

The background of the entire page is a close-up, slightly blurred image of the American flag, showing the blue field with white stars and the red and white stripes. The flag is draped and appears to be moving, creating a sense of depth and texture. The colors are vibrant, with the blue being a deep navy and the red being a bright, slightly dark red. The white stars are prominent against the blue field.

Report of

The Fourteenth Quadrennial Review of Military Compensation

Volume II. Basic Pay and Select Special Pays • January 2025

Preparation of this report and its underlying studies cost the Department of Defense a total of approximately \$5,070,000 in Fiscal Years 2022–2024.

Report of

The Fourteenth Quadrennial Review of Military Compensation

Volume II. Basic Pay and Select Special Pays
January 2025

Preface

Every four years, the President directs “a complete review of the principles and concepts of the compensation system for members of the uniformed services.”¹ When this review is completed, the President must submit a detailed report to Congress summarizing the results of the review along with any recommendations the President may have for changes in the statutory salary system and other elements of the compensation structure for members of the uniformed services.²

In January 2023, President Joseph R. Biden instructed the Secretary of Defense to serve as his Executive Agent in conducting the Fourteenth Quadrennial Review of Military Compensation (14th QRMC). In his charge to the Secretary, the President stated:

Our great Nation has the finest fighting force in the world and it remains our sacred obligation to take care of our men and women in uniform. We owe our service members our support and gratitude, and we recognize the sacrifices they make every day in support of our Nation. Further, our service members deserve a 21st century military compensation system that recognizes and rewards their contributions, reflects the values of our Nation, and incentivizes the next generation of men and women to serve.³

In furtherance of this objective, the President directed the 14th QRMC to review and assess five topics: the current military compensation benchmark; the structure of the basic pay table; the requirements and methodologies used to calculate the housing, subsistence, and cost-of-living allowances, including the Basic Needs Allowance; compensation for critical skills; and the implications for compensation of the growing number of dual-income military households.

¹ U.S. Code, Title 37, Section 1008(b), Presidential Recommendations Concerning Adjustments and Changes in Pay and Allowances.

² U.S. Code, Title 37, Section 1008(b).

³ White House, “Fourteenth Quadrennial Review of Military Compensation,” memorandum for the Secretary of Defense, January 15, 2023.

At the request of the Commander, United States Special Operations Command, and the Chairman, Joint Chiefs of Staff, the Secretary of Defense added a sixth study—a review of entitlements for deployed members.

This second volume of the 14th QRMC report contains research papers on basic pay and select special pays prepared by federally funded research and development centers in support of the QRMC. They provide more detailed discussion of the topics addressed in the main report, including description of the data sets and methodology used in the various analyses. These reports are presented, with permission, in their entirety. The views expressed in these papers represent those of the authors and are not necessarily those of the Department of Defense.

This volume includes the following:

A Review of the Military Basic Pay Table: Analysis in Support of the Fourteenth Quadrennial Review of Military Compensation

BETH J. ASCH, MICHAEL G. MATTOCK, JASON M. WARD, SAMUEL ABSHER, PATRICIA K. TONG,
ANTON SHENK, RAND

Review of Entitlements for Deployed Members

NANCY M. HUFF, BEN J. CHRISTENSEN, MATTHEW S. GOLDBERG, STANLEY A. HOROWITZ, JACKLYN R.
KAMBIC, MIKHAIL SMIRNOV, KELSEY R. STANLEY, ZACHARY N. SZLENDAK, IDA



BETH J. ASCH, MICHAEL G. MATTOCK, JASON M. WARD, SAMUEL ABSHER,
PATRICIA K. TONG, ANTON SHENK

A Review of the Military Basic Pay Table

Analysis in Support of the Fourteenth Quadrennial Review
of Military Compensation



A Review of the Military Basic Pay Table

Analysis in Support of the Fourteenth Quadrennial
Review of Military Compensation

BETH J. ASCH, MICHAEL G. MATTOCK, JASON M. WARD,
SAMUEL ABSHER, PATRICIA K. TONG, ANTON SHENK

Prepared for the Quadrennial Review of Military Compensation
Approved for public release; distribution is unlimited.



NATIONAL SECURITY RESEARCH DIVISION

For more information on this publication, visit www.rand.org/t/RRA2400-1.

About RAND

RAND is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. To learn more about RAND, visit www.rand.org.

Research Integrity

Our mission to help improve policy and decisionmaking through research and analysis is enabled through our core values of quality and objectivity and our unwavering commitment to the highest level of integrity and ethical behavior. To help ensure our research and analysis are rigorous, objective, and nonpartisan, we subject our research publications to a robust and exacting quality-assurance process; avoid both the appearance and reality of financial and other conflicts of interest through staff training, project screening, and a policy of mandatory disclosure; and pursue transparency in our research engagements through our commitment to the open publication of our research findings and recommendations, disclosure of the source of funding of published research, and policies to ensure intellectual independence. For more information, visit www.rand.org/about/research-integrity.

RAND's publications do not necessarily reflect the opinions of its research clients and sponsors.

Published by the RAND Corporation, Santa Monica, Calif.

© 2025 RAND Corporation

RAND® is a registered trademark.

Library of Congress Cataloging-in-Publication Data is available for this publication.

ISBN: 978-1-9774-1432-8

Cover: Yvonna Guyette/U.S. Marine Corps.

Limited Print and Electronic Distribution Rights

This publication and trademark(s) contained herein are protected by law. This representation of RAND intellectual property is provided for noncommercial use only. Unauthorized posting of this publication online is prohibited; linking directly to its webpage on rand.org is encouraged. Permission is required from RAND to reproduce, or reuse in another form, any of its research products for commercial purposes. For information on reprint and reuse permissions, please visit www.rand.org/pubs/permissions.

About This Report

In response to the establishment of the Fourteenth Quadrennial Review of Military Compensation and the mandates of Section 643 of H.R. 7900 in the National Defense Authorization Act for 2023, the RAND National Defense Research Institute was tasked with providing a comprehensive analysis of the military basic pay table, to include an assessment of the basic pay table; a comparison of the level of military pay with the pay of similar civilians; an assessment of the methodology used to annually adjust the military pay table, which is currently guided by the Employment Cost Index; and an analysis of pay for critical skill areas. This report summarizes the analysis and findings.

The research reported here was completed in June 2024 and underwent security review with the sponsor and the Defense Office of Prepublication and Security Review before public release.

RAND National Security Research Division

The research was sponsored by the 14th Quadrennial Review of Military Compensation and conducted within the Personnel, Readiness, and Health Program of the RAND National Security Research Division (NSRD), which operates the RAND National Defense Research Institute (NDRI), a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Navy, the Marine Corps, the defense agencies, and the defense intelligence enterprise.

For more information on the RAND Personnel, Readiness, and Health Program, see www.rand.org/nsrd/prh or contact the director (contact information is provided on the webpage).

Acknowledgments

We are indebted to Thomas Emswiler and Anthony Licari, director and assistant director, respectively, of the 14th Quadrennial Review of Military Compensation. We are also grateful to Jerilyn Busch, director of the Office of Compensation within the Office of the Under Secretary of Defense for Personnel and Readiness, and to Don Svendsen, also within that office, for their assistance to this project. We would like to thank Scott Seggerman of the Defense Manpower Data Center for providing information on months to promotion. Our analysis benefited from the input of several RAND colleagues, including Jonas Kempf, Robert Bozick, Tina Panis, and Lisa Berdie and former RAND colleague Troy Smith. We are also grateful to the reviewers of this report, Russell Beland and Jim Hosek, for their comments. Finally, we would like to thank our RAND colleagues Molly McIntosh and Daniel Ginsberg, director and associate director of the RAND National Defense Research Institute's personnel, readiness, and health center.

Summary

Rapid increases in inflation since 2020 and a strong labor market, together with reported rates of food insecurity among active duty service members of about 25 percent, have put a spotlight on military compensation and on the foundational element of the compensation system, military basic pay. Military basic pay is set out in a pay table where service members' monthly base pay is given based on their years of service (YOS) and pay grade. Section 643 of H.R. 7900 in the National Defense Authorization Act (NDAA) for 2023 mandated a study of military basic pay, as does the charter of the Quadrennial Review of Military Compensation (QRMC), a White House–directed commission that studies military compensation and takes place every four years. The Fourteenth Quadrennial Review of Military Compensation (14th QRMC) requested that the RAND National Defense Research Institute provide research support for its study of military basic pay. This report summarizes the analysis and findings of the RAND study. Specifically, our study

1. compares military pay, measured by regular military compensation (RMC), with civilian earnings and evaluates the 70th percentile benchmark developed by the Ninth Quadrennial Review of Military Compensation (9th QRMC) in 2002¹
2. assesses the basic pay tables of junior enlisted personnel, midcareer and senior enlisted personnel, and commissioned officers
3. evaluates the Employment Cost Index (ECI) as a guide to the annual pay raise, as well as alternatives
4. assesses pay for service members in critical specialties and whether and how basic pay could be used to address personnel needs in these specialties.

In addition, for contextual background, we provide a review of the recent trends in the civilian labor market that might affect recruiting and retention outcomes and the adequacy of military basic pay and RMC. Our approach involved developing proposals for change for each of the four topic areas drawing from past studies and commissions that have assessed military compensation. It also drew from discussions with subject-matter experts (SMEs) in each service branch and in the Office of the Secretary of Defense, as well as the relevant academic literature. In addition, we analyzed relevant data, including both Defense Manpower Data Center (DMDC) pay and personnel data and civilian labor market data. We then assessed these proposals using existing models and available data, as relevant to each topic.

Findings

Comparison of Military and Civilian Pay and the 70th Percentile Benchmark

Similar to past QRMCs, we compared RMC (as defined in footnote 1) for enlisted members and for officers (as defined in footnote 1) with the pay of civilians with similar education and age and computed the weighted average of the percentile of civilian earnings, averaged across all enlisted members and all officers. We find

¹ RMC is considered the military counterpart to civilian earnings and includes basic pay, the basic allowance for housing, the basic allowance for subsistence, and the tax advantage of receiving these allowances tax free. The 70th percentile benchmark established by the 9th QRMC means that if average RMC were compared with the earnings of 100 civilians with similar characteristics as service members, average RMC would exceed the pay of 69 of those civilians, meaning that average military pay would exceed average (the 50th percentile of) civilian pay. As explained by the 9th QRMC (and discussed further in Chapter 2), average military pay exceeds average civilian pay to recruit and retain sufficient quality and quantity of personnel in recognition of the unique demands and arduous nature of military service compared with civilian employment.

that in 2021 enlisted RMC was at the 83rd percentile of comparable civilian pay for members with between zero and 20 YOS and was also at the 83rd percentile for those with between zero and 30 YOS. These figures are virtually identical to the estimates for the Thirteenth Quadrennial Review of Military Compensation (13th QRMC) computed using 2017 data, which were 84.6 percent and 84.1 percent, respectively. We estimate the weighted average RMC for officers were 76 percent and 76 percent, for the less than or equal to 20 and 30 YOS, respectively, which, like their enlisted counterparts, are the same as their 2017 values of 76 percent and 76 percent, respectively.

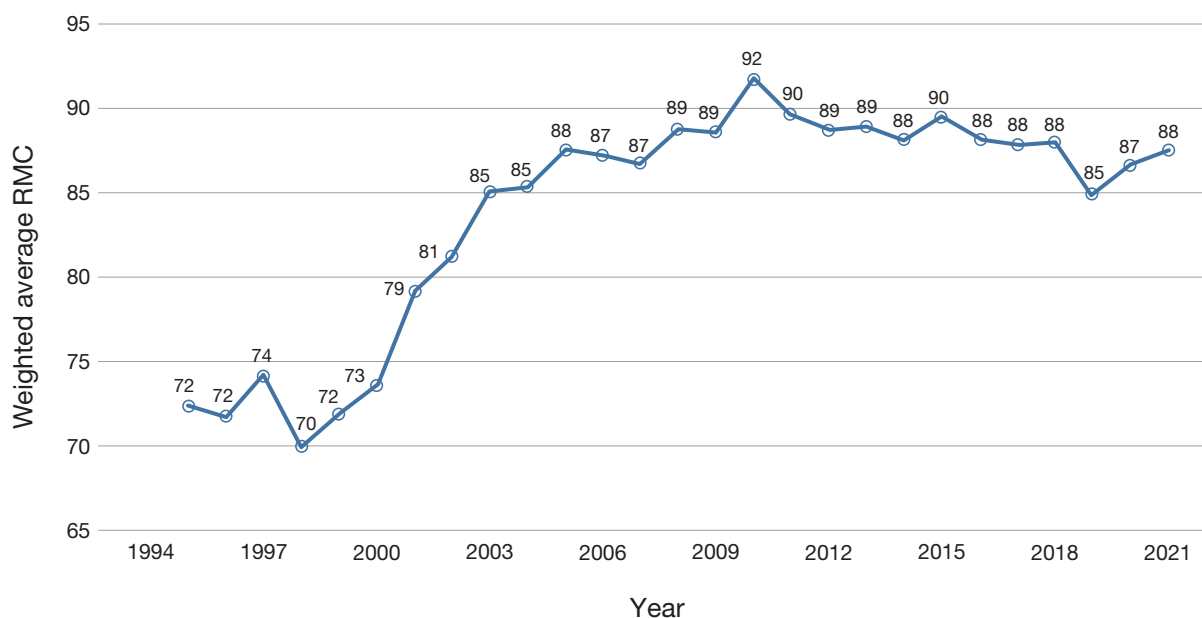
Section 643 of H.R. 7900 in the 2023 NDAA also requested an assessment of whether the 70th percentile benchmark should be changed. As shown in Figure S.1, for enlisted members the weighted average of RMC between zero and 20 YOS has exceeded the 70th percentile benchmark since the early 2000s, when the 70th percentile was established, owing to the faster than ECI pay raises that occurred in 2001–2010.² Given that the de facto RMC percentile has exceeded the benchmark for quite some time, we considered the question of whether a higher percentile is required to achieve the recruiting and retention outcomes desired by the armed services and specifically to achieve the outcomes achieved when the 70th percentile was established based on data from the 1990s. To address this question, we compared recruiting and retention outcomes in recent years relative to the period when the 70th percentile was established, as well as changes in recruiting and retention resources, such as bonuses, and changes in the conditions of service that could explain why recruiting and retention outcomes differ.

Overall, the services have met or exceeded retention and recruit quality outcomes in recent years relative to the earlier years when the 70th percentile was established. Recently, the services have experienced challenges in achieving their recruiting missions, but they have been taking aggressive steps to address these issues with expansion of recruiting resources such as bonuses, recruiters, marketing, and advertising. Furthermore, research shows that in the absence of retention problems, raising pay is the least cost-effective means of addressing recruiting shortfalls relative to these other policies. It is possible that the sustainment of recruit quality and improved retention reflect not just military pay that exceeds the 70th percentile in recent years but factors that have made recruiting and retention easier relative to the periods in the late 1980s and 1990s when the 70th percentile was established. End-strength targets have decreased significantly, owing to the post–Cold War drawdown leading to reduced accession and retention objectives. Recruiting and retention resources have increased—notably, the number of recruiters and bonuses. On the other hand, many key factors have become more challenging, such as the share of young people eligible for enlistment and the strong economy. Further, the percentage of active duty members who say they are satisfied with the military way of life has drifted downward over time, as has the share of active duty spouses who say they are in favor of their spouse staying in the military.

These challenges suggest that an RMC benchmark above the 70th percentile may be appropriate. We do not have a specific new number to offer, but we believe a figure of around the 75th to 80th percentiles for enlisted personnel and around the 75th percentile for officers may be in the right ballpark. That said, ultimately the adequacy of the military pay levels should be judged based on the services' ability to attract and retain the quantity and quality of personnel they need. If higher benchmarks for enlisted members and officers are established, future QRMCs should be required to periodically revisit any new benchmark to ensure it remains relevant as an early warning system of potential issues with the level of military pay relative to civilian pay.

² To enable computations of the RMC percentiles back to the 1990s, we used different and arguably less accurate input data than the data for computing the weighted average RMC percentile for 2021. Consequently, in 2021, the weighted average differs slightly from the figure shown in Figure S.1 for 2021.

FIGURE S.1
Enlisted Regular Military Compensation as a Percentile of Civilian Wages Weighted by Level of Education and Year of Service, with Education Estimated from the Active Duty Master File, 1994–2021



SOURCE: Authors’ calculations using the Current Population Survey’s March Annual Social and Economic Supplement, the DMDC’s active duty pay files; the Greenbook; and *Population Representation in the Military Services*.

NOTE: These weighted average RMC percentiles (or summary percentiles) follow the same methodology used in Table 3.3 but use the DMDC education data instead of Status of Forces Survey of Active Duty Members (SOFS-A) data, as this allows us to make comparisons annually and back to 1994.

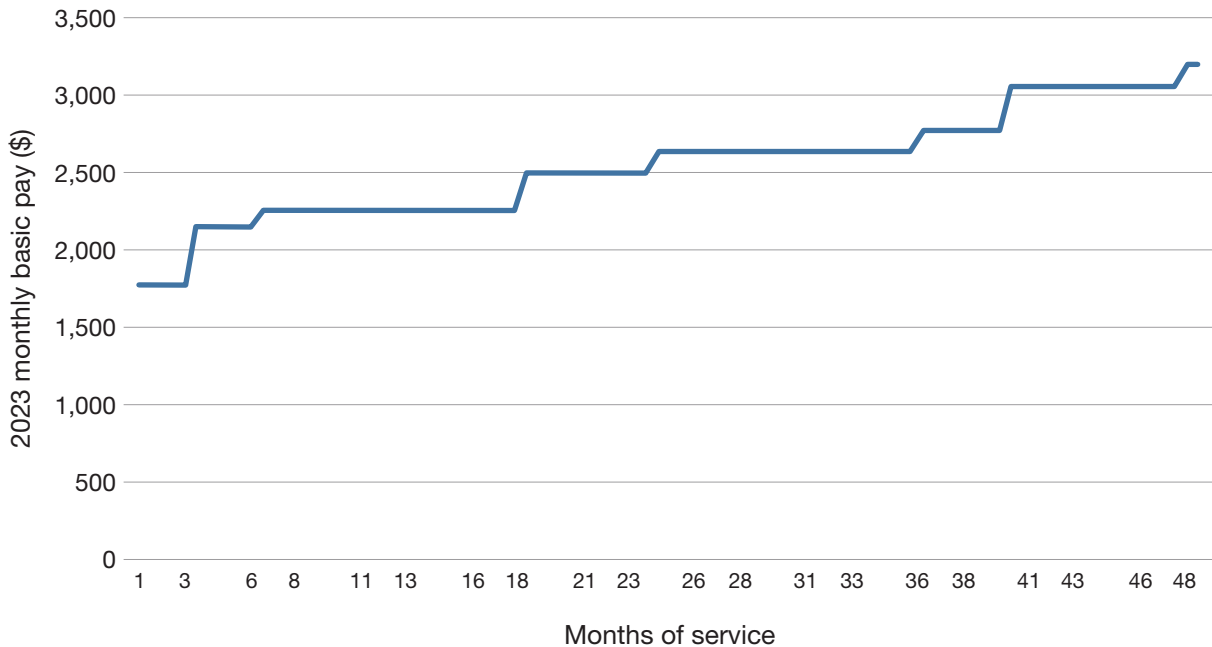
Junior Enlisted Basic Pay

Rapid inflation since 2020, together with higher rates of food insecurity among junior enlisted members, has raised concerns about the level of junior enlisted pay. It is important to recognize that because of rapid promotion in the first year of service, enlisted pay in that first year exceeds the pay of an E-1.³ Furthermore, as shown in Figure S.2, basic pay grows substantially over the first enlistment term because of promotions and longevity increases, as well as annual pay raises, and RMC for junior enlisted members exceeds the federal poverty line even for large families. We also find that average RMC among junior enlisted members exceeds the 90th percentile of the civilian earnings of similar civilians in 2021.

Nonetheless, in the spring of 2023 the U.S. Congress put forward two proposals to increase junior enlisted basic pay, and in the winter of 2024 the House of Representatives’ Quality of Life Panel argued for a junior enlisted basic pay increase as well. We assessed the two congressional proposals together with four additional proposals in terms of their expected effects on pay levels, pay compression of the basic pay table, high-quality enlistments, retention, personnel cost, and efficiency. The third proposal would increase basic pay for junior enlisted members by 12 percent, a figure that reflects the real change in civilian earnings of high school graduates and those with some college compared with the change in

³ Basic pay may be higher than that of an E-1 at entry because some recruits enter the military above the grade of E-1 if they have more education and certain civilian acquired skills.

FIGURE S.2
Monthly Basic Pay over an Early Enlisted Career



NOTE: The figure shows basic pay from the 2023 pay table based on average U.S. Department of Defense (DoD) promotion times between 2013 and 2018.

basic pay. The fourth proposal (4a and 4b) would increase basic pay for junior enlisted by 7 percent and by 15 percent, respectively, to provide stronger recruitment incentives. The fifth proposal would increase and restructure junior enlisted pay to reflect the structure of basic pay at the beginning of the All-Volunteer Force (AVF) in 1973, and the sixth proposal would raise E-1 basic pay for those with fewer than four months of service—that is, for service members who are in boot camp—to the E-1 level for those with more than four months.

We find that none of the proposals is uniformly better in terms of its effects on the factors we considered, as is illustrated in Table S.1. The proposals with the largest pay increases had the largest effects on recruiting and retention (Proposals 2, 3, and 4b), but also were the most costly. The two congressional proposals compressed the pay table the most relative to the pay of midcareer and senior enlisted personnel and were among the least efficient. The least costly proposal we considered had a small effect on recruiting and retention and was also the least efficient proposal we considered. Thus, the proposal that dominates depends on the problem that DoD is trying to solve.

One problem of concern is food insecurity. We did not assess how the proposals would affect the extent of food insecurity among junior enlisted members and, separately, the QRMC is conducting analysis related to food insecurity, but in preliminary tabulations for this study, we did not find a statistically significant relationship between average military cash compensation and likelihood of being food insecure among junior enlisted personnel, though we do not hold constant other factors that could be important.

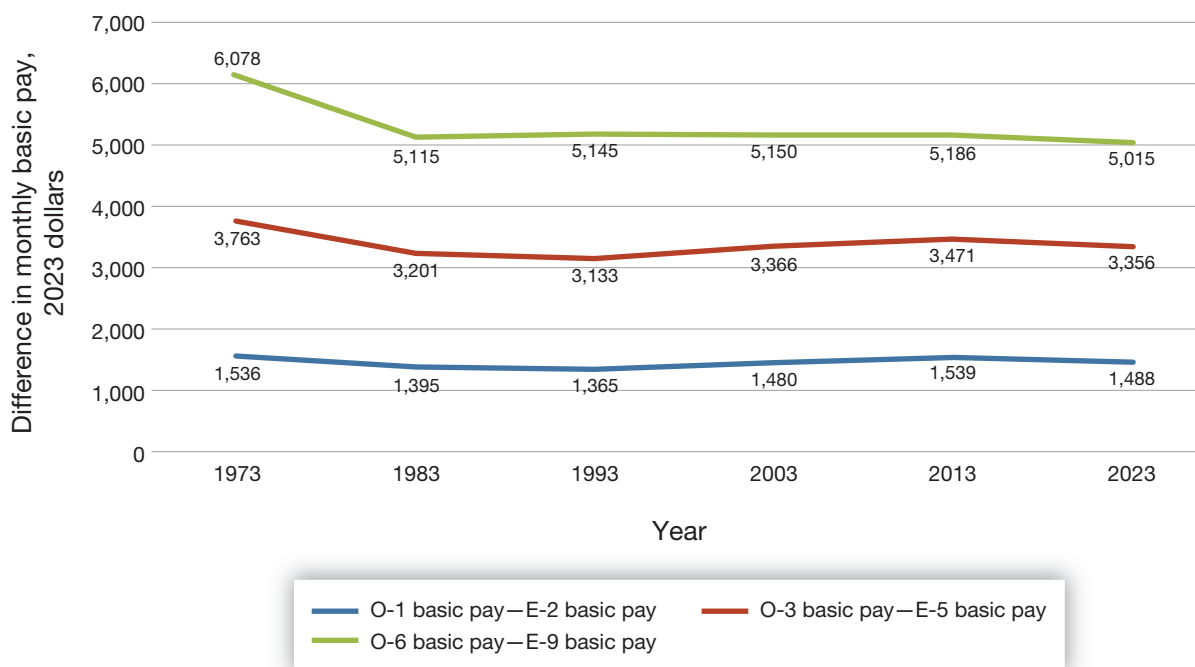
Similarly, as noted earlier, if DoD is seeking to improve recruiting outcomes, research shows that raising basic pay is the least cost-effective means of doing so relative to policies specifically directed at recruiting. Raising pay is inefficient because it is a permanent policy that affects pay in future years and affects other personnel costs including retirement accrual costs.

TABLE S.1
Summary of Junior Basic Pay Findings

Proposal	Recruiting	Retention	Compression	Cost	Food Security
1. Representative Garcia	▲	▲	●	▲	✕
2. House Armed Services Committee proposal	●	●	●	●	✕
3. Junior civilian pay catch-up proposal	●	●	●	●	✕
4a. Recruiting catch-up proposal (7%)	▲	▲	●	▲	✕
4b. Recruiting catch-up proposal (15%)	●	●	●	●	✕
5. All-volunteer force catch-up proposal	▲	▲	▲	▲	✕
6. Boot camp pay catch-up proposal	▲	▲	●	●	✕

KEY: ● = favorable ▲ = acceptable ● = undesirable ✕ = not applicable.

FIGURE S.3
Dollar Difference Between Officer and Enlisted Monthly Basic Pay over Time, in Constant 2023 Dollars



SOURCE: Authors' calculations using 1973–2023 basic pay tables.

NOTE: The figure shows O-1 and E-2 basic pay for those with fewer than two YOS, O-3 and E-5 basic pay for those with over six YOS, and O-6 and E-9 basic pay for those with over 24 YOS.

Midcareer and Senior Enlisted Basic Pay

While enlisted retention has been strong overall, and average RMC among midcareer and senior enlisted members compares well relative to civilian pay, our discussions with SMEs raised concerns about two areas. The first area related to the financial reward associated with promotion, the primary means by which better performance is financially recognized. A consistent theme we heard was that the pay is only weakly related to performance and that pay increases associated with promotion were not always adequate. Another theme we heard related to performance is that E-9s are promoted around the 20th year of service, but those who stay until 30 or 40 years have no further promotion opportunities. The second area of concern was the relationship between officer pay and enlisted basic pay and the increasing absolute gap over time between the two. A related concern was that enlisted jobs have changed over time, involving more responsibility than they did in the past, and that midcareer and senior enlisted members are paid less than officers with similar responsibilities. Some SMEs recommended capping the difference between officer pay and enlisted pay and paying personnel based on job skills and responsibilities.

We evaluated four proposals to increase performance incentives, three of which would add a new E-10 grade, and one which would only provide targeted pay raises to those in the E-6 through E-9 pay grades. The proposals would restructure the pay table in a way that is more in accord with the implications of the personnel economics literature, which finds that the optimal structure of compensation in large hierarchical organizations is one where the pay increase associated with promotion is successively larger for more senior promotions. The increase in compensation can take forms other than cash compensation, including expected retirement benefits or noncash compensation. Adding an E-10 grade to provide promotion opportunities for E-9s was a proposal that was also considered by the 9th QRMC.

We find that adding an E-10 grade is predicted to increase retention and, if coupled with a targeted pay raise for E-6s through E-9s, increases the average ability of the force by increasing the retention and promotion incentives of higher-ability personnel. However, personnel costs also increase, though the proposals that include a targeted pay raise are the most efficient compared with only adding the E-10 grade without a targeted pay raise. While adding an E-10 grade is predicted to increase performance incentives, doing so could involve considerable implementation costs because new manpower requirements would need to be defined and validated and new promotion criteria would need to be defined.

We find that the absolute differences between officer and enlisted pay have grown over time, but only in nominal terms. In real 2023 dollars, these differences have declined or stayed about the same depending on the grades considered (see Figure S.3). Further, the percentage differences have declined over time. Our review of the available literature suggests that capping the differences between officer and enlisted pay could result in reduced military performance and readiness given the evidence from the civilian sector.

Our review of the comparable worth literature indicates that linking enlisted pay to officer pay based on job content and levels of responsibility would require an extensive job evaluation system that has proven difficult to create in the civilian setting. Setting pay based on factors other than supply and demand conditions, career management, and other principles of military compensation could result in an ineffective and inefficient military compensation system that could hurt readiness of the force.

Commissioned Officer Basic Pay

Officer retention has historically been strong in recent years, and average RMC among officers compares well relative to civilian pay based on our updated analysis of the RMC benchmark for 2021, as discussed above. Still, some of the discussions we held with SMEs raised two concerns regarding commissioned officer basic pay. Like concerns about midcareer and senior enlisted pay, we heard concerns about the adequacy of per-

formance incentives in the officer pay table, especially for midcareer officers and very senior officers. There were also concerns about the lower pay for lateral entrants relative to officers in the same grade who entered as an O-1, thereby making lateral entry relatively less attractive as a career alternative.

We evaluated three proposals to increase performance incentives that targeted basic pay raises to mid-career officer grades, with one proposal also raising basic pay for very senior officers by lifting the basic pay cap to the Executive Schedule I level. Since 2007, military basic pay has been capped at the Executive Schedule II level. We find that the three proposals would increase performance incentives in the midcareer and senior officer grades and would improve retention, with a modest increase in cost.

We have found that a time-in-grade pay table could increase the attractiveness of lateral entry by raising entry pay for lateral entrants relative to their pay under the current time-in-service pay table. However, we also have found that if the definition of *constructive credit* were expanded to include YOS and not just grade, as it currently does, it would enable the services to increase the attractiveness of lateral entry under the current time-in-service pay table and virtually replicate the pay advantages of a time-in-grade table for lateral entrants.

The Employment Cost Index and the Annual Basic Pay Adjustment

A key purpose of the annual basic pay adjustment is to ensure that growth in basic pay reflects the change in the civilian earnings opportunities faced by military personnel and potential recruits and to prevent military pay from falling behind potential earnings opportunities in the civilian labor market. For the last two decades the ECI has been used to provide formal guidance for the annual adjustment of basic pay. The ECI is a nationally representative measure of the changes in employer costs of private-sector wage and salary workers computed quarterly by the U.S. Bureau of Labor Statistics (BLS). The ECI that is used to inform the annual January basic pay raise is the third quarter (Q3) ECI, computed 15 months prior to the January pay raise. Thus, the January 2025 pay raise is informed by the change in the Q3 2023 ECI (which was released in October 2023) relative to Q3 2022 (October 2022). The recent, rapid uptick in inflation has contributed to a renewed interest in whether the ECI continues to be the best source of guidance for making these adjustments in a timely and accurate fashion. Of particular concern is the 15-month time lag and the backward-looking computation of the change in ECI, which during times of inflation means that the January pay raise will miss potential pay growth due to inflation during the time lag. Another concern, raised in the 1990s, is that the ECI reflects pay growth in the entire private-sector workforce, which is older on average and has a different gender and education distribution than the active duty military workforce. Thus, the ECI does not accurately reflect the growth in pay that is potentially most relevant to military personnel.

We evaluated the ECI, as well as several alternatives, in terms of accuracy, timeliness, cost-effectiveness, and credibility. Table S.2 summarizes the findings.

The ECI captures broad changes in the civilian labor market in general, and to the extent that service members make retention decisions based on the civilian labor market in general, the ECI would capture these civilian earnings. The ECI is highly credible, since it is computed by the BLS, and is cost-effective to the extent that DoD does not incur the cost of computing it. On the other hand, the 15-month lag hurts the timeliness of the ECI, which affects service members during times of inflation.

We also considered a variant of the traditional Q3 ECI that would involve using an ECI from a more recent quarter relative to the January pay raise, such as the second (June) or third (October) quarter ECI prior to the pay raise. Thus, rather than rely on the October 2023 ECI, the January 2025 pay raise would rely on the June 2024 ECI or perhaps the October 2024 ECI, thereby reducing the time lag from 15 months to six months or less. To facilitate budget deliberations, this variant would use the traditional ECI for budgeting purposes. This alternative would improve the timeliness of the pay adjustment guidance and have the other

TABLE S.2
Summary of Assessment of the ECI and Alternatives

Index	ECI			DECI	Consumer Price Index for All Urban Consumers (CPI-U)
	Traditional	Variant: Separate Budget and Pay Raise ECI	Forecast of the ECI		
Accuracy	Accurately measures employer costs for entire labor force, not serving members	Same accuracy as the ECI	Less accurate than the ECI	More accurate than the ECI and captures rapid changes in labor market	Significantly less accurate than the ECI or any measure of earnings changes
Timeliness	15-month lag	More timely	More timely	Same as the ECI	Same as the ECI
Cost-effectiveness	Existing measure	Method introduces budgeting errors	Existing measure, but ad hoc	Would need to be computed by DoD or an external group	Existing measure
Credibility	High credibility attributed to the BLS, widely used	Better messaging to service members because more timely	Unclear if and how used	Needs to be computed by an independent group	High credibility attributed to the BLS, widely used
Other considerations	Less accurate measure of external market earnings of serving members	Reflects more current inflation impacts	Less accurate pay adjustment	Represents military skill competitiveness, historically more volatile	Smaller basic pay increases than the ECI during periods of increased labor productivity

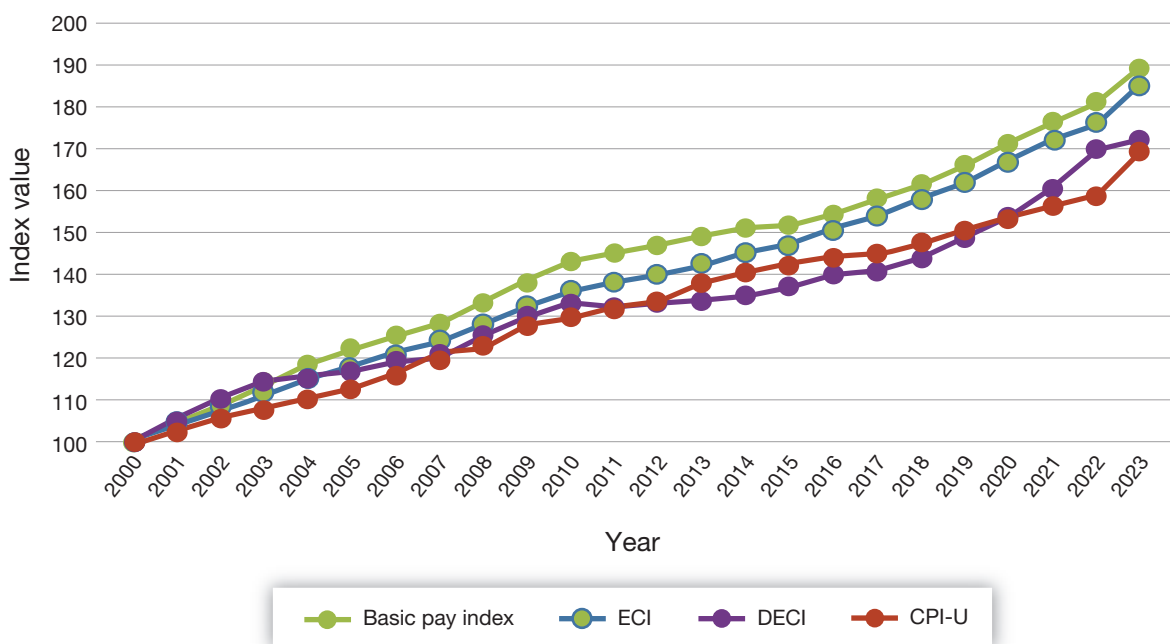
advantages and disadvantages of the ECI. However, it would also mean that the ECI used for the pay raise would be out of sync with the budget process, and if the ECI used for budgeting differed from the ECI used for the pay raise, DoD will find it has either a budgeting shortfall or an overage. We estimated that the size of these shortfalls or overages were relatively small until 2022. When inflation increased, we found DoD would have faced significant shortfalls of approximately \$340 million in 2022 and about \$480 million in 2023.

We also considered a forecast of the ECI produced by the Congressional Budget Office (CBO) that would have the advantage of being forward-looking and more timely. We found that the forecast was less accurate than the traditionally used Q3 ECI, and because it was unclear how it was computed and is only computed on an ad hoc basis currently, we found it less credible and cost-effective than the current ECI.

Congress specifically requested consideration of the Defense Employment Cost Index (DECI) as an alternative. The DECI is an index developed in the 1990s by RAND and evaluated at the request of the 13th QRMC as a supplemental study not included in the 13th QRMC’s final report. The advantages of the DECI are that it takes the perspective civilian employees, rather than employers, and focuses on the labor market opportunities of civilians with similar characteristics as military personnel, thereby more accurately reflecting the external market as service members make retention decisions. The disadvantages of the DECI are that it is subject to more volatility than the ECI during times of significant churn or turnover in the labor market, and it would have to be computed by DoD or some external entity, thereby resulting in a cost to DoD and potentially calling its credibility into question by some stakeholders. Further, it would also be subject to a 15-month timeliness lag.

We also considered the CPI-U, a metric on inflation, as a potential alternative to the ECI given concerns about recent inflation. We found that changes in the CPI-U miss changes in civilian wages due to increases in worker productivity. Since 2000, CPI-U has grown slower than the ECI, implying that military personnel would have missed out on significant pay raises and potentially the services might have experienced significant recruiting and retention challenges (see Figure S.4).

FIGURE S.4
Index of Growth in Basic Pay, ECI, DECI, and CPI-U, Relative to 2000



Pay for Critical Skills

We considered three policy questions raised by Section 643 of H.R. 7900 in the fiscal year (FY) 2023 NDAA:

1. Does the need for higher pay in critical skills occur broadly across the force?
2. Does the current system of supplementing basic pay with bonuses and special pays adequately address the need for wage differentials for these specialties?
3. Should the pay table be modified to provide wage differentials for critical specialties?

To help answer these policy questions, we took a data-driven approach informed by discussions with SMEs and a literature review to consider three related research questions:

1. What is the prevalence of critical specialties, and how much is cash compensation higher owing to receipt of special and incentive (S&I) pays?
2. Does the evidence indicate that the current S&I pay system is adequate for providing wage differentials?
3. What might a pay table approach to offering wage differentials for critical skills look like, and what are the advantages and disadvantages of a pay table approach?

We found that S&I pays are highly targeted, with only a small share of occupations showing a high incidence of S&I pays, and with only a few occupations receiving large amounts of such pays. We found that cash compensation is uniformly higher in critical skills. Previous research shows that S&I pays are effective as accession and retention incentives, and cost-effective, but research has gaps in some key areas, such as whether some S&I pays are set too high or too broadly, resulting in the services paying economic rents (that is, paying members more than is required). Furthermore, the SMEs we interviewed generally favored the current S&I pay approach to setting wage differentials. Finally, we found that consolidating into the pay table S&I pays that currently require a service obligation would be inefficient.

Table S.3 summarizes the findings with respect to the policy questions.

TABLE S.3

Summary of Policy Implications of Analysis of Pay for Critical Skills

Policy Questions	Findings and Implications from the Analysis
1. Does the need for higher pay in critical skills occur broadly across the force?	No. S&I pays are highly targeted, and relatively few occupations receive large amounts in S&I pays.
2. Does the current system of supplementing basic pay with bonuses and special pays adequately address need for wage differentials in these specialties?	Yes. SMEs generally favored the current S&I pay approach for setting wage differentials, and research shows that these pays improve readiness and are cost-effective. Even so, the SMEs and the literature review identified areas where S&I pays might be improved, though more analysis is needed for specific recommendations.
3. Should the pay table be modified to provide wage differentials for critical specialties?	Not at this time. While some S&I pays might be consolidated into a wage differential, pays that depend on a service obligation are more efficient than those that are not, and these pays should not be consolidated into a wage differential.

SOURCE: Authors' analysis of the existing literature and interviews with SMEs.

Wrap-up

A periodic review of the military pay table is important to ensure the continued success of the AVF and the ability of the services to attract and retain the quality and quantity of personnel they need. Our review focused on issues raised in the charter of the 14th QRMC, in Section 643 of H.R. 7900 of the NDAA for FY 2023, and in SME discussions. With respect to junior enlisted basic pay, none of the proposals emerged as uniformly better in terms of effects on recruiting, retention, cost, efficiency, and pay compression, raising the question of ultimately what problems are being specifically addressed and whether other, more targeted and tailored, policies would be more effective and efficient. For example, pay is a blunt and costly instrument for addressing recruiting challenges that can be more effectively and efficiently addressed by the types of policies the services have recently been pursuing, such as increasing the number of recruiters, marketing, and advertising.

With respect to career enlisted personnel and commissioned officers, SMEs raised concerns about the weak link between pay increases and performance in the pay table. We considered proposals that would restructure the pay table for each group to provide successively larger pay bumps associated with promotion, including adding a new E-10 grade, and find that these proposals would improve retention and performance incentives but would also modestly increase personnel costs. Adding an E-10 grade could involve significant implementation costs that we did not estimate in our analysis. We find linking enlisted pay with officer pay, whether to address pay inequality or to better reflect similar job content among enlisted and officer jobs, would move the setting of military pay away from the market-based principles that have guided the setting of military pay successfully over the course of the AVF and could result in recruiting and retention problems.

Rising inflation has put the spotlight on the annual pay adjustment currently guided by the ECI. Overall, we find that the ECI has functioned well as a guide to the pay adjustment, though using a more recent ECI would help address the concerns about the time lag. The DECI has the advantage of providing information about the labor market opportunities specific to people who have characteristics similar to those in the military and could be used as a supplement to the ECI, especially when DoD and Congress are considering deviating from the ECI guidance.

Finally, we find that the services use S&I pays to create pay differentials, whether as recruiting or retention incentives, to recognize unusual or hazardous duties, or as persistent better external market opportunities. While some S&I pays might be better consolidated, it is important that any such consolidation does not adversely affect the efficiency or effectiveness of these pays.

Contents

About This Report	iii
Summary	v
Figures and Tables	xvii
CHAPTER 1	
Introduction	1
Context for Our Study.....	3
The Organization of This Report.....	4
CHAPTER 2	
Comparison of Military and Civilian Pay and Assessment of the 70th Percentile Benchmark	5
Updated Comparison of Regular Military Compensation and Civilian Pay.....	6
Should the 70th Percentile Benchmark Be Changed?.....	19
CHAPTER 3	
Junior Enlisted Basic Pay	25
Background.....	26
Description of the Proposals.....	29
Assessment of the Proposals.....	32
Chapter Summary.....	41
CHAPTER 4	
Midcareer and Senior Enlisted Basic Pay	43
Background.....	43
Toward Development of Proposals to Embed Stronger Performance Incentives in the Enlisted Basic Pay Table.....	44
Description of the Four Proposals.....	48
Assessment of the Proposals.....	51
Addressing Pay Inequity by Linking Enlisted and Officer Basic Pay.....	54
Chapter Summary.....	57
CHAPTER 5	
Commissioned Officer Basic Pay	59
Background.....	59
Toward Development of Proposals to Embed Stronger Performance Incentives in the Officer Basic Pay Table.....	60
Description of the Three Proposals.....	62
Assessment of the Proposals.....	64
Lateral Entry.....	66
Chapter Summary.....	68
CHAPTER 6	
Setting the Annual Adjustment to Basic Pay	69
The Employment Cost Index.....	71
The Congressional Budget Office’s Employment Cost Index Forecast.....	77

The Defense Employment Cost Index.....	80
The Consumer Price Index.....	87
Incorporating a More Recent Version of the Employment Cost Index.....	89
Discussion.....	92
Chapter Summary.....	94
CHAPTER 7	
Adjusting Basic Pay for Critical Skills.....	95
Identifying Critical Skill Areas.....	96
The Incidence of Special Pays and Bonuses.....	97
Special Pay and Bonuses as a Fraction of Overall Cash Pay.....	99
The Extent to Which Pay Is Higher in Critical Specialties.....	101
Insights from Other Sources.....	104
Pay Table Approach to Creating Wage Differentials.....	105
Chapter Summary.....	110
CHAPTER 8	
Conclusions.....	113
The 70th Percentile Benchmark.....	113
Junior Enlisted Basic Pay.....	114
Midcareer and Senior Enlisted Basic Pay.....	115
Commissioned Officer Basic Pay.....	116
The Employment Cost Index and the Annual Basic Pay Adjustment.....	117
Pay for Critical Skills.....	118
Wrap-up.....	119
APPENDIXES	
A. Trends in the Civilian Labor Market.....	121
B. Supplementary Material for Chapter 2.....	141
C. Supplementary Tables and Figures for Chapter 3.....	151
D. Supplementary Tables and Figures for Chapter 4.....	161
E. Supplementary Tables for Chapter 5.....	173
F. Supplementary Figures for Chapter 6.....	181
G. Supplementary Material for Chapter 7.....	185
Abbreviations.....	195
References.....	197

Figures and Tables

Figures

- S.1. Enlisted Regular Military Compensation as a Percentile of Civilian Wages Weighted by Level of Education and Year of Service, with Education Estimated from the Active Duty Master File, 1994–2021..... vii
- S.2. Monthly Basic Pay over an Early Enlisted Career..... viii
- S.3. Dollar Difference Between Officer and Enlisted Monthly Basic Pay over Time, in Constant 2023 Dollars..... ix
- S.4. Index of Growth in Basic Pay, ECI, DECI, and CPI-U, Relative to 2000..... xiii
- 2.1. Enlisted Regular Military Compensation, Civilian Wages, and Regular Military Compensation Percentiles for Full-Time, Full-Year Workers with a High School Education, Some College, or Associate’s Degrees, 2021..... 10
- 2.2. Enlisted Regular Military Compensation, Civilian Wages, and Regular Military Compensation Percentiles for Full-Time, Full-Year Workers with a High School Education, Some College, or Bachelor’s Degrees, 2021..... 11
- 2.3. Officer Regular Military Compensation, Civilian Wages, and Regular Military Compensation Percentiles for Full-Time, Full-Year Workers with Bachelor’s Degrees, Master’s Degrees, or Higher, 2021..... 12
- 2.4. Active Duty Officer Continuation Rate at the Fourth Year of Service..... 17
- 2.5. Percentage of Active Duty Enlistment Mission Achieved by Fiscal Year..... 18
- 2.6. Enlisted Regular Military Compensation as a Percentile of Civilian Wages Weighted by Level of Education and Year of Service, with Education Estimated from the Active Duty Master File, 1994–2021..... 19
- 2.7. Officer Regular Military Compensation as a Percentile of Civilian Wages Weighted by Level of Education and Year of Service, with Education Estimated from the Active Duty Master File, 1994–2021..... 20
- 3.1. Monthly 2023 Basic Pay over an Early Enlisted Career..... 26
- 3.2. Indexed Median Real Weekly Earnings of Civilian Workers, Ages 18–30, by Educational Attainment..... 29
- 3.3. Basic Pay Relative to Pay of an E-5 (Percentage)..... 31
- 3.4. Annual Basic Pay in the First Four Years of Service Under Proposals..... 33
- 3.5. Basic Pay Relative to Pay of an E-5 Under Alternative Proposals (Percentage)..... 34
- 3.6. Average Monthly Cash Compensation and Basic Pay for E-1 through E-4, by Food Insecurity Status, November 2018..... 36
- 3.7. Predicted Steady State Cumulative Fraction of Entry Cohort Retained Through the Tenth Year of Service, Army Enlisted Personnel, Under Scenarios A and B..... 38
- 4.1. Hypothetical Example: Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service..... 46
- 4.2. Current Enlisted Pay Table: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service..... 47
- 4.3. Proposal 1, Adding E-10 Grade: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service..... 49
- 4.4. Proposal 2, Adding E-10 Grade and Targeted E-6 Through E-9 Raises: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service..... 50
- 4.5. Proposal 3, Adding E-10 Grade and Targeted E-6 Through E-7 Raises: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service..... 50

4.6.	Proposal 4, Targeted E-6 Through E-9 Raises: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service	51
4.7.	Difference Between Officer and Enlisted Monthly Basic Pay over Time, in Then-Year Dollars ...	54
4.8.	Difference Between Officer and Enlisted Monthly Basic Pay over Time, in Real 2023 Dollars	55
5.1.	Hypothetical Example: Increase in Monthly Basic Pay Associated with Commissioned Officer Promotion, by Years of Service	60
5.2.	Current Officer Pay Table: 2023 Increase in Monthly Basic Pay Associated with Officer Promotion, by Years of Service	61
5.3.	Proposal 1, Targeted O-4 Through O-6 Raises: 2023 Increase in Monthly Basic Pay Associated with Officer Promotion, by Years of Service.....	62
5.4.	Proposal 2, Targeted O-4 Through O-6 Raises and Executive Schedule I Cap: 2023 Increase in Monthly Basic Pay Associated with Officer Promotion, by Years of Service.....	63
5.5.	Proposal 3, Targeted O-5 Raise: 2023 Increase in Monthly Basic Pay Associated with Officer Promotion, by Years of Service	63
5.6.	Basic Pay with Lateral Entry as an O-4 (in Thousands of Dollars).....	66
5.7.	Lateral Entry with Constructive Credit for Both Grade and Years of Service	67
6.1.	Changes in Hires and Quits Across Recessions	73
6.2.	Example of 15-Month Timeline for Setting Annual Basic Pay Adjustment	74
6.3.	Comparison of ECI Used for Policy Guidance with Actual ECI at Time of Pay Raise (Five Quarters Later).....	75
6.4.	Error in ECI Guidance from the Time Lag Under the Current Policy (Pay Raise at the Start of the Calendar Year) and the Alternate Policy (Pay Raise at the Start of the Fiscal Year)	76
6.5.	Comparison of ECI Used for Policy Guidance with Forecasted ECI at Time of Pay Raise and Actual ECI at Time of Pay Raise.....	78
6.6.	Differences over Time Between the Forecasted ECI at Time of Pay Raise or the ECI Used for Guidance and the Actual ECI.....	79
6.7.	Relationship Between the ECI, the DECI, and the Unemployment Rate.....	84
6.8.	Changes over Time in the ECI, DECI, and BPI Using 2000 as the Baseline Year.....	86
6.9.	Comparison of Changes in Productivity and Real Earnings over Time	88
6.10.	Changes in the CPI, ECI, BPI, and DECI Since 2000	89
6.11.	Fiscal Implications of Using Current ECI Guidance at the Start of the Budget Process and Then Revising with a Later ECI Measure	91
7.1.	Percentage of Personnel Receiving Special and Incentive Pays by Percentage of Total Occupations: Army Enlisted Members	98
7.2.	Percentage of Personnel Receiving Special and Incentive Pays by Strength: Army Enlisted Members.....	98
7.3.	Percentage of Personnel Receiving Special and Incentive Pays by Percentage of Total Occupations: Army Officers	99
7.4.	Average Special and Incentive Pay Share of Total Compensation, by Percentage of Total Occupations: Army Enlisted Members	100
7.5.	Average Special and Incentive Pay Share of Total Compensation, by Percentage of Total Occupations: Army Officers	100
7.6.	Average Enlisted Annual Total of Bonus and Special and Incentive Pays for Each Member, by Critical and Noncritical Occupations.....	101
7.7.	Average Officer Annual Total of Bonus and Special and Incentive Pays for Each Member, by Critical and Noncritical Occupations.....	102
7.8.	Mean Enlisted Bonus Pay and Special and Incentive Pay, by Critical and Noncritical Occupations	103
7.9.	Mean Officer Bonus Pay and Special and Incentive Pay, by Critical and Noncritical Occupations	103

7.10.	Notional Example of Nuclear-Qualified Submarine Officer Special and Incentive Pay.....	106
7.11.	Notional Example of Nuclear-Qualified Submarine Officer Special and Incentive Pay Under an Additive Approach to a Wage Differential	106
7.12.	Notional Example of Navy Fighter Pilot Special and Incentive Pay	107
7.13.	Notional Example of Navy Fighter Pilot Special and Incentive Pay Under an Additive Approach to a Wage Differential.....	108
7.14.	Notional Example of Department of the Air Force Pilot Special and Incentive Pay	109
7.15.	Notional Example of Department of the Air Force Pilot Special and Incentive Pay Under a Multiplicative Approach to a Wage Differential.....	109
A.1.	Percentage Change in the CPI-U, 2000–2022.....	121
A.2.	Percentage Change in Food and Rental Prices, 2000–2022	122
A.3.	Percentage Change in Energy Prices.....	122
A.4.	Unemployment Rate for Americans Ages 18–30	124
A.5.	U.S. Labor Force Participation and Employment-to-Population Rates for Americans Ages 18–30 ...	125
A.6.	Change in Labor Force Participation Rates Relative to 2000 by Sex and Age Group	125
A.7.	Average Total Annual Hours Worked Among Those Employed, Ages 18–30.....	126
A.8.	Number in the United States Who Are Employed, Usually Working Part-Time (in Millions) ...	126
A.9.	Temporary Help Service Employment (in Thousands).....	128
A.10.	Number of Gig Workers, 2007–2016	128
A.11.	Annual Hours Worked, by Sex and Age Group	129
A.12.	U.S. Manufacturing Sector Employment (in Thousands).....	131
A.13.	Fraction of Men, Ages 18–24 and 25–30, Living with Parents.....	132
A.14.	Enrollment in Postsecondary Institutions (in Millions)	134
A.15.	Difference in Daily Hours Spent on Leisure Relative to 2003 Among Men and Women, Ages 18–24 and 25–30.....	134
A.16.	Fraction Reporting a Disability That Limits or Prevents Work Among Men, Ages 25–30.....	135
A.17.	Opioid Overdose Death Trends, 1999–2000	136
A.18.	Drug Overdose Death Rates by State per 100,000 Population, 2020.....	137
A.19.	Total U.S. Correctional Population, 1990–2019 (in Millions)	137
B.1.	Enlisted Regular Military Compensation Percentiles Comparison, SOFS-A and DMDC	147
B.2.	Officer Regular Military Compensation Percentiles Comparison, SOFS-A and DMDC.....	147
B.3.	Current Population Survey Nonresponse, 2019–2021	148
B.4.	Regular Military Compensation and Comparable Civilian Pay: Enlisted, with One Year of Service	149
C.1.	Percentage of Fiscal Year 2023 Active Duty Retention Missions Attained	151
C.2.	Indexed Median Real Weekly Earnings of Civilian Full-Time Workers in Each Year Relative to 2020, Ages 18–30, by Percentile of Civilian Earnings	153
F.1.	Age Composition of Active Duty Military Members and the Civilian Labor Force over Time....	181
F.2.	Educational Attainment Level of Active Duty Military Members and the Civilian Labor Force over Time.....	182
F.3.	Sex of Active Duty Military Members and the Civilian Labor Force over Time.....	182
F.4.	Changes over Time in ECI, DECI, and BPI Using 2010 as the Baseline Year.....	183
F.5.	DECI Measures Both Including and Excluding Gender in Weighting.....	183
F.6.	Fiscal Implications of Using Current ECI Guidance or the Congressional Budget Office ECI Forecast at Start of Budget Process and Then Revising with a Later ECI Measure.....	184
G.1.	Department of the Air Force Enlisted Incidence of Special and Incentive Pays	185
G.2.	Marine Corps Enlisted Incidence of Special and Incentive Pays.....	186
G.3.	Navy Enlisted Incidence of Special and Incentive Pays	186
G.4.	Department of the Air Force Officer Incidence of Special and Incentive Pays	187
G.5.	Marine Corps Officer Incidence of Special and Incentive Pays.....	187

G.6.	Navy Officer Incidence of Special and Incentive Pays.....	188
G.7.	Department of the Air Force Enlisted Share of Total Compensation	189
G.8.	Marine Corps Enlisted Share of Total Compensation	189
G.9.	Navy Enlisted Share of Total Compensation.....	190
G.10.	Department of the Air Force Officer Share of Total Compensation.....	190
G.11.	Marine Corps Officer Share of Total Compensation	191
G.12.	Navy Officer Share of Total Compensation.....	191

Tables

S.1.	Summary of Junior Basic Pay Findings	ix
S.2.	Summary of Assessment of the ECI and Alternatives	xii
S.3.	Summary of Policy Implications of Analysis of Pay for Critical Skills.....	xiv
1.1.	Study Topics and Analytic Approaches for Assessing Proposals	3
2.1.	Educational Attainment of Enlisted Personnel, by Pay Grade	7
2.2.	Educational Attainment of Officer Personnel, by Pay Grade.....	7
2.3.	List of Data Sources for Regular Military Compensation Percentile Calculation	8
2.4.	Regular Military Compensation as a Percentile of Civilian Wages, by Level of Education and Year of Service, for Enlisted Members, 2021	13
2.5.	Regular Military Compensation as a Percentile of Civilian Wages, by Level of Education and Year of Service, for Officers, 2021	15
2.6.	Active Duty Retention, Percentage of Annual Reenlistment Mission Achieved, by Zone of Eligibility	17
2.7.	Weighted Average Enlisted and Officer Regular Military Compensation Percentiles, Department of Defense Recruiting and Retention Outcomes, and Selected Factors Related to Outcomes, 2018–2023 and Selected Benchmark Years	23
3.1.	The Federal Poverty Line and Tabulations of Family Size of Junior Enlisted Active Duty Members, 2023	27
3.2.	Proposals to Increase Junior Enlisted Basic Pay	30
3.3.	Annual Basic Pay in the First Four Years of Service Under the Current Pay Table, and Percentage Change in Annual Basic Pay Under Each Proposal.....	33
3.4.	Summary of the Effects of Junior Enlisted Basic Pay Proposals	37
3.5.	Predicted Steady State Man-Years Per Accession, and Cost per Member, Under the Current Baseline Pay Table, Army Enlisted Personnel, Under Scenarios A and B.....	38
3.6.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Proposals, Army Enlisted Personnel, Under Scenario A	39
3.7.	Cost to the Army of Increasing Enlistment Bonuses or the Number of Recruiters to Produce the Same Enlistment Effect as Each Proposal to Raise Junior Enlisted Members’ Basic Pay	40
4.1.	Proposals to Increase Midcareer and Senior Enlisted Basic Pay	48
4.2.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Army Enlisted Personnel	52
4.3.	Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Army Enlisted Personnel	53
4.4.	Ratio of Officer Basic Pay to Enlisted Basic Pay over Time	56
5.1.	Proposals to Increase Commissioned Officer Basic Pay	62
5.2.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Three Proposals, Army Officers	64
5.3.	Average Ability Percentile by Grade, and Across the Overall Force, Under Three Proposals, Army Officers.....	65
7.1.	Prevalence of Special and Incentive Pays in Critical Occupations, Enlisted Members, 2021	97

7.2.	Summary of Findings	110
7.3.	Policy Implications	110
A.1.	Metropolitan Areas with the Five Largest and Five Smallest Percentage Changes in Inflation ..	123
A.2.	Percentage of Men Who Usually Work Part-Time	127
A.3.	Degree to Which Labor Demand and Supply Factors Explain the Estimated Reduction in Employment-to-Population Ratio Between 1999 and 2018	130
A.4.	Percentage of Household Income Earned by Men.....	133
A.5.	Projected Annual Job Openings for Essential Occupations, 2019–2029	139
B.1.	Enlisted Education Distribution Comparison, SOFS-A and DMDC.....	144
B.2.	Officer Education Distributions Comparison, SOFS-A and DMDC.....	146
C.1.	Months of Service at Promotion, Averaged over 2013–2018	151
C.2.	Annual and Cumulative Increase in the ECI, Basic Pay, and the CPI-U	152
C.3.	Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023.....	153
C.4.	Proposal of Representative Mike Garcia: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023	154
C.5.	House Appropriations Committee Proposal: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023	154
C.6.	Civilian Pay Catch-Up Proposal: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023	154
C.7.	Recruiting Catch-Up Proposal (7%): Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023	155
C.8.	Recruiting Catch-Up Proposal (15%): Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023.....	155
C.9.	All-Volunteer Force Catch-Up Proposal: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023	155
C.10.	Boot Camp Catch-Up Proposal: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023	156
C.11.	Estimated Change in High-Quality Enlistment Elasticities from Past Studies	156
C.12.	Annual 2023 Basic Pay in the First Four Years of Service Under the Current Pay Table and Under the Alternative Proposals.....	157
C.13.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under the Proposals: Army Enlisted Personnel, Under Scenario B.....	158
C.14.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under the Proposals: Navy, Department of the Air Force, and Marine Corps Enlisted Personnel, Under Scenario B (No Permanent Change in Civilian Pay)	158
C.15.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under the Proposals: Navy, Department of the Air Force, and Marine Corps Enlisted Personnel, Under Scenario A (Permanent Change in Civilian Pay)	159
D.1.	Proposal 1, Adding E-10 Grade: Monthly Basic Pay for E-6 to E-10 with More Than Six Years of Service, January 2023	162
D.2.	Proposal 2, Adding E-10 Grade and Targeted E-6 Through E-9 Raises: Monthly Basic Pay for E-6 to E-10 with More Than Six Years of Service, January 2023.....	163
D.3.	Proposal 3, Adding E-10 Grade and Targeted E-6 Through E-7 Raises: Monthly Basic Pay for E-6 to E-10 with More Than Six Years of Service, January 2023.....	164
D.4.	Proposal 4, Targeted E-6 Through E-9 Raises: Monthly Basic Pay for E-6 to E-10 with More Than Six Years of Service, January 2023	165
D.5.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Navy Enlisted Personnel	166
D.6.	Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Navy Enlisted Personnel	166

D.7.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Department of the Air Force Enlisted Personnel	167
D.8.	Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Department of the Air Force Enlisted Personnel	167
D.9.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Marine Corps Enlisted Personnel	168
D.10.	Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Marine Corps Enlisted Personnel	168
D.11.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Army Enlisted Personnel	169
D.12.	Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Army Enlisted Personnel	169
D.13.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Navy Enlisted Personnel	170
D.14.	Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Navy Enlisted Personnel	170
D.15.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Department of the Air Force Enlisted Personnel	171
D.16.	Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Department of the Air Force Enlisted Personnel	171
D.17.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Marine Corps Enlisted Personnel	172
D.18.	Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Marine Corps Enlisted Personnel	172
E.1.	Monthly Basic Pay for O-4 to O-10 with More Than Four Years of Service, January 2023	174
E.2.	Proposal 1, Targeted O-4 Through O-6 Raises: Monthly Basic Pay for O-4s to O-10s with More Than Four Years of Service, January 2023	175
E.3.	Proposal 2, Targeted O-4 Through O-6 Raises and Executive Schedule I Cap: Monthly Basic Pay for O-4s to O-10s with More Than Four Years of Service, January 2023	176
E.4.	Proposal 3, Targeted O-5 Raise: Monthly Basic Pay for O-4s to O-10s with More Than Four Years of Service, January 2023	177
E.5.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Three Proposals, Navy Officers	178
E.6.	Average Ability Percentile by Grade, and Across the Overall Force, Under Three Proposals, Navy Officers.....	178
E.7.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Three Proposals, Department of the Air Force Officers	179
E.8.	Average Ability Percentile by Grade, and Across the Overall Force, Under Three Proposals, Department of the Air Force Officers	179
E.9.	Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Three Proposals, Marine Corps Officers	180
E.10.	Average Ability Percentile by Grade, and Across the Overall Force, Under Three Proposals, Marine Corps Officers	180
G.1.	Summary Regression Results for Enlisted Members	192
G.2.	Summary Regression Results for Officers.....	193

Introduction

On January 31, 2023, the President established the Fourteenth Quadrennial Review of Military Compensation (14th QRMC) with a charter to address five issues, including

- a review of the military basic pay table to ensure that it enables the U.S. Department of Defense (DoD) to recruit and retain the personnel it requires
- an evaluation of the 70th percentile benchmark used to compare military pay with civilian pay and an assessment of whether the benchmark should be changed¹
- a review of the compensation system as it pertains to service members in critical skills to ensure that the services can meet compensation requirements for personnel in these skills.

In addition, Section 643 of H.R. 7900 in the National Defense Authorization Act (NDAA) for 2023 mandated a study of military basic pay that included the three elements above, as well as specifically requested information on the model used to determine basic pay in the current basic pay tables, including

- an analysis of whether to update the current model to meet the needs of the 2023 employment market
- a historical understanding of when the current model was established and how frequently it has been updated during the last ten years
- an understanding of the assumptions on which the model is based and how such assumptions are validated
- an analysis of time-in-grade requirements and how they may affect retention and promotion
- an assessment of how recruiting and retention information is used to adjust the model.

The congressional mandate also required an assessment of whether to adjust the annual increase in basic pay currently guided by changes in the Employment Cost Index (ECI) as a measure of the growth in private-sector employment costs or use a different index, such as the Defense Employment Cost Index (DECI).

Given the overlap between the QRMC charter and the NDAA 2023 mandate, the latter requirement was rolled into the broader QRMC study of basic pay. The 14th QRMC requested that the RAND National Defense Research Institute provide research support for its study of military basic pay to meet these requirements. This report summarizes the analysis and findings of the RAND study. Specifically, our study

- compares military pay, measured by RMC, with civilian earnings and evaluates the 70th percentile benchmark developed by the 9th QRMC in 2002
- assesses the basic pay tables of junior enlisted personnel, midcareer and senior enlisted personnel, and commissioned officers

¹ As we discuss in greater detail in Chapter 3, the 70th percentile refers to how regular military compensation (RMC) compares with the pay of civilians of similar education, age, and gender; in 2002 the Ninth Quadrennial Review of Military Compensation (9th QRMC) established the 70th percentile as the benchmark for this comparison, meaning that average RMC would exceed the pay of 70 percent of comparable civilians.

- evaluates the ECI as a guide to the annual pay raise, as well as alternatives to the ECI
- assesses pay for service members in critical specialties and whether and how basic pay could be used to address personnel needs in these specialties.

In addition, for contextual background we provide a review of the recent trends in the civilian labor market that might affect recruiting and retention outcomes and the adequacy of military basic pay and RMC.

Our approach involved developing proposals for change for each of the four topic areas of our study, drawing from past studies and commissions that have assessed military compensation. It also draws from discussions with subject-matter experts (SMEs) in each service branch and in the Office of the Secretary of Defense (OSD), as well as from the relevant academic literature. In addition, we analyzed relevant data, including both Defense Manpower Data Center (DMDC) pay and personnel data and civilian labor market data. We then assessed these proposals using existing models and available data, as relevant to each topic.

Our analysis builds especially on the work of two prior QRMCs that assessed the military basic pay table—the Seventh Quadrennial Review of Military Compensation (7th QRMC) in 1992 and the 9th QRMC in 2002 (DoD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992a and 1992b; DoD, OUSD[P&R], 2002)—though other QRMCs, commissions, and studies have considered the basic pay table. The 7th QRMC focused on whether the basic pay table and the mechanism for adjusting basic pay were appropriate for the post–Cold War era, while the 9th QRMC considered whether the level of RMC and the structure of the basic table were adequate given the changes in the external civilian labor market due to the dot-com boom of the late 1990s and the changing educational composition of the military. As the 7th QRMC report stated,

Basic pay is the principal vehicle for linking compensation to military performance measure by rank. However, ad hoc changes over the last forty years have distorted this linkage so that years of service weigh more heavily than promotion as a determinant of pay. (DoD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992a, p. 5)

The 7th QRMC found “significant inconsistencies in the pay table and proposed targeted changes that sought to “relieve pay compression between grades” and also noted that the purpose of the annual pay raise is “to adjust military pay, in light of civilian wage growth, to ensure that entering into or continuing a military career remains attractive” (DoD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992a, pp. 5, 9). It assessed the ECI, as well as the DECI, an index being developed at the time of the 7th QRMC. It recommended continued use of the ECI until development of the DECI was complete, at which time the ECI should be reevaluated. We discuss the 7th QRMC findings in more detail in Chapter 6 in our assessment of the ECI and DECI.

The 9th QRMC found that the adjustments in both the level and structure of the pay table were needed to ensure a high enough pay premium for a more educated force, especially for midgrade enlisted members and junior officers. For enlisted members, it recommended targeted basic pay increases for those in the E-5 to E-7 grades with between six and 20 years of service (YOS) to raise pay toward the 70th percentile of civilians of comparable education and age. It also recommended raising basic pay for grades E-8 and E-9 to sustain performance incentives, a modest increase for junior enlisted members, and consideration of the possible addition of an E-10 grade to provide performance incentives via promotion for E-9s. For commissioned officers, the 9th QRMC recommended basic pay increases for O-3s and O-4s. Targeted pay increases were implemented in 2000 through 2004, as well as in 2007, in addition to annual across-the-board increases. We discuss the 70th percentile benchmark further in Chapter 2 and targeted pay raises in Chapters 3–5.

We also relied on insights gained from speaking to military compensation and personnel management SMEs in the winter and spring of 2023. We sought to gain their perspectives on the issues raised in Section 643

of H.R. 7900 in the 2023 NDAA, as well as on whether they perceived that the military pay tables need to be improved and, if so, how. We also reviewed the academic literature on setting compensation in large hierarchical organizations that gave promotions primarily within the organization, as well as the literature on military recruiting and retention. In each chapter we summarize the relevant insights from the literature and from our SME discussions.

Our approach to evaluating proposals differed depending on the topic area, as summarized in Table 1.1. The approach involved simulating how proposals would affect the level and structure of the military pay over a career, using available models from peer-reviewed studies to estimate how proposals to change basic pay would affect recruiting and retention outcomes, as well as cost and performance, and using available data provided by the DMDC and the OSD, such as those on recent recruiting and retention outcomes, as appropriate. Details of the specific models, data, and literature are discussed in detail in later chapters.

TABLE 1.1
Study Topics and Analytic Approaches for Assessing Proposals

Topic Area	Types of Proposals	Analytic Approaches
1. Comparison of military and civilian pay (RMC percentiles)	Consider whether a benchmark other than the 70th percentile is warranted	Review RMC percentiles, and recruiting and retention outcomes using available data since the 70th percentile was established
2a. Junior enlisted basic pay	Targeted basic pay increases	Tabulate effects on basic pay, estimate effects on high-quality enlistments, estimate retention and cost effects
2b. Midcareer and senior enlisted basic pay	Targeted pay increases, add a grade	Tabulate effects on basic pay, estimate retention and cost effects, estimate effects on performance
2c. Commissioned officer basic pay	Targeted pay increases	Tabulate effects on basic pay, estimate retention and cost effects, estimate effects on performance
3. Annual basic pay adjustment	Alternative annual pay adjustment methods	Assess alternatives in terms of accuracy, timeliness, cost-effectiveness, and credibility
4. Pay for critical skills	Alternative approaches to implementing a basic pay differential for critical skills	Tabulate effects on pay over career, draw insights from literature on efficiency

Context for Our Study

A major motivation for the interest in revisiting the setting of the military pay table have been the rapid and dramatic increases in inflation that began in 2021 and the shifts in the labor market that occurred during and after the coronavirus disease 2019 (COVID-19) pandemic. The pandemic-related shifts in the labor market were part of a set of larger shifts that has been occurring over the past two decades, such as declining labor force participation (LFP) rates (particularly among young men) and declining hours of work. These shifts are relevant to the setting of military pay because research over the 50 years of the All-Volunteer Force (AVF) consistently finds that changes in civilian external opportunities for service members and potential recruits affect both military recruiting and retention outcomes. Appendix A provides a detailed overview of relevant civilian trends over the past two decades, including a review of the changes in inflation and of the broad changes in labor market activity and factors related to the demand for labor and supply of labor. We also

discuss how the COVID-19 pandemic changed civilian employment and discuss emerging trends, such as working from home, that may be a permanent feature of the labor market.

The Organization of This Report

Chapter 2 provides our comparison of military pay and civilian pay and considers whether the 70th percentile benchmark should be revised. In Chapters 3–5 we assess junior enlisted basic pay, midcareer and senior enlisted basic pay, and commissioned officer basic pay, respectively. Chapter 6 presents our assessment of the ECI and alternative methods of adjusting basic pay annually. In Chapter 7 we consider pay for critical specialties, and we offer a summary of our findings and conclusions in Chapter 8.

Comparison of Military and Civilian Pay and Assessment of the 70th Percentile Benchmark

As noted in Chapter 1, Section 643 of H.R. 7900 of the fiscal year (FY) 2023 NDAA requires a study of basic pay that includes an analysis of how basic pay has compared with civilian pay since the 70th percentile was established and whether the 70th percentile benchmark is still an appropriate target for DoD to accomplish its recruiting and retention goals. This chapter summarizes the analysis related to this provision.

It is useful to begin with what is meant by the 70th percentile when discussing comparisons of military and civilian pay. When used in such comparisons, military pay is measured as RMC, which consists of basic pay, the basic allowance for housing (BAH), the basic allowance for subsistence (BAS), and the tax advantage associated with receiving these allowances tax free. The 70th percentile means that if one were to compare RMC of the average military enlisted member or officer to the earnings of 100 civilians with similar characteristics, the service member would earn more than 69 of those civilians. That is, average military pay would equal or exceed the average civilian pay at the 70th percentile. RMC is used as the metric of military pay based on the conclusions of the Office of the Assistant Secretary of Defense for Manpower's Task Force on Military Compensation (the Gorham Commission) in the 1960s, which found that RMC was the appropriate counterpart to civilian earnings (DoD, OUS[P&R], 2018a).

The 70th percentile as a benchmark for assessing the adequacy of military pay levels was instituted by the 9th QRMC, which found, "Pay at around the 70th percentile of comparably educated civilians has been necessary to enable the military to recruit and retain the quality and quantity of personnel it requires" given the unique conditions of military service (DoD, OUSD[P&R], 2002, p. xxiii). The conclusions of the 9th QRMC were based on the input of previous commissions, study groups, and QRMCs, including the 1948 Advisory Commission on Service Pay (the Hook Commission), which established the precedent that military pay should be compared with the pay of similar civilians (Advisory Commission on Service Pay, 1948), and the 1970 President's Commission on an All-Volunteer Armed Force (the Gates Commission), which noted that higher levels of military pay relative to civilian pay may be needed given the conditions of military and service and the need to recruit and retain volunteers (U.S. President's Commission on an All-Volunteer Armed Force, 1970). The 9th QRMC's conclusions were also based on analyses of data from the 1990s that found that pay at around the 70th percentile had historically been necessary to recruit and retain the quality and quantity of personnel required by the services (Asch, Hosek, and Warner, 2001; Hosek and Sharp, 2001). The recommendations of the 9th QRMC and subsequent QRMCs were also based on a history of research over the AVF years that consistently found that recruiting and retention outcomes were positively related to changes in military pay.¹

Since the 9th QRMC, each QRMC has compared military and civilian pay and found that average RMC has been at or above the 70th percentile benchmark. The Thirteenth Quadrennial Review of Military

¹ An overview of these studies can be found in Asch, Hosek, and Warner, 2007; Asch and Warner, 2018; Warner, 2012; and Warner and Asch, 1995. Table C.11 summarizes estimates of the relationship between military recruiting and military pay relative to civilian pay.

Compensation (13th QRMC) was the last QRMC to compare military and civilian pay; it found that RMC was more than adequate relative to civilian pay, not only because average RMC exceeded the 70th percentile but also because the services were meeting their recruiting and retention objectives overall.

Much has changed since the 2020 report of the 13th QRMC, however. As discussed in Chapter 1 (and Appendix A), the civilian labor market from which the services recruit and retain personnel has changed markedly, amplified by changes due to the COVID-19 pandemic, and inflation has spiked since 2020, reducing the purchasing power of both military pay and civilian pay. Furthermore, the services, and especially the Army, have struggled to meet their recruiting objectives; the Army missed its recruiting objectives in 2022 and 2023, while the Department of the Air Force and the Navy missed their active duty enlisted recruiting objectives in 2023. Across the services, however, overall retention has been strong.

These changes raise the question of how military pay compares with civilian pay since the 13th QRMC analysis. A second question, relevant to the requirement of Section 643 of H.R. 7900 of the FY 2023 NDAA that motivates this analysis, is whether these changes suggest that the 70th percentile benchmark should be changed and, if so, what the new benchmark should be. Our analysis in this chapter seeks to address both questions.

To address the first question, we describe the distribution of educational attainment among military personnel, which is used to inform our comparisons of military and civilian pay. We then list the sources for military and civilian pay data, describe the methodology used to compare the two, and show and discuss our findings given recruiting and retention outcomes since the 13th QRMC. The second part of the chapter addresses the second question, considering how military pay has compared with civilian pay since the 70th percentile benchmark was established and examining factors that might argue for changing the 70th benchmark and those that might argue for leaving it as is.

It is important to note that, ultimately, any assessment of the adequacy of military pay should be based on whether the services are able to attract and retain adequate numbers of personnel of sufficient quality to meet their readiness needs; it should not be based on whether military pay exceeds a specific benchmark. Further, such an assessment should identify whether any recruiting and retention challenges are due to transitory factors or to factors specific to a community of military personnel that could be more cost-effectively addressed with bonuses and special and incentive (S&I) pay policies. That said, decisions about the adequacy of military pay need a starting point, and for decades, that starting point has been the 70th percentile of the earnings of civilians with characteristics similar to those of military personnel.

Updated Comparison of Regular Military Compensation and Civilian Pay

We compare military pay with that of comparable civilians following the methodology laid out in Asch et al. (2020). RMC is calculated as the sum of basic pay, BAH, BAS, and the federal tax advantage resulting from those allowance being free from taxes.² To ensure that our comparisons are between military personnel and “comparable” civilians, we weight our comparisons by education and, in the case of aggregate RMC percentile estimates, YOS. We first describe the distribution of military personnel’s educational attainment, discuss our data sources on military and civilian pay, describe the methodology used to compare the two, and then present the results.

² For active duty members receiving government-furnished housing, the value of that housing is imputed as the value of BAH. Similarly, the value of government-furnished meals is imputed as the value of BAS. Insofar as service members value their government-furnished housing and/or meals as less than BAH or BAS, such as junior enlisted members living in barracks, the imputed RMC will overstate the value of compensation to these members.

Educational Attainment

For information on military personnel's self-reported educational attainment, we use the Status of Forces Survey of Active Duty members (SOFS-A), a web-based survey of the active component population. Using the individual-level data, we calculate the distribution of educational attainment of each pay grade for enlisted personnel in Table 2.1. This table gives the percentage of enlisted members with some college or Associate's degree, or with a Bachelor's degree or higher for selected years. The table shows that enlisted personnel increasingly have bachelor's or higher degrees, continuing a trend of rising educational attainment for enlisted personnel from earlier years. However, education attainment among officers has changed little between 2017 and 2020, as seen in Table 2.2, which shows the percentage of officer members with a college degree or advanced degree.

TABLE 2.1
Educational Attainment of Enlisted Personnel, by Pay Grade

Pay Grade	Percent with Some College or Associate's Degree				Percent with Bachelor's Degree or Higher			
	1999	2009	2017	2020	1999	2009	2017	2020
E-1	7	NR	NR	25	1	NR	NR	0
E-2	18	28	33	28	0	1	0	1
E-3	22	48	43	42	2	3	4	5
E-4	31	54	50	48	5	7	9	9
E-5	47	67	66	63	6	6	10	11
E-6	57	73	73	65	10	9	14	18
E-7	60	73	64	63	18	16	27	28
E-8	56	67	56	49	22	24	39	41
E-9	57	49	40	34	27	44	55	57

SOURCES: 1999–2017 education distributions come from Smith, Asch, and Mattock (2020); 2020 distributions come from SOFS-A for 2020 (DoD, OPA, 2020b).

NOTE: NR = not reported. To make the calculations, survey responses are weighted to be representative of the force using Status of Forces Survey (SOFS) observation weights (i.e., the data element *finalwgt* in the SOFS dataset).

TABLE 2.2
Educational Attainment of Officer Personnel, by Pay Grade

Pay Grade	Percent with College Degree				Percent with Advanced Degree			
	1999	2009	2017	2020	1999	2009	2017	2020
O-1	97	93	91	92	3	6	8	6
O-2	91	87	87	83	9	11	12	16
O-3	59	60	57	55	39	39	42	44
O-4	31	30	20	20	69	69	79	79
O-5	15	13	7	8	85	85	93	91
O-6	8	4	2	2	92	96	98	98

SOURCES: 1999–2017 education distributions come from Smith, Asch, and Mattock (2020); 2020 distributions come from SOFS-A for 2020 (DoD, OPA, 2020b).

NOTE: To make the calculations, survey responses are weighted to be representative of the force using SOFS observation weights (i.e., the data element *finalwgt* in the SOFS dataset).

The data in Tables 2.1 and 2.2 are used to create an education distribution by YOS for both enlisted and officer personnel, which is required to calculate the RMC percentile relative to civilian pay in the following section. To make this conversion, we use Table A6 from DoD’s *Selected Military Compensation Tables* reports (commonly known as the Greenbooks), which contains information about personnel distribution by pay grade and YOS. We predict the education distribution by YOS using the same methodology developed by Hosek et al. (2018) and detailed in Appendix B.

Regular Military Compensation Percentiles

We compare military pay, as measured by RMC, to that of comparable civilians. We do so by computing the RMC percentile, which measures where RMC falls relative to the civilian wage distribution. In this section we describe the data and methodology used to calculate RMC percentiles and then discusses the findings.

Data Sources and Methodology

We use two different approaches to calculating the RMC percentiles, each having a specific purpose. First, to closely examine the adequacy of military pay across a career, we calculate RMC percentiles for each of the first 30 YOS for both enlisted members and officers, an approach we call detailed RMC. Second, it is also useful to estimate a single RMC percentile that provides a summary comparison of military pay with that of comparable civilians in a given year, which we call summary RMC. The summary RMC percentiles can be thought of as a weighted average of the detailed RMC percentiles, where the weights are derived from the military education distribution and the personnel counts by YOS.³ Table 2.3 lists the data sources used in the calculations and indicates whether the data are used in either the detailed or summary RMC percentiles.

The two approaches share some data and methodologies: in both we use the March Annual Social and Economic Supplement (ASEC) from the Current Population Survey (CPS), which includes individuals’ reported weekly wages, ages, and education levels. It is designed by the U.S. Bureau of Labor Statistics (BLS) to be representative of the entire U.S. population. The Greenbook provides RMC by years of experience and serves as our source for military pay data. It lists the average annual pay for each year of service, which we convert to weekly pay in the analysis. The March ASEC also lists details about respondents’ ages and education levels, which we use to identify “comparable” civilians in our comparison of military and civilian pay.

TABLE 2.3
List of Data Sources for Regular Military Compensation Percentile Calculation

Data	Provides Information on . . .	Detailed RMC	Summary RMC
ASEC	Civilian pay, age, and education	Yes	Yes
<i>Population Representation in the Military Services (PopRep)</i>	Gender composition of the military	Yes	Yes
Greenbook	RMC by YOS	Yes	Yes
DMDC active duty pay files	Personnel counts and education by YOS	No	Yes
SOFS-A	Military education by pay grade	No	Yes

NOTE: The DMDC active duty pay files are used as a source of military education only in our analysis of military pay over time, as they are available back to 1994, allowing a longer-range comparison than SOFS data permit.

³ For a full description of both the summary and detailed RMC percentiles methodologies, see Appendix B.

Given that military service members are full-time, full-year workers, we remove respondents from the CPS data who do not meet this criterion. Unlike service members, civilians' years of service are not directly recorded, yet this information is necessary to ensure that military personnel are being compared with the appropriate civilian cohorts. Following Smith, Asch, and Mattock (2020), we impute each respondent's years of experience based on their age and education. For high school graduates, years of experience are equal to their age minus 18. For those with associate's degrees or some college, years of experience are their age at the time of the CPS survey minus 20. For bachelor's degree holders, years of service are their age minus 22, and for those with a master's degree or higher, it is their age minus 24.

We alter the stock CPS weights to reflect the gender makeup of the force, using data from *PopRep* for 2020. As of 2020, the most recent year for which data are available, women made up 16.9 percent of the enlisted active component and 19.7 percent of the active component commissioned officer corps, shares which have risen in recent years. Thus, when we calculate RMC percentiles, the comparisons reflect not only the U.S. population but also the active components' gender distribution.

In the detailed RMC percentile calculations, we smooth the 50th and 70th percentiles of civilian pay, RMC, and the RMC percentiles using quadratic regressions. This step, which is not taken in the summary RMC percentiles, makes for a more digestible figure and fills in the missing YOS from the Greenbook.

The process for calculating summary RMC percentiles was originally developed and described in Hosek et al. (2018, pp. 26–28). It requires additional data, which are analyzed with some slight differences. In this method, as in the detailed RMC percentile calculations, RMC percentiles are also calculated for every year of service, but the data are not smoothed through regression analysis. Instead raw RMC percentiles are calculated for each year of service and each relevant education level of civilians. Next, we average each education category's RMC percentile for a given year of service weighting by the education distribution of the military, creating a weighted average RMC percentile for every year of service. We weight the raw RMC percentiles by the military education fractions to ensure that the YOS-level weighted average RMC reflects a comparison with "comparable" civilians.

For example, early career enlisted personnel often have only a high school degree, so the raw RMC percentile comparing RMC with the earnings of high-school-educated civilians has a higher weight when calculating the YOS-level weighted RMC percentile. Similarly, almost no early career enlisted members have master's degrees, so the RMC percentile comparing RMC with civilians with master's degrees carries virtually no weight. This is a crucial difference from the detailed RMC percentile, where RMC is compared only with a single, static civilian group (e.g., civilians with high school diplomas for early career enlisted members).⁴ To derive a final weighted average RMC percentile, summarily comparing military and civilian pay, we average each year of service's RMC percentile, weighting each one by the number of service members in its respective year of service, where data on personnel counts come from the DMDC's active duty pay files.⁵

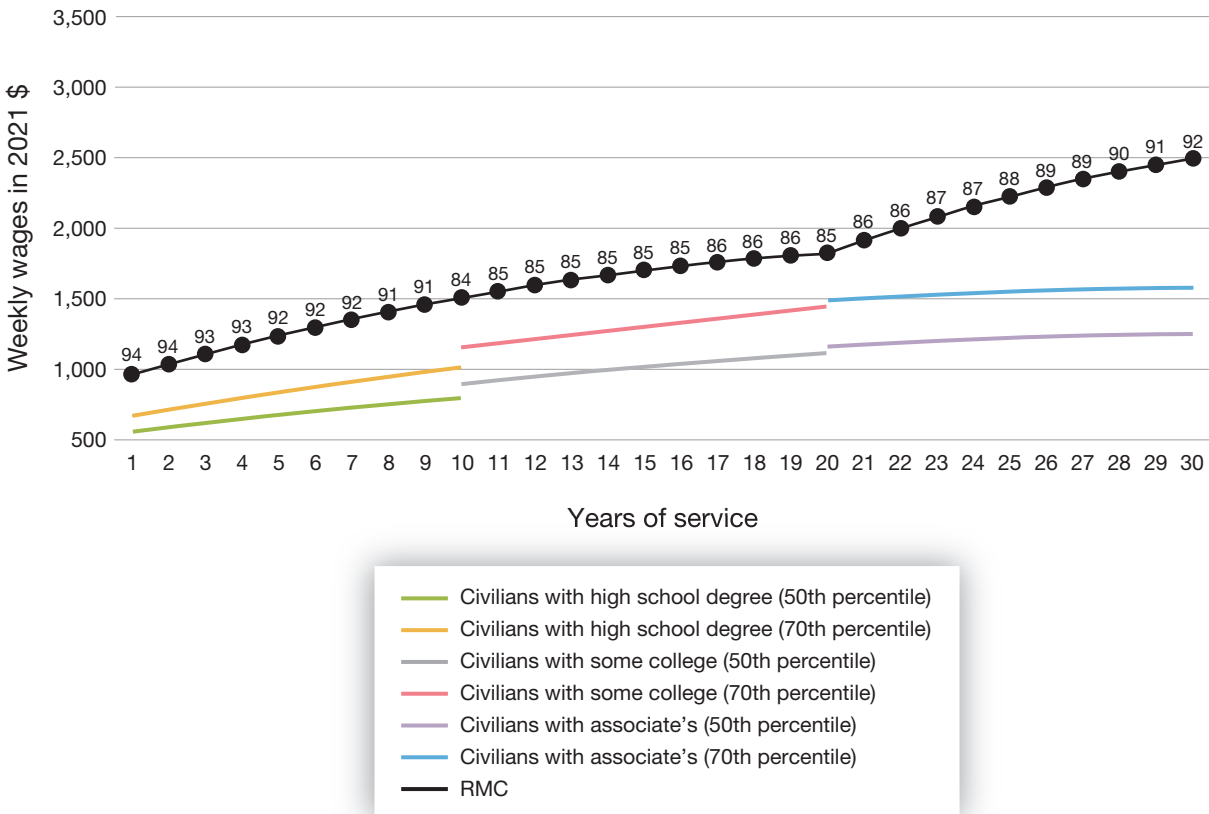
Regular Military Compensation Percentiles over a Career in 2021

Figures 2.1 and 2.2 show the enlisted RMC over YOS in a black, dotted line. Each point is labeled with the estimated RMC percentile, which captures RMC's value relative to the earnings of its respective education comparison group. In Figure 2.1, enlisted members with fewer than ten YOS are compared the civilians with high school degrees. Their median and 70th percentile earnings are shown in green and yellow, respectively. We compare those service members with between ten and 20 YOS to civilians with some college education, where

⁴ We derive military education by YOS from either the Active Duty Master File (ADMF) education data or SOFS. Details on their construction can be found in Appendix B.

⁵ For a more detailed description of the summary weighted average RMC percentiles calculation, see Appendix B.

FIGURE 2.1
Enlisted Regular Military Compensation, Civilian Wages, and Regular Military Compensation Percentiles for Full-Time, Full-Year Workers with a High School Education, Some College, or Associate’s Degrees, 2021

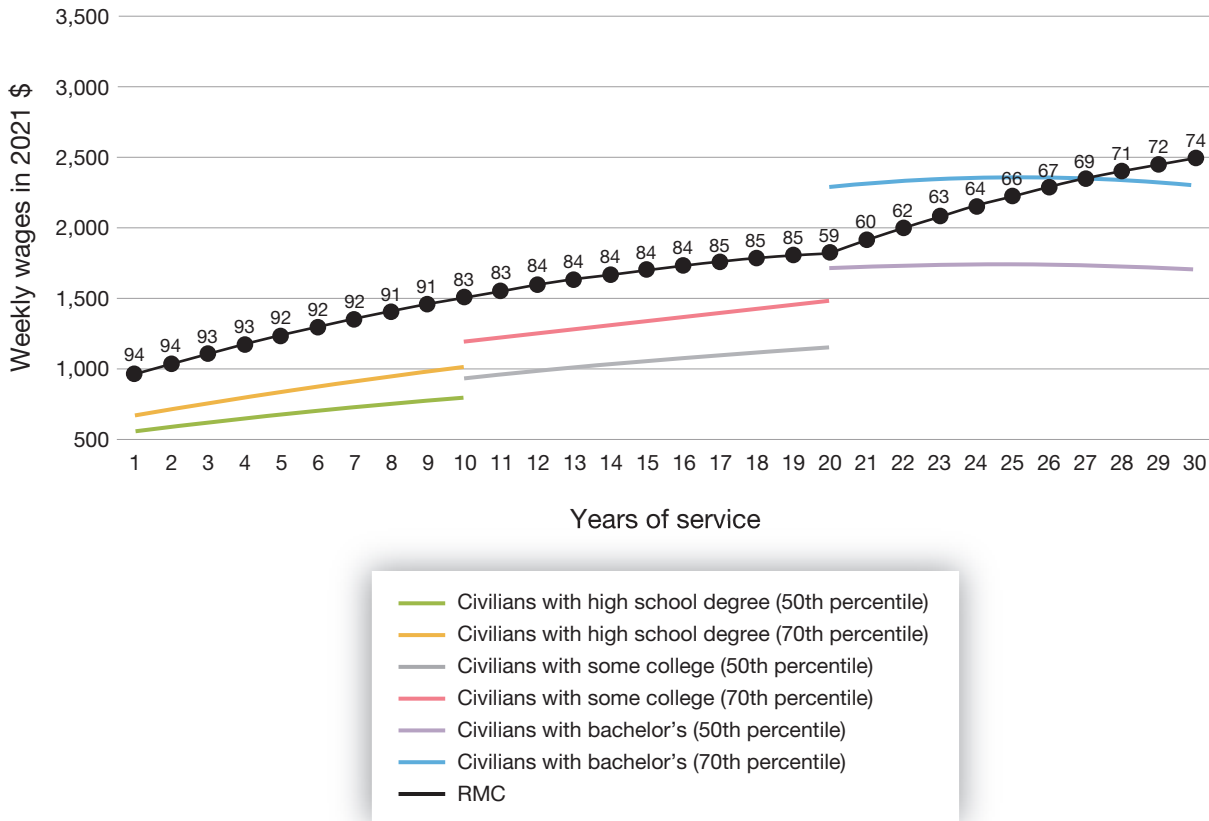


SOURCE: Authors’ calculations using the Greenbook (DoD, OUSD[P&R], 2023), the March ASEC (CPS ASEC), *PopRep* (DoD, OUSD[P&R], undated), and SOFS-A (DoD, OPA, 2020b).
 NOTE: RMC and civilian wage percentiles have been smoothed using quadratic regressions on the raw data. Civilian data are weighted by the standard CPS weights multiplied by the military enlisted gender mix. Weekly pay is expressed in 2021 dollars.

their median and 70th percentile of earnings are listed in gray and red. Finally, senior enlisted members with more than 20 YOS are compared with the 50th and 70th percentiles of earnings of civilians with associate’s degrees, shown in purple and blue. Figure 2.2 is similar to Figure 2.1, except senior enlisted members with more than 20 YOS are compared with the 50th and 70th percentile of earnings of civilians with bachelor’s degrees. DoD does not require enlisted members to hold a bachelor’s degree, but, as shown in Table 2.4, many senior enlisted personnel have a bachelor’s or higher degree.

Before discussing the results in detail, we highlight that the selection of the educational comparison group affects the estimated RMC percentile. When we compute the weighted average RMC percentiles in 2021, as described below, the percentiles are lower than those in the detailed RMC approach, as shown in Figures 2.1–2.3. The inclusion of higher-educated civilians in the weighted average RMC computation explains why the weighted average estimates are lower. For example, in Table 2.4, we see that a nontrivial share of early career service members have education beyond high school, and civilians with education beyond high school have higher earnings, so military pay compares less favorably (though still well above the 70th percentile). For example, the weighted average RMC percentile for enlisted members with one year of service is 94 for the detailed RMC in Figures 2.1 and 2.2 but is 85 in Table 2.4.

FIGURE 2.2
Enlisted Regular Military Compensation, Civilian Wages, and Regular Military Compensation Percentiles for Full-Time, Full-Year Workers with a High School Education, Some College, or Bachelor’s Degrees, 2021



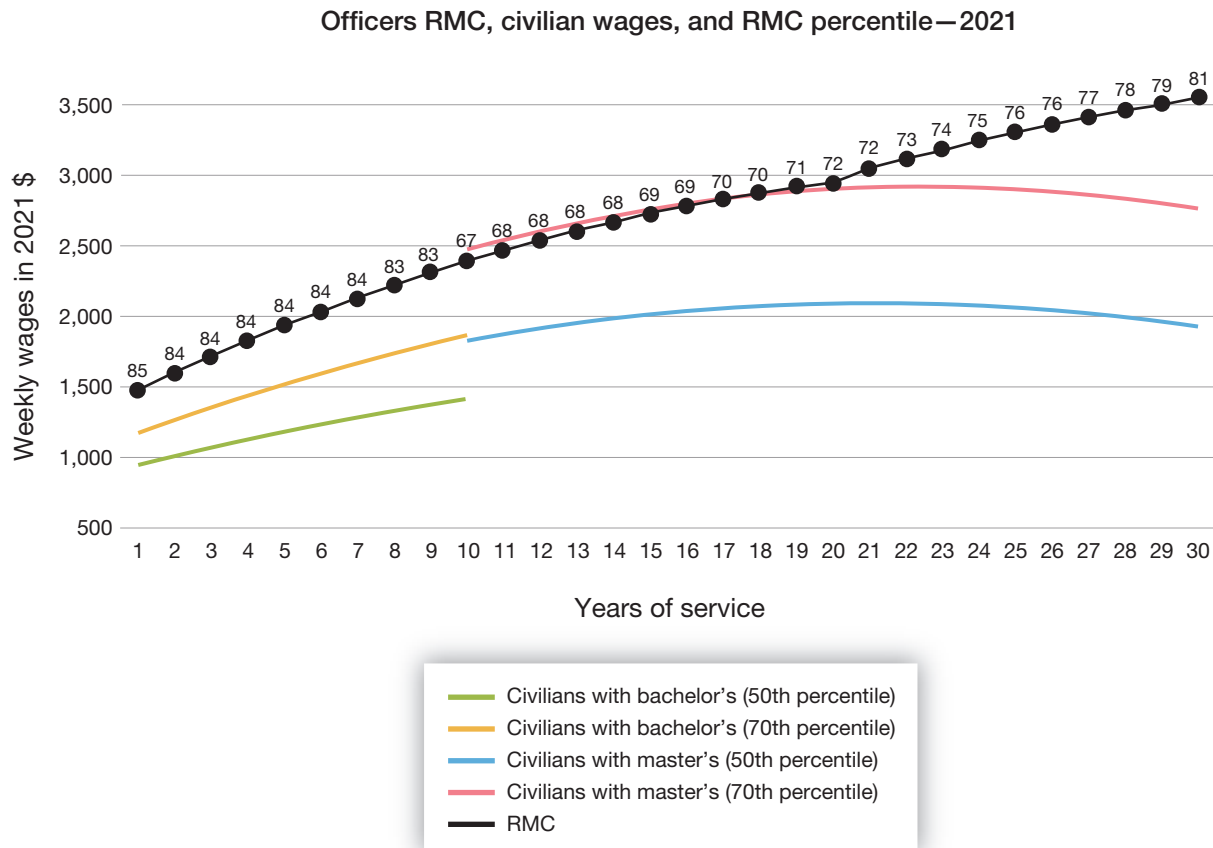
SOURCE: Authors’ calculations using the Greenbook (DoD, OUSD[P&R], 2023), the March ASEC (CPS ASEC), *PopRep* (DoD, OUSD[P&R], undated), and SOFS-A (DoD, OPA, 2020b).

NOTE: RMC and civilian wage percentiles have been smoothed using quadratic regressions on the raw data. Civilian data are weighted by the standard CPS weights multiplied by the military enlisted gender mix. Weekly pay is expressed in 2021 dollars.

In Figures 2.1 and 2.2 we find that military pay, particularly among junior enlisted members, compares favorably to civilian pay. The calculated RMC percentiles below ten YOS are higher than the 90th percentile of earnings relative to civilians with a high school diploma. Midcareer enlisted also fare well against their civilian counterparts (i.e., those with some college education), as their estimated percentiles are well above the 70th percentile threshold. Only among senior enlisted members do the estimated percentiles fail to meet the 9th QRMC’s recommendations, but, as shown in Figure 2.2, when compared with civilians with associate’s degrees rather than bachelor’s degrees, the estimated percentile is again well above its recommended floor. The RMC percentile for 20 YOS increases from 59 to 85 when changing the comparison group, and from 74 to 92 at 30 YOS. Whether it is appropriate to compare RMC for senior enlisted personnel with the pay of civilians with associate’s or bachelor’s degrees depends on whether the services require senior enlisted personnel to have such degrees and therefore require pay levels that enable them to retain such personnel. We did not identify the educational requirements of the services and thus present results that show comparisons for both groups.

In Figure 2.3 we plot officers’ RMC, their RMC percentiles, and the median and 70th percentile of comparable civilian wages by YOS. The earnings of officers with fewer than ten YOS are compared with the earnings of civilians with bachelor’s degrees, while senior officers are compared with advanced degree holders. The

FIGURE 2.3
Officer Regular Military Compensation, Civilian Wages, and Regular Military Compensation Percentiles for Full-Time, Full-Year Workers with Bachelor’s Degrees, Master’s Degrees, or Higher, 2021



SOURCE: Authors’ calculations using the Greenbook (DoD, OUSD[P&R], 2023), the March ASEC (CPS ASEC), *PopRep* (DoD, OUSD[P&R], undated), and SOFS-A (DoD, OPA, 2020b).

NOTE: RMC and civilian wage percentiles have been smoothed using quadratic regressions on the raw data. Civilian data are weighted by the standard CPS weights multiplied by the military officer gender mix. Weekly pay is expressed in 2021 dollars.

RMC percentiles for junior officers are consistently above the 80th percentile of comparable civilian earnings. When the comparison group changes to those with master’s degrees or higher education, the RMC percentile predictably declines, but only slightly below the 70th percentile threshold, and either meets or exceeds the threshold by the 17th year of service. From the tenth to the 30th YOS, officer RMC increases from the 67th percentile of civilian earnings to the 81st.

The Weighted Average of the Regular Military Compensation Percentile in 2021

We also calculate a single weighted RMC percentile (i.e., a summary RMC) for both enlisted members and officers so that military pay can be summarily compared with the wages of comparable civilians. In this section, we briefly explain the summary RMC percentile methodology, present the results of these findings, and, finally, compare the 2021 RMC percentiles with the values from 2017, the last year of analysis produced for the 13th QRCM.

Tables 2.4 and 2.5 present the weighted RMC percentiles in 2021 for enlisted members and officers, respectively, as well as the inputs used in their calculation. Each row in the tables represents a single year of

TABLE 2.4
Regular Military Compensation as a Percentile of Civilian Wages, by Level of Education and Year of Service, for Enlisted Members,
2021

YOS	Predicted Education Distribution by Years of Service					Regular Military Compensation Percentile					Enlisted Count	
	High School	Some College	Associate's	Bachelor's	Master's Plus	High School	Some College	Associate's	Bachelor's	Master's Plus		Weighted Average
1	0.60	0.32	0.04	0.04	0.00	90	81	83	50	37	85	234,603
2	0.49	0.37	0.08	0.06	0.00	95	87	79	55	32	88	135,822
3	0.41	0.40	0.11	0.08	0.01	96	83	75	50	18	84	118,810
4	0.35	0.41	0.13	0.09	0.01	94	88	85	51	40	86	93,904
5	0.31	0.42	0.15	0.10	0.02	91	87	82	53	34	83	67,984
6	0.28	0.43	0.17	0.11	0.02	96	83	84	58	34	83	55,146
7	0.25	0.42	0.19	0.12	0.02	92	76	86	52	38	78	46,378
8	0.23	0.42	0.21	0.13	0.02	94	86	81	57	34	82	45,437
9	0.21	0.41	0.22	0.13	0.02	92	77	80	53	37	77	38,187
10	0.19	0.40	0.24	0.14	0.02	84	81	88	48	32	77	32,400
11	0.18	0.40	0.25	0.15	0.02	90	83	92	51	32	80	28,723
12	0.17	0.39	0.26	0.16	0.03	94	94	81	61	34	83	26,495
13	0.15	0.38	0.27	0.17	0.03	92	90	86	51	34	81	24,456
14	0.14	0.37	0.28	0.18	0.04	92	89	79	58	33	79	20,964
15	0.13	0.36	0.28	0.18	0.04	92	83	83	55	31	77	22,316
16	0.12	0.35	0.29	0.19	0.05	90	80	88	59	50	78	19,058
17	0.12	0.34	0.29	0.20	0.06	87	82	83	50	35	74	20,583
18	0.11	0.33	0.28	0.21	0.07	84	87	85	55	41	76	20,386
19	0.10	0.32	0.28	0.22	0.08	94	84	66	51	36	69	20,348
20	0.10	0.30	0.27	0.24	0.09	90	80	86	51	41	72	15,392
21	0.10	0.29	0.26	0.25	0.10	93	89	86	53	33	74	11,312

Table 2.4—Continued

YOS	Predicted Education Distribution by Years of Service						Regular Military Compensation Percentile						Enlisted Count
	High School	Some College	Associate's	Bachelor's	Master's Plus	High School	Some College	Associate's	Bachelor's	Master's Plus	Weighted Average		
22	0.09	0.28	0.25	0.26	0.12	93	89	81	62	48	76	7,811	
23	0.09	0.27	0.23	0.27	0.13	94	82	88	68	44	76	5,776	
24	0.09	0.26	0.22	0.28	0.15	93	91	82	68	49	76	4,000	
25	0.09	0.25	0.20	0.30	0.16	95	85	81	64	49	73	3,021	
26	0.09	0.24	0.19	0.31	0.18	95	94	93	73	62	82	1,811	
27	0.09	0.23	0.18	0.32	0.19	94	89	94	72	57	79	1,421	
28	0.08	0.22	0.17	0.32	0.20	91	88	90	75	68	81	1,187	
29	0.08	0.22	0.16	0.32	0.21	98	87	91	67	61	77	986	
30	0.08	0.22	0.17	0.31	0.22	97	88	89	71	57	77	408	
0–20											82.7		
0–30											82.4		

SOURCE: Authors' calculations using the Greenbook (DoD, OUSD[P&R], 2023), the March ASEC (OPS ASEC), *PopRep* (DoD, OUSD[P&R], undated), and SOFS-A (DoD, OPA, 2020b).

NOTE: The predicted education distribution is derived from SOFS data (see Table 2.1) and the joint distribution of personnel by pay grade and YOS for the 2021 Greenbook. The RMC percentiles for each education level represent comparisons between RMC and civilian earnings at each respective education and age (i.e., YOS) level. We calculate the weighted average RMC for each year of service using each education level's RMC percentile and using the share of personnel with each education level as weights. We calculate the enlisted count using the DMDC's active duty pay files from September 2021. The summary weighted average RMC percentiles for 0–20 YOS and 0–30 YOS are averages of the individual weighted RMC percentiles weighted by enlisted count.

TABLE 2.5
Regular Military Compensation as a Percentile of Civilian Wages, by Level of Education and Year of Service, for Officers, 2021

YOS	Predicted Education Distribution		Regular Military Compensation Percentile			Officer Count
	Bachelor's	Master's Plus	Bachelor's	Master's Plus	Weighted Average	
1	0.90	0.10	80	69	79.2	20,688
2	0.82	0.18	86	65	82.5	13,097
3	0.75	0.25	85	57	78.0	12,213
4	0.69	0.31	90	81	87.6	11,347
5	0.62	0.38	83	71	78.5	9,063
6	0.57	0.43	85	60	74.3	8,500
7	0.51	0.49	86	69	77.4	7,725
8	0.46	0.54	84	70	76.6	7,993
9	0.42	0.58	77	67	70.9	7,205
10	0.37	0.63	80	70	73.6	7,031
11	0.33	0.67	82	61	67.8	6,703
12	0.30	0.70	88	66	72.7	6,864
13	0.27	0.73	84	74	76.9	6,801
14	0.24	0.76	85	62	67.2	6,269
15	0.21	0.79	83	68	71.2	6,163
16	0.19	0.81	82	77	77.7	6,045
17	0.17	0.83	81	71	72.8	6,555
18	0.15	0.85	83	66	68.4	6,411
19	0.13	0.87	77	64	65.8	6,454
20	0.12	0.88	84	72	73.8	5,677
21	0.11	0.89	83	70	71.5	4,825
22	0.10	0.90	87	70	71.4	4,020
23	0.09	0.91	89	68	69.9	3,638
24	0.09	0.91	90	75	76.1	3,336
25	0.08	0.92	89	77	78.2	2,824
26	0.08	0.92	90	79	79.8	2,348
27	0.08	0.92	87	80	80.1	2,110
28	0.08	0.92	87	86	85.6	1,861
29	0.08	0.92	83	74	74.4	1,723
30	0.08	0.92	88	77	78.2	1,258
0–20					75.9	
0–30					75.8	

SOURCE: Authors' calculations using the Greenbook (DoD, OUSD[P&R], 2023), the March ASEC (CPS ASEC), *PopRep* (DoD, OUSD[P&R], undated), and SOFS-A (DoD, OPA, 2020b).

NOTE: The predicted education distribution is derived from SOFS data (see Table 2.1) and the joint distribution of personnel by pay grade and YOS for the 2021 Greenbook. The RMC percentiles for each educational level represent comparisons between RMC and civilian earning at each respective education and age (i.e., YOS) level. We calculate the weighted average RMC for each year of service using each education level's RMC percentile and using the share of personnel with each education level as weights. We calculate the officer count using the DMDC's active duty pay files from September 2021. The summary weighted average RMC percentiles for 0–20 YOS and 0–30 YOS are averages of the individual weighted RMC percentiles weighted by enlisted count.

service. For each year of service the tables then list the portion of service members that belong to each education category (“Predicted Education Distribution by YOS”) and where military pay falls relative to the earnings of civilians with those educational credentials (“RMC Percentile”). The “Weighted Average” then shows the average RMC percentile for that year of service, using the RMC percentiles by education and the portion of service members with the corresponding education as weights. The summary weighted average RMC percentiles, which compare military pay with similar civilians’ pay across the entire career, are calculated by averaging the YOS-level weighted average RMC percentiles using the “Enlisted Count” as weights. We present two summary weighted average RMC percentiles, one that only includes 20 YOS or fewer (found in the 0–20 row), and a second that uses all 30 YOS in the table (in the 0–30 row).

We find that RMC is well above the 70th percentile threshold in both YOS specifications. Using only the first 20 YOS in our calculation, we estimate that enlisted RMC is at the 82.7th percentile of comparable civilian pay and, with all 30 YOS, at the 82.4th. The 2021 RMC percentiles are just below their values in 2017, which were 84.6 and 84.1, respectively, suggesting that the pay of comparable civilians has just outpaced military pay in the four years since the 13th QRMC, likely due to tightening in the civilian labor market discussed in Appendix A.

The weighted average RMC percentiles for officers is found in Table 2.5. Its structure differs from the tabulations for enlisted personnel in Table 2.4 only in its exclusion of irrelevant educational categories (i.e., high school, some college, and associate’s degrees), because only on rare occasions do officers access without at least bachelor’s degrees. We estimate the weighted average RMC percentiles for officers to be 75.9 and 75.8, for less than or equal to 20 and 30 YOS, respectively, which, like their enlisted counterparts, are below the 2017 values of 76.7 and 76.4.

Discussion of Findings

The percentile comparisons indicate that average military pay, as measured by RMC, continues to compare well relative to the earnings of civilians of similar education levels and ages. Whether military pay levels are adequate, however, must be judged not only on how military pay compares with civilian pay but also on whether the services are able to recruit and retain the personnel needed to meet their manpower objectives.⁶ Recent retention trends indicate that the services have experienced strong retention overall, generally reaching at least 100 percent of their active duty reenlistment mission among service members ending their initial obligation and those at midcareer (see Table 2.6). Officer retention has also been strong overall, with annual continuation rates at the eighth year of service at around or exceeding 90 percent in recent years (see Figure 2.4).

The main challenge for the services in recent years has been recruiting, especially for the Army. As shown in Figure 2.5, the Army, Navy, and Air Force fell short of their active duty enlistment objectives in FY 2023 while the Army also missed its 2022 objective, by around 25 percent, as well as its 2018 objective. On the other hand, since 2017, all of the services have exceeded the OSD benchmark that at least 90 percent of enlisted accessions be high school diploma graduates. And, with the exception of the Navy, all of the services have met or exceeded the OSD benchmark that 60 percent or more of accessions have Armed Forces Qualification Test (AFQT) scores of at least 50. In 2023, 54 percent of the Navy’s accessions had at least a score of 50, and 19.4 percent had scores between 10 and 30 (DoD, OUSD[P&R], 2023). Overall, however, recruit quality has remained strong.

⁶ It is important to acknowledge that other aspects of the compensation package also affect retention, including the military retirement benefit and the value of the military health benefit, among others. That said, debates about the adequacy of military pay generally come to the forefront when recruiting objectives are not being met and the services are experiencing retention challenges.

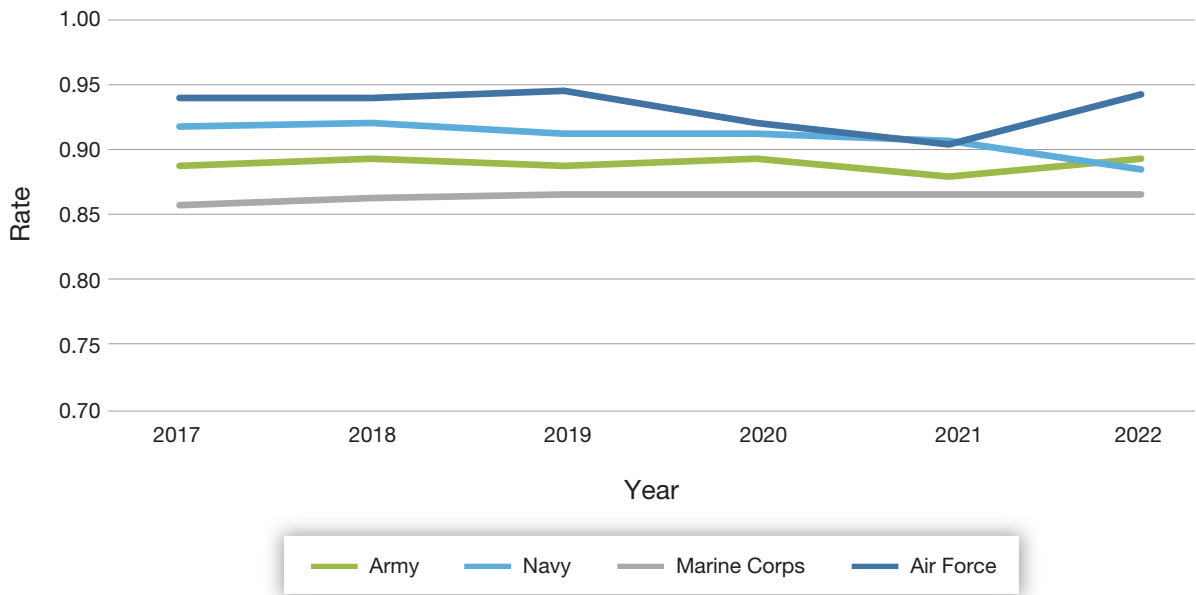
TABLE 2.6
Active Duty Retention, Percentage of Annual Reenlistment Mission Achieved, by Zone of Eligibility

	2017	2018	2019	2020	2021	2022	2023
Initial zone							
Army	96%	105%	101%	104%	102%	103%	102%
Navy	100%	118%	112%	93%	103%	108%	117%
Marine Corps	96%	99%	98%	101%	95%	102%	114%
Air Force	125%	115%	130%	125%	127%	118%	127%
Midcareer zone							
Army	99%	105%	101%	105%	103%	104%	102%
Navy	116%	126%	113%	90%	94%	107%	97%
Marine Corps	96%	111%	99%	105%	100%	107%	106%
Air Force	93%	118%	129%	116%	115%	105%	100%

SOURCE: DoD, OUSD[P&R], 2017–2023.

NOTE: The Marine Corps midcareer zone includes retention subsequent to the initial zone.

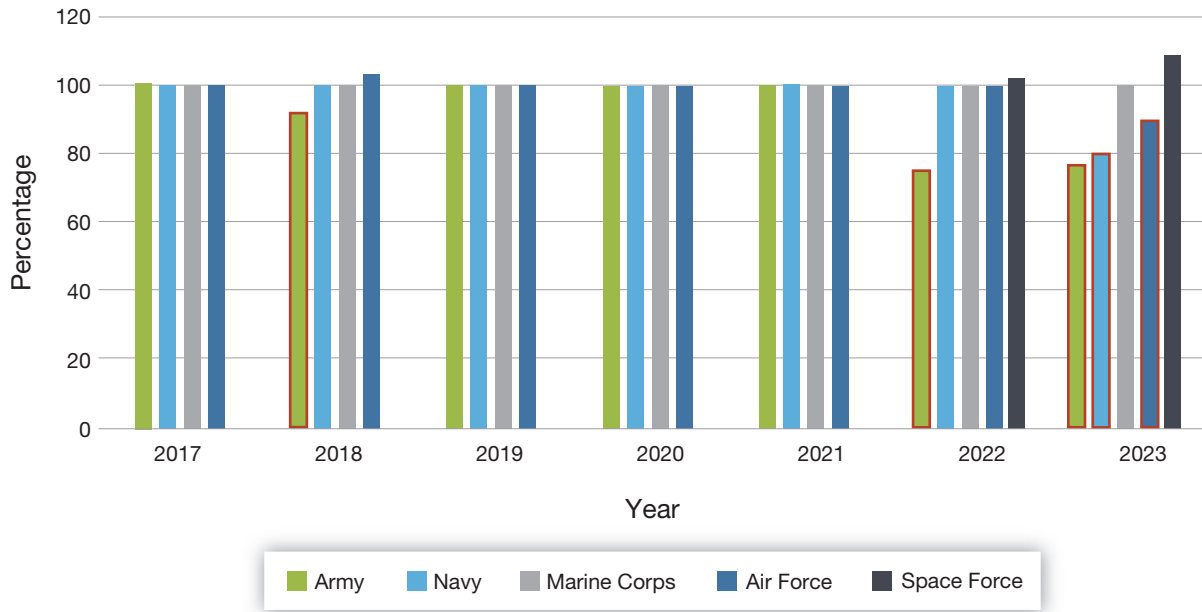
FIGURE 2.4
Active Duty Officer Continuation Rate at the Fourth Year of Service



SOURCE: DMDC tabulations provided to RAND.

While research (Asch et al., 2010; Simon and Warner, 2007; Warner and Simon, 2004; Warner, Simon, and Payne, 2003) shows that the supply of recruits to the military is responsive to increases in military pay relative to civilian pay, the recent recruiting challenges do not provide a compelling reason to increase military pay relative to civilian pay, for two reasons. First, such pay raises only make sense when the services are also experiencing retention problems, since research shows that retention is also responsive to pay raises (Asch et al., 2010). However, the services are not experiencing such problems in general.

FIGURE 2.5
Percentage of Active Duty Enlistment Mission Achieved by Fiscal Year



SOURCE: DoD, OUSD[P&R], 2017–2023.

NOTE: A red outline indicates a service that did not achieve active duty enlistment mission (100%).

Second, as discussed further in Chapter 3, raising military pay is not a cost-effective recruiting policy relative to other policy levers. Research shows that increasing the number of recruiters, expanding advertising, and even increasing enlistment bonuses are more cost-effective (Dertouzos and Garber, 2003; Hogan et al., 1996; Knapp et al., 2018; Simon and Warner, 2007; Ward et al., 2023; Warner and Simon, 2004; Warner, Simon, and Payne, 2003). The reason that raising pay is not cost-effective is because the increase in pay would apply not just to new recruits but to other service members, resulting in substantial economic rents being paid to members who were planning to stay, even without a pay raise. In addition, pay increases are permanent, unlike bonuses and advertising, which can both be reduced or eliminated if no longer needed. Finally, other elements of military compensation depend on basic pay, such as the military retirement accrual charge, as well as the DoD’s Federal Insurance Contribution Act tax to fund Social Security—further increasing the cost of a pay increase.

DoD and the services are working hard to address their recruiting challenges (Vazirani, 2023). Efforts include expanding the use of enlistment bonuses and increasing marketing and advertising. The Army and Navy are expanding the share of applicants who are eligible to enlist through the Future Soldier Preparatory Course and the Future Sailor Preparatory Course, respectively; these allow applicants who do not meet weight or aptitude requirements to train and achieve these standards. DoD is also running the Medical Accessions Records Pilot to allow applicants who previously required a waiver to enlist to enter without a waiver, and each of the services are making extensive use of waivers, thereby increasing the share of applicants who can enlist. In addition, some of the services have increased the size of their recruiter workforces and expanded the number of recruiting stations across the country and are in the process of reorganizing and reengineering their recruiter organization and management approaches. Finally, some of the services are expanding their outreach to new markets, such as the college market.

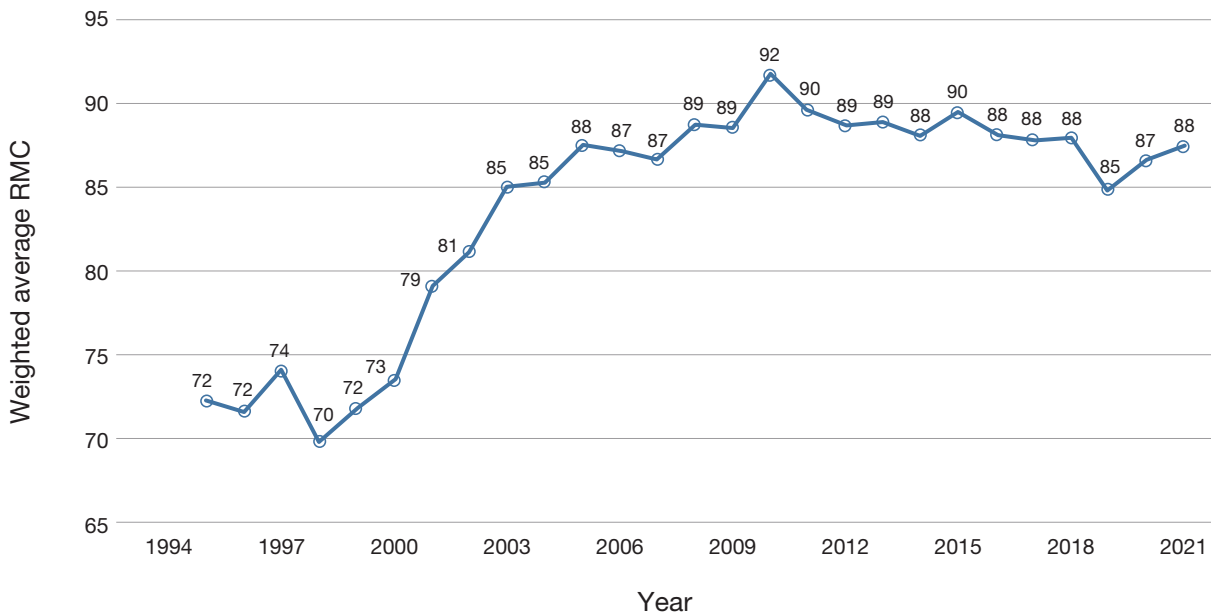
Should the 70th Percentile Benchmark Be Changed?

As noted at the beginning of this chapter, Section 643 of H.R. 7900 in the NDAA for FY 2023 requested that the study of basic pay include an analysis of how military pay compares with civilian pay since the 70th percentile benchmark was established and address whether the 70th percentile benchmark should be changed. Figures 2.6 and 2.7 show that average RMC has exceeded the 70th percentile for quite some time for both enlisted members and officers.

Figure 2.6 presents the summary weighted average RMC percentiles using the methodology shown in Table 2.3, while Figure 2.7 shows comparisons for officers. Average RMC in the figures is based on tabulations from the DoD Greenbook, using the education distribution from the ADMF, and we compute the overall weighted average RMC for the first through 20th YOS for each year from 1994 through 2021 based on the number of personnel by YOS as listed in the Greenbook.⁷

Through the mid-1990s, weighted enlisted RMC across all YOS hovered around the 73rd percentile of the wage distribution of similarly educated civilians and reached a low of about 70 in 1998. Enlisted RMC then began a steady climb and reached the 92nd percentile of the civilian wage distribution in 2010. It stayed relatively constant at around the 88th percentile until 2018, dipped to the 85th percentile in 2019, and reverted

FIGURE 2.6
Enlisted Regular Military Compensation as a Percentile of Civilian Wages Weighted by Level of Education and Year of Service, with Education Estimated from the Active Duty Master File, 1994–2021



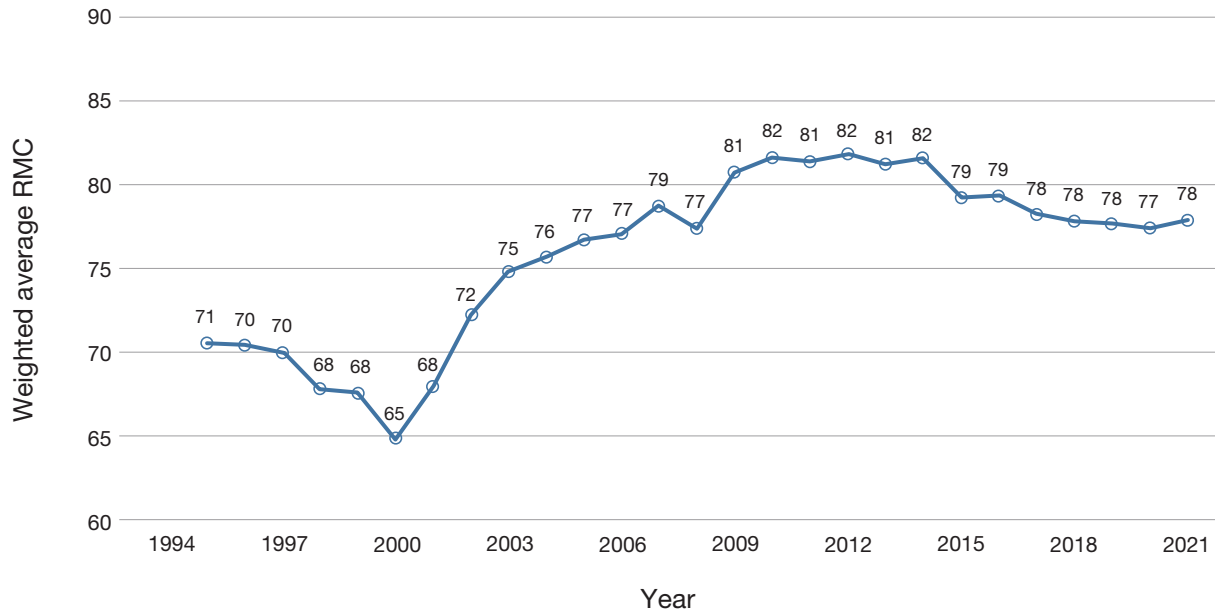
SOURCE: Authors’ calculations using the DMDC’s ADMF, the Greenbook (DoD, OUSD[P&R], 2023), the March ASEC (CPS ASEC), *PopRep* (DoD, OUSD[P&R], undated), and SOFS-A (DoD, OPA, 2020b).

NOTE: These weighted average RMC percentiles (or summary percentiles) follow the same methodology used in Table 3.3 but use the DMDC education data instead of SOFS-A data, as this allows us to make comparisons annually and back to 1994.

⁷ We use the educational distributions from the ADMF rather than SOFS-A because we only have SOFS-A data since the early 2000s, while ADMF data go further back in time.

FIGURE 2.7

Officer Regular Military Compensation as a Percentile of Civilian Wages Weighted by Level of Education and Year of Service, with Education Estimated from the Active Duty Master File, 1994–2021



SOURCE: Authors' calculations using the DMDC's ADMF, the Greenbook (DoD, OUSD[P&R], 2023), the March ASEC (CPS ASEC), *PopRep* (DoD, OUSD[P&R], undated), and SOFS-A (DoD, OPA, 2020b).

NOTE: These weighted average RMC percentiles (or summary percentiles) follow the same methodology used in Table 3.3 but use DMDC education data instead of SOFS-A, as this allows us to make comparisons annually and back to 1994.

to the 88th percentile in 2021.⁸ Weighted officer RMC also increased steadily through the early 2000s, reaching the 81st percentile in 2009. It stayed just above or just below the 80th percentile through 2021. In short, average RMC has exceeded the 70th percentile since the late 1990s when the 70th percentile was established, owing to the faster-than-ECI pay raises that occurred in the early 2000s.

Comparison of Recruiting and Retention Outcomes and Other Factors to Earlier Years

To address the second issue raised in Section 643 of H.R. 7900 of the 2023 NDAA, regarding whether the 70th percentile should be changed, it is useful to recall that the adequacy of military pay should ultimately be based on meeting the objectives of military compensation (and, particularly, on the services' recruiting and retention success in meeting their manpower requirements) rather than on specific pay comparisons. Further, as noted earlier, past research shows that bonuses, recruiters, and advertising are more cost-effective

⁸ In Appendix B, we discuss the dip in the average percentile in 2019 and our hypothesis that the dip may reflect a bias owing to a drop in response rates in the CPS during the COVID-19 pandemic. As we have noted, the CPS is our data source for civilian wage data. Data for 2019 were collected in early 2020, and the pandemic prohibited in-person surveys, resulting in a dramatic drop in CPS response rates. Research by the U.S. Census Bureau suggests that nonresponse disproportionately occurred among lower-income people, thereby inflating the estimated civilian earnings in 2019 by 2.8 percent. In consequence, average RMC compared less well with civilian pay in 2019, especially for enlisted members who would be more affected by nonresponse of lower-income people.

policies than pay to increase high-quality enlistments, implying that even if the services are struggling to meet recruiting requirements, an increase in pay is not necessarily the appropriate policy response.

That said, the 70th percentile benchmark has been the starting point for discussions about pay adequacy, as noted earlier in this chapter. Its purpose has come to be as a type of early warning system for assessing pay adequacy among policymakers such that if pay falls short of the benchmark, it signals the need for a closer look at whether pay is sufficiently competitive, whether the services are able to meet their recruiting and retention requirements, and, if not, whether pay or other resources are the appropriate policy response. However, past discussions of the 70th percentile benchmark, other than analysis for the 13th QRMC, have not considered what happens when average RMC exceeds the 70th percentile benchmark, as has been the case since about 2005, as we show below. On the one hand, it is possible that the benchmark should be raised to be closer to the higher percentile levels seen today. Such would be the case if the services are less able to meet their recruiting and retention objectives when average pay falls below the higher benchmark, thereby implying that the “early warning” percentile should be higher. On the other hand, if the services have exceeded their objectives at the current higher percentiles, then the services are likely paying more than needed to achieve their objectives—that is, economic rents—and the growth of military could be slowed so that average pay moves closer to the 70th percentile.

This suggests that an assessment of whether the 70th percentile benchmark should be changed—and, specifically, be increased—should evaluate whether the services fell short of their recruiting and retention objectives when average RMC fell below the higher percentiles observed over the past 20 years or whether they have exceeded these objectives at the higher percentiles. The assessment should also account for other changes that may have occurred, including changes in bonuses and other recruiting and retention resources and changes in environmental factors such as the state of the economy. A challenge in conducting such an assessment is that the percentiles have been generally steady in recent years; average RMC has not significantly fallen below these higher levels though it has varied a bit over time. Furthermore, with the recent exception of recruiting, the services have generally met or exceeded their objectives, as we discuss further below, and even with recent recruiting challenges, military pay is not the most cost-effective means of addressing recruiting shortfalls, especially when retention is strong. A final challenge is that the objectives in a year may reflect the services’ recruiting and retention success. For example, within a fiscal year, the services set recruiting and retention objectives based on overall end-strength targets, but they might decrease recruiting objectives if retention is unexpectedly strong, or they might increase retention objectives if recruiting is weak. Across fiscal years, the objectives reflect changes in overall end-strength goals.

Our approach is more qualitative and builds on analysis conducted for the 13th QRMC and summarized in Asch et al. (2020).⁹ We compare the recruiting and retention outcomes in 2018–2023 (since the analysis in the earlier report) with those in the late 1980s and mid-1990s; the late 1980s and mid-1990s were periods that roughly correspond to the data used by past studies that led to the establishment of the 70th percentile and were deemed successful in terms of recruiting and retention. In addition, we examine whether the services have achieved better outcomes at the higher RMC percentiles relative to the outcomes in these earlier periods and consider selected factors that might have made recruiting and retention easier or harder, including changes in recruiting and retention resources and environmental factors. We consider whether the higher percentiles above the 70th percentile have resulted in about the same outcomes, after considering other factors (suggesting

⁹ Asch et al. (2020), analyze data through 2018 and show that the average RMC percentile exceeded the 70th percentile benchmark since the late 1990s, reflecting the relatively fast military pay growth in the early 2000s to 2010, as well as a downward trend in real civilian wages. The study also considered recruiting and retention outcomes in 2018–2019 compared with outcomes for 1988–1989 and 1993–1997—the periods that were relevant to the studies that led the 70th percentile being set as the benchmark for military pay levels. It found that, overall, recruit quality and retention outcomes were strong, despite a lower unemployment rate. Nonetheless, the study argued that an RMC percentile benchmark above the 70th could be appropriate given increased difficulties recruiting and retaining personnel and the likelihood that the services would continue to require high-quality personnel, though the study did not recommend a specific new benchmark.

that a higher percentile might be needed to achieve the same outcomes), or whether they have resulted in better outcomes (suggesting the possibility that the services are paying economic rents, and the growth of military pay might be slowed so that average RMC is closer to the 70th percentile).

Table 2.7 shows that the weighted average RMC percentile for enlisted personnel was 87, averaged over the 2018–2021 data period, far exceeding the 70th percentile benchmark. The enlisted average also exceeds the 75 average enlisted percentile for the 1993–1997 period and the 73 percentile for 1988–1989 period. As noted above, both recruiting and retention has been strong, notwithstanding the missed recruiting missions in 2022–2023, as well as in 2018 for the Army.

Table 2.7 also shows that, relative to the earlier periods corresponding to the data periods that were the basis for the establishment of the 70th percentile, recruit quality has remained relatively unchanged in recent years and retention has been stronger. Specifically, 68.1 percent of recruits across the DoD were in AFQT categories 1–3A in the recent period, compared with 70.4 percent in the mid-1990s and 65.5 percent in the late 1980s. The percentage that were at Tier 1 was 95.2 percent in the recent period, about the same as the percentage in the mid-1990s (95.4 percent) and a bit higher than the 92.5 percent figure for the late 1980s. Notably, recruit quality exceeded the benchmarks recently, as well as in the earlier periods. DoD does not set specific objectives for retention; this is left to the individual services. We find that retention rates at key career milestones (the fourth and eighth YOS) were higher on average in 2018–2023 than they were in the two earlier periods. Overall, these comparisons of recruiting and retention outcomes in recent years to those of the earlier periods corresponding to when the 70th percentile was established indicates that, notwithstanding the missed accession missions in recent years, the services have met or exceeded the outcomes from the earlier years.

It is possible that the sustainment of recruit quality and improved retention reflect not just military pay that exceeds the 70th percentile in recent years but also increases in recruiting and retention resources other than pay. Table 2.7 shows that the services maintained a larger recruiter force on average between 2018 and 2023, equal to 15,101, than in the two previous periods, equal to 11,967 and 12,796, respectively, while average enlistment and reenlistment bonus budgets across DoD have increased in real value in the more recent years. On average, the services budgeted about \$500 million on enlistment bonuses in 2023 dollars, and over \$1 billion on reenlistment bonuses, far higher than the amounts budgeted in either the 1993–1997 or 1988–1989 periods. Thus, the improvements could reflect increases in bonuses.

Recruit quality and improved retention could also reflect improvements in some conditions of service. The table shows evidence of fewer deployments, as measured by the number of service members receiving imminent danger pay or hazardous duty pay, relative to the late 1990s. And active duty members report fewer duty days where they work overtime, 84 days in the last 12 months in the recent period compared with 138 in 2003.¹⁰ Finally, while trust in the military among the American public has declined since 2018, the decline occurred relative to a high level of trust that began after 9/11. Consequently, relative to the two earlier periods, the average percent of adults expressing a “great deal/quite a lot” of trust in the military has increased to 68.7 percent in the Gallup poll data (Younis, 2023).

Finally, the improvements relative to the earlier periods could simply reflect lower accession and retention objectives. As is shown in Table 2.7, active duty end strength decreased dramatically, notably owing to the post–Cold War drawdown in the 1990s. The reduction is reflected in the reduced accession objectives over time, falling from an average of about 290,000 in 1988–1989 to an average of about 160,000 between 2018 and 2023. Economic theory implies that if military pay were efficiently set, reduced demand for manpower should result in a reduction in military pay relative to civilian pay, all else being equal.

The sustainment of recruit quality and the strong retention achieved in recent years given increased resources, improvements in some conditions of service, and reduced end-strength requirements suggest that

¹⁰ As indicated in the table note, the earliest data available on days worked overtime are from 2003.

TABLE 2.7
Weighted Average Enlisted and Officer Regular Military Compensation Percentiles, Department of Defense Recruiting and Retention Outcomes, and Selected Factors Related to Outcomes, 2018–2023 and Selected Benchmark Years

Factor	Average 2018–2023	Average 1993–1997	Average 1988–1989
Officer RMC percentile ^a	79	71	71
Enlisted RMC percentile ^a	87	75	73
Recruiting^b			
Accession mission	159,928	189,975	290,343
Percentage accession mission achieved	95.2%	100.2%	100.5%
Percentage Tier 1 (high school degree graduate or at least 15 college credits)	96.8	95.4	92.5
Percentage AFQT Categories 1–3A	68.1	70.4	65.5
Retention^b			
Enlisted continuation rate at the 4th year of service	94%	63%	62%
Enlisted continuation rate at the 8th year of service	90%	84%	87%
Officer continuation rate at the 8th year of service	92%	89%	88%
Recruiters ^b	15,101	11,967	12,796
Annual accessions per recruiter ^b	10.2	15.9	22.7
Enlistment bonuses (\$1,000) ^c	\$529,019	\$48,357	\$113,369
Reenlistment bonuses (\$1,000) ^c	\$1,122,752	\$386,126	\$865,952
Deployments (number of service members receiving imminent danger pay or hazardous duty pay) ^d	22,397	41,770	5,947
Average number of duty days worked longer than normal in the past 12 months among active duty members ^e	84	138 ^f	N/A
Percentage of Americans expressing a “great deal/quite a lot” of trust in the military ^g	68.7%	64.2%	60.5%
Adult unemployment rate ^h	4.9%	5.8%	5.4%
Percentage of young people with positive enlistment propensity ⁱ	10.9%	14.2%	18%
Enlisted end strength ^b	1,078,229	1,277,637	1,815,034
Percentage of active duty members^e			
Satisfied or very satisfied with the military way of life	54%	67% ^f	N/A
Reporting greater than usual work stress	46%	42% ^f	N/A
Percentage of active duty spouses who favor their spouses staying in military ^j	57%	61% ^k	N/A

^a The RMC percentile for 2018–2023 includes only 2018–2021.

^b DoD, OUSD [P&R], and tabulations provided by the DMDC.

^c Constant 2023 dollars.

^d DoD, 2018, for 1988–1989 and 1997–1999; Department of the Air Force, Fiscal Year 2018–2023 Budget Estimates, Military Personnel Appropriation; Department of the Army, Fiscal Year (FY) 2018–2023 Budget Estimates, Military Personnel, Army Justification Book; Department of the Navy, Fiscal Year (FY) 2018–2023 Budget Estimates, Justification of Estimates, Military Personnel, Marine Corps; and Department of the Navy, Fiscal Year (FY) 2018–2023. Budget Estimates, Justification of Estimates, Military Personnel, Navy.

^e DoD, OPA, 2008; DoD, OPA, 2021. The data for 2018–2023 only include 2019 and 2020 responses.

^f Response is for the year 2003, not 1993–1997.

^g Younis, 2023; the poll asks a random sample of adults how much confidence they have in the military.

^h BLS, undated c.

ⁱ DoD, OPA, 2024. Positive enlistment propensity is measured as the percentage of young people ages 16–21 who respond “Definitely” or “Probably” to the question “How likely is it that you will be serving in the military in the next few years?” Note that data for 1993–1997 and 1988–1989 are drawn from the Youth Attitude Tracking Study, a predecessor survey to the currently used Youth Poll (DMDC, 2002).

^j DoD, OPA, 2011; DoD, OPA, 2020a; DoD, OPA, 2023. The data for 2018–2023 only include 2019 and 2021 responses.

^k Response is for the year 2006, not 1993–1997.

the RMC percentiles above the 70th percentile benchmark observed in recent years may be higher than needed to achieve the outcomes of the late 1980s and mid-1990s. On the other hand, other factors have become more challenging. In the case of recruiting, fewer young people express an interest in joining the military, as shown in Table 2.7. In the late 1980s, 18 percent of young people said they definitely or probably would join the military, while in the 2018–2023 period, the average is about 10 percent. Although most people who eventually join the military come from the negatively inclined group (as discussed in Asch, 2023), recruiting becomes more difficult when more young people must be recruited from this group. In addition, only about one-fourth of American youth in 2020 would meet enlistment standards without a waiver, a decrease from roughly 30 percent eligibility rate estimated in 2013 (Asch, 2023). Furthermore, as discussed in Asch et al. (2020), many young people are disqualified for medical reasons especially weight (Orvis et al., 2018), raising concerns about the rising trend in youth obesity. The increasing trend toward legalization of marijuana at the state and local level (Kilmer and MacCoun, 2017; Pacula and Smart, 2017) means that more military applicants must receive a waiver if they have a history of marijuana use given that marijuana use is still a federal offense. Documented cases of behavioral health issues are increasing among American youth, including attention deficit hyperactivity disorder, depression, and anxiety (Danielson et al., 2018; Keyes et al., 2019) and, in some cases, such as cases of self-harm, waivers are not granted.

The state of the economy also poses a challenge to both recruiting and retention success. Research shows that low unemployment means stronger job opportunities in the external market, and it is associated with reduced high-quality accessions and reenlistment (Asch and Warner, 2018). Table 2.7 shows that the adult civilian unemployment rate averaged 4.9 percent, below the average rates in 1993–1997 or 1988–1989. At the same time, as is discussed in Appendix A, the LFP rate of young men has declined, with fewer young men engaged in the world of work; the average number of hours devoted to leisure activities has been increasing, as has part-time work.

Table 2.7 also shows that despite the increase in the number of recruiters, recruiter productivity—measured as annual accessions per recruiter—has declined over time. During the 1988–1989 period, average productivity was 22.7 accessions, but was down to 10.2 on average between 2018 and 2023. It is unclear why recruiters are less productive; it may be due to a more challenging recruiting market, as indicated by reductions in propensity to enlist. It could also be because recruiters are not managed as effectively as they were in the past, so they expend less effort or divert effort to less productive activities.

The bottom rows of Table 2.7 summarize survey responses that indicate some potential areas for concern that could make meeting retention objectives more challenging. The percentage of active duty members who say they are satisfied with the military way of life has drifted downward relative to 2003, from 67 percent to 54 percent in the more recent period. The share who report more than usual work stress has also decreased, while the share of active duty spouses who say they are in favor of their spouse staying in the military has declined, from 61 percent in 2006 (the earliest year for which we have data) to 57 percent in the more recent period.

These challenges suggest that aspects of recruiting—and, possibly, retention—have become more difficult than in the periods that were used to establish the 70th percentile benchmark; many of the factors do not appear to be transitory, a conclusion we also reached in our earlier analysis (Asch et al., 2020). These challenges suggest that an RMC percentile benchmark above the 70th could be appropriate even with the factors that have made recruiting and retention less challenging, including a reduced end-strength requirement. But what is the right number? We do not have a specific number to offer, but we believe a figure of around the 75th to 80th percentile for enlisted personnel and around the 75th percentile for officers could be in the right ballpark to help address these challenges. That said, the adequacy of the military pay levels should ultimately be judged based on the services' ability to attract and retain the quantity and quality of personnel they need. In considering a higher benchmark for enlisted members and officers, future QRMCs should be required to periodically revisit any new benchmark to ensure that it remains relevant.

Junior Enlisted Basic Pay

In the spring of 2023, members of the U.S. Congress proposed alternative approaches to increase the basic pay of junior enlisted service members in the pay grades of E-1 through E-4. As part of its support for the review of basic pay table mandated by its charter, the 14th QRMC asked the RAND NDRI to analyze these proposals and to develop and analyze additional proposals to increase E-1 through E-4 basic pay. This chapter summarizes this analysis.

Concerns about food insecurity among military personnel has put a spotlight on junior enlisted pay. The Office of the Secretary of Defense for Personnel and Readiness (OUSD[P&R]) reported in July 2022 that 24 percent of active duty members experienced food insecurity, with junior enlisted members experiencing the highest rate of food insecurity according to the 2020 SOFS-A (DoD, OUSD[P&R], 2022b). The food insecurity rate among military personnel is higher than the rate among similar civilians (Asch et al., 2023), which is surprising given that average RMC is above the 70th percentile of the earnings of similar civilians. Nonetheless, policymakers have focused on pay for junior enlisted members as a means of addressing food insecurity in the military.¹ Recruiting challenges across the services have further highlighted concerns about the adequacy of entry pay. The Army only reached 75 percent of its FY 2022 active enlisted accession mission. While the other services met their active duty enlisted accession missions, they started FY 2023 with a significantly lower delayed entry pool, and only the Navy met its FY 2022 reserve recruiting mission.

In April 2023, service representatives reported improved recruiting outcomes, but the Department of the Air Force, Army, Navy, and representatives stated that they expect to miss their respective active enlisted accession missions in FY 2023 (U.S. House of Representatives, Armed Services Committee, 2023). Retention, on the other hand, is in good shape. The Department of the Air Force, Army, Navy, and Marine Corps reported to OSD that they exceeded their retention goals for initial, midcareer, and career personnel in FY 2022 and are on track to meet their FY 2023 goals, as shown in Figure 2.5 (DoD, OUSD[P&R], 2023).

To develop basic pay proposals for junior enlisted members, we drew from relevant background materials, including trends in enlisted pay and the history of how junior enlisted pay has been set, results from the 13th QRMC, recent trends in civilian pay, and past literature on setting military pay. We also drew from insights garnered from discussions with SMEs in OSD and in each of the services on pay table reform that we conducted as part of our larger review of the military pay table in support of the 14th QRMC. We assess the proposals in terms of their effects on the pay table, annual pay over the first four YOS for members who experience average promotion times, their effects on pay compression and the differences in pay across ranks, their effects on the recruitment of high-quality enlistees based on past estimates of the relationship between junior enlisted pay and high-quality enlistments, and their effects on retention and personnel costs using RAND's Dynamic Retention Model (DRM).

¹ Additional analysis is being conducted for the 14th QRMC that further investigating the relationship between compensation and military food insecurity.

We begin with a review of the relevant background materials, followed by a description of the proposals. We then present the assessment of the proposals, and conclude with a summary and discussion of findings.

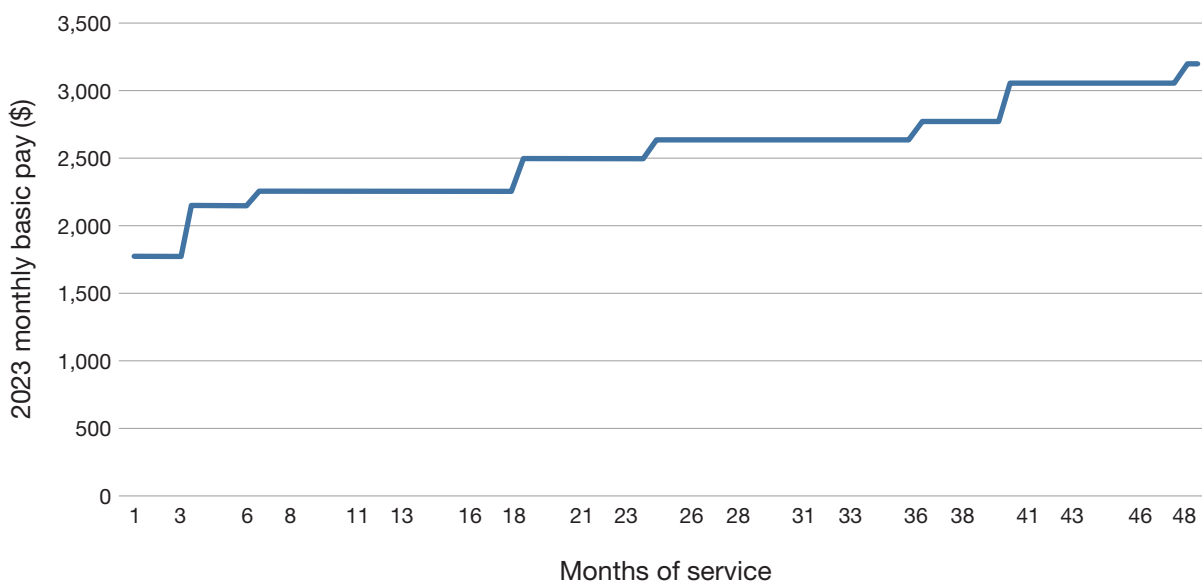
Background

News reports sometimes focus on the annual basic pay of an E-1 to measure military entry pay (Foster, 2022) but pay of first-year service members exceeds the pay of an E-1—\$25,326 in pay for first-year members versus \$22,428 in annual basic pay for an E-1 with fewer than two YOS in 2023—for three reasons. First, service members who enter with additional qualifications, such as college credit, will enter as an E-2 or E-3. Second, because of rapid promotion during the first year of service, members typically achieve E-3 by the end of their first year, as shown in Table C.1, which shows average months at promotion to E-2 through E-5 using DMDC personnel data for 2013–2018. The result is that service members experience a 27-percent increase in monthly basic pay over the first year, based on the average promotion times across services. Over a four-year period, monthly basic pay increases by 80 percent, as shown in Figure 3.1, owing to both promotion and longevity increases.

Third, service members in their first year also receive allowances for subsistence and for housing, and the tax advantage of receiving these allowances tax free, or, alternatively, they receive food and housing in kind, so their annual pay must also include these elements (or the value of these elements for those who receive in-kind benefits). Over the first year, 2023, RMC—defined as the sum of basic pay, BAH, BAS, and the tax advantage (due to allowances being nontaxable)—equals \$53,850 assuming average promotion. Over a four-year period, service members will also receive an annual pay increase each January.

Military pay for junior enlisted members in the first year of service in terms of RMC compares favorably with the federal poverty line (FPL), as shown in Table 3.1. Including potential spouse earnings would make the comparison even more favorable, as would the inclusion of other pays that a service member

FIGURE 3.1
Monthly 2023 Basic Pay over an Early Enlisted Career



NOTE: The figure shows basic pay from the 2023 pay table. Average promotions for all are shown in Table C.1.

TABLE 3.1
The Federal Poverty Line and Tabulations of Family Size of Junior Enlisted Active Duty Members, 2023

Family Size	FPL		Active Duty Family Size Percentages			
	FPL	150% of the FPL	E-3	E-2	E-1	E-1, less than four months
1 person	\$14,580	\$21,870	80.21	89.91	93.92	93.92
2 persons	\$19,720	\$29,580	13.59	6.65	3.60	3.60
3 persons	\$24,860	\$37,290	3.86	2.15	1.44	1.44
4 persons	\$30,000	\$45,000	1.65	0.90	0.77	0.77
5 persons	\$35,140	\$52,710	0.53	0.28	0.19	0.19
6 persons	\$40,280	\$60,420	0.17	0.10	0.07	0.07
7 persons	\$45,420	\$68,130	0.0	0.0	0.0	0.0
8 persons	\$50,560	\$75,840	0.0	0.0	0.0	0.0
			100	100	100	100

SOURCES: FPL (Department of Health and Human Services, Office of the Secretary, 2023); family size percentages are drawn from the 2023 Greenbook (DoD, OUSD[P&R], 2023).

NOTE: Columns may not sum to 100 percent because of rounding error.

might be eligible for, such as S&I pays. The NDAA for 2022 created the basic needs allowance, a monthly allowance for military households with incomes that fall below 130 percent of the FPL. The limit for qualification was increased to 150 percent of the FPL in the FY 2023 NDAA. As shown in Table 3.1, RMC in 2023 also compares well with the 150 percent of the FPL, except for families of six or more persons. However, as shown on the right-hand side of Table 3.1, less than 0.2 percent of active duty service members in the grades of E-3 or below have families that large. Basic pay over the first year, equal to \$25,326, would exceed the FPL for families with two or fewer persons, but exceeds the 150 percent of the FPL for families with one person.

The 13th QRMC concluded in its 2020 report that RMC was more than adequate compared with civilian pay, based on findings at the time that the services were meeting or exceeding their recruiting goals and that average RMC over the first 20 years of an enlisted career was, on average, at the 84th percentile of the earnings of civilians with comparable demographic characteristics (DoD, OPA, 2020b). For junior enlisted members in the first nine YOS, average RMC exceeded the 90th percentile of civilian earnings. As discussed in Chapter 2, we estimate virtually the same percentiles using more updated data for 2021.

Two economic changes have emerged since 2020, when the 13th QRMC reported its results, that are relevant to the setting of basic pay for junior enlisted members. First, inflation has increased since 2021 to levels not seen since the 1970s and early 1980s (Federal Reserve Bank of St. Louis, undated c) and second, the civilian earnings of lower-income earners have risen faster since 2020 than the earnings of higher-income earners creating pay compression in the civilian labor market, as will be shown in Figures 3.2 and C.2.

To put recent inflation in historical perspective, especially as it compares with growth in the ECI and basic pay, Table C.2 shows the annual and cumulative increase in the ECI, basic pay, and the Consumer Price Index for All Urban Consumers (CPI-U) since 2000 (with Figure S.3 showing the cumulative increase).² Table C.2 also shows the cumulative increases since 2020. Between 2000 and 2020, basic pay

² Section 1009c of Title 37 requires that DoD use the 12-month percentage change in the ECI for the third quarter (Q3) of the calendar year where previous years' values are used to guide its recommendation for the annual basic pay increase. For

increased by 70.7 percent in nominal dollars, while the ECI grew by 67.0 percent and inflation measured by the CPI-U increased by 51.9 percent. Thus, basic pay grew in real dollars over this period by 18.8 percent (70.7 percent – 51.9 percent). The table shows the big jump in inflation, from 1.4 percent in 2021 to 7.6 percent in 2022, and an additional increase of 6.3 percent in 2023 (based on inflation information in January 2023).³

Because of recent inflation, the cumulative growth in basic pay between 2000 and 2024 is estimated to be 98.7 percent, or a near doubling of nominal basic pay since 2000, while inflation is estimated to grow by 81.2 percent, for an estimated real growth in basic pay of 17.5 percent (98.7 percent – 81.2 percent). It is important to recognize that these growth figures depend crucially on the choice of the reference year—in this case, 2000. An alternative reference year, such as 2020, as shown in the final three columns of Table C.2, shows that basic pay grew at a slower rate than inflation since 2020, 16.4 percent versus 19.3 percent, respectively.⁴

Figure C.2 shows that lower income civilian workers have had the fastest pay growth since the outbreak of the COVID-19 pandemic in 2020. The figure shows median real civilian weekly earnings of 18- to 30-year-old workers by quarter. To illustrate how earnings have grown relative to the beginning of the pandemic, the figure shows earnings in each quarter relative to earnings in the first quarter (Q1) of 2020. Furthermore, we show comparisons for civilians in the tenth percentile, 50th percentile, and 90th percentile of the civilian earnings distribution. Earnings growth relative to 2020 was roughly the same across the three groups between 2017 and 2020. Beginning in 2020, earnings growth for civilians in the tenth percentile was greater than for the other two groups; those in the 90th percentile have the slowest growth of the three groups. This recent shift in the labor market has been noted by labor economists. Autor, Dube, and McGrew (2023) present evidence that shows this faster wage growth of lower-income workers has been accompanied by a tight labor market for less-skilled workers, resulting in higher turnover, more frequent job changes, and, in turn, higher wages.

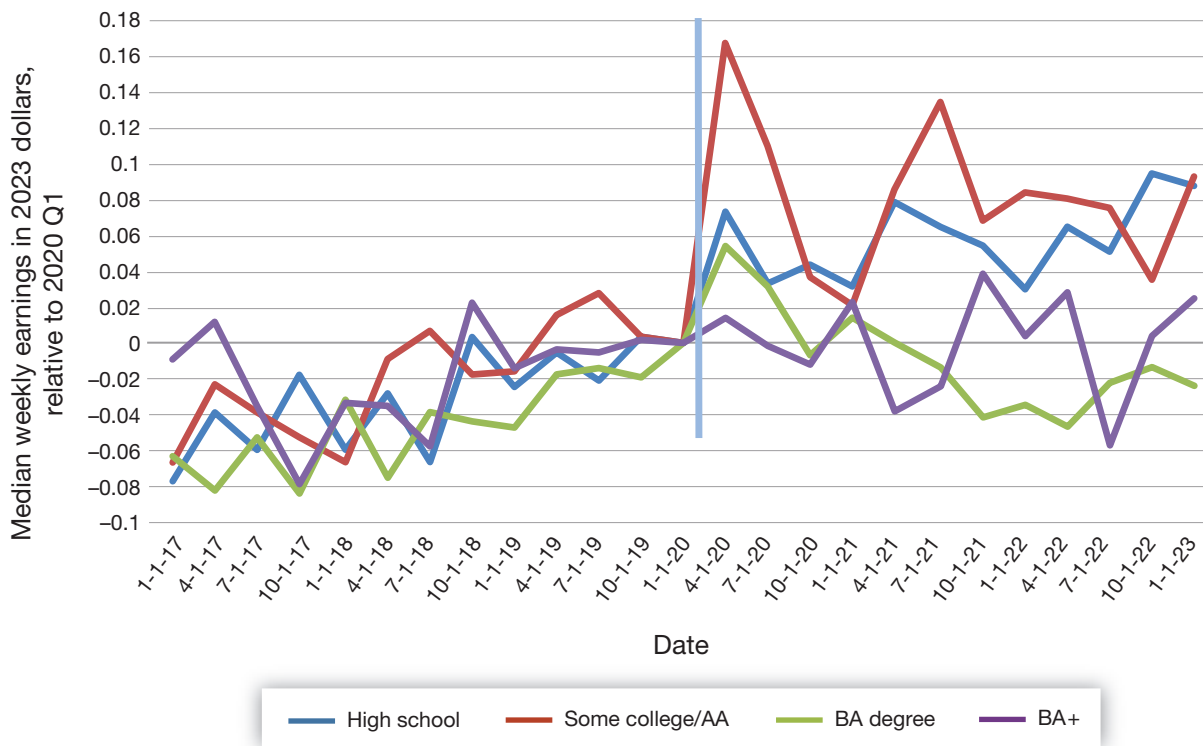
This recent labor market trend can also be seen by educational attainment where the real median earnings of high school graduates and those with some college between the ages of 18 and 30 have grown faster since 2020 than the earnings of college graduates (see Figure 3.2). Specifically, real median earnings have grown by 8.7 percent for high school graduates since 2020 and by 9.2 percent for those with some college, as shown in Figure 3.2. The changes for those with a BA degree and with more than a BA degree were –1.4 percent and 2.4 percent, respectively. The result has been a reduction in the wage premium enjoyed by those with a college degree. An open question is whether this shift is a temporary or permanent change in the labor market opportunities of high school graduates and those with some college, a key demographic from which the military recruits and retains junior enlisted personnel.

example, the ECI that guided the 2023 pay raise is the percentage change for Q3 2021 relative to Q3 2020. The statute also allows the President to specify an alternative pay adjustment informed by recruiting and retention outcomes. The values of ECI shown in Table C.2 are the values that guided the pay raise in a given year. For example, the ECI that guided the 4.6 percent basic pay increase in January 2023 was 4.6 percent, the percentage for Q3 2021.

³ White House budget estimates use a 2.8 percent inflation rate for 2024, as shown in the final row of the table, and the table shows the proposed 5.2 percent across-the-board basic pay raise for 2024; White House, Office of Management and Budget, 2023.

⁴ The arbitrary choice of reference year is a well-known problem with using indices. The choice depends on the intent. If the focus is on recent changes, ignoring the historical context, then using a more recent reference year makes sense, but if the historical context is important, then having information based on an earlier reference year makes sense.

FIGURE 3.2
Indexed Median Real Weekly Earnings of Civilian Workers, Ages 18–30, by Educational Attainment



SOURCE: Authors’ computations using CPS data from the BLS.
 NOTE: AA = associate of arts; BA = bachelor of arts.

Description of the Proposals

Table 3.2 lists the two congressional proposals, plus the four additional proposals we developed to raise junior enlisted basic pay. Tables C.4–C.10 show what the 2023 basic pay table would look like by grade and YOS for those with fewer than ten YOS for each proposal. For comparison, Table C.3 shows the current 2023 basic pay table. Later, in Figure 3.4, we show graphically how the proposals would change pay in the early career and change the structure of the pay table. In this section we describe how we developed Proposals 3–6. Later in this chapter we present our analysis of the proposals.

Proposal 3

To develop Proposal 3, we considered the increases in real median weekly earnings of civilians since 2020, which is shown in Figure 3.2 for high school graduates and civilians with some college, together with the real change in basic pay since 2020, which is shown in the last two columns of Table A.2. We focus on 2020 because the 13th QRMC report, published in 2020, deemed the level of enlisted pay adequate at that point in time, and we focus on high school graduates and those with some college since at least 90 percent of enlisted recruits have at least a high school degree. Together, these tabulations indicate that basic pay would need to increase by about 12 percent to restore the real value of basic pay relative to the civilian pay of high school graduates and those with some college since 2020. Consequently, Proposal 3 would increase E-1 to E-4 basic pay across the board by 12 percent.

TABLE 3.2
Proposals to Increase Junior Enlisted Basic Pay

Proposal Name	Motivation	Description
1. Proposal of Representative Mike Garcia	Reflect H.R. 2591	Creates a minimum \$15/hour or \$31,200 for E-1 < 4 months; to E-4 to 2 years
2. House Appropriations Committee (HAC) proposal	Reflect Section 8138 of HAC FY 2024 defense bill	Target increases to FY 2023 basic pay for E-1 > 4 months; to E-6 < 2 years (see Table C.5).
3. Junior civilian pay catch-up proposal	Reflect recent trends in civilian opportunities for junior enlisted members	Increase E-1 to E-4 basic pay by 12 percent
4a. Recruiting catch-up proposal (7%)	Increase high-quality enlistments to meet FY 2023 goals	Use estimates of high-quality enlistment pay elasticities to infer pay raise needed to increase enlistments, increase E-1 to E-4 pay by 7%
4b. Recruiting catch-up proposal (15%)	Increase high-quality enlistments to meet FY 2024 goals	Use estimates of high-quality enlistment pay elasticities to infer pay raise needed to increase enlistments, increase E-1 to E-4 pay by 15%
5. AVF catch-up proposal	Restore junior enlisted pay to historic structure and increase equity relative to career enlisted	Increase E-1 to E-4 basic pay to real 1973 levels relative to E-5 pay
6. Boot camp pay catch-up proposal	Restore pay for E-1s in boot camp	Raise E-1 < 4 months basic pay to E-1 < 2 years level

SOURCE: H.R. 2591, 2023.

Because a 12-percent pay increase targeted to E-1 to E-4 would create a pay inversion relative to the basic pay of an E-5—meaning that pay of some E-5s would be less than the pay of a lower-ranked E-4—we also increased E-5 pay, using the following algorithm. E-5 basic pay for a given YOS cell under this proposal is set to the greater of (1) the midpoint of the increased E-4 basic pay and E-6 basic pay under the baseline 2023 pay table, or (2) the baseline E-5 basic pay in the 2023 pay table.

Proposal 4

For Proposal 4 we estimated the extent to which military pay must increase relative to civilian pay to increase high-quality enlistments sufficiently to meet the FY 2023 enlistment requirements in the Department of the Air Force, Army, and Navy, the three services reporting that they will be missing their enlistment goals.⁵ In testimony to the House Armed Services Subcommittee on Readiness on April 19, 2023, military department leaders from the Army, Navy, and Department of the Air Force indicated that these services would miss their active enlisted accession missions by 10,000, 6,000, and 3,400 recruits, respectively (U.S. House of Representatives, Armed Services Committee, 2023). These figures represent a shortfall of 15 percent across the three services given their FY 2023 accession missions. Tables C.4–C.10 summarize estimates of the responsiveness of high-quality enlistments to changes in military pay relative to civilian pay—what economists call a pay elasticity—from past studies of enlistment supply using data since the early 1990s. The average estimate

⁵ The definition of a high-quality recruit is one with Tier 1 educational credentials; this is primarily an individual with a high school diploma and who scores at or above the 50th percentile on the AFQT.

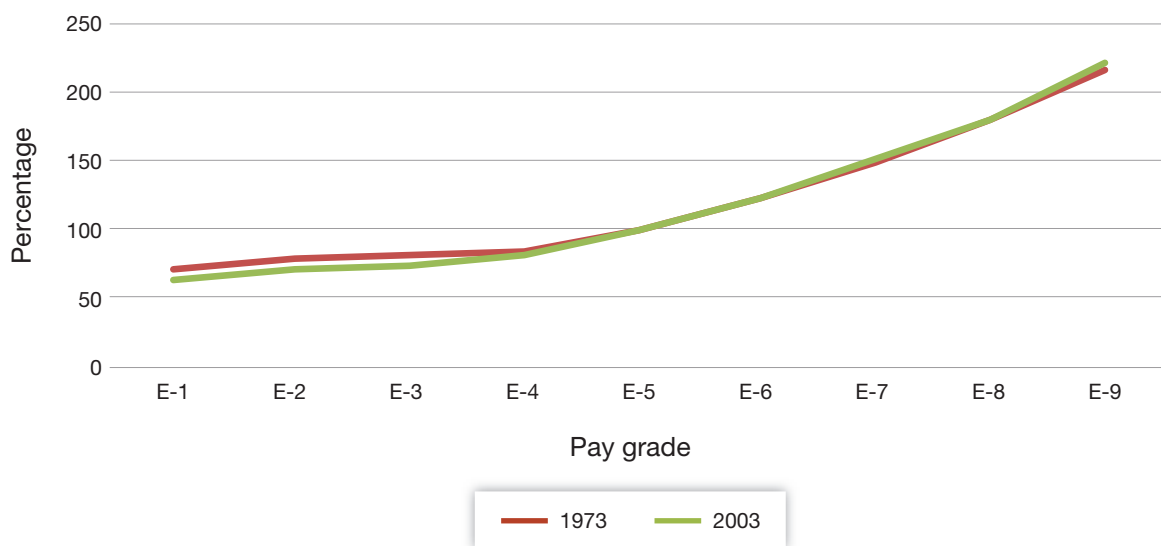
across studies is 0.69, implying that high-quality enlistments are estimated to increase by 0.69 percent if military pay relative to civilian pay were increased by 1 percent, all else being equal.

Assuming that the 15 percent shortfall for all accessions would also apply to high-quality enlistments in these services, the 0.69 average estimate implies that a relative pay increase of 22 percent (15% 0.69) would be required to address the recruiting shortfall with military pay. However, the services are pursuing an array of initiatives and policies to address their recruiting shortfalls, including expanding the use of enlistment bonuses, increasing advertising, adding recruiters, and increasing enlistment eligibility. Consequently, we considered two alternative smaller changes in relative military pay: 15-percent (Proposal 4b) and 7-percent (Proposal 4a) across-the-board increases in E-1 to E-4 basic pay. Because the 15-percent increase targeted to E-1 to E-4 would create a pay inversion with respect to E-5, we used the same algorithm as we used in Proposal 3 to raise E-5, as needed. We note that although these proposals consider using pay to address recruiting shortfalls, we show later in the chapter that improvements in recruiting can be achieved more cost-effectively with bonuses and recruiters, and past research, as noted in Chapter 2, shows that resources other than pay, including advertising and educational benefits, are more cost-effective resources.

Proposals 5 and 6

Proposals 5 and 6 would restore reductions in junior enlisted pay relative to other military personnel that have occurred since the beginning of the AVF in 1973, as shown in Figure 3.3. The figure shows enlisted basic pay at promotion to each grade relative to pay at promotion to E-5 under the current FY 2023 pay table and the pay table applicable at the start of the AVF in 1973.⁶ Basic pay at promotion to E-5 is normalized to 100 percent for both the 2023 and 1973 pay tables. Pay at E-1 was 70 percent of pay at promotion to

FIGURE 3.3
Basic Pay Relative to Pay of an E-5 (Percentage)



SOURCE: Authors' calculations based on October 1972 and January 2023 basic pay tables and average times to promotion in Table C.1.
NOTE: The figure shows basic pay at promotion to each grade relative to E-5 basic pay at promotion. Basic pay at E-1 is entry pay.

⁶ Military conscription ended July 1, 1973, although announcement of the creation of the AVF occurred in January 1973. The basic pay table relevant at the start of the AVF was the October 1, 1972, pay table. Service members received their next basic pay increases on October 1, 1973.

E-5 under the 1973 pay table but is 63 percent under the current pay table. The differences between the pay tables narrow at E-4, equal to 84 and 82 percent of E-5 pay at promotion, respectively, under the 1973 versus the current pay table. Proposal 5 would increase E-1 to E-4 basic pay in the 2023 pay table to restore its 1973 relationship to E-5 pay.

Why is basic pay lower under the current pay table for E-1s to E-4s than under the 1973 table, as shown in Figure 3.3? The reason is that junior enlisted members received smaller pay raises than other enlisted members in 1981, 1988, 2000–2004, and 2007. For example, in October 1981, E-1s to E-4s received a pay raise less than the 16.5-percent raise received by E-5s and above, though their raises were still quite large by historical standards.⁷ In 2000–2004 and again in 2007, all service members received a pay raise, but Congress targeted additional pay raises to midgrade and, in some cases, senior members. A policy action that would raise junior enlisted pay to the 1973 structure would counteract these past actions, even though they were presumably seen as desirable at the time. A year other than 1973 could be chosen, and a priori, there is no clear reason to necessarily prefer 1973 to an alternative year.

Proposal 6 would eliminate the four months of service distinction for E-1s. Currently, enlisted members in the grade of E-1 with fewer than four months of service, typically while they are in basic training, or boot camp, receive lower pay than E-1s with four or more months of service, as shown in Table C.2. This distinction in E-1 pay existed until November 1971, when it was dropped. It was later restored in 1985. By eliminating this distinction, E-1s with fewer than four months would receive the same pay as E-1s with four or more months of service under the current pay table.

Assessment of the Proposals

Effects on Annual Basic Pay

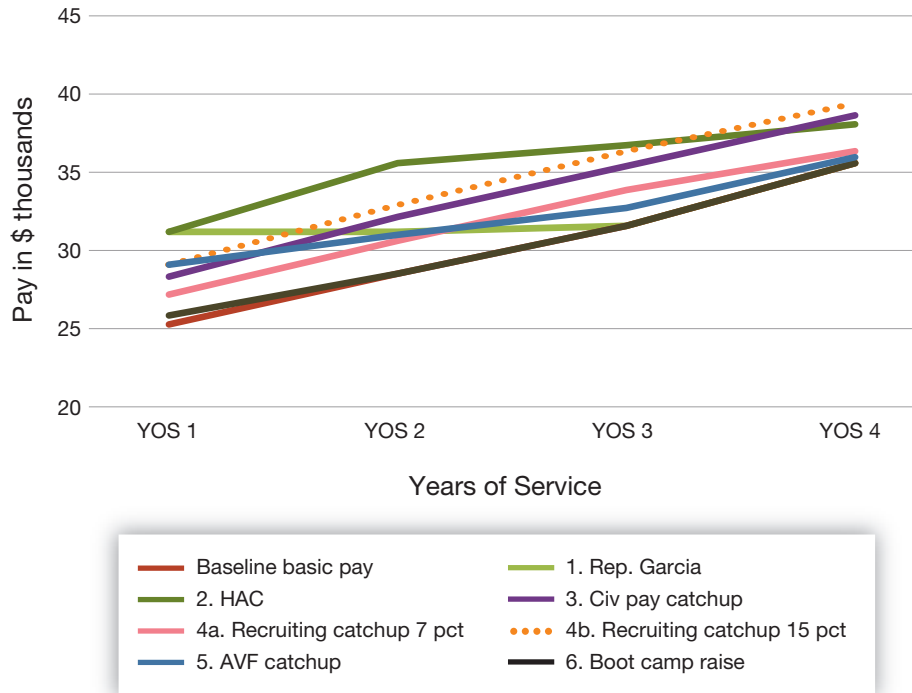
The proposals differ in terms of the magnitude and time pattern of effects on annual basic pay over the first four YOS, as shown in Figure 3.4, assuming average promotion times to each grade. Figure 3.4 shows the levels of annual basic pay, and Table 3.3 shows the percentage changes. The percentage increase in basic pay across YOS is the same under the civilian pay catch-up proposal (Proposal 3)—equal to 12 percent—as well as under the recruiting catch-up proposals (Proposals 4a and 4b), except for the fourth year of service.⁸ The remaining proposals, including the two congressional proposals, front-load the pay increases to the beginning of the career. The largest percentage increase is in the first year of service for these other proposals—except for the HAC proposal (Proposal 2), where the largest increase is in the second year.⁹ The HAC proposal would increase basic pay the most over the first four years, followed by the recruiting catch-up proposal (Proposal 4), assuming a 15-percent pay increase. The proposal of Representative Mike Garcia (Proposal 1) would increase basic pay the most in the first year. The bootcamp catch-up proposal (Proposal 6) would increase pay the least, with an increase in the first year of 1.7 percent.

⁷ That year, E-1s received a 10-percent basic pay raise, E-2s and E-3s received a 10.7-percent raise, and E-4s receive a 13.0-percent raise.

⁸ The fourth year of service differs because service members only spend a partial year as an E-4 in the fourth year of service and a partial year as an E-5. E-5s do not receive the targeted junior enlisted basic pay increase, so the pay raise in the fourth year of service is less than the earlier year of service for these proposals.

⁹ The largest increase occurs in the second year of service rather than the first year of service under the HAC proposal because this proposal does not increase the pay of an E-1 with fewer than four months of service.

FIGURE 3.4
Annual Basic Pay in the First Four Years of Service Under Proposals



SOURCE: Authors' calculations based on average promotion times to each grade.

TABLE 3.3
Annual Basic Pay in the First Four Years of Service Under the Current Pay Table, and Percentage Change in Annual Basic Pay Under Each Proposal

Annual Basic Pay	Years of Service			
	1	2	3	4
Annual basic pay, 2023	\$25,326.00	\$28,580.40	\$31,579.20	\$35,538.00
	Percentage Change in 2023 Annual Basic Pay			
1. Proposal of Representative Mike Garcia	23.2	9.2	0.0	0.0
2. HAC proposal	22.9	24.1	16.3	6.9
3. Junior civilian pay catch-up proposal	12.0	12.0	12.0	8.5
4a. Recruiting catch-up proposal (7%)	7.0	7.0	7.0	2.2
4b. Recruiting catch-up proposal (15%)	15.0	15.0	15.0	10.4
5. AVF catch-up proposal	14.4	8.2	3.3	1.1
6. Boot camp pay catch-up proposal	1.7	0.0	0.0	0.0

SOURCE: Authors' calculations based on average promotion times to each grade.

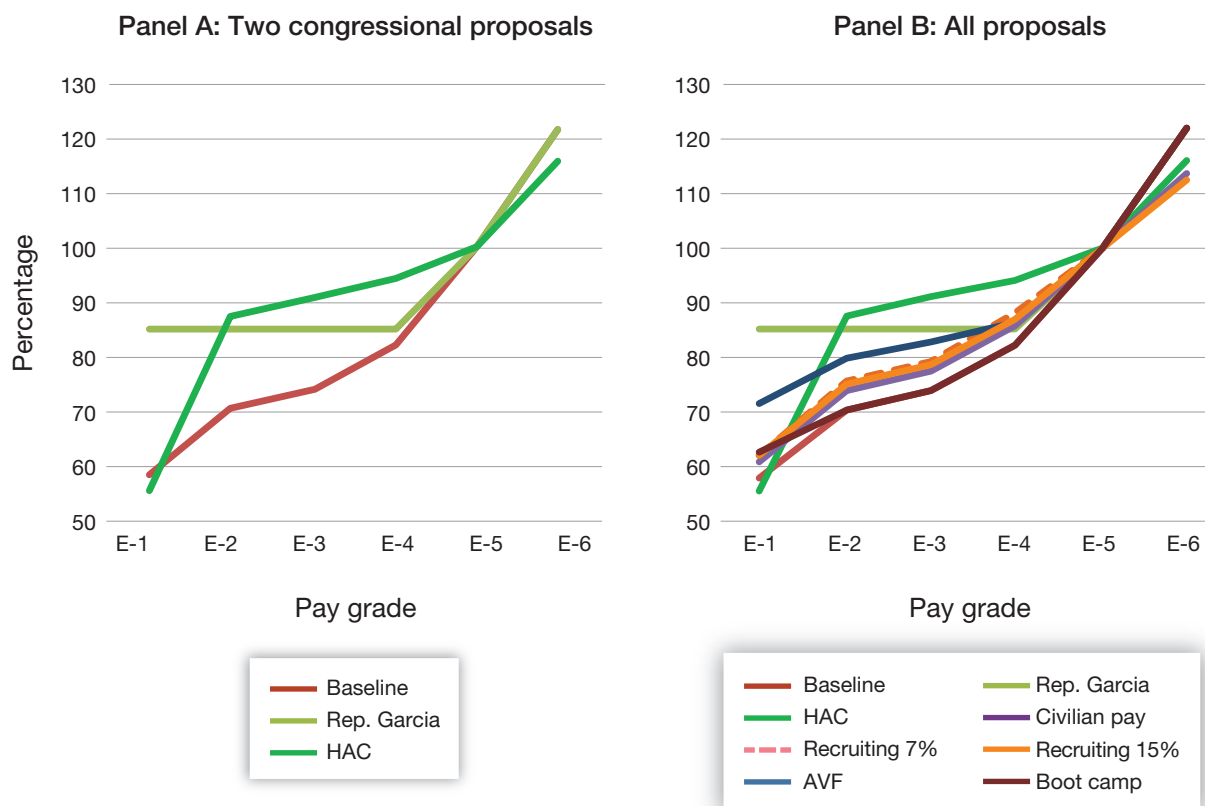
NOTE: Levels of basic pay for the first four years of service are shown in Table C.12.

Effects on Structure of Pay Across Grades

Figure 3.5 shows how all six of the proposals compress the structure of basic pay across grades, with the two congressional proposals compressing the pay structure the most. Similar to Figure 3.3, Figure 3.5 shows monthly basic pay at promotion to each grade relative to basic pay of an E-5—consequently, E-5 pay is benchmarked at 100 percent. Panel A highlights the two congressional proposals, while Panel B shows all six proposals, including the two versions of Proposal 4. The pay structure is compressed when the pay raise associated with promotion to a higher grade is reduced, thereby reducing the financial reward to promotion.

The pay structure is entirely flat until the grade of E-4 under Representative Garcia’s proposal (Proposal 1), implying that there is no financial reward associated with promotion to these early grades. The HAC proposal (Proposal 2) creates a large jump in pay between E-1 and E-2 because the proposal did not increase the pay of E-1s with fewer than four months of service. Relative to the baseline current system, the HAC proposal flattens or compresses the increases in pay associated with promotion after E-2, including promotion to E-6. As shown in Panel B of Figure 3.5, the remaining proposals (Proposals 3–6) also flatten the pay increases associated with promotions to the grades E-2 to E-5, but to a less extent than either of the congressional proposals. Among Proposals 3–6, the bootcamp catch-up proposal (Proposal 6) compresses the pay structure the least, as it only affects the pay increase associated with promotion to E-2.

FIGURE 3.5
Basic Pay Relative to Pay of an E-5 Under Alternative Proposals (Percentage)



NOTE: The figure shows basic pay at promotion to each grade relative to E-5 basic pay at promotion. Basic pay at E-1 is entry pay.

Pay compression matters because it can affect performance incentives. Promotions in the military are the primary means by which the services financially reward superior performance, especially beginning with promotion to E-5, which is the first truly competitive promotion for enlisted personnel. Promotions in the early ranks of E-1 to E-4 tend to be automatic, based on time in grade and time in service and, for promotion to E-4, based on completion of training. Nonetheless, junior enlisted members must exhibit discipline and perform at a requisite level of proficiency associated with their grades. By eliminating the pay bumps associated with promotion to E-2, E-3, and E-4, the proposal of Representative Mike Garcia significantly weakens the incentives to perform above the minimum level required to remain in the military, though the importance of performance incentives in the early enlisted grades is an empirical question. The other proposals reduce these incentives to varying, lesser, extents.

Compression of pay in the early grades relative to the middle grades and senior grades can affect the incentives of the most talented and most qualified service members to remain in the military and perform at levels that result in faster promotion. That is, compressing pay in the early ranks reduces the relative incentives associated with promotion to E-5 and beyond, and therefore retention and performance incentives. Retention and promotion of the most qualified service members is important in a closed personnel system like the military's, where there is little lateral entry. To ensure that the most senior-ranked personnel are the best and the brightest, the pay structure must be set so that these personnel are incentivized to stay in the military and perform well when they are junior members so they are promoted to the more senior ranks. Research shows that to sustain performance incentives, the pay raises associated with promotion should increase more with each subsequent promotion, directly the opposite of pay compression (Asch and Warner 1994; Lazear and Rosen 1981).

Initial Results on Military Cash Compensation and Food Insecurity

Before showing results on the estimated recruiting, retention, and cost effects of the proposals, we first provide some initial analysis on the extent to which raising basic pay for junior enlisted personnel would improve food security. One of the motivations for raising junior enlisted pay is to address the higher rate of food insecurity among these personnel.

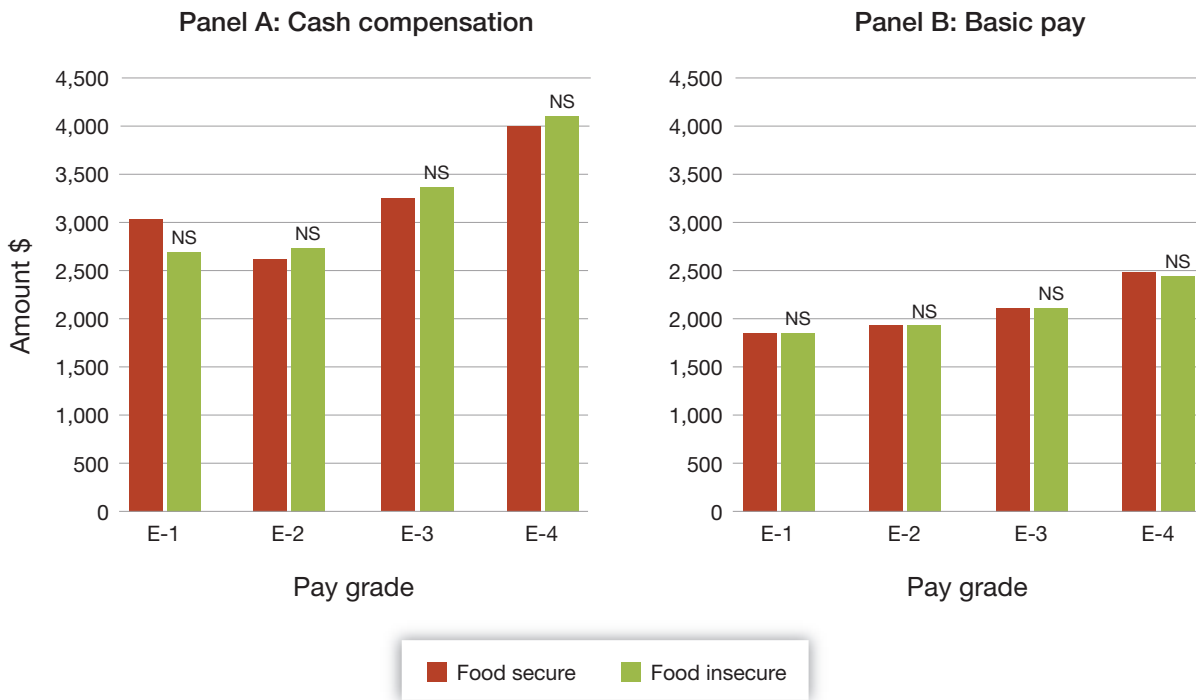
Initial evidence using 2018 SOFS-A data, merged with DMDC pay records for these service members, indicates that average pay for food insecure junior enlisted members is not statistically different from the average pay of food secure service members at the 5 percent level, as shown in Figure 3.6. Research on civilians indicates that those with higher income are less likely to be food insecure, but, as noted by Gundersen and Zilliak in their review of the literature,

Households with lower incomes are consistently found to be more likely to be food insecure. The importance of current income, however, is diminished once assets are considered (e.g., lower financial management skills . . . and lower education levels), physical assets (e.g., renting rather than owning a home), and financial assets (e.g., limited savings, lack of access to credit . . . , sharp changes in asset levels). (2018, pp. 122–123)

More research is needed to understand the relationship between food insecurity and pay in the military and the role of food assistance, financial literacy, savings behavior, and other factors in mitigating food insecurity. While raising junior enlisted pay could reduce food insecurity among junior personnel, the tabulations shown in Figure 3.6 suggests little relationship between pay and food insecurity among these personnel. Additional analysis is being conducted for the 14th QRMC to further investigate the relationship between military pay, financial readiness, and food insecurity.

FIGURE 3.6

Average Monthly Cash Compensation and Basic Pay for E-1 through E-4, by Food Insecurity Status, November 2018



NOTE: Tabulations are based on merging survey responses from 2018 SOFS-A data on food insecurity with November 2018 DMDC pay records of the respondents. NS = not statistically significant (between food secure and food insecure average pay at the 5-percent level).

Effects on Recruiting Outcomes

While the proposals compress the pay structure and reduce performance incentives among enlisted members, as shown in Figure 3.5, raising junior enlisted pay increases the pool of better-qualified applicants by increasing military pay relative to the civilian opportunities available to these applicants in the external market. Past studies estimate a positive relationship between relative military pay and the supply of high-quality enlistments, as summarized in Table C.11. As noted earlier, the average estimated pay elasticity is 0.69 across studies. We applied this average estimate to the percentage change in the discounted present value (DPV) of basic pay under each alternative to estimate the implied percentage change in high-quality enlistments under each proposal. The results are summarized in Table 3.4. All the proposals would increase high-quality enlistments, given the elasticity estimate we use, but to varying degrees, reflecting the extent of the increase in basic pay by YOS.¹⁰

While all proposals would expand enlistment supply, as noted in Chapter 2, research shows that increasing military pay is the least cost-effective way to improve recruiting relative to other policies including bonuses, recruiters, advertising, and educational benefits (Asch et al., 2010; Simon and Warner, 2007; Warner, Simon, and Payne, 2003; Warner and Simon, 2004). Increasing military pay relative to civilian pay is an expensive approach to addressing recruiting problems because unlike bonuses, pay raises are permanent and factor into future pay raises; they also factor into other benefits, such as retired pay. Increasing pay to solve recruiting problems only begins to make sense when the services are also experiencing widespread retention problems, as was the case in the late 1990s. But, as noted earlier, there is no evidence of widespread retention problems

¹⁰ Proposals that front-load the basic pay increase will increase the DPV more than increases that are evenly distributed across YOS.

TABLE 3.4
Summary of the Effects of Junior Enlisted Basic Pay Proposals

Proposal	Recruiting	Retention	Compression	Cost	Food Security
1. Representative Garcia	▲	▲	●	▲	✕
2. House Armed Services Committee proposal	●	●	●	●	✕
3. Junior civilian pay catch-up proposal	●	●	●	●	✕
4a. Recruiting catch-up proposal (7%)	▲	▲	●	▲	✕
4b. Recruiting catch-up proposal (15%)	●	●	●	●	✕
5. All-volunteer force catch-up proposal	▲	▲	▲	▲	✕
6. Boot camp pay catch-up proposal	▲	▲	●	●	✕

KEY: ● = favorable ▲ = acceptable ● = undesirable ✕ = not applicable.

currently. We illustrate the relatively higher cost of addressing recruiting challenges through raising pay in the following discussion on costs.

Effects on Retention and Personnel Costs

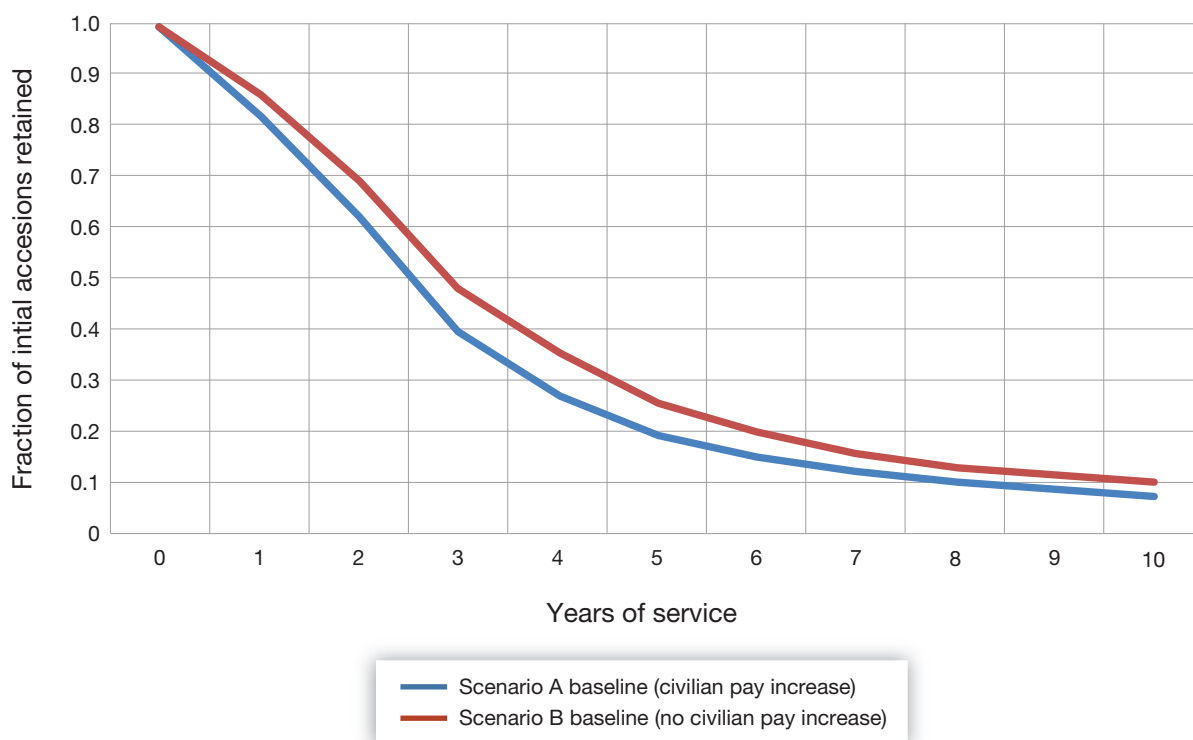
We estimate the steady state retention and cost effects of the six proposals using RAND’s DRM estimates for enlisted personnel in each service produced for the 13th QRMC (Asch, Mattock, and Tong, 2020).¹¹ We show results for Army enlisted personnel in this section, though results for the other services are qualitatively similar and are shown in Appendix C.

We estimate retention and cost effects for each proposal under two alternative scenarios. Scenario A assumes that the increases in civilian earnings since 2020 shown in Figure 3.2 are permanent and can adversely affect retention in the long run. An advantage of considering this scenario is that a motivation for increasing junior enlisted pay is to offset potential adverse effects of recent changes in the civilian economy. The disadvantages of this scenario are that the civilian earnings changes observed since 2020 may be temporary and that retention in the services has been strong, which obviates the need for the pay increase. We therefore also consider results under Scenario B, in which we assume the changes in Figure 3.2 are temporary so that the increases in civilian earnings since 2020 do not affect retention in the steady state.

To illustrate the differences in the two scenarios, Figure 3.7 shows predicted steady state Army enlisted retention—the portion of the entry cohort remaining to each year of service—over the first ten YOS under the current (baseline) FY 2023 pay table under each scenario. Retention is lower under Scenario A because of the assumed (permanent) increase in civilian pay opportunities that service members consider when making their retention decisions in the model. As shown in Table 3.5, predicted man-years per accession are 4.6 under Scenario A, which is 13.7 percent lower than predicted man-years under Scenario B (equal to 5.3 years).

¹¹ The modeling does not account for second-order effects on retention and cost. For example, an increase in retention owing to a basic pay increase could slow promotion speed and expected future pay, thereby creating a second-order effect that mutes retention. Similarly, increased retention means that a smaller portion of the force will be trainees and, presumably, trainers. Thus, improved retention should also reduce end-strength requirements as a second-order effect.

FIGURE 3.7
Predicted Steady State Cumulative Fraction of Entry Cohort Retained Through the Tenth Year of Service, Army Enlisted Personnel, Under Scenarios A and B



SOURCE: Authors' calculations using RAND's DRM.

TABLE 3.5
Predicted Steady State Man-Years Per Accession, and Cost per Member, Under the Current Baseline Pay Table, Army Enlisted Personnel, Under Scenarios A and B

Scenario	Retention: Man-Years per Accession	Cost per Service Member (in 2023 Dollars)
Scenario A baseline (assumes change in civilian pay is permanent)	4.6	\$74,700
Scenario B baseline (assumes no change in civilian pay relative to 2020)	5.3	\$76,900
Percentage change in baseline A relative to B	-13.7%	-2.8%

SOURCE: Authors' calculations using RAND's DRM.

NOTE: To compute cost per service member, personnel costs include basic pay costs, BAH, BAS, and legacy military retirement accrual costs.

Costs per soldier are 2.8 percent lower under Scenario A, \$74,700 compared with \$76,900 in 2023 dollars, because the lower retention means the force is a more junior one, so the basic pay bill and bill associated with the retirement accrual charge for the Army enlisted force is lower. Cost per soldier includes basic pay, BAH, BAS, and retirement accrual costs.

While we produce estimates under both scenarios, we find that the results are qualitatively similar for both, with scenario A increasing cost per person by slightly more due to the changes being permanent. Consequently, we show results for Scenario B in Appendix C.

We find that the recruiting catch-up proposal (15 percent) and junior civilian pay catch-up proposal are predicted to produce the largest increases in steady state retention measured in terms of man-years per accession, 35.3 percent and 27.6 percent, respectively, as well as the largest increases in cost per service member relative to the baseline. Table 3.6 shows the percentage change in retention and in cost relative to the baseline under Scenario A, shown in Table 3.5. Table C.13 shows results under Scenario B. The smallest predicted changes are under the boot camp pay catch-up proposals. Predicted retention is estimated to increase by 0.4 percent while cost per soldier in 2023 dollars is estimated to increase by 0.3 percent. In contrast, the retention and cost-per-member effects of the recruiting catch-up proposal (15 percent) are estimated to be 35.3 percent and 13.3 percent, respectively.

To estimate the incremental cost associated with an increase in retention or marginal cost of raising pay under each proposal, we take the ratio of percentage increase in cost per service member over the percentage increase in retention. The middle column of Table 3.5 shows the results.¹² The lower the ratio, the lower the marginal cost estimate and the more efficient the proposal is in terms of producing more retention for a given increase in cost per service member.

We find that the most efficient proposals are the two recruiting catch-up proposals (Proposals 4a and 4b) and the civilian pay catch-up proposal (Proposal 3), with marginal cost estimates of 0.38, 0.47, and 0.39, respectively for Scenario A, as shown in Table 3.7. The next most efficient are the HAC proposal (Proposal 2) and the AVF catch-up proposal (Proposal 5), with estimates of 0.53 and 0.54, respectively. The least efficient in terms of our marginal cost estimates are the proposal of Representative Mike Garcia (Proposal 1) and the boot camp pay catch-up proposal (Proposal 6), with estimates of 0.80 and 0.82, respectively. The results for Scenario B in Table C.13 show the same ordering of the proposals in terms of marginal cost estimates, though the magnitudes of the estimates differ from Scenario A.

TABLE 3.6
Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Proposals, Army Enlisted Personnel, Under Scenario A

Proposal	Percentage Change in Retention Relative to Baseline	Percentage Change in Cost per Service Member (in 2023 Dollars)	Marginal Cost = Ratio of Percentage Change in Cost over Percentage Change in Retention	Annual cost, Army (\$Billions per Year)	Annual cost, DoD (\$Billions per Year)
1. Proposal of Representative Mike Garcia	3.9	3.1	0.80	\$0.617	\$1.684
2. HAC proposal	19.6	10.4	0.53	\$1.420	\$3.869
3. Junior civilian pay catch-up proposal	27.6	10.9	0.39	\$1.036	\$2.954
4a. Recruiting catch-up proposal (7%)	8.1	3.8	0.47	\$0.516	\$1.463
4b. Recruiting catch-up proposal (15%)	35.3	13.3	0.38	\$1.297	\$3.709
5. AVF catch-up proposal	6.1	3.3	0.54	\$0.583	\$1.712
6. Boot camp pay catch-up proposal	0.4	0.3	0.82	\$0.018	\$0.046

SOURCE: Authors' calculations using RAND's DRM.

NOTES: Retention is measured in terms of steady state man-years per accession, while personnel costs per service member include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Annual costs in the last two columns include basic pay cost and retirement accrual cost only. Results shown are relative to the baseline for Scenario A shown. Scenario A assumes permanent change in civilian pay, as shown in Figure 3.2. Scenario A results for all services are shown in Table C.15. Scenario B results, assuming no change in civilian pay, are shown in Table C.14.

¹² The traditional metric of marginal cost is not typically measured in percentage terms but in absolute change—that is, the ratio of the change in total cost over the change in retention. The metric we use changes the scale of the marginal cost estimates.

While the recruiting catch-up proposal, assuming a 15-percent pay increase, is the most efficient proposal for the Army, it is also one of the most expensive in terms of cost. Table 3.6 also shows the cost to the Army and to DoD of these proposals, in terms of the increase in basic pay cost and retirement accrual costs under Scenario A for the Army. For both the Army and DoD as a whole, the HAC proposal is more expensive than the 15-percent recruiting catch-up proposal and is the most expensive of the proposals. The boot camp proposal is the least costly, but it is also among the least efficient in terms of retention.

As noted above in the context of the estimated effects of the proposals on high-quality enlistments, research shows that enlistment bonuses and recruiters are more cost-effective approaches to increasing enlistments than raising pay. We illustrate this result in Table 3.7 for the Army. Specifically, we draw on past research to estimate the cost to the Army of achieving the same increase in high-quality enlistments under each proposal as shown in the final column of Table 3.7 using enlistment bonuses or recruiters rather than pay. As shown in Table C.11, the average estimated elasticity of high-quality enlistments with respect to enlistment bonuses is 0.077; it is 0.503 for recruiters. That is, a doubling of bonuses (or a 100-percent increase) is estimated to increase high-quality enlistments by 7.7 percent while a 10-percent increase in recruiters is estimated to increase high-quality enlistments by 5.03 percent. Using tabulations and results from Ward et al. (2023), we assume the average enlistment bonus across all high-quality recruits is \$5,904, with 36 percent of high-quality enlistments eligible for bonuses, and we assume the Army recruiter force is 8,700, with an average cost to the Army of a recruiter equal to \$115,830. We also assume the Army has a gross enlistment contract mission of 70,000 recruits, with 59 percent of them being 41,300 high-quality contracts. With these assumed inputs, we computed the additional enlistment bonuses required to produce the same enlistment effect as each proposal and the additional numbers of recruiters required, and then computed the additional cost associated with those added bonuses and recruiters. The results are shown in Table 3.8.

The estimates imply that the cost of producing the same enlistment effect as pay under each proposal is less with enlistment bonuses, and even lower with an increased number of recruiters. For example, the highest-cost proposal to the Army using pay is the HAC proposal, with an estimated cost to the Army of \$617 million. This proposal is estimated to increase Army high-quality enlistments by 4,956. To achieve this same increase, bonuses would need to increase by 156.5 percent or, alternatively, the number of recruiters would need to increase by 2,076, given our assumptions about numbers of high-quality contracts, the

TABLE 3.7
Cost to the Army of Increasing Enlistment Bonuses or the Number of Recruiters to Produce the Same Enlistment Effect as Each Proposal to Raise Junior Enlisted Members' Basic Pay

Proposal	Estimated Percentage Change in High-Quality Enlistments Based on Past Studies	Army Basic Pay plus Retirement Accrual Cost Increase (\$Billions per Year)	Cost to Army of Increasing Enlistment Bonuses (\$Billions per Year)	Cost to Army of Increasing Recruiters (\$Billions per Year)
1. Proposal of Representative Mike Garcia	5.5	\$0.617	\$0.184	\$0.110
2. HAC proposal	12.0	\$1.420	\$0.427	\$0.240
3. Junior civilian pay catch-up proposal	7.7	\$1.036	\$0.264	\$0.154
4a. Recruiting catch-up proposal (7%)	4.0	\$0.516	\$0.132	\$0.080
4b. Recruiting catch-up proposal (15%)	9.5	\$1.297	\$0.331	\$0.190
5. AVF catch-up proposal	4.6	\$0.583	\$0.153	\$0.092
6. Boot camp pay catch-up proposal	0.3	\$0.018	\$0.010	\$0.006

average size of bonuses, and the recruiter force. The cost of these additional bonuses would be \$427 million, less than the \$617 cost of pay to the Army, while the cost of the additional recruiters would be lower, \$240 million. We find similar results for the other proposals; of the three approaches, recruiters are the most cost-effective approach to increasing high-quality enlistments under each proposal, while pay is the least cost-effective approach.

Chapter Summary

None of the six proposals dominate in terms of being best across all the dimensions we evaluated—namely, their effects on recruiting outcomes, retention, personnel cost, and efficiency. Thus, deciding among them requires consideration of other factors. Therefore, we consider recent readiness outcomes and the broader context in which the proposal would be implemented to rank the proposals. There are three reasons why these other outcomes suggest that a more modest proposal should be chosen from among the six considered.

First, retention is strong across the services, despite the strength of the civilian economy. To the extent the services are experiencing pockets of retention problems, they can deploy incentive pays to address them; these are more efficient than pay raises in addressing such retention issues. Second, while the services are struggling to meet their recruiting missions, and several of them expect to miss their missions in the coming year, they are introducing a wide array of programs to improve recruiting. In addition, as noted earlier, raising military pay is the least cost-effective way to increase enlistments relative to bonuses, recruiters, and advertising. Finally, as noted earlier in the chapter, initial evidence using 2018 SOFS-A data merged with DMDC pay records suggests that average pay for food insecure junior enlisted members is not statistically different from the average pay of food secure service members at the 5-percent level.

Of the six proposals considered, the three most modest in terms of size of the pay increases (see Table 3.3 and Figure 3.4) are Proposal 4a (recruiting catch-up—7 percent), Proposal 5 (AVF catch-up), and Proposal 6 (boot camp catch-up proposal). Proposal 6 had the smallest effects on pay, recruitment, retention, and cost, but was the least efficient. Of the remaining two proposals, Proposal 5 dominated Proposal 4a in terms of having a lower increase in cost per service member and having a larger effect on high-quality enlistments, but was not as efficient and did not have as large an effect on retention. Thus, of these two proposals, the better approach depends on priorities; the AVF proposal is better if recruitment and cost control are more important, while the recruiting catch-up proposal is better if retention and efficiency are more important.

Finally, it is important to reiterate the finding that raising military pay is a blunt and costly instrument for addressing recruiting challenges. We find that increasing recruiters or enlistment bonuses could achieve the same improvement in high-quality enlistments as any of the six proposals, but at less cost. Given that retention is generally strong, the fact that raising junior pay would compress the pay table and increase cost, and initial evidence that shows that junior enlisted members who are food insecure do not have lower pay, the findings suggest that more targeted policies other than raising junior enlisted pay might be advisable.

Midcareer and Senior Enlisted Basic Pay

As part of our project’s support to the 14th QRMC’s review of the military basic pay table, the 14th QRMC requested that we also consider whether the pay table for midcareer and/or senior enlisted personnel, as well as the table for officers, required adjustment. This chapter summarizes the analysis pertaining to enlisted personnel; Chapter 5 focuses on officers.

Our approach is similar to the analysis of junior enlisted pay. We review recent retention outcomes and pay comparisons and draw from the available literature on setting compensation within large organizations, as well as on military compensation within the military. We develop proposals for restructuring basic pay for midcareer and senior enlisted personnel, drawing on this literature and on input we received from discussion with SMEs within the OSD and the services. We then assess the proposals in terms of their effects on the structure of the pay table, as well as on readiness—specifically, retention and cost—using RAND’s DRM. Finally, we consider proposals to link enlisted pay to officer pay to address pay inequity, drawing from the available literature on pay inequity within organizations.

Background

To assess the need for changes to the pay table for midcareer and senior enlisted members, we first considered how average RMC compares with the earnings of civilians with similar education and age. As shown in Table 2.4, the weighted average of RMC by YOS for enlisted members varies from about the 69th percentile to the 83rd percentile of civilian earnings for those with between ten and 20 YOS, where the weights reflect the distribution across different levels of education attainment among enlisted members. For those with over 20 YOS, the weighted average of RMC varies from the 72nd percentile to the 81st percentile. In short, average RMC exceeds the 70th percentile benchmark and would about equal the benchmark should it be raised to around the 75th to 80th percentile, as suggested in Chapter 3.

We also considered aggregate retention outcomes, by service, as reported by the OSD. As shown in Figure C.1, the services have generally met or exceeded their retention targets for initial term, midcareer, and career enlisted personnel in FY 2023. Reports for 2024 indicate similar success. Thus, military pay on average for midcareer and senior enlisted members compares favorably with civilian pay, and retention is strong overall.

That said, some SMEs with whom we spoke raised two main issues pertaining to the enlisted pay table (with some issues also relevant to officer pay, as will be discussed in Chapter 5). We describe what we heard for each of them.

Inadequate Performance Incentives Embedded in the Pay Table

We heard several issues pertaining to inadequate performance incentives. Some SMEs expressed concern about pay compression in the pay table if junior enlisted pay is increased without a similar increase for midcareer and senior personnel. Pay compression was discussed in the context of the proposals in Chapter 3. A more general point we heard was that the link between performance and basic pay was too weak and that the basic

pay increases in the pay table overemphasized additional longevity or YOS compared with promotion or better performance. A more specific comment we heard from SMEs was that performance incentives for more senior E-9s were too weak. Promotion to E-9 occurs at around 21 YOS. While these E-9s will still receive annual pay increases and some longevity increases, they have no further promotion opportunities. Some SMEs contrasted this situation with O-6s, who are also typically promoted at 20 YOS but have future potential promotion opportunities up to O-10. Some SMEs also noted that E-9s had varying level of responsibility, with some E-9s in supervisory positions over other E-9s, suggesting the need for additional grades beyond E-9.

We also heard proposals from the SMEs that are intended to address these performance incentive issues. Some SMEs suggested a targeted pay raise for E-9s to increase promotion incentives for senior enlisted members relative to longevity increases. As noted, we also heard the suggestion that the enlisted pay table be extended beyond E-9 to include additional grades and, notably, additional promotion opportunities for E-9s who hold more responsibility. However, some SMEs wondered if extending promotion opportunities for E-9s would be viewed as divisive among the cohesive E-7 through E-9 community. Finally, we heard the suggestion of a targeted pay raise for E-7s to recognize the increase in responsibility and better performance associated with advancement to this grade.

Inequality Between Officer and Enlisted Basic Pay

A second issue raised by some SMEs was the inequality in basic pay between enlisted members and officers, stating that enlisted personnel were used differently than they were 20 or 30 years ago. These SMEs discussed two specific issues.

First, they highlighted that across-the-board percentage increases in basic pay that were the same for officers and enlisted members resulted in growing absolute dollar disparities over time between the level of enlisted and officer basic pay. As a hypothetical example, consider an individual who earned \$50 and another who earned \$100, for a difference of \$50 between the two ($\$100 - \50). A 20 percent across-the-board pay raise would raise pay to \$60 for the first individual and to \$120 for the second, with an increase in the absolute difference of \$60 ($\$120 - \60). The relative gap in pay between the two individuals remains the same ($50/100 = 60/120 = 0.5$) while the absolute gap increases from \$50 to \$60. Some SMEs expressed concern that inequality between enlisted pay and officer pay in absolute terms has grown over time.

To address the growing absolute difference in officer and enlisted basic pay, some SMEs recommended that the differences between enlisted and officer basic pay be capped by either a fixed percentage amount or an absolute dollar amount. For example, in the 2023 basic pay table, an E-6 with over 20 YOS earns monthly basic pay of \$7,102.8 while an O-6 with over 20 YOS earns \$12,050.4 per month—about 70 percent more in relative terms, or \$4,947.6 in absolute terms. Future differences might be capped at 70 percent in relative terms or \$4,947.6 in absolute terms of some multiple of these values.

The second specific issue related to inequality raised by some SMEs is that basic pay for enlisted members is too low relative to officers with similar levels of responsibility. In one example given by an SME, an E-9 with 30 YOS earns less than an O-5 with 12 YOS in the pay table, despite similarities in their levels of responsibility and skill levels. SMEs who raised this issue recommended that enlisted pay be linked to officer pay to recognize similar responsibility levels and skills. For example, E-6 pay might be linked with O-3 pay, E-7 with O-4 pay, E-8 with O-5 pay, and E-9 pay with O-6 pay.

Toward Development of Proposals to Embed Stronger Performance Incentives in the Enlisted Basic Pay Table

We did not validate whether concerns about performance incentives are supported by analysis and data given the lack of such evidence and the challenges of measuring productivity and personnel performance in the

military. Instead we focused on whether the pay table is structured in a way consistent with providing performance incentives, as recommended in the literature, and how it might be improved.

In any large organization, including the military, key objectives of the personnel and compensation systems are to attract and retain enough people to meet its skill and experience requirements and with sufficient quality and ability to perform required tasks. In addition, these systems must motivate personnel to work hard and effectively and sort personnel by inducing higher-ability people to stay and seek advancement to higher ranks where their ability is most productive.

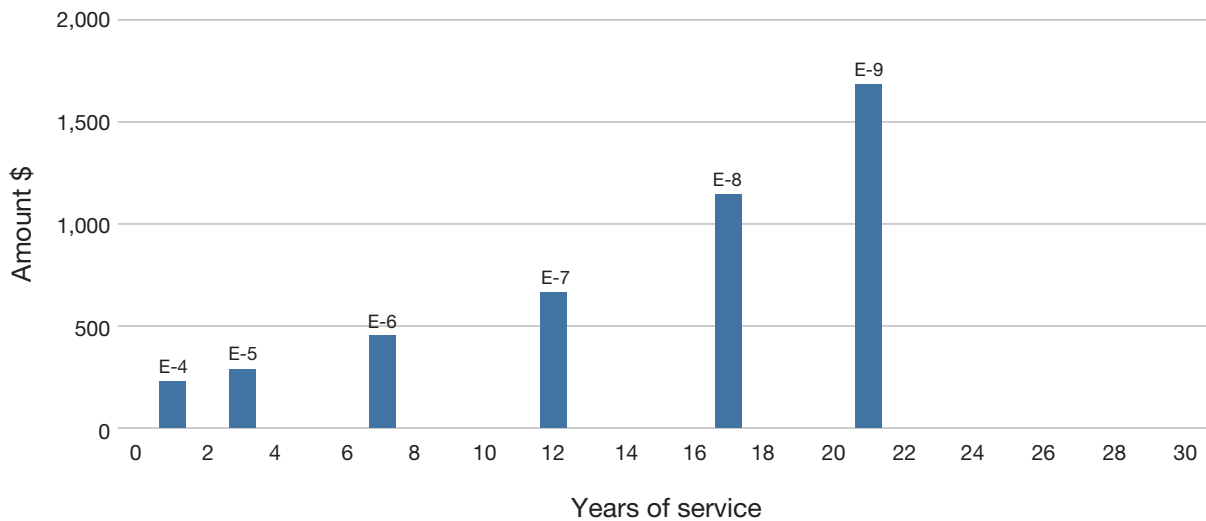
In the military, in the absence of lateral entry to the active force, senior leaders of the future must be recruited at entry. With its triangular hierarchical rank structure in which the upper ranks are filled by promoting those from the next-lowest level, advancement in the junior ranks is typically based on qualifications and time-in-grade requirements. Beyond this level, promotions are competitive and based on centralized promotion boards with promotion depending, notably, on current performance and potential future performance. Promotion rates drop sharply, and competition becomes increasingly fierce as people move up the ranks. Because of the triangular hierarchical rank structure, the productivity of those in the upper ranks has spillover effects on the productivity of those in the lower ranks. Since higher-ranked people control more of the organization's resources and make decisions that affect the overall performance of the organization, span-of-control considerations magnify the importance of ensuring that the most capable people are choosing to stay and eventually land in the upper ranks and that they are motivated to work hard and effectively.

Given the constraints on lateral entry and its hierarchical structure, what attributes of the compensation system supports meeting these organization objectives? The economics literature provides theory and evidence regarding these attributes (Asch and Warner, 2001; Lazear and Oyer, 2012; Lazear and Rosen, 1981; Malcomson, 1984; Rosen, 1986; Rosen, 1992). It is important to recognize that compensation in this context refers to the compensation package, which may include not only cash pay but also expectations of future retirement benefits or other types of benefits. It could also include nonmonetary benefits, such as perquisites associated with higher-ranked positions.

The key attribute of the compensation system in the context of an organization like the military that promotes from within and is hierarchical in structure is that the compensation structure is curved or skewed, as was shown in a hypothetical example in Figure 3.1 in the context of junior enlisted pay. *Skewness* or *curvature* refer to the observation that differences in compensation between ranks increase with rank so that the pay levels of the most senior leaders are substantially higher than those of senior and midlevel managers, while the pay of midlevel managers is only modestly higher than the pay of the lower-ranked employees. Figure 4.1 shows another hypothetical example for enlisted members and shows the curvature of the system by YOS and grade. The figure shows the increase in monthly basic pay associated with each subsequent enlisted promotion. In this hypothetical example, the promotion to E-9—which, based on average promotion timing data between 2013 and 2018, typically occurs around the 21st year of service—produces a larger pay increase than earlier promotions.¹

¹ These differences in pay between ranks also depend on the pay increases within a grade and, notably, the timing of promotion, in addition to the sequence of differences in pay across grades given average promotion timing. However, for brevity's sake, we focus here on the intergrade pay spreads, assuming average times for promotion at each grade. Elsewhere (Asch and Warner, 1994; Asch and Warner, 2001), the role of intragrade pay spreads and promotion timing in the structure of compensation is investigated. Also, as mentioned, incentives for effort and the sorting of higher-ability personnel can be influenced not just by pay but also by nonmonetary factors associated with promotion, plus elements of compensation that increase with promotion—notably, retirement benefits. The retirement system adds a degree of skewness to the compensation system, given the 20-year vesting in an immediate annuity, and permits a flatter pay structure in the pay table to produce the same retention and effort outcomes that would occur with a less generous system. Other elements of military compensation that could increase skewness are the BAH and the tax advantage, both of which increase with grade. While we use the term pay in the following discussion of skewed pay structures, the discussion extends to include the other elements of monetary and nonmonetary compensation that increase with promotion.

FIGURE 4.1
Hypothetical Example: Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service

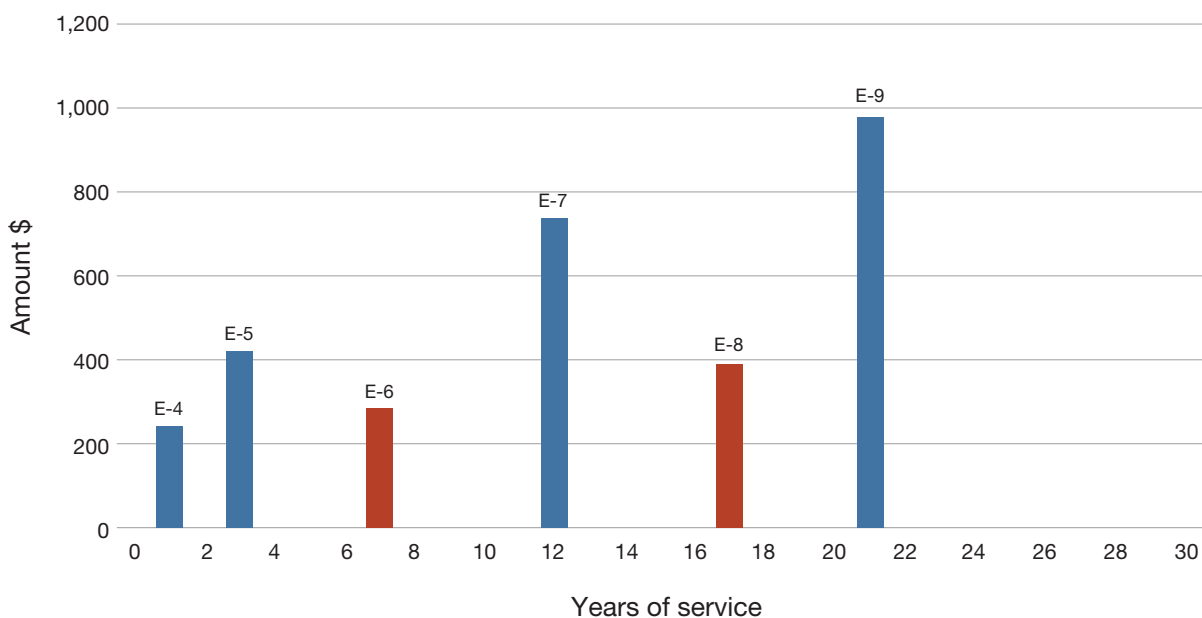


Larger pay spreads motivate harder work, encourage more capable personnel to remain in the organization, and sustain the quality of the talent pool from which promotions are made. There are three rationales for larger spreads at higher ranks—that is, the curved shape of the compensation structure. First, as individuals progress toward the senior ranks, promotion rates fall, which tends to decrease the expected payoff to advancement and thereby discourage effort and the sorting of higher-ability personnel. Pay spreads need to rise with rank—they need to be skewed or curved—to maintain effort and incentives for ability sorting. Second, as personnel progress through the ranks, the number of remaining promotions that can be earned, and therefore the number of future promotion rewards, falls. To offset the declining incentives for performance due to the declining number of future promotions, the reward associated with later promotions must increase—the structure must be skewed. Finally, competition for promotion becomes keener in higher ranks because the talent pool becomes one of a uniformly higher quality—the lower-quality personnel are more likely to have been screened out at lower promotions. This will tend to reduce effort incentives, because bypassing one’s competitors and achieving promotion becomes more difficult to achieve at higher grades. To offset this disincentive, the pay spread or reward to promotion must increase at higher grades.

Figure 4.2 shows how the structure of the enlisted basic pay table deviates from the idealized curved structure shown in Figure 4.1. Importantly, it lacks the desired curvature, with two areas of concern. First, rather than increasing with higher ranks, the pay increases associated with promotion to E-6 and to E-8 *decrease* relative to the previous grade, thereby working counter to a structure that sustains performance incentives across ranks. Specifically, given average enlisted promotion times for 2013–2018, the increase in basic pay for a promotion to E-5 at the third year of service in the 2023 pay table was about \$425 but decreased to \$288 for a promotion to E-6. A promotion to E-8 at 17 YOS increased basic pay by \$392, but a promotion to E-7 at 12 YOS increased basic pay by \$730. The decrease associated with the promotion to E-8 is offset by the expectation of becoming eligible for military retirement benefits at 20 YOS, since an E-8 promoted at the seventeenth year of service is virtually assured to become eligible for these benefits, which provide an additional financial incentive associated with promotion to E-8.

The second area of concern is the lack of promotion opportunities for those who achieve the highest rank of E-9, typically at the 21st year of service based on 2013–2018 promotion timing data. For an E-9 who serves another ten or 20 years, to 30 or 40 YOS, the only sources of basic pay increases are longevity increases

FIGURE 4.2
Current Enlisted Pay Table: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service



NOTE: Tabulations assume average DoD enlisted promotion times for 2013–2018 based on DMDC tabulations provided to RAND.

and annual basic pay increases, neither of which are specifically tied to performance. Thus, the basic pay structure does not provide performance incentives for the highest-ranked enlisted personnel, though other aspects of service, including nonmonetary factors, could contribute to these incentives.

Past Consideration Given to Adding an E-10 Grade

To address the issue of performance incentives for E-9s, in its 2002 report the 9th QRMC raised the question of whether an additional grade is needed beyond E-9. Specifically, citing analysis of the issue conducted by Quester and Lee (2001), it noted,

The E-9 grade does not adequately distinguish among the varying responsibility levels of E-9 assignments. Today, E-9s supervise E-9s, who supervise other E-9s—similar to the situation in 1958 within the E-7 grade, which led to creation of the E-8 and E-9 grades. (DoD, OUSD[P&R], 2002, p. 45)

The Quester and Lee (2001) study also noted that E-9 compensation is mostly based on overall YOS, with those who are fast-tracked and promoted faster earning less than those promoted more slowly and with higher retirement rates among the fast-tracked E-9s. The QRMC saw the value of adding an E-10 grade despite it being numerically small—Quester and Lee recommended that E-10s be no more than 0.2 percent of the enlisted force—with a competitive promotion from among the best E-9s and an appropriate increase in basic pay. Quester and Lee thought that a pay increase of around 10 percent might be such an appropriate increase in basic pay relative to E-9.

The 9th QRMC indicated that the idea of adding an E-10 grade offered potential benefits, but the proposal was not fully supported. The report of the 9th QRMC stated that “an E-10 grade could motivate individuals to depart at the same or greater rate than is currently the case because of a perception of limited opportunities at the E-10 level” (DoD, OUSD[P&R], 2002, p. 47). Based on personal communications with

key staff of the 9th QRMC, our project learned about other concerns expressed at the time of the 9th QRMC. The centerpiece of the suite of recommendations proposed by the 9th QRMC was the recommendation for a targeted pay increase to midcareer and senior personnel, and some felt at the time that pursuing an additional E-10 grade could detract from that other effort. Another concern was that the cost of implementing a new E-10 grade was too “heavy of a policy lift” because of the need to identify manpower requirements and billets, define promotion criteria, and upgrade supporting systems. Finally, other alternatives might be considered that did not involve adding a new grade, including making more use of the warrant officer grades or the transition from enlisted to officer grades, or even slowing promotions in earlier enlisted grades.

Description of the Four Proposals

We consider four proposals to restructure the enlisted pay table to address the two areas of concern regarding performance incentives, the decrease in the pay increase for E-6s and E-8s and the lack of further promotion opportunities for E-9s later in their career. Three of the proposals would add an E-10 grade, consistent with the 9th QRMC, and three would provide targeted pay raises for midgrade and senior enlisted personnel. Table 4.1 summarizes the proposals and their motivation. We describe each proposal in turn and show how the proposal would affect the structure of pay increases across enlisted grades.

Proposal 1

Proposal 1 would add an E-10 grade for the purpose of providing additional promotion opportunities and stronger performance incentives to the most competitive E-9s. The proposed pay table is shown in Table D.1 in Appendix D. To compute E-10 pay at each year of service, we increased E-9 basic pay by 17 percent between ten and 20 YOS. The 17 percent figure was chosen because this is the current percentage difference between E-8 and E-9 basic pay at these YOS. In the current pay table, the percentage difference between E-8 and E-9 basic pay is greater than 17 and an alternative would be a pay table that also gives raises even greater than 17 percent to those in E-10 beyond 28 YOS.

TABLE 4.1
Proposals to Increase Midcareer and Senior Enlisted Basic Pay

Proposal	Motivation	Description
1. Add E-10 grade	Provide additional promotion incentives to top E-9s	Compute E-10 basic pay equal to 17% increase over E-9 through the 28th year of service
2. Add E-10 grade plus targeted E-6 to E-9 raises	Same as Proposal 1, plus ensure that E-6 and E-8 promotions are at least as valuable as previous promotions	Same as Proposal 1, plus target pay raises around average promotion times with E-7 and E-9 increases given to avoid pay inversions
3. Add E-10 grade plus targeted E-6 to E-7 raises	Same as Proposal 1, plus ensure that E-6 promotions are at least as valuable as previous promotions	Same as Proposal 2, but omit the E-8 promotion increase because it occurs prior to retirement eligibility, and omit the E-9 increase because E-9 pay inversion disappears
4. Targeted E-6 to E-9 raises, no E-10 addition	Focus pay raises on restructuring the existing pay table	Same as Proposal 2, but omitting the addition of E-10

NOTE: Proposals 1–3 would also increase Senior Enlisted Advisor basic pay by 4.1 percent relative to the basic pay of an E-10 at 40 YOS. The 4.1 percent figure was chosen because this is the percentage difference under the current pay table between Senior Enlisted Advisor basic pay and the basic pay of an E-9 with 40 YOS.

As indicated in the note to Table 4.1, Proposal 1, as well as Proposals 2 and 3, which also add an E-10 grade, would involve increasing the basic pay of Senior Enlisted Advisors. Today a Senior Enlisted Advisor’s basic pay is 4.1 percent higher than that of an E-9 with 40 YOS. To maintain this relationship, Senior Enlisted Advisor basic pay in Proposals 1–3 would be increased by 4.1 percent relative to the basic pay of an E-10 with 40 YOS.

In our analysis of this proposal, discussed in the next section, we assume that E-10s are promoted on average at 26 YOS, but this is for illustration purposes and not based on any analysis or discussions with the services of when promotions to E-10 might occur should an additional grade be created. We also assume that E-10s would only make up 0.2 percent of the enlisted force and that 10 percent of E-9s are promoted to E-10.

As shown in Figure 4.3, the pay increment associated with promotion to E-10—highlighted in red—would provide additional promotion opportunities and financial incentives for performance for E-9s and potentially also for E-8s.

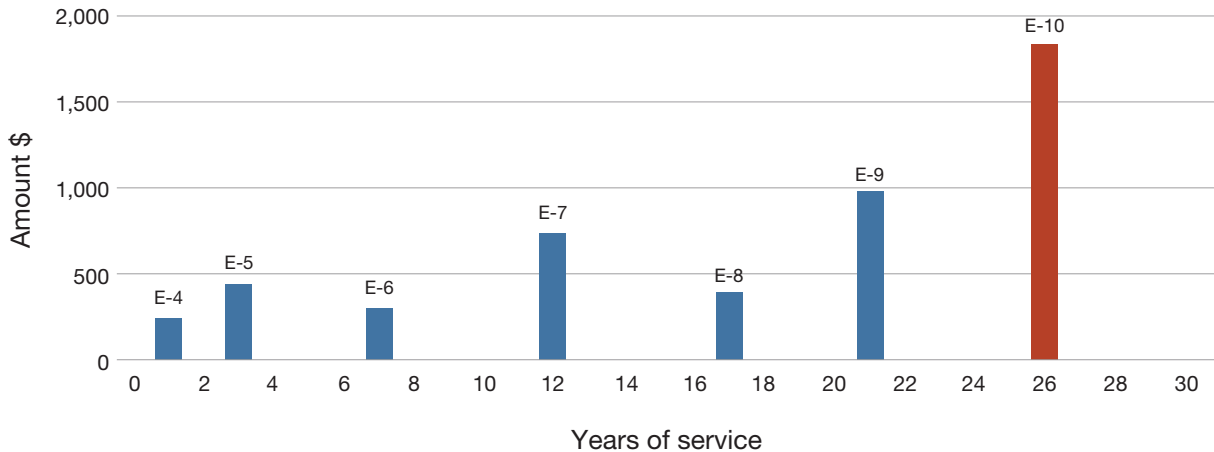
Proposal 2

Proposal 2 would add an E-10 grade but would also include targeted pay raises for E-6s through E-9s. The focus of the targeted raises is on E-6 and E-8 to address the structural concerns shown in Figure 4.2 for those grades. But to prevent pay inversions in the pay table where pay does not increase with longevity or promotion, we found that we also need to include targeted pay raises to E-7s and E-9s. Figure 4.4 shows how this proposal would change the pay increases associated with promotion to E-6 to E-9 (and E-10) given average promotion times. The figure shows that promotions to E-6 and to E-8 are now generally at least as valuable as promotions to their previous grades (E-5 and E-7, respectively). The revised pay table is shown in Table D.2.

Proposal 3

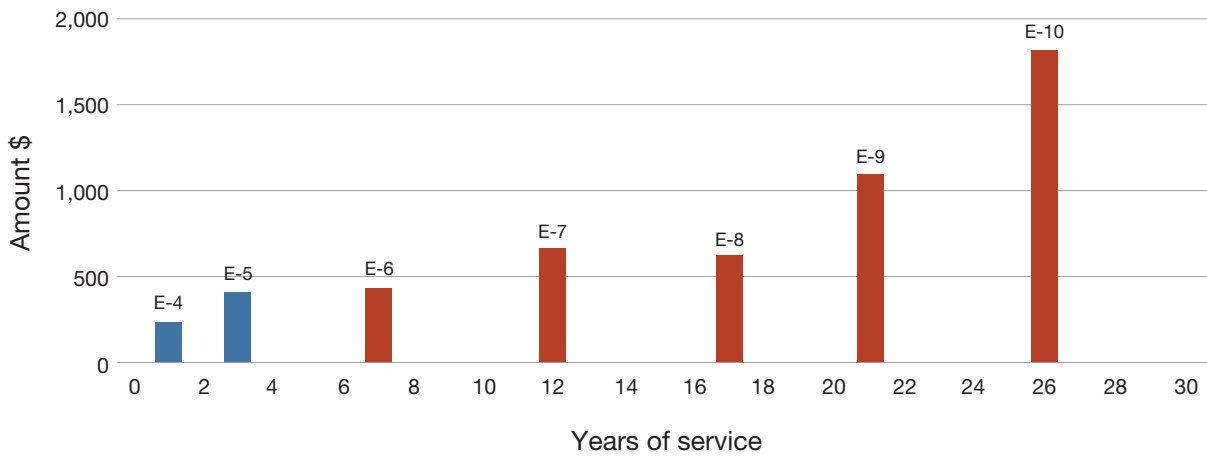
Proposal 3 is similar to Proposal 2 but omits the targeted raises to E-8 and therefore the targeted raises to E-9 since the pay inversion problem disappears if E-8 pay is unchanged. The justification for this proposal is that the financial incentives for promotion to E-8 also include the virtual certainty of qualifying for higher military retirement benefits, a factor not shown in Figure 4.2. The increases in monthly pay associated with promotion under this proposal are shown in Figure 4.5. The revised pay table is shown in Table D.3.

FIGURE 4.3
Proposal 1, Adding E-10 Grade: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service



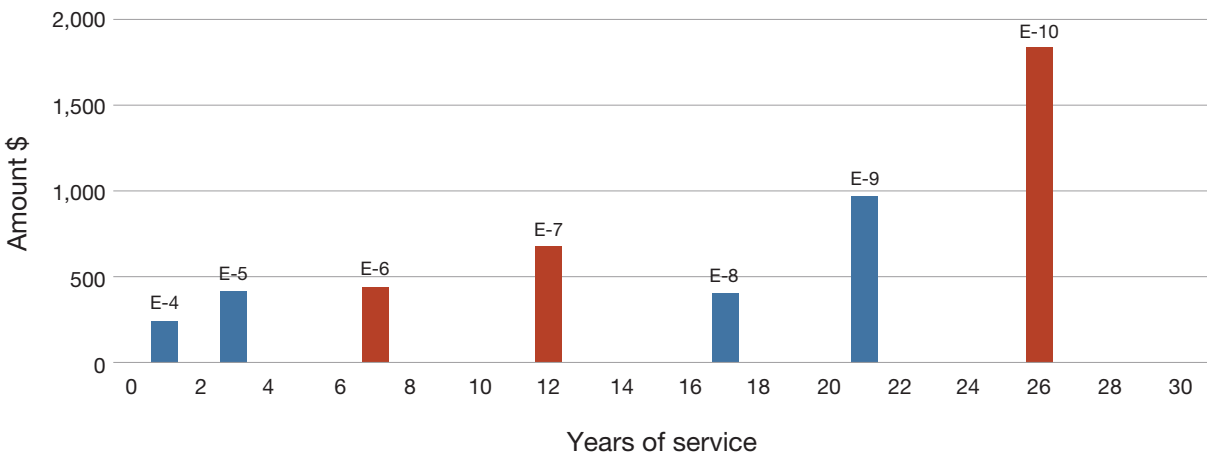
NOTE: Tabulations assume average DoD enlisted promotion times for 2013–2018 based on DMDC tabulations provided to RAND.

FIGURE 4.4
Proposal 2, Adding E-10 Grade and Targeted E-6 Through E-9 Raises: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service



NOTE: Tabulations assume average DoD enlisted promotion times for 2013–2018 based on DMDC tabulations provided to RAND.

FIGURE 4.5
Proposal 3, Adding E-10 Grade and Targeted E-6 Through E-7 Raises: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service

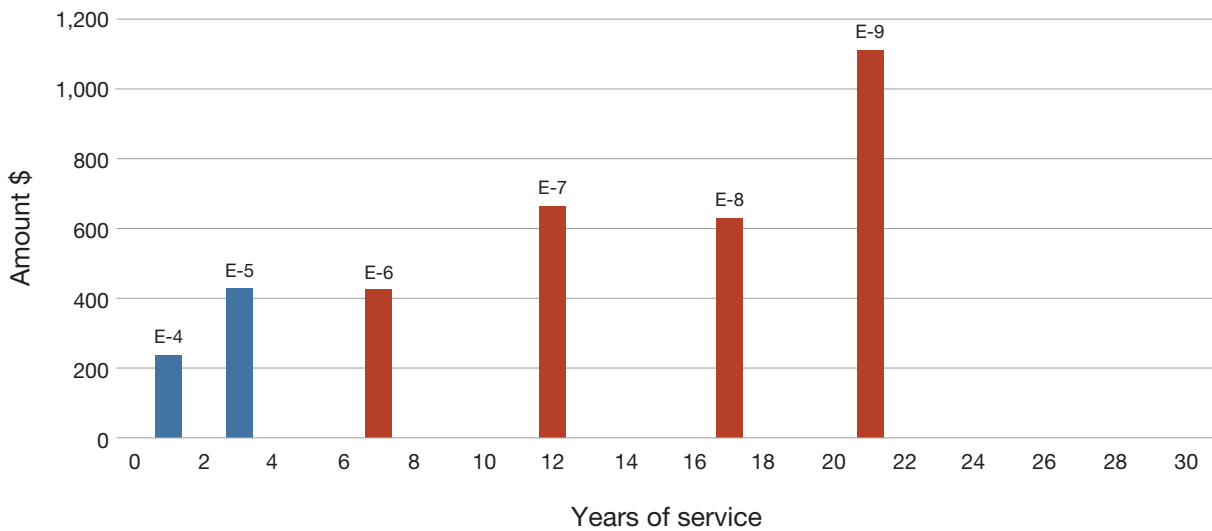


NOTES: Tabulations assume average DoD enlisted promotion times for 2013–2018 based on DMDC tabulations provided to RAND. Tables D.6, D.8, D.10 present analogous results for other services under the assumption 10 percent of E-9s are promoted to E-10. Tables D.12, D.14, D.16, and D.18 give analogous results when 50 percent of E-9s are promoted to E-10 for all services.

Proposal 4

The final alternative is the same as Proposal 2 but omits the addition of the E-10 grade. The justification for this proposal is that it would address the performance incentives issues for E-6 and E-8 in the existing enlisted pay table without the potentially “heavy lift” of creating a new pay grade. The increases in monthly pay associated with promotion are shown in Figure 4.6. The proposed pay table is shown in Table D.4.

FIGURE 4.6

Proposal 4, Targeted E-6 Through E-9 Raises: 2023 Increase in Monthly Basic Pay Associated with Enlisted Promotion, by Years of Service

NOTE: Tabulations assume average DoD enlisted promotion times for 2013–2018 based on DMDC tabulations provided to RAND.

Assessment of the Proposals

Effects on Retention, Personnel Costs, and Performance

Similar to our analysis of junior enlisted pay in Chapter 3, we estimate the steady state retention and cost effects of the four proposals in Table 4.1 using RAND’s DRM estimates for enlisted personnel in each service produced for the 13th QRMC (Asch, Mattock, and Tong, 2020). As with the junior enlisted pay analysis, we show results for Army enlisted personnel in this chapter, though results for the other services are qualitatively similar and are shown in Appendix D.

We estimate retention and cost effects for each of the four proposals to change the pay table for midcareer and senior enlisted personnel. The results are shown in Table 4.2. The first row shows the baseline results for Army enlisted personnel without any basic pay table changes. For example, we estimate that in the steady state, an Army enlisted accessing member is expected to provide 4.547 man-years over their career. Per person cost for the enlisted force in the baseline is estimated to be \$74,652 for basic pay and retirement accrual costs. The subsequent rows show the results for each of the four proposals in terms of percentage change relative to the baseline, and the columns also include estimates of the incremental cost associated with the increase in retention—what we call the marginal cost of raising pay under each proposal. To compute the marginal cost, we take the ratio of percentage increase in cost per service member relative to the baseline over the percentage increase in retention (measured as the percentage increase in expected man-years per accession relative to the baseline). The lower the ratio, the lower the marginal cost estimate and the more efficient the proposal is in terms of producing more retention for a given increase in cost per service member. The final two columns show the change in the annual budgetary cost of basic pay and the retirement accrual cost to the Army and to DoD overall in billions of 2023 dollars.

Given that all four proposals increase basic pay, we find that all of them also increase retention, as well as cost. Proposal 1 has the most modest effect on retention given that E-10s would make up a very small share

TABLE 4.2

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Army Enlisted Personnel

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Army Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	4.547	\$74,682			
1. Add E-10 grade	0.2%	0.2%	1.17	\$0.007	\$0.021
2. Add E-10 grade plus targeted E-6 to E-9 raises	5.8%	3.4%	0.59	\$0.069	\$0.153
3. Add E-10 grade plus targeted E-6 to E-7 raises	5.5%	3.2%	0.59	\$0.056	\$0.128
4. Targeted E-6 to E-9 raises, no E-10 addition	5.6%	3.2%	0.57	\$0.062	\$0.133

SOURCE: Authors' calculations using RAND's DRM.

NOTES: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. Assumes 10 percent of E-9s are promoted to E-10. See Appendix D for results if we assume 50 percent of E-9s are promoted to E-10. Tables D.5, D.7, and D.9, present the same analysis for what happens when 10 percent of E-9s are promoted to E-10 for Navy, DAF, and Marines respectively. Tables D.11, D.13, D.15, and D.17 present analogous results for what happens when 50 percent of E-9s are promoted to E-10 for Army, Navy, DAF, and Marines.

of the enlisted force. Man-years per accession are predicted to increase by 0.2 percent, while cost per service member would also increase by 0.2 percent. The increase in the annual budgetary cost to the Army is predicted to be \$7 million, and it would be \$21 million across DoD. Proposal 2 has the largest effect on retention and on cost given that it also includes targeted pay raises for E-6s to E-9s. Retention is estimated to increase by 5.8 percent, while costs per person are expected to increase by 3.4 percent. It also has the largest increase in annual budgetary cost to the Army (\$69 million) and to DoD (\$153 million).

Proposals 3 and 4 are more modest changes than Proposal 2, and the estimated increases in retention and cost are somewhat smaller. The middle column shows estimates of marginal cost and provides information on the relative efficiency of each proposal. Proposals 2–4 are about equally efficient, with estimated marginal costs of 0.57 to 0.59. Proposal 1 is less efficient, with an estimated marginal cost of 1.17, meaning that to produce a given increase in retention, a higher cost must be incurred under this proposal than under the other proposals. On the other hand, under Proposal 1, the increase in retention occurs among the most experienced personnel in the most senior grades of the enlisted force, while under Proposals 2–4 the increase in retention occurs among less experienced personnel since those proposals target pay raises to midgrade service members.

Predicted Effects on Retained Ability

We use the DRM parameter estimates from Asch, Mattock, and Tong (2020) to simulate the performance effects of each proposal relative to the baseline. We do not observe performance, nor do we have data on performance, and collecting such data was beyond the scope of the project given the challenges of measuring personnel productivity in the military. Instead we use the method of calibration (Dawkins, Srinivasan, and Whalley, 2001). The simulations assume that a service member's promotion speed depends on performance—those who perform better are promoted faster—which, in turn, depends on innate ability. We do not observe ability but treat it as a unitless index. We also assume those with higher ability have better external civilian

opportunities, and we assume that ability differs among military entrants, following a normal distribution with a mean and standard deviation (SD) that we assume. The assumed parameters are calibrated or chosen so that we can replicate the observed aggregate retention profile over an enlisted career in each service. We then conducted sensitivity analyses to understand how results differed under alternative assumptions. The details of this methodology are described in Asch, Mattock, and Tong (2020).

Table 4.3 summarizes the results on ability for Army enlisted personnel. To report results, we compute each service member's simulated percentile in the ability distribution (i.e., the 50th percentile would represent the median) and then report the average ability of the force overall in terms of the mean ability percentile. To assess the extent to which each proposal induces the selective retention of higher-ability personnel into higher grades (i.e., ability sorting), also report the average ability percentile among E-5s, E-9s, and, for Proposals 1–3, E-10s.

Let us first consider the baseline results. We find that the current structure of the pay table is highly selective on ability; the average ability of those in the E-9 grade who are under the baseline (59.2) is substantially higher than the average ability of those in E-5 (41.6). Thus, the current structure successfully induces higher-ability personnel to stay and advances them to higher grades while simultaneously weeding out and inducing lower-ability personnel to leave before being promoted.

Adding an E-10 grade without any other targeted increases (e.g., Proposal 1) would not change the overall average ability of the force—it would remain at 46.8, but higher-ability E-9s would be promoted to E-10, resulting in an average E-10 ability of 67.3 but a slightly lower average ability among E-9s of 58.1. Adding targeted pay raises to earlier grades, as in Proposals 2 and 3, would increase the overall ability of the force—to 47.4 under Proposal 2 and to 47.2 under Proposal 3, since higher-ability personnel would have a stronger incentive to stay across the force. These proposals would also improve the average ability of E-5s, as well as E-9s with the increases larger under Proposal 2. Under this proposal, the average ability of E-5s increases from 41.6 to 42.0, and from 59.2 to 61.3 for E-9s, with the increase for E-9s larger than for E-5s, implying strong incentives for ability sorting. Further, E-10 average ability is estimated to be 67.2. Thus, these proposals would further enhance the ability sorting of the current pay table by inducing higher-ability personnel to stay and promoting them to higher grades.

Proposal 4 would target pay raises to E-6 through E-9 without the addition of an E-10 grade. This proposal would also increase retention among higher-ability personnel, since the average ability of the force would increase from 46.8 to 47.4. It would also improve the ability sorting of the current system; the average ability of E-5s would increase by 0.4 percentile (42.0 – 41.6) while the average ability of E-9s would increase by 3 percentiles (62.2 – 59.2).

TABLE 4.3
Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Army Enlisted Personnel

Proposal	Overall Force	E-5	E-9	E-10
Baseline	46.8	41.6	59.2	N/A
1. Add E-10 grade	46.8	41.6	58.1	67.3
2. Add E-10 grade plus targeted E-6 to E-9 raises	47.4	42.0	61.3	67.2
3. Add E-10 grade plus targeted E-6 to E-7 raises	47.2	41.9	61.1	68.6
4. Targeted E-6 to E-9 raises, no E-10 addition	47.4	42.0	62.2	N/A

SOURCE: Authors' calculations using RAND's DRM.

The main finding is that all four proposals would improve retention and ability sorting—inducing higher-ability personnel to stay and be promoted—but would also increase costs.

Addressing Pay Inequity by Linking Enlisted and Officer Basic Pay

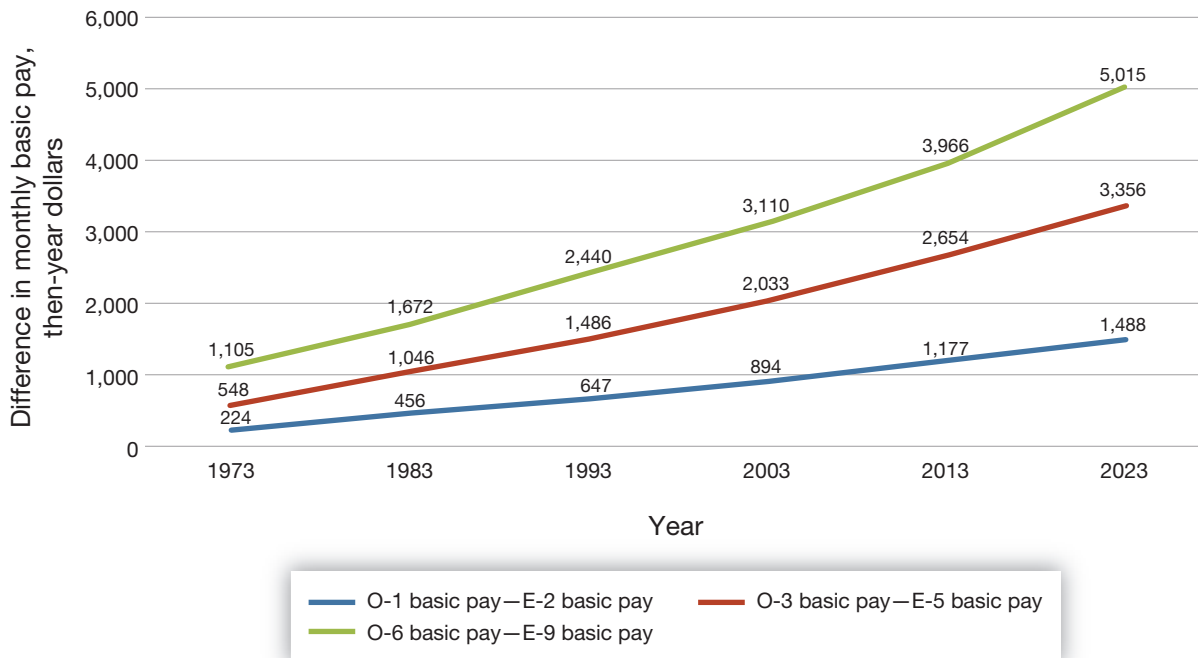
Growing Absolute Differences in Officer and Enlisted Basic Pay

As was discussed earlier in this chapter, some SMEs expressed concern that annual percentage increases in monthly basic pay have resulted in widening absolute dollar differences over time between officer and enlisted basic pay. One suggestion we heard in the SME discussions was to cap the differences between officer and enlisted basic pay.

This suggestion to decrease pay inequity between enlisted and officer pay is based on the concept of fairness, with larger absolute differences feeling increasingly unfair. On the other hand, with an AVF, the military must compete for talent to fill its ranks, and both enlisted pay and officer pay must be set competitively to attract and retain this talent. If enlisted pay is efficiently set, then raising enlisted pay to improve fairness and reduce differences between enlisted and officer pay would raise costs, create additional economic rents, and increase potential supply relative to manning requirements, which in turn might cause oversupply or, alternatively, tighter retention requirements. In other words, greater emphasis on equity comes at the cost of efficiency, as we discuss further below.

The concern raised by some SMEs is illustrated in Figure 4.7, which shows the absolute dollar difference in monthly basic pay in then-year dollars between officers and enlisted personnel, over time, for selected grades. In 1973, the difference between the monthly basic pay of an O-1 and E-2 with fewer than two YOS

FIGURE 4.7
Difference Between Officer and Enlisted Monthly Basic Pay over Time, in Then-Year Dollars



SOURCE: Authors' calculations using 1973–2023 basic pay tables.

NOTE: Chart shows O-1 and E-2 basic pay for those with fewer than two YOS, O-3 and E-5 basic pay for those with over six YOS, and O-6 and E-9 basic pay for those with over 24 YOS.

was \$224. This difference grew to \$1,488 in 2023. Similarly, the difference between the monthly basic pay of an O-6 and E-9 with more than 24 YOS was \$1,105 in 1973, growing to \$5,015 in 2023.

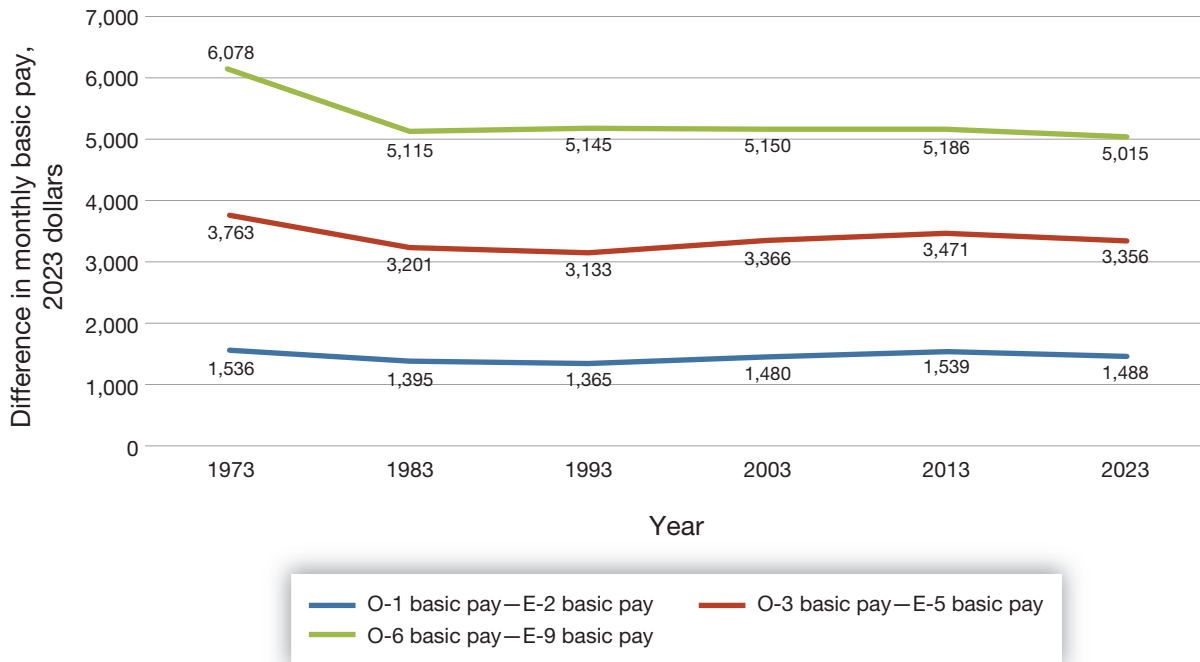
Figure 4.8 shows that these differences disappear when accounting for inflation. The figure shows the same differences as in Figure 5.6 but in 2023 dollars. Thus, the \$224 dollar difference between the monthly basic pay of an O-1 and E-2 in 1973 dollars translated to a difference of \$1,536 in 2023 dollars, greater rather than less than the \$1,488 difference in 2023. We find similar results when we compare O-3 pay with E-5 pay and O-6 pay with E-9 pay. Table 4.4 shows the same information and illustrates the same result but in a different way. The table shows the ratio of officer to enlisted pay at these selected grades. Consistent with Figure 4.8, the ratios decrease or are roughly constant over time, depending on which years are compared.

The implication is that inequality between officer and enlisted monthly basic pay has not increased significantly in real value over the 50 years of the AVF. The broadly constant relationship between real enlisted and officer pay shown in Figure 4.8 and Table 4.4 results from pay increases that have largely been across the board and equally applied to enlisted members and officers, although some years had exceptions by also including targeted pay raises.

Pay inequality within organizations has received renewed attention in recent years not just in the military but also in the civilian world. Some of this renewed interest is a result of the 2015 Dodd-Frank Wall Street Reform and Consumer Protection Act, which requires private-sector companies to disclose the ratio of median employee pay to that of the chief executive officer. This requirement has led to questions, as well as research about how pay disparities within an organization affect employee morale, productivity, and company performance.

Research from the civilian world also suggests that pay disparities do not adversely affect employee output, attendance, and group cohesion unless workers perceive that higher-paid peers are not more productive

FIGURE 4.8
Difference Between Officer and Enlisted Monthly Basic Pay over Time, in Real 2023 Dollars



SOURCE: Authors' calculations using 1973–2023 basic pay tables.

NOTE: The figure shows O-1 and E-2 basic pay for those with fewer than two YOS, O-3 and E-5 basic pay for those with over six YOS, and O-6 and E-9 basic pay for those with over 24 YOS.

TABLE 4.4
Ratio of Officer Basic Pay to Enlisted Basic Pay over Time

	1973	1983	1993	2003	2013	2023
O-1 to E-2 basic pay (fewer than 2 YOS)	1.65	1.71	1.71	1.69	1.69	1.69
O-3 to E-5 basic pay (over 6 YOS)	2.12	2.08	2.08	2.00	1.98	1.98
O-6 to E-9 basic pay (over 24 YOS)	2.39	1.83	1.82	1.69	1.65	1.65

SOURCE: Authors' calculations using 1973–2023 basic pay tables.

NOTE: Research on private-sector firms provides evidence that larger firms pay higher wages especially to their chief executives and have larger pay disparities between employees across hierarchical levels. These studies also find that firms with larger pay disparities also have stronger operating performance, higher valuations, and larger equity returns (Faleye, Reis, and Venkateswaran, 2013; Mueller, Ouimet, and Simintzi, 2017a; Mueller, Ouimet, and Simintzi, 2017b). These results are consistent with the hypothesis that larger firms require more managerial talent at the top to be successful and require higher pay and compensation to attract and retain that talent. An implication of these results is that capping pay differences would hurt firm performance by inhibiting the ability of firms to attract and retain better talent at the higher hierarchical levels.

(Breza, Kaur, and Shamdasani, 2018; Faleye, Reis, and Venkateswaran, 2013). Cullen and Perez-Truglia (2022) find that employees are motivated by well-paid managers but demotivated by well-paid peers in the same unit and same position.

This research has two implications for pay differences between officers and enlisted members. First, capping the differences would likely hurt military organizational performance by hurting the ability of the services to attract and retain higher-quality personnel who will eventually fill upper-ranked managerial positions. Capping differences could result in pay that is too high for some personnel (and excessively costly for the military) and too low for other personnel. Ultimately, military compensation should be set to meet its objectives as outlined in the *Military Compensation Background Papers* (DoD, OUS[P&R], 2018a). Second, to the extent that employees are demotivated by pay differences that they perceive are not explained by differences in productivity and contributions to the organization, DoD should better articulate why officer and enlisted pay tables differ and why officer pay is higher.

Paying People the Same Amount for Similar Job Responsibility

Another concern we heard in some SME discussions is that senior enlisted personnel hold positions of comparable responsibility—as officers, in some cases—yet their pay is lower. Some SMEs recommended that enlisted pay be formally linked to officer pay to reflect similar job content and responsibility.

The policy of equal pay for jobs of similar worth, usually defined in terms of skill, effort, responsibility, and working conditions, is known as comparable worth (O'Neill, Brien, and Cunningham, 1989). Comparable worth gained popularity in the 1970s and 1980s and was viewed by proponents as a means of addressing lower pay in female-dominated occupations, such as teaching, relative to male-dominated fields. The idea behind comparable worth is that job content would be evaluated on a point system that would assign jobs with similar content the same points, and jobs with similar points would be paid the same wage.

The adoption of the policy was limited to the state and local government levels. Both Congress and the executive branch attempted to adopt comparable worth policies at the federal level in the 1970s and 1980s, but federal policy had a major setback in 1985 when the Federal Court of Appeals rejected comparable worth job evaluation as evidence of discrimination in the state of Washington. Comparable worth initiatives were adopted in 14 states, including Idaho, Minnesota, and Washington, and in local jurisdictions such as San Jose, California (Ehrenberg and Smith, 1987; Killingsworth, 2002; O'Neill, Brien, and Cunningham, 1989).

A review of the literature on the effects of comparable worth policies on wages suggest that these policies generally succeeded in increasing wages in female-dominated occupations, though studies differ on the extent of the increase (Ehrenberg, 1989; Ehrenberg and Smith, 1987; Killingsworth, 2002; O'Neill, Brien, and Cunningham, 1989). However, pay differences between female- and male-dominated occupations were not

eliminated by comparable worth policies, leading some proponents to become disenchanted with comparable worth as a means of eliminating gender differences in pay (Killingsworth, 2002). According to Killingsworth (2002, p. S183), some unions also opposed comparable worth policies because of fears that “pay equity increases for some jobs” would result in wage cuts either explicitly or implicitly for others.

Researchers have also investigated whether pay equity increases due to comparable worth induced employers to shift employment away from more costly workers. O’Neill, Brien, and Cunningham (1989) find evidence of employment shifts in the state of Washington. The share of employment in occupations receiving comparable worth pay adjustments was reduced, suggesting that comparable worth resulted in reductions in employment in female-dominated occupations. Ehrenberg and Smith (1987) also estimate the employment effects of comparable worth but find only a small reduction in female employment.

Comparable worth policies have lost favor among proponents. As noted, comparable worth reduces but does not eliminate gender pay differences, and evidence suggests that these policies can reduce employment in female-dominated occupations. Further, research indicates that pay gaps are also attributable to other factors that are not considered in studies of pay gaps that are both measurable (e.g., hours worked), and not measurable (e.g., work flexibility; Levine, 2004; O’Neill, undated). Another challenge with comparable worth policies is implementation of an unbiased and defensible job evaluation process. Job evaluation requires a systematic and defensible means of assigning points to each job attribute and determining the weights assigned to different types of attributes. Developing such a scheme is costly and can be inherently subjective. As O’Neill (undated) states, “Different job evaluation systems and different job evaluators are likely to assign different rankings to the same set of occupations.”

Economists have tended to be highly critical of comparable worth policies because they substitute job evaluation for market conditions in setting pay and they ignore the supply and demand factors that influence pay levels in the market. Ignoring these factors in the pay-setting process can result in shortages of workers in some cases and an oversupply in other cases. As Gunderson notes,

Some jobs may have a high “value-in-use” as measured by the inputs of skill, effort, and responsibility, but they may not warrant a high wage (i.e., “value in exchange” for labor services) if there is a plentiful supply of workers to perform them. (Gunderson, 1989, p. 55)

In the context of addressing differences in enlisted and officer basic pay, adopting a comparable worth policy would move the pay-setting process away from such considerations as retention, recruitment, motivation, and the other principles of military compensation that have guided the setting of military pay for decades. It would de-emphasize career progression considerations that are specific to the enlisted force versus the officer force, such as Defense Officer Personnel Management Act rules for officers and differences in retention patterns between the two forces. Further, it could result in talent management difficulties or inefficiencies because it could result in pay that is too high for some parts of the force and too low for others and could thus induce the services to change the size and experience mix of the enlisted and officer forces in response to these pay differences. Further, it would require an extensive and objective job evaluation process that could be difficult to implement given the challenges of measuring military productivity.

Chapter Summary

While enlisted retention has been strong overall and average RMC among midcareer and senior enlisted members compares well relative to civilian pay, our SME discussions raised concerns about the adequacy of performance incentives in the enlisted pay table (especially for midcareer personnel and E-9s) and about pay inequality relative to officers. The 9th QRMC considered the creation of a new grade, E-10, and we found that

SMEs raised many of the same issues today as were raised in the context of the 9th QRMC, including the lack of performance incentives for E-9s and E-9s supervising other E-9s.

Because of the challenges of measuring military personnel productivity, evaluating whether midcareer and senior enlisted personnel productivity falls short of expectations was beyond the scope of our analysis. Instead we evaluated four proposals to increase performance incentives, three of which would add a new E-10 grade and one that would only provide targeted pay raises to E-6s through E-9s. We measure performance in terms of ability in our modeling and find that adding an E-10 grade is predicted to increase retention and, if coupled with a targeted pay raise for E-6s through E-9s, increase average ability of the force by increasing the retention and promotion incentives of higher-ability personnel. However, personnel costs also increase, though the proposals that include targeted pay raises were the most efficient compared with only adding the E-10 grade without a targeted pay raise.

We find that the absolute differences between officer and enlisted pay have grown over time, but only in nominal terms. In real 2023 dollars, these differences have declined or stayed about the same depending on the grades considered. Further, the percentage differences have declined over time. Our review of the available literature suggests that capping the differences between officer and enlisted pay could result in reduced military performance and readiness, given the evidence from the civilian sector.

Our review of the comparable worth literature indicates that linking enlisted pay to officer pay based on job content and levels of responsibility would require an extensive job evaluation system that has proven difficult to create in the civilian setting. Setting pay based on factors other than supply and demand conditions, career management, and other principles of military compensation could result in an ineffective and inefficient military compensation system that could hurt the readiness of the force.

Commissioned Officer Basic Pay

Similar to our analysis of junior enlisted basic pay in Chapter 3 and midcareer and senior enlisted basic pay in Chapter 4, our project's support to the 14th QRMC also considered potential adjustments to basic pay for commissioned officers. We summarize that analysis in this chapter.

Background

To assess the need for changes to the officer pay table, we first considered how average RMC compares with the earnings of civilians with similar education and age. As shown in Table 2.5, the weighted average of RMC by officers across YOS is at the 76th percentile of civilian earnings for those with between zero and 20 YOS and those between zero and 30 YOS. Thus, average RMC exceeds the 70th percentile benchmark, as shown in Chapter 2. We also considered aggregate continuation rates, by service, provided to RAND by the DMDC. As shown in Figure 2.4, continuation rates at the eighth year of service have hovered at or above 90 percent. Thus, military pay on average for officers compares favorably with civilian pay, and retention is strong overall.

Some SMEs with whom we spoke raised two main issues pertaining to the officer basic pay table: the link between performance and basic pay was too weak, and the need to facilitate high pay for lateral entrants. We focused on these two issues in developing alternative proposals for modifying the officer basic pay table. We describe what we heard on each issue.

Inadequate Performance Incentives Embedded in the Pay Table

As with the issues we heard regarding midcareer and senior enlisted basic pay, some SMEs expressed concern about the link between performance and basic pay being too weak and that the basic pay increases in the pay table overemphasized additional longevity or YOS compared with promotion or better performance. An additional concern was related to the executive pay limits that cap basic pay for very senior officers.

As we discussed in Chapter 4 in the context of midcareer and senior enlisted pay, we did not validate whether concerns about performance incentives for officers are supported by analysis and data given the challenges of measuring productivity in the military. Instead we focused on whether the officer pay table is structured in a way that is consistent with providing performance incentives, as recommended in the literature, and how it might be improved.

The NDAA for FY 2007 extended the pay table for active and reserve component personnel with 30–40 YOS and raised the cap on basic pay for general and flag officers (O-7 to O-10) as of January 2007 from Executive Level III to Executive Level II in the pay table for senior executive federal employees. As shown in Asch et al. (2016), the Executive Level II cap limited the basic pay of O-10 officers with over 24 YOS at the time of implementation in January 2007. In 2024 the Executive Level II cap limits basic pay of both O-9 and O-10 officers, and the cap is likely to further limit O-8 officer basic pay beginning in 2025. The cap on basic

pay means that promotion to these very senior ranks does not result in a basic pay increase for these senior officers.

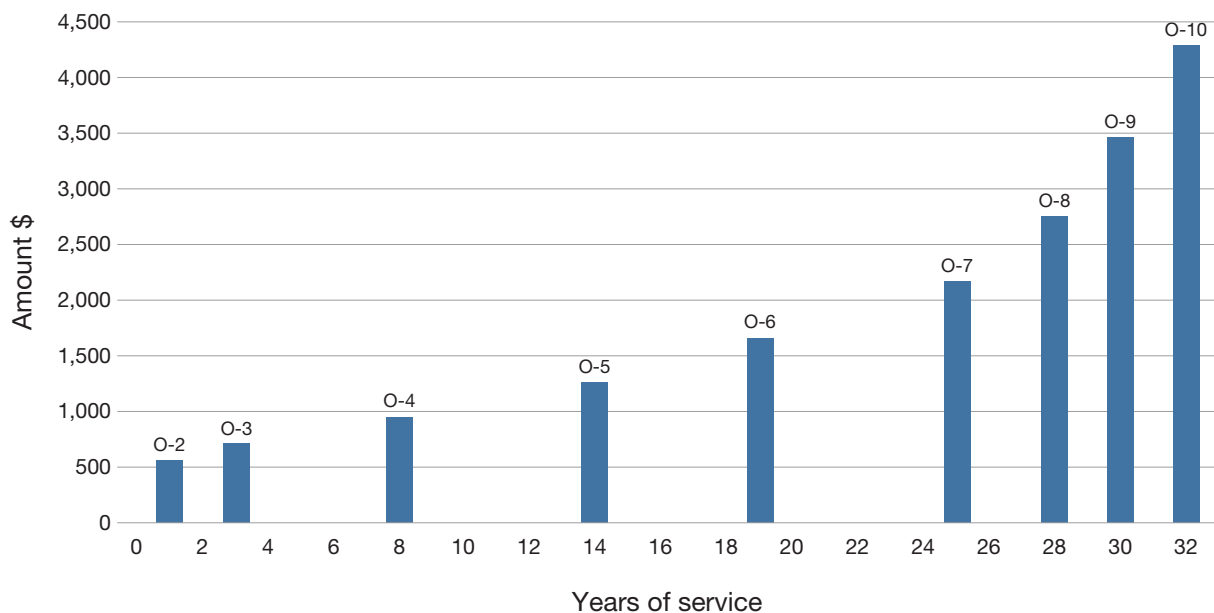
Better Facilitate Lateral Entry

A second issue raised by some SMEs was the need for the basic pay table for officers to better facilitate higher pay for lateral entrants who access the military at a higher grade because they have requisite civilian acquired skills. The 2019 NDAA included reforms to the 1980 Defense Officer Personnel Management Act and specifically authorized the services to grant “constructive credit” for education, as well as for work experience, thereby allowing individuals to enter service at a rank as high as O-6 (colonel or Navy captain). However, these officers would have fewer than two YOS in the basic pay table, resulting in lower basic pay than O-5 and O-6 officers who entered as O-1s and have substantially more than two YOS.

Toward Development of Proposals to Embed Stronger Performance Incentives in the Officer Basic Pay Table

As discussed in detail in Chapter 4 in the context of proposals for midgrade and senior enlisted basic pay, a key insight from the academic literature is that in an organization like the military that promotes from within and is hierarchical in structure, the compensation structure is curved or skewed so that differences in compensation between ranks increase with rank. Figure 5.1 shows this idealized structure for officer compensation focusing on basic pay, just as Figure 4.1 showed it for enlisted personnel. Figure 5.1 shows the increase in monthly basic pay associated with each subsequent officer promotion, assuming the average promotion timing data between 2013–2018. As discussed in the context of Figure 4.1, larger increments in compensation associated with promotion motivate harder work and encourage more talented and better suited

FIGURE 5.1
Hypothetical Example: Increase in Monthly Basic Pay Associated with Commissioned Officer Promotion, by Years of Service

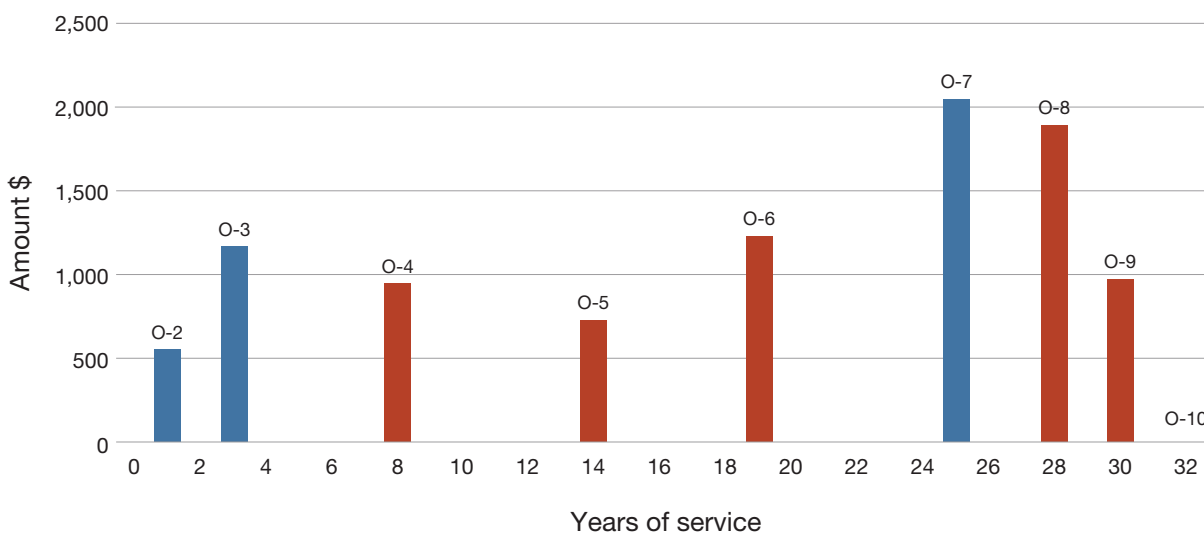


personnel to remain in the organization, thereby sustaining quality of the talent pool from which promotions are made. Further, while Figures 4.1 and 5.1 focus on basic pay, the increase in compensation can occur in other forms of cash compensation, in the form of benefits such as expected retirement benefits, or in the form of nonmonetary benefits. S&I pays are more common among officers than among enlisted members, and the advantage of receiving allowances tax free is larger for officers. Thus, basic pay is generally a relatively smaller share of the compensation package for officers. That said, as the foundational element of the compensation package, it is informative to consider the structure in terms of basic pay.

Figure 5.2 shows how the structure of the commissioned officer basic pay table deviates from the idealized curved structure shown in Figure 5.1. Rather than increasing with higher ranks, the pay increases associated with promotion to O-4 and O-5 *decrease* relative to the previous grade, thereby working counter to a structure that sustains performance incentives across ranks. Specifically, given average DoD enlisted promotion times for 2013–2018, the increase in basic pay for a promotion to O-3 at the third year of service in the 2023 pay table was about \$1,161, but it decreased to \$945 for a promotion to O-4 and further decreased to about \$724 for a promotion to O-5. In addition, the O-6 pay increase is roughly equal to the O-3 increase, rather than larger, and the pay bump associated with promotion to O-8 is less than the bump associated with promotion to O-7. Similarly, the pay increase further decreases with the promotion to O-9, and promotion to O-10 confers no increase in basic pay. The smaller increases associated with promotion for the very senior ranks is driven in large part because of the Executive Level II cap on basic pay. Note that the results regarding the current pay table shown in Figure 5.2 will differ depending on the assumed promotion times. However, using the slower promotion times that prevailed in the early 2000s or the faster promotion times that have prevailed since 2019, we find (in results not shown here) that the current structure continues to deviate from the idealized structure.

The main conclusion is that the basic pay structure for officers does not provide performance incentives for the highest-ranked officers, though other aspects of service, including nonmonetary factors such as expected retirement benefits, could contribute to these incentives.

FIGURE 5.2
Current Officer Pay Table: 2023 Increase in Monthly Basic Pay Associated with Officer Promotion, by Years of Service



NOTE: Tabulations assume average DoD officer promotion times for 2013–2018 based on DMDC tabulations provided to RAND.

Description of the Three Proposals

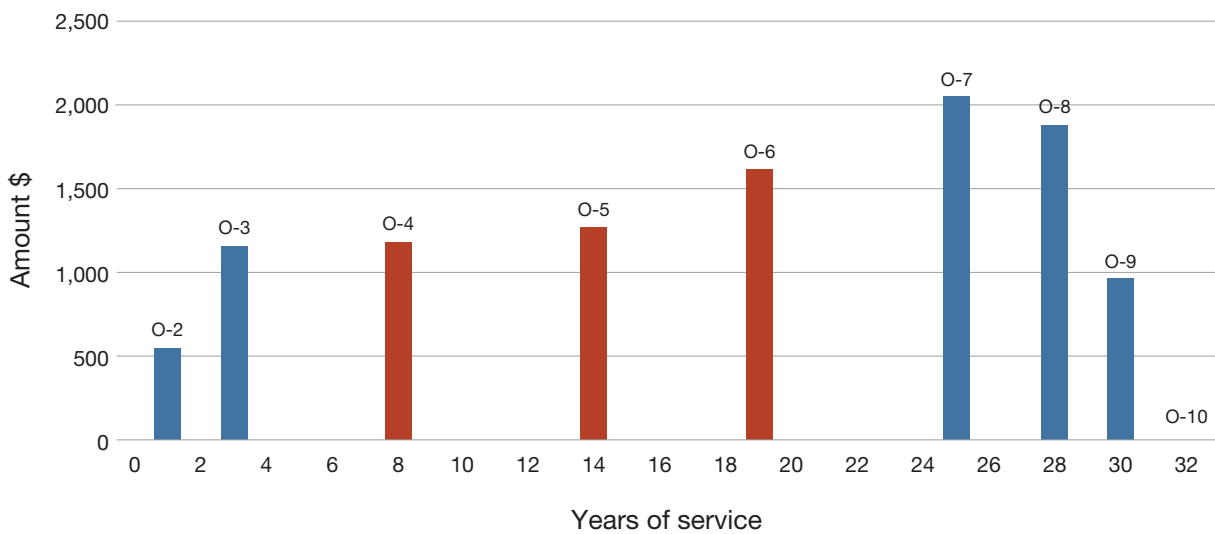
We consider three proposals to restructure the officer pay table to address the issues with the current pay table, summarized in Table 5.1. Proposals 1 and 3 are targeted raises focusing on the O-4 to O-6 pay grades. Proposal 1 would provide a targeted raise between the eighth and 18th YOS for those in grades O-4 through O-6. Proposal 3 would provide a targeted raise for O-5s only. Proposal 2 is the same as Proposal 1, but also replaces the Executive Schedule II (ES-II) cap with the higher Executive Schedule I (ES-I) pay, thereby allowing higher basic pay for O-9s and O-10s. For example, in 2023, ES-II pay was \$212,100, while ES-I pay was \$235,600.

Proposals 1–3 are illustrated in Figures 5.3–5.5, respectively.¹ Proposal 1 would provide targeted pay increases that would result in promotion increases associated with O-4 and O-5 promotion that would be about equal to the O-3 promotion. The proposal would also provide a higher pay increase associated with O-6 promotion. The proposal would move the current structure closer to the idealized structure that sustains performance incentives.

TABLE 5.1
Proposals to Increase Commissioned Officer Basic Pay

Proposal	Motivation	Notes
1. Targeted raises for O-4 to O-6	Ensure that O-4 and O-5 promotions are at least as valuable as previous promotions, and adjust O-6 to provide larger raise than O-3	Focus changes on the 8th through 18th YOS
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	Same as Proposal 1, plus enable higher pay increases for O-9 and O-10	Also raise cap for Joint Chiefs of Staff and combatant commanders
3. Targeted raise for O-5	Target pay raise for O-5, the midgrade, with the lower pay bump	Focus changes on the 14th through 16th YOS

FIGURE 5.3
Proposal 1, Targeted O-4 Through O-6 Raises: 2023 Increase in Monthly Basic Pay Associated with Officer Promotion, by Years of Service

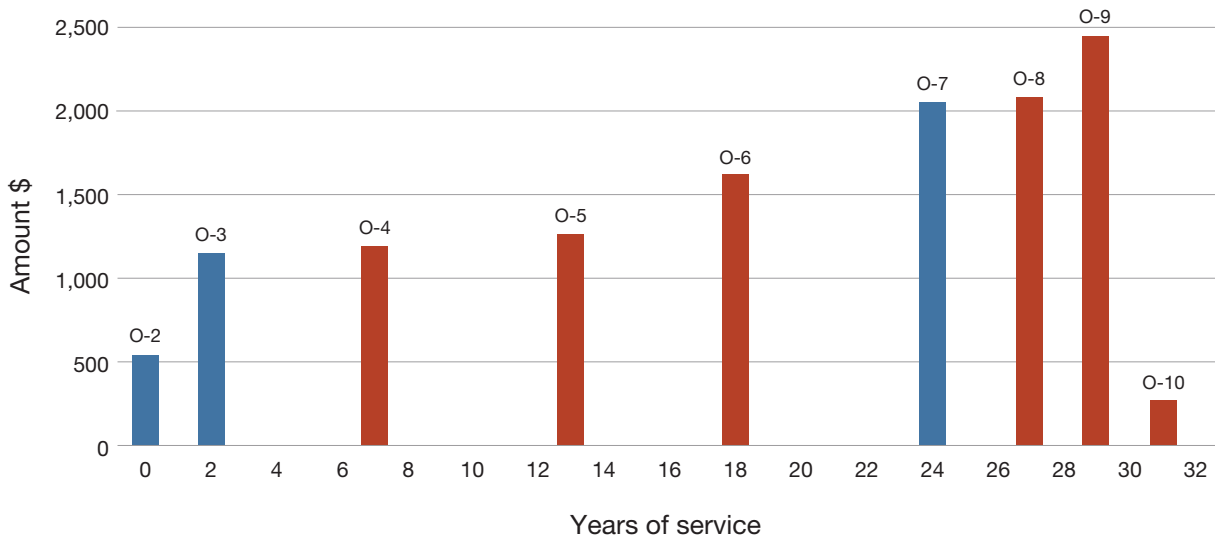


NOTE: Tabulations assume average DoD officer promotion times for 2013–2018 based on DMDC tabulations provided to RAND.

¹ Tables E.2, E.3, and E.4 show the pay tables associated with each proposal.

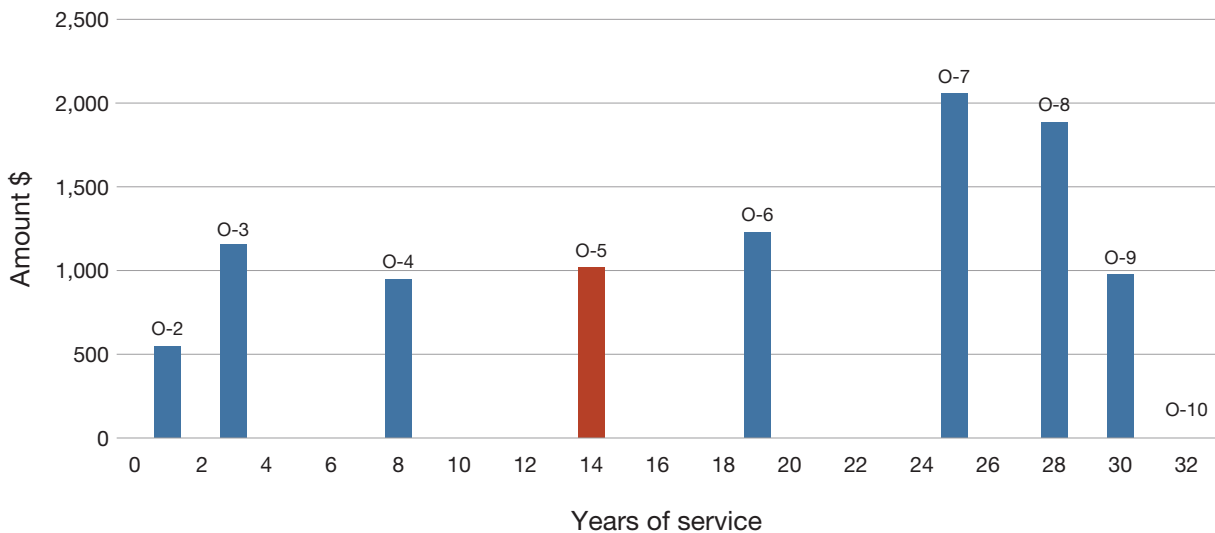
Proposal 2 includes the targeted raises of Proposal 1, and it also increases the cap on basic pay from ES-II to ES-I, as shown in Figure 5.4. Raising the cap would increase the pay bump associated with the O-8 and O-9 promotions so that they are no longer lower than the pay bump associated with the O-7 promotion. Furthermore, the O-10 promotion would now provide a pay increase, unlike under the current pay table, but the raise would still be relatively small despite the higher cap. Proposal 3 gives a targeted raise only to O-5s and does not address the lower pay bump for O-4 promotion or for the O-8 or O-9 promotions, as shown in Figure 5.5.

FIGURE 5.4
Proposal 2, Targeted O-4 Through O-6 Raises and Executive Schedule I Cap: 2023 Increase in Monthly Basic Pay Associated with Officer Promotion, by Years of Service



NOTE: Tabulations assume average DoD officer promotion times for 2013–2018 based on DMDC tabulations provided to RAND.

FIGURE 5.5
Proposal 3, Targeted O-5 Raise: 2023 Increase in Monthly Basic Pay Associated with Officer Promotion, by Years of Service



NOTE: Tabulations assume average DoD officer promotion times for 2013–2018 based on DMDC tabulations provided to RAND.

Assessment of the Proposals

Similar to the analysis of midcareer and senior enlisted basic pay in Chapter 4, we estimate the steady state retention and cost effects of the three proposals in Table 5.1 using RAND's DRM estimates for officers in each service produced for the 13th QRMC (Asch, Mattock, and Tong, 2020). As with the enlisted analysis, we show results for Army officers, though results for the other services are qualitatively similar and are shown in Appendix E.

The results for officers are shown in Table 5.2. We estimate that in the steady state, an Army officer's accession is expected to provide 10.9 man-years over that officer's career under the baseline current FY 2023 pay table. Per person cost for the officer force in the baseline is estimated to be \$152,468 for basic pay and retirement accrual costs. The subsequent rows show the results for each of the three proposals in terms of percentage change relative to the baseline, and the columns also include estimates of our measure of marginal cost of raising pay under each proposal. As in previous chapters, to compute the marginal cost, we take the ratio of percentage increase in cost per service member relative to the baseline over the percentage increase in retention (measured as the percentage increase in expected man-years per accession relative to the baseline). The lower the ratio, the lower the marginal cost estimate and the more efficient the proposal is in terms of producing more retention for a given increase in cost per service member. The final two columns show the change in the annual budgetary cost of basic pay and the retirement accrual cost to the Army and to DoD overall in billions of 2023 dollars.

We find that all three proposals increase retention, as well as cost. Proposal 3 has the most modest effect given that it only provides a targeted raise for O-5s. Man-years per accession are predicted to increase by 0.4 percent, while cost per service member increases by 0.3 percent. The increase in the annual budgetary cost to the Army is predicted to be \$5 million; it is \$27 million across DoD. Proposal 2 has the largest effects on retention and on cost given that it includes targeted pay raises for O-4s to O-6s and also raises the Executive Schedule cap from Level II to Level I. Retention is estimated to increase by 0.7 percent, while costs per person are expected to increase by 0.5 percent. It also has the largest increase in annual budgetary cost to the Army (\$10 million) and to DoD (\$45 million). The middle column provides information on the relative efficiency of each proposal. All three proposals are about equally efficient, with our measure of marginal cost ranging from .77 to .81.

TABLE 5.2
Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Three Proposals, Army Officers

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Army Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	10.9	\$152,468			
1. Targeted raises for O-4 to O-6	0.6%	0.5%	0.77	\$0.008	\$0.039
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	0.7%	0.5%	0.78	\$0.010	\$0.045
3. Targeted raise for O-5	0.4%	0.3%	0.81	\$0.005	\$0.027

SOURCE: Authors' calculations using RAND's DRM.

NOTES: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. Tables E.5, E.7, and E.9 show similar results for the Navy, DAF, and Marines respectively.

Predicted Effects on Retained Ability

We use the DRM parameter estimates from Asch, Mattock, and Tong (2020) to simulate the performance effects of each proposal relative to the baseline. As with the analysis of midcareer and senior enlisted basic pay proposals, we use the method of calibration, since we do not have data on performance. The simulations assume that a service member's promotion speed depends on performance—those who perform better are promoted faster—which, in turn, depends on innate ability. We do not observe ability but treat it as a unitless index. We also assume that those with higher ability have better external civilian opportunities, and we assume that ability differs among military entrants, following a normal distribution with a mean and SD that we assume. The assumed parameters are calibrated or chosen so that we can replicate the observed aggregate retention profile over an officer's career in each service. The details of this methodology are described in Asch, Mattock, and Tong (2020).

Table 5.3 summarizes the results. Under the baseline, we find that the average ability of those in very senior officer grades, O-7 to O-10, is higher than average ability in field grades of O-4 to O-6, 54.5 compared with 39.5, showing that the current system is selective on ability. That is, the current system provides higher-ability officers the incentive to stay and seek advancement while simultaneously weeding out and inducing lower-ability personnel to leave before being promoted. Targeting pay raises to the field grades O-4 to O-6 in Proposals 1–3 increase average ability in these grades, thereby increasing the pool of talent from which senior grade officers are selected and increasing average ability in these grades with the degree varying across proposals. Proposals 1 and 2 increase field grade average ability by an 0.5 percentile in grades O-4 to O-6 relative to the baseline, from 39.5 to 39.9 (a 1-percent change). Proposal 2 increases senior grade average ability by more than Proposal 1 because unlike Proposal 1, Proposal 2 raises pay of O-9s and O-10s by lifting the cap from the ES-II level to the ES-I level. Under Proposal 2, average senior grade ability increases to 55.1. The results for Proposal 3 shows that even a more narrowly targeted raise on O-5 only also increases average ability in the field grades and senior grades, albeit by a relatively smaller amount.

The difference between the mean percentiles of the simulated populations is small but statistically significant. The statistical significance is due to the number of simulated observations (1 million initial accessions followed through, up to 40 YOS). The 0.4 percentile point change from the baseline of 39.5 for the mean ability percentile to 39.9 for field grade officers under Proposals 1 and 2 corresponds to a change of 0.011 SD units. The size of the effect in the simulation (i.e., the change in time to promotion) varies with the change in percentile points and the grade being considered. In this case the 0.011 SD unit change corresponds to an increase in promotion speed to O-4, O-5, and O-6 of from four to 12 days on average—a small effect. However, the simulated effect is larger for the more senior grades, as it varies with the change in percentile points and the grade being considered. For example, a difference of 0.6 percentile points (as we observe for O-7 to O-10 between the baseline scenario and Proposal 2) would correspond to a change of about 0.016 SD units, which translates into the more able service member population being promoted to the senior grades about three weeks faster on average.

TABLE 5.3
Average Ability Percentile by Grade, and Across the Overall Force, Under Three Proposals, Army Officers

Proposal	Overall Force	Field Grade (O-4 to O-6)	Senior Grade (O-7 to O-10)
Baseline	42.5	39.5	54.5
1. Targeted raises for O-4 to O-6	42.7	39.9	54.9
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	42.7	39.9	55.1
3. Targeted raise for O-5	42.6	39.7	54.7

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Tables E.6, E.8, and E.10 give similar results for the Navy, DAF, and Marines respectively.

We can also consider efficiency in terms of ability instead of retention. That is, we can construct an efficiency measure as the ratio of the percentage change in cost to the percentage change in the mean ability percentile for the overall force. For the purpose of illustration, we consider Proposal 2 in Table 5.2, where the change in cost is 0.5 percent. The change in percentile points is 0.47 percent ($= (0.427 \div 0.425) - 1$), and the ratio of the two is 1.06 ($= 0.5 \div 0.47$). Similarly, for Proposal 1 the measure is $0.5 \div 0.47 = 1.06$, and for Proposal 3 the measure is $0.3 \div 0.24 = 1.25$. As in the earlier assessment examining retention, Proposals 1 and 2 are the most efficient among the three proposals.

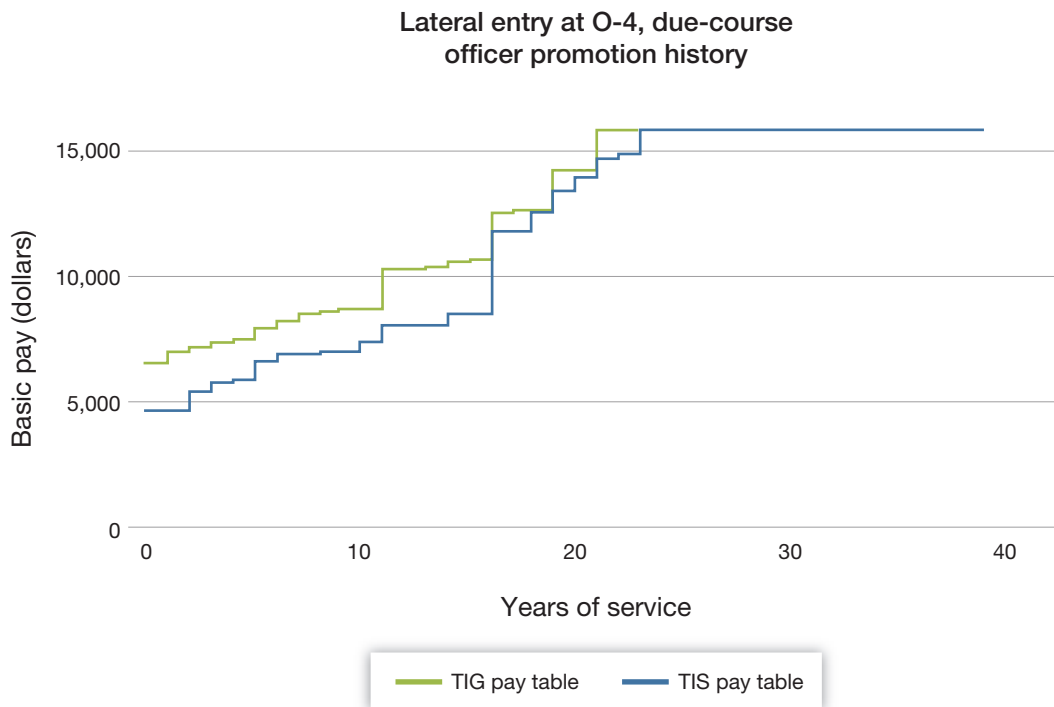
The main finding is that the three proposals would improve retention and ability sorting—inducing higher-ability personnel to stay and be promoted—but would also increase costs; these results are qualitatively similar to our results for midgrade and senior enlisted personnel.

Lateral Entry

As discussed earlier in the chapter, some SMEs expressed concern that the current officer pay table does not accommodate lateral entry because lateral entrants begin with zero YOS in the pay table, earning less basic pay than their peers in the same grade who entered as O-1s. Previous studies, including analyses for the Tenth Quadrennial Review of Military Compensation (10th QRMC) and the 2006 Defense Advisory Committee on Military Compensation, have argued that a time-in-grade pay table would better facilitate lateral entry because lateral entrants would start at higher basic pay.

This finding was verified in Asch et al. (2020), which simulated basic pay over a career for an officer entering the military as an O-4 under the current time-in-service pay table versus an alternative time-in-grade pay table. The finding is replicated in Figure 5.6, which is based on the 2018 basic pay table. The figure shows that,

FIGURE 5.6
Basic Pay with Lateral Entry as an O-4 (in Thousands of Dollars)



SOURCE: Reproduction of Figure 2.10 in Asch et al., 2020.

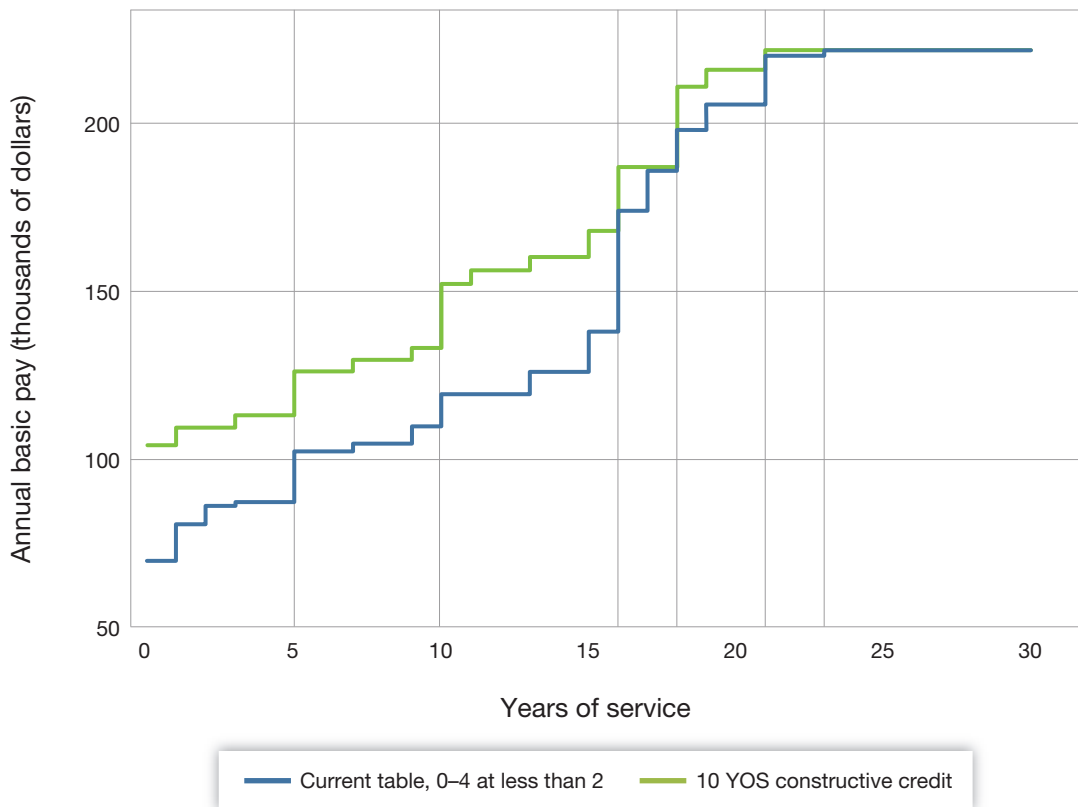
under a current time-in-service pay table, an O-4 entrant would have a starting monthly basic pay of around \$5,000, compared with \$6,600 under the time-in-grade pay table proposed in Asch et al. (2020).

The 10th QRMC did not support the adoption of a time-in-grade table, but to better accommodate higher pay for lateral entrants, it recommended that the current pay table be adjusted by a policy of “constructive credit” whereby the services could credit service members with extra YOS—that is, confer constructive credit—for the purposes of computing basic pay. Constructive credit already exists under DoD policy, but DoD also allows constructive credit in terms of allowing lateral entrants to enter at higher grades, not YOS. Under the 10th QRMC approach, lateral entrants would receive constructive credit for both grade and YOS.

Figure 5.7 replicates simulated basic pay over an officer’s career for a lateral entrant under the current time-in-service pay table but under a policy of constructive credit for YOS from Asch et al. (2020, Figure 2.11). The simulation assumes that the O-4 lateral entrant would receive a credit for nine YOS, thereby enabling the O-4 to enter as an O-4 with nine YOS. The figure shows that such a policy would make pay over a career under the current time-in-service pay table virtually identical to pay under a time-in-grade pay table. The implication is that a policy of constructive credit for YOS could enable the services to increase the pay of lateral entrants, thereby making lateral entry into the military more attractive as an option for civilians with skills acquired in the external market.

The results in Figure 5.7 show the effects on pay over a career but do not consider two issues relevant for implementation of the policy. First, lateral entrants who are accorded nine YOS are not necessarily equivalent in taste or ability to service members who have accumulated nine YOS after accessing with zero YOS, as they have not been subject to the same incentives for performance and ability sorting as service members

FIGURE 5.7
Lateral Entry with Constructive Credit for Both Grade and Years of Service



SOURCE: Reproduction of Figure 2.11 in Asch et al., 2020.

who have accumulated nine YOS over time. The services would need to exercise due care in accessing lateral entrants to ensure that their tastes (that is, their personal preferences for active duty military service versus a civilian career) and abilities will be comparable with those of their new peers. Second, the services would need to consider how lateral entrants who receive constructive credit for YOS would be considered for promotion. Lateral entrants might be passed over for promotion due to limited military experience if they are competing with service members who are paid at the same rate but entered the military at zero YOS.

Chapter Summary

While officer retention has been historically strong in recent years, and average RMC among officers compares well relative to civilian pay, our SME discussions raised concerns about the adequacy of performance incentives in the officer pay table especially for midcareer officers and very senior officers. We did not validate whether these concerns are supported by analysis and evidence given the inherent difficulties measuring officer performance. The SMEs also raised concerns about the lower pay for lateral entrants relative to officers in the same grade who entered as O-1s.

We evaluated three proposals to increase performance incentives that target pay raises to midcareer officer grades. One proposal also raises pay for very senior officers by lifting the basic pay cap to the ES-I level. We find that the proposals would increase performance incentives, measured in terms of ability, in the mid-career and senior officer grades, as well as improve retention, with a modest increase in cost. We also find that those proposals that would more broadly target pay raises (Proposals 1 and 2) were more efficient in raising the mean ability of the force as a whole.

We showed that a time-in-grade pay table could increase the attractiveness of lateral entry by raising entry pay for lateral entrants relative to their pay under the current time-in-service pay table. However, we also showed that if the definition of constructive credit were expanded to include YOS, it would enable the services to increase the attractiveness of lateral entry under the current time-in-service pay table and virtually replicate the advantages of a time-in-grade table for lateral entrants.

Setting the Annual Adjustment to Basic Pay

The annual process of adjusting basic pay has important implications for the health of the AVF. There are at least three key goals for the annual basic pay adjustment. First, these adjustments should prevent military pay from falling behind potential earnings opportunities in the civilian labor market, since this could affect both accession and retention into the military and, thus, operational readiness from a manpower perspective (DoD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992b).¹ Second, these adjustments must not allow pay to grow so fast that compensation costs reduce the flexibility of the military to invest in critical equipment, technology, and other resources that also contribute critically to operational readiness. Finally, since military spending accounts for nearly half of discretionary outlays by the U.S. government (Congressional Budget Office [CBO], 2023a), managing compensation for military personnel has significant implications for the efficient use of taxpayer funds and for the broader fiscal health of the nation.

For the last two decades the ECI has been used to provide formal guidance for the annual adjustment of basic pay, but its connection to the pay adjustment process goes back decades earlier. In 1982 a joint services study was conducted to identify the best candidate measure to use in adjusting basic pay (DoD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992b). The ECI—a nationally representative measure of the changes in employer costs of civilian labor computed quarterly by the BLS—was chosen as the best candidate based on the following criteria outlined in the study:

- The ECI covers civilian jobs comparable to around 70 percent of military occupations.
- The ECI was a readily available index for informing the budget process.
- The ECI accurately reflects civilian wage growth.

Despite this finding, the linkage between civilian federal pay and military pay was a barrier to adopting the ECI formally to adjust military pay. The concern was that the guidance provided by the ECI might lead to a divergence between these two pay scales. This concern was alleviated when the ECI was formally adopted as the guide for civilian federal employee pay adjustment in the Federal Employees Pay Comparability Act of 1990. In 1992 the 7th QRMC recommended the use of the ECI in guiding the annual pay adjustment (DoD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992b), but it was not until 2003 that the ECI was formally adopted as the source of guidance for the annual

¹ The 7th QRMC report characterized the needs of an index to adjust military pay to maintain competitiveness with civilian earnings opportunities as follows:

To manage the annual military pay raise, DoD needs a measure of changes in civilian wages that indicates how much military pay should be adjusted to maintain parity. Ideally, the chosen indicator (index) will have two characteristics:

- It will match as closely as possible the alternative career paths open to individuals choosing, or who have chosen, a military career.
- It will accurately measure, year by year, the general trend in pay accruing to those alternative civilian career choices (DOD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992b, p. 4-1).

adjustment of military pay.² The 7th QRMC also considered alternative sources of guidance for adjusting pay, including the DECI, a measure developed by researchers at RAND in the early 1990s.³

This research highlighted large differences in age and education levels between the overall civilian labor force used in creating the ECI and the active duty military force. Specifically, military personnel are, on average, younger, more likely to be male, and have fewer years of education than the overall civilian labor force.⁴ The RAND research showed that these differences had important implications for the appropriate level of pay for military personnel and suggested that a substantially lower level of pay increases over the 1980s would have sufficed to keep military pay comparable with civilian labor market opportunities for those serving or considering service in the military. These findings were particularly notable in light of a paradox noted by military planners over that decade: the ECI suggested that military pay had fallen far behind civilian earnings opportunities, but recruiting and retention outcomes over this period were good (Hosek et al., 1992). Ultimately, the 7th QRMC did not recommend the formal adoption of the DECI but recognized the advantages of such an index and recommended that DoD continue to support the development of research on the DECI.

As part of the 13th QRMC, DoD requested further research on the DECI. This research, outlined in Asch et al. (2020), updated the 1990s analysis through 2019 and found further evidence of substantial divergence between the pay adjustment guidance provided by the ECI and the guidance that would have been provided by the DECI over the roughly 25 years since the original work on the DECI. This research found that the DECI and ECI diverged most substantially between roughly 2000 and 2012, with the DECI guidance suggesting much smaller pay increases over this time. Notably, this is the same period when the weighted average enlisted RMC by education and YOS departed sharply from the 70th percentile benchmark, rising from approximately the 70th percentile to the 90th percentile. Over the same period, officer RMC increased from roughly the 66th percentile to the 82nd percentile (Asch et al., 2020).⁵

The recent, rapid uptick in inflation driven by food costs, housing costs, and costs of durable goods (Benion et al., 2022), as well as recent reports of reported food insecurity among service members (Asch et al., 2023), have all contributed to a renewed interest in whether the ECI continues to be the best source of guidance for making these adjustments in a timely and accurate fashion. To this end, Sec 643 of H.R. 7900 of the FY 2023 NDAA directed DoD to enter into an agreement with a federally funded research and development center to determine whether DoD should continue to use the ECI to adjust basic pay or should instead consider alternative measures, including the DECI (NDAA, 2022). This requirement was incorporated into the work of the 14th QRMC.

In this chapter we address this request by generating new evidence on the adequacy of the ECI in the tumultuous years since the emergence of the COVID-19 pandemic. We also compare the guidance provided by the ECI to counterfactual guidance from alternative candidates, and specifically the DECI, the Consumer Price Index (CPI), and a forecast of the ECI, that could potentially address the time lag introduced by the lengthy legislative process of setting the annual basic pay adjustment. The DECI was specifically named in the 2023 NDAA as an alternative of interest, while the CPI measures inflation and is used as guidance for

² Notably, the 7th QRMC also recommended important changes in the structure and calculation of allowances and took the view that the ECI should be used to adjust basic pay so that RMC increased by the amount of the change in the ECI net of adjustments to allowances. At present, the ECI is used to guide basic pay adjustments without respect to changes in total RMC related to housing and other allowances.

³ The DECI was introduced in Hosek et al., 1992. Hosek, Peterson, and Heilbrunn, 1994, used additional years of data to extend the pay gap analysis between the DECI and ECI in Hosek et al., 1992.

⁴ Figures F.1–F.3 in Appendix F show how the age composition, educational attainment, and the sex distribution of active duty members differs from that of the civilian labor force over time.

⁵ These percentiles are based on comparisons that use the ADMF for the education weights. Using the SOFS-A data for weights results in slightly lower percentile estimates. See Asch et al., 2020, Figures 3.1–3.4.

major policy decisions including benefit levels in the federal Social Security program. The third alternative is a forecast of the ECI produced by the CBO. We also consider an alternative that involves using an ECI that is computed closer to the time of the military pay raise to reduce the time lag but using an older ECI or an ECI forecast for the purposes of the annual budget process.

To make progress on comparing different measures that could be used to adjust military pay, we developed a common set of criteria that could be applied to each measure considered, drawing from a review of past literature on adjusting military pay—including the report of the 7th QRMC and past RAND research conducted for the 13th QRMC. We use the following set of four criteria to guide our assessment of the relative merit of candidate indexes for adjusting military basic pay:

1. **Accuracy:** Does the index reflect the civilian earnings opportunities of military personnel?
2. **Timeliness:** Does the index reflect the change in civilian earnings between the time the basic pay raise occurs and the same time in the prior year?
3. **Cost-effectiveness:** Is the index an existing measure, or must it be calculated for DoD at an additional cost? And if so, how costly would this process be?
4. **Credibility:** Can the index be produced by a reputable organization? Can it be independently verified, and does it use rigorous methods and underlying data?

In the remainder of the chapter we evaluate the alternatives against these criteria.⁶

The Employment Cost Index

The ECI is a quarterly measure of the change in hourly labor costs to employers over time that has been produced by the BLS since 1975. The ECI uses data on a fixed “basket” of jobs across a variety of occupations and industries to produce a measure of changes in the employer cost of labor that does not reflect the effect of workers moving between jobs (a key source of earning growth for workers) and that includes the employer cost of wages and salaries, as well as the cost of benefits.

The underlying data for the ECI come from the National Compensation Survey, a large-scale survey of compensation costs among businesses and governmental entities conducted by the BLS. The sample of jobs in the ECI is a subset of jobs in this survey, and this sample is held fixed for up to five years to measure the average of a collection of earnings changes within a given job over time. The ECI is a Laspeyres Index, which means that it calculates the average change in labor costs across multiple years using a fixed set of weights—one for each occupation-by-industry grouping—that reflect the share of each of these groupings in the overall economy at a specific baseline period. These shares are held fixed over time; as we discuss below, the BLS updates the ECI employment weights—the mix of jobs used to form the index—approximately once per decade.

⁶ We note that the role that annual pay adjustment plays is different from what was intended by the 7th QRMC. The 7th QRMC recommended substantial changes in the structure and calculation of allowances and suggested that the ECI’s future role should be to guide annual adjustments to basic pay under this new allowance structure so that overall RMC increased by the amount of the change in the ECI net of annual adjustments to allowances. In other words, the recommendation was that the ECI be used to adjust annual pay as a residual component of RMC to ensure that overall pay including the housing and subsistence allowance, as well as the related tax advantage of these pays, was growing at the rate indicated by the ECI. At present, the ECI is used to guide basic pay adjustments without respect to changes in total RMC related to housing and other allowances. Basic pay, on average, makes up around 60 percent of RMC (and even less for an E-5, for example), so these other components of the total income of a service member are substantial (Congressional Research Service, 2023a and 2023b) and RMC does not include all elements of military compensation. Our assessment of the ECI in this chapter does not consider the broader issue of the appropriate pay adjustment for residual component of RMC.

Formally, the index of changes in earnings, e , in year t , relative to baseline year $t = 0$, where fixed earnings weights, w , is defined as follows:

$$ECI_t = \left[\frac{\sum_i w_{i0} e_{it}}{\sum_i w_{i0} e_{i0}} \right] \times 100.$$

The numerator is the product of the average earnings in the i th occupation-by-industry grouping in period t and the weight assigned to it in the baseline period t_0 , summed over all occupation-by-industry groupings. The denominator is computed in a similar way but uses both the weights and the earnings from the baseline period. This ratio is multiplied by 100 to give it a percentage interpretation. Note that only one element, the earnings measure in the numerator, changes over time. The occupation-by-industry weights are held fixed until they are updated (approximately once per decade) to reflect the accrued changes to the composition of employment in the economy. The ECI currently uses weights calculated in 2021 (BLS, 2023).

The BLS produces several specific ECIs that include various subpopulations of the overall labor market (for example, civilian versus government workers) and various components of compensation (for example, total compensation versus only wages and salaries or only benefits). The actual ECI measure used to guide the military pay raise is the measure of the average change in wages and salaries for all private industry workers in Q3 of the year (in other words, the change from July through September of a given year t and July through September of year $t - 1$).

Assessing the ECI Using Our Four Criteria

Accuracy

Due to the nature of its underlying data and by construction, the ECI has a strong claim to be representative of the average change in wage and salary earnings paid in the civilian labor market. Thus, it is highly accurate *if* (to use the language of the 7th QRMC) “the alternative career paths open to individuals choosing, or who have chosen, a military career” (DOD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992b, p. 4-1) are equivalent to the mix of occupations in the entire labor market of private industry occupations (this is the specific ECI index used in setting the annual basic pay adjustment). But multiple aspects of the ECI may limit its accuracy as a guide to the appropriate change in level of military compensation.

Perhaps most important, the ECI measures wage and salary earnings for a population (the civilian labor force) that differs in important respects from the active duty force. Specifically, military service members are, on average, younger, more likely to be male, and they have lower levels of formal educational attainment (we explore these differences in more detail below in our discussion of the DECI). These characteristics have been linked to differences in employment, occupation, and earnings (Cortes and Pan, 2018; Montenegro et al., 2022; von Wachter, 2020).

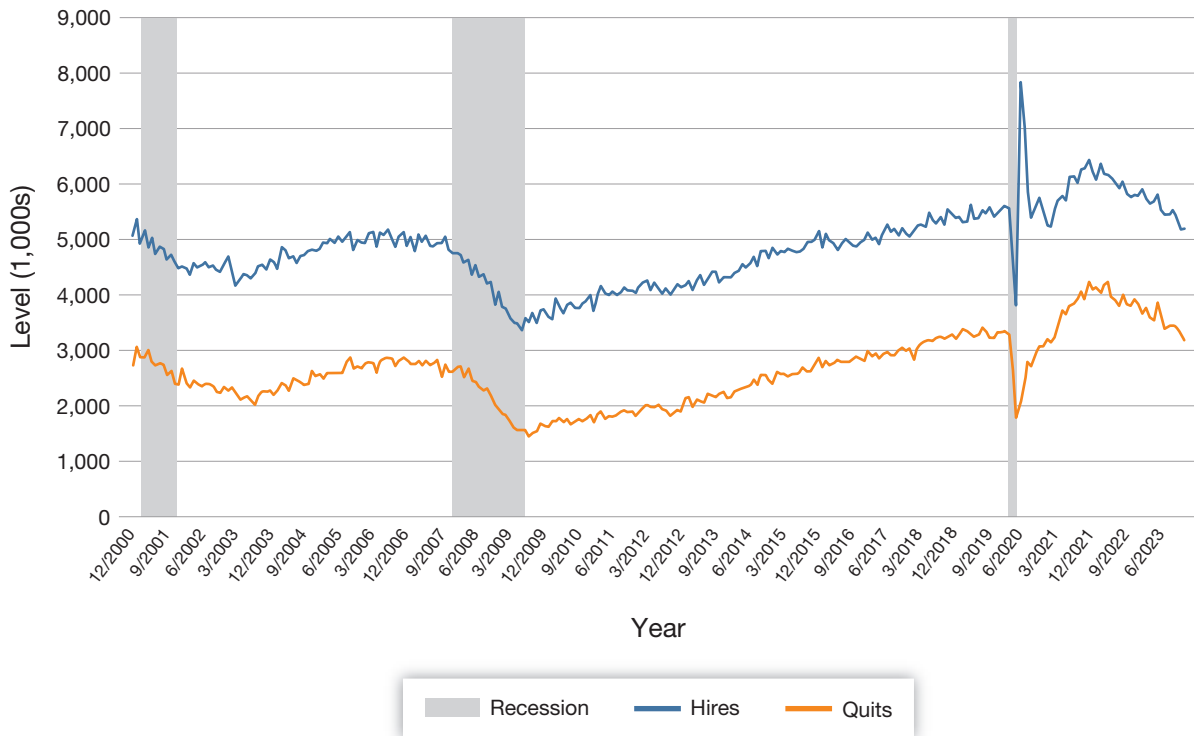
The accuracy of the ECI in measuring the civilian earnings opportunities of service members or potential service members is also conceptually limited by the fact that it measures earnings from an employer cost perspective (rather than from an employee earnings perspective). The ECI tracks the wages paid for a given job, regardless of which worker occupies that job. Furthermore, if a job is eliminated by one employer in the ECI data sample, another similar job is used to replace it. It may also overrepresent certain jobs and underrepresent others, as the mix of jobs is only updated roughly once per decade (BLS, 2023; Ruser, 2001). The result of these design choices is an index that, in the words of the BLS, “measures the change in the cost of labor, free from the influence of employment shifts among occupations and industries” (BLS, 2024a, p. 3).

Additionally, the earnings of workers are often substantially influenced by job changes (Hahn et al., 2017; Kochhar, Parker, and Igielnik, 2022; Tanaka, Warren, and Wiczer, 2023). During times of economic growth, both hires and quits tend to rise as workers move to jobs with greater earnings. Conversely, during recessionary periods workers tend to stay in jobs, as the uncertainty of finding other jobs rises. During such times, employer layoffs that target lower-skilled or less experienced workers during a recession—so-called upskilling (Modestino, Shoag, and Ballance, 2020)—can lead observed wages in an occupation to rise in such periods. Figure 6.1 shows the patterns of hires and quits across the three most recent recessions in the United States. This pattern is clearly visible over time—most dramatically during the brief but profound recession associated with the COVID-19 pandemic.

While the ECI is intended to provide guidance and, in many years, the annual basic pay raise is set equal to the change in the ECI, there have been years since 2000 where policymakers opted to provide pay increases that exceeded the change in the ECI, such as the period 2000–2010, and years where they opted to provide a lower pay increase, such as the period 2014–2016. Notably, the basic pay changes that occurred during these periods, such as during 2000–2003 and 2014–2016, more closely resembled the guidance provided by the DECI, which we consider below.

For these reasons, the ECI may not accurately represent the earnings associated with alternative private-sector options for currently serving military personnel. Below we provide further evidence and discussion on the differences between the DECI and the ECI, an index specifically tailored to the average demographics of active duty military personnel that is constructed using data that reflect employee earnings rather than employer costs.

FIGURE 6.1
Changes in Hires and Quits Across Recessions



SOURCE: Adapted from Federal Reserve Bank of St. Louis (undated f, undated g), using BLS data.
NOTE: Data reflect private hires and quits, BLS data series JTS1000HIL and JTS1000QUL.

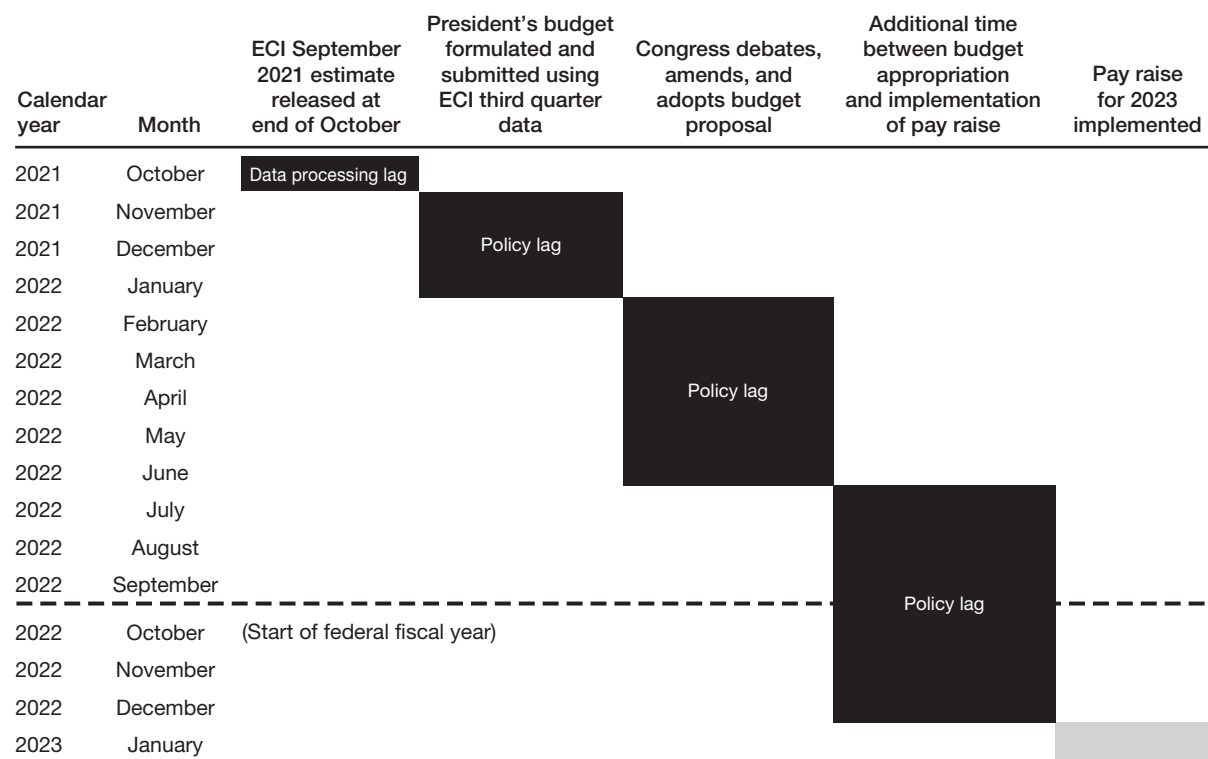
Timeliness

The ECI index is typically released around four weeks after the end of data collection. Thus, the ECI is very timely in terms of any delay after the process of producing the measure itself. However, any candidate measure for adjusting pay faces a second distinct hurdle related to timeliness: the time required by the policy-setting process for the basic pay adjustment.

Figure 6.2 provides an example of the typical policy timeline for setting the annual basic pay adjustment, focusing for simplicity on a hypothetical version of the process for the 2023 pay raise. Collection of the data that inform the pay raise—the ECI measure of the annualized change in wages and salaries for all private-sector workers for Q3 of the year—concludes at the end of September, and the data point summarizing the annualized change in earnings using those data is generally released by the end of October. The President’s budget must be submitted to Congress by the beginning of February, and the congressional budget process traditionally runs through June (Aherne, 2023). The final budget resulting from this process is for the fiscal year that begins in October, but the pay raise occurs three months later, at the start of the calendar year. Adding up all this time (in Figure 6.2, the black shaded areas representing the total delay between the end of relevant data collection and the implementation of the related pay raise), the total time lag associated with setting the annual basic pay adjustment is approximately 15 months.

Only one month of this delay is related to producing a measure of earnings changes after data collection is complete. The time required by the current policy-setting process is, far and away, the most important factor in terms of the delay between the data used to guide the basic pay adjustment and its implementation. Notably, 20 percent of this 15-month delay—the three-month period between the beginning of the fiscal year in October and the implementation of the basic pay adjustment in January—is, to the best of our knowledge,

FIGURE 6.2
Example of 15-Month Timeline for Setting Annual Basic Pay Adjustment



SOURCE: Author calculations using data from Aherne, 2023.

NOTE: See Tables E.6, E.8, and E.10.

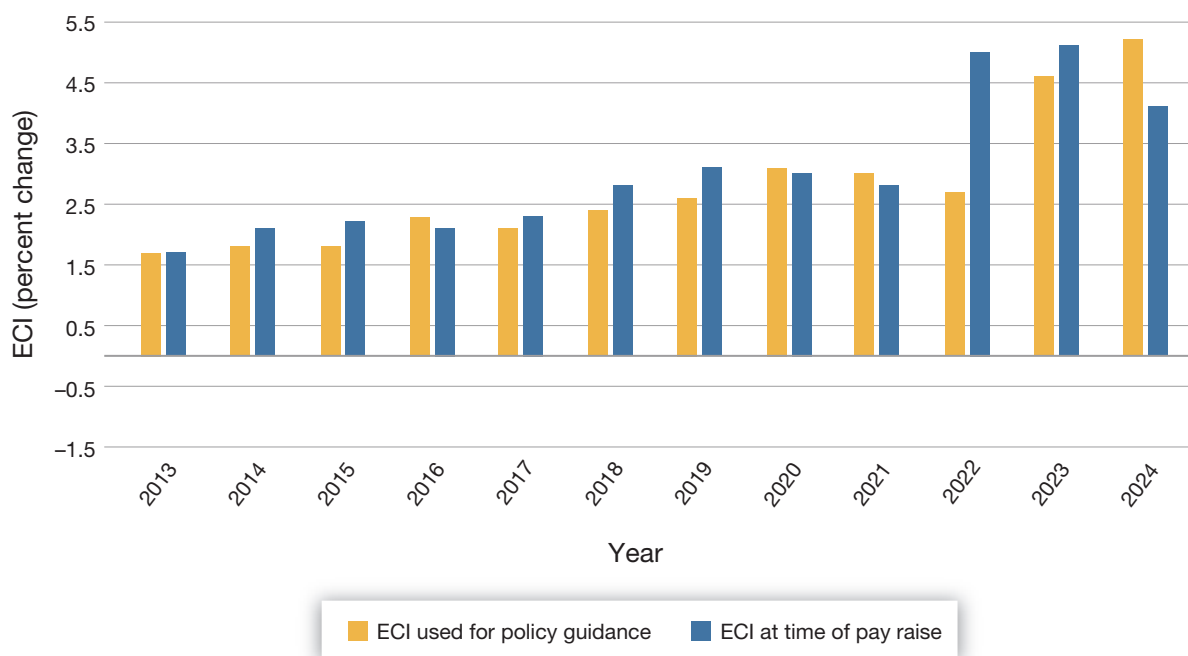
discretionary. For most of the 1970s and the early 1980s, pay adjustments took effect at the beginning of the fiscal year, in October (Defense Finance and Accounting Service, undated). As we highlight in the policy recommendations at the end of this chapter, implementing pay changes at the beginning of the fiscal year may be the most substantial policy lever available to increase the timeliness of the guidance used to inform the annual basic pay adjustment.

To consider how much the accuracy of the ECI is affected by the policy lag, we compare the difference in the ECI used for policy guidance (the change from Q3 to Q3, as described above) and the ECI that uses data from the quarter that precedes the January pay raise in a given year. In terms of Figure 6.2, this approach involves comparing the ECI from September 2021 with the ECI from December 2022.

Figure 6.3 plots the values of the ECI used for guidance and the actual ECI at the time of the pay raise (five quarters later), side by side, for each of the last 12 years. This comparison shows that the ECI used for guidance diverges from the actual ECI relevant to the military pay raise but that in most years the difference is small relative to the overall level of the basic pay adjustment. The differences between 2012 and 2021 were between 0.0 and 0.5 percentage points (the largest difference over this period was in 2019, when the guidance was 2.6 percent, and the actual ECI five quarters later was 3.1 percent). The direction of this error was that a smaller pay increase was recommended than would have been recommended based on the ECI at the time of the pay raise in seven of the 12 years we consider. In four of the 12 years, the error was toward recommending a larger increase, while in 2013 the recommended change was equal to the ECI immediately preceding the pay increase.

Focusing more specifically on the highly inflationary period since 2022—when both prices and earnings increased rapidly—the difference in the two ECI values induced by the policy lag was more notable. The roughly 14-month lag between the ECI guidance for the 2022 basic pay adjustment and the ECI immediately preceding the pay raise reflects a significant additional increase in potential earnings over

FIGURE 6.3
Comparison of ECI Used for Policy Guidance with Actual ECI at Time of Pay Raise (Five Quarters Later)



SOURCE: Author calculations using data from the BLS.

the period of policymaking for this adjustment: the guidance for the pay raise was 2.3 percentage points (85 percent) lower than the annual earnings increase observed at the time of the pay raise. The magnitude of the error over the policymaking lag moderated substantially in 2023 (the difference is 0.5 percentage points, or 11 percent) and then reversed for the most recent 2024 pay raise, where the guidance recommended a 5.2-percent increase but the actual ECI at the time of the pay raise was only 4.1 percent, a difference of 1.1 percentage points, or 21 percent.

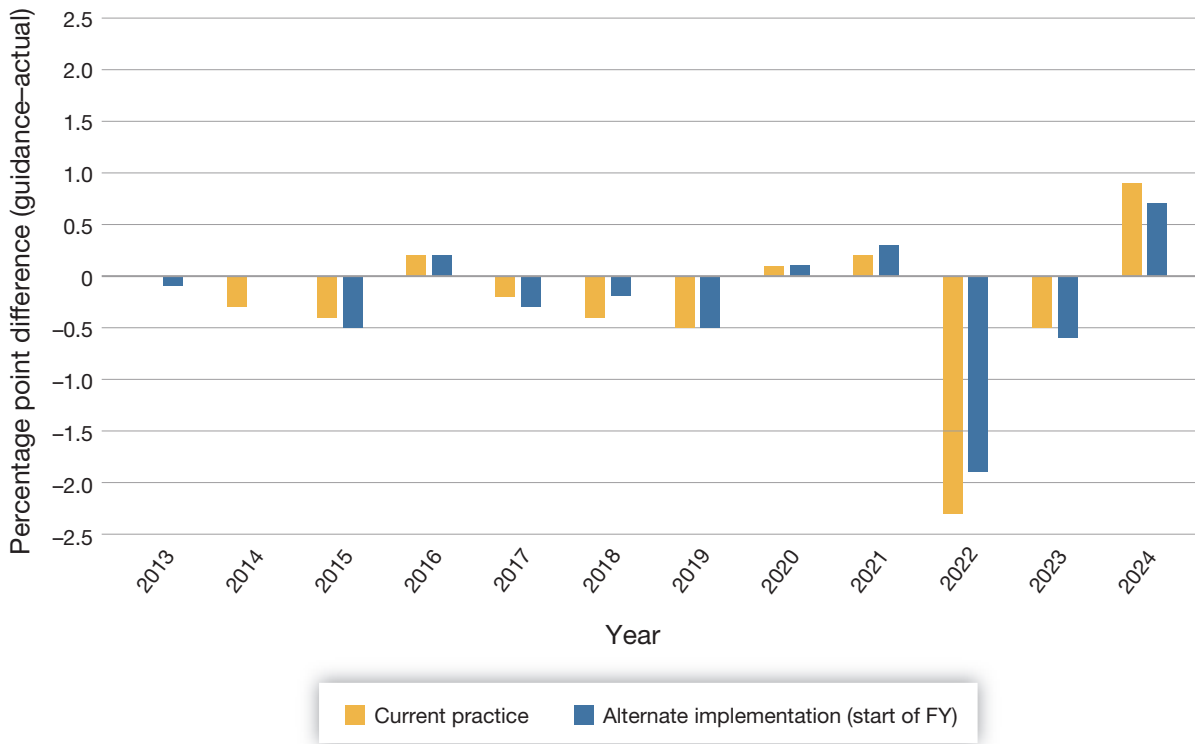
The evidence over the 12 years we consider here suggests that these errors tend to balance out over time. The average difference over the entire 12-year period we consider here is only 0.25 percentage points, or 9 percent of the average annual pay increase over this time of 2.78 percent. Of course, an error in accurate pay guidance of 85 percent below the observed increase in earnings while policy was being made is of obvious importance for service members who, for example, exited the military after 2023 and did not benefit from the subsequent error in the opposite direction during 2024.

Evidence on the Effect of Shortening the Policy Setting Timeline

Figure 6.4 presents empirical evidence on how much of a difference, in terms of accuracy, shortening the policy lag would have made over the past 12 years. This figure plots the percentage point differences between the ECI used for guidance and, first, the ECI immediately preceding the January basic pay adjustment and, second, the ECI that would immediately precede the basic pay adjustment if it were moved to the beginning of the fiscal year, three months earlier.

In Figure 6.4, the gold bars represent the difference derived from subtracting from the ECI used for guidance for the annual basic pay adjustment the actual value of the ECI obtained immediately prior to the

FIGURE 6.4
Error in ECI Guidance from the Time Lag Under the Current Policy (Pay Raise at the Start of the Calendar Year) and the Alternate Policy (Pay Raise at the Start of the Fiscal Year)



SOURCE: Author calculations using data from the BLS.

implementation of the pay raise at the start of the calendar year, 15 months later. The blue bars represent what this same difference would be if the pay raise were instead implemented at the start of the fiscal year, three months earlier. As can be seen, shortening the time between the ECI guidance and the pay raise does not always lead to a smaller error, but in several years it does. The largest improvement over the status quo was for 2022, when the difference under current policy was -2.3 percentage points, or an 85-percent negative difference, from the actual ECI value of 5 percentage points. This error would have been -1.9 percentage points, or a 70-percent difference, had the basic pay adjustment occurred three months sooner. Overall, over these 12 years, implementing the pay raise earlier would have recommended modestly higher pay on average resulting in an overall error that was 12.5 percent smaller than the cumulative error under current policy.

Incorporating This Time Lag into the Analysis

Unless otherwise indicated, we incorporate this time lag directly into the figures used in this report. Using the example in Figure 6.2, the value of the ECI index for September 2021 will show up in a figure with the time series of ECI index values as 2023, since it was the guidance used for that year's pay raise. This approach shows the direct connection between the ECI and the annual basic pay adjustment in recent decades by having them track together in time in figures and tables.⁷

Cost-Effectiveness and Credibility

The ECI is produced and disseminated at no cost to DoD. Thus, it is highly cost-effective. With respect to credibility, we are unaware of any meaningful criticisms of the credibility of the ECI. It is a long-running data series produced by the BLS with a history that substantially predates its uses in providing guidance for pay adjustments among the military and federal civilian workforces. Thus, we view the ECI as highly credible.

The Congressional Budget Office's Employment Cost Index Forecast

The use of the ECI or any other candidate measure we consider here is inherently backward-looking. In other words, we are using the recent past to try to inform the trajectory of future civilian earnings opportunities of service members. This suggests there is potential value in considering a forward-looking measure of earnings changes, which involves seeking candidate measures that forecast the future path of civilian earnings opportunities. With this reasoning in mind, we attempted to identify earnings forecast measures that might be accurate enough to alleviate the considerable delay between guidance and policy by accurately predicting what earnings would look like at the time policy was implemented. We were able to identify one such measure: forecasts of the ECI generated by the CBO. The CBO's ECI forecast is part of a larger data series of forecasts of an array of key economic indicators, the "Budget and Economic Outlook and Updates," that is produced for use in the congressional budget process (CBO, undated a).

Assessing the ECI Forecast Using Our Four Criteria

Accuracy

When considering the ECI, we focused on accuracy as it relates to appropriately covering the population of interest and highlighted some important considerations in this regard. These considerations also apply to the ECI forecast. In this case, though, the forecasting exercise itself is an additional important dimension of

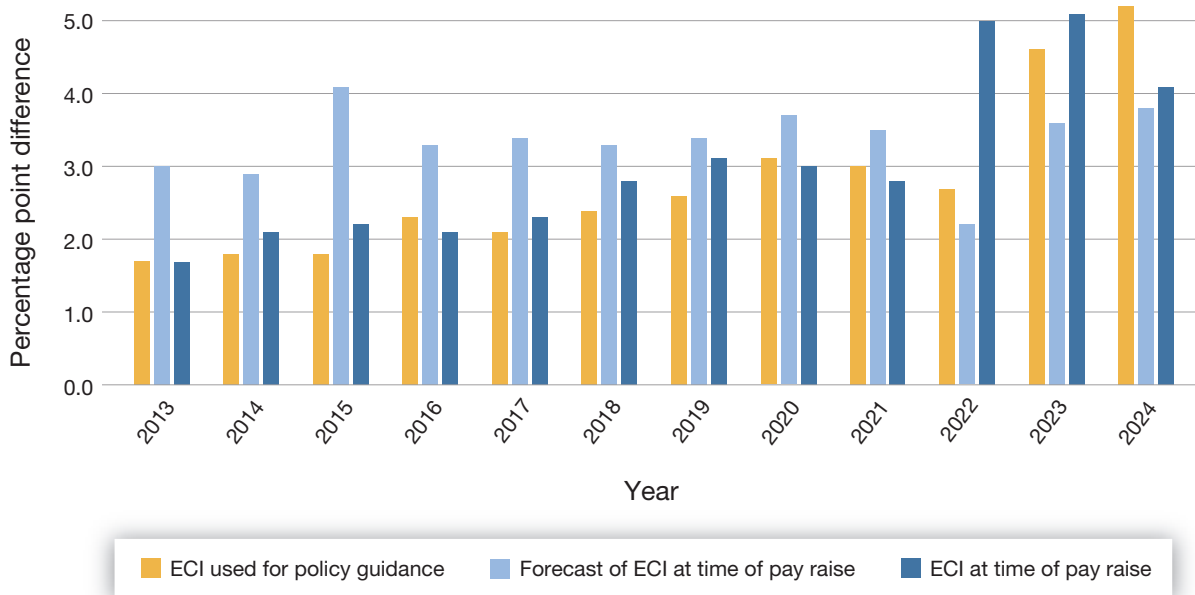
⁷ In a past report on the topic of the DECI as an alternative index for adjusting military pay (Asch et al., 2020), we adjusted the measures forward only one calendar year (so that, using the same example in Figure 6.2 again, the ECI for September 2021 would have been labeled in a time series figure as 2022). This may complicate direct comparison with some of the analysis in that report.

accuracy. In other words, keeping in mind the concerns highlighted above about the accuracy of the ECI, we must additionally ask if the forecasted value of the ECI is an accurate prediction of the actual future value of the ECI. This dimension of accuracy—as it relates to the exercise of forecasting the ECI—is the specific accuracy-related concern of the rest of this subsection.

The CBO’s releases of economic indicators that includes the ECI forecast are somewhat irregular, as we discuss in more detail below. For this reason, we assess the accuracy of the ECI forecast for the fourth quarter of the year immediately prior to the January pay raise using the data release date closest to the beginning of the policymaking cycle.⁸ In Figure 6.5 we compare the values of the actual ECI currently used (five quarters before the pay raise), the forecasted ECI, and the actual ECI immediately prior to the pay raise taking effect. Figure 6.6 presents these same data as differences, showing the direction and magnitude of the difference between the ECI currently used for guidance minus the actual ECI at the time of the basic pay adjustment and the difference between the forecast ECI and the actual ECI at the time of the basic pay adjustment. A positive value in Figure 6.6 means that the guidance ECI value was larger than the actual ECI, and a negative value means it was smaller.

From 2013 to 2021, the ECI forecast was uniformly higher than the actual ECI at the time of the basic pay adjustment—nearly two times the magnitude in 2015. Should the forecasted ECI have been used for guidance, it would have dramatically elevated basic pay over the relatively more accurate guidance provided by current practice. Overall, during only two years (2019 and 2024) from this 12-year period that we consider

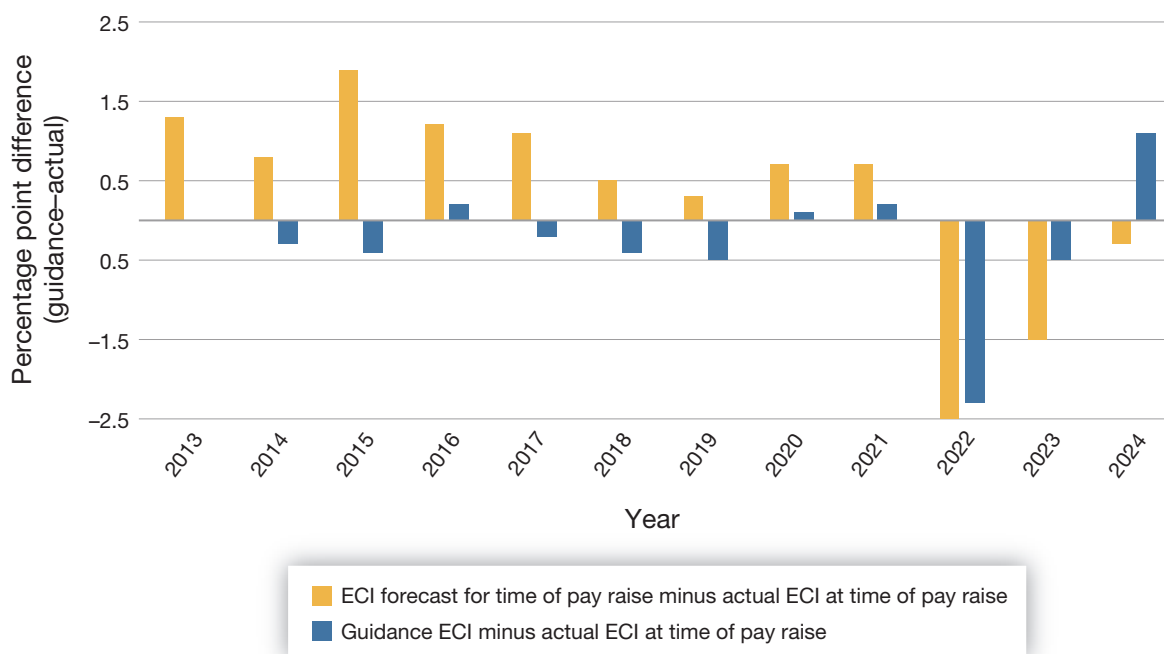
FIGURE 6.5
Comparison of ECI Used for Policy Guidance with Forecasted ECI at Time of Pay Raise and Actual ECI at Time of Pay Raise



SOURCE: Author calculations using data from the BLS and the CBO.

⁸ The specific CBO data release dates we used were August 2011 for the 2013 pay raise (i.e., the fourth quarter forecast for 2012), August 2012 (2014 pay raise), May 2013 (2015 pay raise), August 2014 (2016 pay raise), August 2015 (2017 pay raise), August 2016 (2018 pay raise), June 2017 (2019 pay raise), August 2018 (2020 pay raise), August 2019 (2021 pay raise), September 2020 (2022 pay raise), July 2021 (2023 pay raise), and May 2022 (2024 pay raise). For more on the reasons behind the variation in the dates of the source data, see the discussion of timeliness below.

FIGURE 6.6
Differences over Time Between the Forecasted ECI at Time of Pay Raise or the ECI Used for Guidance and the Actual ECI



SOURCE: Author calculations using data from the BLS and the CBO.

NOTE: Yellow bars are the difference between the light blue and dark blue bars in Figure 6.5. Blue bars are the difference between the yellow bars and the dark blue bars in Figure 6.5.

was the forecasted ECI more accurate (again, in terms of its confluence with the eventual ECI when the pay raise took effect) than the ECI currently used for policy guidance.

We were unable to find documentation outlining the specific approach used by the CBO to develop these ECI forecasts.⁹ Thus, we are unable to weigh in on any specific reasons that might lead to the lack of accuracy relative to a lagged value of the actual ECI that we observe in this comparison. Broadly, however, forecasting the economic future is a difficult task.¹⁰ The key implication is that the ECI currently used for guidance would have provided better guidance about the actual ECI at the time of the pay raise than the ECI forecast, suggesting current practice is a better alternative than using the CBO's ECI forecast.

Timeliness

One important issue for the usefulness of this potential alternative index is that these forecasts are released on an irregular schedule over time. For example, in 2020 updated data releases were made in January, March, July, and September; in 2021 data were released in February, March, and July; in 2022 there was only one data release, in May; and in 2023 data were released in May and July only. If the forecasts were all perfectly

⁹ On the CBO's website there is a brief discussion of how the CBO produces its economic forecasts: "CBO draws information for its forecasts from ongoing analysis of daily economic events and data, the major commercial forecasting services, consultation with economists both within and outside the federal government, and the advice of the experts on its Panel of Economic Advisers"; CBO, undated b.

¹⁰ For informative overviews of some of the challenges involved and the track record of a variety of forecasts, see De Masi, 1996.

accurate, the timing of data releases would be immaterial, but these estimates, as is the case with many similar forecasts, appear to become much more generalized and less accurate over time.¹¹ Thus, this irregularity would appear to militate against the ability to use this forecast without, for example, assuring that it could be provided by the CBO on a more regular basis as guidance for the annual basic pay adjustment.

Cost-Effectiveness and Credibility

The CBO's ECI forecasts are produced and disseminated at no cost to DoD. Thus, this index is highly cost-effective. We are unaware of any *ex ante* criticisms of the credibility of the CBO's economic forecasts as they may bear on issues of impartiality. It may be that a measure produced by an agency of Congress could be considered problematic by some, but the CBO is, to our knowledge, a widely respected and reputable organization, and its analyses are used to assess scores of consequential policy decisions each year. Thus, we view the forecasted ECI as credible.

The Defense Employment Cost Index

One unique alternative approach to providing guidance for the annual adjustment of basic pay is the DECI. The DECI was created by RAND researchers in the early 1990s as an alternative to the ECI for providing guidance on the annual military pay adjustment (Hosek et al., 1992). The DECI is calculated in a manner similar to the ECI, but there are several important differences, primarily related to the data used to construct the index, that distinguish the DECI from the ECI and other potential alternative measures considered in this report.

First, the DECI uses data from a well-established, long-running worker-based survey of earnings and other labor market outcomes: the CPS. This allows the DECI to capture the earnings potential of workers rather than the labor costs of employers. Another important feature of the design of the DECI is that these CPS data are weighted by the demographic composition of the active duty force. These two features, which are both discussed in more detail below, address the key limitations of the ECI highlighted above: the use of employer cost data and the substantial differences in the composition of the overall labor force and the active duty military force.

Construction of the DECI

The earnings data used in the DECI come from a subsample of CPS respondents who provide a self-report of weekly earnings at the current jobs they hold.¹² For each survey respondent, we additionally observe the maximum completed level of education when surveyed and their age, which we use to group respondents into eight age cells. These age groupings are 17–21, 22–26, 27–31, 32–36, 37–41, 42–46, 47–51, and 52 and higher. We also place respondents into one of four groups defining their educational attainment: less than a high

¹¹ Analyzing the series of ECI forecasts in each CBO data release, there is a clear pattern of the projected value settling into a roughly fixed value within 12 to 18 months into the period of the forecasting and carrying this value forward with little change for the roughly ten subsequent years forecasted in each data release.

¹² The CPS survey uses a longitudinal structure, where individuals at selected addresses are enrolled into the survey and then kept in the sample and surveyed multiple times over a period of 16 months (for four initial months, then the same four months one year later after being left out of monthly surveys for eight months in between). Those who are in their fourth and eighth months in the survey (the last two months of each wave of four consecutive monthly surveys) are referred to as the Outgoing Rotation Group and are asked to provide answers to several additional questions, including questions about earnings from their current jobs. For more on the panel structure of the CPS and other details regarding the CPS program, see Rivera Drew, Flood, and Warren, 2014.

school degree, a high school degree or some college (including an associate’s degree), bachelor’s degree, and master’s degree or greater. Across each of the 32 age-by-education groups, we average the earnings of CPS respondents using the provided CPS sample weights. To generate the most timely measurement of earnings feasible, we use CPS Outgoing Rotation Group survey responses from the months April–September. This sample restriction, along with a few others discussed in more detail in Asch et al. (2020), results in an average sample size of 40,000 individuals per year, with a median cell size of approximately 850 respondents and a mean cell size of roughly 1,400 respondents.

To construct the weights for the active duty population, we use ADMF data maintained by the DMDC. These administrative data cover service, enlisted or officer status, age, and education for all active duty members.

The DECI is a chained Laspeyres Index. This means that, rather than holding employment weights (as well as baseline earnings) fixed at some specified period—which is the case for the ECI—these elements are annually updated so the index compares the change in compensation between the current year and the prior year rather than between the current year and a fixed baseline year.¹³ Thus, the DECI for 2023 compares the increase in civilian earnings from 2022 to 2023 and weights these changes using the demographic composition of active duty personnel in 2022.

If we take 2022 to be the baseline year of an analysis, the construction of the DECI ratio for 2022 to 2023 is identical to the ratio used in the ECI. In other words, for earnings, e , and earnings weights, w , the change in the DECI from 2022 to 2023 is defined as:

$$\Delta DECI_{2022-2023} = \left[\frac{\sum_i w_{i,2023} e_{i,2023}}{\sum_i w_{i,2022} e_{i,2022}} \right].$$

However, unlike the ECI, this definition is common to any other pair of years. For example, substitutes this specific pair of years for 2022 and 2023. An index of the DECI for a given year is the product of a chain of year-to-year changes back to any arbitrary baseline year of interest, which is set to 100. Thus, the 2023 DECI using 2019 as the base year is defined in the following way:

$$DECI_{2023} = 100 \times \Delta DECI_{2019-2020} \times \Delta DECI_{2020-2021} \times \Delta DECI_{2021-2022} \times \Delta DECI_{2022-2023}.$$

Background on the History of the DECI in Discussions Regarding Adjusting Military Pay

The potential use of the DECI as the formal guidance to the annual pay increase was considered by the 7th QRMC, but it was ultimately decided to not recommend this role for the index. The final report of the 7th QRMC made the following conclusions about the DECI:

Although the DECI represents an exciting innovation, we do not support adopting it as the primary index for determining the annual military pay raise at this time. With further refinement, this index may very well assume that role. But for now, we recommend that this index be further developed under the policy guidance of DoD. The following specific questions, at a minimum, must be answered:

- Should the annual pay adjustment of the career force be so heavily influenced by the wage growth of the youth population?
- Is it appropriate to tie the military pay raise to an index (DECI) that may be less stable than that used by Federal civilians (ECI)?

¹³ As mentioned previously, the weights used in ECI are updated every seven to ten years so, in this sense, the ECI too is a chained index that changes infrequently. However, we follow the common usage of the term to refer to an index where the baseline year resets to the prior year annually.

- What are the ramifications of legislating different pay raises for military and Federal civilian workers as a result of using separate indexes?
- Because the DECI lags the ECI by about nine months, can we use the monthly CPS to shorten this delay? If so, how would the different data source affect the DECI's results?

The 7th QRMC recommends continuing use of full ECI as the target amount of the annual military pay adjustment. The Office of the Secretary of Defense should underwrite further development of the DECI as a personnel management tool and as a candidate index for future use in the pay adjustment process. (DOD, Office of the Assistant Secretary of Defense [Force Management and Personnel], 1992b, pp. 2-2–2-3)

As suggested, the DoD has in recent years continued to support ongoing research on the DECI, as has Congress, including the present study. Below we aim to address the points raised here, along with discussion of other aspects of the DECI that may help policymakers effectively decide how best to use this novel index as input to the annual adjustment of basic pay.

Assessing the DECI Using Our Four Criteria

Accuracy

Two key factors distinguish the DECI from the ECI and make it potentially a more accurate measure of the earnings associated with alternative careers most relevant to active duty service members. First, the DECI uses CPS data to inform estimates of earnings. The CPS began as a survey of unemployment under the Works Progress Administration during the Great Depression before it was moved to the U.S. Census Bureau in the early 1940s (U.S. Census Bureau, 2006). As a primary data source used in the calculation of national unemployment and LFP measures, as well as a key data source on national demographics, population mobility, earnings, and other social and economic indicators, CPS data play a major role in policymaking. For this reason, we view the CPS data as arguably the most accurate source of high-frequency data for measuring employee earnings changes.

The CPS is a nationally representative survey of households that typically collects data from around 130,000 individuals per month. Approximately one-fourth of surveyed households provide detailed information on their earnings in the week prior to being surveyed. The survey uses an address-based sampling frame to contact individuals regardless of where or whether they are working and then follows them over time, regardless of whether or where they are employed. To focus on earnings potential conditional on ability and willingness to work full-time, we restrict the CPS sample to full-time workers—those who report usually working 35 or more hours per week.

Second, the DECI uses administrative data on the composition of the active duty force in terms of age, educational attainment, and, as appropriate, other characteristics (which can include gender, officer or enlisted status, or potentially other observable characteristics) to weight the sample of civilian earners in the CPS so that they more accurately reflect the makeup of active duty military personnel. We use eight multi-year age groupings, four educational attainment groupings, and gender to generate a set of 64 weights, one for each age-by-education-by-gender cell.¹⁴ As we will demonstrate, this relatively basic division of workers

¹⁴ In the main body of this report, we use a DECI measure that includes gender weighting because of evidence that, similar to occupational differences across age and education groups, there are occupational differences across gender, and accounting for this factor can help the DECI better describe the most relevant earnings trajectories over time for active duty personnel (Alonso-Villar, Del Rio, and Gradin, 2012; Pearlman, 2018). However, in practice the DECI does not differ in a substantial way over a longer time period according to whether gender is included or excluded. For a comparison showing that—aside from the years 2011 and 2012—DECI measures that include or exclude gender vary little from each other between 2000 and 2023, see Figure F.5. For more discussion about the considerations around including or excluding gender from the DECI's construction, see Asch et al., 2020, Chapter 4. Figure F.4 in Appendix F shows DECI over time including and excluding gender in weighting.

according to just three demographic characteristics generates a significantly different measure of the growth rate of earnings over time than the one provided by the ECI.

Since these weights are updated annually (unlike the ECI weights, which are updated every seven to ten years), each year's earnings are weighted by the demographic composition of the prior year's active duty force. This means that the DECI reflects not only changes in the earnings of civilian workers as they experience job changes over time (for various reasons) but also any changes in the makeup of the active duty force that would inform the most relevant path of potential civilian earnings over time for these members.

The design of the DECI also allows for the creation of subgroup specific DECI, such as for enlisted members or officers, specific services or occupational specialties, and other subgroups of potential policy interest. This flexibility not only makes the DECI a good candidate for setting the annual pay raise but also allows the DECI framework to be a useful tool in considering other aspects of military compensation, such as enlistment or reenlistment bonuses. For example, let us suppose that subgroup analyses indicated that the civilian labor market opportunities for young, non-college-educated workers—the age group most representative of those at the decision point of whether to enlist for the first time in the military—experienced a larger increase in earnings than indicated by the overall DECI. Such evidence could be a useful signal that an enlistment bonus might be complementary to the overall basic pay adjustment to compensate for this asymmetric change in compensation levels across the labor market.¹⁵

Differences in the Demographic Composition of the Active Duty Force and the Civilian Labor Force

The age, educational attainment, and gender composition of the active duty force and the civilian labor force have substantial differences. In terms of age, between 1982 and 2023, 17- to 21-year-olds have made up between 18 and 31 percent of the active duty force, while their share in the civilian labor force varied between 4 and 9 percent. Conversely, service members ages 37 and higher made up between 11 and 16 percent of the active duty force, while they made up between 44 and 59 percent of the civilian labor force. As for educational attainment, the share of service members with high school degrees as their highest educational credentials ranged between 62 and 71 percent, while the same range in the civilian labor force was from 25 to 42 percent. Finally, in terms of sex, women made up between 40 and 43 percent of the labor force over this period while making up between 11 and 19 percent of the active duty force. These differences are shown in Figures F.1–Figure F.3 in Appendix F.

Figures F.1–F.3 show the evolution of these demographic trends over time, but the summary above makes clear that there are large differences between the demographic composition of the military and the civilian labor force. It is likely that that the alternative average civilian labor market opportunities for active duty personnel differ from the opportunities for the broader civilian labor force, on which the ECI is based.

The DECI Reflects Earnings Changes Related to Job Switching and Changes in Unemployment

As we previously noted, since it is designed to reflect the labor costs of employers, the ECI does not reflect potentially important factors in the labor market that bear on the realized earnings of civilian workers. Specifically, the ECI uses the earnings from a fixed set of jobs; thus, if during a recessionary period a job in the sample is lost through a layoff, it is replaced with a similar existing job. Relatedly, if new jobs are created during expansionary periods that offer higher wages to attract workers, these new jobs will not enter the sample except through the periodic adjustment of the ECI weights. These two forces (layoffs and job creation) are a key source of earnings changes for workers, and both of these sources of earnings changes in the civilian labor market likely influence the decisions of individuals to enlist in and/or remain in the military over time and should arguably be reflected in the guidance for the annual basic pay adjustment.

Figure 6.7 shows how the DECI and the ECI differ over the last 23 years in terms of their relationship with a key labor market indicator, the unemployment rate. Both the DECI and the ECI use 2000 as the baseline

¹⁵ We note that this is precisely what occurred in the aftermath of the COVID-19 pandemic; Autor, Dube, and McGrew, 2023.

FIGURE 6.7
Relationship Between the ECI, the DECI, and the Unemployment Rate



SOURCE: Author calculations based on unemployment data from the BLS (undated c); CPS data from the Integrated Public Use Microdata Series (IPUMS; Flood et al., 2023); and DMDC data.

NOTE: We do not incorporate the 15-month policy lag into this figure by postdating the DECI and ECI measures, as discussed in the main text, since this comparison is intended to assess the responsiveness of these indexes to changes in the contemporaneous unemployment rate.

year; this index value, beginning at 100 in the year 2000, is shown on the lefthand y -axis of the figure. The unemployment rate, which fluctuated between 3.6 and 9.6 percent on an annualized basis over this period, is shown on the right-hand y -axis.

Multiple shifts in the unemployment rate over this time highlight the differences in the lagged response in these two earnings indexes. From 2000 to 2003, the unemployment rate increased from 4 percent to 6 percent. From 2001 to 2004 the ECI increased by 9.0 percent, while the DECI only increased by 4.4 percent, more accurately reflecting the decreased earnings opportunities associated with a period when the unemployment rate increased by 50 percent.¹⁶ Conversely, from 2003 to 2006, as the unemployment rate declined back to 4.6 percent (a 20-percent decline), the ECI increased by 8.7 percent, while the DECI increased by 10.6 percent, reflecting the increased opportunities for earnings growth as employers had to compete more for workers in a period of low unemployment.

This difference in the relationship between the unemployment rate and the DECI versus the ECI was even more prominent during the large spike in unemployment during the Great Recession of 2007–2009, when the unemployment rate more than doubled, from 4.6 in 2007 to 9.6 by 2010. The unemployment rate did not return to the 2007 level until more than a decade later, in 2017. Over this period (using the same one-year lag as before—thus, 2008–2018) the ECI increased by 22.9 percent, while the DECI increased by 15.4 percent, reflecting the reduced civilian earnings opportunities associated with this period of higher unemployment.

¹⁶ These calculations are based on the simple formula (using the ECI as the example) $ECI \% \text{ change} = \frac{ECI_{t1} - ECI_{t0}}{ECI_{t0}} \times 100$. Thus, for example, the first calculation is $((112.9 - 103.6) / 103.6) \times 100 = 9.0$.

Note that from around 2017 to 2020 the DECI also began to more accurately reflect the long, slow decline in unemployment by increasing more rapidly than the ECI.

Finally, focusing on the period of the COVID-19 pandemic, the DECI incorporated the major shock to earnings experienced during the unemployment spike of 2020. It flattened out from 2020 to 2021, followed by a sharper increase from 2021 to 2022, reflecting the rapid return a of much lower level of unemployment in 2021.

Overall, these patterns suggest that the DECI more accurately characterizes the labor market opportunities of civilians from a perspective of potential earnings rather than from the employer labor cost perspective, which is characterized accurately by the ECI.

How Would Use of the DECI Have Affected Guidance on Adjusting Basic Pay in Recent Decades?

While the conceptual properties of the DECI are important to consider in judging its feasibility as a potential alternative to the ECI, what is arguably most important is how the guidance provided by the DECI would have differed over time from the guidance provided by the ECI. We previewed these differences in Figure 6.7, but in Figure 6.8 we add a comparable index of the path of actual basic pay adjustments (which we call the basic pay index, or BPI), since annual adjustments have diverged from ECI guidance somewhat frequently over the last two decades.¹⁷

Figure 6.8 shows a few notable patterns. First, over the full 24 years, the growth in basic pay as shown by the BPI has been higher than the ECI, suggesting that the guidance provided by the ECI has not always been heeded. The second important pattern is that the DECI has tended to follow multiple discretionary deviations from the ECI decided on by policymakers fairly closely over time. For example, over the period 2008–2009, when the annual basic pay adjustment equaled ECI plus 0.5 percent, the DECI would have suggested a higher increase than the ECI guidance (4.1 percent versus 3.0 percent in 2008, and 3.7 percent versus 3.4 percent in 2009). Similarly, when the annual basic pay adjustment was below the ECI from 2014 through 2016, the DECI had been trending lower than the ECI for the prior five years.

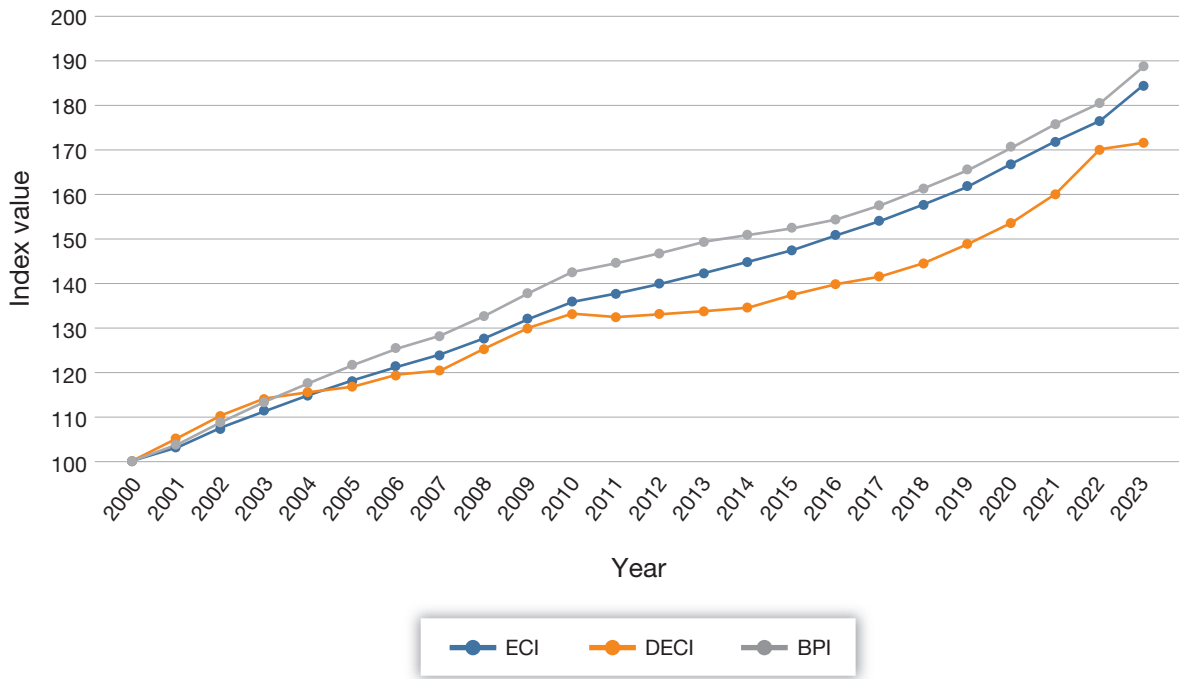
Perhaps most important, during 2021 and 2022, when the labor market and supply chain disruptions of the COVID-19 pandemic raised the issue of pay falling behind in terms of costs of living for current service members and in terms of contributing to recruiting deficits (Gould, 2022; Kheel, 2022), the DECI was more quickly capturing upward trends in employee earnings that were reflected in considerably higher levels of change in the DECI than the ECI (4.2 percent versus 3.0 percent in 2021, and 6.3 percent versus 2.7 percent in 2022). In the most recent year in our data, 2023, the DECI was much lower than the ECI (0.8 percent versus 4.6 percent). But over the three years since 2020, the DECI would have still led to slightly higher pay relative to the ECI guidance and, notably, the largest increases would have been more front-loaded, taking place during the two years with the highest levels of inflation (4.7 and 8.0 percent, respectively).¹⁸

It is also notable that the DECI guidance would have resulted in a lower level of overall pay increase over 2000–2023, the full time period shown in Figure 6.8. From 2000 to 2010, a span of time in which the weighted average of enlisted RMC by education and YOS increased from the 72nd to the 92nd percentile of civilian pay, using ADMF weights (Asch et al., 2020) the DECI was 7 percent lower than the BPI (which reflected pay increases based on a combination of ECI guidance and discretionary variation from that guidance). This gap widened to 12 percent by 2014 and shrunk to 10 percent by 2023. The broad takeaway, though, is that the DECI would have set a lower trajectory of pay growth over more than two decades and, was the guidance

¹⁷ Also, unlike Figure 6.7, Figure 6.8 *does* incorporate the policy-setting lag as discussed earlier so that, for example, the ECI from Q3 2021 is shown here as the change in the ECI for 2023, or the time that the actual pay raise it provided guidance for went into effect. Because the value of each index shown in Figure 6.8 depends on the base year, we show the path of the ECI, DECI, and BPI using 2010 as the baseline year in Figure F.4 in Appendix F.

¹⁸ These numbers are from the annualized rate of change from a year earlier in the BLS's CPI-U data series.

FIGURE 6.8
Changes over Time in the ECI, DECI, and BPI Using 2000 as the Baseline Year



SOURCE: Author calculations from CPS data from IPUMS (Flood et al., 2023), DMDC data, and data on basic pay increases from the Congressional Research Service (CRS, 2023a).

NOTE: In this and similar figures comparing earnings indexes with the BPI, we lag the earnings index measure by two years to match the 15-month policy-setting timeline so that, for example, the ECI from September 2019 to September 2020 is used to guide the pay increase implemented ultimately in January 2022. We use the same approach with the DECI.

followed during this period, the magnitude of the increase of RMC to far above the 70th percentile benchmark would have been attenuated.¹⁹

Timeliness

In the early 1990s, when the DECI was originally developed (Hosek et al., 1992), timely data access was a significant challenge. Three decades later, these issues have been resolved by advances in computing power and connectivity. The BLS typically makes CPS microdata available through its website within a week of the completion of data collection. Furthermore, these data are quickly integrated into a well-designed CPS data repository, IPUMS (Flood et al., 2023), run by the University of Minnesota. IPUMS allows users to easily create a customized CPS data extract with most variables harmonized across time. The IPUMS site maintains a record of all requests from each data user, so that generating a new data extract only requires quickly updating a prior data request. These data are delivered over the internet along with data dictionaries compatible with most common statistical software packages. IPUMS data are typically ready for use in seven to ten days after the data are first made available by the BLS, so data are available through this conduit around three weeks following the end of the relevant survey month.

This data access allows for the generation of a DECI using monthly CPS data collected through the end of September by late October, a timeliness that closely matches that of the ECI. As discussed above, however,

¹⁹ In Figure F.4 we show the same results as in figure 6.8, but using 2010 as the baseline year. Again, the growth of basic pay if following guidance from the DECI would have been lower over this entire period.

the potential for error in guidance introduced by the policy-setting timeline would apply to the DECI just as it does to the ECI.

Cost-Effectiveness

The ECI has the advantage of being generated on a regular basis by another federal agency at no cost to DoD, but DECI would need to be generated by DoD or a contractor. However, generating the DECI does not require any data collection, as the CPS and military administrative data are already collected at no direct or additional costs to DoD. Additionally, generating a DECI annually using code already published in Asch et al. (2020) could be accomplished by any trained programmer using any powerful modern laptop computer. For these reasons, we view the DECI as highly cost-effective.

Credibility

The annual DECI measure could be generated using the in-house computing resources and personnel across organizations within DoD, such as the OPA in OUSD(P&R) or the Office of Cost Assessment and Program Evaluation. This office already provides independent analytics for the Secretary of Defense, so the use of the office in computing the DECI would arguably be a credible approach. Furthermore, making available the methodology and computer code used to generate the DECI (as has already been done) would further help to assure that it is a credible and transparent measure for guiding the annual basic pay adjustment.

The Consumer Price Index

The CPI is the source of official inflation measures for the United States and is used to govern adjustments to payments and other obligations in a wide variety of contract and policy settings (Rippy, 2014). Perhaps most important, since 1975 the CPI has been used as the source of annual cost of living adjustments to benefit levels in the federal Social Security program (Social Security Administration, undated).

The potential to use input from the CPI to guide the annual basic pay adjustment came up on multiple occasions in our discussions with DoD SMEs for this study. Our impression is that interest in the CPI is primarily or entirely motivated by the notion that it would potentially serve as a better safeguard against pay falling behind rising prices than the ECI has in the tumultuous years since the emergence of the COVID-19 pandemic.

In the following sections, we consider the CPI through the lens of the same four criteria we have used for the other measures covered in this chapter. We ultimately conclude that both theory and evidence strongly suggest that the CPI is not a viable candidate for guiding the annual basic pay adjustment.

Accuracy

There are two important points to make about the accuracy of the CPI in terms of reflecting the path of civilian earnings relevant to people considering joining the military or continuing in service. The first one is conceptual and hinges on how prices and wages are related to one another. The second one is empirical and relates to how the CPI has differed from the path of basic pay and the ECI over time. We cover each of these issues in turn.

Economic Theory Posits That Earnings Growth Is Driven by Increases in Productivity

Basic economic theory argues that economic output is split between the contributions of labor and capital and that real wage gains are primarily related to increases in the productivity of labor (see, for example, Smithies, 1960). Figure 6.9 plots this relationship since 2000 by showing the annual percentage change in productivity (output per worker per hour) and the annual percentage change in median real earnings.

FIGURE 6.9
Comparison of Changes in Productivity and Real Earnings over Time



SOURCE: Adapted from Federal Reserve Bank of St. Louis, (undated e), using BLS data.

Though this pattern is not present in all years (for example, the early 2000s), overall there is a clear, persistent relationship between these two measures, consistent with theory that says when productivity increases, real wages should increase as well.

Real wages are defined as changes in nominal wages (wages in actual dollars in each period) adjusted by the change in prices. Therefore, real wages increase when the growth of nominal wages is faster than the growth of prices. This was the case for 15 of the 24 years in the time series in Figure 6.9.

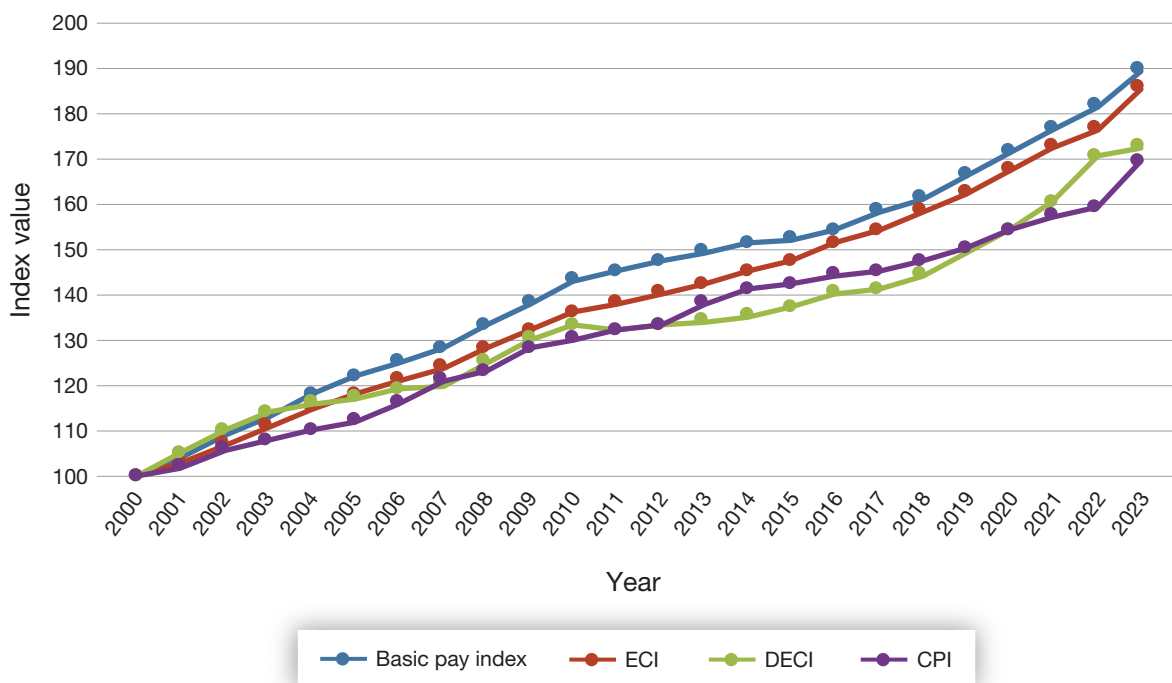
In general, then, increasing real wages means that nominal wage gains outpace prices. Since the CPI measures growth in prices (the denominator of the real wage ratio) and real wage growth is positive in most years, using a price index to guide the annual basic pay adjustment would tend to lead the growth rate of basic pay to fall behind the growth rate of civilian earnings (the nominal wage portion of the real wage ratio). This suggests that, conceptually, the CPI would fail the basic criteria outlined by the 7th QRMC—that is, it would not accurately measure the trend in pay accruing to the alternative civilian career choices facing active duty service members.

The CPI Was Below the DECI and the ECI for 18 of the Last 23 Years

This conceptual point is also reflected in the data. Figure 6.10 compares the CPI with both the DECI and the ECI. Using 2000 as the baseline year (equal to 100), the value of the CPI was lower than either the DECI or the ECI for 18 of the last 23 years, and by 2023 it was 16 index points lower than the ECI and three index points lower than the DECI. This pattern is consistent with the point made above: if real wage growth is positive in most years, the price index should, by definition, be lower than a nominal wage index (a category that includes both the DECI and the ECI).

Thus, both theory and empirical evidence indicate that the CPI does not and, in fact, cannot appropriately reflect changes in civilian earnings, making it a poor candidate for guiding the annual basic pay adjustment in terms of accuracy.

FIGURE 6.10
Changes in the CPI, ECI, BPI, and DECI Since 2000



SOURCE: CPI for all urban consumers, percent change from a year ago at the end of third quarter of the relevant year. Seasonally adjusted from FRED (Federal Reserve Bank of St. Louis Economic Data).

Timeliness

The CPI is released monthly, typically around ten to 15 days after the end of the relevant month. Thus, the CPI is a very timely index (though subject to the same issues related to the policy lag discussed above).

Cost-Effectiveness and Credibility

Like the ECI, the CPI is produced and disseminated at no cost to DoD. Thus, it is highly cost-effective. The CPI, due to its long history and its use in key roles throughout the economy, is also a highly credible measure.

Incorporating a More Recent Version of the Employment Cost Index

We also consider an alternative that would reduce the time lag between when the ECI is computed and the military basic pay raise by using an ECI that is computed closer to the pay raise. A reasonable candidate might be the ECI measure at the end of the second quarter (Q2) in the year prior to the annual pay raise, which is released in late July and would cover the months April–June, three quarters after the end of three-month period used to inform the current ECI guidance.²⁰ For example, in the context of Figure 6.2,

²⁰ We also considered the feasibility of using the CBO ECI forecast for this purpose, but given the findings on the substantial gap between the predicted values from this measure and the future, realized ECI value, and the fact that the prior actual ECI substantially outperformed these forecasts, we decided this was not a fruitful proposal for policymakers to consider. In Figure F.6 we provide results analogous to the those presented in Figure 6.11, using CBO ECI forecasts instead.

the January 2023 basic pay raise was informed by the October 2021 ECI under the current methodology, a 15-month lag. An alternative would use the Q2 2022 ECI, reducing the lag to six months. Thus, such an approach would reduce the policy lag by more than half. To facilitate the budget process shown in Figure 6.2, it would be necessary to use a placeholder ECI, either the current ECI guidance (computed in October) or a forecast of the ECI, such as the CBO forecast.²¹ DoD would then need to adjust its budget once the Q2 ECI is released. If the placeholder understated the Q2 ECI, DoD would face a budget shortfall that it would need to close, and if it overstated the Q2 ECI, it would face a budget overage.

We note that this alternative does not involve an alternative index but is simply an alternative process for using the current index, the ECI, that involves updating the guidance it provides during the budget process. Thus, the characteristics of this alternative do not differ from the subsection above on the ECI in terms of accuracy, computation cost, or credibility. Because it would reduce the time lag, it would compare favorably in terms of timeliness.

A potential pitfall of this alternative process is that it introduces a forecasting error—the difference between the ECI used for the budget process and the more recent ECI—that has new implications for the budgeting process. As mentioned, the error could imply either be a budget shortfall or overage that DoD would need to address. Dealing with personnel budget shortfalls or overages would not be a new concept. DoD already uses a forecast of BAH rates in the budget process, and the actual BAH rates are released the December before the rates are implemented. On the other hand, in 2022 the budget cost of BAH for the active force across DoD was much smaller than the cost of basic pay, \$22.9 billion compared with \$63.9 billion, so that an error of the same magnitude would translate into a far smaller shortfall or overage than would be the case with basic pay (DoD, Office of the Under Secretary of Defense [Comptroller], 2023). For example, the cost of the annual pay adjustment for 2017 was around \$750 million when a 2.1-percent basic pay increase was provided.²² A small error between the ECI used for initial budgeting and the Q2 ECI in the year prior to the pay raise could have substantial fiscal implications.

We investigated the potential magnitude associated with the error and the budgetary impact by computing the size of the budget error if this approach had been used between 2013 and 2023. That is, we assumed the usual (October two years prior to the pay raise) ECI had been used for the purpose of budgeting while the Q2 ECI was the updated ECI that was used for setting the final pay raise. We then used data on basic pay costs for the active force across DoD in each year to estimate the budgetary shortfall or overage of any error between the usual ECI and the updated ECI in nominal dollars for each year we consider.

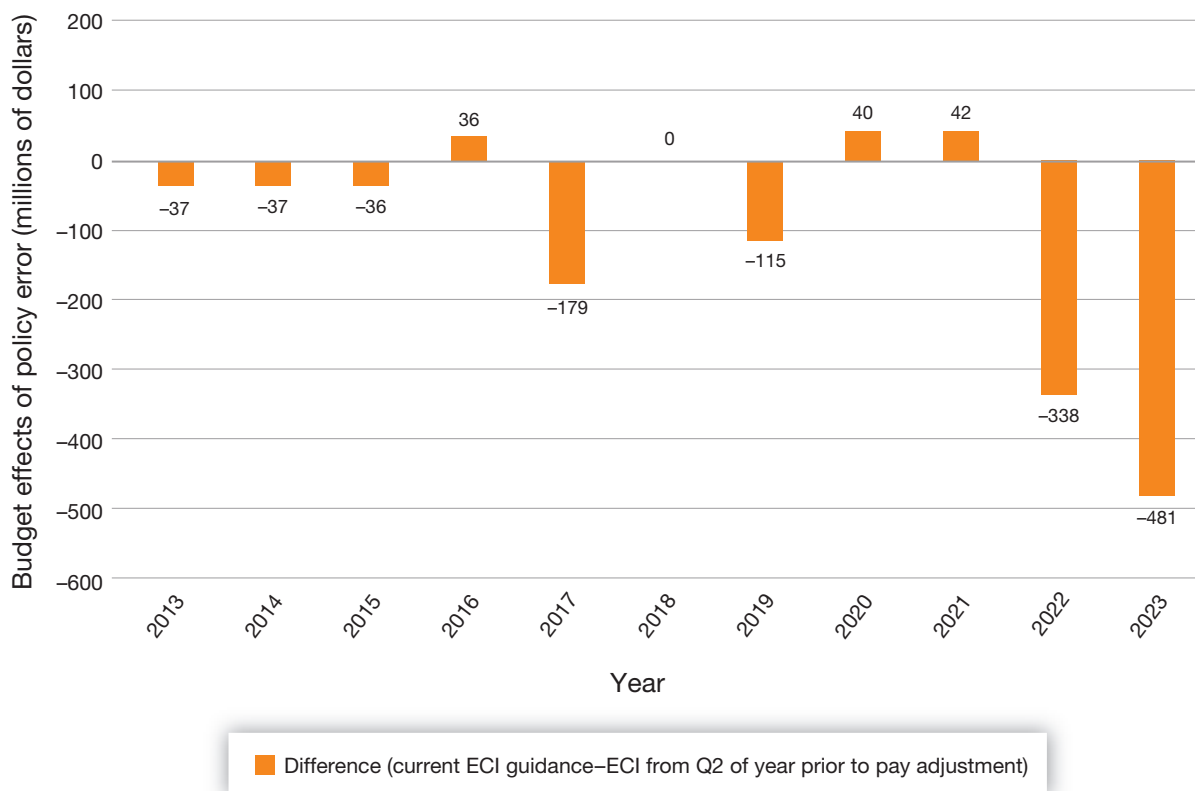
Figure 6.11 shows our estimate of the budgetary implications of the error in each of the 11 years. A negative value indicates that the updated Q2 ECI would have been larger in magnitude than the usual ECI (the ECI currently used for guidance). In such a case, the DoD comptroller would be required to reprogram funds from other uses to make up the shortfall in the basic pay adjustment left by the earlier guidance being too low. Conversely, positive values indicate that the earlier guidance indicated employer cost increases that were larger than the updated guidance. In these years the comptroller would have funds that could be reallocated elsewhere in the budget.

We find that the fiscal implications are mixed between 2013 and 2023. In one year, 2018, the update did not change anything, so it would have had no implication for the budget process. In 2013 through 2015, the update would have provided guidance on a slightly higher pay increase, and the budget implications would have meant a shortfall of \$36 million to \$37 million. In three other years, 2015, 2020, and 2021, overages of a

²¹ This proposal was suggested to the project team by the Navy during an interim project review.

²² This figure comes from author calculations using Greenbook data.

FIGURE 6.11
Fiscal Implications of Using Current ECI Guidance at the Start of the Budget Process and Then Revising with a Later ECI Measure



SOURCE: Author calculations using data on force size and basic pay by grade and year of service from the Greenbook (2013–2023) and ECI data from the BLS.

similar magnitude (between \$37 million and \$42 million) would have occurred. In 2017 and 2019, the budgetary shortfalls were considerably larger, between \$115 million and \$179 million.²³

But the shortfalls of 2017 and 2019 would have been dwarfed by the shortfalls that would have occurred in 2022 and 2023, the years of rapid price and employer cost inflation in the aftermath of the COVID-19 pandemic. In these two years, the use of this approach would have required adjustment late in the budget process in amounts of, respectively, \$338 and \$481 million. Additionally, we note that these estimates are only an approximation of the direct fiscal cost of providing basic pay increases. We only considered direct basic pay costs and not the cost of other elements of military compensation that depend on basic pay such as the retirement accrual cost and the Federal Insurance Contribution Act contributions that DoD makes on behalf of service members. These other elements would amount to roughly half the basic pay bill, implying that a further adjustment of \$170 and \$240 million would have been required in 2022 and 2023, respectively.

This analysis suggests that the potential for this process to be feasible depends critically on the appetite among policymakers to accommodate potentially large adjustments in times of economic volatility. In most recent years the amount of budget uncertainty implied by this kind of approach was reasonable in terms of

²³ Rather than use the current ECI Guidance at the start of the budget process, an alternative approach could be to use the CBO ECI forecast. Figure F.6 in Appendix F shows the fiscal implications of using the CBO ECI forecast instead.

the size of the overall defense budget, but in at least four years from the last decade, the adjustments implied by this alternative approach would have led to substantial shortfalls from what was implied by the preliminary ECI guidance.

Discussion

The findings of our analysis of the ECI are consistent with past research (Asch et al., 2020) that has highlighted potentially important limitations of the ECI as a means of guiding the annual basic pay increase. These include the findings that the ECI

- is not designed to accurately reflect civilian earnings for workers but is, instead, designed to reflect employer labor costs; this limitation means that the ECI does not capture the upward effect on civilian earnings of workers switching jobs during periods of robust economic growth, nor does it reflect the downward or moderating effect on civilian wages of layoffs and other employment changes associated with economic downturns
- holds the mixture of jobs used in the sample constant for several years at a time, which may not fully reflect earnings changes related to growth or contraction in the share of various occupations in the economy
- is representative of the overall civilian labor force, which differs in important ways from the active duty military force, including in age, education level, and gender.

The ECI has some important advantages. First, it is used in setting pay for federal employees, so using this source of guidance helps to ensure some confluence between rates of growth of basic pay and pay in federal government careers, one of the largest sources of veteran employment. Second, it captures broad changes in the civilian labor market in general. To the extent that service members make retention decisions based on the civilian labor market in general—perhaps taking a career perspective that considers current and future earnings at older ages and all civilians rather than the earnings of civilians who currently have characteristics similar to those of service members—the ECI would capture these civilian earnings better than the DECI. Third, the ECI is a timely, well-regarded measure that is produced at no cost to DoD. Finally, one of the shortcomings of the ECI pointed out above—that it does not capture important economic forces that can lead to both more rapid increases in civilian earnings or moderation or even declines in earnings—could also potentially be viewed as a positive factor, as the ECI tends to have relatively small fluctuations over time compared with the CPI or the DECI.

Our analysis of the CBO's ECI forecast led us to conclude that it is not appropriate for use in guiding the annual basic pay adjustment. Over the past 12 years, we found that the forecasted value of the ECI at the time of the pay raise created by the CBO was typically less accurate in terms of reflecting the actual value of the ECI at the time of the pay raise than the actual ECI 15 months before this time. Additionally, the CBO's forecast data are released on an irregular schedule, suggesting that the timeliness of this measure would not be dependable.

We find that the DECI has multiple features that directly address the shortcomings raised regarding the ECI. These advantages include

- using a data source, the CPS, that surveys workers and that can better capture earnings changes related to job switches and other factors affecting earnings opportunities of workers, such as changes in the mix of occupations
- weighting the current population survey using the age, education, and (if required) gender mix of active duty military personnel who are, on average, younger, have less educational attainment, and are more heavily male than the overall civilian labor force; additionally, these weights are updated annually so

that changes in the mix of military personnel are fully reflected in the guidance for the annual basic pay adjustment.

Characteristics of the DECI that may make it less advantageous for guiding the annual basic pay adjustment include its greater responsiveness, which leads to more volatility in the magnitude of changes that would guide the annual basic pay adjustment. In recent years this volatility would have potentially led to basic pay adjustments that would have more rapidly reflected the wage inflation in the wake of the COVID-19 pandemic. But in other cases, this volatility might be less ideal from a policymaking perspective, even if it were to reflect civilian earnings changes more accurately. However, just as Congress ultimately set pay at levels that deviated from the ECI since 2000, it could also address this issue with the DECI in a discretionary fashion to tamp down the DECI's greater swings. Alternatively, it could do so more formally by, for example, using a moving average of the DECI.

Additionally, it is possible that there could be issues around the credibility of the DECI depending on the organization used to calculate it and the transparency of the process. However, given that there are now two decades of research on the DECI, including published code used in its calculation in Asch et al. (2020), we believe these concerns are relatively minor.

It is also the case that the DECI could be a useful additional tool for policymakers in setting the annual basic pay adjustment even if the ECI continued to be the formal measure for guidance. Policymakers have on numerous occasions in recent years departed from the ECI guidance and enacted basic pay adjustments reflecting other considerations. The DECI can help to inform these departures from the ECI guidance by, first, considering how it differs from the ECI and, second, creating DECI measures for subgroups of interest in the military population—for example, officers—that could help to develop a more well-rounded picture of the appropriate basic pay adjustment.

Our analysis of the CPI suggested that on both theoretical and empirical grounds it is not a strong candidate for use as the official guidance in setting the annual basic pay adjustment. Among other applications, the CPI and, in other cases, similar measures of price changes, are used to develop estimates of real earnings growth, which is the ratio of nominal wages to price changes. Real earnings growth is positive in most years, meaning that nominal wage growth exceeds the rate of price increases (price inflation). Thus, using the change in prices measured by the CPI would, in most years, lead to much lower increases in pay than any representative measure of nominal earnings. This is borne out in the data, where we show that over a 24-year period we present evidence on, the CPI was always lower than the ECI and was lower than the DECI in all but five years of this time series.

Finally, using a more updated ECI could improve the timeliness of the ECI but would require relying on the current ECI guidance (or a forecast of the ECI) during the budget process. This alternative process could result in budgetary errors that would need to be addressed by DoD. Over the last decade, we found years where the budgetary error involved a shortfall of around \$36–\$37 million and other years where the shortfall was far larger, exceeding \$300 million. Such shortfalls suggest that the desirability of this approach depends critically on the willingness of policymakers to face potentially consequential budget revisions relatively late in the budgeting process.

An Alternative Approach to Improving Timeliness

The timeliness of any candidate measure for guiding the annual basic pay adjustment must still contend with the extended period of time between when the data on earnings are collected and disseminated and when the annual basic pay adjustment is implemented. This 15-month lag is especially relevant in times of rapid changes in civilian labor market conditions such as those that have occurred in the aftermath of the COVID-19 pandemic. However, 20 percent of this 15-month total delay is the three-month period between

the beginning of the fiscal year in October and the implementation of the pay adjustment in January. This period appears to be discretionary in nature, since pay adjustments took effect at the beginning of the fiscal year from 1972 through 1982 (Defense Finance and Accounting Service, undated). Thus, one approach to shortening the delay is to adjust pay in October, at the beginning of the fiscal year, rather than in January. Implementing this approach would involve a onetime cost in the year when the transition from January to October occurred. Another potential disadvantage is the greater use of continuing resolutions in recent years, which would require that the pay raises implemented in October would need to come from a continuing resolution. On the other hand, the ECI guidance would be more timely and relevant to the actual pay raise.

Chapter Summary

Section 643 of H.R. 7900 of the FY 2023 NDAA directed DoD to enter into an agreement with a federally funded research and development center to determine whether DoD should continue to use the ECI to adjust basic pay or should instead consider alternative measures, including the DECI, given the tumultuous years since the COVID-19 pandemic that put a spotlight on the accuracy and timeliness of the ECI. This requirement was incorporated into the work of the 14th QRMC.

Our analysis leads to the conclusions that the CPI and the CBO's ECI forecast are not viable alternatives. The CPI does not and cannot accurately reflect earnings growth in the civilian labor market and the civilian opportunities faced by service members while the ECI forecast proved less accurate historically than the ECI currently used. While the DECI has some clear advantages over the ECI, the ECI is not without its benefits, not the least of which is that it is credible, relatively stable, and adequate in terms of accuracy. That said, even if the DoD continues to use the ECI, the DECI could provide useful additional information on whether it made sense to deviate from ECI guidance. Regardless of whether the DECI and/or the ECI is used, the analysis indicates that timeliness would be improved if DoD reverted to pay increases that began in October (at the beginning of the fiscal year), rather than January (at the beginning of the calendar year).

Adjusting Basic Pay for Critical Skills

Legislative language in the NDAA for 2023 motivated the policy questions we addressed in our analysis. Section 643 of H.R. 7900 requires a study of basic pay that includes

(2) An assessment of whether to modify current basic pay tables to consider higher rates of pay for specialties the Secretary determines are in critical need of personnel, or whether employing the system of supplementing basic pay with bonuses and other special and incentive pays adequately addresses the need for “wage differentials” among such specialties. The assessment shall specifically consider the degree to which the need for higher rates of pay for critical occupational specialties occurs broadly across the Force.

Three policy questions spring from the legislative language:

1. Does the need for higher pay in critical skills occur broadly across the force?
2. Does the current system of supplementing basic pay with bonuses and special pays adequately address the need for wage differentials for these specialties?
3. Should the pay table be modified to provide wage differentials for critical specialties?

To help answer these policy questions, we took a data-driven approach informed by SME discussions and a literature review to consider three related research questions:

1. What is the prevalence of critical specialties, and how much is cash compensation higher owing to receipt of S&I pays?
2. Does the evidence indicate that the current S&I pay system is adequate for providing wage differentials?
3. What might a pay table approach to offering wage differentials for critical skills look like, and what are the advantages and disadvantages of a pay table approach?

Our approach began with discussions with DoD and service SMEs conducted in the winter and spring of 2023. We also conducted a literature review of the effectiveness of S&I pays. We used DMDC military pay files from 2015 to 2021 to tabulate the prevalence of personnel in critical specialties and the extent to which their military pay is higher owing to receipt of S&I pay.

We begin this chapter with an analysis of the prevalence of critical specialties. We then consider evidence on whether the current S&I pay system is adequate for providing wage differentials, and the extent to which pay is higher in critical specialties owing to S&I pays. This is followed by a summary of the SME observations on pay for service members with critical skills, and a brief literature review. Finally, we consider a pay table approach for creating wage differentials, and then draw some conclusions.

We would like to note that DMDC military pay file data over this time period are imperfect, as there is evidence that these data do not capture all S&I pays received by service members. As a result, our analyses probably understate the extent of the use of S&I pays. The CBO recently used the same data and found broadly similar results (CBO, 2023b). Furthermore, other studies have found similar results using data from earlier periods (see, e.g., Asch, Hosek, and Martin, 2002). Thus, we think the broad implications are sound, but specific estimates could be problematic.

Identifying Critical Skill Areas

Based on service and OSD SME discussions, as well as DMDC data, we identified 11 critical skill areas or specialties, shown in the box. We used DMDC compensation data for 2021 to find the prevalence of receipt of special pays or bonuses for example occupations in each of these areas, as shown in Table 7.1. We found that those occupations identified by SMEs as being critical tended to show a high prevalence of receipt of special pays or bonuses. This does not indicate, however, that every occupation listed necessarily requires a wage differential. For example, the infantryman occupation is essential to the operation of the Army, and sometimes may require high Selective Reenlistment Bonus (SRB) amounts to sustain retention for certain critical skill indicators; high SRBs may also be needed for Skill Level 1 service members assigned to specific locations (such as the 75th Ranger Regiment), but other cases typically require only a low-tier SRB or no SRB at all. This is reflected in Table 7.1, which shows that only 27 percent of Army infantrymen received special pay or a bonus, as opposed to 98 percent for Army Special Operations Forces.

Critical Skill Areas Identified by SMEs

The following critical skill areas were identified:

- aviation
- cybersecurity operations
- explosive ordnance disposal
- foreign language proficiency
- infantryman
- intelligence
- medical
- nuclear professions
- recruiting
- skilled repair
- Special Operations Forces.

SOURCE: Authors' interviews of SMEs, and DMDC pay data for enlisted members, 2015–2021.

TABLE 7.1
Prevalence of Special and Incentive Pays in Critical Occupations, Enlisted Members, 2021

Occupation	Army	Navy	Department of the Air Force	Marines
Aviation	46% (15T)	95% (AWF)	95% (1A2)	52% (627)
Cybersecurity operations	41% (17C)	9% (CTN)	96% (1B4)	28% (171)
Explosive ordnance disposal	80% (89D)	99% (EOD)	81% (3E8)	31% (230)
Foreign language interpreter	22% (35P)	14% (CTI)	71% (1A8)	9% (264)
Infantryman	27% (11B)	—	23% (3P0)	12% (031)
Intelligence	34% (35Z)	28% (IS)	97% (1N7)	12% (021)
Medical	22% (68W)	18% (HM)	15% (4N0)	—
Nuclear	23% (74D)	77% (ETN)	76% (2W2)	6% (571)
Recruiting	95% (79R)	62% (NC)	84% (8R0)	0% (841)
Skilled repair	46% (15T)	54% (MR)	66% (2M0)	6% (217)
Special Operations Forces	98% (18F)	95% (SO)	10% (2A2)	74% (037)

SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

NOTE: The number and letter sequences in parentheses indicate the occupation designation for which the prevalence statistic has been calculated.

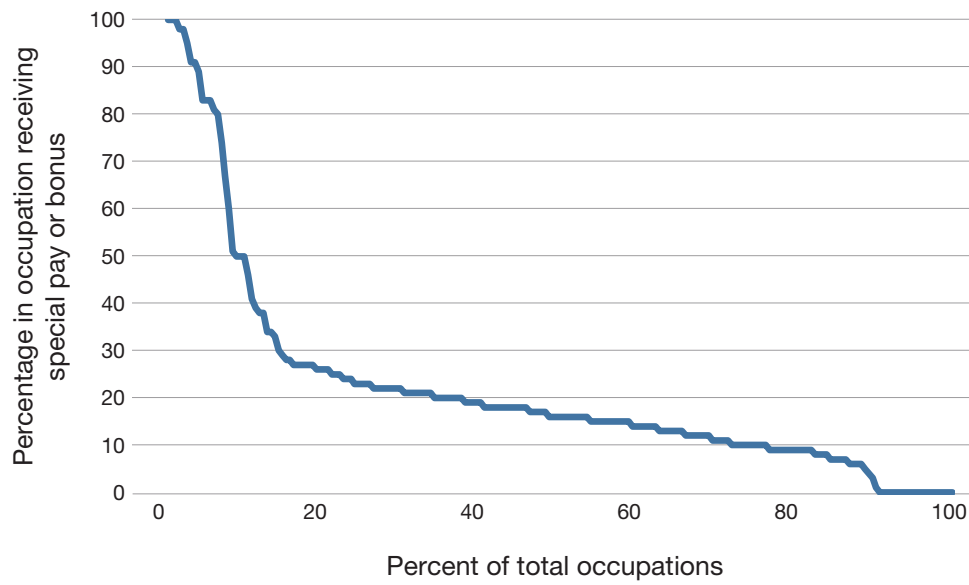
The Incidence of Special Pays and Bonuses

As an initial assessment, we tabulated the incidence of special pays and bonuses within each occupation. Using DMDC pay data for September 2021, we determined the portion of individuals within each occupation who received a special pay or bonus. Figure 7.1 shows the incidence of S&I pays among Army enlisted personnel, where we find that only a small share of occupations show a high incidence of S&I pays: the top 20 percent of occupations have 25 percent or more of members receiving special pays or bonuses, the top 10 percent have 50 percent or more, and the top 5 percent have 83 percent or more. Incidence of S&I pay receipt is highly skewed (i.e., more concentrated in a small share of occupations) among Army enlisted members. This is evidence that S&I pays are targeted to a select group of occupations. We show analogous results for the Department of the Air Force, Marine Corps, and Navy in Appendix G.

Figure 7.2 shows results for Army enlisted members when we consider the incidence of S&I pay by percentage of total strength (Army end strength). Figure 7.2 is similar to 7.1, but each occupation is weighed by strength. In Figure 7.2 the incidence of S&I pays is even more highly skewed: in the top 10 percent of total strength, 27 percent or more of members receive special pay or bonuses, and in the top 5 percent of total strength, 50 percent or more of members receive special pay or bonuses. This is additional evidence that S&I pays are targeted to a select group.

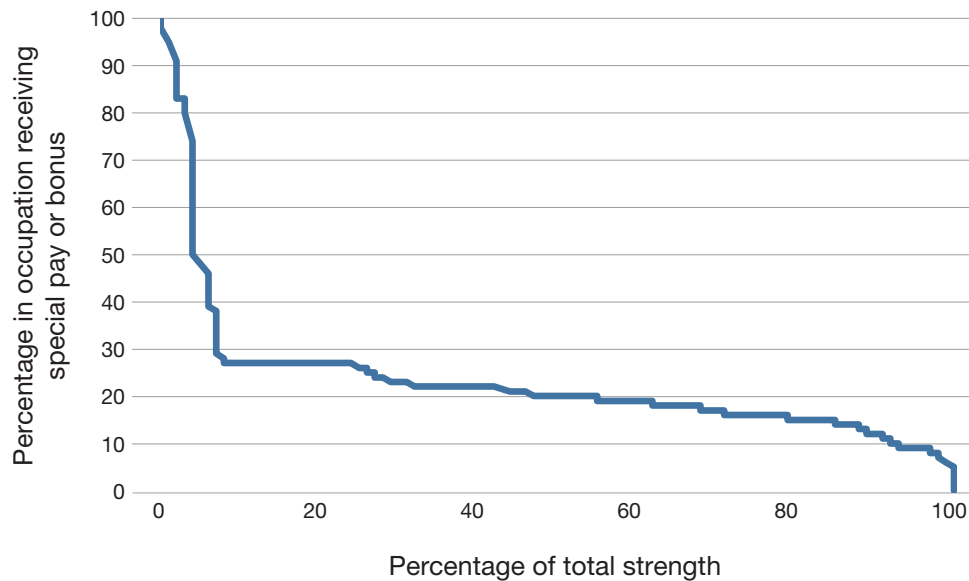
We see a similar concentration of the incidence of special pay and bonuses among commissioned officers. Figure 7.3 shows the incidence of receipt of special pay or bonuses among officers in the Army. The results are similar to those seen with the enlisted members.

FIGURE 7.1
Percentage of Personnel Receiving Special and Incentive Pays by Percentage of Total Occupations: Army Enlisted Members



SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

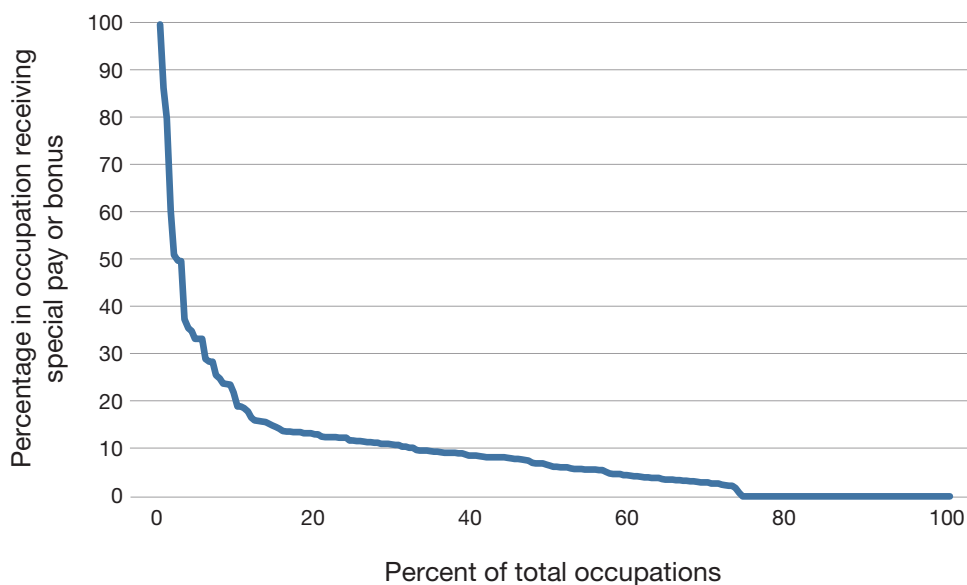
FIGURE 7.2
Percentage of Personnel Receiving Special and Incentive Pays by Strength: Army Enlisted Members



SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

NOTE: The figure shows the percentage of individuals in each occupation receiving S&I pays, where each occupation is weighted by the number of Army enlisted members in that occupation.

FIGURE 7.3
Percentage of Personnel Receiving Special and Incentive Pays by Percentage of Total Occupations: Army Officers



SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

Special Pay and Bonuses as a Fraction of Overall Cash Pay

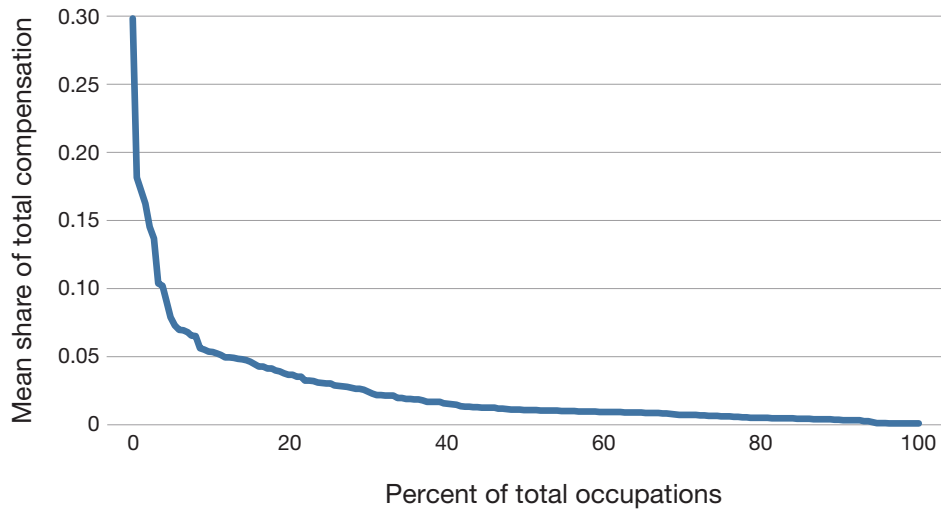
Beyond the incidence of special pay and bonuses by occupation, the size of the special pay and bonuses is also important. We measure the size relative to total compensation. That is, for each individual within an occupation we calculate the share of total compensation due to special pay and bonuses, and then we average across all individuals within an occupation to calculate the unconditional mean share of total compensation accounted for by special pays or bonuses. To create the figures, we sort the occupations by shares from high to low, and then plot by occupation.

Figure 7.4 shows the unconditional mean share of total compensation accounted for by S&I pays for enlisted members in the Army. The graph is highly skewed to the left, showing that special pays or bonuses are concentrated in a relatively few critical occupations. Less than 4 percent of Army enlisted occupations are associated with special pays or bonuses that account for 10 percent or more of total compensation.

Similarly, Figure 7.5 shows a graph of the unconditional mean share of total compensation for Army officers. Like the graph for Army enlisted members, this graph is skewed to the left, showing that special pays or bonuses are concentrated in a relatively few critical occupations. Less than 5 percent of Army officer occupations have special pays or bonuses that account for 10 percent or more of total compensation.

When totaling S&I pays received, we included all special pays and bonuses—even those not associated with a particular occupation. Thus, to some extent these figures overstate the share of compensation associated with an occupation. For example, if a service member received imminent danger pay because of a deployment, then that amount was included in the total, even though receipt of imminent danger pay might not be due to their occupation. Similarly, an individual might receive sea pay, although receipt of sea pay is due to their duty rather than their occupation. Many incentive pays are for duties that are not occupation or skill related, or related to critical skills, though they may be correlated to certain skills. We were intentionally conservative in constructing our measure, treating all pays equally; the alternative would have been to construct a measure that would have had to rely on judgments about which pays are occupation and skill related and which are not.

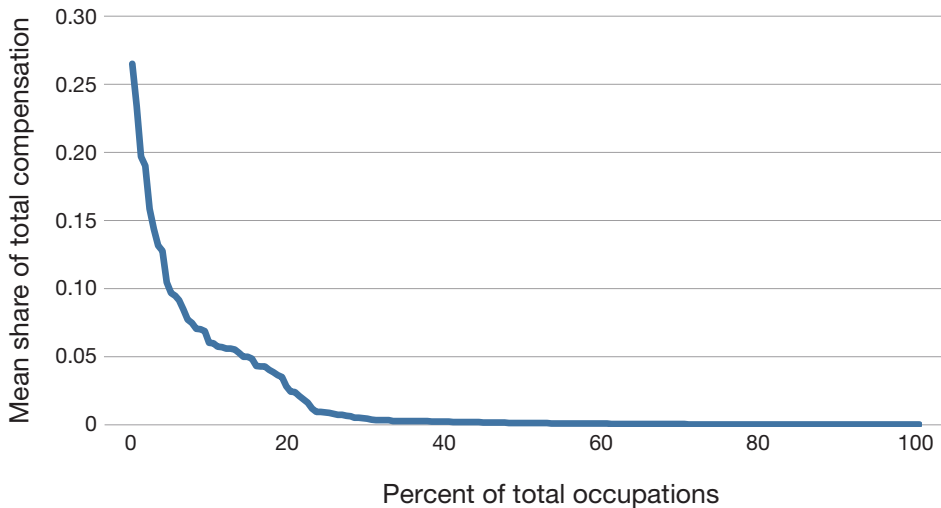
FIGURE 7.4
Average Special and Incentive Pay Share of Total Compensation, by Percentage of Total Occupations: Army Enlisted Members



SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

NOTE: This figure shows the average share of total compensation received by individual service members that is accounted for by S&I pays. The share of total compensation accounted for by S&I pays is computed for each service member within an occupation, and then averaged across all members within each occupation. The average shares by occupation are then sorted from high to low and plotted to produce the figure.

FIGURE 7.5
Average Special and Incentive Pay Share of Total Compensation, by Percentage of Total Occupations: Army Officers



SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

NOTE: This figure shows the average share of total compensation received by individual service members that is accounted for by S&I pays. The share of total compensation accounted for by S&I pays is computed for each service member within an occupation, and then averaged across all members within each occupation. The average shares by occupation are then sorted from high to low, and plotted to produce the figure.

The Extent to Which Pay Is Higher in Critical Specialties

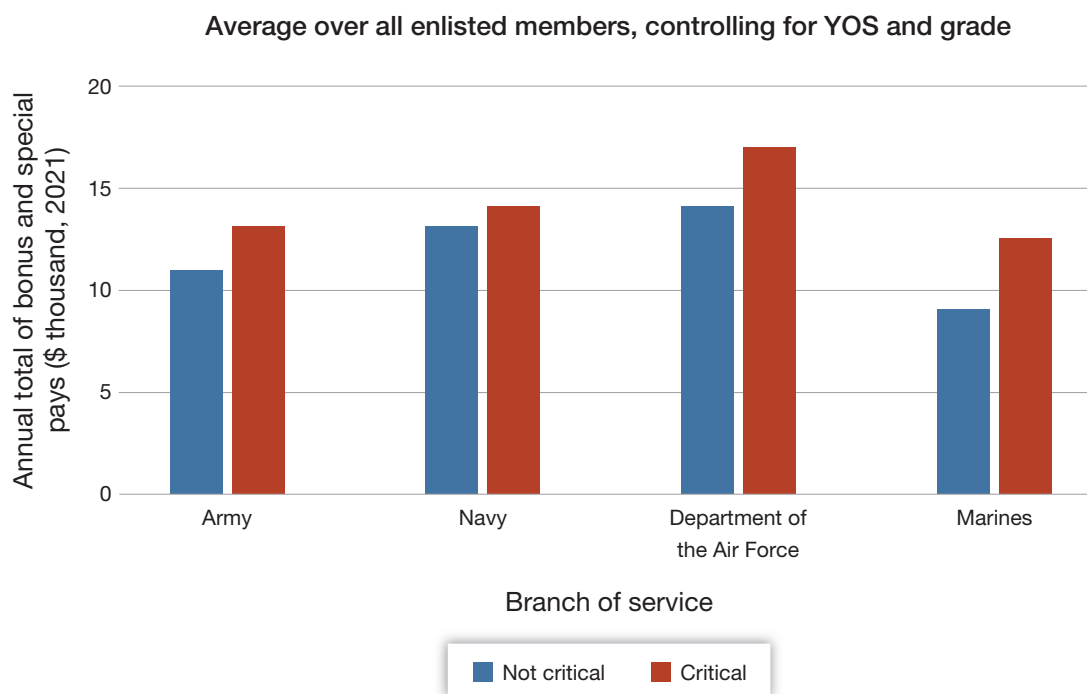
We found that cash compensation is higher in critical occupations across all services. We did this by estimating regression models that show the relationship between cash compensation and being in a critical occupation, while controlling for grade and YOS. The regression models were estimated on DMDC pay data by individual from 2016 to 2021. The dependent variable was total compensation, and the independent variables were YOS, grade, and indicator variables for receipt of special pay, receipt of bonuses, and whether the service member was in a critical occupation, as well as the critical occupation indicator interacting with the indicators for receipt of bonus and receipt of special pay. (The critical occupation indicator was based on the occupational areas identified in the box above.) Our regression results show that, conditional on getting bonuses and special pays,

- total compensation is higher in critical occupations than in noncritical occupations across all services
- special pays are higher in critical occupations than in noncritical occupations in all services except the Navy
- bonuses are higher in critical occupations than in noncritical occupations across all services.

We summarize these results from the regressions in Figures 7.6–7.9. The regression estimates themselves are presented in Appendix G.

We find that the sum of bonus and special pays is greater for those in critical specialties in all services and for both officers and enlisted members. In Figure 7.6 we can see that enlisted members in critical occupations earn from about \$1,000 to \$4,000 more annually, while in Figure 7.7 we can see that officer members in

FIGURE 7.6
Average Enlisted Annual Total of Bonus and Special and Incentive Pays for Each Member, by Critical and Noncritical Occupations

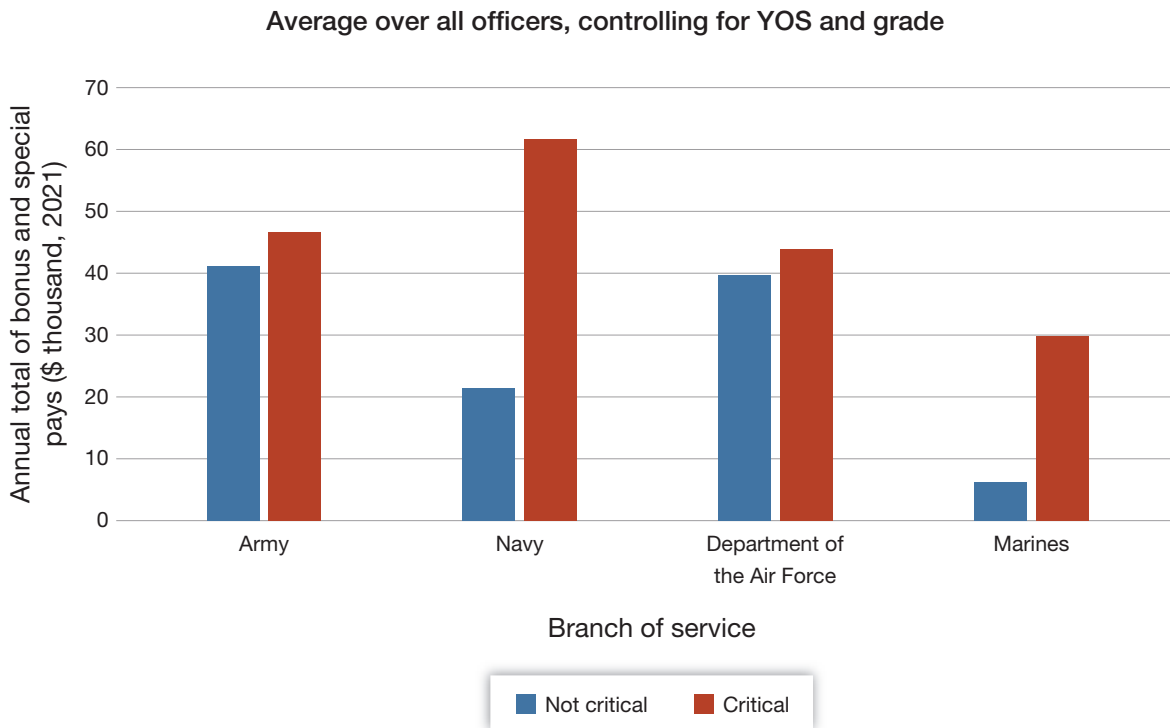


SOURCE: Calculations based on DMDC pay data for individual members from 2016 to 2021.

NOTE: Averages are conditional on receipt of bonus and special and incentive pays, controlling for YOS and grade.

FIGURE 7.7

Average Officer Annual Total of Bonus and Special and Incentive Pays for Each Member, by Critical and Noncritical Occupations



SOURCE: Calculations based on DMDC pay data for individual members from 2016 to 2021.

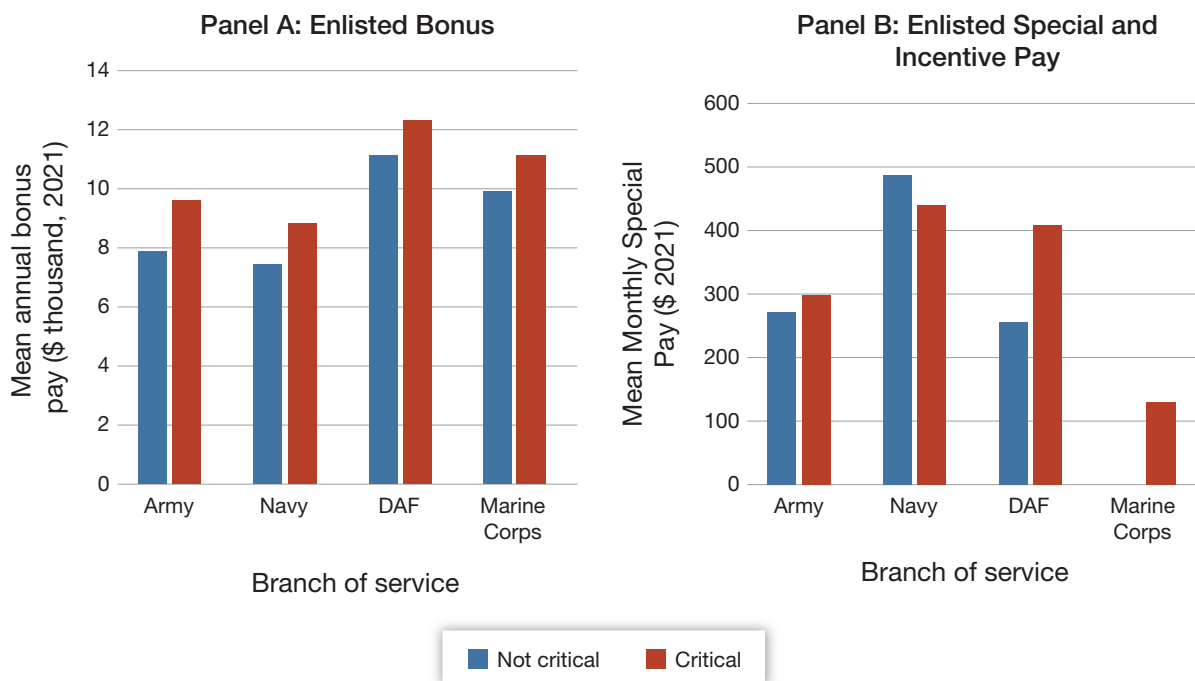
NOTE: Averages are conditional on receipt of bonus and special and incentive pays, controlling for YOS and grade.

critical occupations earn from about \$4,000 to \$40,000 more annually than their peers in noncritical occupations. (We note that data from any skill areas that received bonuses based on criticality and were not included in the box above could serve to blur the relationship shown in Figures 7.6 and 7.7.)

When examining Figures 7.6 and 7.7, it is important to bear in mind that the sum of the bonuses and S&I pays includes both pays that are contingent on commitment to an additional service obligation and pays that are unconditional in that they are paid by virtue of the nature of the assignment or occupation and are not contingent on a service commitment. Thus, the wage differential between critical and noncritical occupations consists of both conditional and unconditional pays, some portion being paid as a matter of course and another portion being paid in exchange for the service member giving up the option to freely leave the service for some period of time. The wage differential consists of both types of pay: unconditional (typically denoted as special pays), and conditional (typically bonuses). However, while we can calculate the difference in the receipt of the total of both types of S&I pays between critical and noncritical occupations, this does not necessarily mean it would be desirable to implement a wage differential as a single unconditional pay based on this calculated difference. We discuss this further in the section on the pay table approach to creating wage differentials.

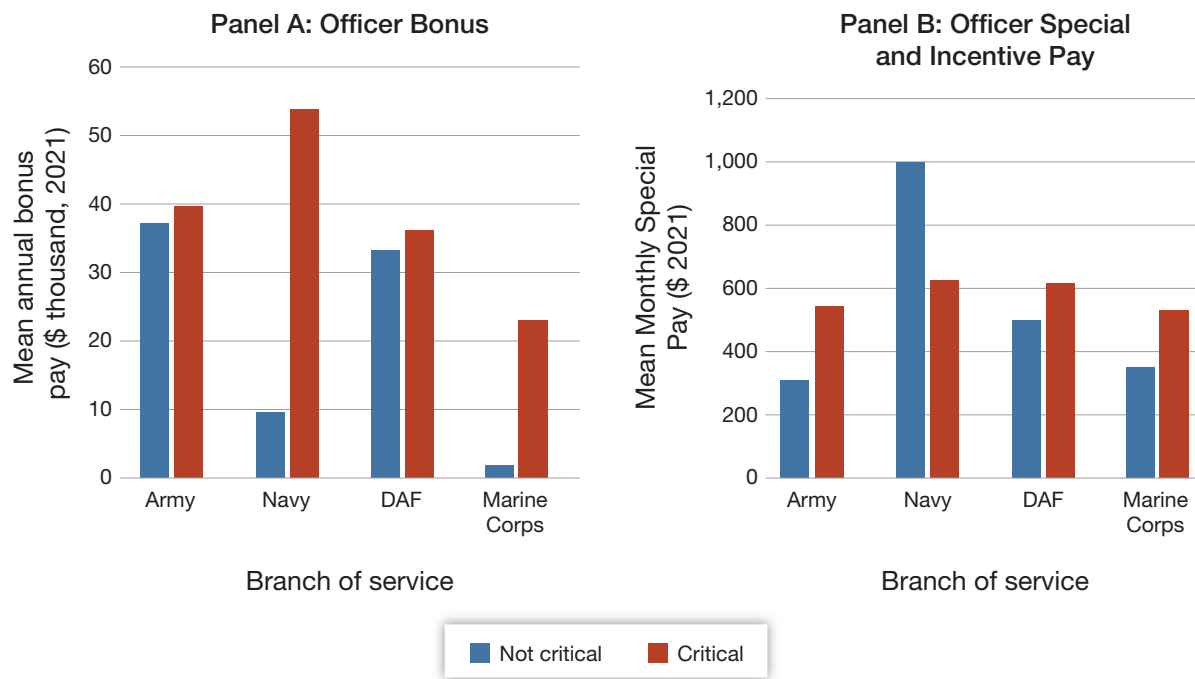
We also found that bonus pay was uniformly higher for officers and enlisted members in critical occupations. In addition, special pay was also higher for service members in critical occupations, with the exception of the Navy (likely due to the receipt of sea pay). Figures 7.8 and 7.9 show bonus and special pay (controlling for grade and YOS) for enlisted members and officers, respectively.

FIGURE 7.8
Mean Enlisted Bonus Pay and Special and Incentive Pay, by Critical and Noncritical Occupations



SOURCE: Calculations based on DMDC pay data for individual members from 2016 to 2021.
 NOTE: Averages are conditional on receipt of bonus and special and incentive pays, controlling for YOS and grade.

FIGURE 7.9
Mean Officer Bonus Pay and Special and Incentive Pay, by Critical and Noncritical Occupations



SOURCE: Calculations based on DMDC pay data for individual members from 2016 to 2021.
 NOTE: Averages are conditional on receipt of bonus and special and incentive pays, controlling for YOS and grade.

Insights from Other Sources

Previous Research

Previous research has demonstrated the utility of bonuses and special pays in providing wage differentials for critical occupations (Hosek, Mattock, and Asch, 2019). We know that bonuses are positively related with accession and retention (Asch et al., 2010; Goldberg, 2002; Knapp et al., 2018), and that pays associated with multiyear contracts (e.g., Aviation Bonuses [AvBs], Retention Bonuses, and SRBs) are cost-effective (Asch et al., 2021; Mattock et al., 2019). S&I pays can provide wage differentials and are more efficient when compensation is conditional on a multiyear retention commitment (Hosek, Mattock, and Asch, 2019); we discuss this point more when we discuss pay table options in the following section. We also know that, all else being equal, inflation reduces the real value of special pays, thereby reducing their retention effect over time (Calkins et al., 2023).

On the other hand, there is to our knowledge no research on whether bonuses and special pays are inefficiently set too high or are too broadly applied, thereby resulting in the services paying more economic rents. While it may be relatively straightforward to detect if bonuses and special pays are set too low, as this will lead to not meeting retention goals, it is much more difficult to detect if pays are overly generous. In addition, research on the relationship between special pays and outcomes other than retention (such as willingness to take certain assignments or perform certain duties) is sparse. One exception is combat compensation (Pleeter et al., 2011; Simon et al., 2011), and another is work on Assignment Incentive Pay and the Navy's auction system for it (Golding and Cox, 2003; Golfen, Lien, and Gregory, 2004).

SME Discussions

In general, the SMEs we consulted favored using S&I pays rather than basic pay to raise pay for service members in critical skill occupations. They expressed considerable support for the current S&I pay approach to differentiating pay by skill area, saying that this approach is transparent, predictable, and effective.

However, most SMEs saw potential areas for improvement. Some said that more pay differentiation for critical skills would be desirable, since the current system “pays a lot of rents” to noncritical skills. That is, they were of the opinion that the current system results in paying many service members in noncritical skill occupations more than is required to retain an adequate quantity and quality of personnel in these occupations and that many of the recipients would have stayed even if they were not receiving S&I pays.

Other experts said pays were not necessarily well coordinated when service members were eligible for multiple pays, and that pays can work in counterproductive ways (e.g., simultaneously offering an active retention bonus and a reserve affiliation bonus to the same people), thereby driving up cost.

Others said that the rationale for the current dollar amounts needed to be clearer. S&I pays are only adjusted infrequently, and those that are stated in nominal values are not automatically adjusted for inflation. Thus, the value of some S&I pays may decay over time. However, that is not to say that all special pays should necessarily be adjusted for inflation, as the required level of special pays may, in some cases, fluctuate. For example, the demand for commercial pilots fell considerably during the first decade of the century when the major airlines were consolidating, resulting in the Air Force reducing the timing and duration of multiyear contracts that were offered. (Some S&I pays adjust “automatically” over time. For example, some services implement SRBs by stating them in terms of multiples of monthly basic pay, which means that these SRBs are implicitly indexed to the basic pay table.)

SMEs also commented on the potential of using different basic pay tables to create wage differentials for critical skills. Several SMEs stated that the administrative burden of setting skill-specific pay tables could be prohibitive, difficult to plan within the budgeting process, and hard to coordinate across services with a common skill area (e.g., that of pilots). A few SMEs were supportive of giving serious consideration to

separate pay tables for certain specialties (e.g., doctors, dentists, pilots, and highly technical areas and elite skills for enlisted members). Separate pay tables could potentially eliminate the need to “artificially” promote people solely for compensation purposes.

Some SMEs suggested that one possibility for implementing skill-based pay would be to give service members in critical skills a *coefficient* multiplier that would be applied to the standard pay table. For example, service members in one critical skill occupation could have a coefficient of 1.1, meaning that their monthly basic pay would be 10 percent higher than the default basic pay for a given YOS and grade. We will explore a variant of this approach further below.

Pay Table Approach to Creating Wage Differentials

We consider two approaches that would add a wage differential to the baseline basic pay table: an *additive approach*, where a fixed amount is added based on grade and YOS, and a *multiplicative (or coefficient) approach*, where a simple linear function (a multiplier plus a constant) is applied to the baseline basic pay table.

The rationale for considering these two approaches is that they each provide a direct means of adjusting a baseline basic pay table to create a wage differential. A simple formula that can be applied to the existing pay table would be more straightforward to implement than, say, creating an entirely new pay table, such as a time-in-grade pay table, for certain select occupations. The advantage of the additive approach is that the amounts to be added can initially be directly derived from existing S&I pays, as we discuss below. To the extent that S&I pays for an occupation can be directly mapped onto grade and YOS, the additive approach could come close to replicating the existing wage differential. The multiplicative approach would not be able to come as close to replicating the existing wage differential unless the coefficients were allowed to vary by each grade and YOS cell, which would be administratively burdensome. A potential advantage of the multiplicative approach is that the nonconstant part of the wage differential would adjust automatically as the baseline basic pay table is adjusted; this is also a potential disadvantage, as there is no guarantee that the factor used to adjust basic pay would necessarily be the correct adjustment for the nonconstant part of the wage differential. The factors used for the additive approach would need to be adjusted over time; as this differential is not linked to the pay table, this would need to be done through a process that could potentially be as administratively burdensome as the existing S&I pay structure.

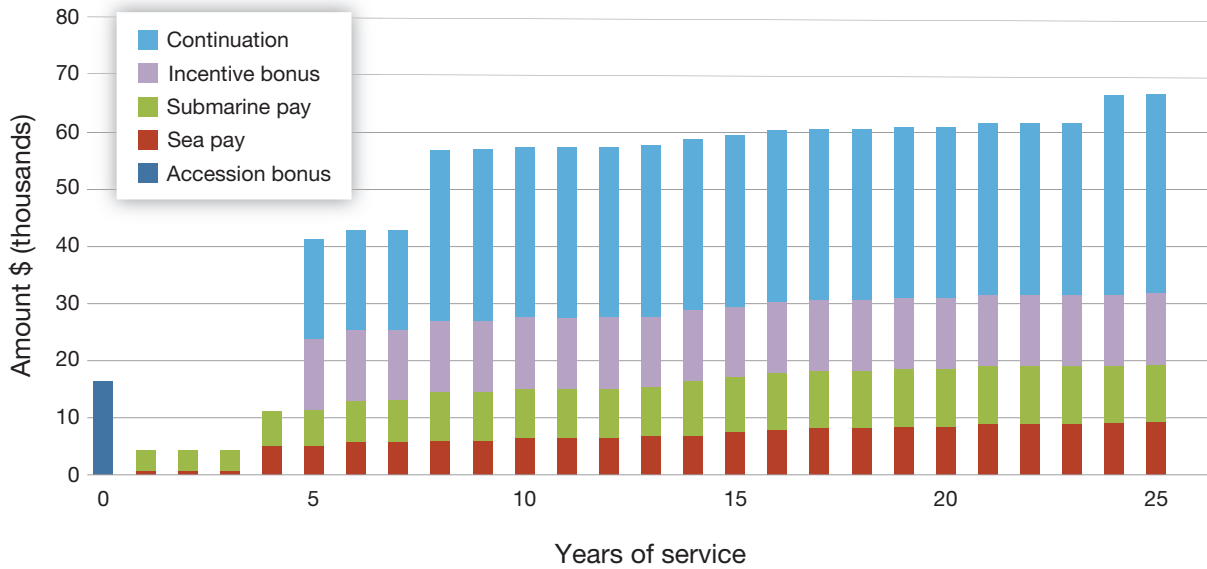
The following discussion of the additive approach draws heavily on research originally presented in Hosek, Mattock, and Asch (2019). The additive approach could be implemented by creating a wage differential that would equal the sum of S&I pays that are stable over time, scheduled to a particular point in a career, not involving an incentive to select a longer obligation, and not conditional on the realization of certain military circumstances. Thus, the initial values of the wage differential would be created by summing the values of existing S&I pays; successive values of the wage differential would need to be determined by a process similar to that whereby the precursor component S&I pays were determined.

Under the multiplicative approach the wage differential would equal a constant plus some multiple of basic pay. The value of the coefficients could initially be calibrated based on approximating the sum of the existing unconditional S&I pays.

The Additive Approach

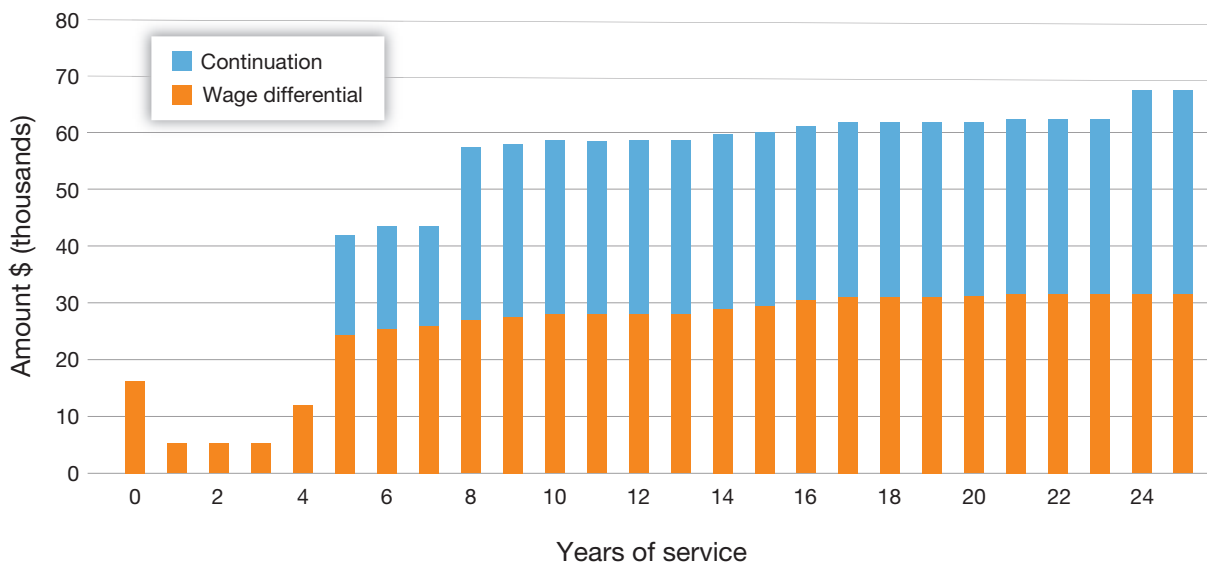
We illustrate the additive approach with some notional examples drawn from Hosek, Mattock, and Asch (2019). The first example is that of a Navy nuclear-qualified submarine officer. Figure 7.10 shows the S&I pays such an officer might receive, including incentive bonus, submarine pay, sea pay, an accession bonus, and a pay that is contingent on a multiyear obligation (the Nuclear Officer Continuation Bonus). Figure 7.11 shows the case where the incentive bonus, submarine pay, sea pay, and the accession bonus are consolidated into

FIGURE 7.10
Notional Example of Nuclear-Qualified Submarine Officer Special and Incentive Pay



SOURCE: Reproduced from Hosek, Mattock, and Asch, 2019.

FIGURE 7.11
Notional Example of Nuclear-Qualified Submarine Officer Special and Incentive Pay Under an Additive Approach to a Wage Differential



SOURCE: Reproduced from Hosek, Mattock, and Asch, 2019.

a wage differential added to basic pay, leaving out the incentive pay associated with a longer obligation. The pays aggregated into the wage differential are consistent with the criteria noted above: they are stable over time, they are scheduled to a particular point in a career, they do not involve an incentive to select a longer obligation, and they are not conditional on the realization of certain military circumstances.

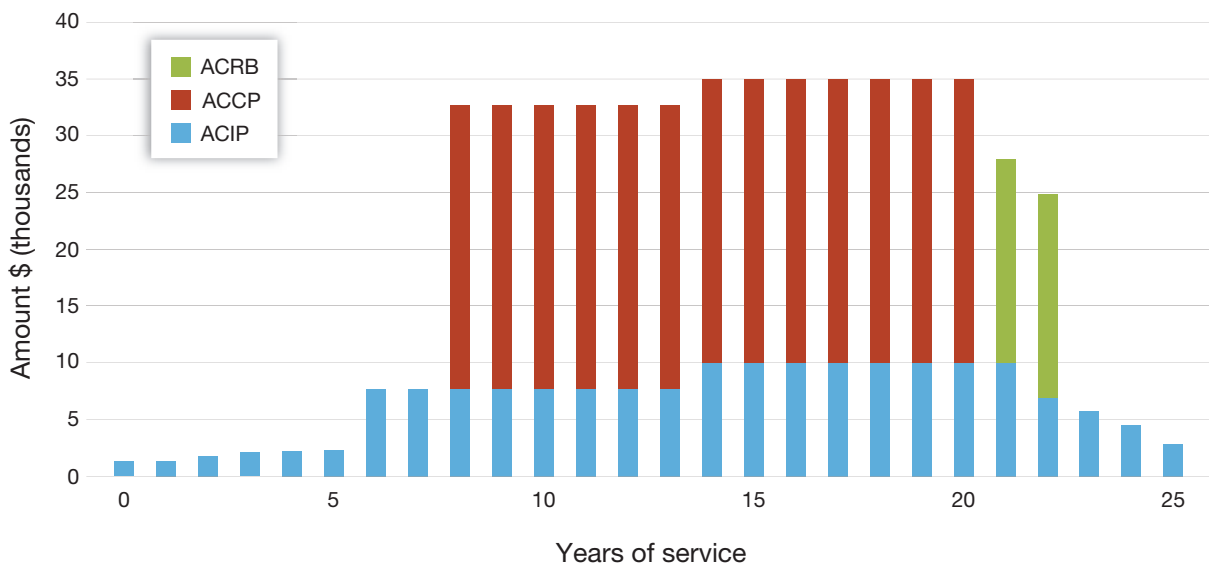
The notional examples depicted in Figures 7.12 and 7.13 show the consolidation of Aviator Career Continuation Pay (now the AvB) and the Aviation Command Retention Bonus into a single pay that depends on a service obligation. Aviation Career Incentive Pay (ACIP; now called Aviation Incentive Pay [AvIP]) would be the wage differential that would be added to the basic pay table to form the new occupation-specific pay table.

The notional examples in Figures 7.12 and 7.13 show where existing S&I pays could be aggregated to form the initial wage differential that would be added to the baseline basic pay table to form an occupation-specific pay table. Over time, any given wage differential would need to be adjusted, just as the separate S&I pays are now. The task of adjusting an occupation-specific wage differential might prove to be more difficult than that of adjusting the individual component S&I pays that were aggregated to form the wage differential. Individual S&I pays are well understood, can be comparable among the services, and have some associated institutional history and precedent. These aspects of S&I pays facilitate discussion and adjustment of the individual pays. The wage differential, unless it is created by simply renaming a single existing S&I pay, as in the Navy aviation example above, may need to perform several conceptually different functions, thus making it more difficult to manage.

One disadvantage of an occupation-specific pay table approach is that it is less flexible than the current system of S&I pays; it would not be able to target incentives as effectively. For example, the pay table that would result from the first example (Navy nuclear-qualified officers) would result in the officers receiving the same pay whether they were at sea or on shore. Thus, this incentive for sea duty provided by the receipt of sea pay being contingent on actually being at sea would be lost.

On the other hand, one advantage of an occupation-specific pay table approach is that it would help to address stovepiping of pay management, where individual S&I pays are managed by different communities

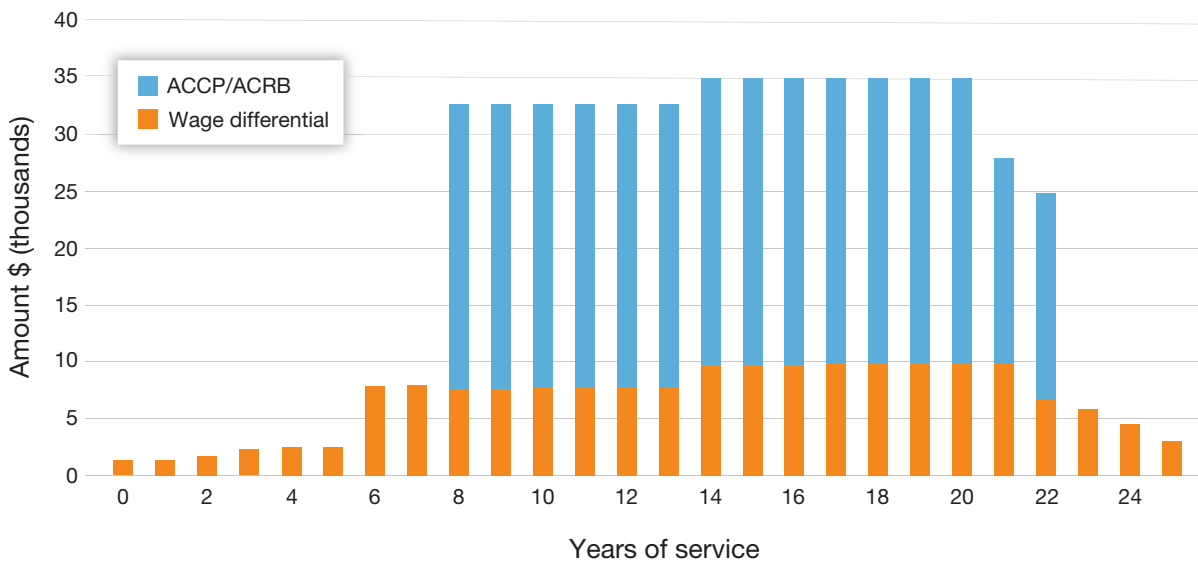
FIGURE 7.12
Notional Example of Navy Fighter Pilot Special and Incentive Pay



SOURCE: Reproduced from Hosek, Mattock, and Asch, 2019.

FIGURE 7.13

Notional Example of Navy Fighter Pilot Special and Incentive Pay Under an Additive Approach to a Wage Differential



SOURCE: Reproduced from Hosek, Mattock, and Asch, 2019.

who may be unaware of developments outside their particular remit, leading to unintended consequences when service members receive multiple S&I pays simultaneously.

The Multiplicative (or Coefficient) Approach

Figure 7.14 shows pilot compensation with AvIP, which is paid unconditionally, and AvB, which is conditional on a longer obligation. The blue line shows how AvIP could be approximated by a linear function of basic pay.

In Figure 7.15 we show an example where the wage differential is a linear approximation of AvIP, $0.0315 \times$ (baseline monthly basic pay) + 317. In this case, the occupation-specific pay table would be defined as $1.0315 \times$ (baseline monthly basic pay) + 317. That is, each entry of the basic pay table would be multiplied by 1.0315 and have the constant \$317.00 added to it.

It would be inefficient to incorporate all S&I pays into the pay table approach. Some S&I pays currently, such as AvB, require a service obligation. The obligation would be eliminated if the pay were instead incorporated into the pay table, but pay would have to be increased to achieve the same retention effect. However, it would be less efficient. The cost of unconditional pays to induce the same retention effect as offering a pay that has a service obligation could be considerably higher. Costs increased by 166 percent in an example of Air Force pilot retention presented in Hosek, Mattock, and Asch (2019). In addition, including S&I pays to compensate ex ante for realization of certain military circumstances would be less efficient than compensating ex post (e.g., Hostile Fire Pay, Imminent Danger Pay) when uncertain events (such as exposure to risk) are realized. However, if exposure to risk is certain (as in an inherently hazardous occupation) then it *can* be efficient to offer a compensating differential (Hosek, Mattock, and Asch, 2019).

Comparing the two pay-table based approaches, the additive approach could initially be implemented for selected occupations using current S&I pays as a guide. However, thereafter the additive wage differential would be subject to the same difficulties as setting current S&I pays in determining the appropriate levels.

The multiplicative approach is appealing in its apparent simplicity, but the version considered here also shows some of the limitations if this approach is solely confined to simple linear functions of the baseline

FIGURE 7.14
Notional Example of Department of the Air Force Pilot Special and Incentive Pay

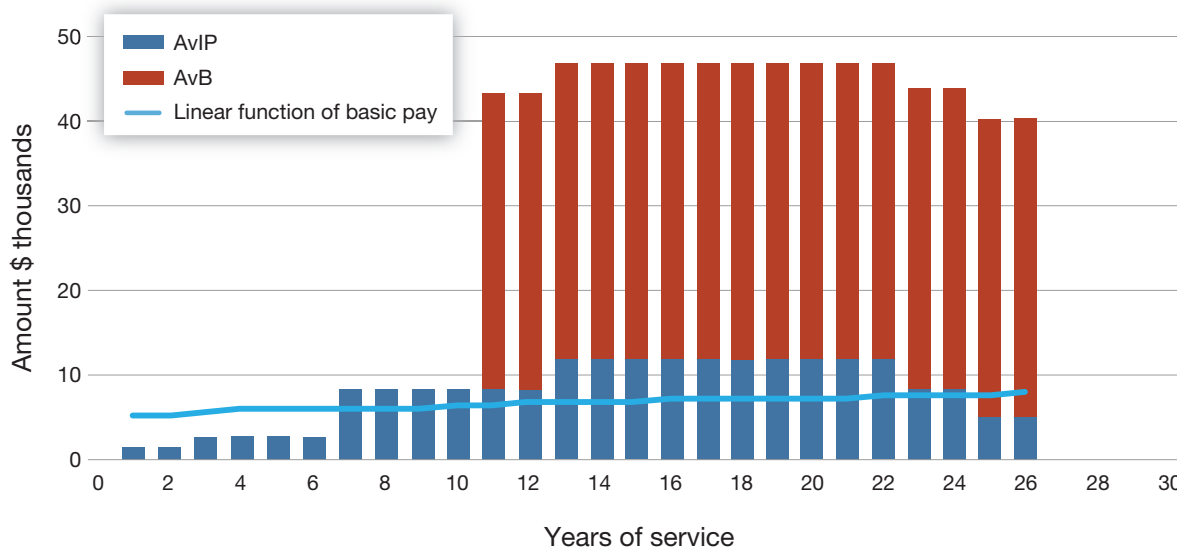
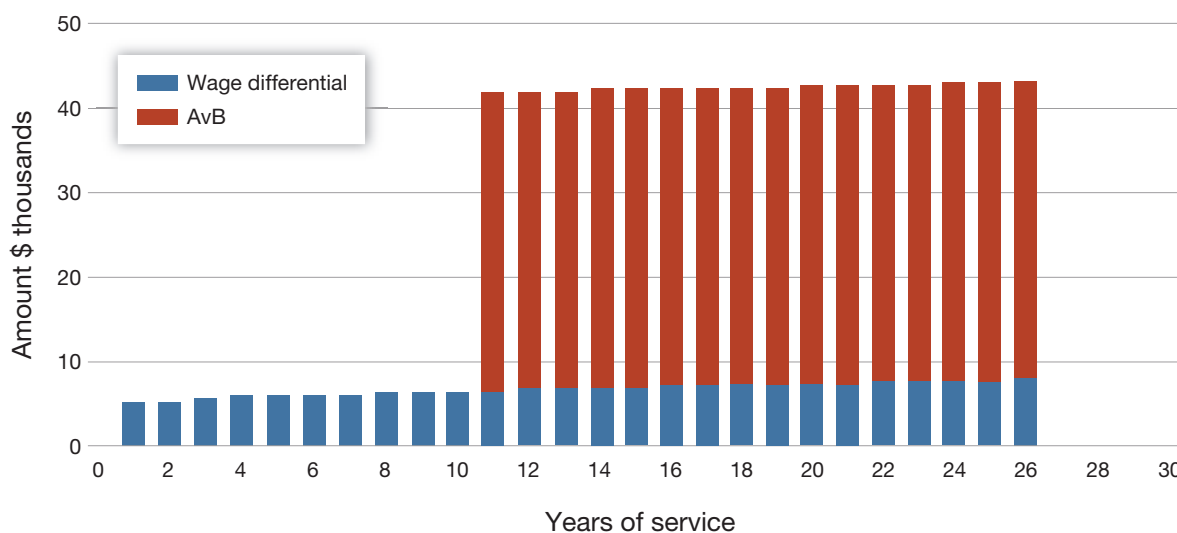


FIGURE 7.15
Notional Example of Department of the Air Force Pilot Special and Incentive Pay Under a Multiplicative Approach to a Wage Differential



basic pay table. For example, the linear approximation of AvIP deviates substantially from the actual AvIP in the early part of the career.

Both approaches have the characteristic that they could be adjusted in the normal course of updating the baseline basic pay table. The additive wage differential could be raised or lowered, as circumstances require. The coefficients in the multiplicative approach could also be adjusted; if it were not adjusted, the first term of the linear expression would increase by the same percentage as the basic pay table, while the constant term would remain the same, resulting in a net percentage increase somewhat less than that applied to the basic pay table. This, however, is no worse than the current situation, where many S&I pays are stated

in nominal values that are not frequently updated, resulting in a reduction in the real value of the pays over time due to inflation. This should not be read as implicitly advocating that S&I pays should be indexed (e.g., to the CPI-U); instead they should be reviewed and adjusted as frequently as needed to ensure that they retain their functionality as a means of ensuring adequate retention. That is, pays should be adjusted as needed to retain their *incentive value* rather than their real value, which may require increases more—or less—than that required to retain their real value.

Both approaches would change the basic pay table for selected occupations, as well as all forms of compensation linked to the basic pay table, such as the defined benefit component of the military retirement system, disability retirement, and disability severance pay.

Chapter Summary

In Table 7.2 we give the key findings corresponding to each research question, and in Table 7.3 we give the implications corresponding to each policy question. In brief, we find that S&I pays are highly targeted, with few occupations receiving large amounts of these pays. Cash compensation is uniformly higher in

TABLE 7.2
Summary of Findings

Research Questions	Key Findings
1. What is the prevalence of critical specialties, and how much is cash compensation higher owing to receipt of S&I pays?	<ul style="list-style-type: none"> S&I pays are highly targeted: a small share of occupations show a high incidence of S&I pays Few occupations receive large amounts of S&I pays
2. Does the evidence indicate that the current S&I pay system is adequate for providing wage differentials?	<ul style="list-style-type: none"> Cash compensation is uniformly higher in critical skills Research shows that S&I pays are effective as accession and retention incentives, and they are cost-effective, but the research has key gaps SMEs generally favored the current S&I pay approach for setting wage differentials
3. What might a pay table approach to offering wage differentials for critical skills look like, and what are the advantages and disadvantages of a pay table approach?	<ul style="list-style-type: none"> Both the additive and multiplicative approaches have advantages Consolidating S&I pays that currently require a service obligation would be inefficient

SOURCE: Authors' analysis and interviews with SMEs.

TABLE 7.3
Policy Implications

Policy Questions	Findings and Implications from the Analysis
1. Does the need for higher pay in critical skills occur broadly across the force?	<ul style="list-style-type: none"> No. S&I pays are highly targeted, and relatively few occupations receive large amounts in S&I pays.
2. Does the current system of supplementing basic pay with bonuses and special pays adequately address the need for wage differentials for these specialties?	<ul style="list-style-type: none"> Yes. SMEs generally favored the current S&I pay approach for setting wage differentials, and research shows that these pays improve readiness and are cost-effective. Even so, the SMEs and the literature review identified areas where S&I pays might be improved, though more analysis is needed for specific recommendations.
3. Should the pay table be modified to provide wage differentials for critical specialties?	<ul style="list-style-type: none"> Not at this time. While some S&I pays might be consolidated into a wage differential, pays that depend on a service obligation are more efficient than those that are not, and these pays should not be consolidated into a wage differential.

SOURCE: Authors' analysis and interviews with SMEs.

critical skills, and SMEs generally favored the current S&I approach for setting wage differentials by occupation; using a pay table approach to establish wage differentials has advantages and disadvantages, and consolidating those pays that currently have an associated service obligation into a wage differential would be inefficient. In response to the policy questions, we find that higher pay for critical skills does not occur broadly across the force. S&I pays are highly targeted, with few occupations receiving a high amount. The current system of S&I pays can adequately address the need for wage differentials in critical skills occupations and, at this time, the pay table should not be modified to provide wage differentials for critical specialties.

Conclusions

This report summarizes analyses we conducted in support of the 14th QRMC's review of the basic pay table; these analyses included an update and assessment of the 70th percentile benchmark used by Congress and DoD to judge the adequacy of level of military pay, a review of officer and enlisted basic pay, an evaluation of the ECI and alternatives as guides to the annual basic pay adjustment, and an assessment of pay for service members in critical specialties. Our main conclusions are summarized in this chapter.

The 70th Percentile Benchmark

Whether military pay levels are adequate must be judged not on how military pay compares with civilian pay but on whether the services are able to recruit and retain the personnel needed to meet their manpower objectives. Recent retention trends indicate that the services have experienced strong retention overall, generally reaching at least 100 percent of their active duty reenlistment mission among service members ending their initial obligations and those in midcareer. Officer retention has been strong as well. Recruiting has been challenging in recent years in terms of missed accession goals, though recruit quality has remained high overall. While research shows that recruiting is responsive to increases in military pay relative to civilian pay, the recent recruiting challenges do not provide a compelling reason to increase military pay relative to civilian pay given that retention has been strong and the services have more efficient means of improving recruiting that they are pursuing, including increasing advertising and numbers of recruiters.

While the adequacy of military pay should be judged ultimately on readiness outcomes, since the 9th QRMC in 2002 both Congress and DoD have used the 70th percentile of civilian earnings as a benchmark to consider the adequacy of RMC. Using 2017 data, the 13th QRMC found that the weighted average of enlisted RMC from zero to 20 YOS was at the 84th percentile of comparable civilians, while officer RMC was at the 77th percentile. We updated these computations using 2021 data and found virtually identical results. The weighted average of enlisted RMC between zero and 20 YOS was at the 83rd percentile, while the weighted average of officer RMC over these YOS was at the 76th percentile. Thus, average RMC continues to be well above the 70th percentile.

We also considered the question of whether the 70th percentile benchmark should be changed. We find that average RMC has exceeded the 70th percentile since the late 1990s, when the 70th percentile was established, owing to the faster-than-ECI pay raises that occurred in the early 2000s, raising the question of whether the percentile benchmark should be increased. We considered recruiting and retention outcomes since the late 1990s and found that, relative to the earlier periods corresponding to the data periods that were the basis for the establishment of the 70th percentile, recruit quality has remained relatively unchanged in recent years, and retention has been stronger, though recruiting and retention resources have increased over time and some conditions have improved. For example, end-strength targets are significantly lower than in the late 1980s and mid-1990s, reducing accession and retention objectives and the overall demand for manpower. Furthermore, the services are fielding larger recruiter workforces than in earlier periods, and service

members are experiencing fewer deployments overall in recent years relative to earlier periods. Furthermore, active duty members report fewer duty days when they work overtime. On the other hand, several factors that affect recruiting and retention outcomes have become more challenging. Fewer young people express an interest in military service, the share of young people qualified for service has been declining over time, and low unemployment has meant robust civilian labor market opportunities overall. Furthermore, the share of active duty members who express satisfaction with the military way of life has drifted downward over time, as have the share of spouses who support their spouses staying in the military.

These challenges suggest that aspects of recruiting and possibly the retention market have become more difficult than in the periods that were used to establish the 70th percentile benchmark, and many of the factors do not appear to be transitory—a conclusion we also reached in our earlier analysis (Asch et al., 2020). On the other hand, other aspects have become easier, including lower recruiting and retention objectives. Nonetheless, these challenges suggest that an RMC percentile benchmark above the 70th could be appropriate, though we reiterate that other policies, such as a greater number of recruiters and increased advertising, are more cost-effective than pay in addressing recruiting challenges. We do not have a specific number to offer in terms of a new benchmark, but a figure of around the 75th to 80th percentile for enlisted personnel and around the 75th percentile for officers might likely be in the right ballpark. In considering a higher benchmark for enlisted members and officers, future QRMCs should be required to periodically revisit any new benchmark to ensure that it remains relevant as an early warning system of potential issues with the level of military pay relative to civilian pay.

Junior Enlisted Basic Pay

Food insecurity among military personnel (especially among junior enlisted members), recent recruiting difficulties, and rapid inflation since 2020 have put a spotlight on junior enlisted pay. In the spring of 2023 Congress put forward two proposals to increase junior enlisted basic pay, and in the winter of 2024 the House of Representatives' Quality of Life Panel also argued for a junior enlisted basic pay increase. We find that because of rapid promotion in the first year of service, enlisted pay in the first year exceeds the pay of an E-1, and some recruits enter the military above the grade of E-1. Furthermore, basic pay grows substantially over the first enlistment term because of promotions and longevity increases, and RMC for junior enlisted members exceeds the FPL, even for large families.

We assessed the two congressional proposals together with four additional proposals in terms of their expected effects on pay levels, pay compression of the basic pay table, high-quality enlistments, retention, personnel cost, and efficiency. We find that none of the proposals dominates in terms of its effects on all the factors we considered. The proposals with the largest pay increases had the largest effects on recruiting and retention but also were the most costly. The two congressional proposals compressed the pay table the most relative to the pay of midcareer and senior enlisted personnel, and these proposals were among the least efficient. The least costly proposal we considered had a small effect on recruiting and retention and was the least efficient proposal we considered.

Thus, the best proposal depends on the problem that DoD is trying to solve. If food insecurity is the problem, our initial tabulations suggest that nonpay assistance may be necessary. We tabulated the relationship between military pay and food insecurity by merging information on food insecurity from the 2020 SOFS-A with DMDC pay records of respondents. We do not find a statistically significant relationship between average military cash compensation and likelihood of being food insecure in the survey for junior enlisted personnel, though we do not hold constant other factors that could be important.

Similarly, if DoD is seeking to improve recruiting outcomes, research shows that raising basic pay is the least cost-effective means of doing so relative to advertising, recruiters, and even enlistment bonuses. Raising

pay is a permanent policy that affects pay in future years and affects other personnel costs, including retirement accrual costs. Increasing basic pay to address recruiting challenges only begins to make sense when the DoD is also facing retention challenges, which is currently not the case.

Midcareer and Senior Enlisted Basic Pay

In our evaluation of midcareer and senior enlisted basic pay, we first considered whether the level of military pay seemed adequate for these personnel by examining whether the services were meeting their overall retention objectives for these personnel and whether the levels of RMC compared well relative to the earnings of similar civilians. We found that overall retention is strong for enlisted personnel, though the services report areas of challenges in specific communities, such as aviators, that are typically addressed with S&I pays. Furthermore, as we have shown, average RMC exceeded the 70th percentile benchmark for enlisted personnel.

That said, discussions with SMEs revealed two areas of concern regarding midcareer and senior enlisted basic pay. The first area was related to performance incentives embedded in the pay table and the financial reward associated with promotion—the primary means by which better performance is financially recognized. A consistent theme we heard was that pay is only weakly related to performance and that pay increases associated with promotion are not always adequate. Another theme we heard related to performance is that E-9s are promoted around the 21st year of service, but those who stay until 30 or 40 YOS have no further promotion opportunities.

The second area of concern was the relationship between officer and enlisted basic pay and the increasing absolute gap over time between them. A related concern was that enlisted jobs have changed over time, involving more responsibility than in the past, and that midcareer and senior enlisted members are paid less than officers with similar responsibilities. Some SMEs recommended capping the difference between officer and enlisted pay and paying personnel based on job skills and responsibility.

We evaluated four proposals that would restructure the basic pay table for midcareer and senior enlisted personnel to increase incentives for performance. The proposals would also structure the pay table in a way that is more in accord with the implications of the personnel economics literature, which finds that the optimal structure of compensation across hierarchical levels is one where the pay increase associated with promotion is larger for more senior promotions. The increase in compensation can take forms other than cash compensation, including expected retirement benefits or noncash compensation. Three of the proposals would add an E-10 grade to provide promotion opportunities for E-9s, a proposal that was also considered by the 9th QRMC.

We find that all four proposals would improve retention and performance incentives but would also increase personnel costs, with larger effects for the proposals that increase basic pay the most. The proposals with the largest effects are ones that target pay raises to the grades of E-6 to E-9, with one of the proposals adding an E-10 grade and one that does not. While adding an E-10 grade is predicted to increase performance incentives, doing so could involve considerable implementation costs because new manpower requirements would need to be defined and validated and new promotion criteria would need to be defined.

Linking Enlisted Basic Pay to Officer Basic Pay

To analyze the issues raised by some SMEs regarding the relationship between enlisted and officer basic pay, we considered the experience of the civilian labor market and reviewed the available literature pertaining to this issue. There has been extensive research on pay disparities in private-sector firms, with the literature becoming more salient due to passage of the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2015, which requires firms to report pay disparities between upper management and the average employee.

Research on private-sector firms provides evidence that larger firms pay higher wages, especially to their chief executives, and have larger pay disparities between employees across hierarchical levels. Studies also find that firms with larger pay disparities have stronger operating performance, higher valuations, and larger equity returns. These results are consistent with the hypothesis that larger firms require more managerial talent at the top to be successful and thus require higher pay and compensation to attract and retain that talent. An implication of these results is that capping pay differences would hurt firm performance by inhibiting the ability of firms to attract and retain better talent at the higher hierarchical levels. Some research also finds that pay disparities do not adversely affect employee output, attendance, and group cohesion unless workers perceive that higher-paid peers are not more productive. It also finds that employees are motivated by higher-paid managers but demotivated by higher-paid peers in the same unit and same position.

The implication of this research is that capping the differences would likely hurt military organizational performance by hurting the ability of the services to attract and retain higher-quality personnel who will eventually fill upper-ranked managerial positions. Capping differences could result in pay that is too high for some personnel (and excessively costly for the military) and too low for other personnel.

We also considered the literature on paying people with similar job responsibility and skill the same amount, a concept known as comparable worth in the labor economics literature. This approach to paying people had some interest in the 1980s and 1990s, especially as a means of reducing pay differences between those in female-dominated occupations like teaching versus male-dominated occupations, but it has lost popularity since then. Critics did not favor comparable worth because it would substitute job content for market conditions in setting pay and ignore the supply and demand factors that influence pay levels in the market. Ignoring these factors in the pay-setting process could produce retention problems in some cases or an oversupply of people in other cases. It also lost favor among proponents because although comparable worth policies increased pay in female-dominated occupations, they also reduced employment and ultimately did not eliminate pay disparities because such disparities were due to other factors.

The implication of comparable worth for setting enlisted versus officer pay is that it would move the pay-setting process away from such considerations as retention, recruitment, motivation, and the other principles of military compensation that have guided the setting of military pay for decades. It would de-emphasize career progression considerations that are specific to the enlisted force versus the officer force and could result in talent management difficulties or inefficiencies because it could result in pay that is too high for some parts of the force and too low for others. Further, it would require an extensive and objective job evaluation process that could be difficult to implement given the challenges of measuring military productivity.

Commissioned Officer Basic Pay

Officer retention has historically been strong in recent years, and average RMC among officers compares well relative to civilian pay based on our updated analysis of the RMC benchmark. Nonetheless, some of the SME discussions we held raised concerns about the adequacy of performance incentives in the officer pay table—especially for midcareer officers and very senior officers. They also raised concerns about the lower pay for lateral entrants relative to officers in the same grade who entered as O-1s, thereby making lateral entry relatively less attractive as a career alternative.

We evaluated three proposals to increase performance incentives that targeted basic pay raises to mid-career officer grades, with one proposal also raising basic pay for very senior officers by lifting the basic pay cap to the ES-I level. We find that the proposals would increase performance incentives in the midcareer and senior officer grades and would improve retention, with a modest increase in cost. We note that the analysis did not estimate the value created for the services of the increased performance incentives.

Research for the 13th QRMC analyzed the advantages and disadvantages of a time-in-grade pay table relative to the current time-in-service pay table. One advantage of a time-in-grade pay table shown in that research is that it could increase the attractiveness of lateral entry by raising entry pay for lateral entrants relative to their pay under the current time-in-service pay table. However, that research also showed that it would be possible to replicate the advantages of a time-in-grade table for lateral entrants by expanding the definition of constructive credit to include YOS. Thus, lateral entrants could enter service not only at a higher pay grade but also at a higher year of service. Such a constructive credit policy would enable the services to increase the attractiveness of lateral entry under the current time-in-service pay table.

The Employment Cost Index and the Annual Basic Pay Adjustment

Rapidly rising inflation since 2021 has brought attention to the annual military pay raise because of concerns that lags in the annual adjustment would result in a decline in real military pay. The ECI used to guide the annual pay adjustment is computed 15 months before the military pay raise in January, and it is backward-looking in the sense that the change in the ECI is measured relative to 12 months earlier. When inflation is increasing rapidly, the 15-month lag and the backward-looking focus mean that the pay raise will not reflect all of the changes in cost of living between one pay raise and the next.

We evaluated the ECI—as well as several alternatives, including the DECI—in terms of accuracy, timeliness, cost-effectiveness, and credibility. The ECI captures broad changes in the civilian labor market in general, and to the extent that service members make retention decisions based on the civilian labor market in general, the ECI would capture these civilian earnings. The ECI is highly credible, since it is computed by the BLS, and it is cost-effective to the extent that DoD does not incur the cost of computing it. On the other hand, the 15-month lag hurts the timeliness of the ECI, and this affects service members during times of inflation.

The DECI is an index developed in the 1990s by RAND and evaluated for the 13th QRMC. The advantages of the DECI are that it takes perspective civilian employees, rather than employers, and focuses on the labor market opportunities of civilians who have similar characteristics as military personnel, thereby more accurately reflecting the external market as service members make retention decisions. The disadvantages of the DECI are that it is subject to more volatility than the ECI during times of significant churn in the labor market, and it would have to be computed by DoD or some external entity, thereby potentially calling its credibility into question by some stakeholders. Further, it would also be subject to a 15-month timeliness lag.

We also consider the CPI, a metric on inflation, as a potential alternative to the ECI given concerns about recent inflation. We found that changes in the CPI miss changes in civilian wages due to increases in worker productivity. The CPI has grown more slowly than the ECI since 2000, implying that military personnel would have missed out on significant pay raises and that the services might potentially have experienced significant recruiting and retention challenges. We considered a forecast of the ECI produced by the CBO as a means of improving timeliness, but we found that the forecast is only produced on an ad hoc basis and is less accurate at predicting the future ECI than the ECI currently used to guide the military pay raise.

Finally, we considered an alternative that would rely on a more recent ECI to inform the pay raise, thereby reducing the time lag from 15 months to six months or less, but which would use the usual ECI for budgeting purposes. This alternative would improve the timeliness of the pay adjustment guidance and have the other advantages of the ECI. However, it would also mean that the ECI used for the pay raise would be out of sync with the budget process, and if the ECI used for budgeting differed from the ECI used for the pay raise, DoD will find it has either a budgeting shortfall or overage. We estimated that the size of these shortfalls or overages were relatively small until 2022. When inflation increased, we found DoD would have faced a shortfall of approximately \$340 million in 2022 and about \$480 billion in 2023.

Pay for Critical Skills

Retention of service members in critical occupational specialties is vital to the mission of the military. This was recognized in NDAA 2023; Section 643 of H.R. 7900 required a study of basic pay to assess whether to modify the current basic pay tables to provide higher rates of pay, or whether employing the current system of S&I pays adequately addresses the need for “wage differentials” for critical occupations. In addition, Section 643 also mandated that the assessment “consider the degree to which the need for higher rates of pay for critical occupational specialties occurs broadly across the Force.”

We considered three policy questions that were motivated by the legislative language in Section 643:

1. Does the need for higher pay in critical skills occur broadly across the force?
2. Does the current system of supplementing basic pay with bonuses and special pays adequately address the need for wage differentials for these specialties?
3. Should the pay table be modified to provide wage differentials for critical specialties?

To help answer these policy questions, we took a data-driven approach informed by SME discussions and a literature review to consider three related research questions:

1. What is the prevalence of critical specialties, and how much is cash compensation higher owing to receipt of S&I pays?
2. Does the evidence indicate that the current S&I pay system is adequate for providing wage differentials?
3. What might a pay table approach to offering wage differentials for critical skills look like, and what are the advantages and disadvantages of a pay table approach?

We first discuss the findings for the research questions, and then the policy questions. With respect to the first research question, on prevalence, we found that S&I pays are highly targeted, with only a small share of occupations showing a high incidence of S&I pays, and also that few occupations receive large amounts of S&I pays. For the second research question, on the adequacy of S&I pays in providing wage differentials for critical skills, we found that cash compensation is uniformly higher for critical skills. In addition, we found that previous research shows that S&I pays are effective as accession and retention incentives and cost-effective, but research has gaps in some key areas, such as whether some S&I pays are set too high or too broadly, resulting in the services paying economic rents. Furthermore, the SMEs we interviewed generally favored the current S&I pay approach to setting wage differentials. Finally, for the third research question, on the advantages and disadvantages of different pay table approaches to giving a wage differential, we found that both approaches we considered had advantages, as they are both conceptually simple extensions of the existing pay table and they could potentially both help to address stovepiping of S&I pay management that could lead to unintended consequences when service members receive multiple S&I pays simultaneously for essentially the same thing. However, we also found that consolidating S&I pays into the pay table that currently require a service obligation would be inefficient.

Based on our research findings, we were able to address the policy questions. With respect to the first policy question, as to whether the need for higher pay in critical skills occurs broadly across the Force, we found that the answer was “No”: S&I pays are highly targeted, with few occupations receiving a large amounts in S&I pays. For the second policy question, as to whether the current system of S&I pays can adequately address the need for wage differentials in critical skills occupations, the answer was “Yes”: SMEs generally favored the current S&I pay approach for setting wage differentials, and research shows that these pays improve readiness and are cost-effective. Even so, the SMEs and the literature review identified areas where S&I pays might

be improved (pays are not necessarily well-coordinated when service members are eligible for multiple pays; pays are adjusted infrequently; those stated in nominal dollar values may inadvertently decay in value over time), though more analysis is needed for specific recommendations for improvement. Finally, with respect to the third policy question, as to whether the pay table should be modified to provide wage differentials for critical specialties, the answer is “Not at this time.” While some S&I pays might be consolidated into a wage differential, pays that currently depend on an additional service obligation are more efficient than those that are not, and these pays should not be consolidated into a wage differential.

Wrap-up

A periodic review of the military pay table is important to ensure the continued success of the AVF and the ability of the services to attract and retain the quality and quantity of personnel they need. Our review focused on issues raised in the charter of the 14th QRMC, in Section 643 of H.R. 7900 of the NDAA for FY 2023, and in SME discussions. We find that none of the proposals to increase junior enlisted basic pay emerged as uniformly better in terms of its recruiting, retention, cost, efficiency, and pay compression effects relative to the baseline. This raises the question of whether other, more targeted and tailored, policies would be more effective and efficient. For example, pay is a blunt and costly instrument for addressing recruiting challenges that can be more effectively and efficiently addressed by the types of policies the services have recently been pursuing, such as increasing the number of recruiters and improved marketing and advertising.

SMEs raised concerns about the weak link between pay increases and performance in the pay table for career enlisted members and for commissioned officers. We considered proposals that would restructure the pay table for each group to provide successively larger pay bumps associated with promotion, including adding a new E-10 grade, and find that these proposals would improve retention and performance incentives but also modestly increase personnel costs. Adding an E-10 grade could involve significant implementation costs, a factor that we did not consider in our cost analysis. The analysis also did not delve into whether the current procedures for evaluating performance are comprehensive and reliable across personnel being evaluated. Some personnel might believe that the performance evaluation process does not capture the range and quality of their contributions; therefore, they might perceive their pay increase as too low. More broadly, the report considers pay table changes to create stronger incentives, and other factors, such as the validity of the performance evaluation process, may be pertinent to strengthening the link between pay and performance. We find that linking enlisted pay with officer pay, whether to address pay inequality or to better reflect similar job content among enlisted members and officers, would move the setting of military pay away from the market-based principles that have guided the setting of such pay successfully over the course of the AVF and could result in recruiting and retention problems.

Overall, we find that the ECI has functioned well as a guide to pay adjustment, though using a more recent ECI would help address concerns about the time lag. The DECI has the advantage of providing information about the labor market opportunities specific to people who have characteristics similar to those in the military and could be used as a supplement to the ECI, especially when Congress and DoD are considering deviating from the ECI guidance.

Finally, we find that the services use S&I pays to create pay differentials, whether as a recruiting or retention incentive or to recognize unusual or hazardous duties or persistent better external market opportunities. While some S&I pays might be better consolidated, it is important that any such consolidation does not adversely affect the efficiency or effectiveness of these pays.

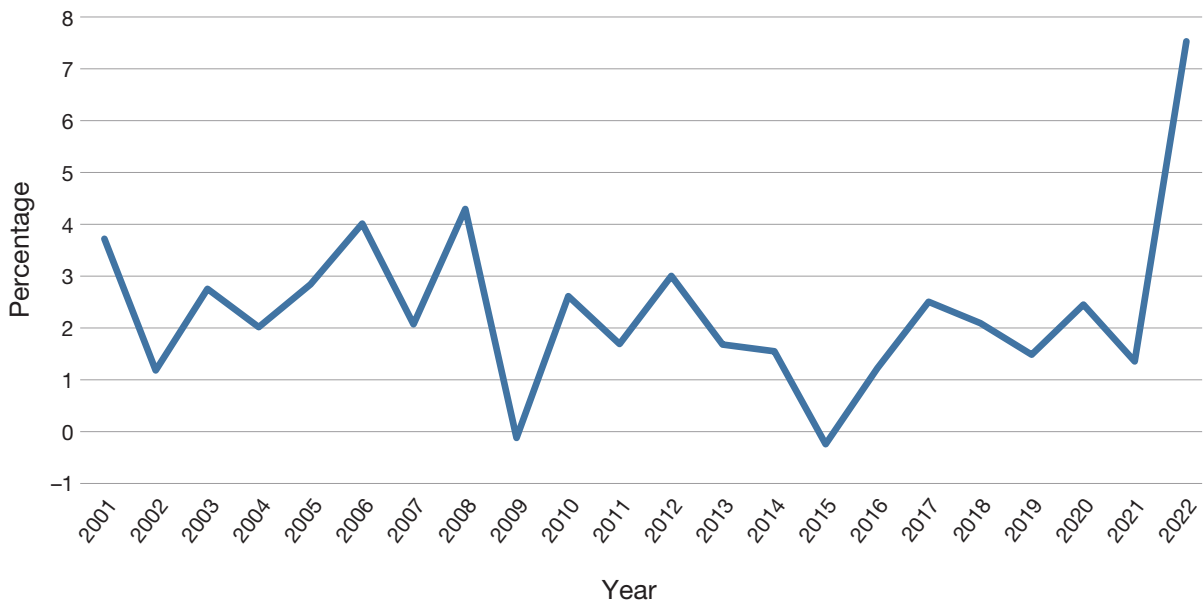
Trends in the Civilian Labor Market

This appendix provides an overview of trends in the civilian labor market. We begin with a review of how inflation has changed, and then turn to a review of broad changes in labor market activity as measured by the unemployment rate, LFP, the employment rate, and measures of nontraditional employment (such as gig work) and part-time work. We then examine changes in factors that underlie these broad changes related to the supply of and demand for labor, drawing from analyses we conducted of publicly available data sources and from a review of research that has considered the extent to which these supply and demand factors explain the changes in LFP and the employment rate. We conclude with a discussion of how the COVID-19 pandemic affected civilian employment and emerging trends, such as working from home, that may be a permanent feature of the labor market.

Inflation

Figure A.1 shows that overall inflation, as measured by the CPI-U, has historically hovered between 0 and 4 percent since 2000, with steep growth occurring during the pandemic and its aftermath, rising to 7.5 percent in 2022. Figures A.2 and A.3 show the increase in food, rent, and energy prices beginning in 2001, with

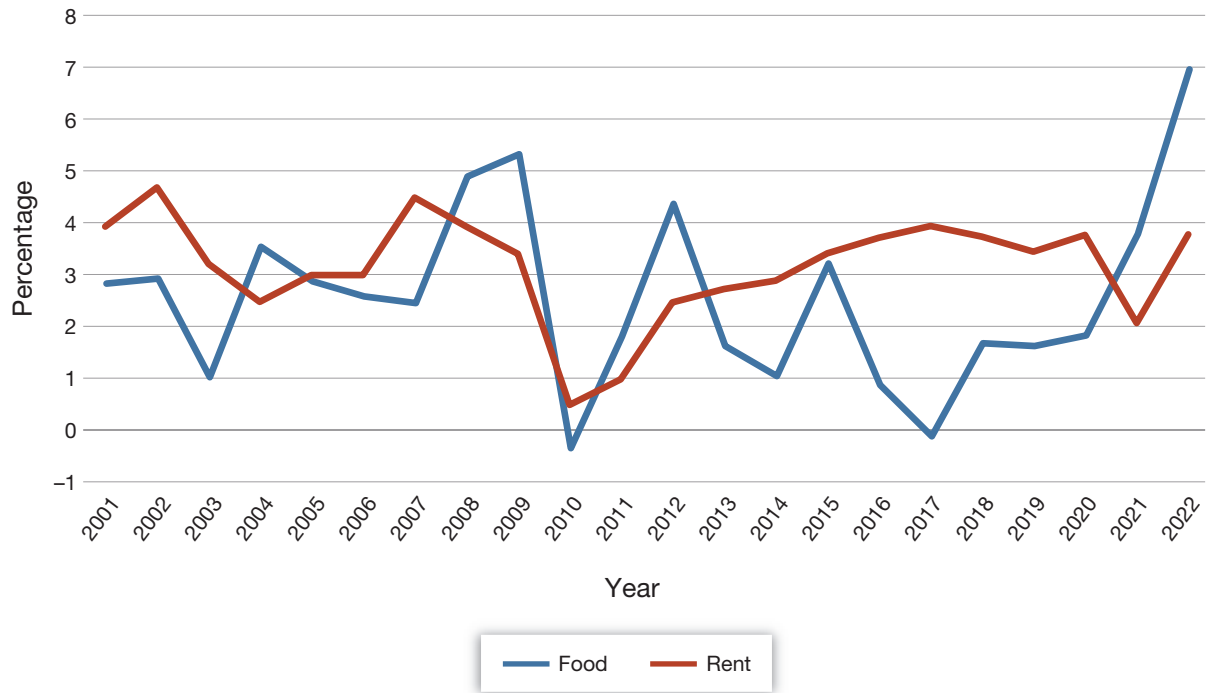
FIGURE A.1
Percentage Change in the CPI-U, 2000–2022



SOURCE: Federal Reserve Bank of St. Louis (undated c), CPI-U, seasonally adjusted.

NOTE: The figure measures annual change from January of one year to January of the next.

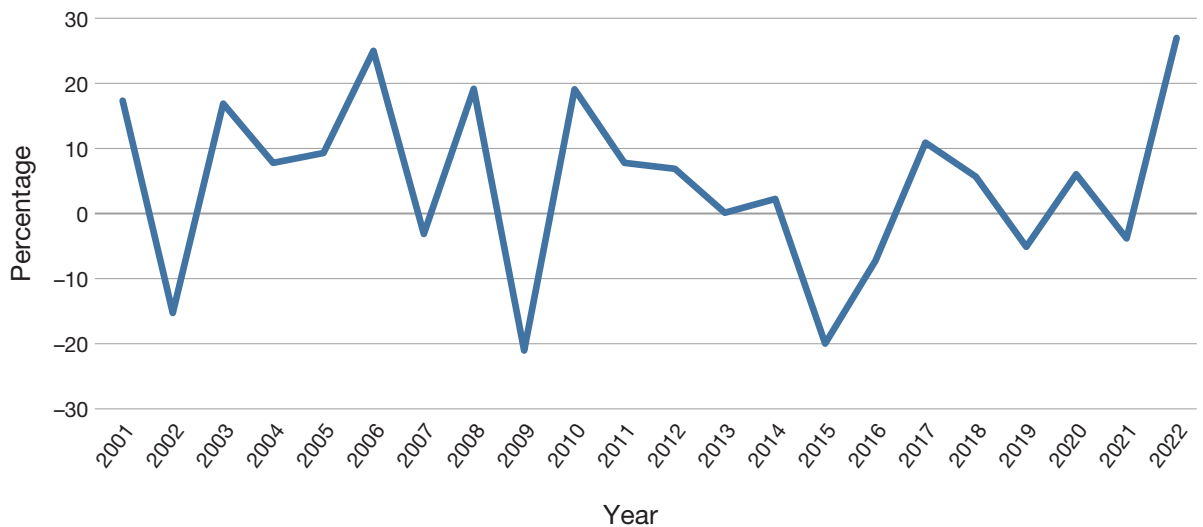
FIGURE A.2
Percentage Change in Food and Rental Prices, 2000–2022



SOURCE: BLS (undated b), CPI-U, food and rent for primary residence in U.S. city average, seasonally adjusted.

NOTE: The figure measures annual change from January of one year to January of the next.

FIGURE A.3
Percentage Change in Energy Prices



SOURCE: BLS (undated b), CPI-U, energy in U.S. city average, seasonally adjusted.

NOTE: The figure measures annual change from January of one year to January of the next year.

Figure A.2 showing increases in food and rental prices in 2022. Inflation varies by local geographies, suggesting that the purchasing power of both military and civilian pay in terms of real income will depend on where people live (see Table A.1). The five metropolitan areas with the largest increases in inflation were Miami, Tampa, Phoenix, Dallas, and Seattle, with inflation rising between 8.4 and 9.9 percent. The five metropolitan areas with the smallest increases in inflation were Anchorage, Minneapolis, Houston, Los Angeles, and San Francisco, with inflation rising between 4.9 and 5.4 percent.

Given the rapid increase in inflation in recent years, there has been renewed interest in the methodology used to annually adjust military basic pay. We conduct an assessment of the methodology and consider alternatives to the current methodology, including using the CPI as the guide for the annual adjustment, in Chapter 6.

TABLE A.1
Metropolitan Areas with the Five Largest and Five Smallest
Percentage Changes in Inflation

Metropolitan Area	12-Month Percentage Change in Inflation
Largest	
Miami	+9.9%
Tampa	+9.6%
Phoenix	+9.5%
Dallas	+8.4%
Seattle	+8.4%
Smallest	
Anchorage	+5.4%
Minneapolis	+5.3%
Houston	+5.3%
Los Angeles	+4.9%
San Francisco	+4.9%

SOURCE: BLS (undated b).

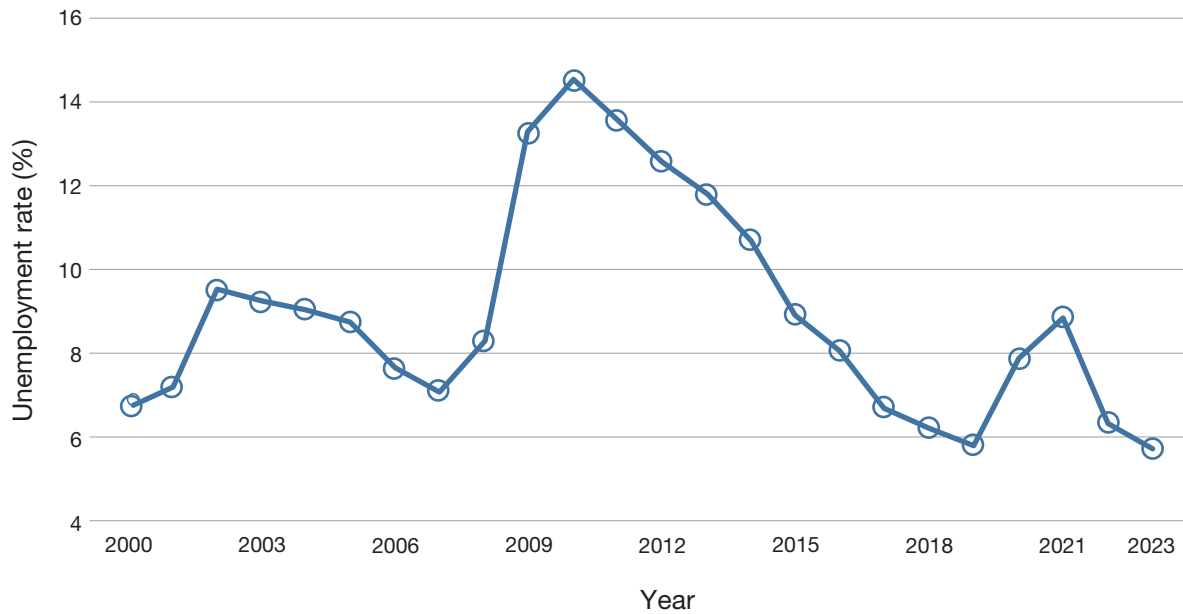
NOTE: Figures are for the most recent 12 months of data available (as of November or December 2022).

Unemployment, Labor Force Participation, Employment, and Nontraditional Employment

Using data from the CPS, we computed the unemployment rate for individuals ages 18–30 from 2000 to 2023, as was shown in Figure A.4. We focus on ages 18–30 because this age range is the group from which the military primarily recruits and retains individuals given that most recruits and enlisted personnel are under age 30. (Older military personnel including officers also make retention decisions, but their retention rates are higher.) The figure shows the sharp increases in the unemployment rate for this age group during the Great Recession in 2009 and again during the COVID-19 pandemic. As of 2023, the unemployment rate for young adults between the ages of 18 and 30 was 5.7 percent, its lowest rate since 2000.

Unemployment rates alone show only a partial picture of labor market activity, especially among young adults. Recent research shows that young Americans are increasingly exiting the labor market. We show this

FIGURE A.4
Unemployment Rate for Americans Ages 18–30



SOURCE: Authors' calculations using CPS data from IPUMS.

NOTE: Survey data are weighted using person-level weight that is available for questions that were not part of the basic monthly survey questions asked every month in the CPS, such as those on the ASEC (ASECWT).

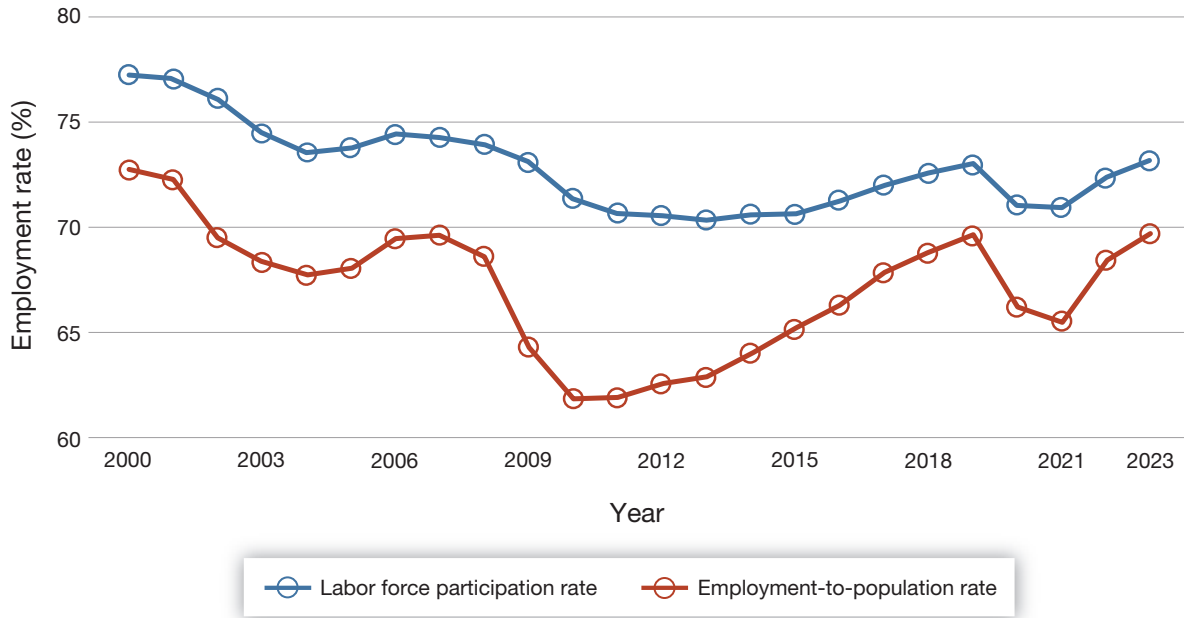
using the CPS data to tabulate two other metrics: the employment-to-population (ETP) rate, which measures the share of individuals employed, regardless of whether they are in the labor market or not, and the LFP rate, which measures the share of working-age individuals that are either employed or searching for work. We plot these two rates from 2000 to 2023 in Figure A.5.

We find that 2023 unemployment rates are lower than 2000 levels (6.75 percent, compared with 5.73 percent, as shown in Figure A.4), suggesting that more young adults are engaged in labor force activity. The ETP and LFP rates are also lower, indicating that fewer young people are working or looking for work. While both the ETP and LFP rates dipped during the COVID-19 pandemic beginning in 2020, their levels have recovered in recent years relative to 2019. As of 2023, 73.19 percent of Americans between the ages of 18 and 30 were in the labor force and 69.70 percent were employed.

Figure A.6 shows how the LFP rates for young adults have changed related to 2000 by gender and by disaggregated age group, ages 18–24 and 25–30. We disaggregate age groups because those who are ages 18–24 could be out of the labor force because they are pursuing college. We find that men between the ages of 18 and 24 have witnessed the largest decline in LFP since 2000, over 8 percentage points lower than its level in 2000. Women between the ages of 25 and 30 have nearly the same LFP rate in 2023 as they did in 2000. The older male and the younger female groups have roughly similar declines in their respective LFP rates, 3.76 percentage points for older males and 4.61 percentage points for younger females.

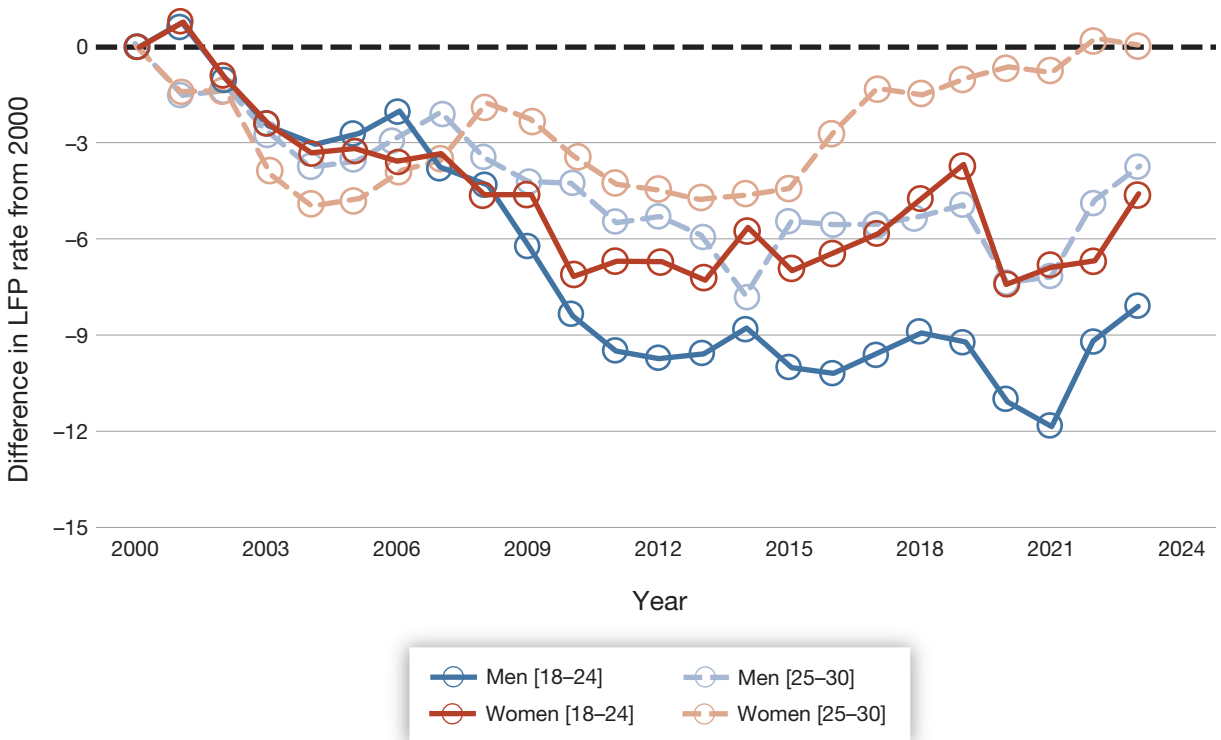
Considerable research has been conducted to explain the declines in LFP and employment rates that have occurred not just among young adults but the entire workforce. We review that literature below when we consider changes in underlying supply and demand factors that have occurred in recent years. But first, we note one additional broad change in labor market activity that has occurred in recent years: the rise of part-time, temporary, and gig work and the overall reduction in hours worked among working young adults (Lee, Park, and Shin, 2023).

FIGURE A.5
U.S. Labor Force Participation and Employment-to-Population Rates for Americans Ages 18–30



SOURCE: Authors' calculations using CPS data from IPUMS.

FIGURE A.6
Change in Labor Force Participation Rates Relative to 2000 by Sex and Age Group

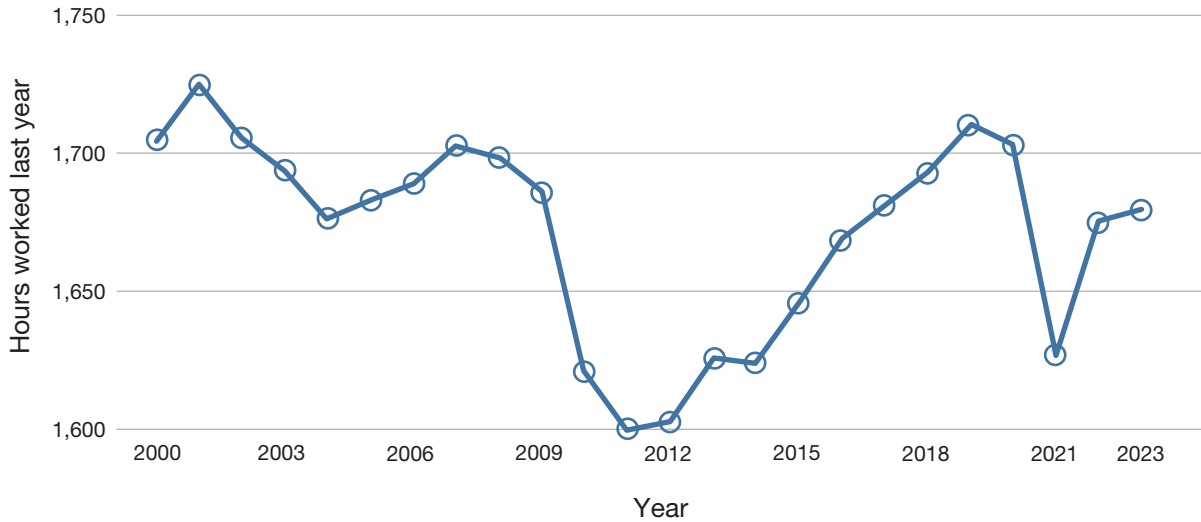


SOURCE: Authors' calculations using CPS data from IPUMS.

NOTE: This figure plots the changes in the LFP rate for the young and old cohorts by sex from their values in 2000. The differences are in percentage points, not a percentage change.

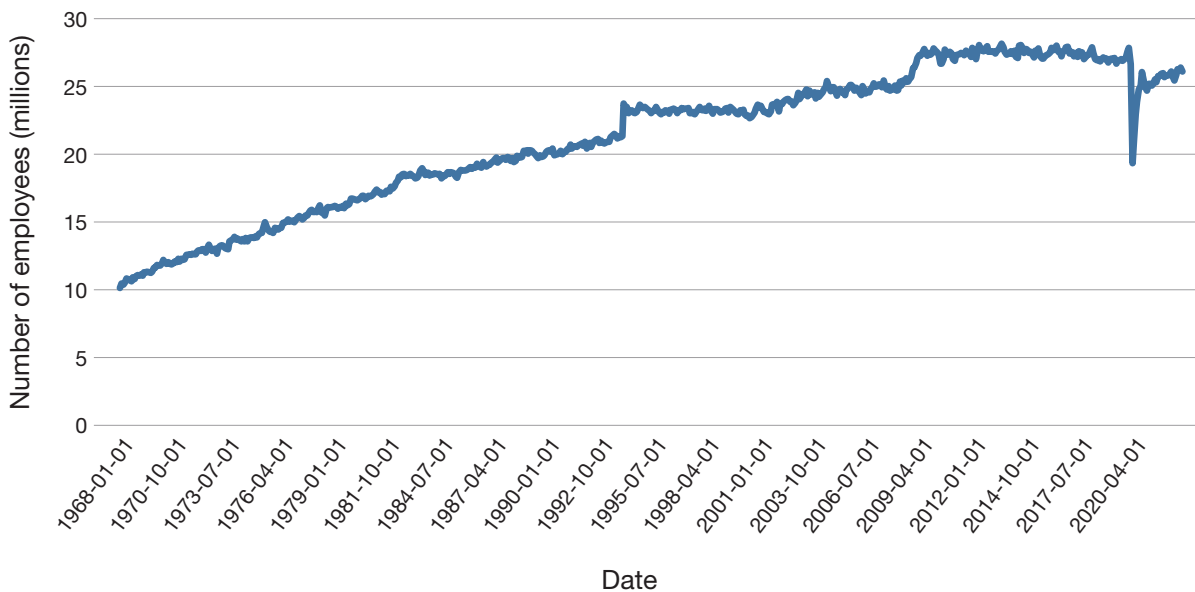
We use CPS data to compute the annual total hours worked by individuals ages 18–30, as shown in Figure A.7. The figure shows a sharp decline in total hours in 2021, followed by a comparably sharp recovery between 2021 and 2023. Some of this decline is attributable to a rise in part-time employment, which includes individuals who work between one and 34 hours per week. Figure A.8 shows that, since the late 1960s, part-time work steadily grew until around 2010, when part-time employment peaked. A sharp drop occurred at the onset of the COVID-19 pandemic, with part-time employment increasing since then but still below

FIGURE A.7
Average Total Annual Hours Worked Among Those Employed, Ages 18–30



SOURCE: Authors' calculations using CPS data from IPUMS.

FIGURE A.8
Number in the United States Who Are Employed, Usually Working Part-Time (in Millions)



SOURCE: Adapted from Federal Reserve Bank of St. Louis, undated d, using BLS data.

peak levels. In November 2022, 26.1 million individuals reported usually working part-time (Federal Reserve Bank of St. Louis, undated d).

Part-time workers who would prefer full-time work but can only find part-time employment are known as involuntary part-time workers. A BLS study estimated that about one-fourth of part-time workers were involuntary part-time workers, with the remaining three-fourths employed voluntarily part-time. The study also found that in 2016, over 65 percent of voluntary part-time workers were women. The two most common reasons for working part-time voluntarily were school attendance and family/personal obligations, where family/personal obligations excluded child care (Dunn, 2018).

Table A.2 shows that the portion of employed young men in different education groups who were working part-time generally increased between 2000 and 2022; the exception were young men ages 18–24 with some college, where the portion decreased by 11.2 percent. For the other groups, the portion with part-time employment increased from as low as 20.5 percent among 18- to 24-year-old men with high school degrees up to 100.9 percent among 25- to 30-year-old men with high school degrees. Although part-time work among 18- to 24-year-old men with some college decreased over time, this demographic group has the largest share reporting part-time employment compared with the other groups, with more than one in five men usually working part-time in 2022. These increases in the number of young men working part-time suggest that part-time opportunities for this demographic group have increased over the past couple of decades. Golden (2016) finds that the rise in part-time employment before the COVID-19 pandemic was largely driven by people who were involuntarily working part-time and would have preferred to work full-time. Since the COVID-19 pandemic the rise in part-time workers has been attributed to voluntary part-time workers (i.e., those who choose to work part-time; Weber, 2023).

Two other types of nontraditional employment have also increased in recent years: temporary work and gig work. Temporary workers provide employers with labor flexibility, allowing them to grow or shrink their workforces when needed (Luo, Mann, and Holden, 2021). Figure A.9 shows that the number of temporary workers has grown steadily since the early 1990s, with large temporary drops during recessionary periods. As of November 2022 there were about 3.1 million temporary workers in the United States (Federal Reserve Bank of St. Louis, undated b). The largest occupational groups employing temporary workers were transportation and material moving (25 percent), production (16 percent), and office and administrative support (15 percent; BLS, 2024b).

The gig economy can be generally thought of as the online platforms that match consumers with providers (Jackson, 2019), such as Instacart and Uber. Figure A.10 shows rapid growth in the number of individuals

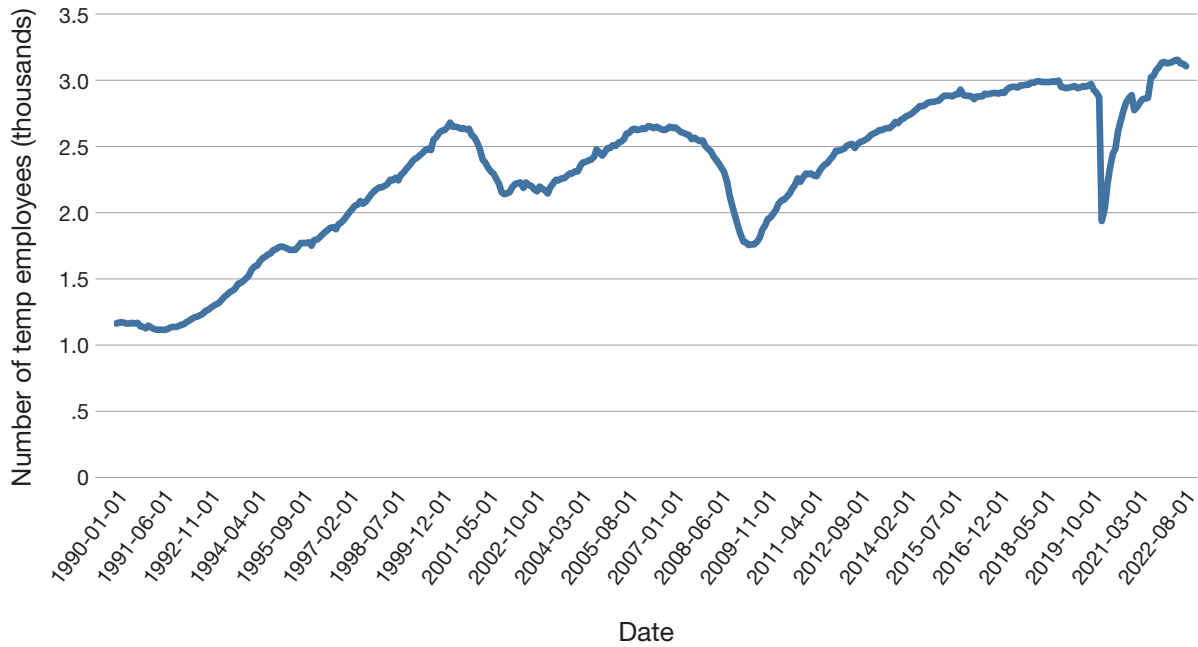
TABLE A.2
Percentage of Men Who Usually Work Part-Time

Age Group	Educational Attainment	2000	2022	Percentage Change Between 2000 and 2022
18–24	High school graduate	11.8%	14.2%	20.5%
18–24	Some college	25.1%	22.3%	–11.2%
18–24	College graduate or higher	9.3%	13.6%	46.7%
25–30	High school graduate	3.2%	6.4%	100.9%
25–30	Some college	6.5%	8.3%	26.8%
25–30	College graduate or higher	4.0%	5.5%	36.7%

SOURCE: Authors' calculations using data from the CPS.

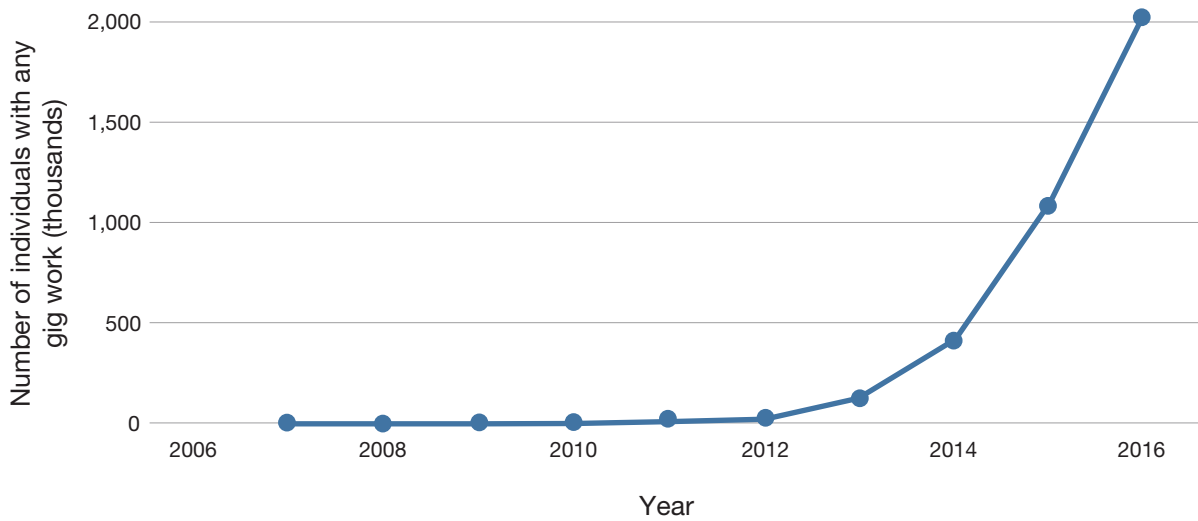
NOTE: Part-time work is defined as reporting one to 34 hours usually worked per week at all jobs. Statistics are weighted by ASECWT.

FIGURE A.9
Temporary Help Service Employment (in Thousands)



SOURCE: Adapted from Federal Reserve Bank of St. Louis, undated b, using BLS data.

FIGURE A.10
Number of Gig Workers, 2007–2016



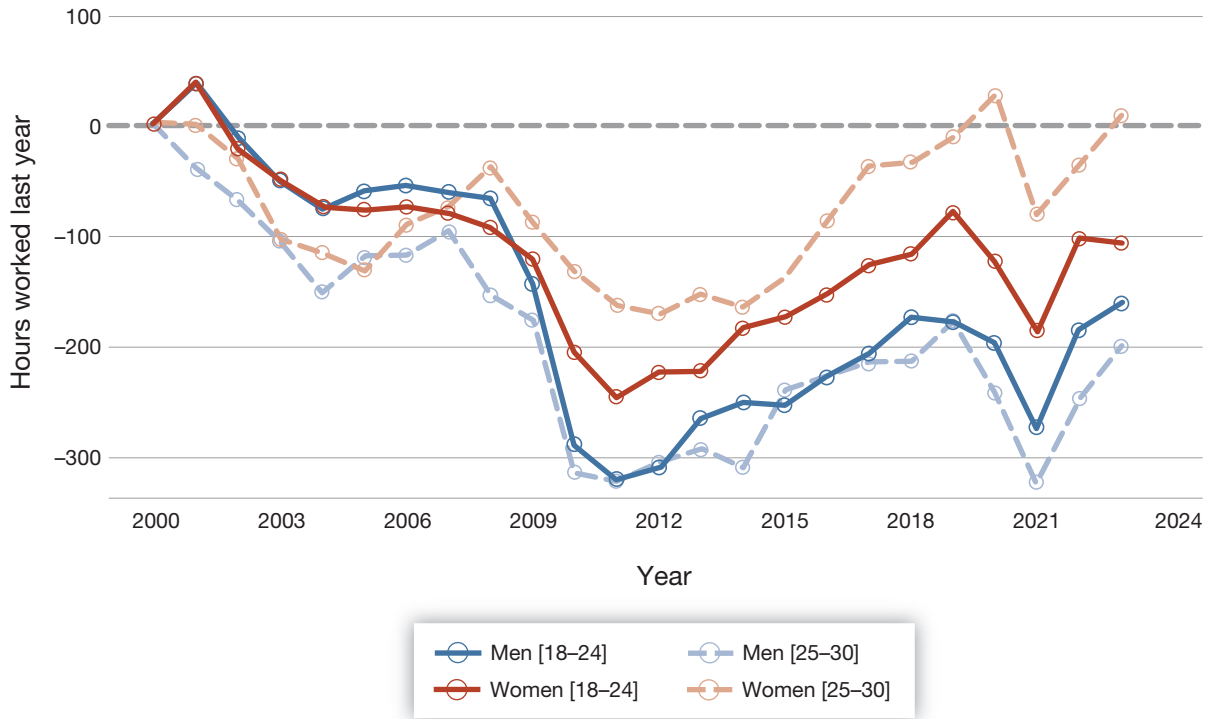
SOURCE: Reproduced from Jackson, 2019, p. 30; used with permission.

NOTE: This figure presents the yearly number of individuals with any gig work as identified using the universe of federal individual income tax returns for the United States. This includes counts of the universe of individuals who received Form 1099-MISC or Form 1099-K from a gig platform identified in Section 2.2 of Jackson, 2019, or filed Schedule C, denoting income from one of these platforms.

who earn income through gig work, with the number of gig workers rising from nearly zero in 2012 to over 2 million in 2016 (Jackson, 2019). While more recent data on the estimated number of gig workers are, to our knowledge, not readily available, a Pew Research Center study that surveyed U.S. adults in August 2021 estimated that 30 percent of Americans ages 18–29 have ever earned money through an online gig platform (Anderson et al., 2021), demonstrating that a sizable share of the population engages in this form of nontraditional work. Furthermore, a large segment of the 18–29 age group was recent or current gig workers. Specifically, 9 percent of Americans ages 18–29 were current gig workers, and 13 percent worked in the gig economy in the past 12 months (Anderson et al., 2021).

Echoing the trends in unemployment and LFP, Figure A.11 uses CPS data to show declines in the annual hours worked by sex and age category. Among the four groups, only women between the ages of 25 and 30 have hours worked that are comparable with their levels in the base year, 2000. These women reported working roughly 1,450 hours on average in both 2000 and 2023. However, the other cohorts reported substantial declines, which were highest among men, and particularly the older male cohort. Men ages 25–30 worked an average of 1,961 hours in 2000, but just 1,761 in 2023, a decrease of 200 hours, or approximately 10 percent.

FIGURE A.11
Annual Hours Worked, by Sex and Age Group



SOURCE: Authors' calculations using March ASEC data from IPUMS.

NOTE: Hours worked last year is calculated from the respondent's usual hours worked per week in the last year and the number of weeks worked in the last year. The calculation includes all individuals, regardless of their employment status. Statistics are weighted by ASECWT.

Factors Explaining Employment Trends

Past studies have investigated why LFP has fallen over time (e.g., Abraham and Kearney, 2020; Perez-Arce and Prados, 2021). Abraham and Kearney (2020) reviewed the available literature and provide estimates of the extent to which different supply and demand factors contribute to the fall in the ETP ratio between 1999 and 2018.¹ Table A.3 lists factors where the authors were able to estimate the reduction in ETP ratio and whether they relate to the demand or supply of labor. In descending order of importance, the factors that most explain the decline in the employment ratio are import competition from China, technology, and the adoption of industrial robots; higher minimum wages; increased receipt of disability benefits; and increased rates of incarceration. Factors that were not found to have an impact based on the existing empirical evidence include food stamp program expansions; public health insurance program expansions; more generous earned income tax credit; increased difficulties due to lack of family leave; and expanded immigration. Abraham and Kearney (2020) also describe factors where the empirical evidence has not reached a consensus on their impact on employment, including increased difficulties due to lack of child care; changes in leisure options; changes in social norms; increased use of opioids; rise in occupational licensing; and increases in institutional frictions and/or mismatch. In this section we provide additional background on these and other demand and supply of labor factors.

TABLE A.3
Degree to Which Labor Demand and Supply Factors Explain the Estimated Reduction in Employment-to-Population Ratio Between 1999 and 2018

Factor	Demand or Supply	Estimated Reduction in ETP Ratio Between 1999 and 2018
Import competition from China	Demand	0.92
Technology and the adoption of industrial robots	Demand	0.43
Higher minimum wages	Demand	0.10
Increased receipt of disability benefits	Supply	0.17
Increased rates of incarceration	Supply	0.12
Food stamp program expansions	Supply	0
Public health insurance program expansions	Supply	0
More generous earned income tax credit	Supply	0
Increased difficulties due to lack of family leave	Supply	0
Expanded immigration	Supply	0

SOURCE: Authors' calculations, based on data from Abraham and Kearney, 2020.

NOTE: The estimated reduction in ETP ratio between 1999 and 2018 was 3.8; the table shows the amount of that reduction attributed to different factors.

¹ While Abraham and Kearney (2020) focus on factors that have an evidence base with data with which to produce estimates, Perez-Arce and Prados (2021) include topics that affect certain demographic groups that may be less relevant for military populations, such as changes to the Social Security retirement program.

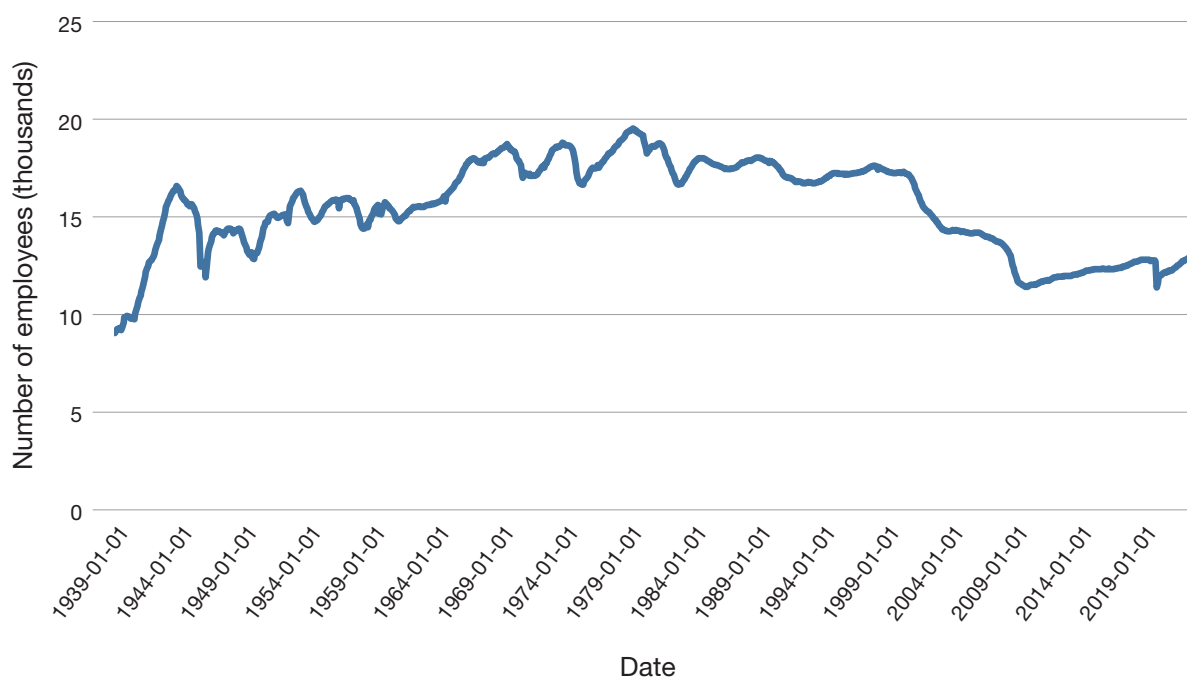
Labor Demand Factors

Studies find that Chinese imports have adversely affected labor demand—specifically, the employment of workers in manufacturing, which typically includes lower-skilled, less educated men (Autor, Dorn, and Hanson, 2013; Autor, Dorn, and Hanson, 2015; Bernard, Jensen, and Schott, 2006). Employment in the manufacturing sector peaked in 1979 and has generally fallen since then, as shown in Figure A.12. For example, Pierce and Schott (2016) find that a change in U.S. trade policy that eliminated potential tariff increases on imports from China was associated with a sharp drop in U.S. manufacturing employment after 2000. Another factor that research has found to adversely affect labor demand and employment is technology and specifically industrial robotics (Acemoglu and Restrepo, 2017).

Abraham and Kearney (2020) estimate that 24 percent of the decline in the employment rate between 1999 and 2018 was attributable to import competition from China, while 11 percent of the decline was attributed to the adoption of robots.

Another changing demand factor is rising minimum wage rates. In theory, increasing the cost of workers will cause firms to reduce their demand for labor. The literature has found mixed results regarding the relationship between rising minimum wage rates and employment, with some papers finding no significant relationship (Allegretto et al., 2013; Allegretto, Dube, and Reich, 2011; Dube, Lester, and Reich, 2010; Dube and Zipperer, 2015) and more recent papers documenting a negative relationship (Clemens and Wither, 2019; Jardim et al., 2022; Powell, 2022). Using the largest estimates of the disemployment effect of minimum wage increases from the literature, Abraham and Kearney (2020) estimate that about 3 percent of the decline in the ETP ratio between 1999 and 2018 is due to rising minimum wage rates.

FIGURE A.12
U.S. Manufacturing Sector Employment (in Thousands)



SOURCE: Adapted from Federal Reserve Bank of St. Louis, undated a, using BLS data.

Labor Supply Factors

The decline in LFP of young men raises questions about how young men are supporting themselves and what they are doing if they are not working. This subsection considers these questions and reviews factors related to the supply of labor including trends in disability, opioid use, and incarceration. We also review available information on whether attitudes toward working have changed among recent cohorts.

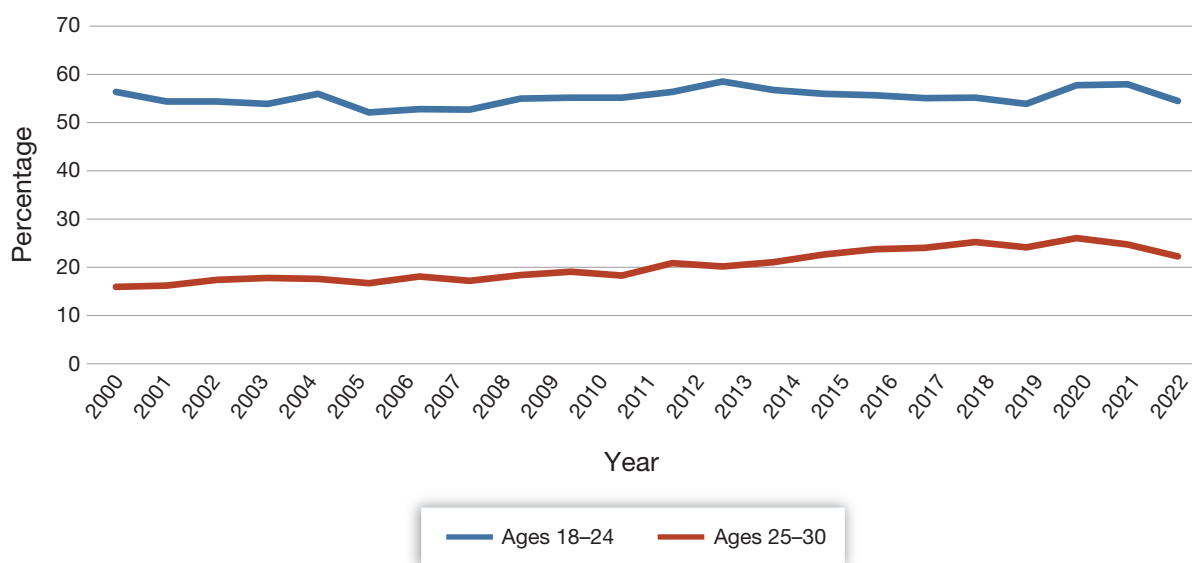
How Are Young Men Supporting Themselves?

We use the CPS data to tabulate the portion of men ages 18–24 and 25–30, respectively, living with their parents, as shown in Figure A.13. Given that children who are living in college dormitories and have never been married are also considered to be living with their parents,² it is not surprising that men ages 18–24 have a higher propensity to live with their parents than men ages 25–30. The portion of men ages 18–24 living with parents hovered around 55 percent between 2000 and 2022. In contrast, the portion of men ages 25–30 living with parents increased over time, from 16 percent in 2000 to as high as 26 percent in 2020 before dropping to 22 percent in 2022. Thus, as LFP of young men fell, the likelihood that men ages 25–30 lived with their parents rose.

For young men, an increasing share of household income is earned by other members of the household, as shown in Table A.4. These drops are largest among high school graduates, with the percentage of household income earned by men ages 18–24 falling from 45 percent in 2000 to 39 percent in 2022 and the percentage of household income earned by men ages 25–30 falling from 69 percent in 2000 to 62 percent in 2022.

Table A.4 focuses on household income, but tabulations of sources of individual income among young men show that the share of their income that is from earnings has decreased since 2000. Sources of individual income can be divided into five categories: personal earnings, transfers, investments, educational assistance, and other income. *Personal earnings* include wage earnings, nonfarm business income, and farm income. *Transfers* include Social Security income, welfare and public assistance income, income from unemployment benefits, income from worker’s compensation, income from veteran’s benefits, income from supplemental

FIGURE A.13
Fraction of Men, Ages 18–24 and 25–30, Living with Parents



SOURCE: Authors’ calculations using data from the CPS.

NOTE: Excludes those with less than a high school degree. Observations in calculation are weighted by ASECWT.

² See the section “Children” in the definitions for the CPS’s technical documentation; U.S. Census Bureau, 2024.

TABLE A.4
Percentage of Household Income Earned by Men

Age Group	Educational Attainment	2000	2022	Difference
18–24	High school graduate	45%	39%	–6%
18–24	Some college	37%	35%	–2%
18–24	College graduate or higher	58%	59%	1%
25–30	High school graduate	69%	62%	–7%
25–30	Some college	69%	66%	–3%
25–30	College graduate or higher	76%	75%	–1%

SOURCE: Authors' calculations using data from the CPS.

NOTE: Statistics are weighted by ASECWT.

security income, and income from disability benefits. *Investments* include interest income, dividend income, and rental income. *Educational assistance* includes Pell Grants or other aid from government sources, non-governmental scholarships and grants, and financial assistance from employers or friends. *Other income* is defined as all other sources of income, including retirement income, survivor's benefits, income from child support, regular financial assistance from friends or relatives not living in the same household, and income from other unspecified sources.

We find that the share of individual income that is from earnings fell from 86.3 percent to 79.9 percent between 2000 and 2023 among men ages 18–24 and from 93.6 percent to 89.6 percent among men ages 25–30. For men ages 18–24, the reduction in earnings is offset by increases in the remaining income categories. For men ages 25–30, the reduction in earnings is mainly offset by increases in transfers and investments. Thus, young men are relying less on their own earnings and more on other sources of income, including transfers, investments, educational assistance, and income from other household members.

How Are Young Americans Spending Their Time?

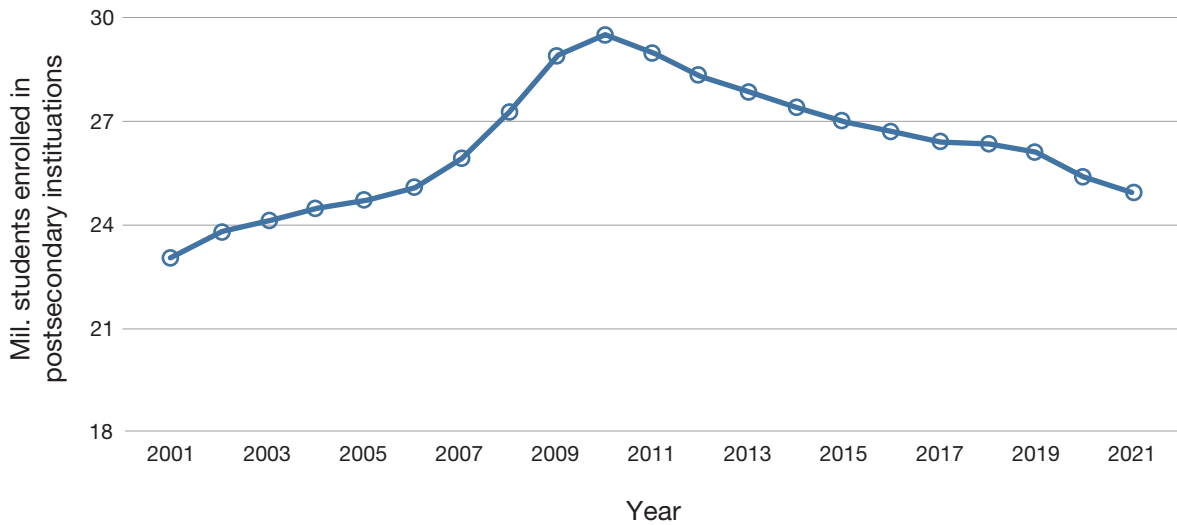
We look at two alternatives to work that might explain the decline in hours worked by young people, as shown earlier in Figure A.11. First, we test whether these declines are a product of higher rates of enrollment in post-secondary education and, second, whether time spent working has been replaced by leisure. Using data from the National Center for Education Statistics, we plot the total enrollments for degree-granting postsecondary institutions in Figure A.14, finding that enrollments have fallen since their peak in 2010. Thus, we reject the hypothesis that education accounts for the decline in work for young Americans in recent years.

Second, we examine trends in time spent on leisure using the American Time Use Survey, a time diary carried out by the U.S. Census Bureau (BLS, undated). From its native time use activities, we construct a leisure category, which includes:

1. relaxing and thinking
2. tobacco and drug use
3. television and movies (not religious)
4. television and movies (religious)
5. listening to the radio
6. listening to or playing music (not on the radio)
7. playing games
8. computer use for leisure.

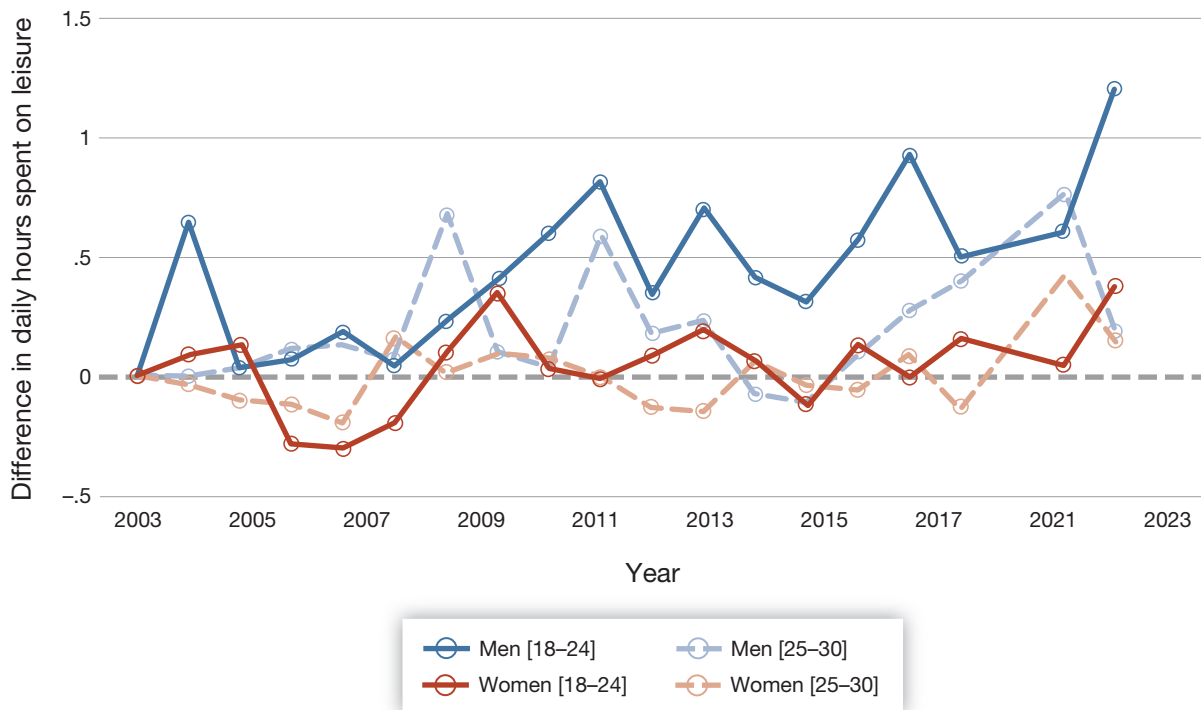
Figure A.15 plots the difference in average leisure time for men and women ages 18–24 and ages 25–30 by cohort relative to 2003, the first year that American Time Use Survey data are available. We find that

FIGURE A.14
Enrollment in Postsecondary Institutions (in Millions)



SOURCE: National Center for Education Statistics (undated).
 NOTE: "Mil" refers to millions.

FIGURE A.15
Difference in Daily Hours Spent on Leisure Relative to 2003 Among Men and Women, Ages 18–24 and 25–30



SOURCE: Authors' calculations using American Time Use Survey data downloaded through IPUMS.

NOTE: Weights (the tufnwgtp data element, a variable in the IPUMS American Time Use Survey file) are used in calculating these statistics to make them representative of the population. Leisure is a combination of time spent on eight different time-use categories: (1) relaxing and thinking, (2) tobacco and drug use, (3) television and movies (not religious), (4) television and movies (religious), (5) listening to the radio, (6) listening to or playing music (not on the radio), (7) playing games, and (8) computer use for leisure. We exclude time diaries that were administered on holidays.

leisure time has increased among all four groups and that increases have been largest among men ages 18–24, a group that devoted 3.36 hours per day to leisure in 2003 but roughly 4.57 hours in the most recent survey. Aguiar et al. (2017) examined the relationship between recreational computer use and the labor supply of young men and show similar results. They argue that innovations in gaming and recreational computer use explain recent increases in leisure and declines in market hours worked among men between the ages of 21 and 30.

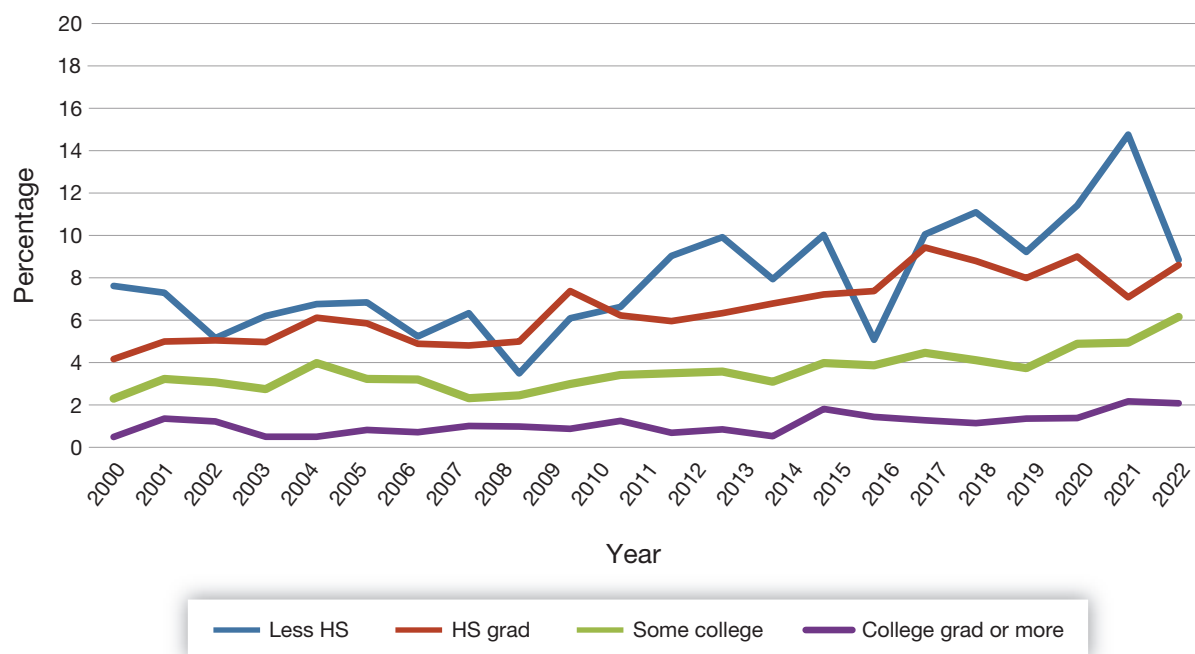
While Figure A.15 shows substantial increases in leisure time among young men, even more striking is the portion of this group spending eight or more hours per day on leisure activities. We find that in 2003, 8.30 percent of men ages 28–24 spent eight or more hours per day on leisure, a figure that rose to 20.56 percent in 2022.

Other Labor Supply Factors

Three labor supply factors that may have adversely affected LFP are rising disability rates, increased drug use (especially opioids), and rising incarcerations. We review these trends next.

We used March ASEC data to compute the portion of young men reporting a disability that limits or prevents work (see Figure A.16). Prior literature has estimated that 5 percent of the decline in the ETP ratio between 1999 and 2018 was attributed to increases in disability benefit receipt (Abraham and Kearney, 2020). We find that the rise in the percentage of young men reporting a work limiting disability is most apparent for men ages 25–30, with the growth being larger among those with some college education or less. Notably, the percentage of men reporting a work disability among those ages 25–30 with less than a high school degree almost doubled, from 7.6 percent in 2000 to 14.8 percent in 2021. However, because the active duty population consists almost exclusively of service members with a high school degree or higher education, large

FIGURE A.16
Fraction Reporting a Disability That Limits or Prevents Work Among Men, Ages 25–30



SOURCE: Authors' calculations using data from the CPS.

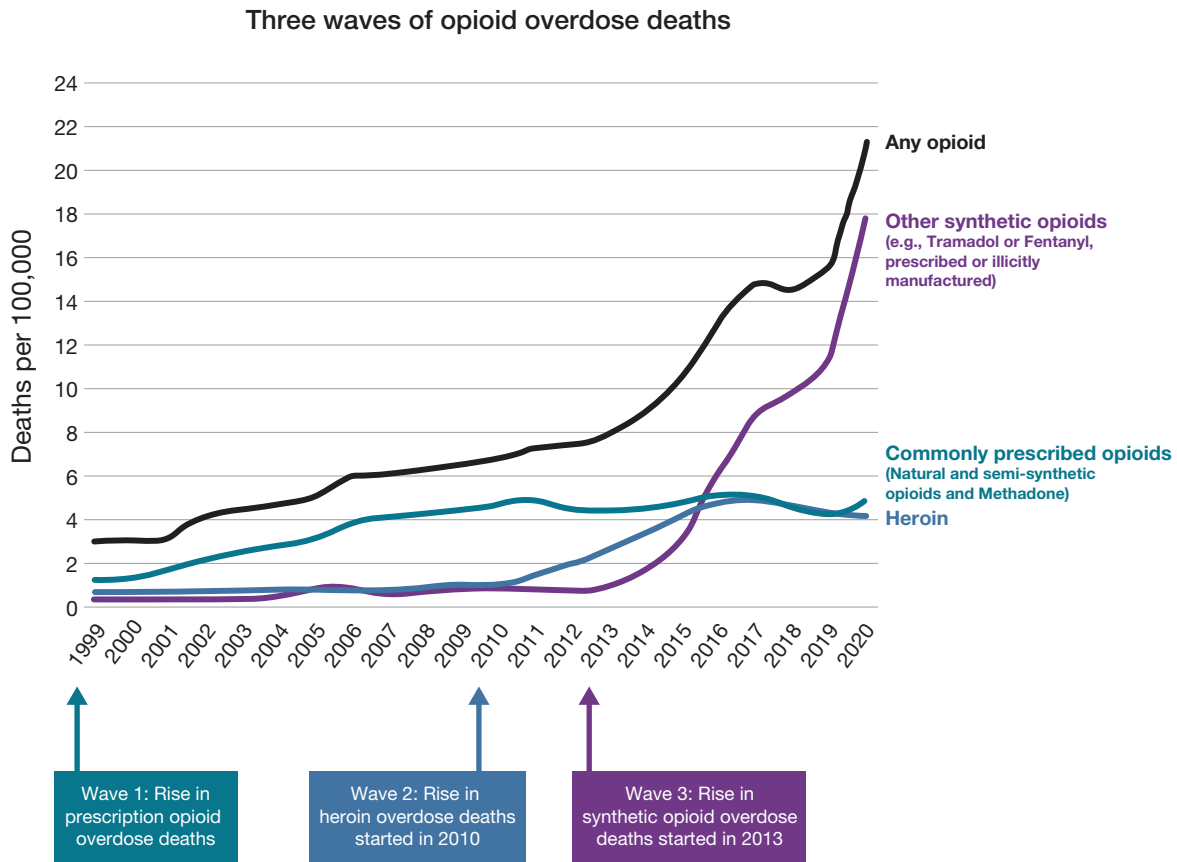
NOTE: HS = high school; statistics are weighted by ASECWT.

increases in work disability among those without a high school degree are less relevant for the military. The trends show modest increases in the percentage of men ages 18–24 reporting a work disability among those with some college or less, though the rates of disability are quite low (not shown).

As shown in Figure A.17, opioid overdose deaths have increased sharply since 2013, with much of this growth attributed to deaths in synthetic opioids (e.g., fentanyl). The number of overdose deaths increased by almost 30 percent between 2019 and 2022 (Centers for Disease Control and Prevention, 2022). Drug overdose death rates vary across states, with those in the Appalachian region and some states in the Northeast, the Southwest, Florida, and Louisiana being hit the hardest (see Figure A.18). It is unclear whether higher opioid use causes lower LFP or if the reverse is true (Abraham and Kearney, 2020).

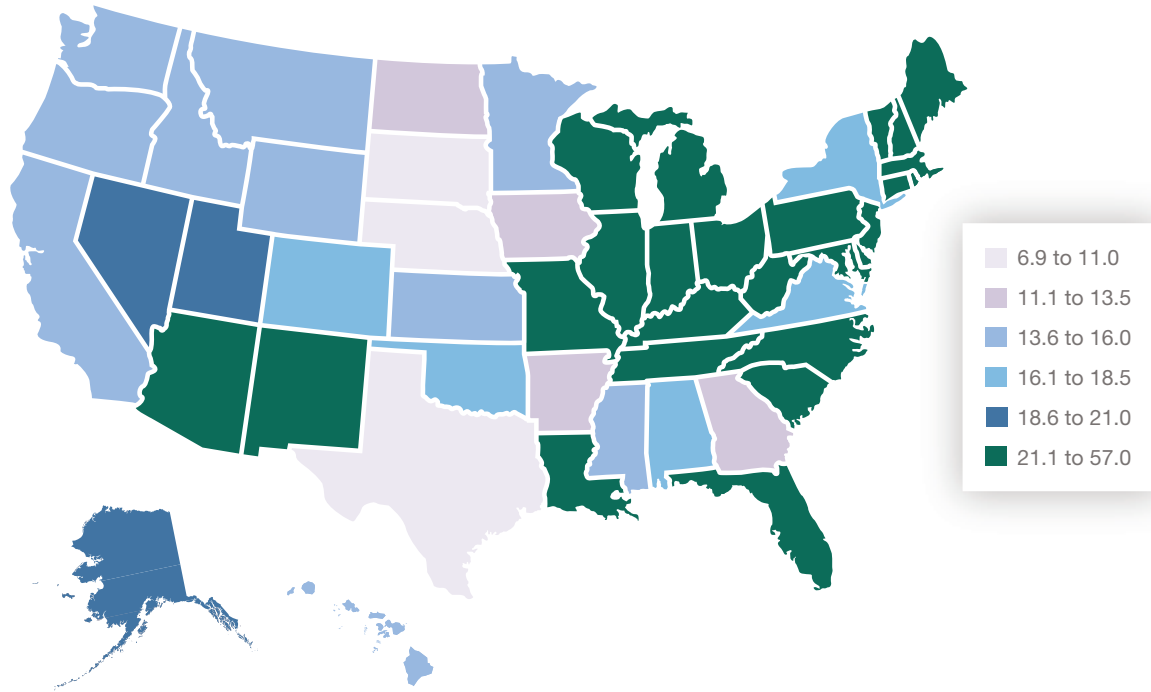
Prior literature shows that rising incarceration rates are linked to the decline in employment, with about 3 percent of the decrease in the ETP ratio between 1999 and 2018 being attributed to rising incarceration (Abraham and Kearney, 2020). Figure A.19 shows an increase in the correctional population since 1990, peaking around 2008 and falling since then. In 2021, 93 percent of the imprisoned population were men, with men ages 35–49 having the highest rate of imprisonment for all men (Carson, 2022). Moreover, 1.1 to 1.5 percent of U.S. men ages 25–49 were estimated to be incarcerated in 2021 (Carson, 2022).

FIGURE A.17
Opioid Overdose Death Trends, 1999–2020



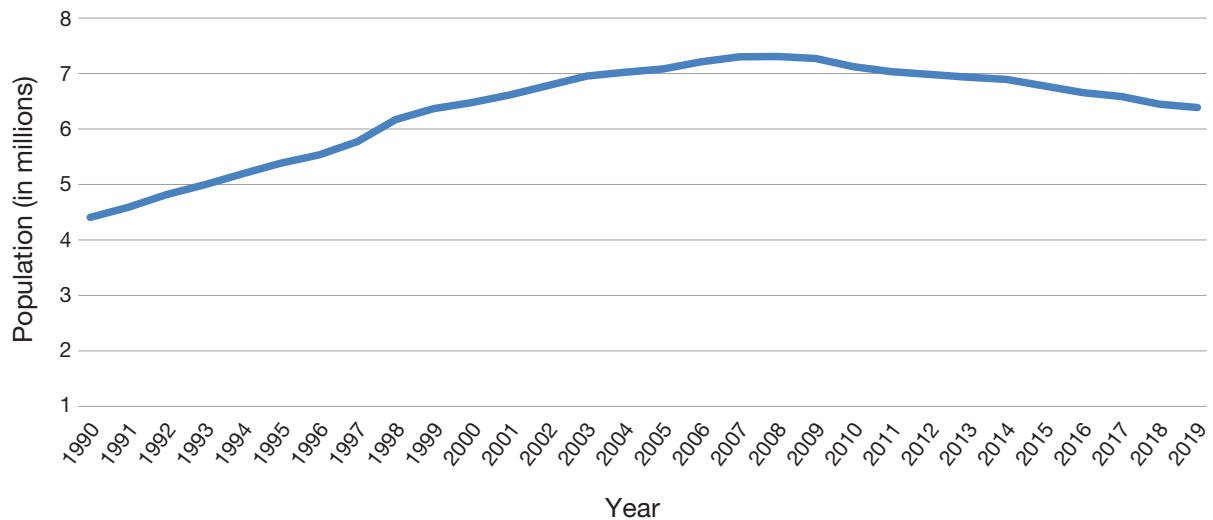
SOURCE: National Vital Statistics System Mortality File. Reproduced from Centers for Disease Control and Prevention, 2022.

FIGURE A.18
Drug Overdose Death Rates by State per 100,000 Population, 2020



SOURCE: Reproduced from Centers for Disease Control and Prevention, 2021.
 NOTE: Rates are per 100,000 population.

FIGURE A.19
Total U.S. Correctional Population, 1990–2019 (in Millions)



SOURCE: Beatty, 2010; Minton, Beatty, and Zeng, 2021.
 NOTE: Correctional population includes individuals who are incarcerated, on probation, or on parole.

Attitudes Toward Work

While research has documented differences in attitudes toward work between older generations and younger generations (Twenge, 2010), supporting evidence from the academic literature demonstrating that such differences exist is lacking, owing to the difficulty of empirically estimating such differences. Specifically, the empirical strategies used in existing studies on generational differences are unable to separate differences due to age, time period, and birth cohort (Costanza and Finkelstein, 2015; Zabel et al., 2017). For example, a difference in attitudes between those in their 20s and those in their 50s could be due to differences in age at a point in time, differences in generations (birth cohort), or factors or conditions specific to the time period. A 50-year-old today could have had similar attitudes toward work when they were in their 20s if they faced similar conditions at that age.

Broadly speaking, there is no consistent evidence that younger generations (individuals born after 1982) differ from previous generations in terms of their interest in job stability, wanting to help others, or finding meaning in work (Twenge, 2010; Twenge et al., 2010). Some studies document an increasing desire to have a work-life balance, a higher valuation of leisure, and a greater emphasis on salary among younger generations compared with older generations (Twenge, 2010; Twenge et al., 2010; Wey Smola and Sutton, 2002). A Pew Research Study on millennials found that when asked about what makes their generation unique, “work ethic” was among the top five answers for Gen Xers, baby boomers, and the Silent Generation, but not a top response among millennials (Pew Research Center, 2010). Moreover, the percentage of workers who say their job gives them a sense of identity has fallen over time, from 57 percent in 1989 to 51 percent in 2016 (Pew Research Center, 2016).

It remains to be seen whether generational differences in attitudes toward work will emerge in a post-COVID-19 era. Most of the discussion on work in a post-COVID-19 era focuses on telework flexibilities. A Pew Research Center survey shows that a top reason for working from home in 2022 was due to personal preference (Parker, Horowitz, and Minkin, 2022). In addition, 64 percent of teleworking employees say working from home has made it easier to balance work and personal life (Parker, Horowitz, and Minkin, 2022). To the extent that younger generations value a better work-life balance, increasing telework flexibilities could make their view of work more favorable than before the pandemic.

COVID-19 Pandemic Changes in Civilian Employment

The COVID-19 pandemic changed the landscape for employers and employees, and it remains to be seen if these changes will remain permanent. First, the pandemic affected employment in certain sectors. For example, as was shown in Figure A.12, manufacturing employment increased due to increased demand for durable goods. Whether the growth in manufacturing employment will be sustained or will taper off remains to be seen. The pandemic also shifted employment away from service industries and toward online retail, which may adversely affect less educated male LFP (Groshen and Holzer, 2021). Piacentini et al. (2022) hypothesize that growth in automation and reduced demand for high-contact jobs and services during the pandemic may drive less educated male LFP down further.

The pandemic also emphasized the need for essential occupations, which includes occupations in public health and safety, manufacturing and selling essential products, and other infrastructure support (Torpey, 2020). Many of these occupations do not require high levels of education, as shown in Table A.5. For example, the top three essential occupations in terms of projected annual openings and 2019 employment required no formal education for employment: cashiers; hand laborers and freight, stock, and material movers; and janitors and cleaners. Most of the essential occupations shown in the table required a high school degree or equivalent.

TABLE A.5
Projected Annual Job Openings for Essential Occupations, 2019–2029

Occupation	Openings, Projected 2019–2029 Annual Average	Employment, 2019	Typical Entry Requirements	Median Annual Wage, 2019
Cashiers	562,300	3,622,500	No formal educational credential	\$23,650
Hand laborers and freight, stock, and material movers	380,600	2,986,000	No formal educational credential	\$29,510
Janitors and cleaners, except maids and housekeeping cleaners	305,600	2,374,200	No formal educational credential	\$27,430
Stockers and order fillers	254,900	2,135,800	High school diploma or equivalent	\$27,380
Registered nurses	175,900	3,096,700	Bachelor's degree	\$73,300
Delivery truck drivers and driver/sales workers	163,100	1,506,000	High school diploma or equivalent	\$32,020
Assemblers and fabricators	156,300	1,883,700	High school diploma or equivalent	\$33,710
General maintenance and repair workers	139,400	1,516,400	High school diploma or equivalent	\$39,080
Agricultural workers	132,400	902,900	Varies	\$26,030
Engineers	117,500	1,810,100	Bachelor's degree	\$94,500
Food processing workers	98,100	832,800	Varies	\$29,320
Electricians	82,200	739,200	High school diploma or equivalent	\$56,180
Farmers, ranchers, and other agricultural managers	80,900	952,300	High school diploma or equivalent and five years or more work experience in a related occupation	\$71,160
Computer support specialists	68,400	882,300	Varies	\$54,760
Financial managers	59,600	697,900	Bachelor's degree and five years or more work experience in a related occupation	\$129,890
Police and sheriff patrol officers	51,000	688,400	High school diploma or equivalent	\$63,150

SOURCE: Torpey, 2020.

Second, work amenities offered by employers changed in response to the pandemic. According to the BLS 2021 Business Response Survey, the availability of telework options and flexible work hours increased (BLS, undated a). Specifically, 34.5 percent of establishments increased telework for some or all employees and, among these establishments, 60.2 percent expected to make increased telework permanent when the pandemic was over, suggesting that just over 20 percent of all establishments, or one in five establishments, would make increased telework permanent. The survey also found that 24.6 percent of establishments started to offer flexible or staggered work hours to employees because of the pandemic. Researchers have similarly concluded that there will be a permanent increase in teleworking (Barrero, Bloom, and Davis, 2021; Davis, Ghent, and Gregory, 2021; Piacentini et al., 2022). Barrero, Bloom, and Davis (2021) estimate that 20 percent of full workdays will be supplied from home after the pandemic, compared with just 5 percent before the pandemic.

Supplementary Material for Chapter 2

This appendix provides detailed descriptions of the methodology used in Chapter 2 to compare military pay with that of comparable civilians. It begins by describing how the detailed RMC percentiles are created, starting with raw data used in the analysis. This exercise is then repeated for the additional data sources used in the weighted average (i.e., summary) RMC percentiles, a metric that requires information on the education distribution of the military and personnel counts by YOS. The differences between the two approaches are emphasized. There are two sources of military education data that may be used as inputs in the calculation of the weighted average RMC percentile, the DMDC's active duty pay files and SOFS, and we find that the educational distribution in 2021 differs between data sources. We rely on self-reported education in SOFS-A when we compute RMC percentiles for 2021 and more recent years. Because SOFS-A data are not available back to the 1990s, we also use the DMDC active duty master file, which comprises administrative rather than self-reported data, to estimate the educational distribution for these earlier years. The two data sources have pros and cons, as we discuss. We find that the choice of data source leads to nontrivial impacts on the summary RMC percentiles' calculations and compare the two DMDC-weighted and SOFS-weighted RMC percentiles over time. Finally, we review the literature on CPS nonresponse, which has biased income estimates in recent years, and discuss its potential implications for our analysis.

Detailed Regular Military Compensation Calculation

The detailed RMC percentile methodology yields an RMC percentile for each year of service along the military career (i.e., one to 30 YOS), permitting a close examination of the suitability of military pay in a given calendar year. The methodology compares military personnel and their compensation (i.e., RMC) to the earnings of comparable civilians. What constitutes *comparable civilians* changes depending on the stage of persons' careers. Because the comparison is made with a static education category, no information on military personnel's educational outcomes is required.

We use the March ASEC as the source of civilian pay data. It is an individual-level data file that includes information on respondents' weekly income, age, education, and hours worked. We use this information to identify comparable civilians in the comparison between military and civilian pay. We limit the data to include full-time and full-year workers—that is, we remove any respondents who did not work more than 36 hours a week on average and at least 36 weeks in the previous year. While the March ASEC has data on respondent's age and education, there is no YOS variable, which the Greenbook uses to categorize military pay. Instead we derive a civilian YOS estimate based on the age of a respondent and their education. The formula to determine YOS depends on education: for high school graduates, their YOS are equal to their age at the time of the survey less 18; for those with some college or an associate's degree, the YOS variable is their age less 20; for those with a bachelor's degree, YOS starts at age 22 and, for those with a master's degree or higher education, age 24. The survey asks for respondents' weekly income in the

preceding year. Thus, although the 2022 CPS data are the most recent available, we only have estimates of civilians' earnings up to 2021. All earnings, for both civilians and military personnel, are converted to 2021 dollars.

The CPS includes weights that make it representative of the U.S. population as a whole. To ensure that the comparison between military and civilian pay is sound, we augment these weights so that they reflect the gender composition of the military rather than the civilian population. We acquire information on the gender composition of the military from *PopRep* and edit the CPS's stock survey weights, giving male CPS respondents higher weights to reflect their overrepresentation in the military (e.g., enlisted members were 83 percent male and officers were 80 percent male, according to the latest *PopRep* data) (DoD, OUSD [P&R], 2019).

After this data cleaning and reweighting, we then import the RMC data from Greenbook's Table B4, convert annual pay to weekly, and deflate to 2021 dollars. Then for each year of service (from zero through 30), we estimate where RMC falls relative to the distribution of comparable civilian pay. The final step in the detailed RMC calculation is that all of the plotted values (i.e., the civilian wage percentiles, RMC, and the RMC percentiles) are all smoothed through quadratic regressions. This serves two purposes: first, it makes the figures that plot the detailed RMC smoother and thus easier to view; second, it fills in the "missing" YOS values as the Greenbook provides its data at YOS intervals of one, two, three, four, six, eight, ten, and so on. The regressions interpolate those "missing" values.

Summary RMC Calculation

The calculation of the weighted average RMC percentiles involves three inputs, which are listed in order of their presentation in Tables 2.3 and 2.4:

1. the predicted education distribution by YOS
2. the RMC percentiles for each education category and YOS
3. the personnel count by YOS.

This subsection describes each component and its construction.

To create the first component, the predicted education distribution, we begin with the enlisted and officer education data shown in Tables 2.1 and 2.2, respectively. Each input into the weighted RMC percentile must be at the YOS level, yet the education distribution data we have is at the pay grade level. To convert the pay grade level data to the YOS level, we use the joint distribution of personnel by YOS and pay grade from the Greenbook's Table A6 to estimate the percentage of personnel for each year of service and then derive the predicted education distribution by fitting a series of polynomial curves to each education category, effectively smoothing the distribution and constraining the sum of education fractions for each year of service to one.

We calculate RMC percentiles for each of the education categories by YOS using a similar methodology to that described above. As in that analysis, military pay data comes from the Greenbook and civilian pay from the CPS. However, rather than smoothing the RMC percentiles, we instead directly calculate the percentiles for each education category. Because the Greenbook lists YOS data at irregular intervals (i.e., one, two, three, four, six, eight, etc.), we assign a "missing" YOS interval (i.e., five, seven, nine, etc.) to the RMC of its preceding YOS neighbor. We then compare military pay, as measured by RMC, to that of civilians from each educational category (i.e., high school, some college, etc.) to generate the RMC percen-

tiles. These two inputs, the predicted education distribution and RMC percentiles, are used to calculate a weighted average RMC percentile for each year of service (see the “Weighted Average” column in Tables 2.3. and 2.4).

Finally, to create a single weighted RMC percentile for enlisted members and officers, we average the YOS-level RMC percentiles using the personnel counts (see “Enlisted Count” in Table 2.4 and “Officer Count” in Table 2.4) as weights. The personnel counts come from the DMDC’s active duty pay files. Although there are pay files for each month, we use only the September pay files for our counts to measure the services’ end strength. We derive each service member’s YOS based on the pay file’s current year and the year that the service member first entered into the pay file database. We then calculate the total number of personnel by YOS using the September pay file, removing any individuals with missing YOS data and duplicate observations to ensure that individuals are not double-counted.

Military Education Data

In Chapter 2 we use two different data sources to estimate the military education distribution, an input in the calculation of weighted average RMC percentiles (i.e., summary RMC percentiles). As noted above, we use SOFS-A for more recent percentile tabulations but the active duty pay administrative date for the educational distribution for the early years, though, for consistency, we also use the DMDC’s active duty pay files for more recent years.

Tables 2.4 and 2.5 show the weighted average RMC percentiles in 2021, and both use SOFS as their source for military education data. However, Figures 2.6 and 2.7 used instead the DMDC active duty pay files as their source for military education distribution. We make this change because DMDC data are available as far back as 1994, while the earliest SOFS data available are from 2002. The additional data allow us to see how military pay has compared with civilian since the inception of the 70th percentile benchmark.

Comparing the results from Table 2.4 and Figure 2.6 shows that there are substantial differences in the weighted average RMC percentile calculating when using the two different data sources: with SOFS-A data, the summary RMC percentile for enlisted members with fewer than 20 YOS is 82.7, while, when weighted using the DMDC’s education distribution, the summary RMC is 87.5 for that same group. Table B.1 compares the two YOS-level education distributions for enlisted service members, showing that DMDC data consistently reveal lower education outcomes than reported in SOFS-A.

Table B.2 shows the distribution of educational attainment of officers at each year of service based on SOFS-A data (self-reported) and DMDC data (administrative reports). The self-reported data generally shows a higher level of educational attainment than the administrative data.

To understand how these different education distributions affect the weighted average (i.e., summary) RMC percentiles, we plot the two series in Figures B.1 and B.2. The former, which plots the enlisted RMC percentiles, shows that the SOFS-A education distribution consistently leads to RMC percentiles that are roughly 2 to 5 percentiles lower than those estimated using DMDC data. This is driven by the fact that the higher reported education outcomes from SOFS-A, which means that RMC is increasingly compared with higher-earning civilian cohorts (e.g., greater weights to “Some College” versus “High School”).

The differences between the two education data sources, and their effects on the weighted RMC percentiles calculations, are more muted among officers. In Figure B.2, we see that the SOFS-A-weighted RMC percentiles track the DMDC-weighted estimates closely, never differing by more than 3 percentile points.

TABLE B.1
Enlisted Education Distribution Comparison, SOFS-A and DMDC

YOS	SOFS-A Predicted Education Distribution by YOS					DMDC Education Distribution by YOS				
	High School	Some College	Associate's Degree	Bachelor's Degree	Master's Degree or Higher	High School	Some College	Associate's Degree	Bachelor's Degree	Master's Degree or Higher
1	0.60	0.32	0.04	0.04	0.00	0.92	0.01	0.02	0.05	0.00
2	0.49	0.37	0.08	0.06	0.00	0.92	0.01	0.02	0.04	0.00
3	0.41	0.40	0.11	0.08	0.01	0.91	0.01	0.03	0.05	0.00
4	0.35	0.41	0.13	0.09	0.01	0.88	0.02	0.05	0.05	0.00
5	0.31	0.42	0.15	0.10	0.02	0.83	0.02	0.08	0.06	0.00
6	0.28	0.43	0.17	0.11	0.02	0.80	0.03	0.10	0.07	0.01
7	0.25	0.42	0.19	0.12	0.02	0.75	0.04	0.12	0.08	0.01
8	0.23	0.42	0.21	0.13	0.02	0.71	0.05	0.15	0.08	0.01
9	0.21	0.41	0.22	0.13	0.02	0.66	0.05	0.18	0.10	0.01
10	0.19	0.40	0.24	0.14	0.02	0.62	0.05	0.20	0.12	0.01
11	0.18	0.40	0.25	0.15	0.02	0.59	0.06	0.21	0.13	0.02
12	0.17	0.39	0.26	0.16	0.03	0.56	0.06	0.23	0.13	0.02
13	0.15	0.38	0.27	0.17	0.03	0.54	0.07	0.25	0.13	0.02
14	0.14	0.37	0.28	0.18	0.04	0.52	0.07	0.25	0.14	0.03
15	0.13	0.36	0.28	0.18	0.04	0.49	0.07	0.26	0.15	0.03
16	0.12	0.35	0.29	0.19	0.05	0.49	0.08	0.25	0.15	0.03
17	0.12	0.34	0.29	0.20	0.06	0.45	0.08	0.26	0.17	0.04
18	0.11	0.33	0.28	0.21	0.07	0.41	0.08	0.28	0.18	0.05
19	0.10	0.32	0.28	0.22	0.08	0.40	0.08	0.27	0.19	0.06
20	0.10	0.30	0.27	0.24	0.09	0.41	0.08	0.25	0.20	0.06
21	0.10	0.29	0.26	0.25	0.10	0.38	0.08	0.25	0.21	0.08

Table B.1—Continued

YOS	SOFSA Predicted Education Distribution by YOS						DMDC Education Distribution by YOS					
	High School	Some College	Associate's Degree	Bachelor's Degree	Master's Degree or Higher	High School	Some College	Associate's Degree	Bachelor's Degree	Master's Degree or Higher		
22	0.09	0.28	0.25	0.26	0.12	0.37	0.08	0.23	0.23	0.08		
23	0.09	0.27	0.23	0.27	0.13	0.35	0.08	0.22	0.25	0.10		
24	0.09	0.26	0.22	0.28	0.15	0.33	0.08	0.21	0.25	0.12		
25	0.09	0.25	0.20	0.30	0.16	0.34	0.08	0.17	0.27	0.14		
26	0.09	0.24	0.19	0.31	0.18	0.32	0.06	0.19	0.29	0.15		
27	0.09	0.23	0.18	0.32	0.19	0.32	0.07	0.15	0.30	0.16		
28	0.08	0.22	0.17	0.32	0.20	0.34	0.06	0.15	0.28	0.16		
29	0.08	0.22	0.16	0.32	0.21	0.30	0.06	0.15	0.30	0.19		
30	0.08	0.22	0.17	0.31	0.22	0.29	0.07	0.14	0.30	0.20		

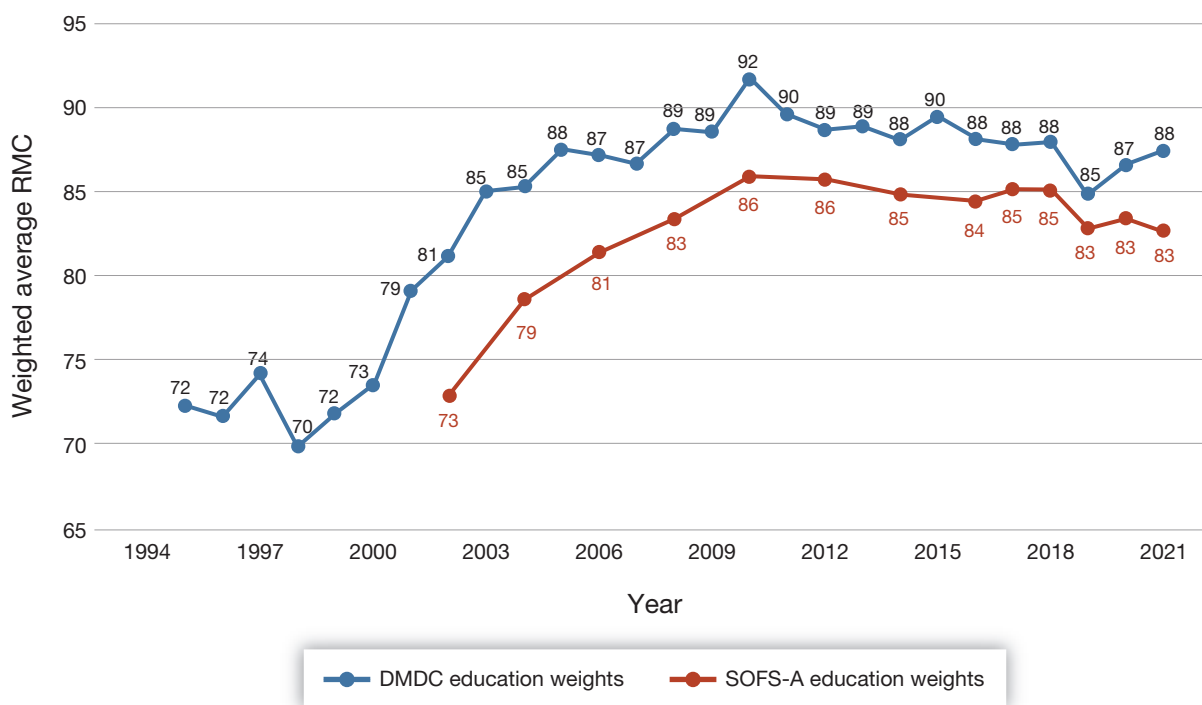
SOURCE: Authors' calculations using DMDC and SOFSA data.

TABLE B.2
Officer Education Distributions Comparison, SOFS-A and DMDC

YOS	SOFS-A Predicted Education Distribution		DMDC Education Distribution	
	Bachelor's Degree	Master's Degree or Higher	Bachelor's Degree	Master's Degree or Higher
1	0.90	0.10	0.88	0.12
2	0.82	0.18	0.86	0.14
3	0.75	0.25	0.85	0.15
4	0.69	0.31	0.84	0.16
5	0.62	0.38	0.81	0.19
6	0.57	0.43	0.78	0.22
7	0.51	0.49	0.73	0.27
8	0.46	0.54	0.70	0.30
9	0.42	0.58	0.67	0.33
10	0.37	0.63	0.61	0.39
11	0.33	0.67	0.54	0.46
12	0.30	0.70	0.47	0.53
13	0.27	0.73	0.38	0.62
14	0.24	0.76	0.32	0.68
15	0.21	0.79	0.29	0.71
16	0.19	0.81	0.27	0.73
17	0.17	0.83	0.25	0.75
18	0.15	0.85	0.25	0.75
19	0.13	0.87	0.25	0.75
20	0.12	0.88	0.25	0.75
21	0.11	0.89	0.22	0.78
22	0.10	0.90	0.21	0.79
23	0.09	0.91	0.20	0.80
24	0.09	0.91	0.19	0.81
25	0.08	0.92	0.20	0.80
26	0.08	0.92	0.17	0.83
27	0.08	0.92	0.16	0.84
28	0.08	0.92	0.16	0.84
29	0.08	0.92	0.16	0.84
30	0.08	0.92	0.16	0.84

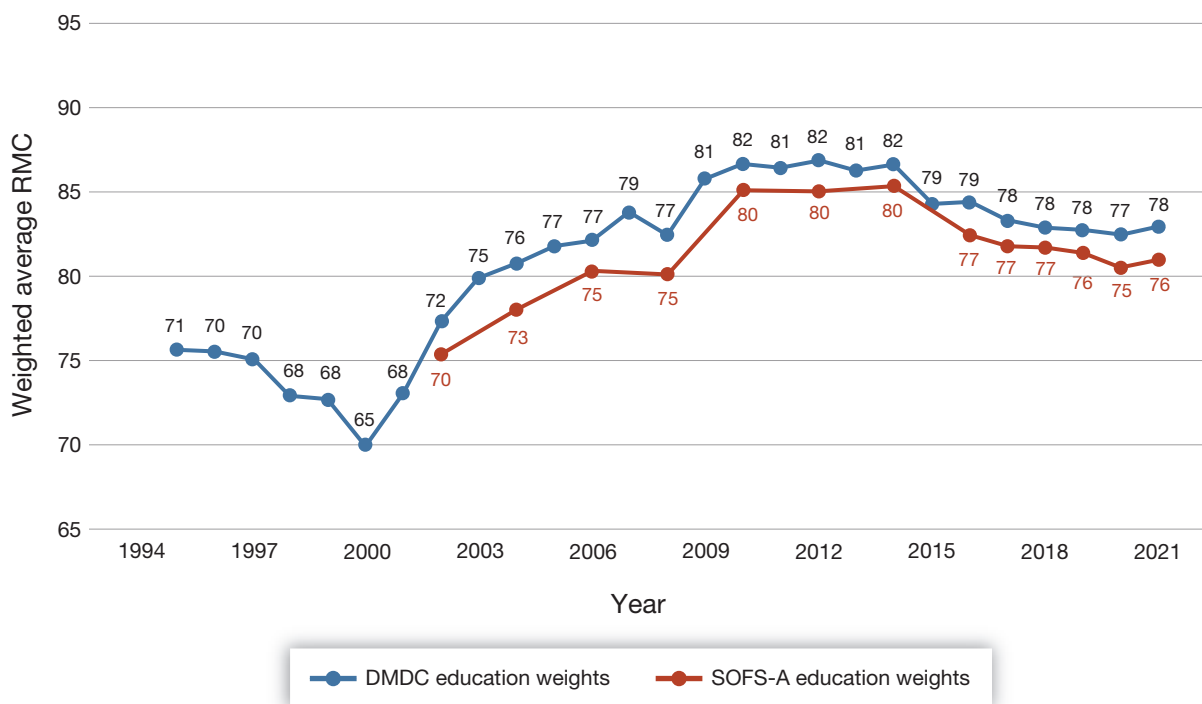
SOURCE: Authors' calculations using DMDC and SOFS-A data.

FIGURE B.1
Enlisted Regular Military Compensation Percentiles Comparison, SOFS-A and DMDC



SOURCE: Authors' calculations using the DMDC's active duty pay files, the Greenbook, the March ASEC, *PopRep*, and SOFS-A.

FIGURE B.2
Officer Regular Military Compensation Percentiles Comparison, SOFS-A and DMDC



SOURCE: Authors' calculations using the DMDC's active duty pay files, the Greenbook, the March ASEC, *PopRep*, and SOFS-A.

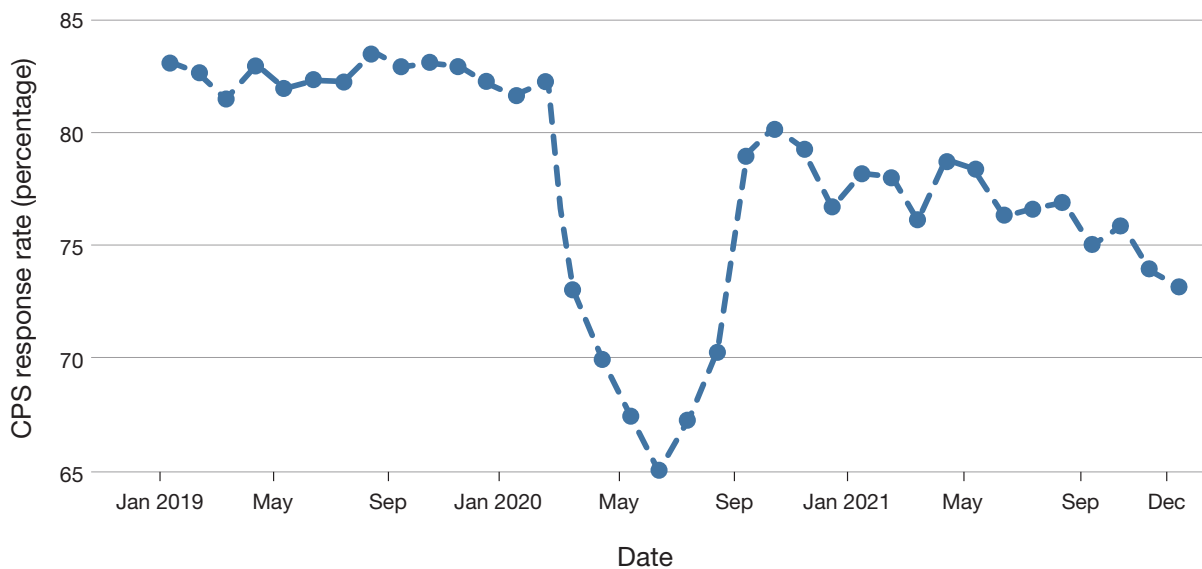
COVID-19 Survey Nonresponse

The COVID-19 pandemic drastically reduced response rates for many surveys. The CPS, our primary source of civilian data throughout this analysis, was no exception. Figure B.3 plots the CPS response rates from January 2019 through December 2021. It shows that response rate for 2020's March ASEC, fell far below typical levels (i.e., around 65 percent at its lowest in June 2020).

Survey nonresponse does not necessarily bias estimates, but it is only harmless if the nonresponse is random (or, at least, not correlated with the measures of interest). Rothbaum and Bee (2021) show, however, that COVID-19 survey nonresponse was nonrandom and, in fact, strongly correlated with income, and much more so than survey response before the onset of COVID-19. The authors compare the CPS data to administrative data from return filings (e.g., W-2s and 1099 forms), the latter being much more costly to avoid and thus a better measure of “true” parameters (e.g., income, employment, education, etc.). They find that CPS respondents tended to be wealthier and better educated than their nonrespondent counterparts, which biased 2019 income estimates. Using the original survey weights, real median household was \$68,700 in 2019—a 6.8 percent increase from the previous year. However, after adjusting for nonresponse bias, the authors estimate the 2019 median household income to be only \$66,790, 2.8 percent lower than the estimate using survey weights.

This nonresponse bias affects our estimates of civilian income and, consequently, the RMC percentiles. Given that those with lower incomes and less education (e.g., high school graduates) were less likely to respond to the CPS in early 2020, it is unsurprising that our estimated weekly income for young (i.e., first year of service) high school graduates climbs rapidly in 2019, before falling to roughly pre-COVID-19 levels in 2020. Those that might normally make up the lower-end of the 18- and 19-year-old high school income distribution simply did not appear in the data. This artificial growth in the 90th percentile of civilian pay reflects only the bias induced by nonresponse, not the inadequacy of RMC, which, as seen in Figure B.4, changes little

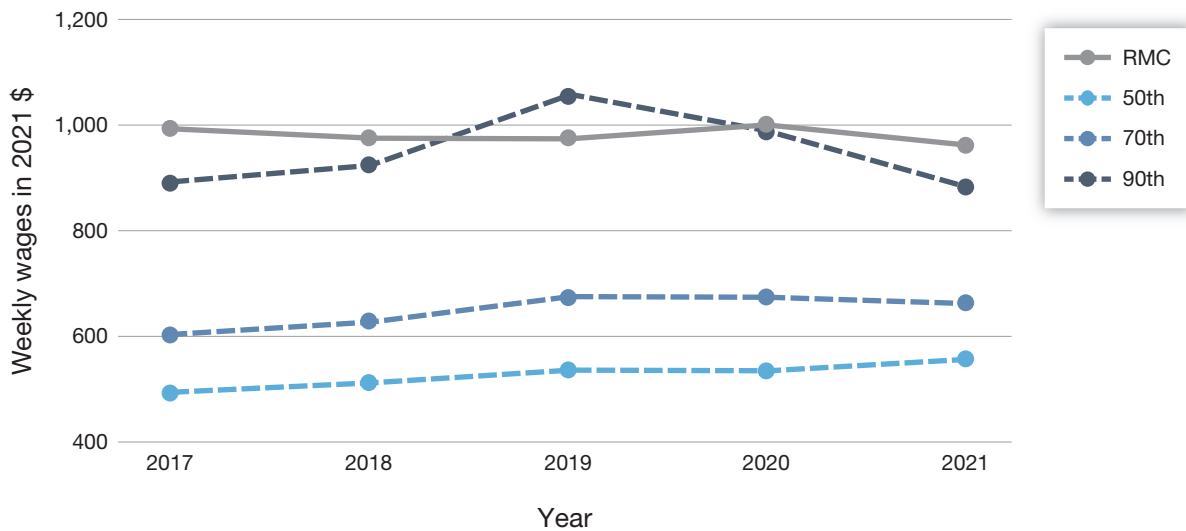
FIGURE B.3
Current Population Survey Nonresponse, 2019–2021



SOURCE: BLS, undated c.

FIGURE B.4

Regular Military Compensation and Comparable Civilian Pay: Enlisted, with One Year of Service



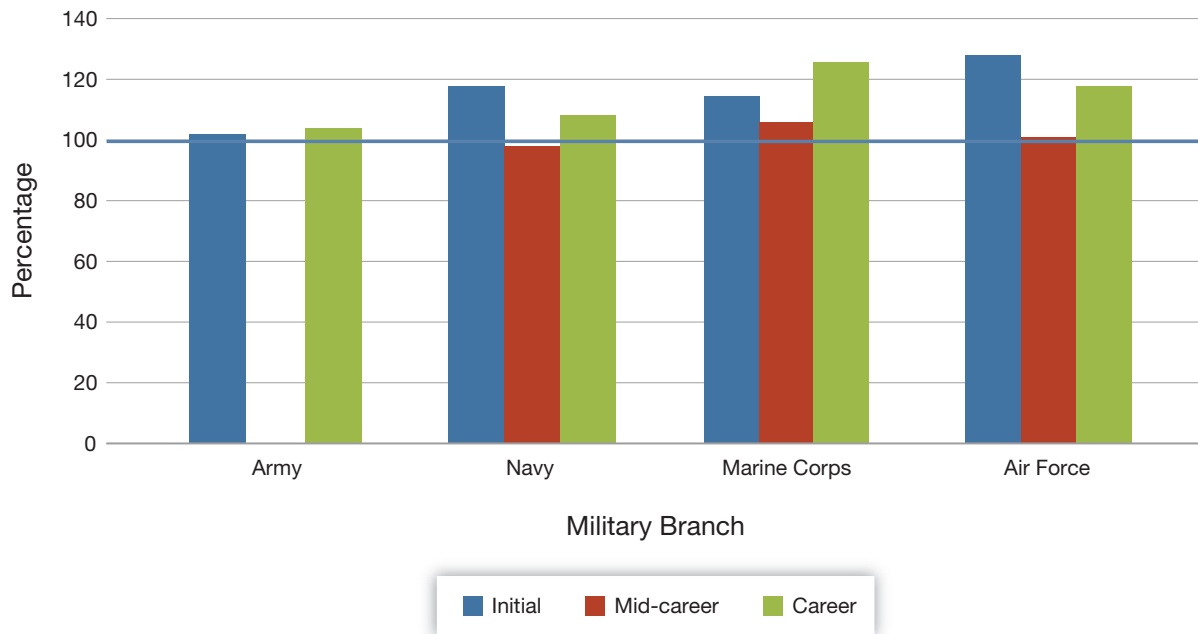
SOURCE: Authors' calculations using the Greenbook, the March ASEC, *PopRep*, and SOFS.

during this time frame. The figure shows that RMC percentile falls below 90 for early career enlisted members but quickly recovers by 2020—all driven by sporadic estimates of civilian weekly wages. It is important to note that the median and 70th percentiles of civilian pay do not witness such sporadic change during this time period.

Supplementary Tables and Figures for Chapter 3

This appendix provides supplementary tables and figures for Chapter 3.

FIGURE C.1
Percentage of Fiscal Year 2023 Active Duty Retention Missions Attained



SOURCE: DoD, OUSD(P&R), 2023.

TABLE C.1
Months of Service at Promotion, Averaged over 2013–2018

Pay Grade at Promotion	Department of the Air Force					All
	Army	Navy	Marine Corps	Department of the Air Force	Coast Guard	
E-2	3	3	1	2	3	3
E-3	6	8	5	6	7	6
E-4	8	19	17	26	11	18
E-5	32	40	32	51	58	40

SOURCE: DMDC tabulations provided to authors.

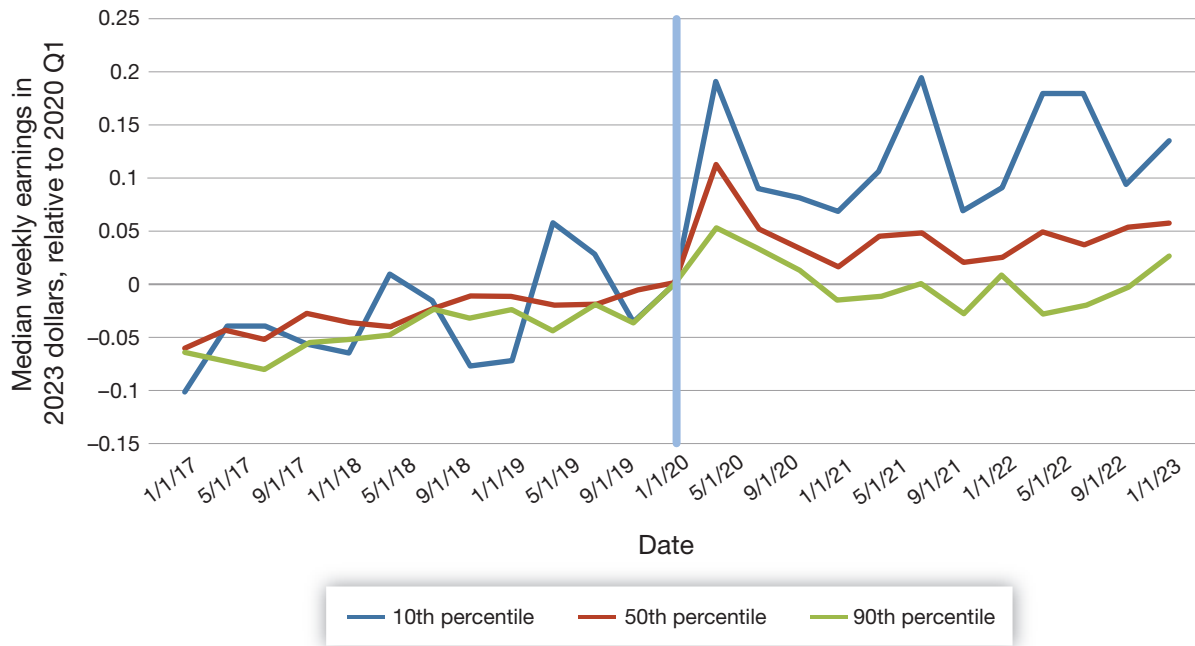
TABLE C.2
Annual and Cumulative Increase in the ECI, Basic Pay, and the CPI-U

Year	Annual Increase			Cumulative Increase Since 2000			Cumulative Increase Since 2020		
	ECI	Basic Pay	CPI-U	ECI	Basic Pay	CPI-U	ECI	Basic Pay	CPI-U
2000	0.034	0.048	0.028						
2001	0.032	0.037 ^a	0.037	0.032	0.037	0.037			
2002	0.041	0.050 ^a	0.012	0.074	0.089	0.050			
2003	0.036	0.041 ^a	0.028	0.113	0.133	0.079			
2004	0.032	0.037 ^a	0.020	0.149	0.175	0.100			
2005	0.03	0.035	0.028	0.183	0.217	0.132			
2006	0.026	0.031	0.040	0.214	0.254	0.177			
2007	0.022	0.022 ^a	0.021	0.241	0.282	0.202			
2008	0.030	0.035	0.043	0.278	0.327	0.253			
2009	0.034	0.039	-0.001	0.321	0.378	0.252			
2010	0.029	0.034	0.026	0.359	0.425	0.285			
2011	0.014	0.014	0.017	0.379	0.445	0.306			
2012	0.016	0.016	0.030	0.401	0.468	0.346			
2013	0.017	0.017	0.017	0.424	0.493	0.368			
2014	0.018	0.010	0.016	0.450	0.508	0.390			
2015	0.018	0.010	-0.002	0.476	0.523	0.387			
2016	0.023	0.013	0.012	0.510	0.543	0.404			
2017	0.021	0.021	0.022	0.542	0.576	0.434			
2018	0.024	0.024	0.016	0.579	0.613	0.456			
2019	0.026	0.026	0.018	0.620	0.655	0.482			
2020	0.031	0.031	0.025	0.670	0.707	0.519			
2021	0.030	0.030	0.014	0.720	0.758	0.541	0.030	0.030	0.014
2022	0.027	0.027	0.076	0.767	0.805	0.658	0.058	0.058	0.091
2023	0.046	0.046	0.063	0.848	0.888	0.763	0.106	0.106	0.160
2024	0.052	0.052	0.028	0.944	0.987	0.812	0.164	0.164	0.193

SOURCES: Congressional Research Service, 2018; Congressional Research Service, 2023a; DoD; Federal Reserve Bank of Saint Louis, undated c.

^a Pay table reform also occurred that gave additional targeted pay raises to certain parts of the pay table. The increase in the table does not incorporate the changes due to pay table reform.

FIGURE C.2
Indexed Median Real Weekly Earnings of Civilian Full-Time Workers in Each Year Relative to 2020, Ages 18–30, by Percentile of Civilian Earnings



SOURCE: Authors' computations using CPS data from the BLS.
 NOTE: The figure shows index earnings for full-year, full-time employees.

TABLE C.3
Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023

Pay Grade	Fewer Than 2 YOS	2 YOS	3 YOS	4 YOS	6 YOS	8 YOS	10 YOS
E-6	\$2,980.50	\$3,279.90	\$3,424.80	\$3,565.50	\$3,711.90	\$4,042.20	\$4,170.90
E-5	\$2,730.30	\$2,914.20	\$3,055.20	\$3,199.20	\$3,423.90	\$3,658.50	\$3,851.70
E-4	\$2,503.50	\$2,631.60	\$2,774.10	\$2,914.80	\$3,039.30	\$3,039.30	\$3,039.30
E-3	\$2,259.90	\$2,402.10	\$2,547.60	\$2,547.60	\$2,547.60	\$2,547.60	\$2,547.60
E-2	\$2,149.20	\$2,149.20	\$2,149.20	\$2,149.20	\$2,149.20	\$2,149.20	\$2,149.20
E-1	\$1,917.60	\$1,917.60	\$1,917.60	\$1,917.60	\$1,917.60	\$1,917.60	\$1,917.60
E-1 fewer than four months	\$1,773.00						

SOURCE: DoD, OUSD(P&R), 2023.

TABLE C.4

Proposal of Representative Mike Garcia: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023

Pay Grade	Fewer Than 2 YOS	2 YOS	3 YOS	4 YOS	6 YOS	8 YOS	10 YOS
E-4	\$2,600.00	\$2,600.00	\$2,774.10	\$2,914.80	\$3,039.30	\$3,039.30	\$3,039.30
E-3	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00
E-2	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00
E-1	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00	\$2,600.00
E-1 fewer than four months	\$2,600.00						

SOURCE: H.R. 2591, 2023.

NOTE: Basic pay for E-5 and E-6 under this proposal is the same as the baseline 2023 pay table shown in Table A.3.

TABLE C.5

House Appropriations Committee Proposal: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023

Pay Grade	Fewer Than 2 YOS	2 YOS	3 YOS	4 YOS	6 YOS	8 YOS	10 YOS
E-6	\$3,210.00	\$3,279.90	\$3,424.80	\$3,565.50	\$3,711.90	\$4,042.20	\$4,170.90
E-5	\$3,100.30	\$3,150.20	\$3,200.20	\$3,250.20	\$3,423.90	\$3,658.20	\$3,851.70
E-4	\$3,010.50	\$3,060.60	\$3,100.10	\$3,150.80	\$3,210.30	\$3,260.30	\$3,260.30
E-3	\$2,900.90	\$2,900.90	\$2,950.60	\$3,000.60	\$3,050.60	\$3,050.60	\$3,050.60
E-2	\$2,799.20	\$2,799.20	\$2,799.20	\$2,799.20	\$2,799.20	\$2,799.20	\$2,799.20
E-1	\$2,600.60	\$2,600.60	\$2,600.60	\$2,600.60	\$2,600.60	\$2,600.60	\$2,600.60
E-1 fewer than four months	\$1,773.00						

SOURCE: U.S. House of Representatives, House Appropriations Committee, 2023.

TABLE C.6

Civilian Pay Catch-Up Proposal: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023

Pay Grade	Fewer Than 2 YOS	2 YOS	3 YOS	4 YOS	6 YOS	8 YOS	10 YOS
E-5	\$2,892.21	\$3,113.65	\$3,265.90	\$3,415.04	\$3,557.96	\$3,723.11	\$3,851.70
E-4	\$2,803.92	\$2,947.39	\$3,106.99	\$3,264.58	\$3,404.02	\$3,404.02	\$3,404.02
E-3	\$2,531.09	\$2,690.35	\$2,853.31	\$2,853.31	\$2,853.31	\$2,853.31	\$2,853.31
E-2	\$2,407.10	\$2,407.10	\$2,407.10	\$2,407.10	\$2,407.10	\$2,407.10	\$2,407.10
E-1	\$2,147.71	\$2,147.71	\$2,147.71	\$2,147.71	\$2,147.71	\$2,147.71	\$2,147.71
E-1 fewer than four months	\$1,985.76						

NOTE: Basic pay for E-6 under this proposal is the same as the baseline 2023 pay table shown in Table A.3.

TABLE C.7

Recruiting Catch-Up Proposal (7%): Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023

Pay Grade	Fewer Than 2 YOS	2 YOS	3 YOS	4 YOS	6 YOS	8 YOS	10 YOS
E-4	\$2,678.80	\$2,815.80	\$2,968.30	\$3,118.80	\$3,252.10	\$3,252.10	\$3,252.10
E-3	\$2,418.10	\$2,570.30	\$2,725.90	\$2,725.90	\$2,725.90	\$2,725.90	\$2,725.90
E-2	\$2,299.60	\$2,299.60	\$2,299.60	\$2,299.60	\$2,299.60	\$2,299.60	\$2,299.60
E-1	\$2,051.80	\$2,051.80	\$2,051.80	\$2,051.80	\$2,051.80	\$2,051.80	\$2,051.80
E-1 fewer than four months	\$1,897.10						

NOTE: Basic pay for E-5 and E-6 under this proposal is the same as the baseline 2023 pay table shown in Table A.3.

TABLE C.8

Recruiting Catch-Up Proposal (15%): Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023

Pay Grade	Fewer Than 2 YOS	2 YOS	3 YOS	4 YOS	6 YOS	8 YOS	10 YOS
E-5	\$2,929.80	\$3,153.10	\$3,307.50	\$3,458.80	\$3,603.60	\$3,768.70	\$3,851.70
E-4	\$2,879.00	\$3,026.30	\$3,190.20	\$3,352.00	\$3,495.20	\$3,495.20	\$3,495.20
E-3	\$2,598.00	\$2,762.40	\$2,929.70	\$2,929.70	\$2,929.70	\$2,929.70	\$2,929.70
E-2	\$2,471.60	\$2,471.60	\$2,471.60	\$2,471.60	\$2,471.60	\$2,471.60	\$2,471.60
E-1	\$2,205.20	\$2,205.20	\$2,205.20	\$2,205.20	\$2,205.20	\$2,205.20	\$2,205.20
E-1 fewer than four months	\$2,039.00						

NOTE: Basic pay for E-6 under this proposal is the same as the baseline 2023 pay table shown in Table A.3.

TABLE C.9

All-Volunteer Force Catch-Up Proposal: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023

Pay Grade	Fewer Than 2 YOS	2 YOS	3 YOS	4 YOS	6 YOS	8 YOS	10 YOS
E-4	\$2,626.00	\$2,717.60	\$2,876.20	\$3,112.40	\$3,249.40	\$3,249.40	\$3,249.40
E-3	\$2,525.70	\$2,611.40	\$2,716.80	\$2,832.10	\$2,832.10	\$2,832.10	\$2,832.10
E-2	\$2,429.40	\$2,429.40	\$2,429.40	\$2,429.40	\$2,429.40	\$2,429.40	\$2,429.40
E-1	\$2,180.60	\$2,180.60	\$2,180.60	\$2,180.60	\$2,180.60	\$2,180.60	\$2,180.60
E-1 fewer than four months	\$2,180.60						

NOTE: Basic pay for E-5 and E-6 under this proposal is the same as the baseline 2023 pay table shown in Table A.3.

TABLE C.10
Boot Camp Catch-Up Proposal: Monthly Basic Pay for E-1 to E-4 with Fewer Than 12 Years of Service, January 2023

Pay Grade	Fewer Than 2 YOS	2 YOS	3 YOS	4 YOS	6 YOS	8 YOS	10 YOS
E-4	\$2,503.50	\$2,631.60	\$2,774.10	\$2,914.80	\$3,039.30	\$3,039.30	\$3,039.30
E-3	\$2,259.90	\$2,402.10	\$2,547.60	\$2,547.60	\$2,547.60	\$2,547.60	\$2,547.60
E-2	\$2,149.20	\$2,149.20	\$2,149.20	\$2,149.20	\$2,149.20	\$2,149.20	\$2,149.20
E-1	\$1,917.60	\$1,917.60	\$1,917.60	\$1,917.60	\$1,917.60	\$1,917.60	\$1,917.60
E-1 fewer than four months	\$1,917.60						

TABLE C.11
Estimated Change in High-Quality Enlistment Elasticities from Past Studies

Authors	Service	Data Type and Period Covered	Relative Pay Elasticity Estimate	Enlistment Bonus Elasticity Estimate	Recruiters Elasticity Estimate
Ward et al., 2023	Army	Monthly, by company, 2012–2018	–.25 (min. wage)	0.05–0.11	0.29
Knapp et al., 2018	Army	Monthly, by company, 2012–2015		0.04–0.13 ^a	0.15–0.60 ^b
Goldberg, Kimko, and Li, 2015	Army	Monthly, by battalion, 1995–2013	0.585		0.47
Asch et al., 2010	Army	Quarterly, by state, 2000–2008	1.15	0.05–0.17	0.57–0.63
	Navy	Quarterly, by state, 2000–2008	0.73		
Simon and Warner, 2007	Army	Quarterly, by state, 1996–2005	0.7		0.47
Simon and Warner, 2007	Army	Quarterly, by state, 2004–2005	1.065		0.48
Warner and Simon, 2004	Army	Quarterly, by state, 1989–2003	0.71–0.81		0.53–0.707
	Navy	Quarterly, by state, 1989–2003	0.62		0.53
	Air Force	Quarterly, by state, 1989–2003	0.4		0.57
Warner, Curtis, and Payne, 2003	Marine Corps	Quarterly, by state, 1989–2003	0.64		0.59
	Army	Monthly, by state, 1989–1997	0.78	0.12	0.41
	Navy	Monthly, by state, 1989–1997	0.95	0.024	0.64
	Air Force	Monthly, by state, 1989–1997	0.47		
Dertouzos and Garber, 2003	Marine Corps	Monthly, by state, 1989–1997	0.23		
	Army	Monthly, males by Military Entrance Processing Station, 1993–1997	–0.36 Civilian pay		0.109
Hogan et al., 1996	Navy	Monthly, Navy Recruiting District, 1990–1994	0.55		0.28
Murray and McDonald, 1999	Army	Monthly, by Census Public Use Microdata Area (PUMA), 1993–1997			0.60

Table C.11—Continued

Authors	Service	Data Type and Period Covered	Relative Pay Elasticity Estimate	Enlistment Bonus Elasticity Estimate	Recruiters Elasticity Estimate
	Marine Corps	Monthly, by Census PUMA, 1993–1997			0.62
	Air Force	Monthly, by Census PUMA, 1993–1997			0.59
	Navy	Monthly, by Census PUMA, 1993–1997			0.53
Hogan et al., 2000	Army	Quarterly, by zip code, 1994–1997			0.419–0.863
	Navy	Quarterly, by zip code, 1994–1997			0.228–0.44
Mean of above, except Dertouzos and Garber, 2003, and Ward et al., 2023	Army only		0.764	0.083	0.504
	Navy only		0.713		
	Air Force only		0.435		
	Marine Corps only		0.435		
Mean of above, except Dertouzos and Garber, 2003, and Ward et al., 2023	Various	After drawdown	0.693	0.077	0.503

SOURCE: Some entries in table drawn from Table 1 in Warner, 2012.

NOTE: An elasticity shows the percentage change in high-quality enlistments associated with a 1-percent change in military pay relative to civilian pay. For example, an elasticity of .693 means that a 1-percent increase in military pay is estimated to increase high-quality enlistments by 0.693 percent.

^a Estimate varies with level the enlistment bonus and the percent of recruits eligible for the bonus.

^b Estimate varies with the number of recruiters and whether and by how much the recruiters' mission changes when the number of recruiters change.

TABLE C.12
Annual 2023 Basic Pay in the First Four Years of Service Under the Current Pay Table and Under the Alternative Proposals

Proposal	Years of Service			
	1	2	3	4
2023 annual basic pay	\$25,326.00	\$28,580.40	\$31,579.20	\$35,538.00
1. Proposal of Representative Mike Garcia	\$31,200.00	\$31,200.00	\$31,579.20	\$35,538.00
2. HAC proposal	\$31,122.00	\$35,468.40	\$36,727.20	\$38,002.00
3. Junior civilian pay catch-up proposal	\$28,365.12	\$32,010.05	\$35,368.70	\$38,555.14
4a. Recruiting catch-up proposal (7%)	\$27,098.82	\$30,581.03	\$33,789.74	\$36,314.75
4b. Recruiting catch-up proposal (15%)	\$29,124.90	\$32,867.46	\$36,316.08	\$39,220.92
5. AVF catch-up proposal	\$28,984.11	\$30,909.97	\$32,610.72	\$35,946.31
6. Boot camp pay catch-up proposal	\$25,759.80	\$28,580.40	\$31,579.20	\$35,538.00

NOTE: Annual pay is computed using average promotion times to each grade across services.

TABLE C.13

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under the Proposals: Army Enlisted Personnel, Under Scenario B

Proposal	Percentage Change in Retention Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Annual cost to Army (\$Billions per Year)	Annual cost to DoD (\$Billions per Year)
1. Proposal of Representative Mike Garcia	4.2%	3.5%	0.82	0.617	1.684
2. HAC proposal	16.7%	8.9%	0.54	1.420	3.869
3. Junior civilian pay catch-up proposal	12.0%	5.4%	0.45	1.036	2.954
4a. Recruiting catch-up proposal (7%)	7.0%	3.3%	0.46	0.516	1.463
4b. Recruiting catch-up proposal (15%)	14.8%	6.6%	0.45	1.297	3.708
5. AVF catch-up proposal	5.2%	2.8%	0.54	0.583	1.712
6. Boot camp pay catch-up proposal	0.3%	0.2%	0.77	0.018	0.046

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs per service member include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Annual costs in the last two columns include basic pay cost and retirement accrual cost only. Results shown are relative to the baseline for Scenario B. Scenario B assumes no permanent change in civilian pay, as shown in Figure 3.2. Scenario A results, assuming a change in civilian pay, are shown in Table 3.7.

TABLE C.14

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under the Proposals: Navy, Department of the Air Force, and Marine Corps Enlisted Personnel, Under Scenario B (No Permanent Change in Civilian Pay)

Proposal	Percentage Change in Retention Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Annual Cost (\$Billions per Year)
Navy				
1. Proposal of Representative Mike Garcia	2.8%	2.6%	0.95	\$0.418
2. HAC proposal	10.3%	6.6%	0.64	\$0.812
3. Junior civilian pay catch-up proposal	7.4%	3.7%	0.51	\$0.721
4a. Recruiting catch-up proposal (7%)	4.4%	2.2%	0.49	\$0.348
4b. Recruiting catch-up proposal (15%)	9.2%	4.7%	0.51	\$0.908
5. AVF catch-up proposal	3.3%	2.0%	0.59	\$0.347
6. Boot camp pay catch-up proposal	0.2%	0.2%	1.13	\$0.012
Department of the Air Force				
1. Proposal of Representative Mike Garcia	1.4%	1.7%	1.23	\$0.384
2. HAC proposal	6.1%	4.4%	0.72	\$0.857
3. Junior civilian pay catch-up proposal	4.8%	2.5%	0.52	\$0.687

Table C.14—Continued

Proposal	Percentage Change in Retention Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Annual Cost (\$Billions per Year)
4a. Recruiting catch-up proposal (7%)	2.8%	1.4%	0.51	\$0.334
4b. Recruiting catch-up proposal (15%)	5.9%	3.1%	0.53	\$0.864
5. AVF catch-up proposal	2.3%	1.3%	0.55	\$0.361
6. Boot camp pay catch-up proposal	0.1%	0.1%	1.43	\$0.009
Marine Corps				
1. Proposal of Representative Mike Garcia	0.9%	3.2%	3.38	\$0.327
2. HAC proposal	3.6%	7.9%	2.17	\$0.780
3. Junior civilian pay catch-up proposal	2.7%	4.4%	1.64	\$0.511
4a. Recruiting catch-up proposal (7%)	1.6%	2.5%	1.61	\$0.265
4b. Recruiting catch-up proposal (15%)	3.3%	5.5%	1.66	\$0.639
5. AVF catch-up proposal	1.4%	2.4%	1.77	\$0.359
6. Boot camp pay catch-up proposal	0.0%	0.2%	4.95	\$0.007

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs per service member include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Annual costs in the last two columns include basic pay cost and retirement accrual cost only. Results shown are relative to the baseline for Scenario B. Scenario B assumes no permanent change in civilian pay.

TABLE C.15

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under the Proposals: Navy, Department of the Air Force, and Marine Corps Enlisted Personnel, Under Scenario A (Permanent Change in Civilian Pay)

Proposal	Percentage Change in Retention Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Annual Cost (\$Billions per Year)
Navy				
1. Proposal of Representative Mike Garcia	2.5%	2.2%	0.88	\$0.418
2. HAC proposal	12.5%	7.2%	0.57	\$0.812
3. Junior civilian pay catch-up proposal	18.1%	7.3%	0.40	\$0.721
4a. Recruiting catch-up proposal (7%)	5.2%	2.4%	0.46	\$0.348
4b. Recruiting catch-up proposal (15%)	22.8%	9.0%	0.40	\$0.908
5. AVF catch-up proposal	4.0%	2.2%	0.54	\$0.347
6. Boot camp pay catch-up proposal	0.2%	0.2%	1.02	\$0.012

Table C.15—Continued

Proposal	Percentage Change in Retention Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Annual Cost (\$Billions per Year)
Department of the Air Force				
1. Proposal of Representative Mike Garcia	1.3%	1.4%	1.08	\$0.384
2. HAC proposal	7.5%	4.6%	0.62	\$0.857
3. Junior civilian pay catch-up proposal	12.8%	4.9%	0.38	\$0.687
4a. Recruiting catch-up proposal (7%)	3.4%	1.5%	0.45	\$0.334
4b. Recruiting catch-up proposal (15%)	16.4%	6.1%	0.37	\$0.864
5. AVF catch-up proposal	2.7%	1.4%	0.51	\$0.361
6. Boot camp pay catch-up proposal	0.1%	0.1%	1.11	\$0.009
Marine Corps				
1. Proposal of Representative Mike Garcia	0.7%	2.5%	3.42	\$0.327
2. HAC proposal	3.9%	8.0%	2.02	\$0.780
3. Junior civilian pay catch-up proposal	5.5%	6.3%	1.14	\$0.511
4a. Recruiting catch-up proposal (7%)	1.6%	2.6%	1.57	\$0.265
4b. Recruiting catch-up proposal (15%)	6.9%	7.8%	1.13	\$0.639
5. AVF catch-up proposal	1.4%	2.4%	1.78	\$0.359
6. Boot camp pay catch-up proposal	0.1%	0.2%	3.24	\$0.007

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs per service member include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Annual costs in the last two columns include basic pay cost and retirement accrual cost only. Results shown are relative to the baseline for Scenario A. Scenario A assumes a permanent change in civilian pay of 8 percent.

Supplementary Tables and Figures for Chapter 4

This appendix provides supplementary material for Chapter 4.

**TABLE D.1
Proposal 1, Adding E-10 Grade: Monthly Basic Pay for E-6 to E-10 with More Than Six Years of Service, January 2023**

Pay Grade	6 YOS	8 YOS	10 YOS	12 YOS	14 YOS	16 YOS	18 YOS	20 YOS	22 YOS	24 YOS	26 YOS	28 YOS	30 YOS	32 YOS	34 YOS	36 YOS	38 YOS	40 YOS
E-10	\$00.00 ^a	\$00.00 ^a	\$00.00 ^a	\$7,245.70 ^a	\$7,447.90 ^a	\$7,685.50 ^a	\$7,926.60 ^a	\$8,310.30 ^a	\$8,636.40 ^a	\$8,978.20 ^a	\$9,502.30 ^a	\$9,502.30 ^a	\$9,976.50 ^a	\$9,976.50 ^a	\$10,475.90 ^a	\$10,475.90 ^a	\$10,475.90 ^a	\$10,475.90 ^a
E-9	\$00.00	\$00.00	\$6,055.50	\$6,192.90	\$6,365.70	\$6,568.80	\$6,774.90	\$7,102.80	\$7,381.50	\$7,673.70	\$8,121.60	\$8,121.60	\$8,526.90	\$8,526.90	\$8,953.80	\$8,953.80	\$8,953.80	\$8,953.80
E-8	\$00.00	\$4,957.20	\$5,176.50	\$5,312.10	\$5,474.70	\$5,650.80	\$5,968.80	\$6,130.20	\$6,404.40	\$6,556.50	\$6,930.90	\$6,930.90	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80
E-7	\$4,244.70	\$4,500.60	\$4,644.90	\$4,900.50	\$5,113.50	\$5,258.70	\$5,413.50	\$5,473.20	\$5,674.50	\$5,782.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50
E-6	\$3,711.90	\$4,042.20	\$4,170.90	\$4,419.90	\$4,496.10	\$4,551.30	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40

^a Shaded cells indicate changes from the 2023 basic pay table.

**TABLE D.2
Proposal 2, Adding E-10 Grade and Targeted E-6 Through E-9 Raises: Monthly Basic Pay for E-6 to E-10 with More Than Six Years of Service, January 2023**

Pay Grade	6 YOS	8 YOS	10 YOS	12 YOS	14 YOS	16 YOS	18 YOS	20 YOS	22 YOS	24 YOS	26 YOS	28 YOS	30 YOS	32 YOS	34 YOS	36 YOS	38 YOS	40 YOS
E-10	\$00.00 ^a	\$00.00 ^a	\$00.00 ^a	\$7,245.70 ^a	\$7,447.90 ^a	\$7,685.50 ^a	\$8,240.50 ^a	\$8,463.40 ^a	\$8,636.40 ^a	\$8,978.20 ^a	\$9,502.30 ^a	\$9,502.30 ^a	\$9,976.50 ^a	\$9,976.50 ^a	\$10,475.90 ^a	\$10,475.90 ^a	\$11,000.70 ^a	\$11,000.70 ^a
E-9	\$00.00	\$00.00	\$6,055.50	\$6,192.90	\$6,365.70	\$6,568.80	\$7,043.20 ^a	\$7,233.04 ^a	\$7,381.50	\$7,673.70	\$8,121.60	\$8,121.60	\$8,526.90	\$8,526.90	\$8,953.80	\$8,953.80	\$9,402.30	\$9,402.30
E-8	\$00.00	\$4,957.20	\$5,176.50	\$5,312.10	\$5,829.40 ^a	\$5,889.70 ^a	\$5,968.80	\$6,130.20	\$6,404.40	\$6,556.50	\$6,930.90	\$6,930.90	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80
E-7	\$4,244.70	\$4,500.60	\$4,766.50 ^a	\$4,900.50	\$5,113.50	\$5,258.70	\$5,413.50	\$5,473.20	\$5,674.50	\$5,782.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50
E-6	\$3,851.90 ^a	\$4,097.50 ^a	\$4,236.90 ^a	\$4,419.90	\$4,496.10	\$4,551.30	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40

^a Shaded cells indicate changes from the 2023 basic pay table.

**TABLE D.3
Proposal 3, Adding E-10 Grade and Targeted E-6 Through E-7 Raises: Monthly Basic Pay for E-6 to E-10 with More Than Six Years of Service, January 2023**

Pay Grade	6 YOS	8 YOS	10 YOS	12 YOS	14 YOS	16 YOS	18 YOS	20 YOS	22 YOS	24 YOS	26 YOS	28 YOS	30 YOS	32 YOS	34 YOS	36 YOS	38 YOS	40 YOS
E-10	\$00.00 ^a	\$00.00 ^a	\$00.00 ^a	\$7,245.70 ^a	\$7,447.90 ^a	\$7,685.50 ^a	\$7,926.60 ^a	\$8,310.30 ^a	\$8,636.40 ^a	\$8,978.20 ^a	\$9,502.30 ^a	\$9,502.30 ^a	\$9,976.50 ^a	\$9,976.50 ^a	\$10,475.90 ^a	\$10,475.90 ^a	\$11,000.70 ^a	\$11,000.70 ^a
E-9	\$00.00	\$00.00	\$6,055.50	\$6,192.90	\$6,365.70	\$6,568.80	\$6,774.90	\$7,102.80	\$7,381.50	\$7,673.70	\$8,121.60	\$8,121.60	\$8,526.90	\$8,526.90	\$8,953.80	\$8,953.80	\$9,402.30	\$9,402.30
E-8	\$00.00	\$4,957.20	\$5,176.50	\$5,312.10	\$5,474.70	\$5,650.80	\$5,968.80	\$6,130.20	\$6,404.40	\$6,556.50	\$6,930.90	\$6,930.90	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80
E-7	\$4,244.70	\$4,500.60	\$4,766.50 ^a	\$4,900.50	\$5,113.50	\$5,258.70	\$5,413.50	\$5,473.20	\$5,674.50	\$5,782.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50
E-6	\$3,851.90 ^a	\$4,097.50 ^a	\$4,236.90 ^a	\$4,419.90	\$4,496.10	\$4,551.30	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40

^a Shaded cells indicate changes from the 2023 basic pay table.

**TABLE D.4
Proposal 4, Targeted E-6 Through E-9 Raises: Monthly Basic Pay for E-6 to E-10 with More Than Six Years of Service, January 2023**

Pay Grade	6 YOS	8 YOS	10 YOS	12 YOS	14 YOS	16 YOS	18 YOS	20 YOS	22 YOS	24 YOS	26 YOS	28 YOS	30 YOS	32 YOS	34 YOS	36 YOS	38 YOS	40 YOS
E-9	\$00.00	\$00.00	\$6,055.50	\$6,192.90	\$6,365.70	\$6,568.80	\$7,043.20 ^a	\$7,233.40 ^a	\$7,381.50	\$7,673.70	\$8,121.60	\$8,121.60	\$8,526.90	\$8,526.90	\$8,953.80	\$8,953.80	\$9,402.30	\$9,402.30
E-8	\$00.00	\$4,957.20	\$5,176.50	\$5,312.10	\$5,829.40 ^a	\$5,889.70 ^a	\$5,968.80	\$6,130.20	\$6,404.40	\$6,556.50	\$6,930.90	\$6,930.90	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80	\$7,069.80
E-7	\$4,244.70	\$4,500.60	\$4,766.50 ^a	\$4,900.50	\$5,113.50	\$5,258.70	\$5,413.50	\$5,473.20	\$5,674.50	\$5,782.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50	\$6,193.50
E-6	\$3,851.90 ^a	\$4,097.50 ^a	\$4,236.90 ^a	\$4,419.90	\$4,496.10	\$4,551.30	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40	\$4,616.40

^a Shaded cells indicate changes from the 2023 basic pay table.

Assuming 10 Percent of E-9s Are Promoted to E-10

TABLE D.5

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Navy Enlisted Personnel

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Navy Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	5.272	\$79,152			
1. Add E-10 grade	0.3%	0.3%	1.15	\$0.006	\$0.021
2. Add E-10 grade plus targeted E-6 to E-9 raises	4.4%	2.6%	0.59	\$0.036	\$0.153
3. Add E-10 grade plus targeted E-6 to E-7 raises	4.2%	2.5%	0.58	\$0.031	\$0.128
4. Targeted E-6 to E-9 raises, no E-10 addition	4.1%	2.3%	0.56	\$0.030	\$0.133

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. The results shown in the table assume that 10 percent of E-9s are promoted to E-10.

TABLE D.6

Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Navy Enlisted Personnel

Proposal	Overall Force	E-5	E-9	E-10
Baseline	47.8	43.1	63.6	N/A
1. Add E-10 grade	47.8	43.1	61.6	72.6
2. Add E-10 grade plus targeted E-6 to E-9 raises	48.3	43.4	63.0	72.3
3. Add E-10 grade plus targeted E-6 to E-7 raises	48.1	43.3	62.4	73.8
4. Targeted E-6 to E-9 raises, no E-10 addition	48.2	43.4	64.4	N/A

SOURCE: Authors' calculations using RAND's DRM.

TABLE D.7

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Department of the Air Force Enlisted Personnel

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Department of the Air Force Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	7.940	\$88,161			
1. Add E-10 grade	0.4%	0.4%	1.00	\$0.005	\$0.021
2. Add E-10 grade plus targeted E-6 to E-9 raises	4.2%	2.1%	0.50	\$0.031	\$0.153
3. Add E-10 grade plus targeted E-6 to E-7 raises	4.0%	1.9%	0.49	\$0.027	\$0.128
4. Targeted E-6 to E-9 raises, no E-10 addition	3.8%	1.7%	0.45	\$0.026	\$0.133

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. The results shown in the table assume that 10 percent of E-9s are promoted to E-10.

TABLE D.8

Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Department of the Air Force Enlisted Personnel

Proposal	Overall Force	E-5	E-9	E-10
Baseline	46.4	42.1	57.4	N/A
1. Add E-10 grade	46.4	42.1	56.4	63.1
2. Add E-10 grade plus targeted E-6 to E-9 raises	46.9	42.4	57.8	63.3
3. Add E-10 grade plus targeted E-6 to E-7 raises	46.7	42.3	57.5	63.1
4. Targeted E-6 to E-9 raises, no E-10 addition	46.9	42.4	58.3	N/A

SOURCE: Authors' calculations using RAND's DRM.

TABLE D.9

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Marine Corps Enlisted Personnel

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Marine Corps Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	5.303	\$79,260			
1. Add E-10 grade	0.1%	0.3%	1.85	\$0.003	\$0.021
2. Add E-10 grade plus targeted E-6 to E-9 raises	1.2%	1.1%	0.93	\$0.018	\$0.153
3. Add E-10 grade plus targeted E-6 to E-7 raises	1.2%	1.0%	0.89	\$0.015	\$0.128
4. Targeted E-6 to E-9 raises, no E-10 addition	1.0%	0.8%	0.81	\$0.014	\$0.133

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. The results shown in the table assume 10 percent of E-9s are promoted to E-10.

TABLE D.10

Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Marine Corps Enlisted Personnel

Proposal	Overall Force	E-5	E-9	E-10
Baseline	49.9	45.4	63.3	N/A
1. Add E-10 grade	49.9	45.4	62.4	68.6
2. Add E-10 grade plus targeted E-6 to E-9 raises	49.8	45.4	62.1	68.6
3. Add E-10 grade plus targeted E-6 to E-7 raises	49.8	45.4	62.1	68.6
4. Targeted E-6 to E-9 raises, no E-10 addition	49.8	45.4	63.0	N/A

SOURCE: Authors' calculations using RAND's DRM.

Assuming 50 Percent of E-9s Are Promoted to E-10

TABLE D.11
Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Army Enlisted Personnel

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Army Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	4.547	\$74,682			
1. Add E-10 grade	1.2%	1.4%	1.16	\$0.033	\$0.103
2. Add E-10 grade plus targeted E-6 to E-9 raises	7.1%	4.8%	0.68	\$0.095	\$0.236
3. Add E-10 grade plus targeted E-6 to E-7 raises	6.7%	4.6%	0.68	\$0.082	\$0.211
4. Targeted E-6 to E-9 raises, no E-10 addition	5.6%	3.2%	0.57	\$0.062	\$0.133

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. The results shown in the table assume that 50 percent of E-9s are promoted to E-10.

TABLE D.12
Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Army Enlisted Personnel

Proposal	Overall Force	E-5	E-9	E-10
Baseline	46.8	41.6	59.2	N/A
1. Add E-10 grade	46.9	41.6	54.7	59.6
2. Add E-10 grade plus targeted E-6 to E-9 raises	47.5	42.1	57.8	62.8
3. Add E-10 grade plus targeted E-6 to E-7 raises	47.2	41.9	56.7	62.2
4. Targeted E-6 to E-9 raises, no E-10 addition	47.4	42.0	62.2	N/A

SOURCE: Authors' calculations using RAND's DRM.

TABLE D.13

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Navy Enlisted Personnel

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Navy Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline					
1. Add E-10 grade	1.6%	1.8%	1.17	\$0.028	\$0.103
2. Add E-10 grade plus targeted E-6 to E-9 raises	6.0%	4.3%	0.72	\$0.058	\$0.236
3. Add E-10 grade plus targeted E-6 to E-7 raises	5.7%	4.1%	0.72	\$0.053	\$0.211
4. Targeted E-6 to E-9 raises, no E-10 addition	4.1%	2.3%	0.56	\$0.030	\$0.133

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. The results shown in the table assume that 50 percent of E-9s are promoted to E-10.

TABLE D.14

Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Navy Enlisted Personnel

Proposal	Overall Force	E-5	E-9	E-10
Baseline	47.8	43.1	63.6	N/A
1. Add E-10 grade	47.9	43.1	57.3	64.0
2. Add E-10 grade plus targeted E-6 to E-9 raises	48.3	43.5	59.0	64.6
3. Add E-10 grade plus targeted E-6 to E-7 raises	48.2	43.4	58.1	64.6
4. Targeted E-6 to E-9 raises, no E-10 addition	48.2	43.4	64.4	N/A

SOURCE: Authors' calculations using RAND's DRM.

TABLE D.15

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Department of the Air Force Enlisted Personnel

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Department of the Air Force Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	7.940	\$88,161			
1. Add E-10 grade	2.0%	2.0%	1.01	\$0.026	\$0.103
2. Add E-10 grade plus targeted E-6 to E-9 raises	5.9%	3.7%	0.63	\$0.052	\$0.236
3. Add E-10 grade plus targeted E-6 to E-7 raises	5.6%	3.6%	0.63	\$0.048	\$0.211
4. Targeted E-6 to E-9 raises, no E-10 addition	3.8%	1.7%	0.45	\$0.026	\$0.133

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. The results shown in the table assume that 50 percent of E-9s are promoted to E-10.

TABLE D.16

Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Department of the Air Force Enlisted Personnel

Proposal	Overall Force	E-5	E-9	E-10
Baseline	46.4	42.1	57.4	N/A
1. Add E-10 grade	46.5	42.1	53.7	58.6
2. Add E-10 grade plus targeted E-6 to E-9 raises	47.0	42.4	55.0	59.7
3. Add E-10 grade plus targeted E-6 to E-7 raises	46.8	42.4	54.6	59.3
4. Targeted E-6 to E-9 raises, no E-10 addition	46.9	42.4	58.3	N/A

SOURCE: Authors' calculations using RAND's DRM.

TABLE D.17
Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Marine Corps Enlisted Personnel

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Marine Corps Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	5.303	\$79,260			
1. Add E-10 grade	0.8%	1.3%	1.71	\$0.016	\$0.103
2. Add E-10 grade plus targeted E-6 to E-9 raises	1.8%	2.2%	1.20	\$0.030	\$0.236
3. Add E-10 grade plus targeted E-6 to E-7 raises	1.8%	2.1%	1.18	\$0.027	\$0.211
4. Targeted E-6 to E-9 raises, no E-10 addition	1.0%	0.8%	0.81	\$0.014	\$0.133

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline. The results shown in the table assume that 50 percent of E-9s are promoted to E-10.

TABLE D.18
Average Ability Percentile by Grade, and Across the Overall Force, Under Four Proposals, Assuming 50 Percent of E-9s Are Promoted to E-10, Marine Corps Enlisted Personnel

Proposal	Overall Force	E-5	E-9	E-10
Baseline	49.9	45.4	63.3	N/A
1. Add E-10 grade	49.8	45.4	58.7	63.9
2. Add E-10 grade plus targeted E-6 to E-9 raises	49.8	45.4	58.5	63.6
3. Add E-10 grade plus targeted E-6 to E-7 raises	49.8	45.4	58.5	63.6
4. Targeted E-6 to E-9 raises, no E-10 addition	49.8	45.4	63.0	N/A

SOURCE: Authors' calculations using RAND's DRM.

Supplementary Tables for Chapter 5

This appendix provides supplementary tables for Chapter 5.

**TABLE E.1
Monthly Basic Pay for O-4 to O-10 with More Than Four Years of Service, January 2023**

Pay Grade	4 YOS	6 YOS	8 YOS	10 YOS	12 YOS	14 YOS	16 YOS	18 YOS	20 YOS	22 YOS	24 YOS	26 YOS	28 YOS	30 YOS	32 YOS	34 YOS	36 YOS	38 YOS	40 YOS
O-10	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10
O-9	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$17,201.40	\$17,449.80	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10
O-8	\$12,908.10	\$13,238.40	\$13,789.50	\$13,918.20	\$14,441.70	\$14,592.60	\$15,043.50	\$15,696.60	\$16,298.10	\$16,700.10	\$16,700.10	\$16,700.10	\$16,700.10	\$17,118.30	\$17,118.30	\$17,118.30	\$17,545.80	\$17,545.80	\$17,545.80
O-7	\$10,973.40	\$11,286.00	\$11,595.30	\$11,952.60	\$12,308.70	\$12,666.60	\$13,789.50	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10
O-6	\$8,978.10	\$9,012.60	\$9,398.70	\$9,450.00	\$9,450.00	\$9,987.00	\$10,936.20	\$11,493.60	\$12,050.40	\$12,367.50	\$12,688.80	\$13,310.70	\$13,310.70	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50
O-5	\$7,794.30	\$8,105.70	\$8,291.40	\$8,700.60	\$9,001.80	\$9,389.70	\$9,982.80	\$10,265.40	\$10,544.70	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80
O-4	\$6,906.30	\$7,301.70	\$7,726.20	\$8,254.80	\$8,665.50	\$8,951.10	\$9,115.50	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30

SOURCE: DoD, OUSD (P&R), 2023.

**TABLE E.2
Proposal 1, Targeted O-4 Through O-6 Raises: Monthly Basic Pay for O-4s to O-10s with More Than Four Years of Service, January 2023**

Pay Grade	4 YOS	6 YOS	8 YOS	10 YOS	12 YOS	14 YOS	16 YOS	18 YOS	20 YOS	22 YOS	24 YOS	26 YOS	28 YOS	30 YOS	32 YOS	34 YOS	36 YOS	38 YOS	40 YOS
O-10	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10
O-9	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$17,201.40	\$17,449.80	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10
O-8	\$12,908.10	\$13,238.40	\$13,789.50	\$13,918.20	\$14,441.70	\$14,592.60	\$15,043.50	\$15,696.60	\$16,298.10	\$16,700.10	\$16,700.10	\$16,700.10	\$16,700.10	\$17,118.30	\$17,118.30	\$17,545.80	\$17,545.80	\$17,545.80	\$17,545.80
O-7	\$10,973.40	\$11,286.00	\$11,595.30	\$11,952.60	\$12,308.70	\$12,666.60	\$13,789.50	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10
O-6	\$8,978.10	\$9,012.60	\$9,398.70	\$9,450.00	\$9,450.00	\$9,987.00	\$10,936.20	\$11,893.60 ^a	\$12,050.40	\$12,367.50	\$12,688.80	\$13,310.70	\$13,310.70	\$13,310.70	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50
O-5	\$7,794.30	\$8,105.70	\$8,291.40	\$8,700.60	\$9,001.80	\$9,939.70 ^a	\$10,087.80 ^a	\$10,265.40	\$10,544.70	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80
O-4	\$6,906.30	\$7,301.70	\$7,976.20 ^a	\$8,254.80	\$8,665.50	\$8,951.10	\$9,115.50	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30

SOURCE: DoD, OUSD (P&R), 2023.

^a Shaded cells indicate changes from the 2023 basic pay table.

**TABLE E.3
Proposal 2, Targeted O-4 Through O-6 Raises and Executive Schedule I Cap: Monthly Basic Pay for O-4s to O-10s with More Than Four Years of Service, January 2023**

Pay Grade	4 YOS	6 YOS	8 YOS	10 YOS	12 YOS	14 YOS	16 YOS	18 YOS	20 YOS	22 YOS	24 YOS	26 YOS	28 YOS	30 YOS	32 YOS	34 YOS	36 YOS	38 YOS	40 YOS
O-10	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$18,300.10 ^a	\$18,300.10 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a
O-9	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$17,201.40	\$17,449.80	\$17,807.20 ^a	\$18,431.70 ^a	\$18,431.70 ^a	\$19,353.90 ^a	\$19,353.90 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a	\$19,633.30 ^a
O-8	\$12,908.10	\$13,238.40	\$13,789.50	\$13,918.20	\$14,441.70	\$14,592.60	\$15,043.50	\$15,696.60	\$16,298.10	\$16,700.10	\$16,700.10	\$16,700.10	\$16,900.00 ^a	\$17,118.30	\$17,118.30	\$17,545.80	\$17,545.80	\$17,545.80	\$17,545.80
O-7	\$10,973.40	\$11,286.00	\$11,595.30	\$11,952.60	\$12,308.70	\$12,666.60	\$13,789.50	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$14,813.70	\$14,813.70	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10
O-6	\$8,978.10	\$9,012.60	\$9,398.70	\$9,450.00	\$9,450.00	\$9,987.00	\$10,936.20	\$11,893.60 ^a	\$12,050.40	\$12,367.50	\$12,688.80	\$13,310.70	\$13,310.70	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50
O-5	\$7,794.30	\$8,105.70	\$8,291.40	\$8,700.60	\$9,001.80	\$9,939.70 ^a	\$10,087.80 ^a	\$10,265.40	\$10,544.70	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80
O-4	\$6,906.30	\$7,301.70	\$7,976.20 ^a	\$8,254.80	\$8,665.50	\$8,951.10	\$9,115.50	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30

SOURCE: DoD, OUSD(P&R), 2023.

^a Shaded cells indicate changes from the 2023 basic pay table.

**TABLE E.4
Proposal 3, Targeted O-5 Raise: Monthly Basic Pay for O-4s to O-10s with More Than Four Years of Service, January 2023**

Pay Grade	4 YOS	6 YOS	8 YOS	10 YOS	12 YOS	14 YOS	16 YOS	18 YOS	20 YOS	22 YOS	24 YOS	26 YOS	28 YOS	30 YOS	32 YOS	34 YOS	36 YOS	38 YOS	40 YOS	
O-10	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10
O-9	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$00.00	\$17,201.40	\$17,449.80	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10	\$17,675.10
O-8	\$12,908.10	\$13,238.40	\$13,789.50	\$13,918.20	\$14,441.70	\$14,592.60	\$15,043.50	\$15,696.60	\$16,298.10	\$16,700.10	\$16,700.10	\$16,700.10	\$16,700.10	\$17,118.30	\$17,118.30	\$17,545.80	\$17,545.80	\$17,545.80	\$17,545.80	\$17,545.80
O-7	\$10,973.40	\$11,286.00	\$11,595.30	\$11,952.60	\$12,308.70	\$12,666.60	\$13,789.50	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$14,737.80	\$14,813.70	\$14,813.70	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10	\$15,110.10
O-6	\$8,978.10	\$9,012.60	\$9,398.70	\$9,450.00	\$9,450.00	\$9,987.00	\$10,936.20	\$11,493.60	\$12,050.40	\$12,367.50	\$12,688.80	\$13,310.70	\$13,310.70	\$13,310.70	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50	\$13,576.50
O-5	\$7,794.30	\$8,105.70	\$8,291.40	\$8,700.60	\$9,001.80	\$9,939.70 ^a	\$10,087.80 ^a	\$10,265.40	\$10,544.70	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80	\$10,861.80
O-4	\$6,906.30	\$7,301.70	\$7,726.20	\$8,254.80	\$8,665.50	\$8,951.10	\$9,115.50	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30	\$9,210.30

SOURCE: DoD, OUSD (P&R), 2023.
^a Shaded cells indicate changes from the 2023 basic pay table.

TABLE E.5
Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Three Proposals, Navy Officers

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Navy Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	11.5	\$148,998			
1. Targeted raises for O-4 to O-6	0.5%	0.5%	0.88	\$0.011	\$0.039
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	0.6%	0.5%	0.89	\$0.012	\$0.045
3. Targeted raise for O-5	0.3%	0.3%	0.89	\$0.007	\$0.027

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline.

TABLE E.6
Average Ability Percentile by Grade, and Across the Overall Force, Under Three Proposals, Navy Officers

Proposal	Overall Force	Field Grade (O-4 to O-6)	Senior Grade (O-7 to O-10)
Baseline	44.9	50.0	63.1
1. Targeted raises for O-4 to O-6	45.0	50.3	63.1
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	45.0	50.3	63.9
3. Targeted raise for O-5	45.0	50.2	63.0

SOURCE: Authors' calculations using RAND's DRM.

TABLE E.7
Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Three Proposals, Department of the Air Force Officers

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Department of the Air Force Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	11.0	\$152,217	0		
1. Targeted raises for O-4 to O-6	0.7	0.6	0.74	\$0.020	\$0.039
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	0.8	0.6	0.75	\$0.022	\$0.045
3. Targeted raise for O-5	0.5	0.3	0.77	\$0.015	\$0.027

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline.

TABLE E.8
Average Ability Percentile by Grade, and Across the Overall Force, Under Three Proposals, Department of the Air Force Officers

Proposal	Overall Force	Field Grade (O-4 to O-6)	Senior Grade (O-7 to O-10)
Baseline	42.6	39.5	57.9
1. Targeted raises for O-4 to O-6	42.8	39.9	58.4
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	42.8	39.9	58.5
3. Targeted raise for O-5	42.7	39.7	58.2

SOURCE: Authors' calculations using RAND's DRM.

TABLE E.9

Percentage Change in Predicted Steady State Man-Years per Accession, and Cost per Member, Under Three Proposals, Marine Corps Officers

Proposal	Retention: Percentage Change in Man-Years per Accession Relative to Baseline	Percentage Change in Cost per Service Member (2023 Dollars)	Marginal Cost: Ratio of Percentage Change in Cost over Percentage Change in Retention	Increase in Annual Marine Corps Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)	Increase in Annual DoD Basic Pay and Retirement Accrual Cost (Billions of 2023 Dollars)
Baseline	12.6	\$158,062			
1. Targeted raises for O-4 to O-6	1.0%	0.6%	0.62	\$0.001	\$0.039
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	1.0%	0.6%	0.63	\$0.001	\$0.045
3. Targeted raise for O-5	0.6%	0.4%	0.66	\$0.001	\$0.027

SOURCE: Authors' calculations using RAND's DRM.

NOTE: Retention is measured in terms of steady state man-years per accession; personnel costs include basic pay, BAH, and BAS costs of the force, as well as legacy military retirement accrual costs. Results shown are relative to the baseline.

TABLE E.10

Average Ability Percentile by Grade, and Across the Overall Force, Under Three Proposals, Marine Corps Officers

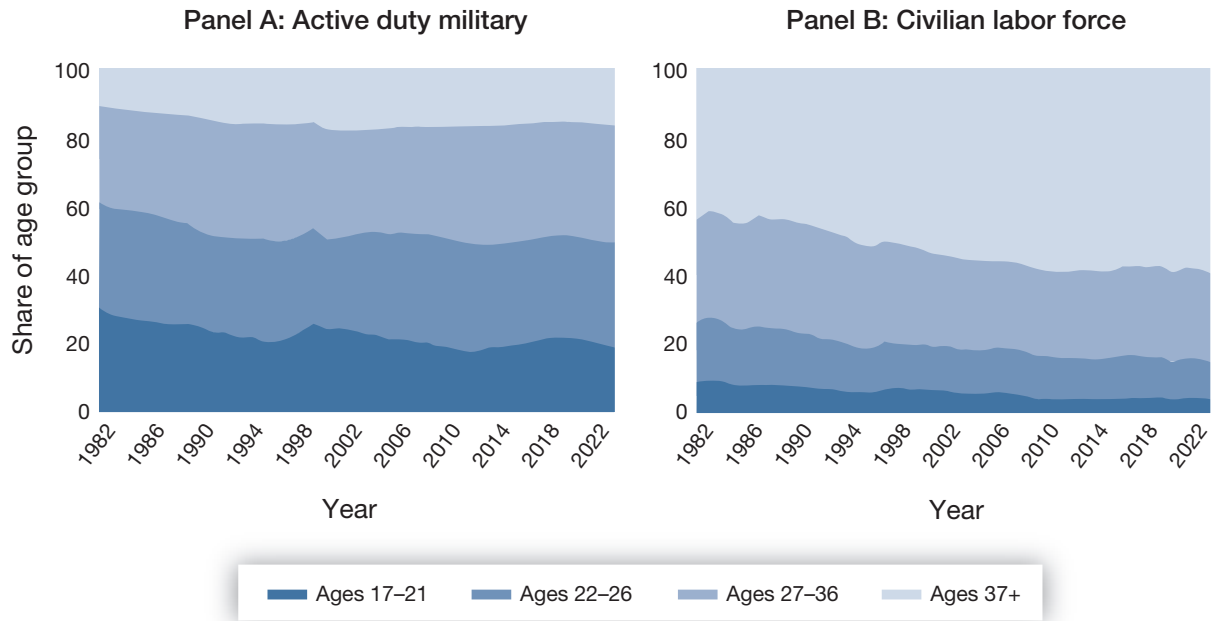
Proposal	Overall Force	Field Grade (O-4 to O-6)	Senior Grade (O-7 to O-10)
Baseline	42.4	39.5	56.1
1. Targeted raises for O-4 to O-6	42.7	40.2	56.4
2. Targeted raises for O-4 to O-6, replace ES-II cap with ES-I cap	42.7	40.2	57.0
3. Targeted raise for O-5	42.5	39.9	56.2

SOURCE: Authors' calculations using RAND's DRM.

Supplementary Figures for Chapter 6

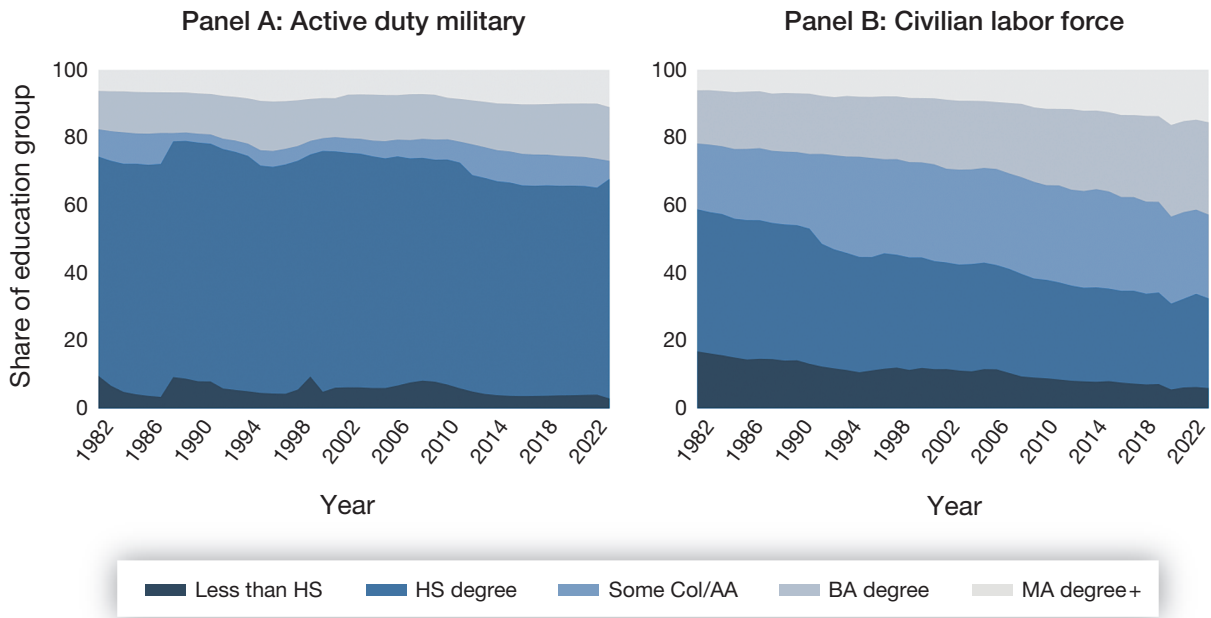
This appendix provides supplementary figures for Chapter 6.

FIGURE F.1
Age Composition of Active Duty Military Members and the Civilian Labor Force over Time



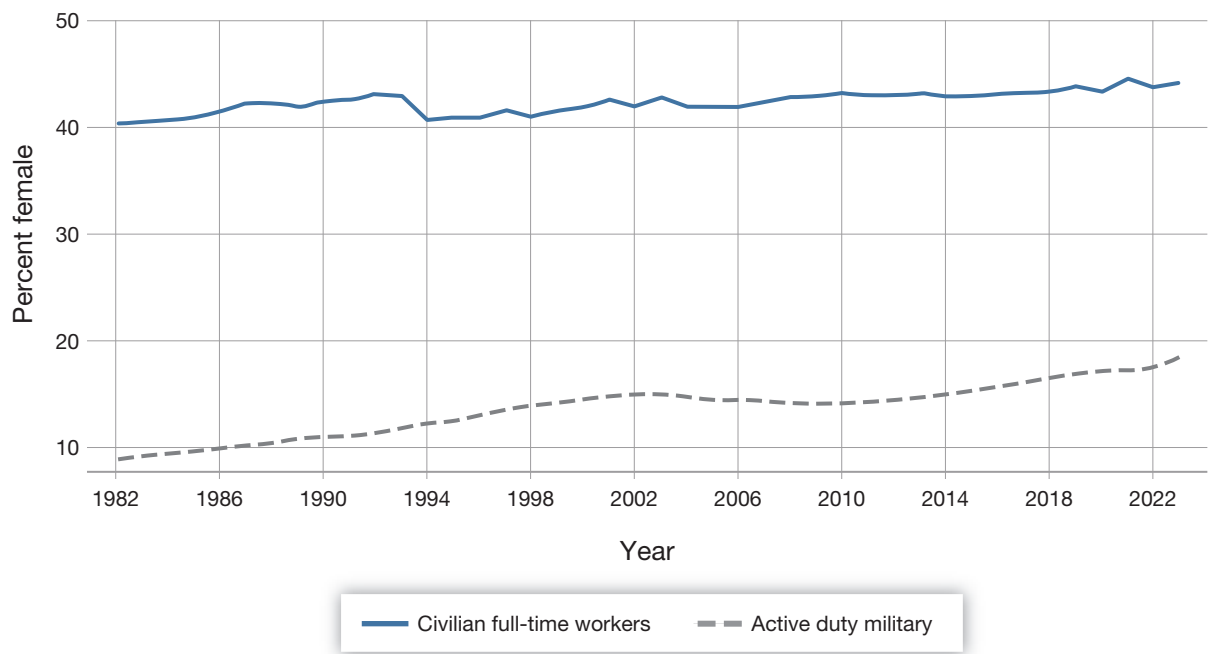
SOURCE: Author calculations from CPS data from IPUMS (Flood et al., 2023) and DMDC data.

FIGURE F.2
Educational Attainment Level of Active Duty Military Members and the Civilian Labor Force over Time



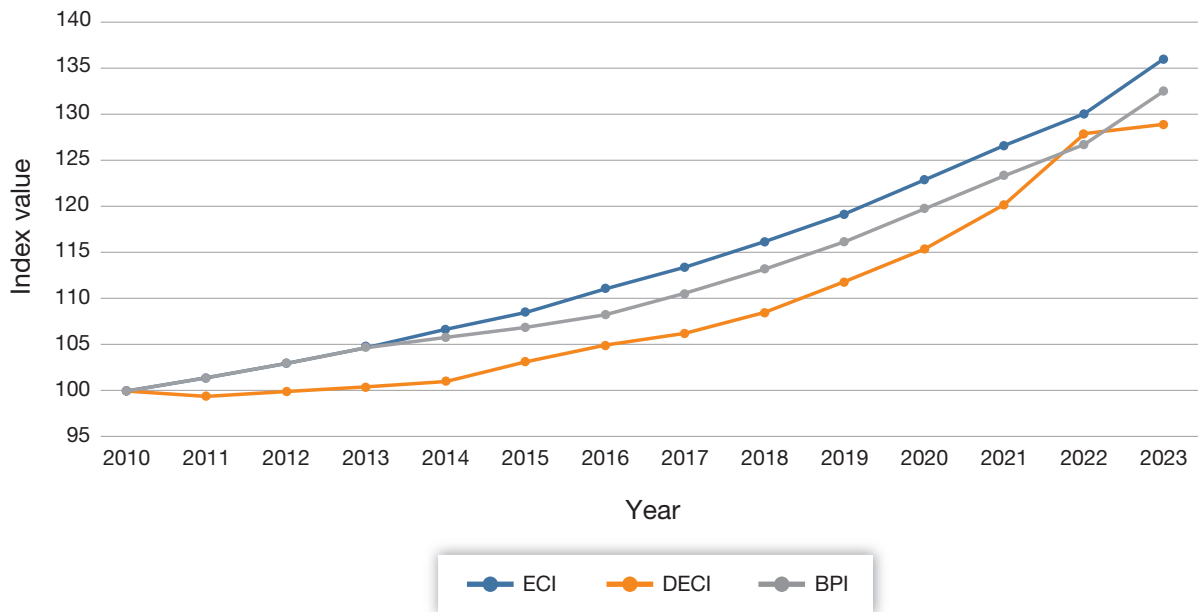
SOURCE: Author calculations from CPS data from IPUMS (Flood et al., 2023) and DMDC data.
 NOTE: HS = high school; MA = master of arts; Col = college; AA = Associate degree

FIGURE F.3
Sex of Active Duty Military Members and the Civilian Labor Force over Time



SOURCE: Author calculations from CPS data from IPUMS (Flood et al., 2023) and DMDC data.

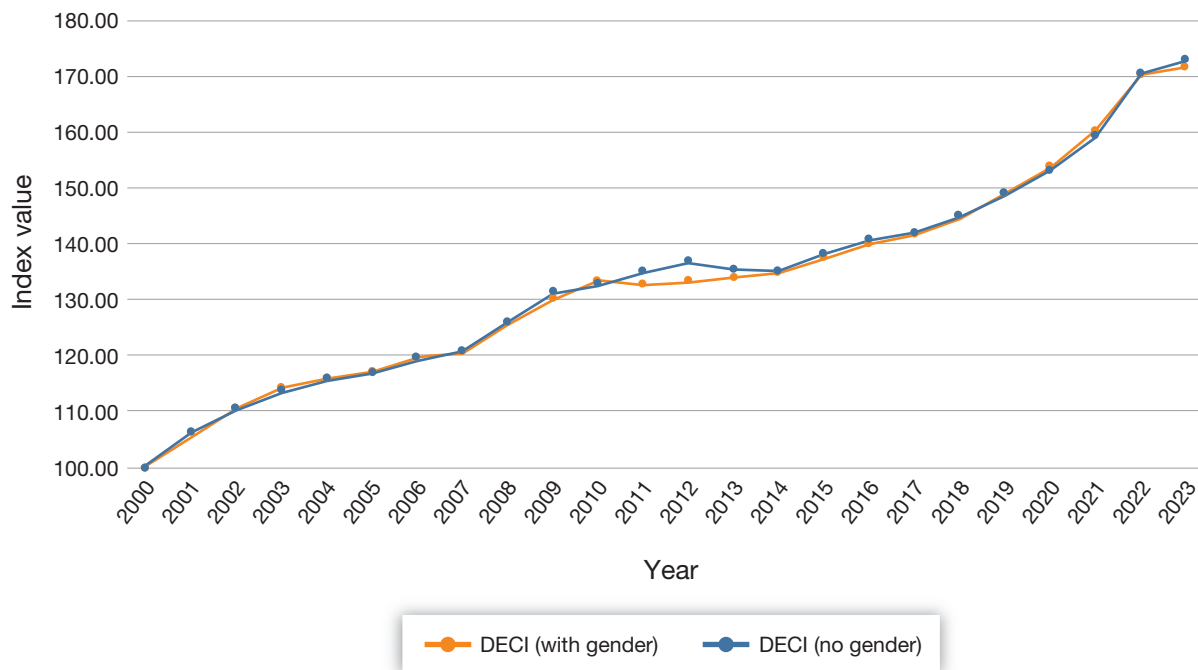
FIGURE F.4
Changes over Time in ECI, DECI, and BPI Using 2010 as the Baseline Year



SOURCE: Author calculations from CPS data from IPUMS (Flood et al., 2023), DMDC data, and data on basic pay increases from the Congressional Research Service (and other sources).

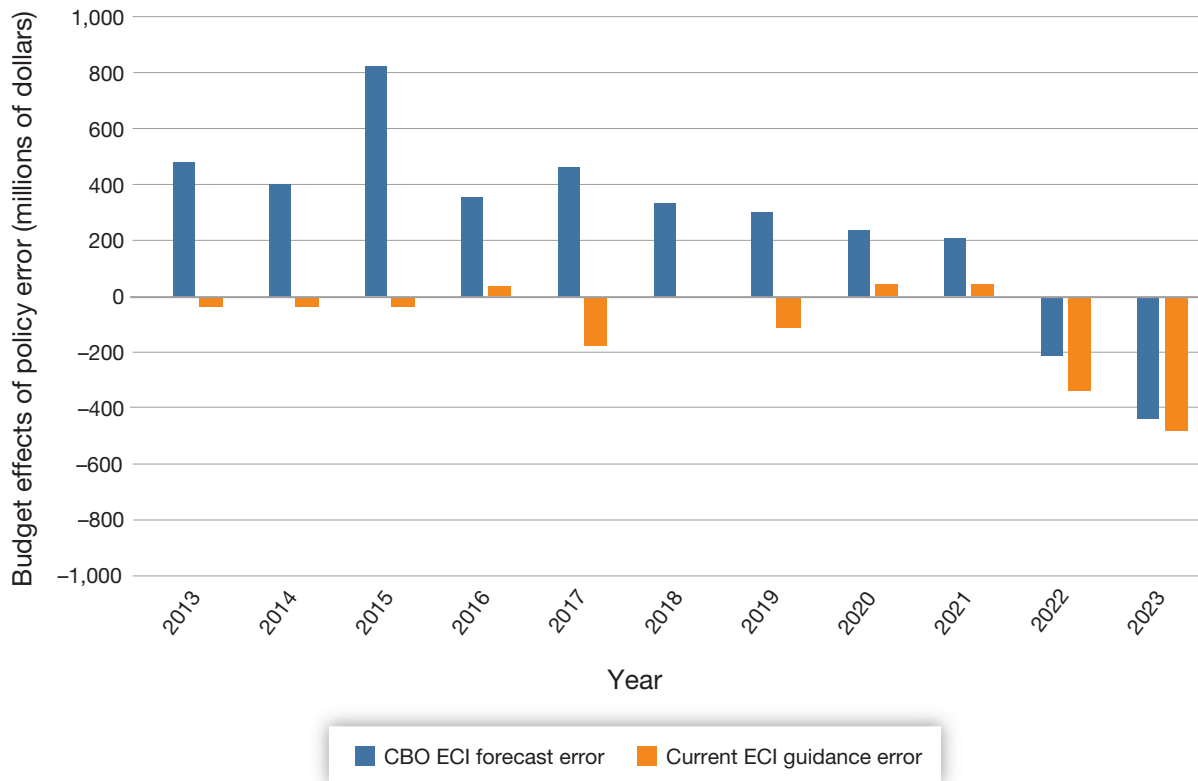
NOTE: This and similar figures comparing earnings indexes with the BPI, we lag the earnings index measure by two years to match the 15-month policy-setting timeline so that, for example, the ECI from September 2019 to September 2020 is used to guide the pay increase implemented ultimately in January 2022. We use the same approach with the DECI.

FIGURE F.5
DECI Measures Both Including and Excluding Gender in Weighting



SOURCE: Author calculations from CPS data from IPUMS (Flood et al., 2023) and DMDC data. Note that in this figure we lag the DECI value by two years to match the 15-month policy-setting timeline so that, for example, the DECI from September 2019 to September 2020 is indicated as 2022, since this measure would be used to guide the pay increase ultimately implemented in January 2022.

FIGURE F.6
Fiscal Implications of Using Current ECI Guidance or the Congressional Budget Office ECI Forecast at Start of Budget Process and Then Revising with a Later ECI Measure



SOURCE: Author calculations using data on force size and basic pay by grade and year of service from the Greenbooks (2013–2023), ECI data from the BLS, and ECI forecasts from the CBO.

Supplementary Material for Chapter 7

This appendix provides supplementary material for Chapter 7. It includes data for the Department of the Air Force, the Marine Corps, and the Navy.

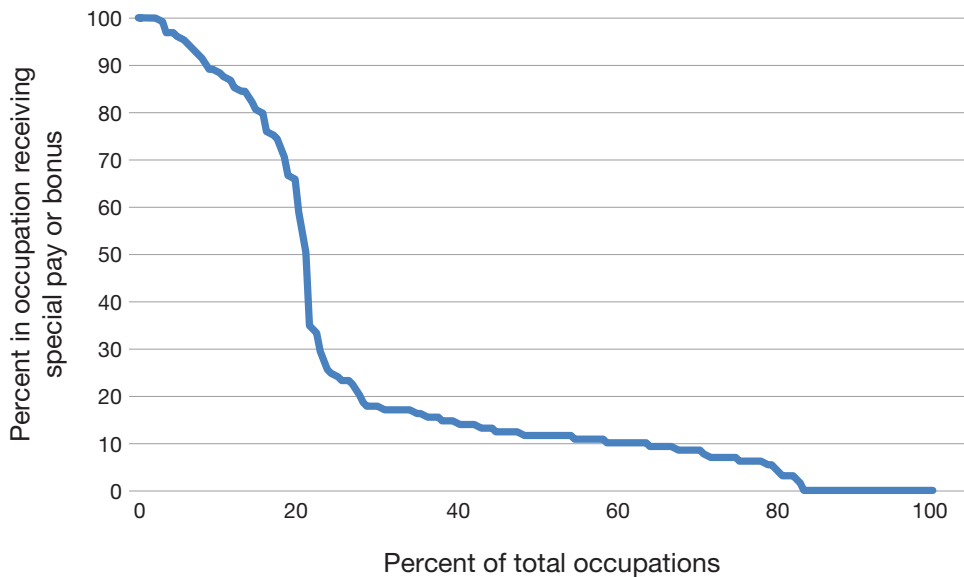
The Incidence of Special and Incentive Pays

Enlisted Incidence of Special Pays and Bonuses

Department of the Air Force enlisted incidence by occupation, shown in Figure G.1, and Marine Corps enlisted incidence by occupation, shown in Figure G.2, display a similar pattern to that of the Army, with the Department of the Air Force being less skewed and the Marine Corps being more skewed. In both services the incidence of special pays and bonuses are concentrated in a small share of occupations.

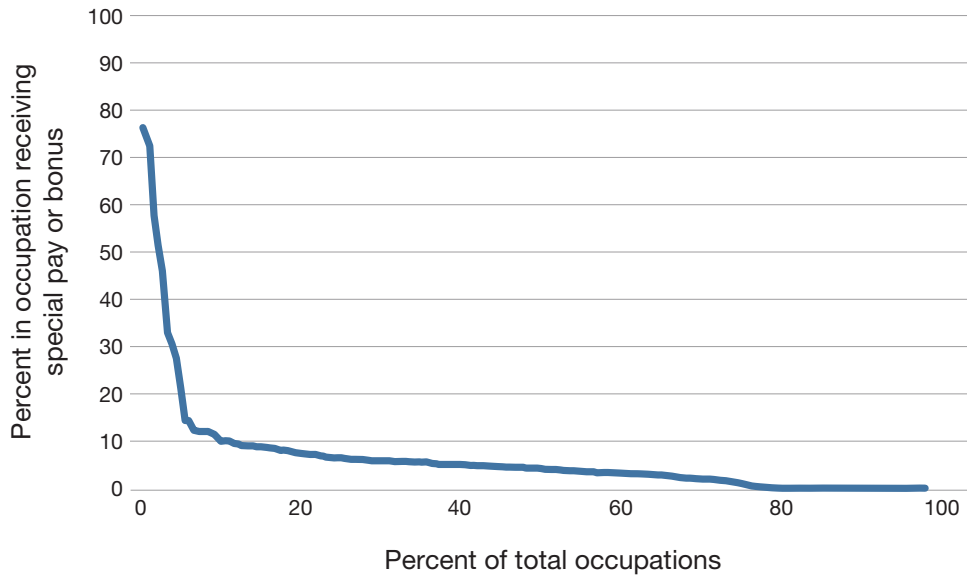
The Navy enlisted incidence by occupation, shown in Figure G.3, is much less concentrated than in the Army, Department of the Air Force, or Marine Corps. In the Navy, 40 percent of the occupations show an incidence of 50 percent or more receiving special pay or bonuses, in contrast to 21 percent in the Department of the Air Force, 10 percent in the Army, and 4 percent in the Marine Corps. This high incidence of receipt may in part be due to the prevalence of sea pay. However, it is important to note that while the incidence of

FIGURE G.1
Department of the Air Force Enlisted Incidence of Special and Incentive Pays



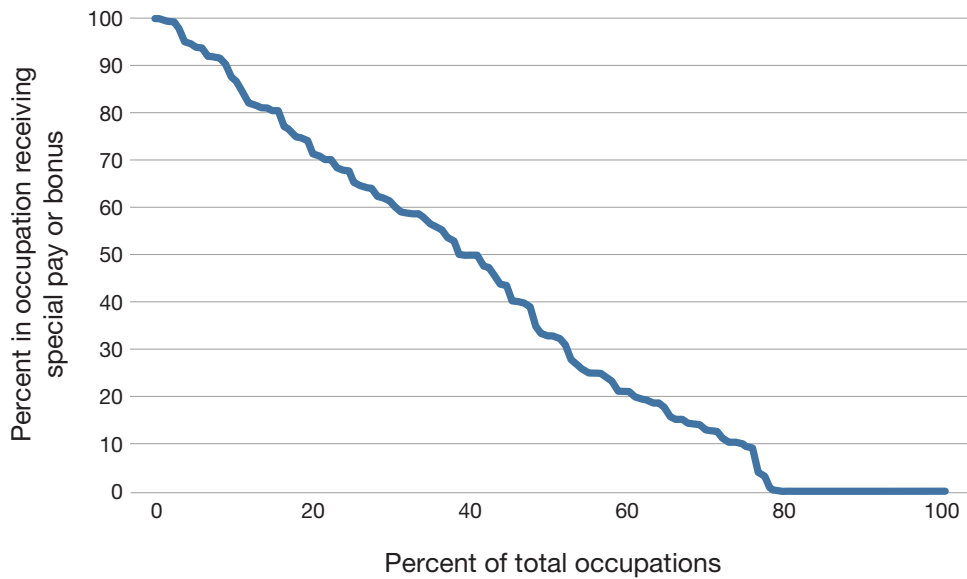
SOURCE: Author's calculations based on DMDC pay data for enlisted members in 2021.

FIGURE G.2
Marine Corps Enlisted Incidence of Special and Incentive Pays



SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

FIGURE G.3
Navy Enlisted Incidence of Special and Incentive Pays



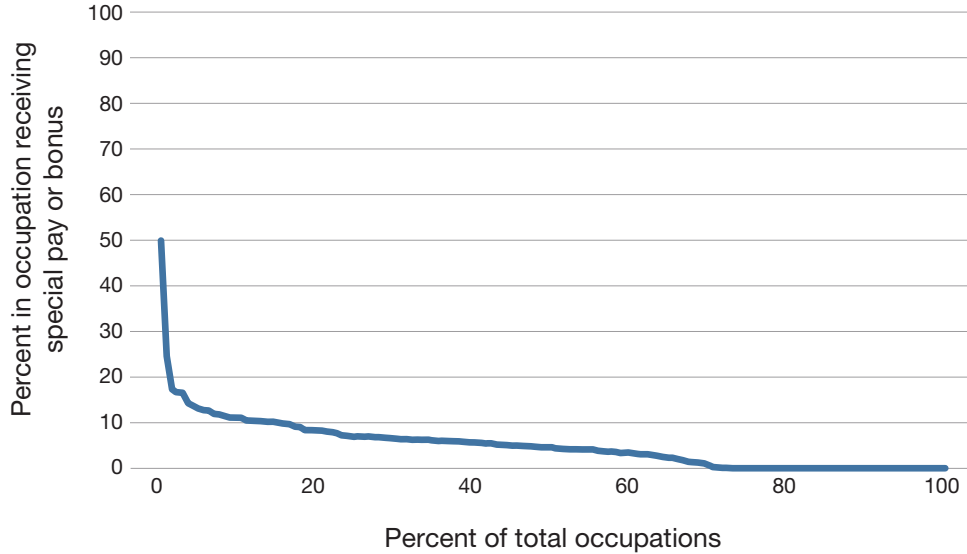
SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

special pay and bonuses may be less skewed within the Navy, we will see later that the size of special pay and bonuses within the Navy (measured as a fraction of total compensation) can still show skewness. That is, as we will see, relatively few occupations receive a larger proportion of their compensation in the form of special pay or bonuses, while many occupations will have special pay and bonuses accounting only for a small proportion of their compensation.

Officer Incidence of Special Pays and Bonuses

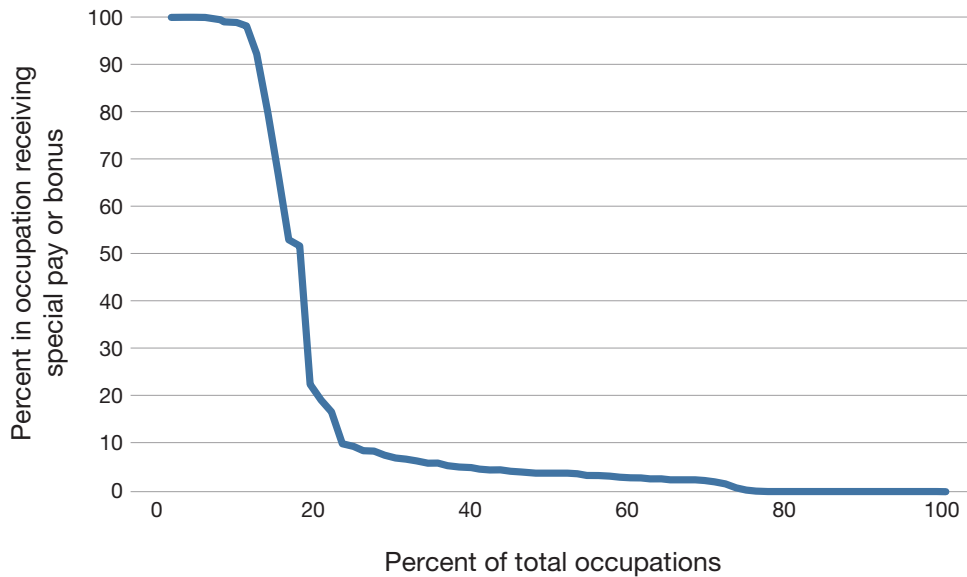
We see a similar concentration of the incidence of special pays and bonuses among commissioned officers. Figures G.4–G.6 show the incidence of receipt of special pay or bonuses among officers in the Department of the Air Force, Marine Corps, and Navy, respectively. The results are similar to those seen for enlisted members, with the Army, Department of the Air Force, and Marine Corps more highly skewed than the Navy, likely due to the receipt of sea pay by naval officers.

FIGURE G.4
Department of the Air Force Officer Incidence of Special and Incentive Pays



SOURCE: Authors' calculations based on DMDC pay data for officers in 2021.

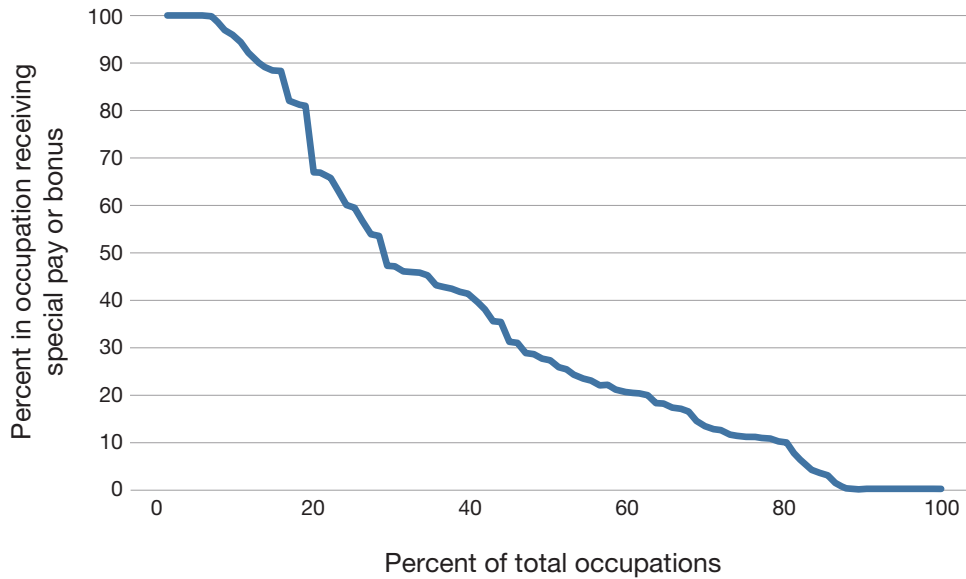
FIGURE G.5
Marine Corps Officer Incidence of Special and Incentive Pays



SOURCE: Authors' calculations based on DMDC pay data for officers in 2021.

FIGURE G.6

Navy Officer Incidence of Special and Incentive Pays



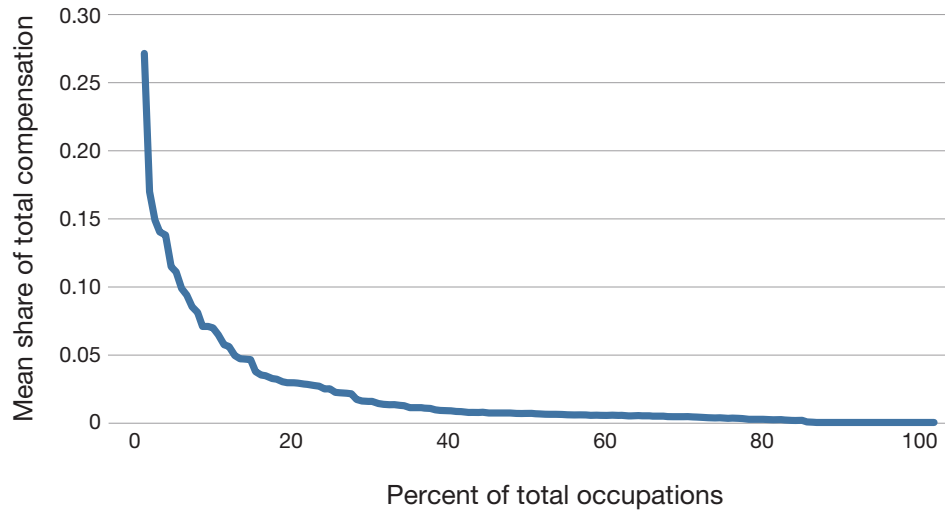
SOURCE: Authors' calculations based on DMDC pay data for officers in 2021.

Special Pay and Bonuses as a Fraction of Overall Cash Pay

In addition to the incidence of special pays and bonuses by occupation, the size is also important. We measure the size relative to total compensation. That is, for each individual within an occupation we calculate the share of total compensation due to special pays and bonuses, and then we average across all individuals within an occupation to calculate the unconditional mean share of total compensation accounted for by special pays or bonuses. As may be recalled from Chapter 7, to create the figures we sort the occupations by shares from high to low, and then plot by occupation.

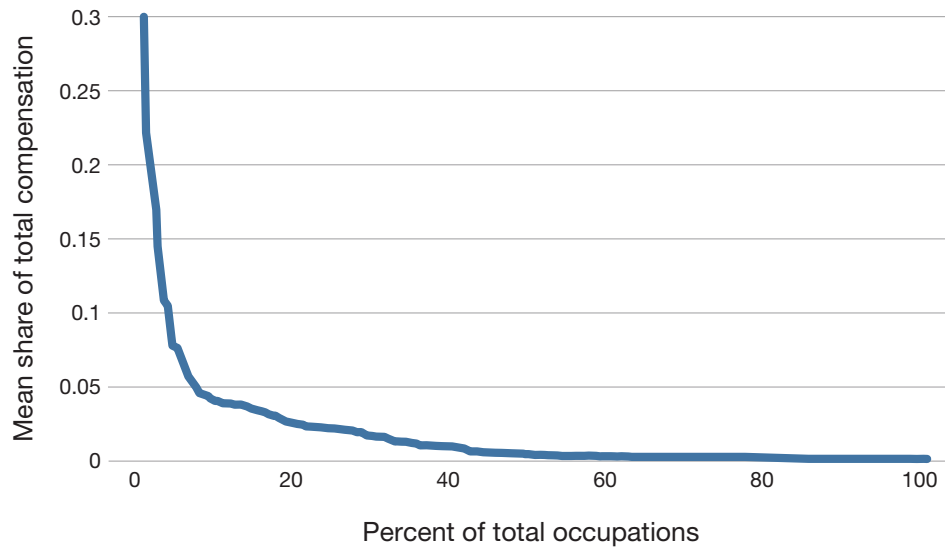
Figures G.7–G.9 show graphs of the unconditional share of total compensation for enlisted members in the Department of the Air Force, Marine Corps, and Navy, respectively. All graphs tend to be skewed, including the Navy, showing that special pays or bonuses are concentrated in a relatively few critical occupations. As we saw in Chapter 7, less than 4 percent of Army enlisted occupations are associated with special pays or bonuses that account for 10 percent or more of total compensation. The figure is less than 5 percent for the Department of the Air Force, 4 percent for the Marine Corps, and 10 percent for the Navy.

FIGURE G.7
Department of the Air Force Enlisted Share of Total Compensation



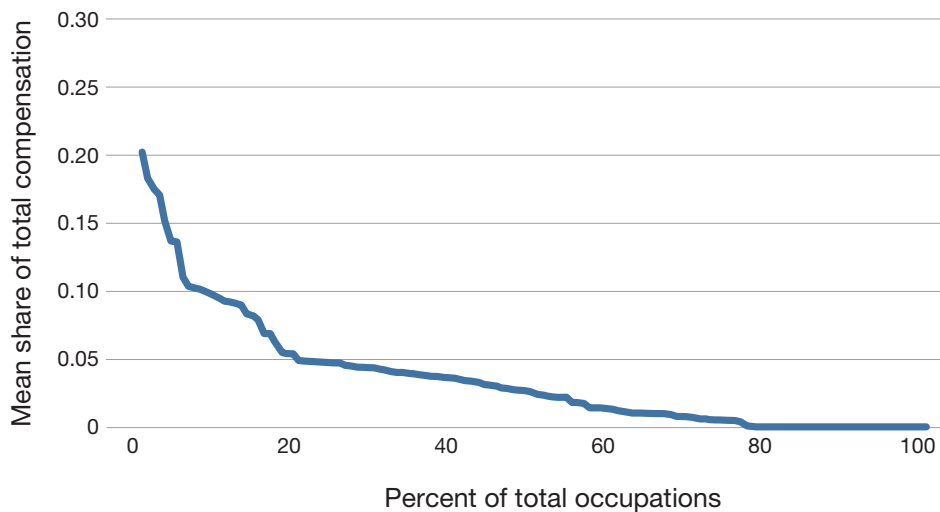
SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

FIGURE G.8
Marine Corps Enlisted Share of Total Compensation



SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

FIGURE G.9
Navy Enlisted Share of Total Compensation

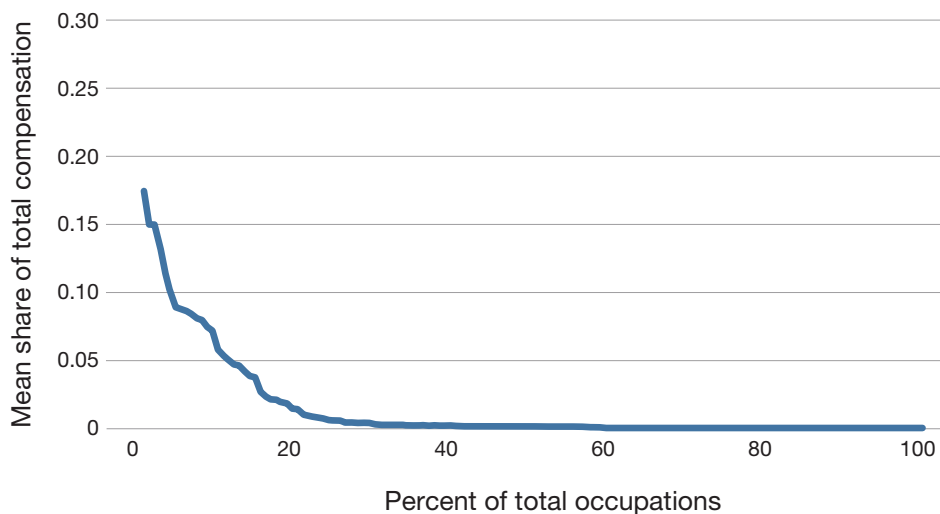


SOURCE: Authors' calculations based on DMDC pay data for enlisted members in 2021.

Officer Special and Incentive Pay and Bonuses as a Fraction of Overall Cash Pay

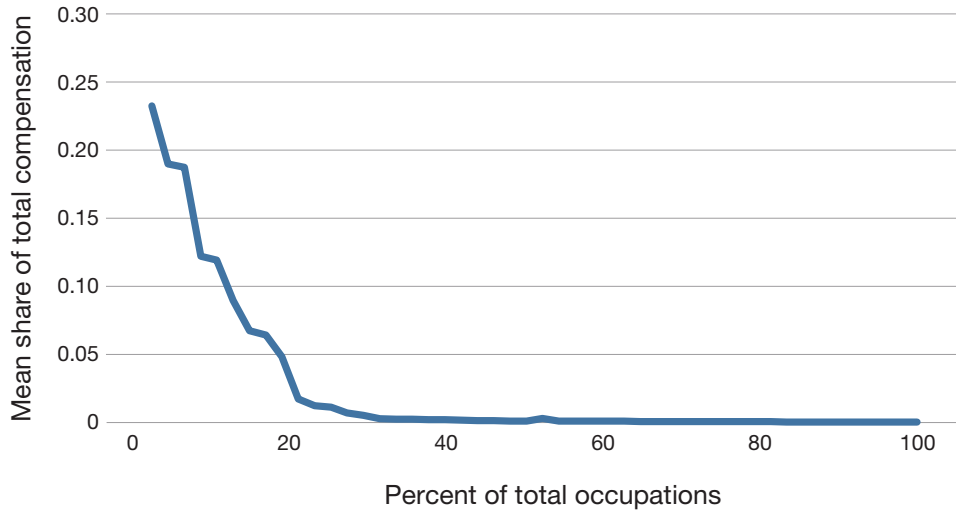
Figures G.10–G.12 show graphs of the unconditional share of total compensation for officers in the Department of the Air Force, Marine Corps, and Navy, respectively. Like the graphs for enlisted members, these figures tend to be skewed to the left, including Figure G.12, the Navy, showing that special pays or bonuses are concentrated in a relatively few critical occupations. Recall from Chapter 7 that less than 5 percent of Army officer occupations have special pays or bonuses that account for 10 percent or more of total compensation. This figure is less than 4 percent for the Department of the Air Force, 10 percent for the Marine Corps, and 6 percent for the Navy.

FIGURE G.10
Department of the Air Force Officer Share of Total Compensation



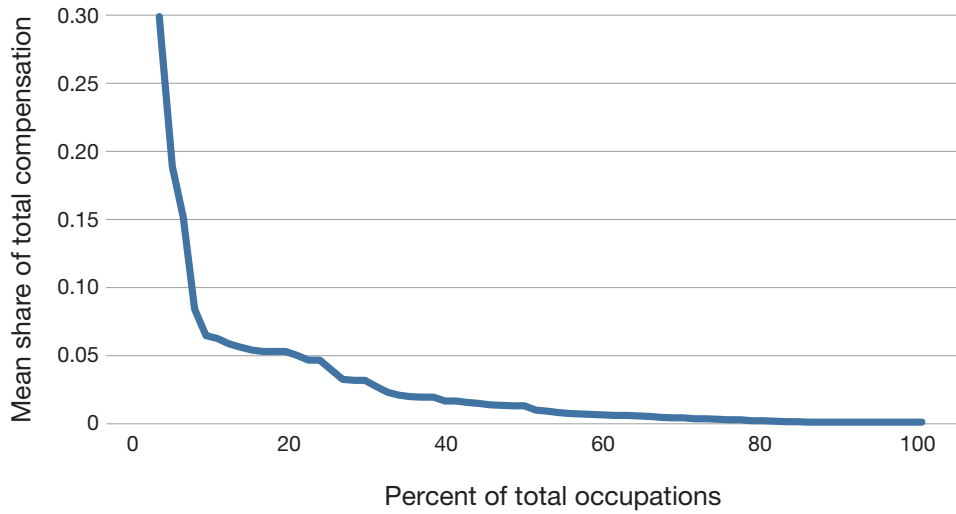
SOURCE: Authors' calculations based on DMDC pay data for officers in 2021.

FIGURE G.11
Marine Corps Officer Share of Total Compensation



SOURCE: Authors' calculations based on DMDC pay data for officers in 2021.

FIGURE G.12
Navy Officer Share of Total Compensation



SOURCE: Authors' calculations based on DMDC pay data for officer members in 2021.

Regression Analysis for Determining Extent to Which Pay Is Higher in Critical Specialties

Tables G.1 and G.2 show the regression coefficients used to construct the figures shown in Chapter 7 pertaining to the extent to which pay is higher in critical specialties.

TABLE G.1
Summary Regression Results for Enlisted Members

	Coefficient	Standard Error	t
Army Enlisted Members			
1. received_bonus	7,883.74	10.75	733.60
1. received_special_pay	270.55	2.60	104.20
critical_skill_flag#received_bonus	1,778.11	17.65	100.74
critical_skill_flag#received_special_pay	29.03	4.37	6.64
Navy Enlisted Members			
1. received_bonus	7,489.02	9.50	788.36
1. received_special_pay	480.55	2.52	190.82
critical_skill_flag#received_bonus	1,404.00	30.04	46.73
critical_skill_flag#received_special_pay	-43.17	6.65	-6.49
Department of the Air Force Enlisted Members			
1. received_bonus	11,076.05	14.56	760.67
1. received_special_pay	255.60	3.21	79.53
critical_skill_flag#received_bonus	1,254.87	33.06	37.96
critical_skill_flag#received_special_pay	148.50	7.36	20.18
Marine Corps Enlisted Members			
1. received_bonus	9,988.42	25.08	398.30
1. received_special_pay	-59.36	6.05	-9.82
critical_skill_flag#received_bonus	1,081.72	45.06	24.01
critical_skill_flag#received_special_pay	192.25	9.00	21.37

SOURCE: Authors' calculations and DMDC pay file data 2016–2021.

NOTE: Key coefficients reported for brevity. Full regression specification included grades, YOS, critical skill flag, and grade and YOS interacted with critical skill flag.

TABLE G.2
Summary Regression Results for Officers

	Coefficient	Standard Error	<i>t</i>
Army Officers			
1. received_bonus	37,313.58	90.75	411.16
1. received_special_pay	309.78	7.37	42.04
critical_skill_flag#received_bonus	2,434.01	153.32	15.87
critical_skill_flag#received_special_pay	227.66	12.55	18.15
Navy Officers			
1. received_bonus	9,517.18	34.25	277.87
1. received_special_pay	995.92	13.07	76.21
critical_skill_flag#received_bonus	44,402.67	191.09	232.36
critical_skill_flag#received_special_pay	-370.28	22.61	-16.37
Department of the Air Force Officers			
1. received_bonus	33,640.95	147.19	228.56
1. received_special_pay	504.58	16.58	30.44
critical_skill_flag#received_bonus	2,677.38	199.44	13.42
critical_skill_flag#received_special_pay	109.02	20.53	5.31
Marines Officers			
1. received_bonus	2,432.06	244.48	9.95
1. received_special_pay	351.66	13.28	26.48
critical_skill_flag#received_bonus	20,606.41	249.82	82.49
critical_skill_flag#received_special_pay	180.28	21.06	8.56

SOURCE: Authors' calculations and DMDC pay file data 2016–2021.

NOTE: Key coefficients reported for brevity. Full regression specification included grades, YOS, critical skill flag, and grade and YOS interacted with critical skill flag.

Abbreviations

7th QRMC	Seventh Quadrennial Review of Military Compensation
9th QRMC	Ninth Quadrennial Review of Military Compensation
10th QRMC	Tenth Quadrennial Review of Military Compensation
13th QRMC	Thirteenth Quadrennial Review of Military Compensation
14th QRMC	Fourteenth Quadrennial Review of Military Compensation
AA	associate of arts
ACIP	Aviation Career Incentive Pay
ADMF	Active Duty Master File
AFQT	Armed Forces Qualification Test
ASEC	Annual Social and Economic Supplement
AvB	Aviation Bonus
AVF	All-Volunteer Force
AvIP	Aviation Incentive Pay
BA	bachelor of arts
BAH	basic allowance for housing
BAS	basic allowance for subsistence
BLS	Bureau of Labor Statistics
CBO	Congressional Budget Office
COVID-19	coronavirus disease 2019
CPI	Consumer Price Index
CPI-U	Consumer Price Index for All Urban Consumers
CPS	Current Population Survey
DECI	Defense Employment Cost Index
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DPV	discounted present value
DRM	Dynamic Retention Model
ECI	Employment Cost Index
ES-I	Executive Schedule I
ES-II	Executive Schedule II
ETP	employment-to-population
FPL	federal poverty line
FY	fiscal year
HAC	House Appropriations Committee
IPUMS	Integrated Public Use Microdata Series
LFP	labor force participation
NDAA	National Defense Authorization Act
NDRI	RAND National Defense Research Institute

OPA	Office of People Analytics
OSD	Office of the Secretary of Defense
OUSD(P&R)	Office of the Under Secretary of Defense for Personnel and Readiness
<i>PopRep</i>	<i>Population Representation in the Military Service</i>
PUMA	Public Use Microdata Area
Q1	first quarter
Q2	second quarter
Q3	third quarter
QRMC	Quadrennial Review of Military Compensation
RMC	regular military compensation
S&I	special and incentive
SD	standard deviation
SME	subject-matter expert
SOFS	Status of Forces Survey
SOFS-A	Status of Forces Survey of Active Duty Members
SRB	Selective Reenlistment Bonus
YOS	years of service

References

- Abraham, Katharine G., and Melissa S. Kearney, “Explaining the Decline in the US Employment-to-Population Ratio: A Review of Evidence,” *Journal of Economic Literature*, Vol. 58, No. 3, 2020.
- Acemoglu, Daron, and Pascual Restrepo, “Robots and Jobs: Evidence from US Labor Markets,” National Bureau of Economic Research, NBER Working Paper 23285, March 2017.
- Advisory Commission on Service Pay, *Career Compensation for the Uniformed Forces: A Report and Recommendations for the Secretary of Defense*, U.S. Government Printing Office, December 1948.
- Aguiar, Mark, Mark Bilal, Kerwin Kofi Charles, and Erik Hurst, “Leisure Luxuries and the Labor Supply of Young Men,” National Bureau of Economic Research, NBER Working Paper 23552, June 2017.
- Aherne, Drew C., *The Congressional Budget Process Timeline*, Congressional Research Service, R47235, July 27, 2023.
- Allegretto, Sylvia A., Arindrajit Dube, and Michael Reich, “Do Minimum Wages Really Reduce Teen Employment? Accounting for Heterogeneity and Selectivity in State Panel Data,” *Industrial Relations*, Vol. 50, No. 2, 2011.
- Allegretto, Sylvia A., Arindrajit Dube, Michael Reich, and Ben Zipperer, “Credible Research Designs for Minimum Wage Studies,” Institute for Research on Labor and Employment, IRLE Working Paper 148-13, 2013.
- Alonso-Villar, Olga, Coral Del Rio, and Carlos Gradin, “The Extent of Occupational Segregation in the United States: Differences by Race, Ethnicity, and Gender,” *Industrial Relations*, Vol. 51, No. 2, 2012.
- Anderson, Monica, Colleen McClain, Michelle Faverio, and Risa Gelles-Watnick, “The State of Gig Work in 2021,” Pew Research Center, December 8, 2021. As of August 31, 2024:
<https://www.pewresearch.org/internet/2021/12/08/the-state-of-gig-work-in-2021/>
- Asch, Beth J., *Addressing the Recruiting Crisis in the Armed Services: Insights from Research*, RAND, CT-A2740-1, 2023. As of May 17, 2024:
<https://www.rand.org/pubs/testimonies/CTA2740-1.html>
- Asch, Beth J., Paul Heaton, James Hosek, Paco Martorell, Curtis Simon, and John T. Warner, *Cash Incentives and Military Enlistment, Attrition, and Reenlistment*, RAND, MG-950-OSD, 2010. As of May 22, 2023:
<https://www.rand.org/pubs/monographs/MG950.html>
- Asch, Beth, James Hosek, Jennifer Kavanagh, Michael Mattock, *Retention, Incentives and DoD Experience Under the 40-Year Military Pay Table*, RAND RR-1209-OSD, 2016. As of November 26, 2024:
https://www.rand.org/pubs/research_reports/RR1209.html
- Asch, Beth J., James Hosek, Michael G. Mattock, and Christina Panis, *Assessing Compensation Reform: Research in Support of the 10th Quadrennial Review of Military Compensation*, RAND, MG-764-OSD, 2008. As of August 15, 2024:
<https://www.rand.org/pubs/monographs/MG764.html>
- Asch, Beth J., James R. Hosek, and Craig W. Martin, *A Look at Cash Compensation for Active-Duty Military Personnel*, RAND, MR-1492-OSD, 2002. As of May 13, 2024:
https://www.rand.org/pubs/monograph_reports/MR1492.html
- Asch, Beth J., James R. Hosek, and John T. Warner, *An Analysis of Pay for Enlisted Personnel*, RAND, DB-344-OSD, 2001. As of March 6, 2024:
<https://www.rand.org/pubs/monographs/DB344.html>
- Asch, Beth J., James R. Hosek, and John T. Warner, “New Economics of Defense Manpower in the Post-Cold War Era,” in Todd Sandler and Keith Hartley, eds., *The Handbook of Defense Economics: Vol. 2, Defense in a Globalized World*, Elsevier, 2007.
- Asch, Beth J., Michael G. Mattock, Troy D. Smith, and Jason M. Ward, *Setting the Level and Annual Adjustment of Military Pay*, RAND, RR-A368-1, 2020. As of April 26, 2024:
https://www.rand.org/pubs/research_reports/RRA368-1.html
- Asch, Beth J., Michael G. Mattock, and Patricia K. Tong, *Analysis of a Time-in-Grade Pay Table for Military Personnel and Policy Alternatives*, RAND, RR-A369-1, 2020. As of April 11, 2023:
https://www.rand.org/pubs/research_reports/RRA369-1.html

- Asch, Beth J., Michael G. Mattock, Patricia K. Tong, and Jason M. Ward, *Increasing Efficiency and Incentives for Performance in the Army's Selective Reenlistment Bonus (SRB) Program*, RAND, RR-A803-1, 2021. As of August 15, 2024:
https://www.rand.org/pubs/research_reports/RRA803-1.html
- Asch, Beth J., Stephanie Rennane, Thomas E. Trail, Lisa Berdie, Jason M. Ward, Dina Troyanker, Catria Gadwah-Meaden, and Jonas Kempf, *Food Insecurity Among Members of the Armed Forces and Their Dependents*, RAND, RR-A1230-1, 2023. As of April 26, 2024:
https://www.rand.org/pubs/research_reports/RRA1230-1.html
- Asch, Beth J., and John T. Warner, *A Theory of Military Compensation and Personnel Policy*, RAND, MR-439-OSD, 1994. As of August 15, 2024:
https://www.rand.org/pubs/monograph_reports/MR439.html
- Asch, Beth J., and John T. Warner, "A Theory of Compensation and Personnel Policy in Hierarchical Organizations with Application to the United States Military," *Journal of Labor Economics*, Vol. 19, No. 3, 2001.
- Asch, Beth J., and John T. Warner, "Recruiting and Retention to Sustain a Volunteer Military Force," in David J. Galbreath and John R. Deni, eds., *Routledge Handbook of Defense Studies*, Routledge, 2018.
- Autor, David H., David Dorn, and Gordon H. Hanson, "The China Syndrome: Local Labor Market Effects of Import Competition in the United States," *American Economic Review*, Vol. 103, No. 6, 2013.
- Autor, David H., David Dorn, and Gordon H. Hanson, "Untangling Trade and Technology: Evidence from Local Labor Markets," *Economic Journal*, Vol. 125, No. 584, 2015.
- Autor, David, Arindrajit Dube, and Annie McGrew, "The Unexpected Compression: Competition at Work in the Low Wage Labor Market," National Bureau of Economic Research, NBER Working Paper 31010, March 2023.
- Barrero, Jose Maria, Nicholas Bloom, and Steven J. Davis, "Why Working from Home Will Stick," Becker Friedman Institute, Working Paper No. 2020-174, 2021.
- Beatty, Lauren G., *Correctional Populations in the United States, 2009*, U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, December 2010.
- Bennion, Edwin, Trevor Bergqvist, Kevin M. Camp, Joseph Kowal, and David Mead, "Exploring Price Increases in 2021 and Previous Periods of Inflation," *Beyond the Numbers*, Vol. 11, No. 7, 2022.
- Bernard, Andrew B., J. Bradford Jensen, and Peter K. Schott, "Survival of the Best Fit: Exposure to Low-Wage Countries and the (Uneven) Growth of U.S. Manufacturing Plants," *Journal of International Economics*, Vol. 68, No. 1, 2006.
- BLS—See U.S. Bureau of Labor Statistics.
- Breza, Emily, Supreet Kaur, and Yogita Shamdasani, "The Morale Effects of Pay Inequality," *The Quarterly Journal of Economics* 133, no. 2 (2018): 611–63.
- Calkins, Avery, Michael G. Mattock, Beth J. Asch, Ryan A. Schwankhart, and Tara L. Terry, *Army Aviation Special and Incentive Pay Policies to Promote Performance, Manage Talent, and Sustain Retention*, RAND, RR-A2234-1, 2023. As of May 7, 2024:
https://www.rand.org/pubs/research_reports/RRA2234-1.html
- Carson, E. Ann, *Prisoners in 2021—Statistical Tables*, U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, December 2022.
- CBO—See Congressional Budget Office.
- Centers for Disease Control and Prevention, "2020 Drug Overdose Death Rates," webpage, 2021. As of February 24, 2023:
<https://www.cdc.gov/drugoverdose/deaths/2020.html>
- Centers for Disease Control and Prevention, "Understanding the Opioid Overdose Epidemic," webpage, June 1, 2022. As of February 24, 2023:
<https://www.cdc.gov/opioids/basics/epidemic.html#print>
- Clemens, Jeffrey, and Michael Wither, "The Minimum Wage and the Great Recession: Evidence of Effects on the Employment and Income Trajectories of Low-Skilled Workers," *Journal of Public Economics*, Vol. 170, 2019.

- Congressional Budget Office, “Major Recurring Reports,” webpage, undated a. As of April 26, 2024:
<https://www.cbo.gov/about/products/major-recurring-reports>
- Congressional Budget Office, “Processes,” webpage, undated b. As of April 26, 2024:
<https://www.cbo.gov/about/processes>
- Congressional Budget Office, “Discretionary Spending in Fiscal Year 2022: An Infographic,” fact sheet, 2023a. As of April 26, 2024:
<https://www.cbo.gov/publication/58890>
- Congressional Budget Office, *Purposes and Uses of Special and Incentive Pay for Military Personnel*, July 2023b.
- Congressional Research Service, *Defense Primer: Military Pay Raise*, IF10260, last updated December 17, 2018. As of May 23, 2023:
<https://crsreports.congress.gov/product/pdf/IF/IF10260/15>
- Congressional Research Service, *Defense Primer: Military Pay Raise*, IF10260, last updated December 5, 2023a. As of May 23, 2023:
<https://sgp.fas.org/crs/natsec/IF10260.pdf>
- Congressional Research Service, *Defense Primer: Regular Military Compensation*, IF10532, last updated December 5, 2023b. As of August 31, 2024:
<https://crsreports.congress.gov/product/pdf/IF/IF10532>
- Cortes, Patricia, and Jessica Pan, “Occupation and Gender,” in Susan L. Averett, Laura M. Argys, and Saul D. Hoffman, eds., *The Oxford Handbook of Women and the Economy*, 2018.
- Costanza, David P., and Lisa M. Finkelstein, “Generationally Based Differences in the Workplace: Is There a There There?” *Industrial and Organizational Psychology*, Vol. 8, No. 3, 2015.
- CPS ASEC—See U.S. Census Bureau and U.S. Bureau of Labor Statistics.
- Cullen, Zoe, and Ricardo Perez-Truglia, “How Much Does Your Boss Make? The Effects of Salary Comparisons,” *Journal of Political Economy*, Vol. 130, No. 3, 2022.
- Danielson, Melissa L., Rebecca H. Bitsko, Reem M. Ghandour, Joseph R. Holbrook, Michael D. Kogan, and Stephen J. Blumberg, “Prevalence of Parent-Reported ADHD Diagnosis and Associated Treatment Among U.S. Children and Adolescents, 2016,” *Journal of Clinical Child and Adolescent Psychology*, Vol. 47, No. 2, 2018.
- Davis, Morris A., Andra C. Ghent, and Jesse M. Gregory, “The Work-at-Home Technology Boon and Its Consequences,” National Bureau of Economic Research, NBER Working Paper 28461, 2021.
- Dawkins, Christina, T. N. Srinivasan, and John Whalley, “Chapter 58—Calibration,” in James Heckman and Edward Leamer, eds., *Handbook of Econometrics*, Vol. 5, Elsevier, 2001.
- De Masi, Paula R. “The Difficult Art of Economic Forecasting,” *Finance and Development*, December 1996.
- De Vito, Antonio, and Juan-Pedro Gomez, “Within-Firm Pay Inequality and Firm Performance,” research paper, last revised June 5, 2024. As of September 2, 2024:
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4008989
- Defense Finance and Accounting Service, “Military Pay Charts—1949 to 2021,” database, undated. As of April 26, 2024:
<https://www.dfas.mil/militarymembers/payentitlements/Pay-Tables/PayTableArchives/>
- Defense Manpower Data Center, *Youth Attitudes Toward the Military: Poll One*, DMDC Report No. 2002-027 April 2002.
- Department of Defense Instruction 6130.03, *Medical Standards for Military Service: Appointment, Enlistment, or Induction*, Vol. 1, November 16, 2022.
- Dertouzos, James N., and Steven Garber, *Is Military Advertising Effective? An Estimation Methodology and Applications to Recruiting in the 1980s and 90s*, RAND, MR-1591-OSD, 2003. As of March 24, 2022:
https://www.rand.org/pubs/monograph_reports/MR1591.html
- DoD—See U.S. Department of Defense.
- DoD, OPA—See U.S. Department of Defense, Office of People Analytics.

- DoD, OUSD(P&R)—See U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness.
- Dube, Arindrajit, T. William Lester, and Michael Reich, “Minimum Wage Effects Across State Borders: Estimates Using Contiguous Counties,” *Review of Economics and Statistics*, Vol. 92, No. 4, 2010.
- Dube, Arindrajit, and Ben Zipperer, “Pooling Multiple Case Studies Using Synthetic Controls: An Application to Minimum Wage Policies,” discussion paper, IZA Institute of Labor Economics, IZA DP 8944, March 2015.
- Dunn, Megan, “Who Chooses Part-Time Work and Why?” *Monthly Labor Review*, March 2018.
- Ehrenberg, Ronald, “Empirical Consequences of Comparable Worth,” in M. Anne Hill and Mark Killingsworth, eds., *Comparable Worth: Analyses and Evidence*, Cornell University Press, 1989.
- Ehrenberg, Ronald, and Robert Smith, “Comparable Worth in the Public Sector,” in David A. Wise, ed., *Public Sector Payrolls*, University of Chicago Press, 1987.
- Faleye, Olubunmi, Ebru Reis, and Anand Venkateswaran, “The Determinants and Effects of CEO-Employee Pay Ratios,” *Journal of Banking and Finance*, Vol. 37, No. 8, 2013.
- Federal Reserve Bank of St. Louis, “All Employees, Manufacturing (MANEMP),” dataset, undated a. As of September 6, 2024:
<https://fred.stlouisfed.org/series/MANEMP>
- Federal Reserve Bank of St. Louis, “All Employees, Temporary Help Services (TEMPHELPS),” dataset, undated b. As of December 5, 2022:
<https://fred.stlouisfed.org/series/TEMPHELPS>
- Federal Reserve Bank of St. Louis, “Consumer Price Index for All Urban Consumers: All Items in the U.S. City Average (CPIAUCSL),” dataset, undated c. As of May 18, 2023:
<https://fred.stlouisfed.org/series/CPIAUCSL>
- Federal Reserve Bank of St. Louis, “Employed, Usually Work Part Time (LNS12600000),” dataset, undated d. As of December 5, 2022:
<https://fred.stlouisfed.org/series/LNS12600000>
- Federal Reserve Bank of St. Louis, “Nonfarm Business Sector: Labor Productivity (Output per Hour) for All Workers (OPHNFB),” dataset, undated e. As of April 26, 2024:
<https://fred.stlouisfed.org/series/OPHNFB>
- Federal Reserve Bank of St. Louis, “Quits: Total Private (JTS1000QUL),” dataset, undated f. As of April 26, 2024:
<https://fred.stlouisfed.org/series/JTS1000QUL>
- Federal Reserve Bank of St. Louis, “Hires: Total Private (JTS1000HIL),” dataset, undated g. As of October 11, 2024:
<https://fred.stlouisfed.org/series/JTS1000HIL>
- Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, J. Robert Warren, Daniel Backman, Annie Chen, Grace Cooper, Stephanie Richards, Megan Schouweiler, and Michael Westberry. IPUMS CPS: Version 11.0 [dataset]. Minneapolis, MN: IPUMS, 2023. As of September 27, 2024:
<https://doi.org/10.18128/D030.V11.0>
- Foster, Caitlin, “Military Pay: This Is How Much U.S. Troops are Paid According to Their Rank,” *Business Insider*, November 24, 2022. As of July 6, 2023:
<https://www.businessinsider.com/how-much-military-service-members-make-2019-2>
- Fry, Richard, “For Today’s Young Workers in the U.S., Job Tenure Is Similar to That of Young Workers in the Past,” Pew Research Center, December 2, 2022. As of January 20, 2023:
<https://www.pewresearch.org/fact-tank/2022/12/02/for-todays-young-workers-in-the-u-s-job-tenure-is-similar-to-that-of-young-workers-in-the-past/>
- Goldberg, Lawrence, Dennis Kimko, and Maggie Li, *Analysis and Forecasts of Army Enlistment Supply*, Institute for Defense Analyses, NS D-5466, June 2015.
- Goldberg, Matthew S., “A Survey of Enlisted Retention: Models and Findings,” Chapter II in U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Report of the Ninth Quadrennial Review of Military Compensation*, Vol III: *Creating Differentials in Military Pay: Special and Incentive Pays*, Washington, D.C., 2002.

- Golden, Lonnie, “Still Falling Short on Hours and Pay,” Economic Policy Institute, December 5, 2016. As of April 20, 2023:
<https://www.epi.org/publication/still-falling-short-on-hours-and-pay-part-time-work-becoming-new-normal/>
- Golding, Heidi L. W., and Gerald E. Cox, *Design and Implementation of AIP*, CNA Corporation, CAB D 7827, July 2003.
- Golfin, Peggy, Diana S. Lien, and David Gregory, *Evaluation of the Assignment Incentive Pay (AIP) System*, CNA Corporation, CAB D 10240, 2004.
- Gould, Joe, “Inflation Sparks New Fight over Biden’s Military Budget Request,” Defense News, March 29, 2022.
- Groshen, Erica L., and Harry J. Holzer, “Labor Market Trends and Outcomes: What Has Changed Since the Great Recession,” *Annals of the American Academy of Political and Social Science*, Vol. 695, No. 1, 2021.
- Gundersen, Craig, and James Zilliak, “Food Insecurity Research in the United States: Where We Have Been and Where We Need to Go,” *Applied Economic Perspectives and Policy*, Vol. 40, No. 1, 2018.
- Gunderson, Morley, “Male-Female Wage Differentials and Policy Responses,” *Journal of Economic Literature*, Vol. 27, No. 1, 1989.
- Hahn, Joyce K., Henry R. Hyatt, Hubert P. Janicki, and Stephen R. Tibbets. “Job-to-Job Flows and Earnings Growth,” *American Economic Review*, Vol. 107, No. 5, 2017.
- Hogan, Paul, Timothy Dall, Pat Mackin, and Chris Mackie, *An Econometric Analysis of Navy Television Advertising Effectiveness*, Systems Analytic Group, 1996.
- Hogan, Paul, Jared Hughes, Stephen Mehay, and Michael Cook, *Enlistment Supply at the Local Market Level*, Naval Post Graduate School, 2000.
- Hosek, James, Beth J. Asch, Michael G. Mattock, and Troy D. Smith, *Military and Civilian Pay Levels, Trends, and Recruit Quality*, RAND, RR-2396-OSD, 2018. As of September 23, 2024:
https://www.rand.org/pubs/research_reports/RR2396.html
- Hosek, James, Michael G. Mattock, and Beth J. Asch, *A Wage Differential Approach to Managing Special and Incentive Pay*, RAND, RR-2101-OSD, 2019. As of May 7, 2024:
https://www.rand.org/pubs/research_reports/RR2101.html
- Hosek, James, and Jennifer Sharp, *Keeping Military Pay Competitive: The Outlook for Civilian Wage Growth and Its Consequences*, RAND, IP-205-A, 2001. As of August 15, 2024:
https://www.rand.org/pubs/issue_papers/IP205.html
- Hosek, James R., Christine E. Peterson, and Joanna Zorn Heilbrunn, *Military Pay Gaps and Caps*, RAND, MR-368-P&R, 1994. As of April 26, 2024:
https://www.rand.org/pubs/monograph_reports/MR368.html
- Hosek, James R., Christine E. Peterson, Jeannette Van Winkle, and Hui Wang, *A Civilian Wage Index for Defense Manpower*, RAND, R-4190-FMP, 1992. As of April 26, 2024:
<https://www.rand.org/pubs/reports/R4190.html>
- H.R. 2591, RAISE Minimum Base Pay Act, April 13, 2023.
- H.R. 7900, Bill to Authorize the National Defense Authorization Act for Fiscal Year 2023, 117th Congress, 2nd Session. As of September 4, 2024:
<https://www.govinfo.gov/content/pkg/BILLS-117hr7900rh/pdf/BILLS-117hr7900rh.pdf>
- Jackson, Emilie, “Availability of the Gig Economy and Long Run Labor Supply Effects for the Unemployed,” research paper, November 15, 2019. As of September 4, 2024:
https://economics.nd.edu/assets/348621/jackson_jmp.pdf
- Jardim, Ekaterina, Mark C. Long, Robert Plotnick, Emma van Inwegen, Jacob Vigdor, and Hilary Wething, “Minimum-Wage Increases and Low-Wage Employment: Evidence from Seattle,” *American Economic Journal: Economic Policy*, Vol. 14, No. 2, 2022.
- Keyes, Katherine M., Dahsan Gary, Patrick M. O’Malley, Ava Hamilton, and John Schulenberg, “Recent Increases in Depressive Symptoms Among US Adolescents: Trends from 1991 to 2018,” *Social Psychiatry and Psychiatric Epidemiology*, Vol. 54, No. 8, 2019.

- Kheel, Rebecca, “Supercharging Military Pay Raises Because of Inflation Being Weighed in Congress,” *Military.com*, June 9, 2022.
- Killingsworth, Mark, “Comparable Worth and Pay Equity: Recent Developments in the United States,” *Canadian Public Policy*, Vol. 28, Supplement: “Gender Segregation: Public Policies and Economic Forces,” 2002.
- Kilmer, Beau, and Robert J. MacCoun, “How Medical Marijuana Smoothed the Transition to Marijuana Legalization in the United States,” *Annual Review of Law and Social Science*, Vol. 13, 2017.
- Knapp, David, James V. Marrone, Laura L. Miller, and Thomas E. Trail, *The Impact of a Spouse Incentive on Employee Retention: Evidence from a Military Spouse Scholarship*, RAND, WR-1295-OSD, 2019. As of August 15, 2024:
https://www.rand.org/pubs/working_papers/WR1295.html
- Knapp, David, Bruce R. Orvis, Christopher E. Maerzluft, and Tiffany Berglund, *Resources Required to Meet the U.S. Army’s Enlisted Recruiting Requirements Under Alternative Recruiting Goals, Conditions, and Eligibility Policies*, RAND, RR-2364-A, 2018. As of May 20, 2023:
https://www.rand.org/pubs/research_reports/RR2364.html
- Kochhar, Rakesh, Kim Parker, and Ruth Igielnik, *Majority of US Workers Changing Jobs Are Seeing Real Wage Gains*, Pew Research Center, July 28, 2022. As of September 4, 2024:
https://www.pewresearch.org/wp-content/uploads/sites/20/2022/07/PST_2022.07.28_labor-market_REPORT.pdf
- Lazear, Edward P., and Paul Oyer, “Personnel Economics,” in Robert Gibbons and John Roberts, eds., *The Handbook of Organizational Economics*, Princeton University Press, 2012.
- Lazear, Edward P., and Sherwin Rosen, “Rank-Order Tournaments as Optimum Labor Contracts,” *Journal of Political Economy*, Vol. 89, No. 5, 1981.
- Lee, Dain, Jinhyeok Park, and Yongseok Shin, “Where Are the Workers? From Great Resignation to Quiet Quitting,” National Bureau of Economic Research, NBER Working Paper 30833, January 2023.
- Levine, Linda, *The Gender Wage Gap and Pay Equity: Is Comparable Worth the Next Step?* Congressional Research Service, last updated December 20, 2004.
- Luo, Tian, Amar Mann, and Richard J. Holden, “What Happened to Temps? Changes Since the Great Recession,” *Monthly Labor Review*, February 2021.
- Malcomson, James, “Work Incentives, Hierarchy, and Internal Labor Markets,” *Journal of Political Economy*, Vol. 92, No. 3, 1984.
- Mattock, Michael G., Beth J. Asch, James Hosek, and Michael Boito, *The Relative Cost-Effectiveness of Retaining Versus Accessing Air Force Pilots*, RAND, RR-2415-AF, 2019. As of September 28, 2024:
https://www.rand.org/pubs/research_reports/RR2415.html
- Minton, Todd D., Lauren G. Beatty, and Zhen Zeng, *Correctional Populations in the United States, 2019—Statistical Tables*, U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, July 2021.
- Modestino, Alicia Sasser, Daniel Shoag, and Joshua Ballance, “Upskilling: Do Employers Demand Greater Skill When Workers Are Plentiful?” *Review of Economics and Statistics*, Vol. 102, No. 4, 2020.
- Montenovo, Laura, Xuan Jiang, Felipe Lozano-Rojas, Ian Schmutte, Kosali Simon, Bruce A. Weinberg, and Coady Wing, “Determinants of Disparities in Early COVID-19 Job Losses,” *Demography*, Vol. 59, No. 3, 2022.
- Mueller, Holger, Paige Ouimet, and Elena Simintzi, “Wage Inequality and Firm Growth,” *American Economic Review Papers and Proceedings*, Vol. 107, No. 5, 2017a.
- Mueller, Holger, Paige Ouimet, and Elena Simintzi, “Within-Firm Pay Inequality,” *Review of Financial Studies*, Vol. 30, No. 10, 2017b.
- Murray, Michael, and Laurie L. McDonald, *Recent Recruiting Trends and Their Implications for Models of Enlistment Supply*, RAND, MR-847-OSD/A, 1999. As of August 15, 2024:
https://www.rand.org/pubs/monograph_reports/MR847.html
- National Center for Education Statistics, “Number of Students Enrolled in Postsecondary Institutions Annually,” undated. As of October 11, 2024:
<https://nces.ed.gov/ipeds/trendgenerator/app/answer/2/2#:~:text=Student%20Enrollment%3A%20How%20many%20students,is%20based%20on%205%2C679%20institutions>

- O'Neill, June, "Comparable Worth," in *The Concise Encyclopedia of Economics*, 1st ed., online, undated. As of April 16, 2024:
<https://www.econlib.org/library/Enc1/ComparableWorth.html>
- O'Neill, June, Michael Brien, and James Cunningham, "Effects of Comparable Worth Policy: Evidence from Washington State," *American Economic Review*, Vol. 79, No. 2, 1989.
- Orvis, Bruce R., Christopher E. Maerzluft, Sung-Bou Kim, Michael G. Shanley, and Heather Krull, *Prospective Outcome Assessment for Alternative Recruit Selection Policies*, RAND, RR-2267-A, 2018. As of May 17, 2024:
https://www.rand.org/pubs/research_reports/RR2267.html
- Paacula, Rosalie Liccardo, and Rosanna Smart, "Medical Marijuana and Marijuana Legalization," *Annual Review of Clinical Psychology*, Vol. 13, 2017.
- Parker, Kim, Juliana Menasce Horowitz, and Rachel Minkin, "COVID-19 Pandemic Continues to Reshape Work in America," Pew Research Center, February 16, 2022. As of January 22, 2023:
<https://www.pewresearch.org/social-trends/2022/02/16/covid-19-pandemic-continues-to-reshape-work-in-america/>
- Pearlman, Jessica, "Gender Differences in the Impact of Job Mobility on Earnings: The Role of Occupational Segregation," *Social Science Research*, Vol. 74, 2018.
- Perez-Arce, Francisco, and Maria J. Prados, "The Decline in the U.S. Labor Force Participation Rate: A Literature Review," *Journal of Economic Survey*, Vol. 35, No. 2, 2021.
- Pew Research Center, "Millennials: Confident. Connected. Open to Change; Executive Summary," webpage, February 24, 2010. As of January 20, 2023:
<https://www.pewresearch.org/social-trends/2010/02/24/millennials-confident-connected-open-to-change/>
- Pew Research Center, *The State of American Jobs*, October 6, 2016. As of January 20, 2023:
<https://www.pewresearch.org/social-trends/2016/10/06/the-state-of-american-jobs/>
- Piacentini, Joe, Harley Frazis, Peter B. Meyer, Michael Schultz, and Leo Sveikauskas, "The Impact of COVID-19 on Labor Markets and Inequality," U.S. Bureau of Labor Statistics, Working Paper 551, August 5, 2022.
- Pierce, Justin R., and Peter K. Schott, "The Surprisingly Swift Decline of US Manufacturing Employment," *American Economic Review*, Vol. 106, No. 7, July 2016.
- Pleeter, Saul, Alexander O. Gallo, Brandon R. Gould, Maggie X. Li, Shirley H. Liu, Curtis J. Simon, Carl F. Witschonke, and Stanley A. Horowitz, "Risk and Combat Compensation," Institute for Defense Analyses, IDA Paper P-4747, August 2011.
- Powell, David, "Synthetic Control Estimation Beyond Comparative Case Studies: Does the Minimum Wage Reduce Employment?" *Journal of Business and Economic Statistics*, Vol. 40, No. 3, 2022.
- Quester, Aline, and Gary Lee, *Senior Enlisted Personnel: Do We Need Another Grade?* Center for Naval Analyses, CRM D0005072.A2, December 2001.
- Rippy, Darren, "The First Hundred Years of the Consumer Price Index: A Methodological and Political History," *Monthly Labor Review*, April 2014.
- Rivera Drew, Julia A., Sarah Flood, and John R. Warren, "Making Full Use of the Longitudinal Design of the Current Population Survey: Methods for Linking Records Across 16 Months," *Journal of Economic and Social Measurement*, Vol. 39, No. 3, 2014.
- Rosen, Sherwin, "Prizes and Incentives in Elimination Tournaments," *American Economic Review*, Vol. 76, No. 4, 1986.
- Rosen, Sherwin, "The Military as an Internal Labor Market: Some Allocative, Productivity, and Incentive Problems," *Social Science Quarterly*, Vol. 73, 1992.
- Rothbaum, Jonathan, and Adam Bee, "Coronavirus Infects Surveys, Too: Survey Nonresponse Bias and the Coronavirus Pandemic," U.S. Census Bureau, Working Paper SEHSD WP2020-10, March 2021. As of May 17, 2024:
<https://www.census.gov/content/dam/Census/library/working-papers/2020/demo/sehsd-wp2020-10.pdf>
- Ruser, John W., "The Employment Cost Index: What Is It?" *Monthly Labor Review*, September 2001.

- ShIPLEY, Ahlshia, “Opioid Crisis Affects All American, Rural and Urban,” U.S. Department of Agriculture, January 11, 2018. As of April 20, 2023:
<https://www.usda.gov/media/blog/2018/01/11/opioid-crisis-affects-all-americans-rural-and-urban>
- Simon, Curtis J., Shirley H. Liu, Saul Pleeter, and Stanley A. Horowitz, *Combat Risk and Pay: Theory and Some Evidence*, Institute for Defense Analyses, 2011.
- Simon, Curtis J., and John T. Warner, “Managing the All-Volunteer Force in a Time of War,” *Economics of Peace and Security Journal*, Vol. 2, No. 1, 2007.
- Smith, Troy D., Beth J. Asch, and Michael G. Mattock, *An Updated Look at Military and Civilian Pay Levels and Recruit Quality*, RAND, RR-3254-OSD, 2020. As of September 23, 2024:
https://www.rand.org/pubs/research_reports/RR3254.html
- Smithies, Arthur, “Productivity, Real Wages, and Economic Growth,” *Quarterly Journal of Economics*, Vol. 74, No. 2, 1960.
- Social Security Administration, “Cost of Living Adjustments,” webpage, undated. As of April 26, 2024:
<https://www.ssa.gov/oact/cola/colaseries.html>
- Tanaka, Satoshi, Lawrence Warren, and David Wiczer, “Earnings Growth, Job Flows and Churn,” *Journal of Monetary Economics*, Vol. 135, 2023.
- Taseen, Arshad A., “Economic Forecasting Evaluation: Re-Examination of the Track Record of Macroeconomic Forecasting,” *Journal of Economic Issues*, Vol. 40, No 3, 2006.
- Torpey, Elka, “Essential Work: Employment and Outlook in Occupations that Protect and Provide,” U.S. Bureau of Labor Statistics, September 2020. As of December 12, 2022:
<https://www.bls.gov/careeroutlook/2020/article/essential-work.htm>
- Twenge, Jean M., “A Review of the Empirical Evidence on Generational Differences in Work Attitudes,” *Journal of Business Psychology*, Vol. 25, 2010.
- Twenge, Jean M., Stacy M. Campbell, Brian J. Hoffman, and Charles E. Lance, “Generational Differences in Work Values: Leisure and Extrinsic Values Increasing, Social, and Intrinsic Values Decreasing,” *Journal of Management*, Vol. 36, No. 5, 2010.
- U.S. Bureau of Labor Statistics, “Business Response Survey: 2021 Results of the Business Response Survey,” webpage, undated a. As of November 30, 2022:
<https://www.bls.gov/brs/2021-results.htm>
- U.S. Bureau of Labor Statistics, “Consumer Price Index News Releases: Geographic Information,” webpage, undated b. As of February 7, 2023:
<https://www.bls.gov/regions/subjects/consumer-price-indexes.htm#AZ>
- U.S. Bureau of Labor Statistics, “Labor Force Statistics from the Current Population Survey,” webpage, undated c. As of March 29, 2024:
https://data.bls.gov/timeseries/LNU04000000?years_option=all_years&periods_option=specific_periods&periods=Annual+Data
- U.S. Bureau of Labor Statistics, “American Time Use Survey,” webpage, undated d. As of September 28, 2024:
<https://www.bls.gov/tus/>
- U.S. Bureau of Labor Statistics, “Table 3. Employees of Nonfarm Payrolls by State and Selected Industry Sector, Seasonally Adjusted,” webpage, November 18, 2022. As of December 12, 2022:
<https://www.bls.gov/news.release/laus.t03.htm>
- U.S. Bureau of Labor Statistics, “Introducing 2021 Fixed Employment Weights and 2018 SOC Codes for the Employment Cost Index,” notice, last modified June 15, 2023. As of September 4, 2024:
<https://www.bls.gov/eci/notices/2022/eci-2021-fixed-weights-and-2018-soc-update.htm>
- U.S. Bureau of Labor Statistics, “Employment Cost Index—December 2023,” press release, January 31, 2024a. As of September 4, 2024:
https://www.dol.gov/newsroom/economicdata/eci_01312024.pdf
- U.S. Bureau of Labor Statistics, “May 2021 National Industry-Specific Occupational Employment and Wage Estimates,” webpage, last modified April 3, 2024b. As of September 4, 2024:
https://www.bls.gov/oes/current/naics4_561300.htm

- U.S. Census Bureau, “Current Population Survey Design and Methodology,” Technical Paper 66, 2006. As of April 26, 2024:
<https://www.census.gov/prod/2006pubs/tp-66.pdf>
- U.S. Census Bureau, “Current Population Survey (CPS) Technical Documentation: Subject Definitions,” webpage, last updated May 15, 2024. As of May 17, 2024:
<https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html>
- U.S. Census Bureau and U.S. Bureau of Labor Statistics, *Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS)*, 1980–2022. As of November 22, 2024:
<https://www.census.gov/data/datasets/time-series/demo/cps/cps-asec.html>
- U.S. Department of Defense, Office of the Assistant Secretary of Defense (Force Management and Personnel), *Report of the Seventh Quadrennial Review of Military Compensation*, August 21, 1992a. As of September 5, 2024:
<https://apps.dtic.mil/sti/tr/pdf/ADA265369.pdf>
- U.S. Department of Defense, Office of the Assistant Secretary of Defense (Force Management and Personnel), *Report of the Seventh Quadrennial Review of Military Compensation: Annual Pay Adjustment, Major Topical Summary (MTS) 5*, August 1992b. As of September 27, 2024:
<https://apps.dtic.mil/sti/tr/pdf/ADA265045.pdf>
- U.S. Department of Defense, Office of People Analytics, *April 2008 Status of Forces Survey of Active Duty Members (SOFS-A), Leading Indicators Briefing*, OPA Report No. 2008-057, April 2008. As of March 29, 2024:
<https://www.opa.mil/research-analysis/quality-of-work-life/status-of-forces-survey-reports-briefings/april-2008-status-of-forces-survey-of-active-duty-members/april-2008-status-of-forces-survey-of-active-duty-members-leading-indicators-briefing/>
- U.S. Department of Defense, Office of People Analytics, *2008 Survey of Active Duty Spouses: Well-Being and Feelings about Military Life Briefing*, OPA Report No. 2010-034, January 28, 2011. As of March 29, 2024:
<https://www.opa.mil/research-analysis/spouse-family/military-spouse-survey-survey-reports-briefings/2008-survey-of-active-duty-spouses/2008-survey-of-active-duty-spouses-topical-briefing-well-being-and-feelings-about-military-life/>
- U.S. Department of Defense, Office of People Analytics, *2019 Active Duty Spouse Survey (ADSS): Results from the 2019 Active Duty Spouse Survey*, OPA Report No. 2019-ADSS-OVER, December 2, 2020a. As of March 29, 2024:
<https://www.opa.mil/research-analysis/spouse-family/military-spouse-survey-survey-reports-briefings/2019-active-duty-spouse-survey-adss-results-from-the-2019-active-duty-spouse-survey/>
- U.S. Department of Defense, Office of People Analytics, *Status of Forces Survey*, 2020b.
- U.S. Department of Defense, Office of People Analytics, “2020 Status of Forces Survey of Active Duty Members (SOFS-A), Leading Indicators Briefing,” briefing slides, 2020-SOFR-LI-01, July 14, 2021. As of March 29, 2024:
<https://www.opa.mil/research-analysis/quality-of-work-life/status-of-forces-survey-reports-briefings/2020-status-of-forces-survey-of-reserve-component-members-leading-indicator-briefing/>
- U.S. Department of Defense, Office of People Analytics, “2021 Active Duty Spouse Survey (ADSS): Results from the 2021 Active Duty Spouse Survey,” OPA Report No. 2023-045, February 9, 2023. As of March 29, 2024:
<https://www.opa.mil/research-analysis/spouse-family/military-spouse-survey-survey-reports-briefings/2021-active-duty-spouse-survey-adss-results-from-the-2021-active-duty-spouse-survey/>
- U.S. Department of Defense, Office of People Analytics, “Public Release Spring 2023 Propensity Update: Youth Poll Study Findings,” presentation slides, Joint Advertising and Market Research Studies 24-P-0250, February 1, 2024. As of March 29, 2024:
https://jamrs.defense.gov/Portals/20/Documents/YP55Spring2023PUBLICRELEASEPropensityUpdate_20231218_Final.pdf
- U.S. Department of Defense, Office of the Under Secretary of Defense (Comptroller), *Military Personnel Programs (M-1): Department of Defense Budget; Fiscal Year 2024*, March 2023. As of April 17, 2024:
https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2024/FY2024_m1.pdf
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, “Population Representation in the Military Services, Fiscal Year 2019, Summary Report,” undated. As of April 25, 2023:
<https://www.cna.org/pop-rep/2019/summary/summary.pdf>

- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, Report of the Ninth Quadrennial Review of Military Compensation, Vols. I–V, March 2002. As of March 26, 2024: https://militarypay.defense.gov/Portals/3/Documents/Reports/9th_QRMC_Report_Volumes_I_-_V.pdf
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Recruiting and Retention Report*, 2017.
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Military Compensation Background Papers: Compensation Elements and Related Manpower Cost Items*, 8th ed., 2018a. As of April 11, 2023: https://militarypay.defense.gov/Portals/3/Documents/Reports/Mil-Comp_8thEdition.pdf
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Recruiting and Retention Report*, 2018b.
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Recruiting and Retention Report*, 2019.
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Recruiting and Retention Report*, 2020a.
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Report of the Thirteenth Quadrennial Review of Military Compensation: Vol. 1, Main Report*, December 2020b. As of April 20, 2023: https://militarypay.defense.gov/Portals/3/QRMC-Vol_1_final_web.pdf
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Recruiting and Retention Report*, 2021.
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Recruiting and Retention Report*, 2022a.
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Recruiting and Retention Report*, 2023.
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Strengthening Food Security in the Force: Strategy and Roadmap*, July 2022b. As of April 11, 2023: <https://media.defense.gov/2022/Jul/14/2003035423/-1/-1/1/STRENGTHENING-FOOD-SECURITY-IN-THE-FORCE-STRATEGY-AND-ROADMAP.PDF>
- U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, Directorate of Compensation, *Selected Military Compensation Tables*, 2023. As of September 27, 2024: <https://militarypay.defense.gov/References/pous/>
- U.S. Department of Health and Human Services, Office of the Secretary, “Annual Update of the HHS Poverty Guidelines,” *Federal Register*, Vol. 88, No. 12, Notices, Thursday, January 19, 2023.
- U.S. House of Representatives, Armed Services Committee, *RDY Hearing: Fiscal Year 2024 Budget Request for Military Readiness*, April 19, 2023. As of July 10, 2023: <https://armedservices.house.gov/hearings/rdy-hearing-fiscal-year-2024-budget-request-military-readiness>
- U.S. House of Representatives, House Appropriations Committee, House Appropriations Committee (HAC) FY24 Defense Appropriations Bill, Section 8138, June 14, 2023.
- U.S. President’s Commission on an All-Volunteer Armed Force, *The Report of the President’s Commission on an All-Volunteer Armed Force*, U.S. Government Printing Office, 1970.
- Vazirani, Ashish, “Recruiting Shortfalls and Growing Mistrust: Perceptions of the U.S. Military,” Testimony Before the House Armed Services Committee, Military Personnel Subcommittee, December 13, 2023.
- von Wachter, Till, “The Persistent Effects of Initial Labor Market Conditions for Young Adults and Their Sources,” *Journal of Economic Perspectives*, Vol. 34, No. 4, 2020.
- Ward, Jason M., Jeffrey B. Wenger, Irineo Cabrerros, Daniel Schwam, Craig A. Bond, and Samuel Absher, *A Revised Recruiting Resource Model for Achieving the Army Personnel Strategy: Accounting for Digital Advertising*, RAND, RR-A2108-1, 2023. As of August 15, 2024: https://www.rand.org/pubs/research_reports/RRA2108-1.html

- Warner, John, Curtis Simon, and Deborah Payne, "The Military Recruiting Productivity Slowdown: The Roles of Resources, Opportunity Cost, and Tastes of Youth," *Defence and Peace Economics*, Vol. 14, No. 5, 2003.
- Warner, John T., "The Effect of the Civilian Economy on Recruiting and Retention," in U.S. Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Report of the Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers*, 2012. As of July 10, 2023: https://militarypay.defense.gov/Portals/3/Documents/Reports/SR05_Chapter_2.pdf
- Warner, John T., and Beth J. Asch, "The Economics of Defense Manpower," in Keith Hartley and Todd Sandler, eds., *Handbook of Defense Economics*, North Holland Publishing, 1995.
- Warner, John T., and Curtis J. Simon, "Updated Estimates of U.S. Military Enlistment Supply," unpublished manuscript, Clemson University, October 2004.
- Weber, Lauren, "Burned Out, More Americans Are Turning to Part-Time Jobs," *Wall Street Journal*, February 25, 2023.
- Wey Smola, Karen, and Charlotte D. Sutton, "Generational Differences: Revisiting Generational Work Values for the New Millennium," *Journal of Organizational Behavior*, Vol. 23, No. 4, 2002.
- White House, Office of Management and Budget, *Analytical Perspectives: Budget of the Government; Fiscal Year 2024*, 2023. As of July 17, 2023: https://www.whitehouse.gov/wp-content/uploads/2023/03/spec_fy2024.pdf
- Younis, Mohamed, "Confidence in U.S. Military Lowest in over Two Decades," Gallup, July 31, 2023. As of March 29, 2024: <https://news.gallup.com/poll/509189/confidence-military-lowest-two-decades.aspx>
- Zabel, Keith L., Benjamin B. J. Biermeier-Hanson, Boris B. Baltes, Becky J. Early, and Agnieszka Shepard, "Generational Differences in Work Ethic: Fact or Fiction?" *Journal of Business Psychology*, Vol. 32, No. 3, 2017.



Rapid increases in inflation since 2020, a strong labor market, together with military recruiting struggles and reported food insecurity among military members, have put a spotlight on military compensation and on the foundational element of the compensation system, military basic pay. The National Defense Authorization Act for 2023 mandated a study of military basic pay, as does the charter of the 14th Quadrennial Review of Military Compensation, the White House–directed commission that studies military compensation. The Fourteenth Quadrennial Review of Military Compensation requested the RAND National Defense Research Institute to conduct such a study.

In this report, the authors assess the basic pay tables of junior, midcareer, and senior enlisted personnel and commissioned officers; evaluate the Employment Cost Index (ECI) as a guide to the annual pay raise, as well as alternatives; compare military pay, measured by regular military compensation, with civilian earnings and evaluate the 70th percentile benchmark developed by the Ninth Quadrennial Review of Military Compensation in 2002; and assess pay for service members in critical specialties and whether and how basic pay could be used to address personnel needs in these specialties.

The authors also review recent trends in the civilian labor market that might affect recruiting and retention outcomes and the adequacy of military basic pay; develop proposals for change, drawing from past studies and commissions that have assessed military compensation; present findings from discussions with subject-matter experts and a review of relevant academic literature; and analyze pay, personnel, and civilian labor market data.

\$83.00

ISBN-10 1-9774-1432-X
ISBN-13 978-1-9774-1432-8



www.rand.org



INSTITUTE FOR DEFENSE ANALYSES

Review of Entitlements for Deployed Members

Nancy M. Huff, Project Leader
Ben J. Christensen
Matthew S. Goldberg
Stanley A. Horowitz
Jacklyn R. Kambic
Mikhail Smirnov
Kelsey R. Stanley
Zachary N. Szlendak

January 2025

Distribution Statement A.
Approved for public release:
distribution is unlimited.

IDA Product 3003958

INSTITUTE FOR DEFENSE ANALYSES
730 East Glebe Road
Alexandria, Virginia 22305



The Institute for Defense Analyses is a nonprofit corporation that operates three Federally Funded Research and Development Centers. Its mission is to answer the most challenging U.S. security and science policy questions with objective analysis, leveraging extraordinary scientific, technical, and analytic expertise.

About This Publication

This work was conducted by the IDA Systems and Analyses Center under contract HQ0034-19-D-0001, Project BE-7-5253, “Review of Entitlements for Deployed Members,” for the Office of the Under Secretary of Defense for Personnel and Readiness (OUSD (P&R)). The views, opinions, and findings should not be construed as representing the official position of either the Department of Defense or the sponsoring organization.

Acknowledgments

Thank you David S. C. Chu, Sarah K. John, and Alan B. Gelder for performing a technical review of this document.

For More Information

Nancy M. Huff, Project Leader
nhuff@ida.org, (703) 575-6334

Julie E. Hunter, Director, Cost Analysis and Research Division
jhunter@ida.org, (703) 575-4686

Copyright Notice

© 2025 Institute for Defense Analyses
730 East Glebe Road, Alexandria, Virginia 22305 • (703) 845-2000

This material may be reproduced by or for the U.S. Government pursuant to the copyright license under the clause at DFARS 252.227-7013 (Feb. 2014).

INSTITUTE FOR DEFENSE ANALYSES

IDA Product 3003958

Review of Entitlements for Deployed Members

Nancy M. Huff, Project Leader

Ben J. Christensen

Matthew S. Goldberg

Stanley A. Horowitz

Jacklyn R. Kambic

Mikhail Smirnov

Kelsey R. Stanley

Zachary N. Szlendak

Executive Summary

The Commander of the United States Special Operations Command (SOCOM) observed in a May 2022 memo to the Secretary of Defense that the 2022 National Defense Strategy (NDS) prioritizes “the People’s Republic of China challenge in the Indo-Pacific, then the Russia challenge in Europe.” He noted that Service members in NDS-priority areas were entitled to fewer benefits than those serving in declared combat zones.¹ The SOCOM commander therefore requested a policy review to better align the entitlements for deployed members with those of Service members in NDS priority areas. In a subsequent July 2022 memo to the Secretary of Defense, the Chairman of the Joint Chiefs of Staff (CJCS) concurred with the request from SOCOM for a review of entitlements for deployed Service members. The CJCS also noted that the “[c]riteria for special pay and entitlements are based on the sacrifices our deployed Service members make and the risks they assume.”² The CJCS requested that the review of combat entitlements consider both the NDS priorities and the important function of these entitlements in “recognizing and preserving Service members’ willingness to assume risk when called to serve in combat.”

The Secretary of Defense approved a review of entitlements for deployed members as part of the Fourteenth Quadrennial Review of Military Compensation (QRMC). The QRMC, chartered by the President, reviews military compensation and benefits, including special pay, to ensure the Department of Defense (DoD) is appropriately compensating Service members while remaining responsible stewards of American taxpayers’ funds. The Director of the Fourteenth QRMC asked the Institute for Defense Analyses (IDA), via the Office of the Secretary of Defense for Personnel and Readiness (OUSD(P&R)), to conduct an analysis of combat entitlements. The analysis was to include

- a review of the bases for operationally-oriented compensation and an evaluation for whether this rationale extends to members serving in NDS priority areas
- an analysis of the risk for members serving in NDS priority areas, combat zones, or Qualified Hazardous Duty Areas (QHDA)s
- a cost and retention analysis to estimate the retention implications of changing eligibility for operationally-oriented compensation

¹ United States Special Operations Command, “Review of Entitlements,” Richard D. Clarke, May 12, 2022.

² Chairman of the Joint Chiefs of Staff, “U.S. Special Operations Command Request for Review of Entitlements,” Mark A. Milley, July 16, 2022.

To complete this review, IDA reviewed statutes and policy documentation on engaged stakeholders in the Combatant Commands, the Joint Staff, and OUSD(P&R). IDA also reviewed deployment entitlements and analyzed various DoD data on risk, deployments, and compensation.

We observed that the two largest deployment entitlements—the Combat Zone Tax Exclusion (CZTE) and Imminent Danger Pay (IDP)—are intended to compensate Service members for *combat risk*. The statutes, policy, historical practice, and feedback from DoD leaders generally do not support expanding these entitlements to Service members solely on the basis of being deployed in support of NDS priorities. Rather, the criteria for these entitlements should be aligned to the level of risk faced by Service members.

Service members begin to receive CZTE and IDP benefits relatively quickly after a region becomes dangerous due to combat or other hostile activities that threaten physical harm. However, benefits can persist for decades due to a lack of political appetite for removing them, even if regions are no longer deemed dangerous. The persistence of these benefits may be due, in part, to their ability to accomplish other goals besides compensation for risk. For example, these benefits may also be used to encourage Service members to accept deployments to less favorable locations and to enhance reenlistment bonuses.

DoD has the authority to designate and terminate IDP benefits by location. Accordingly, it will periodically conduct reviews across locations to determine whether risks to Service members remain high. In 2014, DoD removed 20 areas (15 countries and 5 bodies of water) from the list of IDP-eligible locations. DoD added Saudi Arabia back to the list in 2019. In 2020, it recertified that all 38 locations on the list had high enough risks to remain on the list, and it added three countries to the list in 2022 (Burkina Faso, Burma, and Ukraine). Such updates keep the list somewhat current as they take time to perform.

Combat zones, however, can be designated and terminated only by the President of the United States, through an Executive order. The designation of Vietnam as a combat zone remained until President Clinton ended the designation in 1996, more than 20 years after the end of the U.S. involvement in the Vietnam War. At the start of Operation Desert Storm in 1991, President George H.W. Bush designated seven countries and five bodies of water on and around the Arabian Peninsula as combat zones. In 1999, President Clinton designated what is now four countries and two bodies of water around Kosovo as combat zones. In 2001, President George W. Bush designated Afghanistan as a combat zone. These designations from 1991, 1999, and 2001 all hold today and will continue to hold until a President ends them by Executive order.

Over the years, DoD has removed several of these presidentially designated combat zones from the list of IDP-eligible locations, indicating that it no longer considers them a high risk to Service members. However, any Service member who receives compensation

for active service in a presidentially designated combat zone is eligible for the CZTE, regardless of the current risk in that location.

The long persistence of combat zone designations has created inconsistency in the levels of risk to Service members in CZTE- and IDP-eligible regions. Some regions with lower levels of risk still provide these combat entitlements, even as riskier locations outside of designated CZTE or IDP regions do not.

Using TAXSIM35,¹ we estimate that the CZTE and the IDP cost the Federal Government \$348 million in 2023. This total represents an upper bound on the potential savings from sunsetting these benefits in less risky regions. If eligibility for the CZTE alone were reduced by half, the Federal Government could save as much as \$157 million per year. Moreover, the estimated retention effect of reducing CZTE and IDP eligibility is relatively small. In the most extreme case, removing all CZTE and IDP has an estimated retention impact of less than 1 percent across the total force. More targeted sunsets of CZTE and IDP eligibility that are limited to low-risk regions are likely to have an even smaller effect on retention. These cost savings can be applied to increasing other deployment entitlements, such as Assignment Incentive Pay or the Family Separation Allowance, to encourage Service members to volunteer for less favorable deployments. This reallocation would further mitigate any retention impacts of a realignment of the CZTE and IDP to compensate Service members serving in the most dangerous regions.

The value of the CZTE greatly depends on rank, spousal income, and number of dependents. In general, the CZTE is more valuable to families with higher incomes. As a result, Service members deployed to the same location and facing equivalent levels of risk are not necessarily entitled to the same amount of benefits for the risk that they face.

In light of these observations, we make the following seven recommendations to realign current combat entitlements with risk and to maintain that realignment into the future.

Recommendation 1: Justify additions, renewals, and termination of CZTE and IDP eligibility using U.S. military casualty statistics and other quantitative and qualitative risk measures from recent years, as outlined in DoDI 1340.09, “Hazardous Pay Program,” concerning:

- A. Acts of violence
- B. Insurrection, war, or wartime conditions
- C. Terrorism conditions
- D. Security environment

¹ <https://taxsim.nber.org/taxsim35/>.

E. Travel restrictions

F. Presence of dependents in the area

Recommendation 2: The Office of the Secretary of Defense (OSD) should comprehensively review all extant designations of CZTE and IDP eligibility and terminate designations for IDP and direct-support areas that are no longer subject to high levels of risk, as described in the previous recommendation. Terminating the IDP designation for a country or region in a QHDA or for a country or region in direct support to either a combat zone or a QHDA also removes eligibility for the CZTE. Therefore, OSD should provide recommendations to the President and to Congress for recommended terminations of combat zone and QHDA designations. DoD does not currently have the authority to remove combat zone or QHDA designations, so the President and Congress would need to support efforts to realign CZTE eligibility with risk, or grant DoD new authorities to terminate CZTE eligibility in combat zones and QHDAs.

If desired, a transition period could be established, during which the Services phase out eligibility in low-risk regions. Other forms of compensation, such as assignment incentive pay or the family separation allowance, could be used to encourage Service members to continue to volunteer for less favorable deployments.

Recommendation 3: OSD should establish a fixed schedule to review all CZTE-eligibility and IDP designations to maintain the alignment between risk and combat entitlements. Because a comprehensive review of IDP designations takes approximately 2 years to complete, leave an interval of 4 to 6 years between the start of consecutive reviews so that they do not overlap.

Recommendation 4: All new CZTE- and IDP-eligibility entitlements, whether established by the President, Congress, or DoD, should be created with termination dates so that eligibility automatically ends after a fixed period, unless action is taken to extend the entitlement.

Recommendation 5: The President, the Congress, and DoD should continue to allow for rapid, situational additions to the list of regions eligible for CZTE or IDP, based on changes in the risk in various regions. For urgent situations, leaders should follow the example of the April 2022 IDP designation for Ukraine, which was completed exactly 2 months after the Russian invasion of that country in February 2022.

Recommendation 6: DoD should request that Congress add a permanent National Defense Authorization Act provision granting DoD the authority to remove countries or areas from a QHDA, thereby turning off the CZTE benefit in those locations while maintaining their IDP designation. Any such provision could include the requirement that DoD notify the House and Senate Armed Services Committees (HASC and SASC) prior to finalizing those changes. Further, the provision could levy a requirement that DoD

justify its proposed action by providing the HASC and SASC with casualty statistics or other quantitative risk metrics, though the data would not necessarily be publicly releasable due to classification.

Recommendation 7: Consistent with recommendations from the 11th QRMC, Congress should consider instituting refundable tax credits to replace the CZTE, thereby reducing the variability in the level of benefits Service members receive relative to the level of risk that they face. The tax credit should be structured as a fixed amount per month of deployment and indexed to inflation.

Contents

1.	Introduction	1
2.	Types of Risk Compensation and Which Countries Qualify	5
	A. Introduction	5
	B. Hostile Fire Pay/Imminent Danger Pay.....	6
	1. Amount.....	6
	2. Legislative Authority.....	6
	3. Current Rationale	6
	4. Areas Covered	7
	5. Decision-maker	8
	6. Origin And Evolution.....	11
	C. Combat Zone Tax Exclusion.....	13
	1. Amount.....	13
	2. Legislative Authority.....	15
	3. Current Rationale	15
	4. Areas Covered	15
	5. Decision-maker	18
	6. Origin and Evolution	20
	D. Savings Deposit Program	26
	1. Amount.....	26
	2. Legislative Authority.....	26
	3. Current Rationale	26
	4. Areas Covered	27
	5. Decision-maker	27
	6. Origin And Evolution.....	27
	E. Department of State’s Danger Pay Allowance.....	28
	1. Amount.....	28
	2. Legislative Authority.....	29
	3. Current Rationale	29
	4. Areas Covered	29
	5. Decision-maker	30
3.	Measurement of Various Types of Risk.....	31
	A. Casualties among Members of the U.S. military.....	32
	1. Types of Military Casualties	32
	2. Recent History of U.S. Military Casualties	35
	B. Eligibility for Imminent Danger Pay.....	42
	C. Eligibility for Accompanied Tours.....	44
	D. Summary	46

4.	Policy Analysis	49
	A. Relationship of CZTE and IDP to Hostile Casualties	49
	B. Other Potential Combat Risks	50
	C. Procedures for Turning Benefits Off.....	51
	1. Combat Zones and QHDAs.....	51
	2. Hostile Fire Pay and Imminent Danger Pay.....	53
	D. Summary	54
5.	Cost and Retention Analysis	57
	A. Combat Zone Tax Exclusion.....	57
	1. Methodology	57
	2. Results	58
	B. Imminent Danger Pay.....	66
	C. Retention Analysis	68
	D. Summary	71
6.	Recommendations	73
	Appendix A. Other Types of Military Compensation That Are Indirectly Related to Combat Risk.....	A-1
	Appendix B. Assumptions for Estimating the Dollar Value of the Combat Zone Tax Exclusion to Service Members.....	B-1
	Appendix C. Additional Estimates of the Effect of the Combat Zone Tax Exclusion on Household Taxes	C-1
	Illustrations	D-1
	References.....	E-1
	Abbreviations.....	F-1

1. Introduction

The Commander of the United States Special Operations Command (SOCOM) observed in a May 2022 memo to the Secretary of Defense that the 2022 National Defense Strategy (NDS) prioritizes “the People’s Republic of China challenge in the Indo-Pacific, then the Russia challenge in Europe”; notably, Service members in NDS-priority areas were entitled to fewer benefits than those serving in declared combat zones.¹ In his memo, the SOCOM commander requested a review of entitlements for deployed members to better align them with NDS priorities. In a subsequent July 2022 memo to the Secretary of Defense, the Chairman of the Joint Chiefs of Staff (CJCS) concurred with the request from SOCOM for a review of entitlements for deployed Service members, also noting that the “[c]riteria for special pay and entitlements are based on the sacrifices our deployed Service members make and the risks they assume.”² The CJCS requested that the review of combat entitlements consider both the NDS priorities and the important function of these entitlements in “recognizing and preserving Service members’ willingness to assume risk when called to serve in combat.”

The Secretary of Defense approved a review of entitlements for deployed members as part of the Fourteenth Quadrennial Review of Military Compensation (QRMC). The QRMC was chartered by the President to review military compensation and benefits, including special pay, to ensure the Department of Defense (DoD) is appropriately compensating Service members while remaining responsible stewards of taxpayer funds. The Director of the Fourteenth QRMC, via the Office of the Secretary of Defense for Personnel and Readiness (OUSDP&R), asked the Institute for Defense Analyses (IDA) to conduct an analysis of combat entitlements that included

- a review of the bases for operationally oriented compensation and an evaluation for whether this rationale extends to members serving in NDS priority areas
- an analysis of the risk for members serving in NDS priority areas, combat zones, and Qualified Hazardous Duty Areas (QHDA)s
- a cost and retention analysis to estimate the retention implications of changing eligibility for operationally oriented compensation

¹ United States Special Operations Command, “Review of Entitlements,” Richard D. Clarke, May 12, 2022.

² Chairman of the Joint Chiefs of Staff, “U.S. Special Operations Command Request for Review of Entitlements,” Mark A. Milley, July 16, 2022.

This study contributes to a broader conversation on how to appropriately compensate Service members for combat risk and how to make the best use of entitlements such as the Combat Zone Tax Exclusion (CZTE) and Hostile Fire/Imminent Danger Pay (HF/IDP)—the two largest components of risk compensation for Service members deployed to combat conditions. The 11th QRMC previously investigated the relationship between the level of risk faced by Service members and the level of risk-based compensation, as measured by the CZTE and HF/IDP, concluding that there was a substantial mismatch between risk compensation and the individual danger faced by Service members.³ Since the 11th QRMC was published in 2012, we observe that the level of combat risk facing Service members—particularly as measured by hostile casualties—has declined significantly in recent years. Yet the mismatch between risk and compensation for risk persists. In this paper, we consider not only the extent of the mismatch between risk and compensation, but we also consider the reasons why the mismatch has persisted and make recommendations for options to remedy it.

An extensive body of economic literature has looked more broadly at how employees are compensated for risk.⁴ Most of this literature centers on how much more individuals get paid for increases in risk associated with jobs. Instead of having extra metrics for how much an individual needs to be compensated for a job that has a 1 in 100,000 chance of death, a 1 in 250,000 chance of death, or a 1 in 53,700 chance in death, the extra compensation for risk is often converted to a risk compensation numeraire through the value of a statistical life (VSL). In these instances, VSL is equal to the increase in compensation an individual gets for a job, $\Delta Compensation$, divided by the increase in chance of death, $\Delta P(death)$, the individual faces because of said job.

$$VSL = \frac{\Delta Compensation}{\Delta P(death)}$$

It should be noted that this formula holds true only when the chance of death is relatively small. If individuals face a large probability of death (e.g., 1/100), the VSL estimate will be very different. Hence, interpretation of the existing literature should be approached cautiously for exceptionally hazardous situations.

To connect the VSL to risk compensation, consider a case where there is an annual mortality rate of 1 per 1,000 Service members. In these cases, one would multiply the VSL (say \$9,000,000) by the increase in mortality rate (1/1,000) and calculate that individuals would expect to be compensated by \$9,000 per year for having the increase in risk.

³ 11th Quadrennial Review of Military Compensation, *Final Report*, Washington, DC: Department of Defense, 2012.

⁴ Instead of providing an exhaustive summary of the VSL literature, this analysis examined papers that are either metareviews or especially applicable to Service members.

Viscusi (2018)⁵ conducted a meta-analysis of VSL literature with a focus on less-biased estimates of the VSL and found an adjusted VSL of \$8,100,000 in 2015 dollars (\$10,375,000 in 2023 dollars).⁶ However, papers that used data from the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) had higher VSL estimates, with a VSL of \$11,400,000 in 2015 dollars (\$14,602,000).⁷ This noteworthy departure from other papers' values indicates that wage compensation for risk may exceed other forms of risk compensation, or it might suggest individuals are paying for marginal improvements in safety.⁸ Conducting a meta-analysis of meta-analyses, Banzhaf 2022 found a likely range that was consistent with that from Viscusi 2018.⁹

It is important to note that the population of Service members is different from the general U.S. population. Two papers have estimated the VSL from U.S. military behavior. Greenberg et al. 2021¹⁰ looked at U.S. Army reenlistment decisions through the Iraq and Afghan wars from 2002 to 2010. They found that the VSL for this subpopulation was much lower than that of the U.S. general population, with an estimate ranging from \$500,000 to \$900,000 in 2019 dollars (\$596,000 to \$1,072,000 in 2023 dollars).¹¹ They also estimated the VSL for different groups within the Army and found that women had a higher VSL than did men, that the VSL estimate increased as the mortality rate rose, and that Service members in noncombat roles had higher VSLs than those in combat roles. The range of values from Greenberg et al. (2021) is consistent with the range of compensation found in the 11th QRMC.¹² Examining risk compensation through HFP/IDP and the CZTE, Curtis et al. found an average compensation per fatality of \$656,889 in 2010 dollars (\$921,000 in

⁵ W. K. Viscusi, "Best Estimate Selection Bias in the Value of a Statistical Life," *Journal of Benefit-Cost Analysis* 9, no. 2 (2018): 205–246. <https://doi.org/10.1017/bca.2017.21>.

⁶ Adjusted from July 2015 to July 2023 using the U.S. BLS inflation calculator. It is possible that VSL has scaled more closely with income than inflation, implying that the value could be larger. <https://data.bls.gov/cgi-bin/cpicalc.pl?cost1=8100&year1=201507&year2=202307>.

⁷ Adjusted from July 2015 to July 2023 using the U.S. BLS inflation calculator. It is possible that VSL has scaled more closely with income than inflation, implying that the value could be larger. <https://data.bls.gov/cgi-bin/cpicalc.pl?cost1=11400&year1=201507&year2=202307>.

⁸ Many VSL papers look at how much an individual pays for a marginal decrease in their chance of death due to something like a vehicle feature to calculate the VSL.

⁹ H. S. Banzhaf, "The Value of Statistical Life: A Meta-Analysis of Meta-Analyses," *Journal of Benefit-Cost Analysis* 13, no. 2 (2022): 182–197, <https://doi.org/10.1017/bca.2022.9>.

¹⁰ Kyle Greenberg, Michael Greenstone, Stephen Ryan, and Michael Yankovich, "The Heterogeneous Value of a Statistical Life: Evidence from U.S. Army Reenlistment Decisions," (Working Paper No. 2021-75, University of Chicago, Becker Friedman Institute for Economics, September 29, 2021), available at SSRN: <https://ssrn.com/abstract=3877413> or <http://dx.doi.org/10.2139/ssrn.3877413>.

¹¹ Adjusted from July 2015 to July 2023 using the U.S. BLS inflation calculator. It is possible that VSL has scaled more closely with income than inflation, implying that the value could be larger. <https://data.bls.gov/cgi-bin/cpicalc.pl?cost1=900&year1=201907&year2=202307>.

¹² Curtis J. Simon, Shirley H. Liu, Saul Pleeter, and Stanley A. Horowitz, "Combat Risk and Pay: Theory and Some Evidence," *The Eleventh Quadrennial Review of Military Compensation*, June 2012, 411.

2023 dollars)¹³ when including the value of the CZTE. It should be noted that our CZTE analysis focuses on data from 2022 and 2023; the number of fatalities and the number of individuals who qualify for the CZTE have both decreased since the 11th QRMC was completed. As a result, the average compensation per fatality and compensation for risk have both decreased. To supplement our analyses in a way that is agnostic to the number of individuals who qualify and the number of combat fatalities, we look at how valuable the CZTE is to Service members based on familial status, spousal earnings, rank, and basic pay.

When interpreting estimates of risk compensation for Service members, one should note that the decision to enlist for most Service members likely assumes some increased risk, agnostic of where they will be deployed and in what role. As a result, it is possible that literature estimating the VSL for Service members or literature examining how Service members are compensated for risk underestimates both values.

The lower VSL estimate for Service members owes largely to age and wealth. An individual's willingness to pay for safety (e.g., how much people spend for vehicular safety measures) or their willingness to accept risk (e.g., how much extra people have to be paid to endure risk at a job) are functions of preferences and wealth. As individuals gain more wealth, they are willing to pay more for safety and have to be compensated more for risk. Aldy and Viscusi 2008¹⁴ looked at how the VSL varies with age. They found that the VSL for those 18 to 24 is about one third of the VSL of those 35 to 44, partially due to changes in wealth and income over time and partially due to changes in risk-aversion preferences with age.

The VSL is a tool to show the tradeoff individuals make between safety and monetary resources, and Federal agencies use it at the cost of taxpayer dollars to reduce the risks U.S. citizens are exposed to. Federal agencies that use VSL estimates include: the U.S. Environmental Protection Agency, with a VSL of \$7,400,000 in 2006 dollars (\$11,116,000 in 2023 dollars); the U.S. Department of Transportation, with a VSL of \$13,200,000 in 2023 dollars;¹⁵ and the U.S. Department of Health and Human services with a VSL of \$9,600,000 in 2013 dollars (\$9,684,000 in 2023 dollars).¹⁶

¹³ Adjusted from July 2015 to July 2023 using the U.S. BLS inflation calculator. It is possible that VSL has scaled more closely with income than with inflation, implying that the value could be larger. <https://data.bls.gov/cgi-bin/cpicalc.pl?cost1=656889&year1=201007&year2=202307>.

¹⁴ J. E. Aldy and W. K. Viscusi, "Adjusting the Value of a Statistical Life for Age and Cohort Effects," *Review of Economics and Statistics* 90, no. 3 (2008): 573–581, <http://www.jstor.org/stable/40043167>.

¹⁵ <https://www.transportation.gov/office-policy/transportation-policy/revised-departmental-guidance-on-valuation-of-a-statistical-life-in-economic-analysis>, accessed August 27, 2024.

¹⁶ <https://aspe.hhs.gov/reports/updating-vsl-estimates>, accessed August 27, 2024.

2. Types of Risk Compensation and Which Countries Qualify

A. Introduction

Military personnel are eligible for various special pays, allowances, and tax advantages that have the effect of compensating them for combat and related risks. This chapter begins by describing the types of compensation most directly related to combat risks:

- Hostile Fire Pay (HFP)
- Imminent Danger Pay (IDP)
- Combat Zone Tax Exclusion (CZTE)

In addition to describing the legislative history and current payment parameters for these forms of compensation, this chapter examines the processes by which countries or regions are designated for eligibility.

Other types of compensation have explicit rationales related to working conditions, long deployments, and extended family separations:

- Hazardous Duty Incentive Pays (HDIP)
- Hardship Duty Pay (HDP)
- Career Sea Pay (CSP) and Sea Duty Incentive Pay (SDIP)
- Family Separation Allowance (FSA)

The latter four types of compensation are not ostensibly related to combat risks. However, the numbers of individuals who qualify and the total amounts paid may be sensitive to the presence of combat operations that lead to extended deployments and unaccompanied tours.¹⁸ These types of compensation are not the primary focus of this analysis and will be discussed in Appendix A.

IDA considers one other program that is available to Service members stationed in essentially the same countries or regions that qualify for the CZTE:

¹⁸ In addition to these benefits, the heirs of Service members who die in the line of duty are entitled to several survivor benefits such as the Dependency and Indemnity Compensation (DIC) and the Survivors Pension. These ex-post benefits are beyond the scope of this particular report as they are not received directly by the Service member.

- Savings Deposit Program (SDP)

Finally, for purposes of comparison, IDA examines the Department of State's Danger Pay Allowance.

B. Hostile Fire Pay/Imminent Danger Pay

1. Amount

\$225/month

2. Legislative Authority

37 U.S.C. §310 (Special pay: duty subject to hostile fire or imminent danger)

3. Current Rationale

HFP and IDP are designed to compensate a Service member who

- a. Was subject to hostile fire or explosion of hostile mines
- b. Was on duty in an area in which the member was in imminent danger of being exposed to hostile fire or explosion of hostile mines and in which, during the period the member was on duty in the area, other members of the uniformed Services were subject to hostile fire or explosion of hostile mines
- c. Was killed, injured, or wounded by hostile fire, explosion of a hostile mine, or any other hostile action
- d. Was on duty in a foreign area in which the member was subject to the threat of physical harm or imminent danger on the basis of civil insurrection, civil war, terrorism, or wartime conditions¹⁹

Paragraphs (a) through (c) are *event-based* and qualify the member for HFP when exposed to hostile fire. Paragraph (d) is *location-based* and qualifies the member for IDP when serving in a foreign area subject to the risks detailed in that paragraph.²⁰

Members may *not* receive both HFP and IDP in the same month; either pays at a rate of \$225 per month and there is no duplication. However, HFP is paid for the entire month if at any time during the month a member is exposed to the conditions in paragraphs

¹⁹ 37 U.S.C. §310 (Special pay: duty subject to hostile fire or imminent danger). The letter-indexed paragraphs here correspond to subparagraphs under 37 U.S.C. §310(a)(2).

²⁰ We adopt the taxonomy of *event-based* and *location-based* qualifications from the excellent discussion in Beth J. Asch, James V. Marrone, and Michael G. Mattock, "An Examination of the Methodology for Awarding Imminent Danger Pay and Hostile Fire Pay," RAND Corporation, RR-3231-OSD, 2019, www.rand.org/pubs/research_reports/RR3231.html.

(a) through (c) above. IDP is prorated to a daily amount (1/30 of the monthly rate) for time served in a location described in paragraph (d).²¹

4. Areas Covered

The current IDP locations are listed in Table 1.

Table 1. Locations for Imminent Danger Pay

Afghanistan	Haiti	Pakistan
Algeria	Indonesia (portion)	Philippines (portion)
Azerbaijan	Iran	Saudi Arabia
Burkina Faso	Iraq	Somalia
Burma (Myanmar)	Israel	Somalia Basin
Burundi	Jordan	South Sudan
Cameroon (portion)	Kenya	Sudan
Chad	Kosovo	Syria
Colombia	Lebanon	Tunisia
Cuba	Libya	Turkey (portion)
Democratic Republic of Congo	Malaysia (portion)	Uganda
Djibouti	Mali	Ukraine
Egypt	Mediterranean Sea (portion)	Yemen
Ethiopia	Niger	

Source: Defense Finance and Accounting Service (DFAS), "Imminent Danger Pay," DoD Financial Management Regulation (FMR) Vol. 7A, Chapter 10, www.dfas.mil/militarymembers/payentitlements/Pay-Tables/IDP-Areas/, as of July 19, 2023.

The most recent addition is Ukraine, which was added July 13, 2023, retroactive to April 24, 2022.²²

²¹ 37 U.S.C. §310(b)(2) provides the Service Secretaries with authority to pay HFP for an entire month. There is no similar authority to extend IDP to an entire month without proration. DoD's policy to pay HFP for an entire month is expressed in DoD Instruction (DoDI) 1340.09, "Hazardous Pay Program," Section 3.1.c, last updated February 2, 2024.

²² Air Force Times, "US troops in Ukraine can now earn hazard pay," reported by Rachel S. Cohen, July 27, 2023, <https://www.airforcetimes.com/news/your-military/2023/07/27/us-troops-in-ukraine-can-now-earn-hazard-pay/>.

5. Decision-maker

a. Hostile Fire Pay

According to (DoDI) 1340.09:

The appropriate on-scene commander must certify that the service member was subjected to hostile fire, explosion of hostile mines, or other hostile action during a specific period, and meets the other requirements for HFP...

A death certificate or incident report documenting a service member's injury or wound from a hostile fire event may serve as a substitute for certification for purposes of HFP, as long as the document establishes that the cause of death, injury, or wound was due to a hostile fire event.²³

b. Imminent Danger Pay

A Combatant Command (COCOM) is defined as: "A unified or specified command with a broad continuing mission under a single commander established and so designated by the President, through the Secretary of Defense and with the advice and assistance of the Chair of the Joint Chiefs of Staff." For our purposes, it is important to distinguish the geographic COCOMs from the other, functional COCOMS as shown in Table 2.

Table 2. DoD Combatant Commands

Geographic Combatant Commands	Functional Combatant Commands
Africa Command	Cyber Command
Central Command	Special Operations Command
European Command	Strategic Command
Indo-Pacific Command	Transportation Command
Northern Command	
Southern Command	
Space Command	

Source: Department of Defense, "Combatant Commands," www.defense.gov/About/combatant-commands/.

²³ DoD Instruction (DoDI) 1340.09, "Hazardous Pay Program," Section 3.2.b, last updated February 2, 2024.

The process for determining the IDP locations is described in DoD Instruction (DoDI) 1340.09. The responsibilities are assigned to various offices as follows:

Geographic Combatant Commanders: Through the Director, Joint Staff, the geographic Combatant Commanders:

- Submit requests for areas to be designated as imminent danger areas, supported by a written assessment of the dangers or threats to Service members and their dependents in these areas, to the ASD(M&RA) [Assistant Secretary of Defense for Manpower and Reserve Affairs].
- Monitor the conditions within imminent danger areas to determine whether circumstances warrant continuation of imminent danger designations. Promptly forward written recommendations for modification or termination of such designations within their geographic area of responsibility to the Director, Joint Staff.
- In response to the periodic request of the ASD(M&RA), provide imminent danger area assessments of threat conditions that support continuing or terminating an imminent danger area designation. [DoDI 1340.09, Section 2.7]

*Director, Joint Staff:*²⁴

- Evaluates, in coordination with the Secretaries of the military departments, all geographic Combatant Commander imminent danger area designation requests.
- Confirms that geographic Combatant Commanders submit the periodic ASD(M&RA)-requested imminent danger area assessments. Based on the assessments, makes appropriate recommendations to the ASD(M&RA) on the continuation, modification, or termination of such designations. [DoDI 1340.09, Section 2.6]

Assistant Secretary of Defense for Manpower and Reserve Affairs, ASD(M&RA):

- Reviews and adjudicates imminent danger area designation requests from the Joint Staff based on the relevant geographic Combatant Commander's threat assessment report and the Assistant Secretary of Defense for International Security Affairs' (ASD(ISA)) politico-military analysis [who, in turn, reports to the Under Secretary of Defense for Policy]. [DoDI 1340.09, Section 2.1]

²⁴ The Director of the Joint Staff is a three-star Lieutenant General or Vice Admiral.

Under Secretary of Defense for Policy, USD(P):

- Provides politico-military analysis of the geographic Combatant Commander's threat assessment.
- Provides coordination regarding final parameters and effective date for commencement of the period during which IDP may be paid for duty performed in designated IDP area. [DoDI 1340.09, Section 2.4]

The USD(P) has the authority to delegate final approval to the ASD(M&RA) and has recently done so.

It is notable that the functional (i.e., nongeographic) Combatant Commanders do not have a *direct* role in the process of determining the IDP locations. This issue was raised in a 2019 RAND study based on interviews with subject matter experts. In particular, RAND observed that one difficulty with paying IDP to Special Operations personnel involves classification:

According to several interviewees, a further hindrance to paying IDP based on the (potential) presence of special operations in a region is that such missions may be classified, while the pay records and the IDP designation list are not. It would not be feasible to pay IDP in locations where the presence of U.S. troops is a matter of national security but the location is classified.²⁵

Regarding the participation of nongeographic Combatant Commanders in the IDP process, RAND went on to summarize its interviews:

In terms of SOCOM's [Special Operations Command's] role in the process, interviewees provided mixed responses. In some cases, interviewees reported that the relevant special operations regional command was consulted and, in some cases, closely involved; in others, they felt that the geographic COCOM was sufficiently aware of any relevant information that would have been supplied by SOCOM. And although SOCOM and other nongeographic commands cannot officially originate a designation package (per DoDI 1340.09), some interviewees indicated that they could do so in practice if they routed the request through the relevant geographic COCOM. Finally, interviewees said that all packages relevant to special operations forces eventually "went through."

Nevertheless, some people felt that SOCOM should be given more ownership of the IDP process, especially the origination of IDP packages. They argued that doing so would allow valuable information to be provided during the review and recommendation process that was not currently

²⁵ Beth J. Asch, James V. Marrone, and Michael G. Mattock, "An Examination of the Methodology for Awarding Imminent Danger Pay and Hostile Fire Pay," RAND Corporation, RR 3231 OSD, 2019, 23-24. www.rand.org/pubs/research_reports/RR3231.html.

provided regularly. Consequently, they felt that leaving nongeographic commands out of the official review process meant that such information would be received only on an ad hoc basis. One interviewee stated that the geographic COCOMs would still be important to the IDP process even if SOCOM took a more active role because geographic-related factors unrelated to special operations forces were also relevant to the IDP determination process.²⁶

6. Origin And Evolution²⁷

The recognition of combat risks goes back to Badge Pay for combat infantry in World War II. Designed to boost flagging infantry morale, Badge Pay awarded \$10 per month to holders of a Combat Infantryman’s Badge, earned through combat service; and \$5 per month to those with an Expert Infantryman’s Badge, earned through proficiency in training.

Combat Pay for Service members deployed to Korea, authorized in 1952, represented the first modern form of direct combat compensation. Combat Pay awarded \$45 per month to members serving at least six days in designated “combat units”; or those wounded, injured, or killed by hostile fire. Defined by statute, “combat units” were effectively restricted to frontline ground units, with the intent that special recognition extend only to those enduring the worst “hazards and hardships” of war. Receipt of additional special and incentive pays, such as flight or submarine pay, was banned.

Combat Pay statutorily expired with the Korean armistice in 1953. A decade later in 1963, during the Vietnam War, Combat Pay was reauthorized as Hostile Fire Pay. DoD had the authority to determine eligibility, which it extended to all members serving in Vietnam with no minimum number of days served. DoD progressively expanded eligibility to a broader geographical construct, foreshadowing IDP, which would not itself be established until 1983. In particular, in May 1965 at the behest of the Commander in Chief

²⁶ Beth J. Asch, James V. Marrone, and Michael G. Mattock.

²⁷ This section is adapted from histories contained in (a) Brandon R. Gould and Stanley A. Horowitz, “History of Combat Pay,” in Office of the Under Secretary of Defense for Personnel and Readiness, Report of the Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers, Department of Defense, June 2012, 210–266, archived at <https://militarypay.defense.gov/References/QRMC/>; (b) Department of Defense, “Military Compensation Background Papers: Compensation Elements and Related Manpower Cost Items – Their Purposes and Legislative Backgrounds,” Eighth edition, July 2018, https://militarypay.defense.gov/Portals/3/Documents/Reports/Mil-Comp_8thEdition.pdf?ver=2018-09-01-181142-307; and (c) Beth J. Asch, James V. Marrone, and Michael G. Mattock, “An Examination of the Methodology for Awarding Imminent Danger Pay and Hostile Fire Pay,” RAND Corporation, RR-3231-OSD, 2019, www.rand.org/pubs/research_reports/RR3231.html.

for the Pacific, the (since superseded) DoDI 1340.6 was revised to extend eligibility for HFP as follows:

- All personnel physically located in areas designated by the Secretary of Defense were eligible for HFP with the stipulation that Unified Commanders concerned had the prerogative to further restrict the pay to specific locations within the area designated.
- Any members killed, wounded, or injured by hostile fire, explosion of hostile mines, or any other hostile action any place in the world were granted HFP regardless of whether or not the incident occurred in a previously designated area.²⁸

In 1983, the terrorist bombing of the Marine Corps barracks in Beirut, which resulted in the deaths of 241 Marines, and violence against Service members in El Salvador prompted DoD and Congress to re-evaluate combat pay policy. As HFP was traditionally reserved for the overt hazards of open warfare, existing policy struggled to recognize the latent risks of low-intensity conflicts that characterized post-Vietnam military deployments. Congress redressed the omission by authorizing a new special pay: IDP. Specifically, Section 905 of the Department of Defense Authorization Act, 1984 amended 37 U.S.C. §310 to include the following criterion for Service members to receive IDP:

[A member of a uniformed service who] was on duty in a foreign area in which the member was subject to the threat of physical harm or imminent danger on the basis of civil insurrection, civil war, terrorism, or wartime conditions.²⁹

The enactment of IDP was largely spurred by Representative Patricia Schroeder (D-CO). The discussions at the time reveal her dissatisfaction with the lack of compensation for latent risks. To quote from an earlier IDA report:

In response to the events in Lebanon and El Salvador, Representative Patricia Schroeder (D-CO) introduced an amendment to the Department of Defense Authorization Act of 1984 granting “HFP for members serving in areas threatening imminent danger.” In brief congressional testimony, Representative Schroeder argued that the existing system of determining eligibility for HFP on a “case-by-case basis” was inadequate for recognizing the risks faced by “an American soldier or sailor in Beirut or San Salvador.” It was “wrong,” Schroeder claimed, that the family of a member killed by

²⁸ DoD Instruction (DoDI) 1340.06, “Special Pay for Duty Subject to Hostile Fire,” first issued November 21, 1963; since superseded by DoDI 1340.09, “Hazardous Pay Program,” last updated February 2, 2024.

²⁹ Department of Defense Authorization Act, 1984 (Public Law 98-94), Section 905, “Hostile Fire Pay for Members Serving in Areas Threatening Imminent Danger,” enacted September 24, 1983. That provision amended 37 U.S.C. §310, “Special pay: duty subject to hostile fire or imminent danger.”

hostile fire only “gets one month’s pay of \$65” for the death of their loved one. In place of event-based eligibility, Schroeder proposed extension of zonal eligibility to foreign areas where servicemembers were “subject to the threat of physical harm or imminent danger on the basis of civil insurrection, civil war, terrorism, or wartime conditions.” Under Schroeder’s proposal, soldiers deployed to designated dangerous areas such as Lebanon or El Salvador would receive IDP of \$65 per month even if not exposed to actual hostile fire.

Schroeder’s proposal received near-unanimous support within the executive and legislative branches. After removing retroactive eligibility for Lebanon and El Salvador at the urging of the Administration, the amendment passed without dissent on the floor of the House of Representatives. With the passage of the Defense Authorization Act on September [24], 1983, IDP became law. Immediately upon implementation on October 1, the Secretary of Defense designated Lebanon and El Salvador for the newly authorized pay.³⁰

More recently, Section 619 of the fiscal year (FY) 2004 National Defense Authorization Act (NDAA) unified HFP and IDP by equalizing the monthly rates at which they are paid.³¹ The rate of \$225 per month has not been increased since that time.

C. Combat Zone Tax Exclusion

1. Amount

Military compensation for both enlisted members and warrant officers earned while serving any part of a month in a covered area (described below) falls under the CZTE and is excluded from Federal income tax. The concept of “military compensation” in this instance includes bonuses and special pays if earned in the same month in which the individual served in a combat zone. However, it does not include pensions or retirement pay, which remain subject to the regular IRS rules on taxation upon receipt or withdrawal (26 U.S.C. §112(c)(4)).

³⁰ Brandon R. Gould and Stanley A. Horowitz, “History of Combat Pay,” in Office of the Under Secretary of Defense for Personnel and Readiness, Report of the Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers, Department of Defense, June 2012, 249–250, Statement by Rep. Schroeder from July 26, 1983.

³¹ National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136), Section 619, “Temporary Increase in the Authorized Amount of Hostile Fire and Imminent Danger Special Pay,” enacted November 24, 2003. The legislative history behind that provision is recounted in Military Compensation Background Papers, 211.

For commissioned officers, the monthly amount of compensation excluded is capped at the sum of

- a) The highest rate of monthly enlisted basic pay for a senior enlisted member serving as Sergeant Major of the Army or Marine Corps; Master Chief Petty Officer of the Navy or Coast Guard; Chief Master Sergeant of the Air Force; and Senior Enlisted Advisor of the Chairman of the Joint Chiefs of Staff (grade E-9) regardless of years of service; plus
- b) The monthly amount of HFP/IDP.³²

As of January 1, 2024, top enlisted basic pay is \$10,295 per month. When added to \$225 per month for HFP/IDP, the cap on tax exclusion for commissioned officers equals \$10,520 per month (an annual equivalent of \$126,240).

The CZTE is not a type of pay or allowance. DoD does not make any outlays (other than minimal administrative costs) in connection with the CZTE. Rather, the CZTE is an example of what the Joint Committee on Taxation (JCT) calls *tax expenditures*—“[Federal] revenue losses attributable to provisions of the Federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability.”³³

The value of the CZTE to a Service member depends on the member’s tax bracket. In turn, the tax bracket is determined not only by the member’s military pay and allowances, but also by spouse’s income, investment and other types of income, various tax deductions (mortgage interest, charitable contributions, etc., unless the family takes the standard deduction), and other factors. The proportion of taxpayers taking the standard deduction rose with passage of the Tax Cuts and Jobs Act of 2017.³⁴ The value of CZTE is not estimated by DoD; rather, it is estimated using Internal Revenue Service (IRS) records by JCT in its annual reporting of tax expenditures.³⁵

³² DoD Instruction (DoDI) 1340.25, “Combat Zone Tax Exclusion (CZTE),” Section 4(c), September 28, 2010. The calculation for commissioned officers was established in Section 1(d)(2) of Public Law 104-117, “Treatment of Certain Individuals Performing Services in Certain Hazardous Duty Areas,” enacted March 20, 1996.

³³ Joint Committee on Taxation, “Estimates of Federal Tax Expenditures for Fiscal Years 2023-2027,” December 7, 2023, 2, <https://www.jct.gov/publications/2023/jcx-59-23/>.

³⁴ Tax Policy Center, “Key Elements of the U.S. Tax System: How did the TCJA change the standard deduction and itemized deductions?” www.taxpolicycenter.org/briefing-book/how-did-tcja-change-standard-deduction-and-itemized-deductions.

³⁵ Joint Committee on Taxation, “Estimates of Federal Tax Expenditures for Fiscal Years 2023-2027,” December 7, 2023, Table 1, 29, <https://www.jct.gov/publications/2023/jcx-59-23/>.

2. Legislative Authority

26 U.S.C. §112 (Certain combat zone compensation of members of the Armed Forces)

3. Current Rationale

The CZTE shields members serving in designated combat zones from Federal income tax on most or all of their military earnings. The tax exclusion was introduced during World War I (WWI) to ensure that Service members fighting in the war would not also have to finance it through their own taxes. Later, during the Korean War, the exclusion was justified as compensation for members exposed to wartime risks. Many States follow the Federal example and exclude corresponding amounts from taxable earnings. More information on the historical rationale for the CZTE is found in Section 6 below.

4. Areas Covered

Per DoD Instruction 1340.25, Service members are eligible if for any period during a calendar month the member perform active service in

- A combat zone designated by the President by Executive order
- A Qualified Hazardous Duty Area (QHDA) designated by Congress, “provided a member is also entitled to [HFP/IDP]”, or are certified as in “direct support” to a combat zone or a QHDA, “and the member is entitled to HFP/IDP.”

The areas currently designated as either a combat zone or a QHDA are shown in Table 3.

Table 3. Designated Combat Zones and Qualified Hazardous Duty Areas

Location	Combat Zone	Qualified Hazardous Duty Area (QHDA)	Date
Afghanistan Area	Executive Order No. 13239		September 19, 2001
Arabian Peninsula Area	Executive Order No. 12744		January 17, 1991
Kosovo Area (former Yugoslavia)	Executive Order No. 13119		March 24, 1999
Kosovo Area (former Yugoslavia)		Public Law 106-21	April 19, 1999
Sinai Peninsula		Public Law 115-97	Enacted December 22, 2017, retroactive to June 2015

Source: Internal Revenue Service, “Combat Zones Approved for Tax Benefits,” <https://www.irs.gov/individuals/military/combat-zones>, last updated August 8, 2023.

The complete list of 23 countries that currently qualify for the CZTE is shown in Table 4. Each row of the table contains the dates at which a still-extant combat zone or QHDA was established that contains the subject country or region; and the dates at which

“in support” status (if any) was certified. The middle column indicates that date that an extant IDP designation was made. IDP designation is an important indicator of the risk to Service members in a particular country. As described below, IDP is sometimes a trigger for CZTE eligibility.

The final two columns in Table 4 indicate the named U.S. military operations (if any) in which the subject country participated, both when the combat zone or QHDA was initially established, and at present. Operation Freedom’s Sentinel (OFS) officially began in January 2015 after the close of Operation Enduring Freedom (OEF) in and around Afghanistan. Operation Inherent Resolve (OIR) officially began in October 2014 with the mission to support Iraqi Security Force operations against the Islamic State of Iraq and the Levant (ISIL). OIR is the descendant of Operation Iraqi Freedom (OIF), which was followed by the intervening Operation New Dawn (OND). Operation Prosperity Garden (OPG) began in December 2023 to protect commercial shipping in the Red Sea from Houthi attacks originating in Yemen.³⁶

³⁶ Department of Defense, “Statement from Secretary of Defense Lloyd J. Austin III on Ensuring Freedom of Navigation in the Red Sea,” December 18, 2023, <https://www.defense.gov/News/Releases/Release/Article/3621110/statement-from-secretary-of-defense-lloyd-j-austin-iii-on-ensuring-freedom-of-n/>.

Table 4. Countries that Currently Qualify for the Combat Zone Tax Exclusion

Country	Combat Zone / QHDA Established	In Direct Support Established	Imminent Danger Pay Established	Original Named Operation	Current Named Operation
Afghanistan	Sep. 2001		Nov. 1988	OEF	OFS
Bahrain	Jan. 1991			ODS	OIR
Djibouti		Jul. 2002	Jul. 2002	OEF	
Egypt (Sinai Peninsula)	Jun. 2015		Jan. 1997	OEF	
Iraq	Jan. 1991		Sep. 1990	ODS	OIR
Israel		Mar. 2023	Jan. 2002		OIR
Jordan		Sep. 2001	Jan. 1997	OEF / OIF	OIR
Kenya		Sep. 2023	Jul. 2002	OEF	
Kosovo Area*	Mar. 1999		removed May 2014	OAF	
Kuwait	Jan. 1991			ODS	OIR
Lebanon		Feb. 2015	Oct. 1983		OIR
Oman	Jan. 1991			ODS	OIR
Pakistan		Sep. 2001	Nov. 1996	OEF	
Qatar	Jan. 1991			ODS	OIR
Saudi Arabia	Jan. 1991		Sep. 2019	ODS	OIR
Somalia		Jan. 2004	Sep. 1992	OEF	
Syria		Jan. 2004	Jul. 2003	OEF	OIR
Turkey**		Sep. 2016	Jan. 1997	OEF	OIR
United Arab Emirates	Jan. 1991			ODS	OIR
Yemen		Apr. 2002	May 1999	OEF	OPG

Sources: Defense Finance and Accounting Service, “Designated Direct Support Areas of a Combat Zone (CZ),” www.dfas.mil/militarymembers/payentitlements/Pay-Tables/CZ2/, last updated November 28, 2023; and Defense Finance and Accounting Service, “Imminent Danger Pay,” DoD Financial Management Regulation, Vol. 7A, Chapter 10, www.dfas.mil/militarymembers/payentitlements/Pay-Tables/IDP-Areas/, last updated July 19, 2023.

Notes: OAF = Operation Allied Force, ODS = Operation Desert Storm, OEF = Operation Enduring Freedom, OFS = Operation Freedom’s Sentinel, OIF = Operation Iraqi Freedom, OIR = Operation Inherent Resolve, OPG = Operation Prosperity Garden, QHDA = Qualified Hazardous Duty Area.

* The Kosovo Area, which includes Kosovo as well as the neighboring countries of Albania, Montenegro, and Serbia, remains eligible for the CZTE, despite the removal of IDP for the neighboring countries in May 2014, because they combine to form a combat zone under Executive Order No. 13119.

** As of September 19, 2016, only the portion of Turkey east of 33.51 degrees east longitude remains in direct support of the Arabian Peninsula combat zone and thereby eligible for the CZTE.

5. Decision-maker

a. Combat Zone

The President may designate a combat zone by Executive order:

The term “combat zone” means any area which the President of the United States by Executive Order designates, for purposes of this section or corresponding provisions of prior income tax laws, as an area in which Armed Forces of the United States are or have engaged in combat. [26 U.S.C. §112(c)(2)]

Each of the Executive orders currently designating a combat zone (12744, 13119, and 13239) references Section 112 of the Internal Revenue Code. In each case, combat zones are explicitly designated “for the purposes of that section [26 U.S.C. §112].” The combat zone designation is therefore specific to the CZTE.

b. QHDA

Congress may establish a QHDA by legislation. Congress voted to designate the Kosovo Area (former Yugoslavia) as a QHDA, but President William J. Clinton had already issued Executive Order No. 13119 on March 24, 1999, some 26 days before he signed what became Public Law 106-21 on April 19, 1999.³⁷ Thus, the Kosovo Area is both a QHDA and a combat zone. As a combat zone, it is eligible for the CZTE, independent of whether Service members receive HFP/IDP. If the zone were only a QHDA, Service members would also need to receive HFP/IDP while serving there in order to be eligible for the CZTE.

More recently, in December 2017 Congress designated the Sinai Peninsula (a portion of Egypt) as a QHDA under the Tax Cuts and Jobs Act of 2017 (Public Law 115-97).³⁸ Because both of those bills affected Federal tax revenues, they originated in the House Committee on Ways and Means (*not* in either the House or Senate Armed Services Committees).

Importantly, the legislative language establishing a QHDA may require that the area also be designated for HFP/IDP in order to trigger the CZTE. For example, in the designation of the Kosovo Area as a QHDA:

³⁷ “An Act to Extend the Tax Benefits Available with Respect to Services Performed in a Combat Zone to Services Performed in the Federal Republic of Yugoslavia (Serbia/Montenegro) and Certain Other Areas, and for Other Purposes,” Public Law 106-21, enacted April 19, 1999.

³⁸ Section 11026, “Treatment of certain individuals performing services in the Sinai Peninsula of Egypt,” of the Tax Cuts and Jobs Act of 2017, Public Law 115-97, enacted December 22, 2017.

GENERAL RULE.—For purposes of the following provisions of the Internal Revenue Code of 1986, a qualified hazardous duty area shall be treated in the same manner as if it were a combat zone ... [if] **any member of the Armed Forces of the United States is entitled to special pay under Section 310 of title 37, United States code (relating to special pay; duty subject to hostile fire or imminent danger)**, for services performed in such area.³⁹

[bold emphasis added]

Similarly, in the designation of the Sinai Peninsula as a QHDA:

QUALIFIED HAZARDOUS DUTY AREA.—For purposes of this section, the term “qualified hazardous duty area” means the Sinai Peninsula of Egypt, if as of the date of the enactment of this section **any member of the Armed Forces of the United States is entitled to special pay under section 310 of title 37, United States Code (relating to special pay; duty subject to hostile fire or imminent danger)**, for services performed in such location. Such term includes such location only during the period such entitlement is in effect.⁴⁰

[bold emphasis added]

The Sinai Peninsula satisfies the latter stipulation of the QHDA because Egypt has remained designated for IDP since January 1997 (see Table 4). The Kosovo Area, which includes Kosovo as well as the neighboring countries of Albania, Montenegro, and Serbia, remains eligible for the CZTE despite the removal of IDP for the neighboring countries, because they all combine to form a combat zone under Executive Order No. 13119. As of September 2022, only 30 U.S. military personnel were permanently stationed in Kosovo, with a total force of only 40 personnel in Albania, Montenegro, and Serbia.⁴¹

c. Countries in Direct Support

DoD has the authority to add countries from which deployed U.S. military personnel or units provide direct support to military operations in either a designated combat zone or a QHDA, as long as those certifications conform to guidance from the Department of Treasury.⁴² The third column of Table 4 identifies all such “direct support” countries.⁴³ For

³⁹ Section 1(c) of Public Law 106-21, enacted April 19, 1999. See also DoD Instruction (DoDI) 1340.25, “Combat Zone Tax Exclusion (CZTE),” Section 4(b)(2), September 28, 2010.

⁴⁰ Section 11026(b) of Public Law 115-97, and DoD Instruction 1340.25.

⁴¹ Department of Defense, Defense Manpower Data Center, “DoD Personnel, Workforce Reports & Publications: Military and Civilian Personnel by Service/Agency and State/Country,” <https://dwp.dmdc.osd.mil/dwp/app/dod-data-reports/workforce-reports>.

⁴² Department of the Treasury, Internal Revenue Service, 26 CFR (Code of Federal Regulations) § 1.112-1, “Combat zone compensation of members of the Armed Forces.”

⁴³ See Internal Revenue Service, “Combat Zones Approved for Tax Benefits,” www.irs.gov/individuals/military/combat-zones, last updated August 8, 2023;

example, DoD has added several countries in direct support of the Afghanistan Combat Zone: Yemen (April 2002), Djibouti (July 2002), and Somalia (January 2004) and Syria (January 2004). DoD also recently added Israel (March 16, 2023) in direct support of the Arabian Peninsula Combat Zone.

DoDI 1340.25 stipulates that the CZTE for direct support countries must again be triggered by the designation of those countries for HFP/IDP. For example, in September 2001, DoD certified the Central Asian countries of Kyrgyzstan, Tajikistan, and Uzbekistan as being in direct support of the Afghanistan Combat Zone. But military members currently serving in those countries are no longer eligible for the CZTE because DoD removed the prerequisite IDP designation in May 2014. As of September 2022, a total of only 40 U.S. military personnel were permanently stationed in those three countries.

6. Origin and Evolution⁴⁴

a. Duration of Combat Zones

The tax exclusion was originally established in World War I (WWI) to alleviate the burden of war finance from those who fought in the nation's conflicts. Military personnel were covered regardless of where they served. This policy persisted through WWII. The income tax exclusion during the Korean War was justified as compensation for members exposed to wartime risks; it was not targeted on specific units or occupations but was limited to clearly identifiable areas of risk. This philosophy has persisted since, then but its application has changed over time.

Early combat zones were time-limited by statute, but benefits still outlived the combat conditions. WWI benefits continued until 1921, and WWII benefits continued until 1949. Korean War benefits were curtailed soon after combat operations ended.

The Vietnam Combat Zone continued long after President Ford declared the end of U.S. participation in that conflict as of April 1975.⁴⁵ The rationale for not terminating the

or Defense Finance and Accounting Service, "Designated Direct Support Areas of a Combat Zone (CZ)," www.dfas.mil/militarymembers/payentitlements/Pay-Tables/CZ2/, last updated November 28, 2023.

⁴⁴ This section is adapted from histories contained in (a) Brandon R. Gould and Stanley A. Horowitz, "History of the Combat Zone Tax Exclusion," in Office of the Under Secretary of Defense for Personnel and Readiness, Report of the Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers, Department of Defense, June 2012, 267-299, archived at <https://militarypay.defense.gov/References/QRMC/>; and (b) Beth J. Asch, James V. Marrone, and Michael G. Mattock, "An Examination of the Methodology for Awarding Imminent Danger Pay and Hostile Fire Pay," RAND Corporation, RR-3231-OSD, 2019, www.rand.org/pubs/research_reports/RR3231.html.

⁴⁵ The White House, President Gerald R. Ford, speech at Tulane University, April 23, 1975, documented at <https://www.history.com/this-day-in-history/ford-says-that-war-is-finished-for-america>.

combat zone was to ensure that possible prisoners of war (POWs) or members missing in action (MIA) who may have still been alive would continue to receive the CZTE benefit. The combat zone continued until June 30, 1996, long after any known living POWs were released.⁴⁶ During the two decades that the Vietnam Combat Zone continued after the war, only a small number of military members were present in Vietnam—and usually for only a short duration. Although the duration of the combat zone was extended, the geographical scope was initially restricted. Although the war had spread to Cambodia and Laos, the narrow coverage, which included only Vietnam proper, was not extended to the other two countries until 1970.

b. Establishment of Combat Zones

Contrary to the postconflict continuation, combat zones have historically “turned on” relatively quickly. Combat zones have typically been designated in proximity to the beginning of U.S. participation in ongoing conflict. This observation includes both historical and current combat zones and QHDAs.

The Revenue Act of 1918 began tax exclusion benefits for U.S. Service members serving in WWI when it was enacted on February 24, 1919.⁴⁷ This Revenue Act followed the United States’ entrance into the conflict in April 1917 by approximately 23 months.

The WWII-era equivalent of the CZTE was initially included in the Revenue Act of 1942, which was enacted in October of that year.⁴⁸ These benefits followed the United States’ 1941 entrance into the war by approximately 10 months.

The Revenue Act of 1950 began tax exclusion benefits for Service members in that year, following the North Korean invasion of South Korea. The United States entered the conflict in July of 1950, and the Revenue Act was signed into law by President Truman on September 23, 1950.⁴⁹

⁴⁶ The White House, President William J. Clinton, Executive Order 13002, “Termination of Combat Zone Designation in Vietnam and Waters Adjacent Thereto,” May 13, 1996, archived at <https://clintonwhitehouse6.archives.gov/1996/05/1996-05-14-executive-order-terminating-vietnam-as-combat-zone.html>.

⁴⁷ G. Roy and Gladys C. Blakey, “The Revenue Act of 1918,” *The American Economic Review* 9, no. 2 (June 1919): 213, <http://www.jstor.org/stable/1823605>.

⁴⁸ Revenue Act of 1942: Questions and Answers Containing an Analysis Relative to Public Law No. 753, an Act to Provide Revenue, and for Other Purposes, Approved October 21, 1942, H.R. Document no. 908, 77th Cong. (1942) (enacted), <https://li.proquest.com/elhpdf/histcontext/10695-H.doc.908.pdf>. And Brandon R. Gould and Stanley A. Horowitz, “History of the Combat Zone Tax Exclusion,” in Office of the Under Secretary of Defense for Personnel and Readiness, Report of the Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers, Department of Defense, June 2012, 267, archived at <https://militarypay.defense.gov/References/QRMC>.

⁴⁹ “Revenue Act of 1950,” *CQ Almanac 1950*, 6th ed., 573–595. Washington, DC: Congressional Quarterly, 1951, <http://library.cqpress.com/cqalmanac/cqal50-1375509>.

Benefits for those serving in the Vietnam War lagged behind the conflict's start. The Vietnam War began in 1955, with U.S. advisors deploying to the region in the 1950s.⁵⁰ However, combat tax benefits were not awarded to Service members in Vietnam until 1965, coinciding with ground troops arriving in the country.⁵¹

c. Combat Zones since the 1990s

The Arabian Peninsula was designated a combat zone on January 17, 1991, while conflict in the area began largely in August 1990 with the Iraqi invasion of Kuwait.⁵² The Combat Zone's designation, however, coincides with the beginning of the Gulf War (Operation Desert Storm, or ODS) and the United States-led coalition's air and ground campaigns on January 16, 1991.⁵³

It is sometime possible to trace the policy discussions that led to the post-1990 combat zone or QHDA designations. President William J. Clinton designated the Kosovo Area Combat Zone via Executive Order No. 13119 on March 24, 1999. Combat within Kosovo began earlier, with conflict between Serbian forces and police under Slobodan Milošević, the President of Serbia at the time, and the Kosovo Liberation Army.⁵⁴ On March 24, 1999, the designation date of the combat zone, the United States joined Operation Allied Force, a NATO-led air campaign, which would last until June 1999.⁵⁵ In his statement that accompanied the Executive order, President Clinton provided the following background and explanation:

Working For A Peaceful Solution For Kosovo. The United States and our NATO allies made repeated efforts to obtain a peaceful solution to the crisis in Kosovo. However, President Milosevic, who started the wars against Croatia and Bosnia, chose aggression over peace and violated the commitments he made last fall to stop the brutal repression of Kosovo.

⁵⁰ Brandon R. Gould and Stanley A. Horowitz, "History of the Combat Zone Tax Exclusion," in Office of the Under Secretary of Defense for Personnel and Readiness, Report of the Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers, Department of Defense, June 2012, 267–299, archived at <https://militarypay.defense.gov/References/QRMC>.

⁵¹ Ronald H. Spector, "Vietnam War," *Britannica*, October 24, 2024, <https://www.britannica.com/event/Vietnam-War>.

⁵² "The Gulf War, 1991," *Office of the Historian*, accessed October 24, 2024, <https://history.state.gov/milestones/1989-1992/gulf-war>.

⁵³ "The Gulf War, 1991."

⁵⁴ "Kosovo Conflict," *Britannica*, accessed October 24, 2024, <https://www.britannica.com/event/Kosovo-conflict>.

⁵⁵ "25th Anniversary of Kosovo Peacekeeping Mission," *VFW*, March 20, 2024, <https://www.vfw.org/media-and-events/latest-releases/archives/2024/3/25th-anniversary-of-kosovo-peacekeeping-mission#:~:text=U.S.%20troops%20became%20involved%20in,entered%20Kosovo%20on%20the%20ground>.

President Milosevic also rejected the peace accords that NATO proposed last month and Kosovo's ethnic Albanians courageously accepted.

Acting To End The Crisis In Kosovo. President Milosevic's forces have intensified their attacks of burning down Kosovar Albanian villages and murdering innocent civilians. As a result, 60,000 Kosovars have fled their homes in the past five weeks, and a million of them are refugees in neighboring countries like Albania and Macedonia. The United States and NATO allies' air strikes have three objectives:

- To deter President Milosevic from continuing to escalate his attacks on helpless civilians by imposing a price for those attacks.
- To demonstrate the seriousness of NATO's opposition to aggression and its support for peace.
- If necessary, to damage Serbia's capacity to wage war against Kosovo in the future by seriously diminishing its military capabilities.

Standing Against Ethnic Violence And Atrocity. President Clinton is aware of the risks that military action carries. However, the President believes that the dangers of acting now clearly outweigh the risks of failing to act--the risks of more innocent people being killed or driven from their homes, or the risks that the conflict in Kosovo will eventually involve and destabilize neighboring NATO allies like Greece and Turkey. Our NATO allies unanimously supported today's air strikes, and the United States must stand with them.⁵⁶

President George W. Bush designated Afghanistan as a combat zone in an Executive order signed December 12, 2001 (Executive Order No. 13239). Although the Executive order was signed 3 months after the 9/11 attacks, it designated September 19, 2001 "as the date of the commencement of combatant activities" in that combat zone. On September 18, 2001, President Bush had signed a law that "authorized [the President] to use all necessary and appropriate force against those nations, organizations, or persons he determines planned, authorized, committed, or aided the terrorist attacks that occurred on September 11, 2001."⁵⁷ That law anticipated by 20 days the United States' entry into Operation Enduring Freedom on October 7, 2001.⁵⁸

The House of Representatives' reports to accompany two versions of the bill that finally became Public Law 115-97—which designated the Sinai Peninsula as a QHDA

⁵⁶ The White House, "President Clinton Taking a Stand for Peace in Europe," March 24, 1999, archived at <https://clintonwhitehouse3.archives.gov/WH/Work/032499.html>.

⁵⁷ Joint Resolution to authorize the use of United States Army Forces against those responsible for the recent attacks launched against the United States (Public Law 107-40), enacted September 18, 2001.

⁵⁸ "1992 – 2021 The U.S. War in Afghanistan," *Council on Foreign Relations*, accessed October 24, 2024, <https://www.cfr.org/timeline/us-war-afghanistan>.

retroactive to June 2015—did not explain the rationale for creating a QHDA. However, several conflicts were ongoing in the Sinai Peninsula region, which historically had been the subject of conflict resolution work, such as peacekeeping efforts between Israel and Egypt.⁵⁹ But the likely driver for enacting the Sinai Peninsula QHDA was the presence of active terrorist organizations and counterterrorism measures in the region. Al-Qaeda in the Sinai Peninsula had been active for approximately a decade before it pledged allegiance to the Islamic State in 2014. Al-Qaeda’s activity in the region appears to be the principal motivation behind the QHDA enactment. Of the current combat zones and QHDAs, the Sinai Peninsula seems the most delayed in enactment of benefits, similar to the Vietnam War case.

Two earlier congressional actions did contain explanatory statements. Both actions were designed to acknowledge the spread of then ongoing U.S. or allied military operations to additional nearby countries. In some cases, the U.S. could be contributing to NATO or United Nations operations rather than its own named operations.

First, in March 1996, Public Law 104-117 designated Bosnia and Herzegovina, Croatia, and Macedonia (“Balkans”) as forming a QHDA. The House of Representative’s report provided this explanation:

The bill, as amended, is intended to treat service by United States Armed Forces (and support) personnel in Bosnia and Herzegovina, Croatia, or Macedonia in the same manner as if it were combat zone service for purposes of the Internal Revenue Code **as long as the personnel are entitled to receive hostile fire/imminent danger pay for services in such country**. Members of the Armed Forces are in Bosnia and Herzegovina and Croatia as part of “Operation Joint Endeavor” (the NATO operation) and in Macedonia as part of “Operation Able Sentry” (the United Nations operation). The bill, as amended, also makes the suspension of time provisions of [26 U.S. Code §7508] applicable to other Operation Joint Endeavor personnel.⁶⁰
[bold emphasis added]

Deployments to those countries have not been eligible for the CZTE since the prerequisite IDP designation expired back in October 2007.

Second, in April 1999, Public Law 106-21 designated the Federal Republic of Yugoslavia (Serbia/Montenegro) and certain other areas as forming a QHDA. The House of Representative’s report provided this explanation:

⁵⁹ “Mission,” *Multinational Force & Observers*, accessed October 24, 2024, <https://mfo.org/>.

⁶⁰ “An Act to Provide That Members of the Armed Forces Performing Services for the Peacekeeping Efforts in Bosnia and Herzegovina, Croatia, and Macedonia Shall Be Entitled to Tax Benefits in the Same Manner As If Such Services Were Performed in a Combat Zone, and for Other Purposes,” Public Law 104-117, enacted March 20, 1996.

The bill contains two elements. First, the bill treats the Federal Republic of Yugoslavia (Serbia/Montenegro), Albania, the Adriatic Sea, and the northern Ionian Sea above the 39th parallel (including all of their air spaces) as a qualified hazardous duty area. Consequently, military personnel serving in those areas are entitled to relief under all eight of the hazardous duty area provisions listed above ...

Second, the bill also provides that military personnel performing services outside of those areas but still a part of Operation Allied Force qualify for the suspension of time provisions in [26 U.S. Code §7508] during the period that hostile fire/imminent danger pay is paid with respect to those areas, provided that those services are performed both outside the United States and while deployed away from that individual's duty station.

Accordingly, the bill provides the same treatment for those serving in (or in support of) Operation Allied Force [a NATO operation] as is provided under present law to those serving in (or in support of) Operation Joint Endeavor [also a NATO operation].⁶¹
[bold emphasis added]

As mentioned above, the countries in what has become known as the Kosovo QHDA are no longer eligible for CZTE since the May 2014 removal of their IDP designation.

d. Summary

Combat zones are established by the President through Executive order. Service members are eligible for CZTE for months in which they serve in a combat zone, regardless of whether they receive HFP/IDP. QHDAs are established by Congress. Service members are eligible for CZTE for months in which they serve in a QHDA if they also receive HFP/IDP for service in that location. Since 1990, the designations of combat zones and QHDAs has generally been made either concurrent with or proximal in time to the commencement of major U.S. military action in a region. The designations sometimes lag the general conflict in a region but coincide with the start of major U.S. involvement (e.g., the U.S. entry into ODS in January 1991, trailing the Iraqi invasion of Kuwait by five months but coinciding to the day with the start of ODS). Designations of combat zones and QHDAs invariably *start* in close proximity to precipitating events (e.g., the U.S. entry into OEF in October 2001, with the designation quickly trailing the 9/11 attacks).

In contrast, some post1990 combat zone designations have persisted for decades after major conflict has ended. As shown in Table 4, seven countries (Bahrain, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates), as well as several bodies of water not listed were first designated for the Arabian Peninsula Combat Zone in January 1991

⁶¹ "An Act to Extend the Tax Benefits Available with Respect to Services Performed in a Combat Zone to Services Performed in the Federal Republic of Yugoslavia (Serbia/Montenegro) and Certain Other Areas, and for Other Purposes," Public Law 106-21, enacted April 19, 1999.

and still retain that status. The risk profiles of several of these countries have changed in the ensuing decades. As Chapter 3 shows, among those countries only Iraq has had (quite a few) recent casualties. As seen in the example of Vietnam, which retained its combat zone designation until 1996, more than two decades after the Vietnam War, combat zones have proven far easier to establish than to disestablish.

D. Savings Deposit Program

1. Amount

Balances (past deposits plus accrued interest) under this program that total up to \$10,000 earn interest at an annual rate of 10 percent, compounded quarterly. Any additional balances in excess of \$10,000 do not earn interest. Assuming, for example, a market interest rate of 4 percent on certificates of deposit (CDs), the maximum value of the benefit (i.e., the gain from the above-market interest rate) is roughly \$600 per year. Withdrawals are subject to Federal income tax according to regular IRS rules.

DoD outlays for the SDP are only a few million dollars per year. For example, U.S. troop levels in the Middle East reached a recent high during FY 2020, including 16,025 troops engaged in Operation Freedom's Sentinel in Afghanistan (falling to essentially zero by the end of the next fiscal year with the U.S. withdrawal in August 2021), and 5,487 troops engaged in OIR in Iraq and Syria.⁶² Even during that busy year, some 7,769 officers received average annual interest of \$425, while 10,186 enlisted personnel received average interest of \$339. The grand total outlay was \$6.8 million.

2. Legislative Authority

10 U.S.C. §1035 (Deposits of savings).

3. Current Rationale

The DoD Savings Deposit Program was established to provide members of the uniformed Services an opportunity to invest in their financial savings while serving in a designated combat zone, or to receive HF/IDP while receiving hostile fire or IDP while serving in a QHDA or in a designated direct support area of a combat zone.⁶³

⁶² Department of Defense, Under Secretary (Comptroller), "Defense Budget Overview: United States Department of Defense, Fiscal Year 2022 Budget Request," May 2021, 7-3, <https://comptroller.defense.gov/Budget-Materials/>.

⁶³ Defense Finance and Accounting Service, "DoD Savings Deposit Program," <https://www.dfas.mil/MilitaryMembers/sdp/>.

4. Areas Covered

Service members are eligible for the SDP if they meet the conditions specified in the DoD Financial Management Regulation:

2.1.1. Effective May 1, 2016, any member, serving in an assignment outside of the United States, its possessions, or the Commonwealth of Puerto Rico for at least 30 consecutive days or 1 day for each 3 consecutive months is eligible to participate in SDP if serving:

2.1.1.1. In a Combat Zone (CZ); or

2.1.1.2. While qualified to receive hostile fire or imminent danger pay while in a:

2.1.1.2.1. Qualified Hazardous Duty Area (QHDA); or

2.1.1.2.2. Designated direct support area of a CZ.

Further, the accrual of interest terminates at the earlier of these two dates:

2.8.1. at the end of the month in which full repayment is made to the member or member's heirs, or

2.8.2. 90 days ... after the member's eligibility to make deposits terminates.⁶⁴

All of the countries listed as “in direct support” in Table 4 are also currently designated for IDP, except for Central Asia that is banded in a darker color. Therefore, all of the other countries in Table 4 qualify for the SDP. In particular, countries in the Kosovo Area (including Albania, Montenegro, and Serbia) qualify for SDP because that area is a combat zone (in accordance with Executive Order No. 13119) as well as a QHDA. As noted in Section 2.C.5.b, only 70 U.S. military personnel were permanently stationed in the Kosovo Area as of September 2022.

5. Decision-maker

The President may designate a combat zone by Executive order, and Congress may establish a QHDA by legislation. IDPs are determined by a chain of command at DoD culminating with USD(P), as described in Section 5.B.

6. Origin And Evolution

A Congressional Act of August 14, 1966 authorized members of the uniformed Services who were serving on a permanent duty assignment outside the United States or

⁶⁴ Department of Defense, Financial Management Regulation, DoD 7000.14-R, “Savings Programs,” Volume 7A, Chapter 51, Section 2.1 (Eligibility), https://comptroller.defense.gov/Portals/45/documents/fmr/Volume_07a.pdf, last updated May 2024.

its possessions to make deposits.⁶⁵ Amounts up to \$10,000 could be deposited, with interest accrual at the rate of 10 percent per annum. This program was phased out effective June 30, 1974, except for members in a missing status resulting from service during the Vietnam Conflict: their accounts continued.

The program was restarted to allow members of the Armed Forces to make deposits when (a) serving outside the United States or its possessions under arduous conditions (as determined by the Secretary of Defense) in connection with the Persian Gulf Conflict (e.g., Operation Desert Shield, including Desert Storm) or (b) on permanent duty assignment outside the United States or its possessions in support of a contingency operation (in a QHDA).

Effective January 1, 1997, members of the Armed Forces serving on Operation Joint Guard (a NATO peacekeeping operation in Bosnia and Herzegovina) outside the United States or its possessions became authorized to make deposits.

Effective June 20, 1998, any member assigned to Operation Joint Forge (the follow-up operation in Bosnia and Herzegovina) became authorized to participate in the SDP, provided that he or she had served for at least 30 consecutive days or at least 1 day in each of 3 consecutive months in the Operation Joint Forge area of eligibility.

E. Department of State's Danger Pay Allowance

1. Amount

The Danger Pay Allowance [5 U.S.C. §5928 (Danger pay allowance)] provides additional compensation for State Department employees serving at designated danger pay posts. It is paid as a percentage of basic compensation in 15, 25, and 35-percent increments. In addition to being paid to permanently assigned personnel, danger pay may also be paid to employees on temporary duty or detail to the post.⁶⁶

State Department employees receive danger pay as a percentage of their basic compensation. Neither overtime and other premium pay nor other allowances are factored into the calculation of danger pay. Further, danger pay is paid only for hours for which basic compensation is paid.⁶⁷

⁶⁵ An Act to amend Section 1035 of Title 10, United States Code (Public Law 89-538), enacted August 14, 1966.

⁶⁶ Department of State, Office of Allowances, "Danger Pay," https://aoprals.state.gov/content.asp?content_id=205&menu_id=75.

⁶⁷ Department of State, Office of Allowances, "Frequently Asked Questions: Danger Pay," https://aoprals.state.gov/content.asp?content_id=177&menu_id=75.

A Danger Pay Allowance may not exceed 35 percent of the basic pay of the employee, except that if an employee is granted an additional differential with respect to an assignment [under 5 U.S.C. §5925 (Post differentials)], the sum of that additional differential and any Danger Pay Allowance granted to the employee with respect to that assignment may not exceed 35 percent of the basic pay of the employee.⁶⁸

Post differentials, in turn, may be granted on the basis of conditions of environment that differ substantially from conditions of environment in the continental United States and warrant additional pay as a recruitment and retention incentive. A post differential may be granted to an employee officially stationed in the United States who is on extended detail in a foreign area.

For those not qualifying for the Danger Pay Allowance described above, a Danger Pay Allowance may be granted to State Department employees who accompany U.S. military forces designated by the Secretary of Defense as eligible for IDP. The amount of danger pay is the same flat rate amount as the IDP amount paid to uniformed military personnel: currently \$225 per month. The two types of danger pay may not be paid simultaneously.

2. Legislative Authority

5 U.S.C. §5928 (Danger pay allowance).

3. Current Rationale

An employee serving in a foreign area may be granted a Danger Pay Allowance on the basis of (1) civil insurrection, (2) civil war, (3) terrorism, or (4) wartime conditions that threaten physical harm or imminent danger to the health or well-being of the employee.⁶⁹

4. Areas Covered

A Department of State website lists the areas covered by the Danger Pay Allowance and the corresponding allowance percentages (15, 25, or 35 percent).⁷⁰

⁶⁸ 5 U.S.C. §5928 (Danger pay allowance).

⁶⁹ 5 U.S.C. §5928 (Danger pay allowance).

⁷⁰ Department of State, Office of Allowances, "Danger Pay Allowance: Percentage of Basic Compensation," https://aoprals.state.gov/Web920/danger_pay_all.asp.

5. Decision-maker

The State Department determines Danger Pay locations through the Security Environment Threat List (SETL) process, which involves both the leadership team at every post and a team of experts in threat analysis at Diplomatic Security (DS).⁷¹

The SETL is an annual process that every post undertakes with DS's Office of Intelligence and Threat Analysis. On the post side, SETL involves the Regional Security Officer and the Emergency Action Committee (EAC), which is led by the Deputy Chief of Mission and consists of post leadership and agency heads. The EAC reports on security conditions across several categories, including crime, political violence, and terrorism. Each post is rated by DS threat analysis experts in each category as low, medium, high, or critical, depending on the conditions and events at that post. Actions that are specifically targeted at U.S. Government personnel and interests are rated more heavily than actions that are not. The host government's willingness and ability to provide security and protection to U.S. personnel and interests is also a significant factor.

The State Department's Assistant Secretary for Administration makes the final determination of Danger Pay locations and allowance percentages. Additions or deletions of Danger Pay locations must be reported to Congress. According to 5 U.S.C. §5928:

In each instance where [a Danger Pay location] under this section is initiated or terminated, the Secretary of State shall inform the Speaker of the House of Representatives and the Committee on Foreign Relations of the Senate of the action taken and the circumstances justifying it.

⁷¹ Department of State, Office of Allowances, "Frequently Asked Questions: Danger Pay," https://aoprals.state.gov/content.asp?content_id=177&menu_id=75; and "Changes in Administration of Danger Pay," <https://aoprals.state.gov/content/Documents/Answers%20to%20Frequently%20Asked%20Questions%20about%20Recent%20Changes%20in%20Administration%20of%20Danger%20Pay.doc>.

3. Measurement of Various Types of Risk

This chapter considers three different ways risk is determined or measured:

- Casualty rates among members of the U.S. military
- Whether various countries are eligible for IDP
- Whether family members are authorized to accompany Service members to various countries (“accompanied tours”)

Military casualties are the most acute measure of combat risk. As we show in Section 3.A.2, between October 2019 and January 2024, hostile casualties (those that are a direct result of hostile action—defined more precisely below) among members of the U.S. military occurred in only five foreign countries. By contrast, U.S. Service members assigned or deployed to those 5 countries and 18 others are eligible for the CZTE (Table 4). Some 41 countries or bodies of water qualify for IDP (Table 1). Thus, if compensation for combat risk were based solely on hostile casualties, the resulting set of countries at any point in time could be very narrow.

Locations can be extremely dangerous and yet have no casualties. In fact, U.S. Service members may have minimal or no presence in a dangerous location in order to prevent casualties. The risk calculus that military and government leaders face requires balancing safety precautions against any benefits of having personnel physically present in a dangerous area. If personnel are required to be present, they may deliberately be stationed in a less dangerous and more secure portion of the country or body of water. Casualties therefore represent the confluence of leaders identifying that Service members need to be physically present given the risks of a location, and the security precautions of that location being breached to the point of a Service member’s being injured, captured, or killed.

The risk factors that contribute to an IDP designation are much broader than simply hostile casualties; these factors will be examined after the discussion of casualty rates. Lastly, this chapter investigates the factors that contribute to a determination of whether or not accompanied tours are permitted to various countries.

A. Casualties among Members of the U.S. military

1. Types of Military Casualties

There are a variety of types of military deaths and injuries, as indicated in Figure 1. Definitions are provided in DoD Instruction 1300.18.⁷² Figure 1 provides a visual depiction of information contained in that document, as well as the data organization at DoD’s public-facing website, “Defense Casualty Analysis System (DCAS).”⁷³

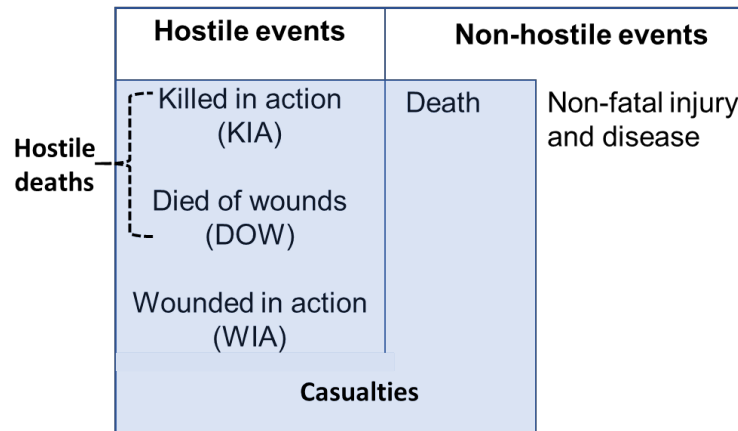


Figure 1. Taxonomy of Military Deaths and Injuries

Source: Adapted from Goldberg, Matthew S., “Casualty rates of US military personnel during the wars in Iraq and Afghanistan,” *Defence and Peace Economics*, vol. 29, no. 1, 2016.

a. Hostile Casualties

Hostile casualties are defined as follows:

Hostile casualties [are] the direct result of hostile action, sustained in combat or relating thereto, or sustained going to or returning from a combat mission provided that the occurrence was directly related to hostile action. Included are persons killed or wounded mistakenly or accidentally by friendly fire directed at a hostile force or what is thought to be a hostile force. However, not to be considered as sustained in action and not to be interpreted as hostile casualties are injuries or death due to the elements, self-inflicted wounds, combat fatigue, and except in unusual cases, wounds or death inflicted by a friendly force while the individual is in an AWOL

⁷² Department of Defense, DoD Instruction 1300.18, “DoD Personnel Casualty Matters, Policies, and Procedures,” last updated March 29, 2023. This document also describes other types of generally less-common casualties that are not represented in Figure 1, such as missing, beleaguered, besieged, captured, detained, and interned.

⁷³ Department of Defense, Defense Manpower Data Center, “Defense Casualty Analysis System: Conflict Casualties,” <https://dcas.dmdc.osd.mil/dcas/app/conflictCasualties>.

[Absent Without Leave], deserter, or dropped-from-rolls status or is voluntarily absent without authority from a place of duty.
[DoDI 1300.18, Paragraph E2.33]

Distinctions are sometimes made between Service members who were Killed in Action (KIA) and those who Died of Wounds (DOW):

Killed in Action (KIA). A casualty category applicable to a hostile casualty, other than the victim of a terrorist activity, who is killed outright or who dies as a result of wounds or other injuries before reaching damage control surgical capability.
[DoDI 1300.18, Paragraph E2.36]

Died of Wounds [DOW] Received in Action. A casualty category applicable to a hostile casualty, other than the victim of a terrorist activity, who dies of wounds or other injuries received in action after having reached damage control surgical capability.
[DoDI 1300.18, Paragraph E2.24]

The distinction between KIA and DOW is important for certain purposes, such as evaluating the utility of battlefield trauma care and medical evacuation. However, following common practice, we will ignore that distinction and combine both types of deaths into the composite category, “Hostile deaths” (e.g., the dashed bracket in Figure 1).

Those who survive their wounds are classified as Wounded in Action (WIA):

Wounded in Action (WIA) [refers to] a hostile casualty, other than the victim of a terrorist activity, who has incurred an injury due to an external agent or cause. The term encompasses all kinds of wounds and other injuries incurred in action, whether there is a piercing of the body, as in a penetration or perforated wound, or none, as in the contused wound. These include fractures, burns, blast concussions, all effects of biological and chemical warfare agents, and the effects of exposure to ionizing radiation or any other destructive weapon or agent. A [WIA casualty’s] status may be categorized as SI [Seriously ill or injured], VSI [Very seriously ill or injured], or NSI [not seriously ill or injured].
[DoDI 1300.18, Paragraph E2.56]

b. Non-hostile casualties

Non-hostile casualties are distinct from hostile casualties:

Non-hostile Casualty. A person who becomes a casualty due to circumstances not directly attributable to hostile action or terrorist activity. Casualties due to the elements, self-inflicted wounds, and combat fatigue are non-hostile casualties.
[DoDI 1300.18, Paragraph E2.39]

As indicated in Figure 1, non-hostile events include both deaths and injuries; the latter are also known as disease/non-battle injuries (DNBI). DoD classifies non-hostile deaths into these categories:

- Accident
- Homicide
- Illness/Injury
- Self-inflicted
- Other

Among a population of more than 1.4 million U.S. Service members, about 1,000 non-hostile deaths occur worldwide in any given year. In fact, because most Service members are stationed in the U.S., most of the non-hostile deaths also occur within the U.S.. Using data from DCAS, IDA estimated the “peacetime” U.S. rate of non-hostile deaths per military population over the 3 calendar years 2020-2022.⁷⁴ To do so, IDA

- Subtracted the number of hostile deaths ($n=22$, all of which occurred overseas) out of the numerator of the rate
- Subtracted the number of overseas non-hostile deaths ($n=24$) in the 23 CZTE countries (listed in Table 4) out of the numerator
- Subtracted the number of annual-equivalent Service members assigned to those 23 CZTE countries over the three years ($n=34,000$) out of the denominator

The remaining nearly 1,000 non-hostile deaths per year, relative to a U.S. military population of about 1.4 million, yields a 3-year average “peacetime” rate of 66.7 deaths per 100,000 Service members. That rate is 21 percent lower than the rate of 84.2 per 100,000 for the U.S. general population ages 15-24 in the same years 2020–2022.⁷⁵

Non-hostile death rates provide a measure of risk, and the corresponding rates in foreign countries to which U.S. Service members deploy could conceivably be compared to the peacetime U.S. rate of 66.7 deaths per 100,000. However, that analysis was beyond the scope of this report.

⁷⁴ Data for this calculation are available only through the year 2022 at Department of Defense, Defense Manpower Data Center, “Defense Casualty Analysis System: U.S. Active Military Deaths by Year and Manner,” <https://dcas.dmdc.osd.mil/dcas/app/summaryData/deaths/byYearManner>.

⁷⁵ Derived from Centers for Disease Control and Prevention, National Center for Health Statistics (NCHS), NCHS Data Brief, Number 456, December 2022, <https://www.cdc.gov/nchs/data/databriefs/db456.pdf>; and NCHS Data Brief, Number 492, March 2024, <https://www.cdc.gov/nchs/data/databriefs/db492.pdf>.

2. Recent History of U.S. Military Casualties

The current Operation Freedom’s Sentinel (Afghanistan), Operation Inherent Resolve (Iraq and Syria), and Operation Prosperity Garden (Yemen) were described in Section 2.C.5. As shown earlier in Table 4, some of the extant combat zone and QHDA designations go further back to Operation Enduring Freedom (Afghanistan), which began in October 2001; and to Operation Iraqi Freedom, which began in March 2003. In fact, seven of the countries (Bahrain, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates) were first designated for the Arabian Peninsula Combat Zone much further back on January 17, 1991, in connection with Operation Desert Storm (ODS) in Iraq. Other than Iraq, all of those countries lost their IDP designations in May 2014, though Saudi Arabia’s designation was restored in September 2019.

a. Hostile casualties

IDA tabulated data from DCAS and determined that all of the 27 hostile deaths and 508 WIA incidents from October 2019 through January 2024 occurred in just five countries: Afghanistan, Iraq, Jordan, Kenya, and Syria (see Table 5). All of the 18 other countries are included in the table for comparison—despite their absence of recent casualties—because they are either in a combat zone, a QHDA, or in direct support. In particular, among the seven previously named countries that were designated within a combat zone back in January 17, 1991, only Iraq has had recent casualties.

Table 5. Countries with U.S. Military Hostile Casualties, October 2019 through January 2024

Country	Hostile Deaths	Wounded in Action	Original Named Operation	Current Named Operation	Combat Zone / QHDA	In Direct Support
Afghanistan	19	121	OEF	OFS	Y	
Bahrain			ODS	OIR	Y	
Djibouti			OEF			Y
Egypt (Sinai Peninsula)			OEF		Y	
Iraq	4	227	ODS	OIR	Y	
Israel				OIR		Y
Jordan	3	71	OEF / OIF	OIR		Y
Kenya	1		OEF			Y
Kosovo Area			OAF		Y	
Kuwait			ODS	OIR	Y	
Lebanon				OIR		Y
Oman			ODS	OIR	Y	
Pakistan			OEF			Y
Qatar			ODS	OIR	Y	
Saudi Arabia			ODS	OIR	Y	
Somalia			OEF			Y
Syria		89	OEF	OIR		Y
Turkey			OEF	OIR		Y
United Arab Emirates			ODS	OIR	Y	
Yemen			OEF	OPG		Y

Sources: Department of Defense, Defense Manpower Data Center, “Defense Casualty Analysis System: Conflict Casualties,” <https://dcas.dmdc.osd.mil/dcas/app/conflictCasualties>; Defense Finance and Accounting Service, “Designated Direct Support Areas of a Combat Zone (CZ),” <https://www.cdc.gov/nchs/data/databriefs/db456.pdf>, last updated November 28, 2023.

Notes: Casualties indicated in **bold font** and salmon shading; OAF = Operation Allied Force, OEF = Operation Enduring Freedom, OFS = Operation Freedom’s Sentinel, OIF = Operation Iraqi Freedom, OIR = Operation Inherent Resolve, OPG = Operation Prosperity Garden, QHDA = Qualified Hazardous Duty Area.

It is possible to make at least limited comparisons between casualty rates in the five countries with hostile casualties (highlighted in salmon color in Table 5) and the same countries during previous conflicts. In recent years, the Defense Manpower Data Center's (DMDC's) public-facing website, "DoD Personnel, Workforce Reports & Publications: Military and Civilian Personnel by Service/Agency and State/Country," has not listed the number of U.S. Service members deployed to certain overseas countries."⁷⁶ However, the DoD Comptroller routinely reports estimated numbers deployed to named operations as part of its unclassified budget request for contingency operations.⁷⁷

Recent casualties in Afghanistan (OFS) can be compared to casualties during the earlier OEF, and recent casualties in Iraq and Syria (OIR) can be compared to the earlier OIF. However, while the DoD Comptroller publishes troop levels for the single country of Afghanistan, that office combines the troop levels for Iraq and Syria into a single number. So, temporal comparisons between conflicts are possible for Afghanistan (OFS versus OEF) and for Iraq/Syria (OIR versus OIF). The two other countries with recent casualties—Jordan and Kenya—were originally associated with either OEF or OIF but cannot be studied because troop levels are not available.⁷⁸

Comparisons to OEF and OIF are further complicated because both conflicts were of much larger scale than current ongoing operations. Goldberg (2016) determined that the surge in Iraq lasted from February 2007 through July 2008, and the surge in Afghanistan lasted from January 2010 through June 2011. U.S. troop levels during the 2007–2008 surge in Iraq ranged between 175,000 and a peak of 220,000. Troop levels increased from 70,000 to a peak of 110,000 during the 2010–2011 surge in Afghanistan.⁷⁹

To get a bit closer to the scale of the recent operations over the past roughly 4 years, a useful point of comparison would be to the post-surge casualty rates that Goldberg (2016) estimated for the completed operations OEF and OIF. Although recent operations in Afghanistan (OFS) officially began in January 2015 and recent operations in Iraq and Syria

⁷⁶ Department of Defense, Defense Manpower Data Center, "DoD Personnel, Workforce Reports & Publications: Military and Civilian Personnel by Service/Agency and State/Country," <https://dwp.dmdc.osd.mil/dwp/app/dod-data-reports/workforce-reports>.

⁷⁷ Department of Defense, Under Secretary (Comptroller), "Defense Budget Overview: United States Department of Defense," various years, <https://www.dfas.mil/militarymembers/payentitlements/Pay-Tables/CZ2/>. See, for example, 7-3, Fiscal Year 2022 Budget request.

⁷⁸ Jordan was declared in direct support of operations in Afghanistan on September 19, 2001, and in direct support of operations in Iraq on March 19, 2003. Kenya was declared in direct support of operations in Iraq on September 26, 2023. See Defense Finance and Accounting Service, "Designated Direct Support Areas of a Combat Zone (CZ)," www.dfas.mil/militarymembers/payentitlements/Pay-Tables/CZ2/, last updated November 28, 2023.

⁷⁹ Matthew S. Goldberg, "Casualty rates of US military personnel during the wars in Iraq and Afghanistan," *Defence and Peace Economics* 29, no. 1 (2016): 44–61, <https://doi.org/10.1080/10242694.2015.1129816>.

(OIR) began in October 2014, IDA made the following comparisons using only more-recent data beginning in October 2019.

The hostile death rate of 9.66 per 10,000 during OFS between October 2019 and the withdrawal of U.S. military forces from Afghanistan in August 2021 was only 45 percent as large as the post-surge rate of 21.68 during OEF (blue versus red figures in the middle column of the upper panel of Table 6). The WIA rate of 61.54 per 10,000 during OFS was only 21 percent as large as the post-surge OEF rate of 299.54.

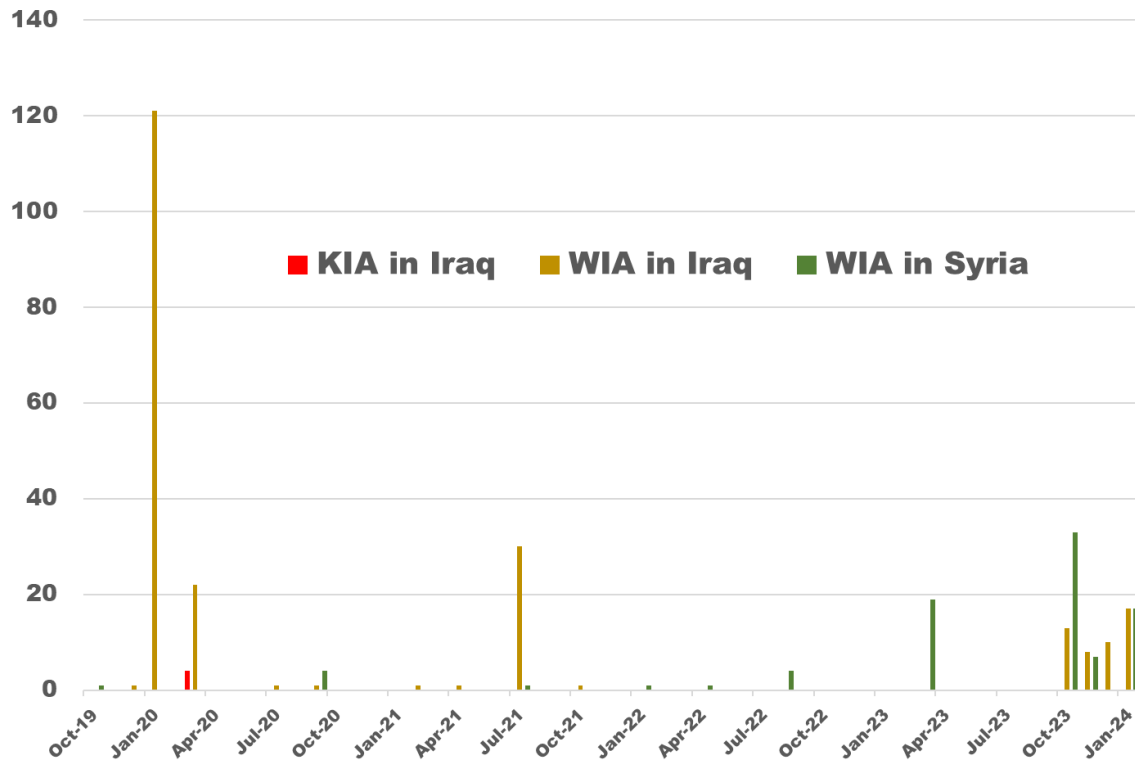
The comparison between current operations in Iraq and Syria (OIR) since October 2019 and in post-surge OIF is more nuanced. The hostile death rate of 2.73 per 10,000 during OIR has been only 68 percent as large as the post-surge rate of 4.03 during OIF (blue versus red figures in the middle column of the lower panel of Table 6). However, the WIA rate of 215.00 per 10,000 during OIR has been 4.8 times as large as the post-surge OIF rate of 44.82 (red versus blue figures in the far-right column).

Table 6. Comparison Between Past and Recent U.S. Military Casualty Rates in Afghanistan and in Iraq and Syria

		Hostile deaths		Wounded in action		
		<u>Troop-years</u>	<u>Number</u>	<u>Rate per 10,000</u>	<u>Number</u>	<u>Rate per 10,000</u>
Afghanistan						
	OEF post-surge, 1 Jul. 2011 – 31 Dec. 2014	250,918	544	21.68	7,516	299.54
	OFS, 1 Oct. 2019 – 31 Aug. 2021	19,662	19	9.66	121	61.54
Iraq / Syria						
	OIF post-surge, 1 Aug. 2008 – 31 Aug. 2010	320,376	129	4.03	1,436	44.82
	OIR, 1 Oct. 2019 – 31 Jan. 2024	14,642	4	2.73	316	215.00

Sources: Matthew S. Goldberg, "Casualty rates of US military personnel during the wars in Iraq and Afghanistan," *Defence and Peace Economics* 29, no. 1 (2016): 44–61, <https://doi.org/10.1080/10242694.2015.1129816>; and Department of Defense, Defense Manpower Data Center, "Defense Casualty Analysis System: Conflict Casualties," <https://dcas.dmdc.osd.mil/dcas/app/conflictCasualties>.

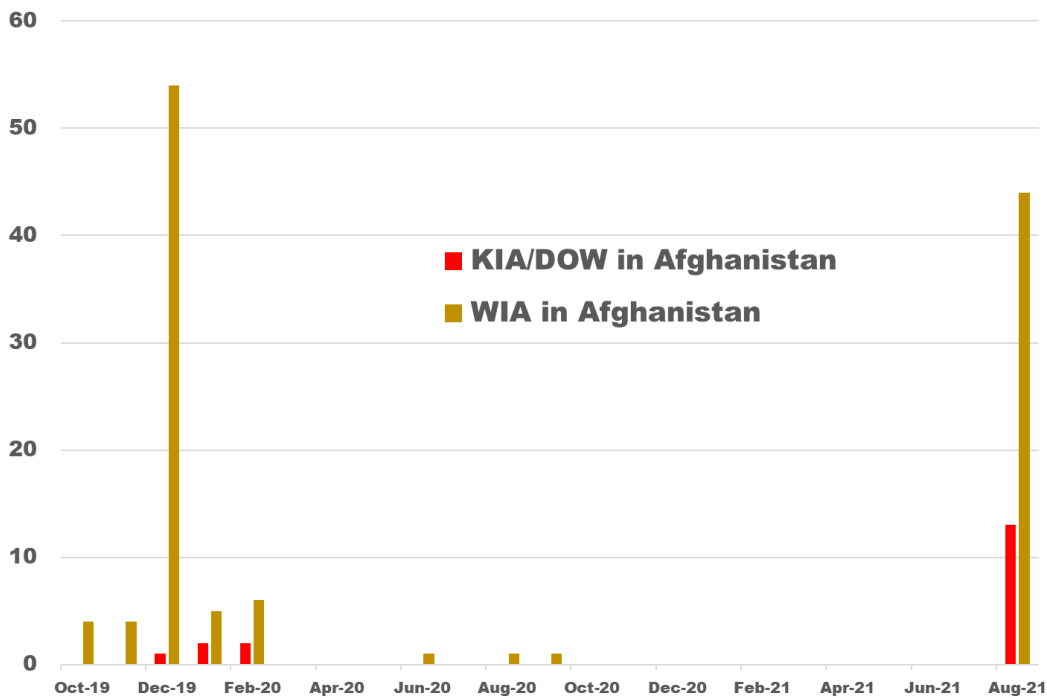
Iraq and Syria have been extremely dangerous for U.S. military personnel during the past 4 years. Of the 316 WIA events in OIR from October 2019 through January 2024, 227 occurred in Iraq and the remaining 89 occurred in Syria. The monthly distribution of those WIA events is shown in Figure 2. January 2020 was a brutal month, with 121 WIA in Iraq, though no hostile deaths occurred that month in either country. All four of the hostile deaths in Iraq during the period occurred in March 2020 (single red bar in Figure 2).



Source: IDA Calculations from Department of Defense, Defense Manpower Data Center, “Defense Casualty Analysis System: Conflict Casualties,” <https://dcas.dmdc.osd.mil/dcas/app/conflictCasualties>.

Figure 2. Monthly Distribution of U.S. Hostile Military Casualties, Iraq and Syria, October 2019 through January 2024

The situation for Afghanistan is depicted in Figure 3. There were 54 WIA in December 2019; IDA’s data collection begins in October 2019, but the WIA total for that entire calendar year was closer to 200. During August 2021, which was the final month of the U.S. military withdrawal from Afghanistan, there were 44 WIA and a total of 13 KIA/DOW.



Source: IDA Calculations from Department of Defense, Defense Manpower Data Center, “Defense Casualty Analysis System: Conflict Casualties,” <https://dcas.dmdc.osd.mil/dcas/app/conflictCasualties>.

Figure 3. Monthly Distribution of U.S. Hostile Military Casualties, Afghanistan, October 2019 through January 2024

One point is clear from the analysis of recent casualties both in Afghanistan and in Iraq and Syria. In Afghanistan, casualties peaked in December 2019 and again in August 2021 during the withdrawal. In Iraq and Syria, casualties peaked in early 2020, mid-2021, and then in April and late 2023. If hostile casualties are to be adopted as a major criterion in the designation of IDP, it would seem prudent to smooth the data by looking back at least 4 or 5 years.

b. Non-hostile Deaths

Table 7 provides the numbers of non-hostile deaths in the U.S. Central Command area of operation during FY 2020–2022. There were six such deaths in Afghanistan during FY 2020, and a total of nine deaths in five other countries. There were eight non-hostile deaths during FY 2021, including five in Kuwait. There was one non-hostile death in Syria during FY 2022.

Table 7. Non-hostile Deaths in the U.S. Central Command, FY 2020–FY 2022

Fiscal year	Country	Date	Service branch
2020	Afghanistan	Jan. 2020	n/a
2020	Afghanistan	Jan. 2020	n/a
2020	Afghanistan	Feb. 2020	Army
2020	Afghanistan	May 2020	Army
2020	Afghanistan	Jul. 2020	Army
2020	Afghanistan	Jul. 2020	Army
2020	Iraq	Oct. 2019	Army
2020	Iraq	Mar. 2020	Army
2020	Iraq	May 2020	Army
2020	Jordan	Jun. 2020	Army
2020	Kuwait	Sep. 2020	Air Force
2020	Kuwait	Sep. 2020	Air Force
2020	Qatar	Mar. 2020	Army
2020	Syria	Jan. 2020	Army
2020	Syria	Jul. 2020	Army
2021	Kuwait	Jan. 2021	Army
2021	Kuwait	Jan. 2021	Army
2021	Kuwait	Apr. 2021	Army
2021	Kuwait	Jun. 2021	Army
2021	Kuwait	Aug. 2021	Air Force
2021	Qatar	Jun. 2021	Air Force
2021	Syria	Jun. 2021	Army
2021	United Arab Emirates	Nov. 2020	Air Force
2022	Syria	Feb. 2022	Army

Source: IDA tabulation from Department of Defense, Defense Manpower Data Center, “Defense Casualty Analysis System: Conflict Casualties,” <https://dcas.dmdc.osd.mil/dcas/app/conflictCasualties>.

Note: n/a = not available.

B. Eligibility for Imminent Danger Pay

The risk factors that contribute to an IDP determination are spelled out in Appendix 3A of DoDI 1340.09.⁸⁰ Those factors fall into six main categories, with a few significant subcategories indicated as follows (the numbering scheme is retained from original):

A. Acts of violence

⁸⁰ DoD Instruction 1340.09, “Hazardous Pay Program,” last updated February 2, 2024.

Assassination, Homicide, Sabotage, Kidnapping, Aggravated battery, Property damage, Terrorizing, Extortion, Rioting, Commandeering a vessel and/or Hijacking an aircraft

B. Insurrection, war, or wartime conditions

1. Fighting is sufficiently close to uniformed Service members that:
 - a. There is a substantial probability of death or bodily injury to members
 - b. Members have a reasonable and continuing fear for their safety.
 - c. There is danger to human life and/or property. ...

C. Uniformed Service members and terrorism conditions

D. Security environment

E. Travel restrictions

... 3. Whether uniformed Service members and/or their dependents must be accompanied by armed guards or travel in armored vehicles when moving outside the installation.

F. Presence of dependents in the area

1. Whether there are command-sponsored dependents in the area, how many, what ages of dependents are allowed in the area, and whether accompanied tours authorized for key billets only.

2. Whether there are command-sponsored school children or a DoD Dependents School in the area in the area.

3. Whether there is evidence that dependents of members are targeted, and if so, what extra security measures are employed to adequately protect the dependents against the risk to their safety, to include measures to protect children from the threat as they move to and from school.

4. Whether there is a restriction on dependent travel to the area at this time, and whether some or all dependents have been evacuated (or authorized departure) from the area.

Although an IDP determination *does not require* recent casualties, the process does take account of any deaths that might have occurred or any substantial threat of death (whether or not uniformed Service members were specifically targeted). Details of the first two categories include:

A. Acts of violence

1. Assassination. An individual or group targeted and intentionally caused the death(s) of [uniformed service] members(s).

2. Homicide. An individual or group caused the death(s) of [uniformed service] members(s), but there is no evidence that the victim(s) was targeted due to status as a member.

B. Insurrection, war, or wartime conditions

1. Fighting is sufficiently close to uniformed Service members that:

a. There is a substantial probability of death or bodily injury to members.

DoDI 1340.09 also contains instructions for Combatant Commanders to document and justify their assessments in each of the six categories of risk factors (A through F, above):

In Sections A through F that apply, provide statistics (demography, numbers of incidents) and supporting narratives (on separate sheets) for each section that applies to the area, explaining how the situation places U.S. military members (and their families) in imminent danger of physical harm. Sections B and C must be supported by a copy of the command's threat assessment for the area prepared in the standard DoD threat assessment format; the existence, capability, history, and intentions of groups targeting U.S. military members (and/or their families) are to be addressed. Provide additional comments or contributing factors in Section G.⁸¹

The risk assessments associated with the IDP request for any country or area are classified, although the IDP determination itself is unclassified (see Table 1 for the complete, current list). In this report, IDA treats the IDP determination for a country or area as an adequate summary of the risk assessments in the six areas, and we do not pursue the underlying classified assessments.

C. Eligibility for Accompanied Tours

Additional information is available on accompanied tours, which play a major role in risk factors E (Travel restrictions) and F (Presence of dependents in the area) of the IDP determination process.

DoDI 1315.18, "Procedures for Military Personnel Assignments," provides policy guidance for establishing standardized tour lengths for members serving outside the continental United States (OCONUS). This DoDI also "requires an assessment of force protection and anti-terrorism considerations ... for establishment of new, or changes to

⁸¹ DoD Instruction 1340.09, "Hazardous Pay Program," Appendix 3A: IDP Area Assessment Format, 27, last updated February 2, 2024.

current, overseas tour lengths.”⁸² The responsibility for developing and overseeing the assignment of Service members to designated hostile-fire and imminent-danger areas belongs to the ASD(M&RA). The Chairman of the Joint Chiefs of Staff (CJCS) is responsible for recommending tour lengths and restriction on accompanied tours to the ASD(M&RA).⁸³

DoDI 1315.18 identifies the following as considerations when authorizing dependent travel overseas:

- The available standard of living
- The general desirability of the location
- Adequacy of dependent support facilities
- Availability of medical care and schools for children in kindergarten through grade 12
- The political climate existing in the respective country
- Force protection and anti-terrorism concerns, to include **authorized payment of IDP**, if any
- The probability of being attacked by a potential enemy
- The possible adverse effect that the presence of dependents may have on a unit’s mission, operational readiness, or combat capability⁸⁴
[**bold emphasis added**]

DoDI 1315.18 further states that, “Normally, dependent travel is not authorized to any overseas location where one or more of these factors are significantly unfavorable.”⁸⁵ As one of the above considerations includes “authorized payment of IDP” [bolded above], countries receiving IDP should presumably not be authorized for accompanied tours. However, according to DoD’s Joint Travel Regulation supplement, “Tour Length and Tours of Duty Outside the Continental United States (OCONUS),” several countries are currently eligible for IDP even though accompanied tours are allowed. The travel regulation supplement provides a list of OCONUS locations with designation of maximum lengths for accompanied or unaccompanied tours, respectively. In some cases, countries

⁸² Department of Defense, DoD Instruction 1315.18, “Procedures for Military Personnel Assignments,” last updated June 24, 2019, 1.

⁸³ Department of Defense, DoD Instruction 1315.18, 12.

⁸⁴ Department of Defense, DoD Instruction 1315.18, 43.

⁸⁵ Department of Defense, DoD Instruction 1315.18, 43.

are further broken down by region. Table 8 shows that fully accompanied tours are allowed in the following countries, despite their being eligible for IDP.⁸⁶

Table 8. Locations Allowing Accompanied Tours, but Eligible for IDP

Algeria	Haiti
Azerbaijan	Indonesia (portion)
Burkina Faso	Jordan
Chad	Kenya
Colombia	Malaysia (portion)
Cuba	Niger
Democratic Republic of Congo	Pakistan
Djibouti	Sudan
Ethiopia	Ukraine

Sources: Defense Finance and Accounting Service (DFAS), “Imminent Danger Pay,” DoD Financial Management Regulation (FMR) Vol. 7A, Chapter 10, www.dfas.mil/militarymembers/payentitlements/Pay-Tables/IDP-Areas/, as of July 19, 2023; and Defense Travel Management Office, “Tour Lengths and Tours of Duty Outside the Continental United States (OCONUS),” Joint Travel Regulations Supplements, www.travel.dod.mil/Portals/119/Documents/JTR/Supplements/TOUR_LENGTHS_AND_TOURS_OF_DUTY_OCONUS.pdf, as of August 21, 2024.

D. Summary

This chapter investigated three measures of combat risk:

- Casualty rates among members of the U.S. military
- Determinations that various countries are eligible for IDP
- Determinations that various countries are eligible for accompanied tours

Military casualties are the most acute measure of combat risk. Fortunately, they have occurred in only five countries (Afghanistan, Iraq, Jordan, Kenya, and Syria) over the past roughly 4 years.

Some 15 additional countries also qualify for the CZTE (see complete list in Table 4), and 41 countries or bodies of water qualify for IDP (see Table 1).

⁸⁶ Department of Defense, Defense Travel Management Office, “Tour Lengths and Tours of Duty Outside the Continental United States (OCONUS),” Joint Travel Regulations Supplements, www.travel.dod.mil/Portals/119/Documents/JTR/Supplements/TOUR_LENGTHS_AND_TOURS_OF_DUTY_OCONUS.pdf, 1-9.

IDP determinations consider a wide range of *potential risks* to U.S. military personnel and their families:

- A. Acts of violence
- B. Insurrection, war, or wartime conditions
- C. Uniformed Service members and terrorism conditions
- D. Security environment
- E. Travel restrictions
- F. Presence of dependents in the area

IDP determinations *do not require* recent casualties, though the process does take account of any deaths that might have occurred (whether or not Service members were specifically targeted), as well as any “substantial probability of death or bodily injury to members.”

The analysis of recent casualties both in Afghanistan and in Iraq and Syria makes one point clear. Casualties in both conflicts have occurred at disjoint points in time over the past 4 years or so. If casualties are to be adopted as a major criterion in the designation of CZTE or IDP, it would seem prudent to look back at least 4 or 5 years in order to smooth out the year-to-year variability.

Many CZTE and IDP designations are longstanding. For example, seven countries were first designated for the Arabian Peninsula Combat Zone in January 1991 (in connection with ODS) and remain CZTE-eligible, even though IDP designations for five of those countries were removed a decade ago, in May 2014 (Iraq has retained its IDP designation, and Saudi Arabia’s designation was restored in September 2019). The next chapter will augment the discussion (from Chapter 2) of how CZTE and IDP designations are *made*, with a discussion of how those designations are *removed*.

4. Policy Analysis

A. Relationship of CZTE and IDP to Hostile Casualties

In Chapter 2 we observed that many combat zone and IDP designations are very long-standing. In particular, seven countries remain in the Arabian Peninsula Combat Zone first established in January 1991 at the start of Operation Desert Storm. Apart from Iraq, six of those seven countries have not had any hostile U.S. military casualties since at least October 2019:

- Bahrain
- Kuwait
- Oman
- Qatar
- Saudi Arabia
- United Arab Emirates

While they retain their combat zone designations and CZTE eligibility, those six countries all lost their IDP designations in May 2014 (although Saudi Arabia's designation was restored in September 2019). Unlike the case with QHDAs, CZTE eligibility for a country within a combat zone established by the President is *not* automatically turned off when DoD removes the country from the IDP roster.

In Chapter 3 we reported that between October 2019 and January 2024, all of the hostile U.S. military casualties occurred in just five countries:

- Afghanistan
- Iraq
- Jordan
- Kenya
- Syria

The combat risks during the recent Operation Freedom's Sentinel in Afghanistan, concluded on August 31, 2021, tended to be lower than during the post-surge period in Operation Enduring Freedom. The hostile death rate during OFS was only 45 percent as large as the post-surge rate during OEF, and the WIA rate was only 21 percent as large (Table 6).

When comparing current operations in Iraq and Syria (Operation Inherent Resolve) to the post-surge period in Operation Iraqi Freedom, our findings are mixed. The hostile death rate during OIR has been only 68 percent as large as the post-surge rate from OIF. However, the WIA rate during OIR has been 4.8 times as large as the post-surge OIF rate.

The enduring combat zone designations for the 15 (of 20) CZTE countries without any recent U.S. military casualties (Table 5) require further examination.

B. Other Potential Combat Risks

It should be recalled that this report’s inclusion of compensation for combat risk in the 14th QRMC was motivated by a series of memoranda, beginning with one from General Richard D. Clark, then-Commander of the United States Special Operations Command (USSOCOM). General Clark was concerned that members from USSOCOM and other commands were not being adequately compensated for their current (perhaps undisclosed) or potential future service in countries such as Ukraine and Taiwan, which are specifically called out in the National Defense Strategy (NDS).⁸⁷

In addition, as recounted in Section 2.B.5.b, a 2019 RAND study reported that functional COCOMs such as USSOCOM felt left out of the official process, in which only the geographic COCOMs had a direct role to initiate an IDP request [DoDI 1340.09, Section 2.7]. However, one obstacle to granting IDP designation involves classification:

According to several interviewees, a further hindrance to paying IDP based on the (potential) presence of special operations in a region is that such missions may be classified, while the pay records and the IDP designation list are not. It would not be feasible to pay IDP in locations where the presence of U.S. troops is a matter of national security but the location is classified.⁸⁸

During an interview that IDA conducted, senior military officers at one of the geographic COCOMs expressed a different concern—that even regions not called out specifically in the NDS, and not currently designated for IDP, can nonetheless be extremely dangerous. DoDI 1340.09 provides a taxonomy of risk categories that we detailed earlier in Section 3.B. Among the categories that are considered in the IDP process, but not necessarily decisive with regard to any particular country, are:

⁸⁷ Department of Defense, “2022 National Defense Strategy of the United States of America,” October 27, 2022, unclassified, <https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF>.

⁸⁸ Beth J. Asch, James V. Marrone, and Michael G. Mattock, “An Examination of the Methodology for Awarding Imminent Danger Pay and Hostile Fire Pay,” RAND Corporation, RR-3231-OSD, 2019, www.rand.org/pubs/research_reports/RR3231.html, 24.

A. Acts of violence

Assassination, Homicide, Sabotage, Kidnapping, Aggravated battery, Property damage, Terrorizing, Extortion, Rioting, Commandeering a vessel and/or Hijacking an aircraft

B. Insurrection, war, or wartime conditions

1. Fighting is sufficiently close to uniformed Service members that:

- a. There is a substantial probability of death or bodily injury to members
- b. Members have a reasonable and continuing fear for their safety.
- c. There is danger to human life and/or property. ...⁸⁹

The analysis of hostile casualties in the previous section would have to be augmented by additional considerations in order to address the issues raised by these two CCMDs.

Several CCMDs suggested that in determining eligibility for CZTE and IDP, several other potential data sources—apart from casualty rates—should be considered, including:

- Centers for Disease Control and Prevention (CDC) Travel Health Notices
- Defense Intelligence Agency (DIA) Terrorism Threat Levels
- DIA and COCOM databases of “significant incidents”
- DoD COCOMs’ Force Protection Condition (FPCON) levels
- Department of State (DoS) list of high-risk diplomatic posts
- DoS Security Environment Threat Levels (SETLs)
- DoS Travel Advisory Levels
- Federal Aviation Administration (FAA) Notice to Air Missions (NOTAM).

Except for one, all of the CCMDs that provided feedback recommended that eligibility for CZTE and IDP remain based on the level of risk faced by Service members, rather than define these benefits according to the specific regions defined in the NDS.

C. Procedures for Turning Benefits Off

1. Combat Zones and QHDAs

The President may establish a combat zone via Executive order (see Section 2.C.4). The Arabian Peninsula Area (designated January 17, 1991), the Kosovo Area (designated March 24, 1999), and the Afghanistan Area (designated September 19, 2001) remain

⁸⁹ DoD Instruction 1340.09, “Hazardous Pay Program,” Appendix 3A, last updated February 2, 2024.

combat zones and eligible for the CZTE (see Table 3). It would require a second Executive order from a President (perhaps a later President) to terminate a combat zone. For example, the Vietnam Combat Zone lingered from President Ford's April 1975 decision to terminate U.S. participation in that conflict, until President Clinton's disestablishment of the combat zone some 21 years later in May 1996.^{90,91} DoD has no leverage (other than appealing to the White House) to terminate a combat zone.

The legislation that establishes a QHDA may require that the area also be designated for HFP/IDP in order to trigger the CZTE. With that stipulation, DoD can nullify the CZTE benefit for a country belonging to a QHDA only by terminating that country's IDP designation (though technically, the CZTE benefit would return if HFP is later awarded based on conditions on the ground).

The Kosovo Area (former Yugoslavia) was first designated as a combat zone (Executive Order 13119, March 24, 1999) and about 1 month later as a QHDA (Public Law 106-219, April 19, 1999). Three of the four countries in the Kosovo Area (Albania, Montenegro, and Serbia) lost their IDP designation in May 2014. But as a combat zone, these countries remain eligible for CZTE regardless of their IDP designation..

The CZTE benefit is also available to members serving "in support" of a combat zone or QHDA if the country in which they serve is designated as "in support" by DoD *and* if they qualify for either IDP or HFP. As discussed in Section 2.C.5.c, DoD can terminate the CZTE benefit by turning off IDP, unless HFP is later awarded based on conditions on the ground. DoD did exactly that in May 2014 by removing the IDP designation from the Central Asian countries of Kyrgyzstan, Tajikistan, and Uzbekistan that had been in direct support of the Afghanistan Combat Zone.

Leaders within the CCMDS and the OUSD(P&R) indicated that there is often very little political will to remove the CZTE designation from many regions because there may be political consequences to removing Service members' entitlements. The CZTE can also be useful for incentivizing Service members to deploy to less favorable locations, regardless of the level of risk in these locations. In addition, the CZTE acts as a multiplier to retention bonuses that Service members accept while they are deployed to CZTE-eligible regions, potentially increasing the effectiveness of these bonuses without additional cost to the Services' budgets. As a result, CZTE benefits tend to persist long after (often decades

⁹⁰ The White House, President Gerald R. Ford, speech at Tulane University, April 23, 1975, documented at <https://www.history.com/this-day-in-history/ford-says-that-war-is-finished-for-america>.

⁹¹ The White House, President William J. Clinton, Executive Order [unnumbered], "Termination of Combat Zone Designation in Vietnam and Waters Adjacent Thereto," May 13, 1996, archived at <https://clintonwhitehouse6.archives.gov/1996/05/1996-05-14-executive-order-terminating-vietnam-as-combat-zone.html>.

after!) the initial inciting events that led to the combat zone, QHDA, or direct support designations.

2. Hostile Fire Pay and Imminent Danger Pay

DoD’s procedures for designating countries for HFP and IDP were described in Section 2.B.5, and are summarized here in Table 9. HFP is determined situationally when the on-scene commander certifies hostile action. IDP designation follows a procedure delineated in DoDI 1340.09, “Hazardous Pay Program.” In the case of IDP, a sequenced chain of requestors and approvers starts with the geographic COCOMs; through the Director, Joint Staff; then through the ASD(Manpower and Reserve Affairs, M&RA); and finally to the USD(Policy), who has the authority to delegate the final determination to the ASD(M&RA).

Table 9. Procedures for Initiating and Terminating HFP and IDP Locations

Type of pay	Locational determination
Hostile Fire Pay	<i>Event-based</i> : On-scene commander must certify hostile action; or incident report / death certificate
Imminent Danger Pay	<i>Exposure-based</i> : Geographic COCOMs (e.g., <i>not</i> SOCOM) → Director, Joint Staff → ASD(M&RA) → USD(P) [delegable to ASD(M&RA)]
<i>Terminations</i>	Geographic COCOMs (e.g., <i>not</i> SOCOM) → Director, Joint Staff → ASD(M&RA) [<i>Situational; or Periodic ASD(M&RA) review</i>]

Source: DoD Instruction 1340.09, “Hazardous Pay Program,” last updated February 2, 2024.

Notes: ASD(M&RA) = Assistant Secretary of Defense (Manpower and Reserve Affairs), COCOM = Combatant Command, SOCOM = Special Operations Command, USD(P) = Under Secretary of Defense (Policy).

IDP terminations may follow two paths. First, the same chain of offices that requested an IDP designation can later argue for its termination. Or, the ASD(M&RA) can terminate an IDP designation based on periodic review. According to DoDI 1340.09:

An imminent danger area designation will be terminated by the ASD(M&RA) when circumstances no longer warrant continuation of such designation. Normally, a designation remains in effect until terminated either as a result of a ASD(M&RA)-requested periodic review[,] or from the recommendation of the Combatant Commander with a physical area of responsibility or the Director, Joint Staff. [DoDI 1340.09, Section 3.3b(3)]

The ASD(M&RA) conducts periodic reviews, though not on a fixed schedule. A major review that was completed in June 2020 began 2 years earlier in 2018. The previous major review also ran about 2 years, from 2012 to 2014.

The June 2020 review recertified 38 then-extant IDP designations among the 41 total designations shown in Table 1. The remaining three countries in Table 1 have been added since:

- Burkina Faso, February 1, 2022
- Burma (Myanmar), June 22, 2022
- Ukraine, April 24, 2022

The earlier 2014 review terminated the IDP designations of several countries that have been mentioned repeatedly throughout this report, as well as a few bodies of water and the countries of East Timor, Haiti (later restored in January 2020), Liberia, and Rwanda.

DoD officials indicated that an IDP action for a single country can be completed in a matter of months. A comprehensive review takes about 2 years because proposed actions must be coordinated among several offices within the military departments and the Office of the Secretary of Defense (OSD).

D. Summary

The processes for designating combat zones, QHDAs, and countries eligible for IDP are all different. Hostile casualties are among the several factors explicitly considered during an IDP determination. Current and prospective casualties may be implicitly considered in the presidential declarations that establish combat zones, and in the congressional deliberations that accompany legislation establishing QHDAs. Examples include:

- President Clinton’s declaration of the Kosovo Area Combat Zone (Executive Order No. 13119, March 24, 1999)
- Legislation that designated Bosnia and Herzegovina, Croatia, and Macedonia (“Balkans”) as forming a QHDA (Public Law 104-117, enacted March 20, 1996)
- Legislation that designated the Federal Republic of Yugoslavia (Serbia/Montenegro) and certain other areas as forming a QHDA (Public Law 106-21, enacted April 19, 1999).

Between October 2019 and January 2024, U.S. military casualties occurred in only 5 foreign countries. Thus, if compensation for combat risk were based solely on looking back at military casualties, the resulting set of countries at any point in time could be very narrow. During interviews that IDA conducted, senior military officers at several of the CCMDs largely agreed that eligibility for the CZTE benefit should be based on the risk to Service members rather than the National Defense Priorities. Several of the CCMDs

recommended that the consideration of risk-based eligibility should include many sources of information beyond just hostile casualties, including both classified and unclassified sources, to identify other regions in which the current political situation poses various dangers to U.S. military personnel.

DoD has several levers to remove the CZTE benefit, such as terminating the IDP designation for a country in a QHDA or for a country in direct support to either a QHDA or a combat zone. The ASD(MR&A) conducts periodic reviews of IDP designations. The two most recent comprehensive reviews began 6 years apart (2014 and 2020), each taking about 2 years to complete. Commencing those reviews as frequently as every 2 years would sequence them essentially “heel-to-toe” with no time in between. An interval of 4 to 6 years between the start of consecutive reviews seems more reasonable. Individual countries can and sometimes are considered situationally, and those determinations are typically completed in a matter of months (e.g., Ukraine was designated for IDP on April 24, 2022, exactly 2 months after the Russian invasion that began on February 24th of that year).⁹²

Even with periodic review, the political consequences of removing deployment entitlements encourages the continuation of benefits, even in areas of relatively low risk. Given that leadership faces far fewer challenges establishing or extending benefits, it may be helpful to establish these benefits with a defined “sunset date” upon which the benefits in a given region terminate unless action is taken to renew them. Adding a default time limit to these entitlements may help overcome the political challenges of “removing entitlements” because the decision to end the benefits at a given date would have been made at the time the entitlements were established. In regions where the risk level remained high, leaders would be still able to continue (or reestablish) risk-based entitlements as they do today.

⁹² Reuters, “Military Operation Against Ukraine,” February 24, 2022, <https://www.reuters.com/world/europe/russias-putin-authorises-military-operations-donbass-domestic-media-2022-02-24/>.

5. Cost and Retention Analysis

In the previous chapters, we showed that the persistence of CZTE and IDP designations for many decades leads to an inconsistency in the levels of risk faced by Service members currently serving in CZTE- and IDP-eligible regions. In this chapter, we explore the distribution of the value of the CZTE and IDP across Service members, and consider the cost and retention implications of modifying eligibility for these benefits.

A. Combat Zone Tax Exclusion

1. Methodology

For all tax scenario calculations, hypothetical and actual, we calculated the difference in tax outcome for all combinations of marital status, number of dependents (from zero to six or more), Service member income by thousands, spousal income by thousands, and the percent of Service member income subject to the combat zone tax exclusion (0, 20, 40, 60, 80, or 100).⁹³ These values were calculated with the aid of TAXSIM35.⁹⁴ A Service member's CZTE was then calculated by a convex combination of these values. For example, if a single Service member had \$54,750 in income with 90 percent of it subject to the CZTE, that individual's calculated exclusion would be $0.75 * [(benefit for \$55,000 in income at 100\% eligibility) * 0.5 + (benefit for \$55,000 in income at 80\% eligibility) * 0.5] + 0.25 * [(benefit for \$54,000 in income at 100 percent eligibility) * 0.5 + (benefit for \$54,000 in income at 80 percent eligibility) * 0.5]$ for their respective number of dependents.

a. Assumptions

To estimate the size of the CZTE, we made the following five assumptions about Service members' tax filings and household income.

1. Service members take the standard deduction, and they do not take any other deductions.
2. Service members correctly optimize the earned income election.

⁹³ Service member income is eligible for the CZTE if it is earned in from active service in a CZTE-eligible region. By statute (26 U.S.C. 112), CZTE is capped for commissioned officers at the maximum of enlisted pay plus the monthly amount of HFP/IDP. There is no cap for enlisted Service members or warrant officers.

⁹⁴ <https://taxsim.nber.org/taxsim35/>.

3. Scenarios where both members of a dual-military couple are eligible for the CZTE are excluded.
4. Service members who are married file jointly.
5. The monthly civilian income of individuals who serve part of the year is the same as their monthly military income in that year.

See Appendix B for additional discussion about the rationale for these five assumptions and their potential effects on the estimated size of the CZTE.

2. Results

We estimated that for the 103,000 Service members who were eligible for the CZTE in 2023, the average reduction in household taxes was \$3,024, and the average benefit of the CZTE, when averaged over all Service members (including those not eligible), was \$221 in 2023. This figure amounts to a total cost to the Federal Government of \$313.5 million. This cost estimate reflects an upper bound on the potential savings from realigning the CZTE to risk by terminating CZTE eligibility in regions that are no longer subject to combat levels of risk. A full determination of which regions should continue to be eligible for the CZTE was beyond the scope of this paper and would require a thorough assessment of many data sources, both classified and unclassified. However, we can approximate that reducing of the number of Service members eligible for tax exclusion by 25 to 50 percent could save the Federal Government roughly \$80 to \$150 million annually in the form of increased tax revenue. The increased tax revenue could be allocated to other forms of pay such as Assignment Incentive Pay or the Family Separation Allowance for less preferable deployment locations.

The effect of changing eligibility for CZTE depends not only on the number of regions that are affected but also on the number of Service members that are deployed to those regions. The number of Service members eligible for the CZTE in 2023 (2022 for Army) was lower than it has been over the past two decades.⁹⁵ The IRS estimated that 147,263 taxpayers claimed it in 2017, decreasing to 111,463 in 2021.⁹⁶ In the DMDC data, 103,660 Service members were eligible for the CZTE in 2023 (Army used 2022 data). Higher or lower deployments in future years could increase or decrease the total costs of realigning CZTE eligibility to better match the risk to Service members.

In addition to estimating the total cost of the CZTE to the Federal Government, we also looked at the distribution of the value of CZTE to different categories of Service members. In addition to the findings from Chapter 3 that CZTE eligibility is not aligned to

⁹⁵ <https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-returns-complete-report-publication-1304>.

⁹⁶ <https://www.irs.gov/pub/irs-pdf/p1304.pdf#page=337>.

geographic risk, we found that the dollar value of the CZTE varies significantly across Service members, even when they are deployed to the same location. The size of the reduction in household taxes from the CZTE depends on the income and household composition of Service members rather than the level of risk that Service members face in a deployment. In particular, higher paid households benefit more from the CZTE. In some cases, junior enlisted may receive zero benefit because their income is not eligible for the CZTE, while more senior Service members (or members who claim a bonus while in a combat zone) can receive up to thousands of dollars in benefits. Additionally, married Service members with high earning spouses benefit more than those without.

This pattern is the result, primarily, of increasing marginal tax rates within the United States. As a household makes more money, it goes from paying 0 percent of each additional dollar to Federal income taxes (if its income is less than the standard deduction), to paying 10 percent, to paying 12 percent... until the household pays 37 percent of each additional dollar earned to Federal income taxes. Since the CZTE reduces how much income is subject to the Federal income tax, households that are paying a higher percentage of their marginal dollars in Federal income taxes benefit more than households that are in a lower tax bracket.

a. Estimated Effect of the CZTE on Household Taxes

Using just basic pay, we can observe general patterns of how different earning profiles benefit from the CZTE. When incentive pays and reenlistment bonuses are added in, the benefit will be greater than what is seen from the basic pay analysis in this section. However, because being in a combat zone is not a sufficient condition for these other pays, we first analyze basic pay separately. An important note is that when a Service member's annual pay is subject to greater taxation, the magnitude of the benefit of the CZTE increases. To simplify visualizing this information, we focus on the basic pay for the median years of service for each rank, rounded to the nearest thousand.

If 100 percent of Service member annual pay is eligible for the CZTE, then the size of the reduction in a household tax burden would range from \$0 to over \$40,000 when just considering basic pay. Table 10 examines how these benefits can vary based on the Service member's income, their spousal income (if any), and the number of dependents. The median years of service (YoS) column is for that specific rank. The basic income column for the median years of service is rounded to the nearest thousand. The cells in the columns after the third column represent the benefit of having 100 percent of the Service member's annual basic pay be eligible for the CZTE, if the Service member has no other taxable pay. If the Service member has other taxable pay, such as IDP or a reenlistment bonus, then the size of the reduction in household tax burden is greater than shown in the table.

Table 10. Benefit of 100 Percent CZTE Eligibility: Reduction in Household Federal Income Taxes when 100% of Annual Basic Pay is Excludable, Compared to 0% Excludable

Rank	Median YoS	Income for median YoS	Single, 0 Children	Single, 2 Children	Married, 0 Children Spouse no income	Married, 0 Children Spouse earns \$50k	Married, 0 Children Spouse earns \$100k	Married, 2 Children Spouse no income	Married, 2 Children Spouse earns \$50k	Married, 2 Children Spouse earns \$100k
E-1	0	\$24,000	\$1,015	\$320	\$0	\$2,880	\$4,155	\$0	\$4,872	\$4,155
E-2	0	\$27,000	\$1,373	\$620	\$0	\$3,240	\$4,815	\$0	\$5,232	\$4,815
E-3	1	\$29,000	\$1,613	\$820	\$130	\$3,480	\$5,255	\$130	\$5,472	\$5,255
E-4	3	\$35,000	\$2,333	\$1,420	\$730	\$4,200	\$6,575	\$730	\$6,192	\$6,575
E-5	6	\$43,000	\$3,293	\$2,371	\$1,530	\$5,160	\$8,335	\$1,530	\$7,152	\$8,335
E-6	11	\$53,000	\$4,493	\$3,571	\$2,625	\$6,360	\$10,535	\$2,625	\$8,352	\$10,535
E-7	17	\$66,000	\$7,090	\$5,131	\$4,185	\$8,395	\$13,395	\$4,185	\$10,387	\$13,395
E-8	20	\$77,000	\$9,510	\$6,481	\$5,505	\$10,815	\$15,815	\$5,505	\$12,807	\$15,815
E-9	25	\$97,000	\$13,910	\$10,881	\$7,905	\$15,215	\$20,215	\$7,905	\$17,207	\$20,215
W-1	11	\$64,000	\$6,650	\$4,891	\$3,945	\$7,955	\$12,955	\$3,945	\$9,947	\$12,955
W-2	16	\$77,000	\$9,510	\$6,481	\$5,505	\$10,815	\$15,815	\$5,505	\$12,807	\$15,815
W-3	20	\$94,000	\$13,250	\$10,221	\$7,545	\$14,555	\$19,555	\$7,545	\$16,547	\$19,555
W-4	24	\$111,000	\$17,152	\$13,984	\$9,585	\$18,295	\$23,398	\$9,585	\$20,287	\$23,398
W-5	28	\$127,000	\$20,992	\$17,824	\$13,080	\$21,815	\$27,238	\$13,080	\$23,807	\$27,238
O-1	1	\$46,000	\$3,653	\$2,731	\$1,830	\$5,520	\$8,995	\$1,830	\$7,512	\$8,995
O-2	3	\$69,000	\$7,750	\$5,491	\$4,545	\$9,055	\$14,055	\$4,545	\$11,047	\$14,055
O-3	7	\$86,000	\$11,490	\$8,461	\$6,585	\$12,795	\$17,795	\$6,585	\$14,787	\$17,795
O-4	13	\$109,000	\$16,672	\$13,521	\$9,345	\$17,855	\$22,918	\$9,345	\$19,847	\$22,918
O-5	19	\$130,000	\$21,999	\$18,544	\$14,028	\$22,024	\$27,507	\$13,740	\$23,223	\$27,507
O-6	25	\$160,000	\$26,728	\$25,744	\$19,734	\$25,107	\$28,855	\$24,952	\$25,107	\$28,855
O-7	29	\$187,000	\$29,702	\$32,224	\$22,724	\$28,347	\$29,395	\$22,724	\$28,347	\$29,395
O-8	32	\$216,000	\$32,602	\$41,196	\$25,827	\$28,975	\$29,975	\$25,827	\$28,975	\$29,975
O-9	34	\$222,000	\$33,202	\$43,116	\$26,547	\$29,095	\$30,095	\$26,547	\$29,095	\$30,095
O-10	37	\$222,000	\$33,202	\$43,116	\$26,547	\$29,095	\$30,095	\$26,547	\$29,095	\$30,095

Table 10 highlights how the benefit of the CZTE can vary significantly for different Service members. For married Service members with under \$27,700 in basic pay and no household income, the CZTE provides no benefit because the standard deduction is greater than the Service member’s pay. That is, the Service member would pay no income tax with or without the CZTE. The standard deduction and lower marginal rates are the reason that lower Service members, especially those with less spousal income, benefit less from CZTE than higher income Service members.

Higher income Service members and Service members with higher earning spouses benefit more from nontaxable combat income primarily due to higher marginal rates.

Figure 4 shows this effect for households of different structure and spousal income amounts. However, when Service members have dependents, households with spousal income or households where officers' income exceeds the maximum amount of their income that the CZTE can apply to, they may qualify for EITC when they otherwise would not have. This credit can be worth several thousand dollars a year. For very high earners, they can even become eligible for the earned income tax credit when they otherwise would not have (income below \$400,000 for married filing jointly or below \$200,000 for all others).⁹⁷

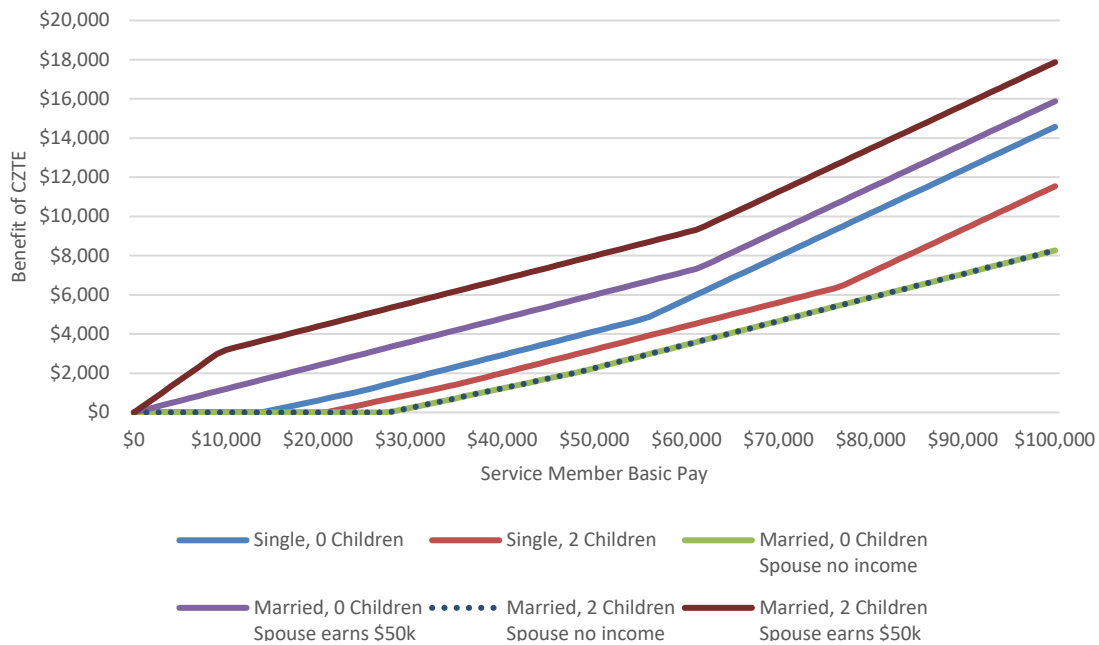


Figure 4. Benefit of 100 percent CZTE Eligibility

As discussed in Chapter 1, higher ranked Service members may have a higher value of statistical life due to factors such as being older and having more financial resources. However, higher ranked Service members also tend to have lower casualty risk.⁹⁸ Given the difference in actual risk faced, junior enlisted are undercompensated compared to others when looking at the benefit of full eligibility for the CZTE.

In Appendix C, we show how estimated effects of the CZTE changes when a smaller proportion of Service members' annual income is excludable. The effects of partial eligibility highlight the potential for inequities in risk compensation. We find that the value

⁹⁷ <https://www.irs.gov/credits-deductions/individuals/child-tax-credit>

⁹⁸ Saul Pleeter, Alexander O. Gallo, Brandon R. Gould, Maggie X. Li, Shirley H. Liu, Curtis J. Simon, Carl F. Witschonke, and Stanley A. Horowitz, "Risk and Combat Compensation," IDA Paper P-4747 (Institute for Defense Analyses, 2011).

of the CZTE to Service members depends on a number of factors including household income, the number of dependents, marital status, spousal income, and whether a Service members' deployment to a CZTE-eligible region is split across years. All of these factors—none of which relate to the level of risk faced by Service members on a deployment—can drastically affect Service members' risk compensation.

1) Estimated Benefit by Rank

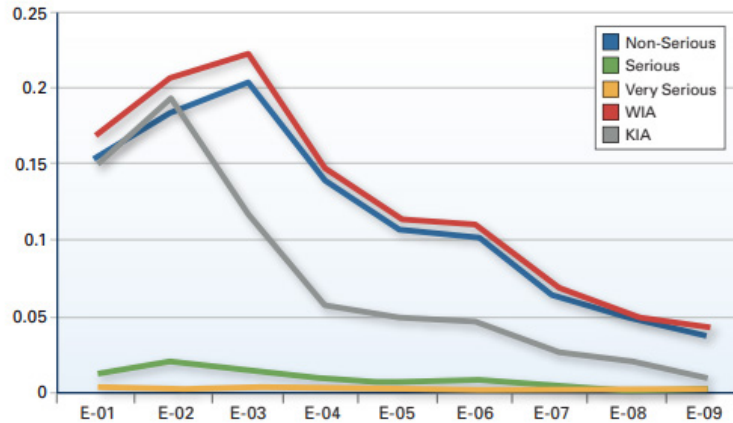
The heterogenous benefit of the CZTE by rank creates a lot of opportunity for highly variable risk compensation. Figure 5 shows that the benefit of the CZTE to senior enlisted and officers far exceeds the benefit junior enlisted received on average in 2023 (2022 for Army). As discussed in Chapter 1, the private sector would compensate individuals with more wealth and higher paying outside options more for the same amount of risk exposure. However, this increased compensation is at most about three times more, whereas for eligible Service members the benefit of the CZTE can be 10 times more for senior officers than junior enlisted.



Note: O-7s, O-8s, O-9s, and O-10s are all included in O-7+

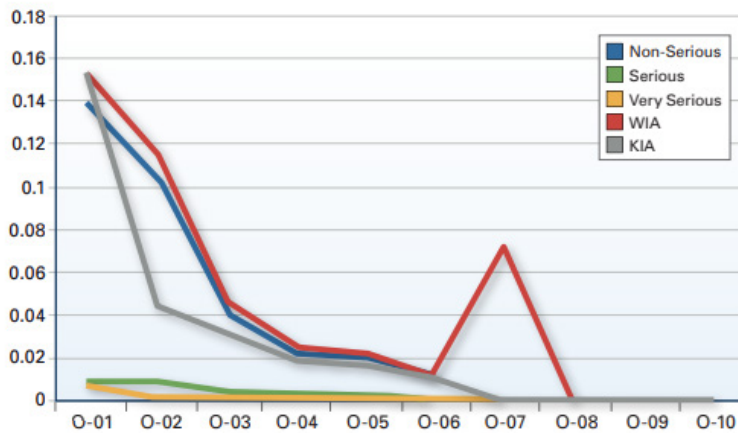
Figure 5. Average Value of the CZTE to Service Members, by Rank

Additionally, it is unlikely that senior enlisted and officers are exposed to more risk than junior enlisted. Due to the limited number of combat fatalities in 2023, we cannot compare our benefit of the CZTE to risk exposure. However, in the 11th QRMC they found that senior enlisted and senior officers had lower rates of casualties and that junior officers had lower rates of casualties than junior enlisted, as show in Figure 6 and Figure 7.



Source: Saul Pleeter, Alexander O. Gallo, Brandon R. Gould, Maggie X. Li, Shirley H. Liu, Curtis J. Simon, Carl F. Witschonke, and Stanley A. Horowitz, "Risk and Combat Compensation," IDA Paper P-4747 (Institute for Defense Analyses, 2011).

Figure 6. Casualty Rates by Enlisted Pay Grade 2005 through 2010



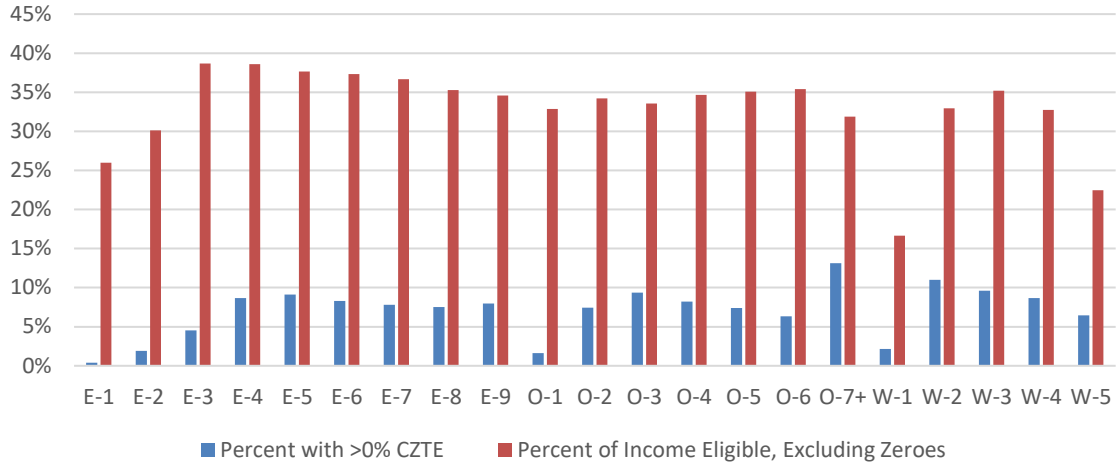
Source: Saul Pleeter, Alexander O. Gallo, Brandon R. Gould, Maggie X. Li, Shirley H. Liu, Curtis J. Simon, Carl F. Witschonke, and Stanley A. Horowitz, "Risk and Combat Compensation," IDA Paper P-4747 (Institute for Defense Analyses, 2011).

Figure 7. Casualty Rates by Officer Pay Grade 2005 through 2010

The share of Service members eligible for the CZTE, by rank, varies; junior officers and junior enlisted members are less likely than more experienced personnel to be eligible for the CZTE. Additionally, conditional on being eligible for the CZTE, junior enlisted have a smaller fraction of their income subject to the CZTE.⁹⁹ This difference in share of income subject to the CZTE can only explain a fraction of the benefit gap we observe in

⁹⁹ Estimating the benefit of the CZTE requires information on income after Service members leave service. Due to missing nonmilitary pay, we assume that Service members have the same monthly income as they did while serving. As a result, the lower share of income eligible for the CZTE for junior enlisted could be due to these individuals' having nonmilitary compensation in the same calendar year prior to enlisting.

Figure 5. Table 10 holds constant the amount of income subject to the CZTE for all ranks and shows that junior enlisted can still receive a small fraction of the benefit that senior enlisted and officers get from the CZTE.



Note: O-7s, O-8s, O-9s, and O-10s are all included in O-7+

Figure 8. Share of Service Members Eligible for the CZTE and Share of Their Income Subject to the CZTE

2) Estimated Benefit by Marital Status

As shown previously, the complexities of the U.S. tax system make it so marital status greatly affects the benefit of the CZTE, with the general pattern that the more one's spouse makes, the more benefit they receive from the CZTE. We observe that married and unmarried Service members have similar rates of eligibility for the CZTE and, conditional on being eligible, we estimate that they have a similar percent of their income subject to it, as shown in Figure 9.

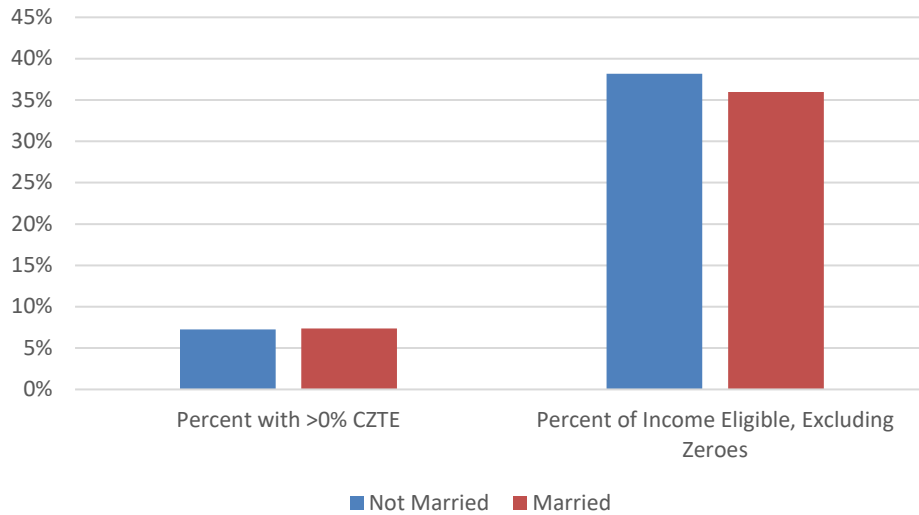


Figure 9. Percent of Service Members Eligible for the CZTE and Percent of Income Subject to the CZTE, by Marital Status

However, when looking at the benefit of the CZTE to Service members by marital status, we estimate that married Service members receive over 50 percent more benefit from the CZTE than do nonmarried Service members, as shown in Figure 10.

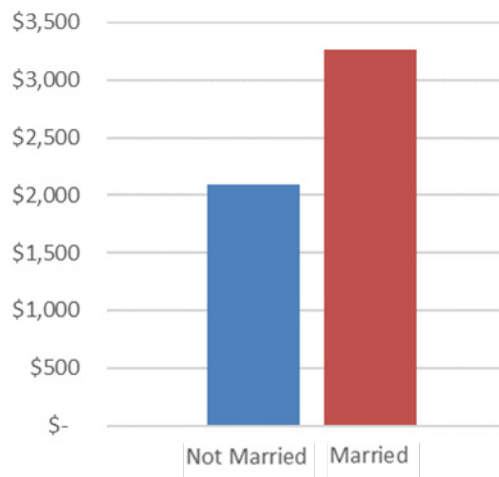


Figure 10. Average Value of the CZTE to Service Members

3) Estimated Benefit by Number of Dependents

Similar to marital status, the number of dependents Service members have significantly affects the benefit of the CZTE. Some of this effect is due to Service members' ability to qualify for EITC. Figure 11 and Figure 12 show that despite having similar rates of CZTE eligibility and a similar percent of their income subject to the CZTE, Service

members with more dependents receive more benefit from the CZTE. It is important to note that some of this difference is due to the greater likelihood that Service members with dependents are married; as discussed in Section 5.A.2.a.2), married Service members tend to benefit more from the CZTE than do unmarried Service members.

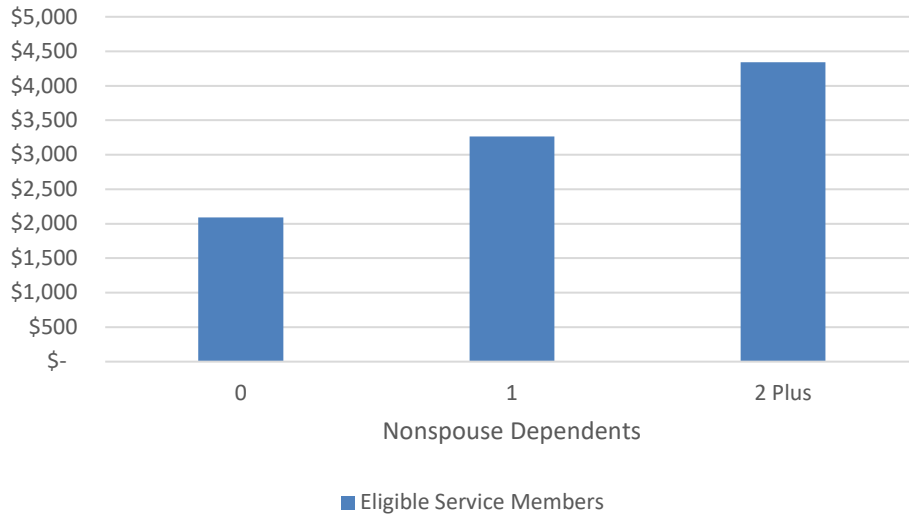


Figure 11. Average Value of the CZTE to Service Members

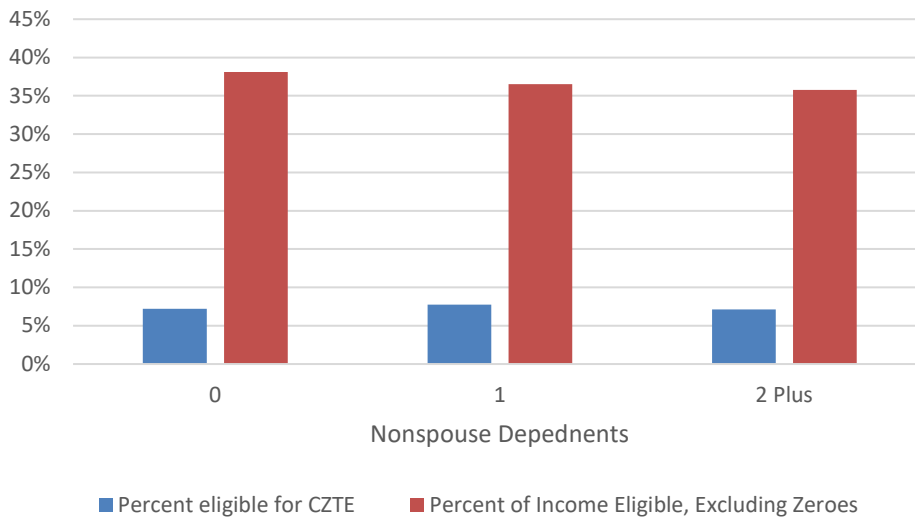


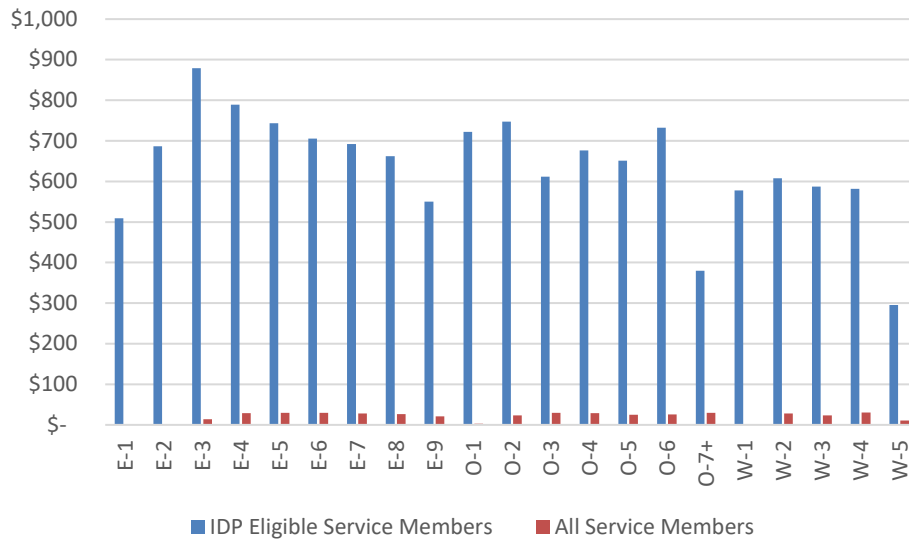
Figure 12. Percent of Service Members Eligible for the CZTE and Percent of Income Subject to the CZTE, by Number of Dependents

B. Imminent Danger Pay

In 2023 (2022 for Army), 46,957 Service members qualified for IDP, receiving a total of \$34.3 million in compensation. This sum amounts to Service members who qualify

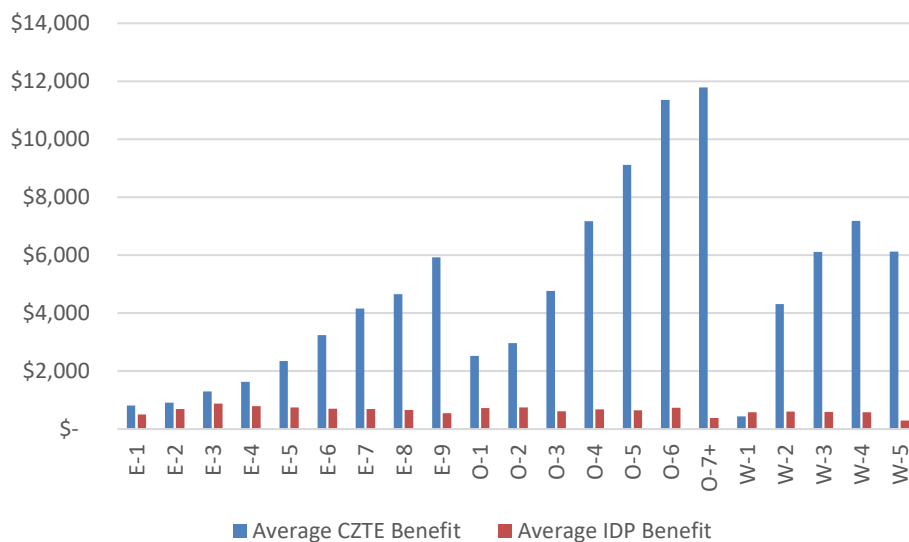
getting an average of \$730 a year in IDP. If all Service members—not just those who qualify—are considered, this benefit averages to only \$24 per Service member. Hence, IDP may have a limited effect on the reenlistment decisions of those who do not have reason to believe they are more likely than others to receive IDP. Because IDP compensation is directly proportional to duration of service in an IDP-designated region, IDP compensation varies less than the CZTE does.

Figure 13 shows the average IDP benefit for Service members who received at least some IDP during the year. Of note, higher paid ranks show different IDP benefit patterns from lower-ranked members. Second, the magnitude of the average benefit is much smaller for IDP than for analogous CZTE; Figure 14 contrasts the average CZTE benefit and IDP benefit for eligible Service members. And third, the limited variance in IDP compensation by rank more closely aligns with past risk, as shown in Figure 6 and Figure 7.



Note: O-7s, O-8s, O-9s, and O-10s are all included in O-7+

Figure 13. Average IDP Compensation



Note: O-7s, O-8s, O-9s, and O-10s are all included in O-7+

Figure 14. Average IDP and CZTE Compensation for Eligible Service members

C. Retention Analysis

In addition to their roles in compensating Service members for risks faced, CZTE and IDP factor in alongside other benefits and special and incentive pays in Service members' decisions about whether to stay in the Services or to leave. To understand the potential retention impact of reducing these benefits, we developed a counterfactual policy scenario using IDA's Military Career Analysis Toolkit (MCAT).¹⁰⁰ MCAT combines a dynamic structural model of military retention decisions with a military career simulation model to predict how retention decisions would change under a counterfactual policy scenario in which all Service members considering reenlistment are no longer eligible for CZTE or IDP. In particular, the model estimates how retention decisions respond to changes in military households' discretionary income, including military compensation, in-kind benefits, and taxes. The policy scenario uses two steps to account for the reduction in CZTE and IDP. First, we predict the impact of this policy change on Service members who are actually affected (i.e., those who would experience a financial loss). Then, we multiply this effect by the fraction of Service members who are expected to be affected by the policy change in order to determine the impact of the policy on overall retention rates.

Note that we do not propose to eliminate all CZTE and IDP benefits as a real policy. Rather, we are estimating an upper bound on the potential retention effects of reducing

¹⁰⁰ See the forthcoming paper by Kambic, Smirnov, and Huff, "Retain the Family: Redefining the Military Compensation Benchmark: Volume II" for additional detail about the MCAT model and the selection of the selection of the fourteen military communities in the model sample.

eligibility for these entitlements. This retention estimate would also not take into consideration the potential offsetting effects of increasing other targeted compensation, such as assignment incentive pay.

Retention decisions in MCAT are a function of the compensation that Service members expect to receive between their current retention decision and the next. For example, enlisted Service members at 4 years of service finishing their initial enlistment contract may be offered a 3-year reenlistment contract. To decide whether to accept the reenlistment contract, the members compare the compensation they expect to receive in the military over the next 3 years to the compensation they could receive if they were to leave the Service. Since CZTE and IDP are associated with location and other features of an assignment, a Service member’s eligibility for these benefits is likely to be correlated over time. We account for this correlation by assuming that if a member receives CZTE/IDP during one year of an assignment, they will receive it during all years of that assignment, but that CZTE/IDP eligibility is not correlated between one assignment and the next. Figure 15 shows the resulting average values of CZTE and IDP, per year and per assignment, for Service members who are eligible for these benefits in each of the communities selected for study.

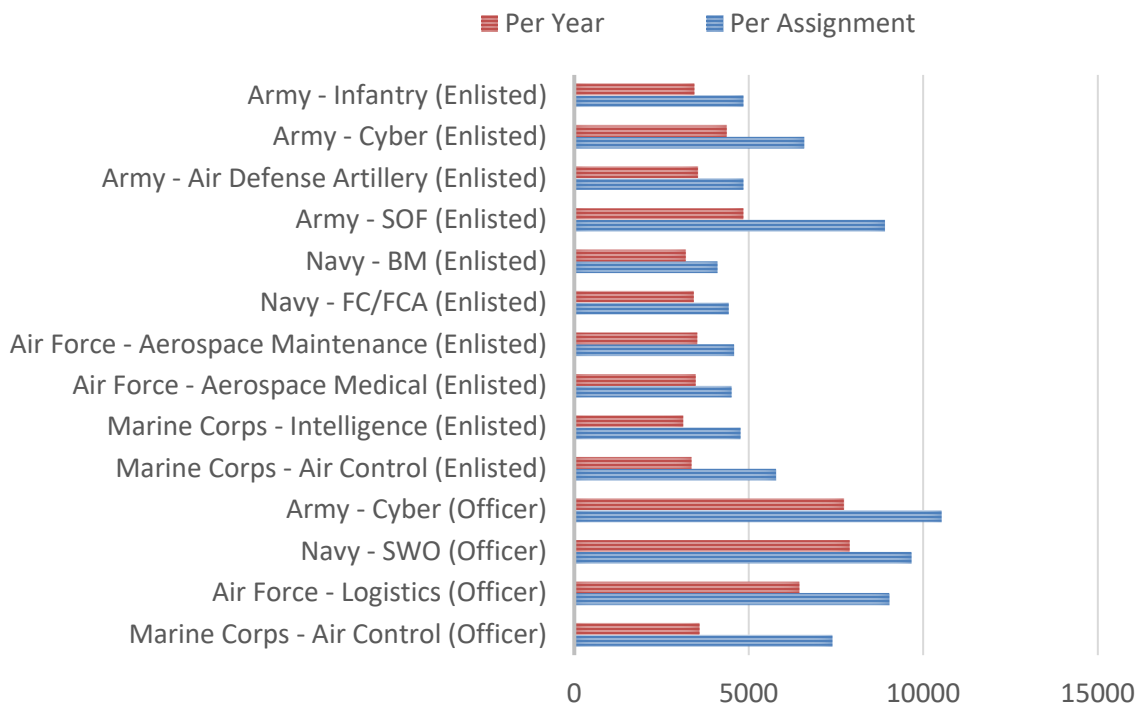


Figure 15. Average Value of CZTE and IDP in the MCAT Sample, by Community

Removing these benefits results in a 3 to 10 percent reduction in retention for members who are eligible for CZTE and IDP across these 14 communities. Figure 16

shows the retention impact for enlisted communities and officer communities, across the entire community and within subgroups. Most officer communities, despite having a high value of CZTE/IDP during years in which they are eligible, also have high military compensation and household income and therefore do not respond strongly to this change. Enlisted members respond more strongly despite having a lower value of CZTE and IDP because their total household income is much lower.

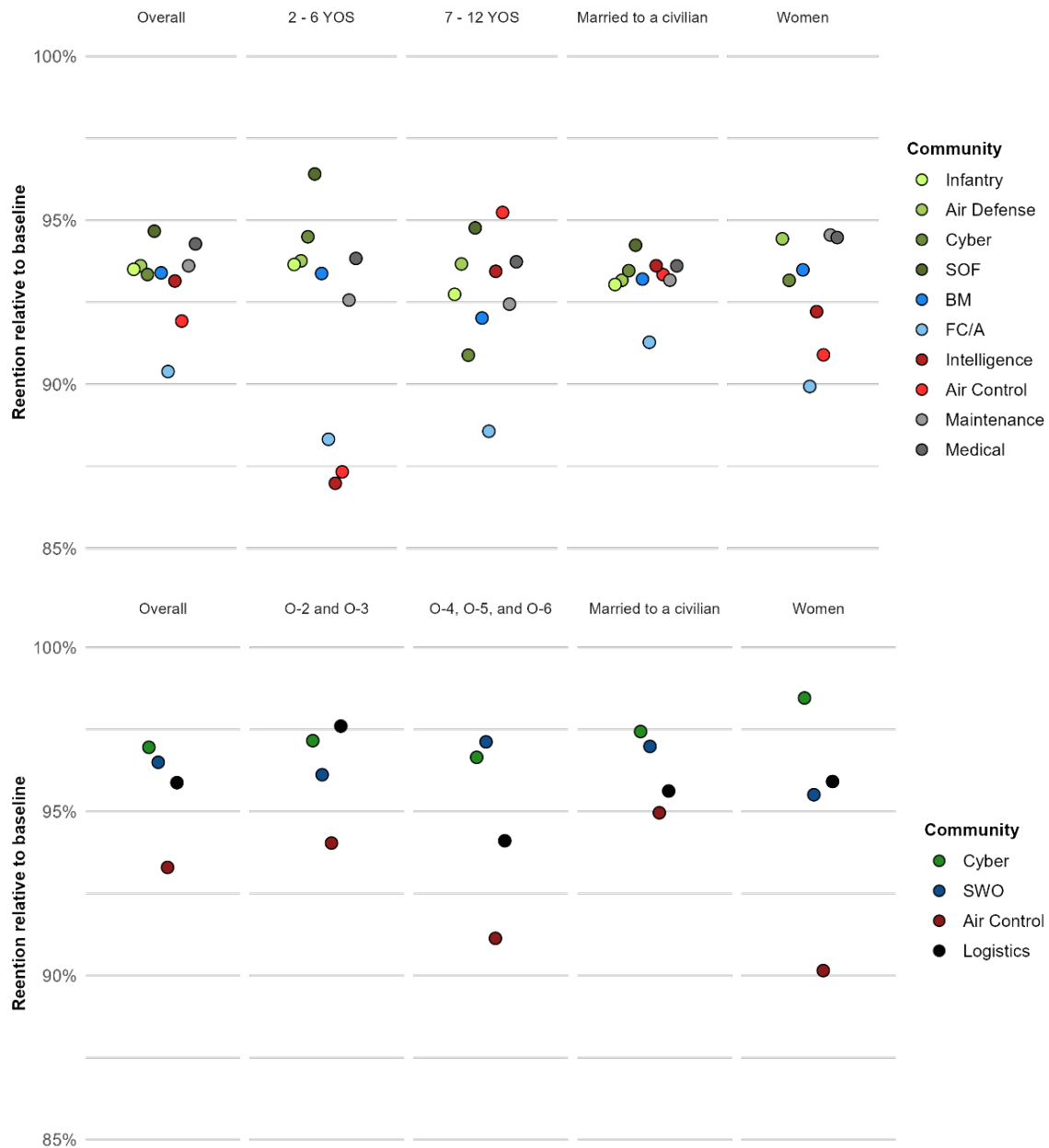


Figure 16. Estimated Retention Impact of Removing CZTE and IDP from Those Affected

Even for CZTE/IDP-eligible members within the same community, the effect of this counterfactual policy change depends on characteristics like years of service, marital status, and gender. This effect is primarily because Service members' household income varies with these characteristics. In general, retention decisions for Service members with lower household income respond more strongly to a change in compensation than do households with higher income. Household income is typically higher for married Service members (due to differences in Basic Allowance for Housing and the possibility of spousal income) and for women (whose spouses typically earn more). However, the overall effect of the policy on these subgroups is not so straightforward, since gender and marital status are also correlated with factors like pay grade and years of service.

While the retention effect of removing CZTE and IDP is not insignificant for members who are affected, the overall effect of the policy change is small due to the small share of members who are eligible for these benefits. The likelihood of eligibility for CZTE depends on many of the same factors that affect the value of CZTE, such as length of service, pay grade, marital status, and whether the member has dependents. On average, between 4 percent and 11 percent of Service members in these communities are expected to be eligible for CZTE. Multiplying these eligibility rates by the retention effect for those who are eligible results in a *retention impact of less than 1 percent* in each community.

Therefore, while removing CZTE and IDP is predicted to affect retention decisions of members facing assignments where they would currently be eligible for these benefits, the financial loss would not significantly affect retention rates across the force. However, it is important to note that the MCAT model was developed to capture the retention impact of policy changes through their effect on household income. In addition to financial losses, changes to CZTE and IDP may affect Service members' decisions in other ways. Specifically, members who are not affected financially may still consider the perceived fairness of the policy change.

D. Summary

We estimate that the CZTE and IDP together cost the Federal Government \$348 million in 2023. This total represents an upper bound on the potential savings from sunsetting these benefits in less risky regions. For example, if eligibility for the CZTE were reduced by half, then the Federal Government could save as much as \$157 million per year. Moreover, the estimated retention effect of reducing CZTE and IDP eligibility is relatively small. In the most extreme case, removing all CZTE and IDP has an estimated retention impact on the order of less than one percent across the total force. More targeted sunsets of CZTE- and IDP eligibility that are limited to low-risk regions are likely to have an even smaller effect on retention. To encourage Service members to continue to volunteer for less favorable deployments, the cost savings from reducing CZTE eligibility could be reapplied to increases in other deployment entitlements, such as Assignment Incentive Pay or the

Family Separation Allowance. This reallocation would further mitigate any retention impacts of a realignment of CZTE and IDP to compensate Service members serving in the most dangerous regions.

In addition, we find that the monetary benefit of the CZTE is not evenly distributed across Service members, regardless of the level of risk that they face. The value of the CZTE generally increases with spousal income, rank, and the number of dependents. Eligible E-2s benefit less than 10 percent as much, on average, from the CZTE as do eligible O-6s. Those eligible for the CZTE with two or more dependents benefit more than twice as much as do those with no dependents. All else equal, a married E-4 with two children and no spousal income, who gets 60 percent of their income eligible from the CZTE, would receive just 16 percent of the benefit they otherwise would receive if they had a spouse earning \$100,000 a year. The inequities in how much Service members benefit from the CZTE stem primarily from increasing marginal tax rates (so higher earners benefit more) and the complexities of the U.S. tax system.

Replacing the CZTE with a tax credit of equal total cost to the government would reduce these inequities. Using 2023 data, we calculated that a refundable tax credit of \$680 for each month a Service member is in a combat zone would impose the same cost on the U.S. tax system as does the current CZTE.

6. Recommendations

IDA proposes the following seven recommendations to realign current combat entitlements with risk and to maintain that realignment into the future.

Recommendation 1: Justify additions, renewals, and termination of CZTE and IDP eligibility using U.S. military casualty statistics and other quantitative and qualitative risk measures from recent years, as outlined in DoDI 1340.09, “Hazardous Pay Program,” which takes into consideration

- A. Acts of violence
- B. Insurrection, war, or wartime conditions
- C. Terrorism conditions
- D. Security environment
- E. Travel restrictions
- F. Presence of dependents in the area

Recommendation 2: OSD should comprehensively review all extant CZTE-eligibility and IDP designations and terminate designations for IDP and direct-support areas that are no longer subject to high levels of risk, as described in the previous recommendation. Note that terminating the IDP designation for a country or region in a QHDA, or for a country or region in direct support to either a combat zone or a QHDA, also removes eligibility for the CZTE. OSD should provide recommendations to the President and to Congress for terminations of combat zone designations and QHDA designations, respectively. DoD does not currently have the authority to remove combat zone or QHDA designations, so the President and Congress would need to support efforts to realign CZTE eligibility with risk, or grant DoD new authorities to terminate CZTE eligibility in combat zones and QHDAs.

If desired, a transition period could be established during which the Services phase out eligibility in low-risk regions. Other forms of compensation, such as Assignment Incentive Pay or the Family Separation Allowance, could be used to encourage Service members to continue to volunteer for less favorable deployments.

Recommendation 3: OSD should establish a fixed schedule to review all CZTE-eligibility and IDP designations to maintain the alignment between risk and combat entitlements. Because a comprehensive review of IDP designations takes about 2 years to

complete, an interval of 4 to 6 years should be kept between the start of consecutive reviews so that they do not stack up “heel-to-toe.”

Recommendation 4: All new CZTE-eligibility and IDP-eligibility entitlements, whether established by the President, Congress, or DoD, should be created with termination dates, so that eligibility automatically ends after a fixed period, unless action is taken to extend the entitlement.

Recommendation 5: The President, the Congress, and DoD should continue to allow for rapid, situational additions to the list of regions eligible for CZTE or IDP, based on changes in the risk in various regions. For urgent situations, leaders should follow the example of the April 2022 IDP designation for Ukraine, which was completed exactly 2 months after the Russian invasion of that country in February 2022.

Recommendation 6: DoD should request that Congress add a permanent NDAA provision granting DoD the authority to remove countries or areas from a QHDA, thereby turning off the CZTE benefit in those locations while maintaining their IDP designation. Any such provision could include the requirement that DoD notify the House and Senate Armed Services Committees (HASC and SASC) prior to finalizing those changes. Further, the provision could levy a requirement that DoD justify its proposed action by providing the HASC and SASC with casualty statistics or other quantitative risk metrics, though the data would not necessarily be publicly releasable due to classification.

Recommendation 7: Consistent with recommendations from the 11th QRMC, Congress should consider instituting refundable tax credits to replace the CZTE, thereby reducing the variability in the level of benefits Service members receive relative to the level of risk that they face. The tax credit should be structured as a fixed amount per month of deployment and indexed to inflation.

Appendix A.

Other Types of Military Compensation That Are Indirectly Related to Combat Risk

This study examined four central considerations regarding various types of military compensation:

- Are the payments explicitly designed to compensate Service members for combat or other risks (for example, as enunciated in Federal statute or in the authorizing legislation), or might the payments have that effect indirectly?
- Is there a baseline amount of payments for normal training in the U.S.? Are there additional payments for deployments (to dangerous locations) or participation in combat? Are the payments made *only* in the latter situations?
- Is there an explicit set of geographical regions where payments are made? Or, are payments made coincidentally to Service members' serving in regions where particular activities occur (e.g., parachute jumps or sea duty)? Is there perhaps no geographical element at all to determining payments?
- If there is an explicit set of geographical regions, how and by whom are those regions determined?

Summary

The following four types of military compensation are not ostensibly related to combat risks but instead have explicit rationales related to working conditions, long deployments, and extended family separations:

- Hazardous Duty Incentive Pays (HDIP)
- Hardship Duty Pay (HDP)
- Career Sea Pay (CSP) and Sea Duty Incentive Pay (SDIP)
- Family Separation Allowance (FSA)

However, the numbers of individuals who qualify and the total amounts paid may be sensitive to the presence of combat operations that lead to extended deployments and unaccompanied tours.

Considerable baseline payments of HDIP are indeed made for normal training in the U.S. For example, soldiers from the 82nd Airborne Division train in parachute duty at Fort

Liberty (formerly Fort Bragg) NC and some sailors assigned to aircraft carriers stationed at homeport in Bremerton WA, Norfolk VA, or San Diego CA qualify for flight deck hazardous duty pay. Of note, some forms of HDIP may be sensitive to certain types of deployment. For example, airborne soldiers engage in combat missions overseas, and aircraft carriers increase their sortie rates when deployed proximate to a combat zone.

HDP-Tempo is available only to Sailors and Marines operationally deployed to a non-U.S. territory. Because this pay is available only beyond the 220th consecutive day of an operational deployment, it may be sensitive to the presence of combat operations that lead to extended deployments.

Both CSP and Career Sea Pay-Premium (CSP-P) are paid for serving aboard a ship, no matter whether the ship is underway or remains in port or if underway or deployed (“chopped”) to a geographical command (e.g., U.S. Pacific Fleet). The two forms of pay are based, respectively, on cumulative and consecutive months of sea duty, but neither CSP nor CSP-P is specifically a deployment pay. However, both CSP and CSP-P may be sensitive to the presence of combat operations that lead to extended deployments.

Finally, FSA is not explicitly paid by location; the allowance covers all personnel who are involuntarily separated from their dependents for more than 30 days, whether inside or outside the United States. However, FSA may be indirectly sensitive to the extent that deployments precipitate movements of military personnel to combat zones or other regions of the world to which members are forbidden from bringing along their dependents.

The remainder of this Appendix contains additional detail on these four types of military compensation.

Hazardous Duty Incentive Pays

Amount

The current types of HDIP and the monthly payment rates are shown in Table A-1. Although a Service member may perform more than three hazardous duties in a given month, the member may not receive simultaneous payments for more than three such duties in a month. The payment for any particular type of hazardous duty is prorated at a daily rate when the duty is performed for only part of a month.¹ For example, consider a Service member who, during a single month, is assigned to a biohazard laboratory for 2 weeks, where she performs two laboratory experiments using dangerous viruses (line 9 of Table A-1); then supports the WMD (weapons of mass destruction) Civil Support Team (line 13 of Table A-1) for the remaining 2 weeks. The member would receive \$75 for the biohazard

¹ DoD Instruction (DoDI) 1340.09, “Hazardous Pay Program,” Section 3.4a, last updated February 2, 2024.

laboratory assignment (half of \$150); then an additional \$75 for the WMD team assignment (half of \$150); for a total of \$150.

Table A-1. Types of Hazardous Duty Incentive Pay

Type of Pay	Monthly Payment Rate
1. Demolition Duty	\$150
2. Diving Duty	\$240
3. Duty Involving Exposure to Highly Toxic Pesticides	\$150
4. Duty Involving Handling Chemical Munitions	\$150
5. Duty Involving Toxic Fuels and Propellants	\$150
6. Experimental Stress Duty	\$150
7. Flight Deck Hazardous Duty	\$150
8. Flying Duty	\$150 – \$250 (aircrew members), \$150 (non-aircrew members)
9. Laboratory Duty Utilizing Live Dangerous Viruses or Bacteria	\$150
10. Maritime Visit, Board, Search, and Seizure Duty	\$150
11. Parachute Duty	\$150 (static line), \$225 (freefall ^a)
12. Polar Region Flight Operations Duty	\$150
13. Weapons of Mass Destruction (WMD) Civil Support Team	\$150

Sources: DoD Instruction (DoDI) 1340.09, “Hazardous Pay Program,” Section 3.4, last updated February 2, 2024; and “Purposes and Uses of Special and Incentive Pay for Military Personnel,” Congressional Budget Office, July 2023, www.cbo.gov/publication/58996, especially Appendix A.

Note: (a) Freefall jumps are also known as High Altitude Low Opening (HALO) jumps.

There is no explicit geographic element to HDIP. For example, soldiers from the 82nd Airborne Division who train at Fort Liberty, NC (formerly Fort Bragg) today qualify for parachute duty pay just as did their predecessors when they jumped into Nimruz Province, Afghanistan in February 2003. Of course, soldiers deployed to Afghanistan also qualified for additional types of combat pay discussed elsewhere in this paper.

Legislative Authority

37 U.S.C. §351 (Hazardous duty pay), most recently amended in Sections 613 and 614 of the National Defense Authorization Act (NDAA) for fiscal year (FY) 2021, Public Law 116-283.

Current Rationale

According to DoDI 1340.09:

HDIP [Hazardous Duty Incentive Pay] provides a monetary incentive to Service members who volunteer to perform a duty designated as hazardous, based upon the inherent dangers of the duty and risks of physical injury.

The duties listed in this issuance are designated as hazardous and the Secretary concerned may offer HDIP payments to eligible service members required to perform these duties under competent orders. Periodically, a review of these duties will be conducted with the Services to determine necessary policy or procedural changes for subsequent issuance.²

Decision maker

The Assistant Secretary of Defense for Manpower and Reserve Affairs reviews and makes determinations on requests by the Secretaries of the military departments to offer HDIP for Service-specific military skills and duty positions. [DoDI 1340.09, Section 2.1h]

Origin and evolution

Whereas military basic pay that all Service members receive is determined solely by pay grade and years of military service, HDIPs are a form of special and incentive (S&I) pay determined by a member's occupational specialty or duties. Some S&I pays are permanently authorized by law, whereas others, including hazardous duty pay, are reauthorized each year in the NDAA.³ Among the other categories of S&I pay that must be reauthorized are:

- Bonuses related to nurse officer candidate accessions
- Special bonus and incentive pays for officers in health professions
- Repayments of educational loans for certain reserve health professionals
- Special pay for nuclear-trained officers
- Special aviation incentive pay
- Contracting bonuses for cadets and midshipman enrolled in the Senior Reserve Officers' Training Corps
- Skill incentive pays or proficiency bonuses

The number of distinct types of S&I pay varies among the Service branches. For example, the active Navy included about 30 types of special pay and 10 types of incentive

² DoD Instruction (DoDI) 1340.09, "Hazardous Pay Program," Section 3.4, last updated February 2, 2024.

³ For example, Section 601(d)(6), "One-year extension of certain expiring bonus and special pay authorities" of the National Defense Authorization Act for Fiscal Year 2023, Public Law 117-263, enacted December 23, 2022.

pay in its budget request for FY 2024.⁴ The Marine Corps had somewhat fewer types, notably excluding submarine duty pay and Navy special warfare skills incentive pay.

While some of the S&I pays are intended to be paid for skills and qualification (e.g., special pay for nuclear-trained officers), others are intended to be paid only when those skills are actually performed. Examples of the latter type include special pay for diving and incentive pay for flying duty and for parachute jumping. Some S&I pays are associated with high-risk specialties; others, such as the bonus for nurse officer accessions, are not.

Shortly after the COVID-19 crisis was acknowledged; DoD gave the Service Secretaries the authority to waive the performance requirements for Service members who were otherwise eligible to receive those S&I pays. That authority, no longer exercised, applied to members of both the active and reserve components.⁵ An earlier IDA study, which compared the budget accounts for FY 2019 and FY 2020 (i.e., before and during the COVID-19 crisis), found that performance waivers were somewhat effective in maintaining the number of members receiving parachute and related incentive pays.⁶

Hardship Duty Pay

Amount

HDP-Location (HDP-L) pay is available in the amounts of \$50, \$100, or \$150 a month based on the level of hardship in a given area.⁷ HDP-Mission (HDP-M) pay is \$150 per month. HDP-M and HDP-L can be received concurrently, yielding a maximum of \$300 per month. HDP-L and HDP-M are payable to both officers and enlisted personnel of the active and reserve components.

HDP-Tempo (HDP-T) pay is available only to Sailors and Marines operationally deployed to any non-U.S. territory. Pay is \$16.50 per day beyond the 220th consecutive day of an operational deployment, up to a maximum of \$495 per month (i.e., 30 days per full month).⁸

⁴ Department of the Navy, FY 2024 Budget Materials, “Military Personnel, Navy,” <https://www.secnv.navy.mil/fmc/Pages/Fiscal-Year-2024.aspx>.

⁵ Department of Defense, Fact Sheet “COVID-19 Military Personnel, Pay, and Benefits Policy – Supplement 1,” April 9, 2020, <https://media.defense.gov/2020/Apr/09/2002278146/-1/-1/1/PAY-PERSONNEL-BENEFITS-FAQ-SUP-1.PDF>.

⁶ Nancy M. Huff et al., “Financial Impacts of the COVID-19 Pandemic on Military Families,” IDA Document D-29850, (Institute for Defense Analyses, April 2023), Chapter 3.

⁷ Defense Finance and Accounting Service, “Hardship Duty Pay Locations,” www.dfas.mil/militarymembers/payentitlements/Pay-Tables/HDP_L/, last posted July 19, 2023.

⁸ Department of the Navy, “MyNavyHR: PERSTEMPO [Personnel Tempo],” <https://www.mynavyhr.navy.mil/Support-Services/PERSTEMPO/>.

Legislative Authority

37 U.S.C. §352 (Assignment pay or special duty pay).

Current Rationale

According to DoDI 1340.26:

HDP-L is designed to recognize service at locations where living conditions are substantially below those normally found within the continental United States and to provide equity across DoD for Service members assigned to these locations ...

HDP-M is designed to recognize permanent or temporary assignment of Service members when conditions are deemed particularly arduous or require Service members to perform duties outside of normal military operations ...

HDP-T is designed to recognize extended or excessive amounts of time outside of a Service member's permanent duty station.⁹

Areas Covered

HDP-L is currently authorized at over 300 locations worldwide, including 6 locations in Alaska.¹⁰ HDP-M includes "performance of a hardship mission [such as] investigative or remains recovery in a remote, isolated area (including, but not limited to, areas in Laos, Cambodia, Vietnam and North Korea) for recovery of U.S. Service member remains."¹¹ A particular example would be assignment to the Defense POW/MIA Accounting Agency's laboratory in Hawaii, which examines skeletal remains.

HDP-T is paid for long deployments of Sailors and Marines to any non-U.S. territory. A change in U.S. defense posture could affect the number of eligible Service members.

Decision-maker

- The ASD(M&RA) promulgates locations and specific amounts for HDP-L.
- The ASD(M&RA) promulgates missions and specific amounts for HDP-M.

⁹ Department of Defense, DoD Instruction 1340.26, "Assignment and Special Duty Pays," Sections 4.4-4.6, last updated January 11, 2019.

¹⁰ Defense Finance and Accounting Service, "Hardship Duty Pay Locations," https://www.dfas.mil/militarymembers/payentitlements/Pay-Tables/HDP_L/, last posted July 19, 2023.

¹¹ Department of Defense: "Military Compensation: Hardship Duty Pay," <https://militarypay.defense.gov/Pay/Special-and-Incentive-Pays/HDP/>.

- The Secretaries of the military departments concerned establish monthly rates, but the maximum amount of HDP-T per month will not exceed \$500.¹²

Origin and evolution¹³

The practice of paying something extra to military personnel serving outside the contiguous United States originated in the extensive deployment of United States “beyond the seas” during the Spanish-American War. The Act of 1900 provided for a special additional pay for Army personnel serving in Puerto Rico, Cuba, the Philippine Islands, Hawaii, and Alaska. Army officers serving in any of the enumerated places became entitled to an additional 10 percent of their “pay proper,” while Army enlisted personnel became entitled to an additional 20 percent. The Act of 1901 extended this foreign duty pay entitlement for Army personnel to service anywhere outside the United States and contiguous territories and authorized similar additional pay for Navy officers and Marine Corps personnel. Although Hawaii, Puerto Rico, Panama, and the Canal Zone were thereafter from time to time excluded as foreign duty pay localities, the basic structure of the pay remained unchanged until repealed by the Act of 1922. Foreign duty pay was not authorized from 1922 to 1942.

The Act of 1942 revived foreign duty pay as a wartime measure and for the first time included Navy enlisted personnel within its scope. The Act provided for commissioned officers to receive an additional 10 percent of base pay, and for warrant officers, enlisted personnel, and “nurses (female)” to receive an additional 20 percent, for service at any place outside the contiguous United States. A few months later, the Pay Readjustment Act of 1942 enacted these foreign duty pay provisions into permanent law.

In 1948, at the request of the Secretary of Defense, the Advisory Commission on Service Pay, sometimes referred to as the Hook Commission, undertook the first comprehensive study of military compensation since 1908. In reviewing military compensation generally, and foreign duty pay in particular, the Hook Commission recommended that this latter pay be abolished for officers but continued, albeit in a modified form, for enlisted personnel. Congress adopted the major portion of the Hook Commission’s reasoning and recommendations concerning foreign duty pay in the Career Compensation Act of 1949. The Act eliminated authorization for foreign duty pay for officers entirely. In addition, it changed the way the entitlement was computed for enlisted personnel, establishing rates ranging from \$8 for the lowest enlisted grade to \$22.50 for

¹² Department of Defense, DoD Instruction 1340.26, “Assignment and Special Duty Pays,” Sections 4.4-4.6, last updated January 11, 2019.

¹³ This section is adapted from history contained in Department of Defense, “Military Compensation Background Papers: Compensation Elements and Related Manpower Cost Items – Their Purposes and Legislative Backgrounds,” Eighth edition, July 2018.

the top enlisted grade. When set in 1949, these rates approximated 10 percent of enlisted basic pay. Because rates were not adjusted for the ensuing 48 years, over time foreign duty pay acquired a pronounced “token” quality.

In 1963, the Department of Defense (DoD) proposed that foreign duty pay be eliminated, along with sea duty pay. While Congress rejected the proposal, in the Uniformed Services Pay Act of 1963 it did change the structure of the pay. Under this restructuring, enlisted members serving outside the contiguous United States were not automatically entitled to foreign duty pay. Instead, the Secretary of Defense was to designate the areas for which the pay was authorized. Congress indicated that factors such as undesirable climate, lack of normal community facilities, and accessibility of location were criteria that should be used in making such designations. Because of differences in climate, amenities, or accessibility, some parts of a “foreign country” were commonly designated for foreign duty pay while other parts of the same country were not. The law specified that foreign duty pay was not to be paid to an individual for duty in a state, Puerto Rico, the Virgin Islands, a foreign country, or a possession of a foreign country of which that individual was a resident.

The NDAA for FY 1998 eliminated the “token” quality of special payment for this type of duty by prescribing a maximum monthly payment of \$300 for members on duty in places designated as hardship duty locations.¹⁴ No differentiation by grade was prescribed. The Act eliminated the restriction of eligibility for such pay to enlisted members by applying the pay simply to “a member of the uniformed service who is entitled to basic pay,” and it lifted the prohibition on paying hardship duty location pay for duty in areas where the member was a resident, as well as the prohibition on receiving this pay together with sea pay during the same service period. The legislation also changed the nomenclature of the special pay, replacing “foreign duty pay” with “hardship duty location pay,” in keeping with the new stipulation that designated duty locations could be either within or outside the United States. The NDAA for FY 1999 made another change of nomenclature, from “hardship duty location pay” to “hardship duty pay.”¹⁵

Between April 2004 and November 2008, an additional \$200 per month in hardship duty pay was paid to military members for each month they were involuntarily extended in Iraq, Afghanistan, and certain theater units. Hardship duty pay was expanded to include a tempo element (HDP-T) in October 2008. A mobilization or deployment tempo that requires a member to perform duties in an operational environment for periods that exceed rotation norms, such as voluntary or involuntary rotations that are frequent or that involve

¹⁴ Section 619, “Availability of Special Pay for Duty at Designated Hardship Duty Locations,” of the NDAA for FY 1998 (Public Law 105-85), enacted November 18, 1997.

¹⁵ Section 617, “Hardship Duty Pay,” of the NDAA for FY 1999 (Public Law 105-261), enacted October 17, 1998.

extensions beyond established goals, is designated as hardship duty for purposes of paying HDP-T. Rotation norms are based on guidance from the Secretary of Defense. The Secretaries of the military departments may establish HDP-T programs under the established guidance. Then-Secretary of the Navy, Hon. Raymond E. Mabus Jr., authorized HDP-T effective September 17, 2014 for Sailors and Marines operationally deployed to a non-U.S. territory.¹⁶ The Departments of the Army and the Air Force did not follow the lead of the Department of the Navy at that time.¹⁷

Career Sea Pay/Sea Duty Incentive Pay

Amount

CSP is paid to Navy and Marine Corps enlisted members and officers who are in sea billets; it is based on pay grade and *cumulative* months of sea duty. A Service member who has served 36 months of *consecutive* sea duty is entitled to an additional Career Sea Pay-Premium (CSP-P) for the thirty-seventh month and for each consecutive month thereafter.

The monthly rates of CSP are posted in DoD's Financial Management Regulation.¹⁸ These rates comply with the statutory cap of \$750 per month, which is reached for certain warrant officers; for enlisted pay grade E-6 (USN Petty Officer First Class; USMC Staff Sergeant) at 18 years of service; and for grades E-7 through E-9 at 13 years of service. The rates were last changed in May 2014.

CSP-P is paid at \$200 per month. However, CSP-P is not explicitly paid in grades E-5 through E-9 for members with more than 8 years of cumulative sea duty; CSP-P is subsumed in their CSP.

¹⁶ Department of the Navy, Naval Administrative Message [NAVADMIN] 221-14, "Extended Deployment Hardship Duty Pay – Tempo (HDP-T)," September 17, 2014, archived at *Navy Cyberspace Blog*, www.navy.mil/blogs/navadmin-221-14.

Explicit, corresponding authorization for Marines was provided in U.S. Marine Corps, Marine Administrative Message [MARADMINS] 510/14, "Authorization for Hardship Duty Pay – Tempo (HDP-T)," October 9, 2014, archived at <https://www.marines.mil/News/Messages/Messages-Display/Article/896694/authorization-for-hardship-duty-pay-tempo-hdp-t/>.

¹⁷ For example, Davis, Kristen, "New special hardship pay does not apply to airmen," *Air Force Times*, September 27, 2014, <https://www.airforcetimes.com/education-transition/jobs/2014/09/27/new-special-hardship-pay-does-not-apply-to-airmen/>.

¹⁸ Department of Defense, Financial Management Regulation, DoD 7000.14-R, "Special Pay – Career Sea Pay," Volume 7A, Chapter 18, Table 18-3, https://comptroller.defense.gov/Portals/45/documents/fmr/Volume_07a.pdf, last updated May 2024. More accessible, and accurate though unofficial websites include: <https://www.military.com/benefits/military-pay/special-pay/officer-career-sea-pay.html>, and <https://www.military.com/benefits/military-pay/special-pay/career-sea-pay.html>.

Legislative authority

37 U.S. Code §305a (Special pay: career sea pay).

Navy and Marine Corps enlisted members and officers are eligible for career sea pay in these circumstances:

While permanently or temporarily assigned to a ship and—

- (i) while serving on a ship the primary mission of which is accomplished while under way;
- (ii) while serving as a member of the off-crew of a two-crewed submarine;
- (iii) while serving as a member of a tender-class ship (with the hull classification of submarine or destroyer); or
- (iv) while serving as an off-cycle crewmember of a multi-crewed ship;
or

While permanently or temporarily assigned to a ship and while serving on a ship the primary mission of which is normally accomplished while in port, but only during a period that the ship is away from its homeport; or

While serving on a ship the primary mission of which is accomplished either while under way or in port as “sea duty” for purposes of this section, even though the duty is performed while the member is permanently or temporarily assigned to a ship-based staff or other unit.¹⁹

Both CSP and CSP-P are paid for serving aboard a ship, whether the ship is underway or remains in port; and if underway, whether or not the ship is deployed (“chopped”) to a geographical command (e.g., U.S. Pacific Fleet). Thus, neither CSP nor CSP-P is specifically a deployment pay. However, both CSP and CSP-P may be sensitive to the presence of combat operations that lead to extended deployments, such as those that upset plans for Sailors or Marines to return to homeport and then rotate from sea billets to shore billets (at which point these forms of pay would cease).

Current Rationale

The intent of Congress in enacting the present CSP entitlement is to provide a key distribution tool for the Navy as well as provide a special payment in recognition of the greater than normal rigors of sea duty, the arduous duty involved in long seagoing deployments and the repetitive nature of assignment to such duty. In line with Congressional intent, Navy policy is to designate eligible self-propelled vessels (ships or craft) in which service

¹⁹ 37 U.S. Code §305a(e) (Special pay: career sea pay).

entails the arduous conditions and separation from home and family demanded of service at sea.²⁰

Decision-maker

The Deputy Chief of Naval Operations for Manpower, Personnel and Training (Office of the Chief of Naval Operations (OPNAV) N1, a Vice Admiral) designates vessels in one of two categories for purposes of CSP via a Navy Administrative Message (NAVADMIN):

- *Category A Vessel.* A classification of ships or craft with a primary mission accomplished while underway and in which the Service member's service qualifies as sea duty.
- *Category B Vessel.* A classification of ships or craft with a primary mission accomplished in port and in which the Service member's service qualifies as sea duty only when the ship or craft is at sea or in a port more than 25 miles from its homeport.

Under OPNAV N1, the Director, Military Personnel Plans and Policy (OPNAV N13, a Rear Admiral) performs an annual recertification of Category A- and B-designated vessels, with assistance of fleet commanders and type commanders, each September. OPNAV N13 also acts upon proposed changes to ship categorization and may modify ship categorizations and determine the standardized policy by which ship-based staffs will be entitled to CSP to include the approval of interim changes to policy.²¹

Sea Duty Incentive Pay

Not to be confused with either CSP or CSP-P, SDIP is an incentive paid to enlisted sailors (but not to officers) in specific ratings, pay grades, or naval enlisted classifications (NECs) to voluntarily remain on sea duty past their prescribed sea tour; or to curtail their current shore duty and return early to sea duty. SDIP falls under the general authorities of 37 U.S.C. §352 (Assignment pay or special duty pay).

The Navy's rationale for SDIP is as follows:

Sea duty is often viewed as particularly arduous for certain ratings, pay grades and skills. This creates difficulty in manning within the Navy's sea-centric framework. While career sea pay [CSP] and career sea pay premium [CSP-P] incentivize Sailors to go to sea, stay at sea and return to sea, some

²⁰ Department of the Navy, Chief of Naval Operations Instruction OPNAVINST 7220.14A, "Career Sea Pay and Career Sea Pay Premium," September 1, 2023, Section 4, <https://www.secnav.navy.mil/doni/Directives/07000%20Financial%20Management%20Services/07-200%20Disbursing%20Services/7220.14A.pdf>.

²¹ Department of the Navy, Chief of Naval Operations Instruction OPNAVINST 7220.14A, "Career Sea Pay and Career Sea Pay Premium," Section 13.

enlisted ratings, pay grades and skills continuously remain undermanned at sea. In an effort to improve sea duty manning, the Navy has established SDIP ... to help harness the talent, energy and motivation of the all-volunteer force. This incentive is designed to immediately aid those enlisted ratings, pay grades and skills with at-sea manning challenges, while broader policies are put in place for long-term sustained manning.²²

The current (as of February 7, 2024) SDIP rates are posted at a Navy website.²³ The SDIP rates are listed for about 100 combinations of rating/NEC and ranges of enlisted pay grades. Rates for eligible combinations vary between \$400 and \$1,000 per month, mostly clustered between \$700 and \$800.

Origin and Evolution²⁴

Sea pay can be traced back as far as the 1948 Report of the Hook Commission.²⁵ The current structure of CSP was largely established in Section 621 of the NDAA for FY 1988 and 1989.²⁶ By the end of the century, enlisted sailors were receiving CSP of between \$50 and \$520 per month, depending on pay grade and cumulative years of sea duty. Warrant officers received between \$130 and \$500 per month, and commissioned officers received between \$150 and \$380 per month.

Section 630 of the FY 2001 NDAA set the current cap for CSP at \$750 per month and established CSP-P at a maximum rate of \$350 per month.²⁷ However, the full authority for

²² Department of the Navy, Director, Military Personnel Plans and Policy (OPNAV N13), Policy Decision Memorandum 002-21, "Sea Duty Incentive Pay Program," October 25, 2021, <https://www.mynavyhr.navy.mil/Portals/55/Reference/PayandBenefits/Documents/SDIP%20PDM%20002-21.pdf?ver=mUyroaBwcmUZrHLqx1ZK2g%3d%3d>.

Originally issued under Policy Decision Memorandum 001-21, "Sea Duty Incentive Pay Program," November 23, 2020,

[https://www.mynavyhr.navy.mil/Portals/55/Reference/PayandBenefits/Documents/SDIP%20Policy%20Decision%20Memorandum%20\(PDM\)%200001-21.pdf?ver=cN3z2FvAcWfpQpe9Ockhg%3D%3D](https://www.mynavyhr.navy.mil/Portals/55/Reference/PayandBenefits/Documents/SDIP%20Policy%20Decision%20Memorandum%20(PDM)%200001-21.pdf?ver=cN3z2FvAcWfpQpe9Ockhg%3D%3D).

²³ Department of the Navy, "SDIP Eligibility Chart," February 7, 2024,

<https://www.mynavyhr.navy.mil/References/Pay-Benefits/SDIP/>.

The website MyNavyHR is well known to Navy personnel.

²⁴ This section is adapted from history contained in Martha E. Koopman and Anita U. Hattiangadi, "Do the Services Need a Deployment Pay?," CNA, CRM D0004458.A2/Final, December 2001. Reprinted as Volume III, Chapter IV of the Ninth Quadrennial Review of Military Compensation, <https://militarypay.defense.gov/References/QRMC/>.

²⁵ Advisory Commission on Service Pay [Hook Commission], "Career Compensation for the Uniformed Forces: A Report and Recommendation for the Secretary of Defense by the Advisory Commission on Service Pay," December 1948.

²⁶ NDAA for FY 1988 and 1989 (Public Law 100-180), Section 621, "Restructuring of career sea pay," enacted December 4, 1987.

²⁷ NDAA for FY 2001 (Public Law 106-398), Section 630, "Career sea pay," enacted October 30, 2000.

CSP-P has never been exercised. CSP-P was initially paid at \$100 per month, but in May 2014 the Navy increased that amount to \$200 per month (where it remains today).²⁸

Family Separation Allowance

Amount

There are three types of Family Separation Allowance.

FSA-R (Family Separation Allowance–Restricted) applies in either of the following circumstances:

- The transportation of dependents is not authorized at government expense, and dependents do not live in the area of the Service member’s permanent duty station
- The transportation of dependents is authorized but a dependent cannot accompany the Service member due to certified medical reasons and the member elects an unaccompanied tour of duty

FSA-S (Family Separation Allowance–Ship) applies when a military member is on duty aboard a ship that is away from homeport for more than 30 days continuously; this allowance includes the situation when a military member redeploys for a period of 30 days or less to homeport and then deploys again for a period of more than 30 days. (In military parlance, “redeploy” implies that a Service member *returns from a deployment*.) Dependents are not required to reside in the area of the permanent duty station for this allowance to apply.

FSA-T (Family Separation Allowance–Temporary) applies when a Service member is on temporary duty continuously for more than 30 days away from their permanent duty station and their dependents are not residing at or near the TDY station. This allowance applies to Service members who

- Must perform TDY before reporting to their initial permanent duty assignment; or
- Redeploy for a period of 30 days or less to the permanent duty station and then deploy again for a period of more than 30 days.

²⁸ “Career Sea Pay Increases: 5 Things to Know and the New Sea Pay Tables,” *All Hands: Magazine of the U.S. Navy*, March 4, 2014, <https://allhands.navy.mil/Stories/Display-Story/Article/1839660/career-sea-pay-increases/>.

Dependents are not required to reside in the area of the permanent duty station in order to receive FSA-T.²⁹

The FY 2024 NDAA increased the amount of FSA that the Services are authorized to pay from \$250 per month to “not less than \$250, and not more than \$400.”³⁰

Legislative Authority

37 U.S.C. §427 (Family separation allowance).

Current Rationale

FSA is intended to partially reimburse members of the uniformed Services involuntarily separated from their dependents for the reasonable amount of extra expenses that result from such separation, and to reimburse members who must maintain a home in the United States for their dependents and another home overseas for themselves for the average expenses of maintaining the overseas home.³¹

Areas Covered

Law and policy do not explicitly link the FSA to geography, as there are no countries or regions specifically designated for the FSA over any period of time. The FSA covers all personnel who are involuntarily separated from their dependents for more than 30 days, whether inside or outside the United States. However, a change in U.S. defense posture could potentially affect the number of eligible Service members. For example, additional deployments to unaccompanied tour locations would trigger eligibility for FSA under the clause, “Transportation of dependents is not authorized at government expense.” These unaccompanied tours include five locations in Alaska.³² The Secretaries of the military departments concerned determine whether a location is accompanied or unaccompanied.³³

²⁹ These eligibility conditions are adapted from Department of the Army, “MyArmyBenefits: Family Separation Allowance (FSA),” [https://myarmybenefits.us.army.mil/Benefit-Library/Federal-Benefits/Family-Separation-Allowance-\(FSA\)-?serv=120](https://myarmybenefits.us.army.mil/Benefit-Library/Federal-Benefits/Family-Separation-Allowance-(FSA)-?serv=120).

³⁰ Section 626, NDAA for FY 2024 (Public Law 118 31), enacted December 22, 2023.

³¹ Department of Defense, “Military Compensation Background Papers: Compensation Elements and Related Manpower Cost Items – Their Purposes and Legislative Backgrounds,” Eighth edition, July 2018, p. 827.

³² Department of Defense, “Tour Lengths and Tours of Duty Outside the Continental United States (OCONUS),” https://www.travel.dod.mil/Portals/119/Documents/JTR/Supplements/TOUR_LENGTHS_AND_TOURS_OF_DUTY_OCONUS.pdf, last posted May 30, 2024.

³³ Department of Defense, DoD Instruction 1315.18, “Procedures for Military Personnel Assignments,” last updated June 24, 2019.

Decision-maker

The process for setting FSA policy is described in DoD Instruction (DoDI) 1340.24.³⁴ The responsibilities are assigned to various offices as follows:

Assistant Secretary of Defense for Manpower and Reserve Affairs:

- Provides FSA guidance to the Military Services
- Serves as the focal point for FSA-related policies and adjudicates requests for exceptions to policy beyond the authorities provided in this issuance
- Recommends changes be made to Volume 7A of DoD 7000.14-R (Financial Management Regulation) as necessary [DoDI 1340.24, Section 2.1]

Under Secretary of Defense (Comptroller):

- Issues specific guidance regarding military pay and procedures for entitlement to FSA in accordance with Chapter 27 of Volume 7A of DoD 7000.14-R (Financial Management Regulation) [DoDI 1340.24, Section 2.2]

Secretaries of the military departments:

- Establish Service-specific policy to administer FSA in accordance with Section 427 of Title 37, U.S.C., and this issuance. This guidance will be coordinated with the Assistant Secretary of Defense for Manpower and Reserve Affairs [DoDI 1340.24, Section 2.3]

Origin and evolution³⁵

The Uniformed Services Pay Act of 1963 established the FSA. The Act stipulated that FSA-II was available only to Service members already receiving the Basic Allowance for Quarters (BAQ).³⁶ The exclusion of members whose dependents instead occupied family-type government quarters during the period of separation was rationalized on the theory that those families had no significant extra expenses for home maintenance and repair. As the full array of family separation expenses came into clearer focus, however, Congress decided this bar was not justified. The Act of December 7, 1970 accordingly eliminated

³⁴ Department of Defense, DoD Instruction 1340.24, “Family Separation Allowance,” last updated June 15, 2023.

³⁵ This section is adapted from history contained in Department of Defense, “Military Compensation Background Papers: Compensation Elements and Related Manpower Cost Items – Their Purposes and Legislative Backgrounds,” Eighth edition, July 2018.

³⁶ BAQ was later eliminated in 1998 under the consolidation to the Basic Allowance for Housing (BAH). See Section 603, “Consolidation of Basic Allowance for Quarters, Variable Housing Allowance, and Overseas Housing Allowances,” of the NDAA for FY 1998, Public Law 105-85, enacted November 18, 1997.

the BAQ prerequisite for receiving FSA-II. The Department of Defense Authorization Act, 1986 increased FSA-II to \$60 per month.³⁷

The Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 temporarily authorized an increase in FSA-II from \$60 to \$75 for “the period beginning January 15, 1991, and ending on the first day of the first month beginning on or after the date 180 days after the end of the Persian Gulf Conflict.” The NDAA for FY 1992 and 1993 permanently increased FSA-II to \$75 per month.”³⁸

The NDAA for FY 1998 raised the FSA from \$75 per month to \$100 per month.³⁹ In response to the great increase in family separation situations caused by Operation Enduring Freedom and Operation Iraqi Freedom, the Emergency Wartime Supplemental Appropriations Act of 2003 mandated a temporary increase in the allowance to \$250 per month. The NDAA for FY 2005 made the \$250 FSA-II rate permanent.⁴⁰

The Duncan Hunter NDAA for FY 2009 requires the Service Secretaries to pay each member of a married couple a full FSA if both are members of the uniformed Services who are residing together with dependents prior to a qualifying deployment.⁴¹

The FY 2024 NDAA increased the amount of FSA that the Services are authorized to pay from \$250 per month to “not less than \$250 [per month], and not more than \$400.”⁴²

³⁷ Section 607, “Increase in family separation allowance,” of the Department of Defense Authorization Act, 1986 (Public Law 99-145), enacted November 8, 1985.

³⁸ Section 625, “Increase in family separation allowance,” of the NDAA for FY 1992 and 1993 (Public Law 102-190), enacted December 5, 1991.

³⁹ Section 626, “Increase in family separation allowance,” of the NDAA for FY 1998 (Public Law 105-85), enacted November 18, 1997.

⁴⁰ Section 623, “Permanent increase in authorized amounts for imminent danger special pay and family separation allowance,” of the Ronald W. Reagan NDAA for FY 2005 (Public Law 108-375), enacted October 28, 2004.

⁴¹ Section 604, “Availability of second family separation allowance for married couples with dependents,” of the Duncan Hunter NDAA for FY 2009 (Public Law 110-417), enacted October 14, 2008.

⁴² Section 626, NDAA for FY 2024 (Public Law 118 31), enacted December 22, 2023.

Appendix B.

Assumptions for Estimating the Dollar Value of the Combat Zone Tax Exclusion to Service Members

In this appendix, we describe the five key assumptions underlying the cost estimate and their potential effect on the estimated cost of the Combat Zone Tax Exclusion (CZTE).

Service Members Take Only the Standard Deduction

When filing income taxes, Service members must decide to use the standard deduction or to itemize. For 2023, the year of simulation, the standard deduction was \$13,850 for single filers, \$27,700 for married, jointly filing couples, and \$20,800 for head of household filers. For the standard deduction to be optimal, the standard deduction amount must be greater than the following: bad debts; canceled debt on home, capital losses, donations to charity, gambling losses, home mortgage interest, losses from disaster and theft, medical expenses above 7.5 percent of income.¹ The most common itemized deductions are those for state and local taxes, mortgage interest, charitable contributions, and medical expenses.² In 2020 only 10 percent of filers itemized their deductions.³ Due to the historic low interest rates from 2020 to 2022 most home owners will pay less in interest on their home than in 2020.⁴ Another common reason for itemizing is high medical expenses, something less common among Service members.

There are other deductions that can be taken without itemizing. Of note, educator expenses, student loan interest, and select retirement contributions are all deducted from income without the need to itemize. These deductions will primarily be for spouses; hence we do not have data on them.

If a Service member did itemize or have deductions that don't require itemization, then modeling their taxes under these assumptions would likely over estimate their benefit from the CZTE due to them potentially having a lower actual marginal tax rate than what was modeled. However, it is possible, but unlikely, that this could cause some higher

¹ <https://www.irs.gov/credits-and-deductions-for-individuals>.

² <https://www.taxpolicycenter.org/briefing-book/what-are-itemized-deductions-and-who-claims-them>.

³ <https://www.taxpolicycenter.org/briefing-book/what-are-itemized-deductions-and-who-claims-them>.

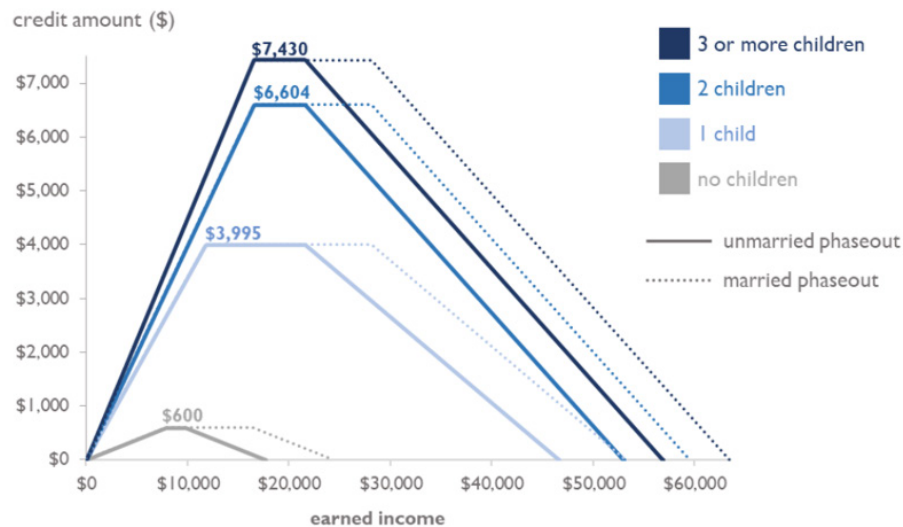
⁴ <https://fred.stlouisfed.org/series/MORTGAGE30US>.

earners to become eligible for the Earned Income Tax Credit when they otherwise wouldn't have been, potentially flipping it so it would underestimate the benefit of the CZTE.

Service Members Correctly Optimize the Earned Income Election

Service members can exclude select income earned while in a combat zone from their taxes while including it as earned income for calculating eligibility for the child tax credit (CTC) and the earned income tax credit (EITC). Many Service members do not choose correctly to include or exclude it when calculating their earned income for EITC or CTC.⁵

The phaseout for CTC starts at \$400,000 for married filing jointly and \$200,000 for all other filing statuses. Hence, it is less likely that Service members do not optimize this than optimizing EITC. EITC is a negative tax rate for low-income Americans, mainly those with children. Figure B-1 was generated by Congressional Research Service and shows how the credit varies with earned income amounts. Hence, low earners would be better off including nontaxable combat zone pay when calculating their earned income for EITC purposes while high earners would be better off not including it.



Source: "The Earned Income Tax Credit (EITC): How It Works and Who Receives It," Congressional Research Service, November 14, 2023, <https://crsreports.congress.gov/product/pdf/R/R43805>.

Figure B-1. EITC Amount by Number of Qualifying Children, Marital Status, and Income in 2023

Given the how large EITC can be and how many Service members could be eligible if they optimized their taxes correctly, assuming that taxes are optimized correctly will overestimate the cost of the CZTE. Using data from 2005 to 2009, the Office of Tax

⁵ Suzanne Gleason and Patricia K. Tong, "Nontaxable Combat Pay Election and the Earned Income Tax Credit," IRS Research Bulletin, U.S. Department of the Treasury, 2015, 207–215, <https://www.irs.gov/pub/irs-soi/15resconong.pdf>.

Analysis found that only 82 percent of Service members optimized correctly; with 29 percent of those that should include nontaxable combat pay excluding it and 17 percent of those that should exclude it including it.⁶ Even for those using a paid tax preparer, 9 percent did not optimize correctly. However, from 2009 through 2021, the use of software (including by paid preparers) to file taxes has increased by over 50 percent.⁷ If this tax software optimizes correctly, then the assumption that Service members optimize correctly is more valid. However, if the tax software does not optimize, it could decrease the rate of optimization by Service members.

Scenarios where Both Members of a Dual-Military Couple are Eligible for the CZTE Are Excluded

Since we were unable to observe the income and career of spouses, we instead simulated spousal income. If both members of a married couples are serving in a combat zone, the couple may be double-counted, as both spouses have a (separate) simulated spouse in the data. This double-counting likely creates a slight upwards bias for total cost of the CZTE. However, for married couples where both spouses serve in a combat zone, the actual benefit per couple is likely greater than our estimate, mitigating the overestimation of the total cost of the CZTE.

Married Service Members Are Assumed to File Jointly

For some married couples with high reimbursable medical expenses or student loan debt, it can be beneficial to sometimes file separately instead of jointly.⁸ Due to not having insight into these cases, and the former being less common among the military population, we assume that all married couples file jointly. This assumption affects a small number of cases and could bias estimates of the value of the CZTE.

The Monthly Civilian Income Of Individuals Who Serve Part of the Year is the Same as Their Monthly Military Income in that Year

The DMDC data does not have income information for Service members prior to joining the military or after departing. However, this information is required to estimate the benefit of the CZTE due to increasing marginal tax rates and tax credits like EITC. To address this missing data, we assume that the Service member's monthly income is equal

⁶ Gleason, Suzanne and Patricia K. Tong, "Nontaxable Combat Pay Election and the Earned Income Tax Credit." <https://www.irs.gov/pub/irs-soi/15resconong.pdf>.

⁷ The number of electronically filed returns went up from an estimated 98,358,434 in 2009 to 150,269,738 in 2021. <https://www.irs.gov/statistics/soi-tax-stats-individual-income-tax-returns-complete-report-publication-1304>.

⁸ <https://www.wsj.com/buyside/personal-finance/taxes/is-it-better-filing-jointly-or-separately>

to their average monthly military income that year. In reality, some Service members may have no income due to joining out of school, leaving for school, joining while not employed, or leaving with no job set up. In other cases, some Service members may leave for careers that pay more than they receive while enlisted. Our assumption is in between the two possibilities.

Appendix C.

Additional Estimates of the Effect of the Combat Zone Tax Exclusion on Household Taxes

The benefit of eligibility for the Combat Zone Tax Exclusion (CZTE) does not scale linearly with the share of income subject to it. Due to increasing marginal rates, the marginal benefit of increases in the percent of income eligible is decreasing. That is, the monetary benefit of going from 0 percent eligible to 50 percent eligible is greater than going from 50 percent eligible to 100 percent eligible.

When Service members only have a fraction of their basic income eligible for CZTE, the pattern remains similar but the difference in benefit between high earning households and low earning households is lessened. Some of this reduction in the difference is because high earning households save less money by having less of their money eligible for CZTE, and some of it is because some low earning households actually benefit more from partial eligibility because their earned income gives them more EITC. While Service members have the option to include their earned income for EITC calculations with 100 percent eligibility, they cannot include only a fraction of it, which is often the amount that maximizes EITC. Table C-1 shows the benefit of the CZTE when Service members only have 60 percent of their annual basic pay eligible for it. Married enlisted Service members in single-income households (i.e., where the spouse does not receive income) can benefit more from partial eligibility than full eligibility due to the ability to get EITC.

To highlight the inconsistent relationship between basic pay and the benefit of the CZTE for different households, we plot the benefit of having 60 percent of Service members' income excludable under the CZTE against the income of select households in Figure C-1. For households with two children and either single or married without spousal income, the curve is a bowed-out shape, leading to a very quick increase in the CZTE benefit as income increases until it plateaus at higher incomes. This pattern is due to families becoming eligible for the EITC then slowly losing eligibility. For Service members earning \$60,000, who have two children and a spouse who does not work, the benefit of having 60 percent of their income eligible for the CZTE is more than doubled due to this effect. Even for those without children, the relationship can vary significantly based on spousal income. Service members with spouses who make \$100,000 a year receive more than twice as much benefit from having 60 percent of their income eligible for the CZTE than those whose spouses do not work.

Table C-1. Benefit of 60 %t CZTE Eligibility: Reduction in Household Federal Income Taxes when 60% of Annual Basic Pay is Excludable Compared to 0% Excludable

Rank	Median YoS	Income for median YoS	Single, 0 Children	Single, 2 Children	Married, 0 Children Spouse no income	Married, 0 Children Spouse earns \$50k	Married, 0 Children Spouse earns \$100k	Married, 2 Children Spouse no income	Married, 2 Children Spouse earns \$50k	Married, 2 Children Spouse earns \$100k
E-1	0	\$24,000	\$1,615	\$320	\$584	\$1,728	\$3,003	\$0	\$1,728	\$3,003
E-2	0	\$27,000	\$1,896	\$620	\$600	\$1,944	\$3,519	\$0	\$1,944	\$3,519
E-3	1	\$29,000	\$2,075	\$820	\$730	\$2,088	\$3,828	\$130	\$2,088	\$3,828
E-4	3	\$35,000	\$2,597	\$1,420	\$1,330	\$2,520	\$4,620	\$730	\$2,520	\$4,620
E-5	6	\$43,000	\$2,992	\$5,092	\$2,066	\$3,096	\$5,676	\$2,869	\$3,096	\$5,676
E-6	11	\$53,000	\$3,758	\$8,976	\$2,855	\$3,816	\$6,996	\$6,670	\$3,816	\$6,996
E-7	17	\$66,000	\$5,790	\$9,911	\$4,185	\$5,227	\$8,712	\$9,985	\$5,227	\$8,712
E-8	20	\$77,000	\$7,682	\$10,134	\$5,195	\$7,119	\$10,164	\$10,741	\$7,119	\$10,164
E-9	25	\$97,000	\$11,122	\$11,983	\$6,795	\$10,559	\$12,804	\$11,146	\$10,559	\$12,804
W-1	11	\$64,000	\$5,446	\$9,840	\$3,945	\$4,883	\$8,448	\$9,745	\$4,883	\$8,448
W-2	16	\$77,000	\$7,682	\$10,134	\$5,195	\$7,119	\$10,164	\$10,741	\$7,119	\$10,164
W-3	20	\$94,000	\$10,606	\$11,719	\$6,555	\$10,043	\$12,408	\$11,159	\$10,043	\$12,408
W-4	24	\$111,000	\$13,691	\$13,234	\$7,915	\$12,967	\$14,755	\$11,087	\$12,967	\$14,755
W-5	28	\$127,000	\$16,763	\$14,958	\$10,719	\$15,719	\$17,187	\$12,543	\$15,719	\$17,187
O-1	1	\$46,000	\$3,198	\$6,264	\$2,275	\$3,312	\$6,072	\$3,981	\$3,312	\$6,072
O-2	3	\$69,000	\$6,306	\$10,018	\$4,545	\$5,743	\$9,108	\$10,345	\$5,743	\$9,108
O-3	7	\$86,000	\$9,230	\$10,996	\$5,915	\$8,667	\$11,352	\$11,063	\$8,667	\$11,352
O-4	13	\$109,000	\$13,307	\$13,036	\$7,755	\$12,623	\$14,451	\$11,095	\$12,623	\$14,451
O-5	19	\$130,000	\$17,339	\$15,282	\$11,235	\$16,235	\$17,643	\$12,806	\$16,235	\$17,643
O-6	25	\$160,000	\$22,262	\$20,853	\$16,395	\$21,203	\$22,203	\$16,395	\$21,203	\$22,203
O-7	29	\$187,000	\$26,614	\$26,037	\$21,039	\$25,307	\$26,307	\$21,039	\$25,307	\$26,307
O-8	32	\$216,000	\$32,602	\$32,707	\$25,827	\$28,975	\$29,975	\$25,827	\$28,975	\$29,975
O-9	34	\$222,000	\$33,202	\$33,607	\$26,547	\$29,095	\$30,095	\$26,547	\$29,095	\$30,095
O-10	37	\$222,000	\$33,202	\$33,607	\$26,547	\$29,095	\$30,095	\$26,547	\$29,095	\$30,095

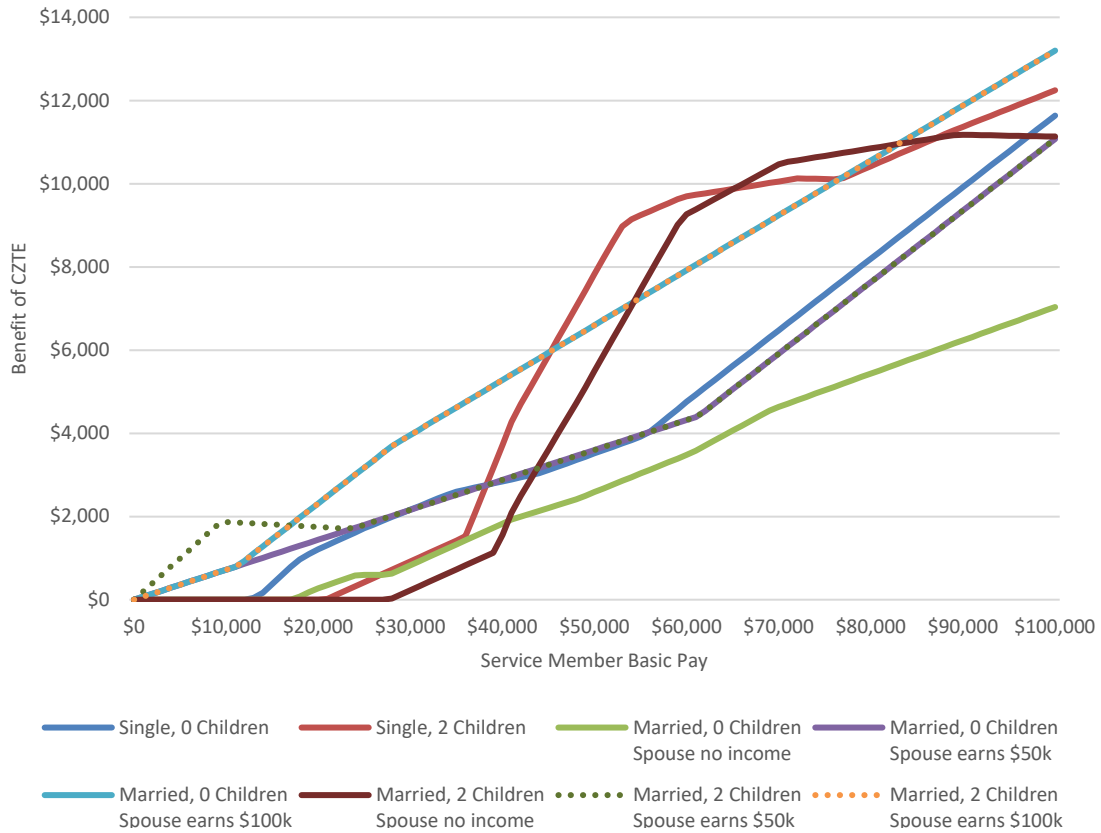


Figure C-1. Benefit of 60 % CZTE Eligibility

In Table C-2, we show the estimated benefit of only having a fifth of a Service member’s annual income be eligible for the CZTE. Of note is that the benefit in Table C-2 usually is much greater than a fifth of the benefit in Table 10. That is, if the benefit of the CZTE was linear with income, the benefit of the CZTE in Table 10 would just be five times the benefits in Table C-2. As a result, this shows that Service members who split their time in a CZTE-eligible region across 2 calendar years (e.g., 8 months in 2022 and 4 months in 2023) benefit more than those who are deployed for the same length of time in a single calendar year (e.g., 12 months in 2023).

Table C-2. Benefit of 20 % CZTE Eligibility: Reduction in Household Federal Income Taxes when 20% of Annual Basic Pay is Excludable Compared to 0% Excludable

Rank	Median YoS	Income for median YoS	Single, 0 Children	Single, 2 Children	Married, 0 Children Spouse no income	Married, 0 Children Spouse earns \$50k	Married, 0 Children Spouse earns \$100k	Married, 2 Children Spouse no income	Married, 2 Children Spouse earns \$50k	Married, 2 Children Spouse earns \$100k
E-1	0	\$24,000	\$480	\$320	\$367	\$576	\$1,056	\$0	\$576	\$1,056
E-2	0	\$27,000	\$598	\$802	\$200	\$648	\$1,188	\$0	\$648	\$1,188
E-3	1	\$29,000	\$678	\$1,146	\$207	\$696	\$1,276	\$130	\$696	\$1,276
E-4	3	\$35,000	\$840	\$2,094	\$700	\$840	\$1,540	\$1,449	\$840	\$1,540
E-5	6	\$43,000	\$1,032	\$2,822	\$860	\$1,032	\$1,892	\$2,541	\$1,032	\$1,892
E-6	11	\$53,000	\$1,272	\$3,482	\$1,155	\$1,272	\$2,332	\$3,387	\$1,272	\$2,332
E-7	17	\$66,000	\$2,622	\$1,604	\$1,584	\$2,059	\$2,904	\$2,987	\$2,059	\$2,904
E-8	20	\$77,000	\$3,388	\$1,878	\$1,848	\$3,388	\$3,388	\$1,848	\$3,388	\$3,388
E-9	25	\$97,000	\$4,268	\$4,268	\$2,328	\$4,268	\$4,268	\$2,328	\$4,268	\$4,268
W-1	11	\$64,000	\$2,374	\$1,893	\$1,536	\$1,811	\$2,816	\$3,276	\$1,811	\$2,816
W-2	16	\$77,000	\$3,388	\$1,878	\$1,848	\$3,388	\$3,388	\$1,848	\$3,388	\$3,388
W-3	20	\$94,000	\$4,136	\$3,986	\$2,256	\$4,136	\$4,136	\$2,256	\$4,136	\$4,136
W-4	24	\$111,000	\$5,046	\$4,907	\$2,664	\$4,884	\$4,987	\$2,664	\$4,884	\$4,987
W-5	28	\$127,000	\$6,070	\$5,931	\$4,623	\$5,588	\$6,011	\$4,623	\$5,588	\$6,011
O-1	1	\$46,000	\$1,104	\$3,042	\$920	\$1,104	\$2,024	\$2,858	\$1,104	\$2,024
O-2	3	\$69,000	\$2,994	\$1,656	\$1,656	\$2,431	\$3,036	\$2,553	\$2,431	\$3,036
O-3	7	\$86,000	\$3,784	\$2,994	\$2,064	\$3,784	\$3,784	\$2,064	\$3,784	\$3,784
O-4	13	\$109,000	\$4,918	\$4,796	\$2,616	\$4,796	\$4,859	\$2,616	\$4,796	\$4,859
O-5	19	\$130,000	\$6,240	\$6,123	\$4,995	\$5,720	\$6,203	\$4,995	\$5,720	\$6,203
O-6	25	\$160,000	\$7,680	\$7,680	\$7,040	\$7,123	\$7,680	\$7,040	\$7,123	\$7,680
O-7	29	\$187,000	\$9,224	\$8,976	\$8,228	\$8,851	\$8,976	\$8,228	\$8,851	\$8,976
O-8	32	\$216,000	\$12,936	\$13,180	\$9,707	\$10,368	\$10,368	\$9,707	\$10,368	\$10,368
O-9	34	\$222,000	\$13,704	\$14,248	\$10,091	\$10,656	\$10,656	\$10,091	\$10,656	\$10,656
O-10	37	\$222,000	\$13,704	\$14,248	\$10,091	\$10,656	\$10,656	\$10,091	\$10,656	\$10,656

Figure C-2 shows the relationship between the percent of annual income that is excludable under the CZTE and the size of the reduction in household taxes due to the CZTE for a few example ranks, assuming median years of service. The decreasing slope as more income becomes eligible for CZTE is due to Service members facing decreasing marginal tax rates as their taxable income decreases. The slight negative slope for E-2s, E-4s, and E-6s is from 80 percent to 100 percent is due to a loss of eligibility for EITC plus the standard deduction meaning that they don't save any money by decreasing income. For non-junior enlisted Service members with children, the benefit from a small share of

income being subject to the CZTE is often greater than 100 percent because of the ability to qualify for EITC, as shown in Figure C-3.

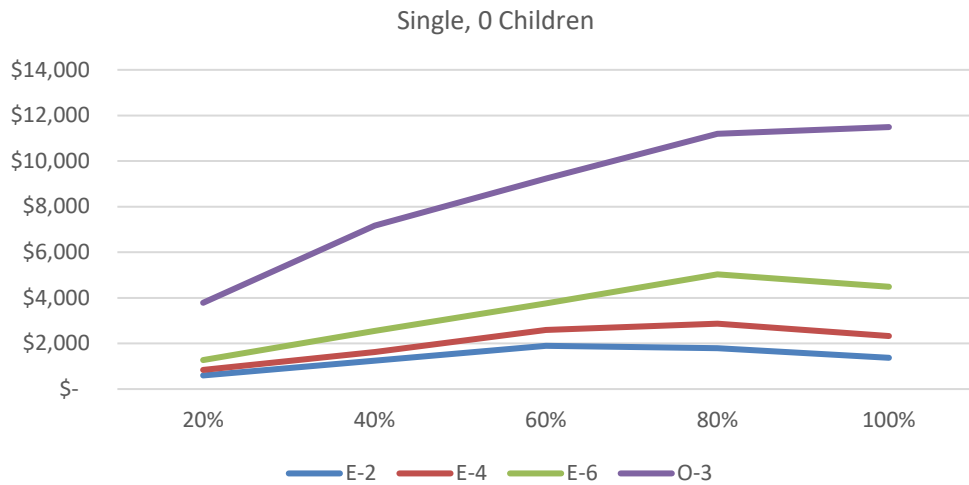


Figure C-2. Benefit of Increasing CZTE Eligibility of Basic Pay for Single Service Members with No Dependents

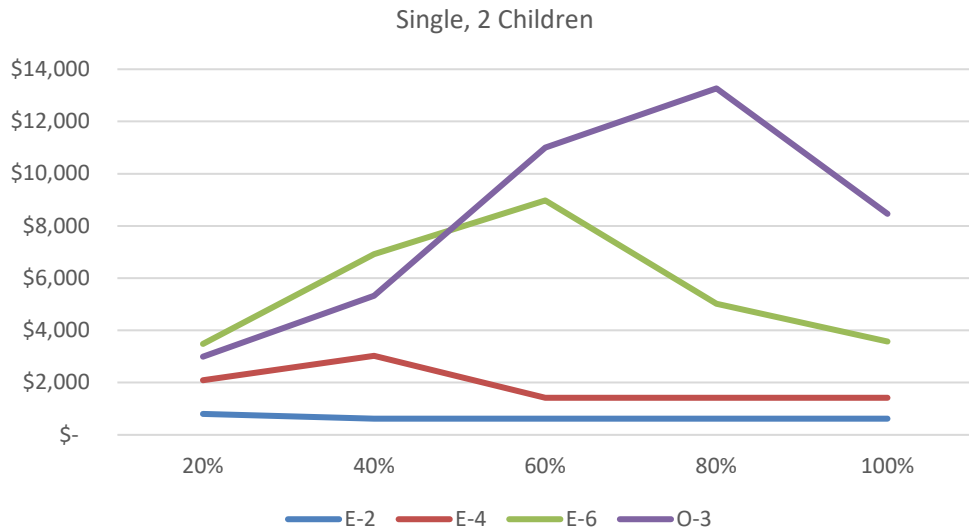


Figure C-3. Benefit of Increasing CZTE Eligibility of Basic Pay for Single Service Members with Two Dependents

For the Service members eligible for the CZTE, on average 35 percent of their normally taxable income is excluded from taxes due to the CZTE. Figure C-4 shows how much of a Service member’s income is subject to the CZTE, conditional on at least some income subject to the CZTE. Over half of Service members that benefit from the CZTE have less than 40 percent of their income subject to it. As a result, many enlisted Service members with children could become eligible for EITC.

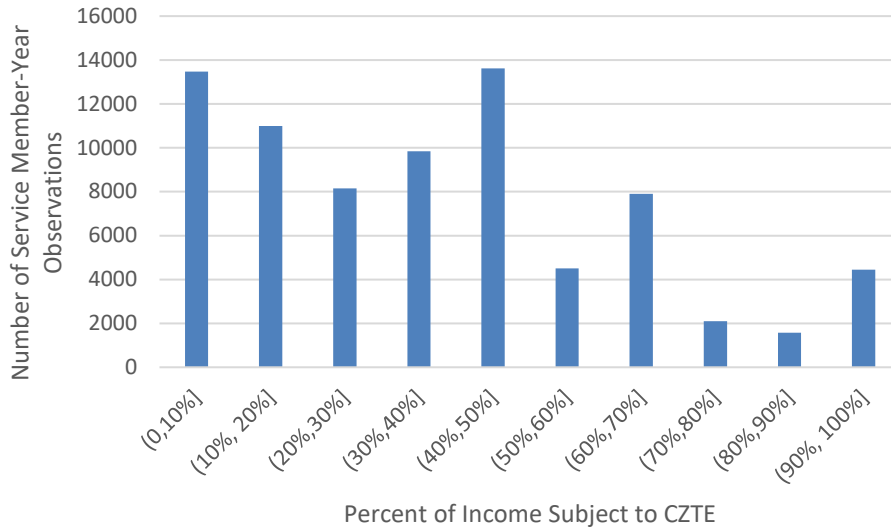


Figure C-4. Distribution of the Percent of Income Subject to CZTE

Estimated Benefit by Branch

Our cross-branch comparisons will exclude Space Force and Coast Guard. Comparing across Air Force, Army, Marine Corp, and Navy we see that the Air Force has the fewest people eligible for CZTE followed by the Navy (Figure C-5). Of note is that conditional on a Service member being eligible for the CZTE, the share of income eligible differs by less than 10 percentage points across branches.

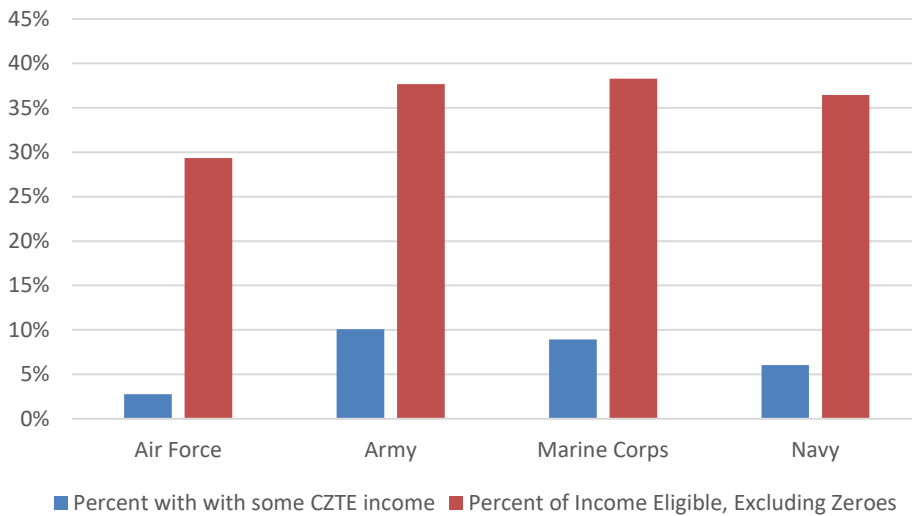


Figure C-5. Percent of Service members Eligible for CZTE and Percent of Income Eligible, by Branch

Figure C-6 shows that the average value of the CZTE for those Service members that are eligible is around \$3,000 for all branches. It also shows that, due to the limited share of Service members who are eligible, the value of the CZTE averaged across all Service members is at most a couple hundred dollars a year in 2023.

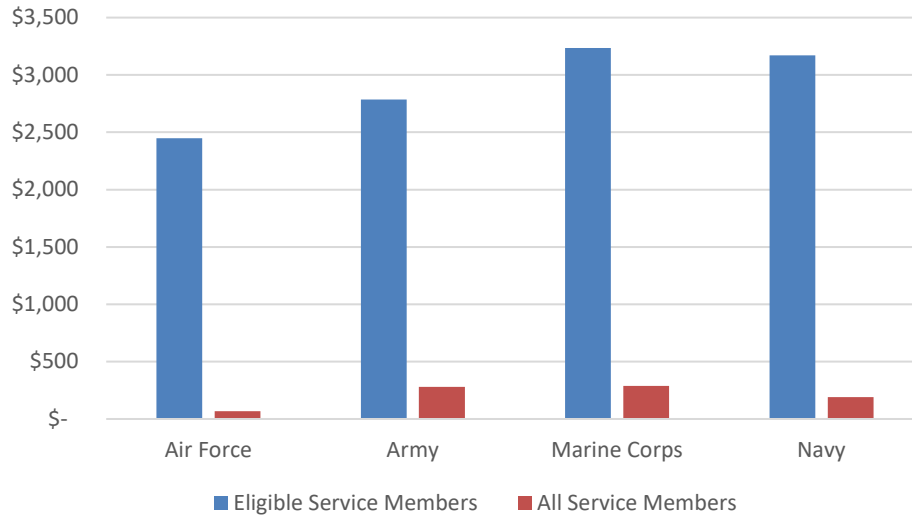


Figure C-6. Average Value of CZTE to Service Members in 2023

Illustrations

Figures

Figure 1. Taxonomy of Military Deaths and Injuries	32
Figure 2. Monthly Distribution of U.S. Hostile Military Casualties, Iraq and Syria, October 2019 through January 2024.....	40
Figure 3. Monthly Distribution of U.S. Hostile Military Casualties, Afghanistan, October 2019 through January 2024.....	41
Figure 4. Benefit of 100 percent CZTE Eligibility	61
Figure 5. Average Value of the CZTE to Service Members, by Rank	62
Figure 6. Casualty Rates by Enlisted Pay Grade 2005 through 2010.....	63
Figure 7. Casualty Rates by Officer Pay Grade 2005 through 2010	63
Figure 8. Share of Service Members Eligible for the CZTE and Share of Their Income Subject to the CZTE	64
Figure 9. Percent of Service Members Eligible for the CZTE and Percent of Income Subject to the CZTE, by Marital Status.....	65
Figure 10. Average Value of the CZTE to Service Members.....	65
Figure 11. Average Value of the CZTE to Service Members.....	66
Figure 12. Percent of Service Members Eligible for the CZTE and Percent of Income Subject to the CZTE, by Number of Dependents	66
Figure 13. Average IDP Compensation	67
Figure 14. Average IDP and CZTE Compensation for Eligible Service members	68
Figure 15. Average Value of CZTE and IDP in the MCAT Sample, by Community.....	69
Figure 16. Estimated Retention Impact of Removing CZTE and IDP from Those Affected	70

Tables

Table 1. Locations for Imminent Danger Pay.....	7
Table 2. DoD Combatant Commands.....	8
Table 3. Designated Combat Zones and Qualified Hazardous Duty Areas.....	15
Table 4. Countries that Currently Qualify for the Combat Zone Tax Exclusion.....	17
Table 5. Countries with U.S. Military Hostile Casualties, October 2019 through January 2024	36
Table 6. Comparison Between Past and Recent U.S. Military Casualty Rates in Afghanistan and in Iraq and Syria	39

Table 7. Non-hostile Deaths in the U.S. Central Command, FY 2020–FY 2022.....	42
Table 8. Locations Allowing Accompanied Tours, but Eligible for IDP	46
Table 9. Procedures for Initiating and Terminating HFP and IDP Locations	53
Table 10. Benefit of 100 Percent CZTE Eligibility: Reduction in Household Federal Income Taxes when 100% of Annual Basic Pay is Excludable, Compared to 0% Excludable	60

References

- “1992 – 2021 The U.S. War in Afghanistan.” Council on Foreign Relations. Accessed October 24, 2024. <https://www.cfr.org/timeline/us-war-afghanistan>.
- “25th Anniversary of Kosovo Peacekeeping Mission.” VFW. March 20, 2024. <https://www.vfw.org/media-and-events/latest-releases/archives/2024/3/25th-anniversary-of-kosovo-peacekeeping-mission#:~:text=U.S.%20troops%20became%20involved%20in,entered%20Kosovo%20on%20the%20ground>.
- Advisory Commission on Service Pay [Hook Commission]. “Career Compensation for the Uniformed Forces: A Report and Recommendation for the Secretary of Defense by the Advisory Commission on Service Pay.” December 1948.
- Air Force Times. “US troops in Ukraine can now earn hazard pay.” Reported by Rachel S. Cohen, July 27, 2023. <https://www.airforcetimes.com/news/your-military/2023/07/27/us-troops-in-ukraine-can-now-earn-hazard-pay/>.
- An Act to amend Section 1035 of Title 10, United States Code (Public Law 89-538). Enacted August 14, 1966.
- An Act to Extend the Tax Benefits Available with Respect to Services Performed in a Combat Zone to Services Performed in the Federal Republic of Yugoslavia (Serbia/Montenegro) and Certain Other Areas, and for Other Purposes.” Public Law 106-21. Enacted April 19, 1999.
- Asch, Beth J., James V. Marrone, and Michael G. Mattock. “An Examination of the Methodology for Awarding Imminent Danger Pay and Hostile Fire Pay.” RAND Corporation. RR 3231 OSD, 2019. www.rand.org/pubs/research_reports/RR3231.html.
- Roy G., and Gladys C. Blakey. “The Revenue Act of 1918,” *The American Economic Review* 9, no. 2 (June 1919): 213. <http://www.jstor.org/stable/1823605>.
- “Career Sea Pay for Enlisted Members.” *Military.com*. <https://www.military.com/benefits/military-pay/special-pay/career-sea-pay.html>.
- “Career Sea Pay Increases: 5 Things to Know and the New Sea Pay Tables.” *All Hands: Magazine of the U.S. Navy*. March 4, 2014. <https://allhands.navy.mil/Stories/Display-Story/Article/1839660/career-sea-pay-increases/>.
- Centers for Disease Control and Prevention, National Center for Health Statistics (NCHS). NCHS Data Brief, Number 456. December 2022. www.cdc.gov/nchs/data/databriefs/db456.pdf.

- Centers for Disease Control and Prevention, National Center for Health Statistics (NCHS). NCHS Data Brief, Number 492. March 2024.
<https://www.cdc.gov/nchs/data/databriefs/db456.pdf>.
- Davis, Kristen. “New special hardship pay does not apply to airmen.” *Air Force Times*. September 27, 2014. www.airforcetimes.com/education-transition/jobs/2014/09/27/new-special-hardship-pay-does-not-apply-to-airmen/.
- Department of Defense. “2022 National Defense Strategy of the United States of America.” October 27, 2022. Unclassified.
<https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF>.
- Department of Defense, Defense Finance and Accounting Service. “Designated Direct Support Areas of a Combat Zone (CZ).”
<https://www.dfas.mil/militarymembers/payentitlements/Pay-Tables/CZ2/>. Last updated November 28, 2023.
- Department of Defense. Defense Finance and Accounting Service, Financial Management Regulation. DoD 7000.14-R. “Special Pay – Career Sea Pay.” Volume 7A, Chapter 18, Table 18-3.
https://comptroller.defense.gov/Portals/45/documents/fmr/Volume_07a.pdf. Last updated May 2024.
- Department of Defense. Defense Finance and Accounting Service, Financial Management Regulation. DoD 7000.14-R. “Family Separation Allowance.” Volume 7A, Chapter 27.
https://comptroller.defense.gov/Portals/45/documents/fmr/Volume_07a.pdf. Last updated May 2024.
- Department of Defense. Defense Finance and Accounting Service, Financial Management Regulation. DoD 7000.14-R. “Withholding of Income Tax.” Volume 7A, Chapter 44, Table 44-2.
https://comptroller.defense.gov/Portals/45/documents/fmr/Volume_07a.pdf, last updated May 2024.
- Department of Defense. Defense Finance and Accounting Service. Financial Management Regulation. DoD 7000.14-R. “Savings Programs.” Volume 7A, Chapter 51.
https://comptroller.defense.gov/Portals/45/documents/fmr/Volume_07a.pdf. Last updated May 2024.
- Department of Defense. Defense Finance and Accounting Service. “DoD Savings Deposit Program.” www.dfas.mil/MilitaryMembers/sdp/.
- Department of Defense. Defense Finance and Accounting Service. “Family Separation Allowance.” <https://www.dfas.mil/militarymembers/payentitlements/fsa/>.
- Department of Defense. Defense Finance and Accounting Service. “Hardship Duty Pay Locations.” https://www.dfas.mil/militarymembers/payentitlements/Pay-Tables/HDP_L/. Last posted July 19, 2023.

Department of Defense. Defense Manpower Data Center. “Defense Casualty Analysis System: Conflict Casualties.” <https://dcas.dmdc.osd.mil/dcas/app/conflictCasualties>.

Department of Defense. Defense Manpower Data Center. “Defense Casualty Analysis System: U.S. Active Military Deaths by Year and Manner.” <https://dcas.dmdc.osd.mil/dcas/app/summaryData/deaths/byYearManner>.

Department of Defense, Defense Manpower Data Center. “DoD Personnel, Workforce Reports & Publications: Military and Civilian Personnel by Service/Agency and State/Country.” <https://dwp.dmdc.osd.mil/dwp/app/dod-data-reports/workforce-reports>.

Department of Defense. Defense Travel Management Office. “Tour Lengths and Tours of Duty Outside the Continental United States (OCONUS).” Joint Travel Regulations Supplements. www.travel.dod.mil/Portals/119/Documents/JTR/Supplements/TOUR_LENGTHS_AND_TOURS_OF_DUTY_OCONUS.pdf, as of August 21, 2024.

Department of Defense. DoD Instruction 1300.18. “DoD Personnel Casualty Matters, Policies, and Procedures.” Last updated March 29, 2023.

Department of Defense. DoD Instruction 1315.18. “Procedures for Military Personnel Assignments.” Last updated June 24, 2019.

Department of Defense. DoD Instruction 1340.06. “Special Pay for Duty Subject to Hostile Fire.” First issued November 21, 1963, superseded.

Department of Defense. DoD Instruction 1340.09. “Hazardous Pay Program.” Last updated February 2, 2024 .

Department of Defense. DoD Instruction 1340.24. “Family Separation Allowance.” Last updated June 15, 2023.

Department of Defense. DoD Instruction 1340.25. “Combat Zone Tax Exclusion (CZTE).” September 28, 2010.

Department of Defense. DoD Instruction 1340.26. “Assignment and Special Duty Pays.” Last updated January 11, 2019.

Department of Defense. Fact Sheet. “COVID-19 Military Personnel, Pay, and Benefits Policy – Supplement 1.” April 9, 2020. <https://media.defense.gov/2020/Apr/09/2002278146/-1/-1/1/PAY-PERSONNEL-BENEFITS-FAQ-SUP-1.PDF>.

Department of Defense. “Military Compensation: Hardship Duty Pay.” <https://militarypay.defense.gov/Pay/Special-and-Incentive-Pays/HDP/>.

Department of Defense. “Military Compensation Background Papers: Compensation Elements and Related Manpower Cost Items – Their Purposes and Legislative Backgrounds.” Eighth edition. July 2018. https://militarypay.defense.gov/Portals/3/Documents/Reports/Mil-Comp_8thEdition.pdf?ver=2018-09-01-181142-307.

Department of Defense. “Statement from Secretary of Defense Lloyd J. Austin III on Ensuring Freedom of Navigation in the Red Sea.” December 18, 2023.
<https://www.defense.gov/News/Releases/Release/Article/3621110/statement-from-secretary-of-defense-lloyd-j-austin-iii-on-ensuring-freedom-of-n/>.

Department of Defense. Under Secretary (Comptroller). “Defense Budget Overview: United States Department of Defense, Fiscal Year 2022 Budget Request.” May 2021. <https://comptroller.defense.gov/Budget-Materials/>.

Department of Defense Authorization Act. 1984 (Public Law 98-94). Enacted September 24, 1983.

Department of Defense Authorization Act. 1986 (Public Law 99-145). Enacted November 8, 1985.

Department of State. Office of Allowances. “Danger Pay.”
https://aoprals.state.gov/content.asp?content_id=205&menu_id=75.

Department of State. Office of Allowances. “Danger Pay Allowance: Percentage of Basic Compensation.” https://aoprals.state.gov/Web920/danger_pay_all.asp.

Department of State. Office of Allowances. “Frequently Asked Questions: Danger Pay.”
https://aoprals.state.gov/content.asp?content_id=177&menu_id=75.

Department of the Army. “MyArmyBenefits: Family Separation Allowance (FSA).”
[https://myarmybenefits.us.army.mil/Benefit-Library/Federal-Benefits/Family-Separation-Allowance-\(FSA\)-?serv=120](https://myarmybenefits.us.army.mil/Benefit-Library/Federal-Benefits/Family-Separation-Allowance-(FSA)-?serv=120).

Department of the Navy. Chief of Naval Operations Instruction OPNAVINST 7220.14A. “Career Sea Pay and Career Sea Pay Premium.” September 1, 2023.
<https://www.secnav.navy.mil/doni/Directives/07000%20Financial%20Management%20Services/07-200%20Disbursing%20Services/7220.14A.pdf>.

Department of the Navy. Director, Military Personnel Plans and Policy (OPNAV N13). Policy Decision Memorandum 002-21. “Sea Duty Incentive Pay Program.” October 25, 2021.
<https://www.mynavyhr.navy.mil/Portals/55/Reference/PayandBenefits/Documents/SDIP%20PDM%20002-21.pdf?ver=mUyroatBwcmUZrHLqx1ZK2g%3d%3d>.

Department of the Navy. Director, Military Personnel Plans and Policy (OPNAV N13). Policy Decision Memorandum 001-21. “Sea Duty Incentive Pay Program.” November 23, 2020.
[https://www.mynavyhr.navy.mil/Portals/55/Reference/PayandBenefits/Documents/SDIP%20Policy%20Decision%20Memorandum%20\(PDM\)%20001-21.pdf?ver=cN3z2FvAcWfpQpe9Ockhg%3D%3D](https://www.mynavyhr.navy.mil/Portals/55/Reference/PayandBenefits/Documents/SDIP%20Policy%20Decision%20Memorandum%20(PDM)%20001-21.pdf?ver=cN3z2FvAcWfpQpe9Ockhg%3D%3D).

Department of the Navy. Fiscal Year 2024 Budget Materials. “Military Personnel, Navy.”
<https://www.secnav.navy.mil/fmc/Pages/Fiscal-Year-2024.aspx>.

Department of the Navy. “MyNavyHR: PERSTEMPO [Personnel Tempo].”
www.mynavyhr.navy.mil/Support-Services/PERSTEMPO/.

Department of the Navy. Naval Administrative Message [NAVADMIN] 221-14. “Extended Deployment Hardship Duty Pay – Tempo (HDP-T).” September 17,

2014. Archived at *Navy Cyberspace Blog*, www.navycs.com/blogs/navadmin-221-14.
- Department of the Navy. “SDIP [Sea Duty Incentive Pay] Eligibility Chart.” August 8, 2023. <https://www.mynavyhr.navy.mil/References/Pay-Benefits/SDIP/>.
- Department of the Treasury. Internal Revenue Service. 26 CFR (Code of Federal Regulations) § 1.112-1. “Combat zone compensation of members of the Armed Forces.”
- Goldberg, Matthew S. “Casualty rates of US military personnel during the wars in Iraq and Afghanistan.” *Defence and Peace Economics*, vol. 29, no. 1, 2016. <https://doi.org/10.1080/10242694.2015.1129816>.
- Gould, Brandon R., and Stanley A. Horowitz. “History of Combat Pay.” Office of the Under Secretary of Defense for Personnel and Readiness, Report of the Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers. Department of Defense. June 2012, 210–266. Archived at <https://militarypay.defense.gov/References/QRMC/>.
- Gould, Brandon R., and Stanley A. Horowitz, “History of the Combat Zone Tax Exclusion,” in Office of the Under Secretary of Defense for Personnel and Readiness. Report of the Eleventh Quadrennial Review of Military Compensation: Supporting Research Papers. Department of Defense. June 2012, 267–299. Archived at <https://militarypay.defense.gov/References/QRMC/>.
- Huff, Nancy M., Matthew S. Goldberg, Kristen M. Guerrero, Ryan W. Murphy, EunRae Oh, Susan L. Rose, and Zachary N. Szlendak. “Financial Impacts of the COVID-19 Pandemic on Military Families.” IDA Document D-29850. Institute for Defense Analyses, April 2023.
- Internal Revenue Service. “Combat Zones Approved for Tax Benefits.” www.irs.gov/individuals/military/combat-zones. Last updated August 8, 2023.
- Joint Committee on Taxation, “Estimates of Federal Tax Expenditures for Fiscal Years 2023-2027.” December 7, 2023. <https://www.jct.gov/publications/2023/jcx-59-23/>.
- Joint Resolution to authorize the use of United States Army Forces against those responsible for the recent attacks launched against the United States (Public Law 107-40). Enacted September 18, 2001.
- Koopman, Martha E., and Anita U. Hattiangadi. “Do the Services Need a Deployment Pay?.” CNA. CRM D0004458.A2/Final. December 2001. Reprinted as Volume III, Chapter IV of the Ninth Quadrennial Review of Military Compensation. <https://militarypay.defense.gov/References/QRMC/>.
- “Kosovo Conflict.” Britannica. Accessed October 24, 2024. www.britannica.com/event/Kosovo-conflict.
- “Mission.” Multinational Force & Observers. Accessed October 24, 2024. <https://mfo.org/>.
- National Defense Authorization Act for Fiscal Years 1988 and 1989 (Public Law 100-180). Enacted December 4, 1987.

National Defense Authorization Act for Fiscal Year 1998 (Public Law 105-85). Enacted November 18, 1997.

National Defense Authorization Act for Fiscal Year 1999 (Public Law 105-261). Enacted October 17, 1998.

National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398). Enacted October 30, 2000.

National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136). Enacted November 24, 2003.

National Defense Authorization Act for Fiscal Year 2023 (Public Law 117-263). Enacted December 23, 2022.

National Defense Authorization Act for Fiscal Year 2024 (Public Law 118-31). Enacted December 22, 2023.

“Officer Career Sea Pay.” *Military.com*. <https://www.military.com/benefits/military-pay/special-pay/officer-career-sea-pay.html>.

Reuters. “Military Operation Against Ukraine.” February 24, 2022. <https://www.reuters.com/world/europe/russias-putin-authorises-military-operations-donbass-domestic-media-2022-02-24/>.

Revenue Act of 1942: Questions and Answers Containing an Analysis Relative to Public Law No. 753. An Act to Provide Revenue, and for Other Purposes. Approved October 21, 1942, H.R. Document no. 908, 77th Cong. (1942) (enacted). <https://li.proquest.com/elhpdf/histcontext/10695-H.doc.908.pdf>.

“Revenue Act of 1950.” CQ Almanac 1950, 6th ed., Washington, DC: Congressional Quarterly. 1951. 573-95. <http://library.cqpress.com/cqalmanac/cqal50-1375509>.

Spector, Ronald, H. “Vietnam War.” Britannica, October 24, 2024. <https://www.britannica.com/event/Vietnam-War/The-United-States-enters-the-war>.

Tax Cuts and Jobs Act of 2017 (Public Law 115-97). Enacted December 22, 2017.

Tax Policy Center. “Key Elements of the U.S. Tax System: How did the TCJA change the standard deduction and itemized deductions?.” www.taxpolicycenter.org/briefing-book/how-did-tcja-change-standard-deduction-and-itemized-deductions.

“The Gulf War, 1991.” Office of the Historian. Accessed October 24, 2024. <https://history.state.gov/milestones/1989-1992/gulf-war>.

The White House, President William J. Clinton, Executive Order [unnumbered]. “Termination of Combat Zone Designation in Vietnam and Waters Adjacent Thereto.” May 13, 1996. Archived at <https://clintonwhitehouse6.archives.gov/1996/05/1996-05-14-executive-order-terminating-vietnam-as-combat-zone.html>.

The White House, “President Clinton Taking a Stand for Peace in Europe.” March 24, 1999. Archived at

<https://clintonwhitehouse4.archives.gov/WH/Work/032499.html#:~:text=PRESIDENT%20CLINTON%3A,act%20now%20to%20do%20that>.

The White House, President Gerald R. Ford. Speech at Tulane University. April 23, 1975. Documented at <https://www.history.com/this-day-in-history/ford-says-that-war-is-finished-for-america>.

Treatment of Certain Individuals Performing Services in Certain Hazardous Duty Areas (Public Law 104-117). Enacted March 20, 1996.

U.S. Army. "US Army battalion leads multinational force during peace support operations in Kosovo." April 27, 2022.
https://www.army.mil/article/256104/us_army_battalion_leads_multinational_force_during_peace_support_operations_in_Kosovo.

U.S. Marine Corps. Marine Administrative Message [MARADMINS] 510/14.
"Authorization for Hardship Duty Pay – Tempo (HDP-T)." October 9, 2014.
Archived at <https://www.marines.mil/News/Messages/Messages-Display/Article/896694/authorization-for-hardship-duty-pay-tempo-hdp-t/>.

Abbreviations

ASD(ISA)	Assistant Secretary of Defense (International Security Affairs)
ASD(M&RA)	Assistant Secretary of Defense (Manpower and Reserve Affairs)
AWOL	Absent Without Leave
CDC	Centers for Disease Control and Prevention
CJCS	Chairman, Joint Chiefs of Staff
COCOM	Combatant Command
CONUS	Continental United States
CSP	Career Sea Pay
CSP-P	Career Sea Pay-Premium
CZ	Combat Zone
CZTE	Combat Zone Tax Exclusion
DCAS	Defense Casualty Analysis System
DFAS	Defense Finance and Accounting Service
DIA	Defense Intelligence Agency
DMDC	Defense Manpower Data Center
DNBI	Disease and Non-battle Injury
DoD	Department of Defense
DoDI	Department of Defense Instruction
DS	Diplomatic Security
EAC	Emergency Action Committee
FAA	Federal Aviation Administration
FMR	Financial Management Regulation
FPCON	Force Protection Condition
FSA	Family Separation Allowance
FSA-R	Family Separation Allowance-Restricted
FSA-S	Family Separation Allowance-Ship
FSA-T	Family Separation Allowance-Temporary
HALO	High Altitude Low Opening
HASC	House Armed Services Committee
HDIP	Hazardous Duty Incentive Pays
HDP	Hardship Duty Pay

HDP-L	Hardship Duty Pay-Location
HDP-M	Hardship Duty Pay-Mission
HDP-T	Hardship Duty Pay-Tempo
HFP	Hostile Fire Pay
IDA	Institute for Defense Analyses
IDP	Imminent Danger Pay
IRS	Internal Revenue Service
JCT	Joint Committee on Taxation
JTR	Joint Travel Regulation
MARADMIN	Marine Administrative Message
MIA	Missing in action
NAVADMIN	Navy Administrative Message
NCHS	National Center for Health Statistics
NDAA	National Defense Authorization Act
NDS	National Defense Strategy
NOTAL	Notice to Air Missions
NSI	Not seriously ill or injured
OAF	Operation Allied Force
OCONUS	Outside the Continental United States
ODS	Operation Desert Storm
OEF	Operation Enduring Freedom
OFS	Operation Freedom's Sentinel
OIF	Operation Iraqi Freedom
OIR	Operation Inherent Resolve
OND	Operation New Dawn
OPG	Operation Prosperity Garden
OPNAV	Office of the Chief of Naval Operations
OSD	Office of the Secretary of Defense
OUSD(P&R)	Office of the Secretary of Defense for Personnel and Readiness
POW	Prisoner of war
QHDA	Qualified Hazardous Duty Area
QRMC	Quadrennial Review of Military Compensation
S&I	Special and Incentive
SASC	Senate Armed Services Committee
SDIP	Sea Duty Incentive Pay
SDP	Savings Deposit Program

SETL	Security Environment Threat List
SI	Seriously ill or injured
SOCOM	Special Operations Command
U.S.	United States
USD(P)	Under Secretary of Defense (Policy)
USSOCOM	United States Special Operations Command
VSI	Very seriously ill or injured
VSL	Value of a Statistical Life
WIA	Wounded in action
WWI	World War I
WWII	World War II”

REPORT DOCUMENTATION PAGE

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION

1. REPORT DATE xx-01-2025		2. REPORT TYPE Final		3. DATES COVERED	
				START DATE Apr 2023	END DATE Dec 2024
4. TITLE AND SUBTITLE Review of Entitlements for Deployed Members					
5a. CONTRACT NUMBER HQ0034-19-D-0001		5b. GRANT NUMBER		5c. PROGRAM ELEMENT NUMBER	
5d. PROJECT NUMBER BE-7-5253		5e. TASK NUMBER		5f. WORK UNIT NUMBER	
6. AUTHOR(S) Huff, Nancy M.; Christensen, Ben J.; Goldberg, Matthew S.; Horowitz, Stanley A.; Kambic, Jacklyn R.; Smirnov, Mikhail; Stanley, Kelsey R.; Szlendak, Zachary N.					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Institute for Defense Analyses / Systems and Analyses Center Research Division 730 East Glebe Road Alexandria, Virginia 22305				8. PERFORMING ORGANIZATION REPORT NUMBER IDA Product 3003958	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Office of the Under Secretary of Defense, Personnel & Readiness 14th Quadrennial Review of Military Compensation 1500 Defense Pentagon, Rm. 2D573 Washington, DC 20301-1500				10. SPONSOR/MONITOR'S ACRONYM(S) OUSD (P&R)	11. SPONSOR/MONITOR'S REPORT NUMBER
12. DISTRIBUTION/AVAILABILITY STATEMENT Distribution Statement A. Approved for public release: distribution is unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT <p>In this report, we conduct a review of the bases for operationally-oriented compensation and an evaluation for whether this rationale extends to members serving in NDS priority areas, assess the risk for members serving in NDS priority areas, combat zones, or Qualified Hazardous Duty Areas (QHDA), and estimate the cost and retention implications of changing eligibility for operationally-oriented compensation such as the Combat Zone Tax Exclusion (CZTE) and Imminent Danger Pay (IDP). We find that the statutes, policy, historical practice, and feedback from leaders in the Department generally do not support expanding these entitlements to Service members solely on the basis of being deployed in support of NDS priorities. Rather, the criteria for these entitlements should be better aligned to the level of risk faced by Service members. We estimate that realigning CZTE- and IDP-eligibility to only high-risk regions would have a very small effect on retention which could be mitigated by reallocating potential cost savings to other targeted pays. We offer seven recommendations for realigning combat entitlements with risk.</p>					
15. SUBJECT TERMS Compensation; Risk; Combat; Combat Zone Tax Exclusion; Imminent Danger Pay; Quadrennial Review of Military Compensation					
16. SECURITY CLASSIFICATION OF:				17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U		UU	130
19a. NAME OF RESPONSIBLE PERSON Lichte, Lt Col Kim				19b. PHONE NUMBER (703) 697-9832	



U.S. Department of Defense
Office of the Under Secretary of Defense for
Personnel and Readiness
Washington, D.C.