CHAPTER 16

# Reserve Participation and Cost Under a New Approach to Reserve Compensation

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## Summary

Every four years, the Department of Defense (DoD) conducts a Quadrennial Review of Military Compensation (QRMC). One issue considered in the 11th QRMC, which began in 2010, is ensuring that the pay and benefits of Reserve Component (RC) members are consistent with the current and planned use of RC personnel in an operational capacity. The 11th QRMC proposes a new approach to compensating RC members, a total-force approach, in which RC compensation is more closely aligned with the approach used to compensate Active Component (AC) members.

The total-force compensation approach has four elements:

- **Regular military compensation (RMC) based on days of reserve service, regardless of duty status.** RMC includes basic pay, allowances for housing and subsistence, and a tax advantage (allowances are not subject to taxation). Currently, RC members receive different pay levels depending on duty status. Under the total-force approach, they would receive a day of RMC for each day of duty, computed in the same way that active RMC is computed.
- **53 RC retirement points, one for each day of service, regardless of duty status.** In the existing system, RC members accumulate 75 points per year of participation under the model used in this assessment, while under the proposed system RC members accumulate 53 points for 53 days of service.



*The views expressed in this paper represent those of the authors and are not necessarily those of the Department of Defense.*

- **Retirement eligibility after 30 years of service (YOS)**, RC members who have attained 20 qualifying years for retirement benefits can begin receiving benefits on accumulating 10 additional years in the selected, individual ready, or retired reserve, or at age 60, whichever occurs first. Thus an individual could collect reserve retirement benefits within 30 years of starting service. Currently, RC retirement benefits begin at age 60; under the total-force approach, benefits might begin up to 13 years earlier for some individuals.
- **Supplemental pay.** Forms of supplemental pay include incentive pay, pay for RC travel in excess of 50 miles (or 100 miles round trip), and pay for currently unpaid reserve work.

The total-force approach would reduce RC pay but would compensate for the reduction by allowing RC members who qualify to claim retirement benefits earlier than age 60 and by providing supplemental pay, such as incentive pay. The study reported here assesses the force-management and cost effects of this new pay approach on RC participation, AC retention, and cost.

## Approach of This Study

To assess these effects, we used a stochastic dynamic programming model of AC retention and RC participation developed at RAND for the 10th QRMC. Individuals in the model begin their military career in the AC and are assumed to make annual retention decisions to stay or leave. If they leave the AC, they may join the RC and flow in and out of the RC over the remainder of their career. Because individuals start out as AC members, our analysis of RC participation focuses on members who previously served on active duty. The majority of RC participants in the senior years of service have prior AC service and are therefore likely to qualify for RC retirement benefits. The majority of junior-level RC participants do not have prior AC service and are more likely to have fewer years of RC participation. We estimate that RC participants with prior AC service comprise 35 percent to 40 percent of total RC participants. While our model can be extended to non-prior-service RC members, the results reported here are only for those with prior AC service.

In the model, individuals are forward-looking in their decisions, accounting, for example, for the possibility of qualifying for future retirement benefits, and their decisions are affected by uncertainty (which we model with random shocks at every decision point), by compensation, and by their preferences for active and reserve military service relative to the civilian sector. We do not directly observe

these preferences or the random shocks, but we can infer the parameters underlying their distributions using Defense Manpower Data Center (DMDC) data on actual active retention and reserve participation decisions through 2010 of members who began service in 1990–1991. The estimated model parameters permit us to conduct policy simulations to project how AC participation, affiliation with the RC, RC participation, and personnel costs would change under alternative compensation policies. This modeling approach permits evaluation of policies that do not yet exist or that have no direct historical analog. Thus, it is well suited to the purposes of the 11th QRMC.

We used the model estimates to simulate the effects of 11 variants of the total-force compensation approach on AC retention, RC participation, and cost relative to the current baseline approach to RC compensation for officer and enlisted personnel for all four service branches.

The first three variants represent the core QRMC proposal and include all four elements—RMC, 53 points, 30-YOS retirement, and supplemental pay. The form of the supplemental pay is varied. One case considers incentive pay in the form of an annual bonus that is a percentage of basic pay, the amount of which would hold RC prior-service force size constant. In another case, incentive pay is structured as a flat dollar amount, regardless of years of service, also set to hold RC force size constant. In the third case, targeted incentive pay is structured as a flat dollar amount in each year of service between 8 and 15 years. The next three variants are the same as the first three but without the earlier retirement element—RC retirement benefits begin at age 60, as they do under the current retirement system. The seventh alternative includes all four elements, but the supplemental pay consists of travel reimbursement rather than incentive pay. In the remaining alternatives, we remove different elements and revert to the status quo for the purpose of comparison. In one of these variants, we remove supplemental pay, while in another, we remove both 30-YOS retirement and supplemental pay. None of these alternatives includes supplemental pay.

The simulations compute the current costs, retirement costs, and total costs of each variant and the change in cost relative to the baseline case. Current cost is the cost of current compensation and includes RMC (or baseline RC pay in the base case) and any additions to current compensation in the variant under consideration. AC retirement costs are based on the accrual charge sufficient to cover the retirement liability of AC members who retire from the AC plus the part of the retirement liability of AC members who retire from the RC. RC retirement costs are based on the RC retirement liability for the RC force minus the funds credited to the RC retirement account for the accrual charges made during AC service. The total cost for each component is the sum of current and retirement costs.

## Findings

All of the variants we considered have little effect on the AC—effects on force size and cost are within a percentage point or two of the baseline. Thus, we focus on the effects on the RC.

A key finding of our analysis is that the total-force compensation approach with incentive pay set as a flat dollar amount rather than a percentage of basic pay is less costly than the baseline. By design, we chose the dollar amount of the incentive pay to hold RC prior force size constant, and the resulting total RC enlisted and officer cost decreases by about 2.7 percent across all services, a savings of $80 million annually in 2007 dollars. Total RC costs fall despite an increase in retirement costs because current costs fall. Retirement at 30 YOS increases retirement benefits and therefore retirement costs, but this increase is more than offset by a decrease in pay (relative to baseline pay) after YOS 5 and the reduction in retirement costs due to a reduction in retirement points. The simulations indicate that RC participation falls slightly before YOS 20 and increases slightly after YOS 20, although the effects are small and overall RC force size is constant.

In addition, a flat-dollar-amount incentive that targets personnel in YOS 8 to 15 can yield additional savings. The total dollar amount needed to keep prior service RC force size constant when pay is targeted is less than the total needed under the nontargeted arrangements, resulting in a 6.6 percent cost savings ($190 million annually in 2007 dollars) when combined with retirement at 30 YOS, and a 7.3 percent cost savings ($220 million annually in 2007 dollars) when combined with retirement at age 60. It may be difficult for this kind of incentive to gain acceptance, as service members outside the targeted range would earn considerably less than their more senior or junior peers; however, this could be addressed by judicious allocation of some portion of the cost savings toward special or incentive pays for those service members. This point extends to non-prior-service reservists as well. That is, like prior-service reservists, they would not receive targeted incentive pay until YOS 8 to 15, but special or incentive pays such as reserve enlistment or affiliation bonuses could be used in earlier years to sustain non-prior-service participation.

We also considered the total-force compensation approach without the opportunity to retire early. Because the value of retirement benefits is lower under the current retirement-at-60 system, incentive pay would have to be higher to maintain prior-service RC force size. The net result is that this variant results in a more front-loaded RC compensation structure with higher current pay for many personnel and lower retirement benefits. As past research has found, a front-loaded system is more

efficient, although the amount of cost savings depends on the structure of incentive pay. When incentive pay varies with YOS and is a percentage of basic pay, the cost saving is about $20 million, a 0.6 percent change in total prior-service RC cost across the services. When incentive pay is a flat dollar amount, the cost saving is $100 million, about a 3.5 percent change in RC total cost. Finally, when incentive pay is a flat amount but targeted to YOS 8 to 15, the cost saving is $220 million, a 7.3 percent decrease in RC costs. But as in the previous case, part of the cost savings might need to be allocated to special and incentive pays in earlier years to sustain non–prior-service participation. The structure of incentive pay affects the amount of cost savings because it affects the degree to which baseline pay is restored under the total-force pay approach. Interestingly, though not surprisingly, RC retirement costs are lower when RC members retire at age 60 than when they retire earlier at 30 YOS because the value of retirement benefits is lower and post-20-YOS RC participation is a bit lower, even though pre-20-YOS participation is higher. Our overall conclusion is that the total-force compensation approach is viable in either case in terms of maintaining RC force size, whether RC members retire earlier or not.

We also assessed the total-force approach with travel reimbursement as the supplemental pay and found that the RC force size increases by 3 to 4 percent relative to the baseline for enlisted personnel but decreases by 5 to 10 percent for officers. Total RC cost falls for officers, but it stays roughly constant for enlisted personnel. Other considerations may also affect the use of travel reimbursement as supplementary pay. Reimbursing travel expenses may be inefficient if members are willing to travel more than 50 miles one way even in the absence of reimbursement. Our model was not designed to detect this effect. Nonetheless, in this case, the services would be paying an economic rent—i.e., more than required to induce the desired level of participation—which would be inefficient. Furthermore, reimbursing travel expenses may create unintended consequences by inducing RC members to travel longer distances in order to increase their compensation. Reimbursing travel may also be unfair to the extent that those who travel less than 50 miles one way would not receive this benefit. Finally, travel might be considered a work-related expense, not compensation for work performed. Thus, travel reimbursement should probably be used highly selectively for critical personnel or market areas.

We also considered variants in which incentive pay was omitted and the terms of retirement varied and found that supplemental pay is a critical element for maintaining RC force size. Under a policy that includes RMC, 53 retirement points, and retirement at 30 YOS but no supplemental pay, enlisted RC force size falls by 10 to 16 percent for officers and 10 to 19 percent for enlisted personnel.

Finally, we assessed a variant in which the terms of retirement are changed, but not RC pay. In this case, baseline RC compensation is unchanged, but RC members can retire at 30 YOS and they earn 53 points annually. We find that RC participation increases, and enlisted RC force size increases by from 2 to 5 percent, depending on service, but total cost rises because of an increase in retirement costs. Thus, changing the terms of retirement without changing RC pay based on the concept of a day of RMC for a day of duty increases total cost.

## Concluding Thoughts

Our analysis finds that the total-force compensation approach is cost-effective when supplemental pay takes the form of either a flat-amount incentive or targeted incentive pay. The approach moves RC compensation closer in structure to that in the AC by paying RMC for each day of duty, using the same formula as the AC uses, and it allows RC members the opportunity to begin receiving retirement benefits sooner, at 30 YOS. Thus, we conclude that the approach is not only cost-effective but also fairer vis-à-vis the compensation for AC members, and it improves the transparency and simplicity of the overall military compensation system. The approach is viable in terms of meeting RC force requirements, even in the absence of a change in retirement age, but the supplemental pay feature, especially in the form of incentive pay, is critical to ensuring that the RC meets its desired force size. The addition of incentive pay also offers the opportunity for enhanced force-management flexibility, because the amount could vary by occupation, unit type, YOS, and over time depending on force growth targets and economic conditions. Further, the cost savings from the total-force compensation approach could be programmed for other uses to manage the force, such as other special and incentive (S&I) pays or RC family support programs. Thus, the approach enhances force management.

The focus of the 11th QRMC on RC compensation continues a long tradition of policy debate and analysis of the structure of military compensation in general. It remains of utmost importance that the structure of compensation enables the AC and RC to meet their manpower requirements. The present analysis finds that the proposals under consideration by the current QRMC would do so, and the simulations indicate that certain variants would do so more cost-effectively than the baseline system. The 10th QRMC, the Defense Advisory Committee on Military Compensation, and earlier groups also considered proposals that affected the AC retirement benefit, and similar proposals seem likely to be put forth again. Our analysis assumed that AC compensation did not change, but such changes could affect our results. Because our model incorporates AC retention along with (prior-service) RC participation, it can analyze the effects of such changes on both the AC and the RC in conjunction with the 11th QRMC proposals.

Finally, because our analysis focuses on the steady state, it does not address the myriad of questions that may arise in implementing changes. Ensuring successful implementation will require input from many stakeholders and may require further analysis.

## 1. Introduction

The 11th Quadrennial Review of Military Compensation (QRMC) in 2010 examined four aspects of military compensation, one of which was whether the compensation system for members of the Reserve Component (RC) is consistent with the current and planned use of RC personnel.

The RC now plays a more prominent and active role in national security than it did in the past, but the current RC compensation system is not well integrated with that of the Active Component (AC). First, different types of RC duty status result in different levels of compensation. Reservists who are not activated typically participate in inactive-duty training one weekend a month (called *drilling*) and annual training for two weeks, usually in the summer. The two-week annual training is performed on active duty. Daily pay differs depending on whether a reservist is drilling or performing the annual training. Specifically, one weekend day of inactive duty for training yields two days of basic pay, whereas one day of active duty results in one day of basic pay plus allowances. This is inconsistent with the AC approach, in which basic pay for one day of service is the same from day to day.

The RC and AC housing allowance systems also differ. RC members do not receive a housing allowance for inactive duty, and, unlike the AC allowance, the RC allowance is not based on location and in general is lower for RC members who are on active duty for fewer than 31 days.

Finally, the RC retirement system differs from the AC system. Like their AC counterparts, RC members vest at 20 years of service (YOS), but they cannot begin receiving benefits until they are 60 years of age,[1] whereas vested AC members can claim benefits immediately. The RC retirement system is based on a point system in which members accumulate points based on participation, including time served in the AC, if any. However, unlike the AC, RC members receive annual participation points (15 per year), and RC retirement point accumulations are converted into years on the basis of 360 days per year rather than 365 days.[2]

1. As a result of recent legislation, the age at which an RC member who has been deployed in the period beginning January 28, 2008, can begin drawing retirement is decreased by three months for every 90 consecutive days of deployment.
2. The AC and RC retirement systems differ in other important ways not discussed here, and the compensation systems also differ in ways that are not discussed. Differences in the retirement systems are discussed in greater detail in Asch, Hosek, and Loughran (2006).

Consistent with the objectives of military compensation articulated in the Department of Defense's (DoD's) *Military Compensation Background Papers* (Department of Defense, 2005), the RC compensation system should provide incentives for members to serve at the required levels of participation and should be clearly integrated with the AC compensation system to facilitate transitions between the AC and RC and to ensure equitable pay for similar service. More broadly, any reform of RC compensation should be consistent with the broader objectives of military compensation stated in the Military Compensation Background Papers. Any change to the system should simplify and facilitate force management, specifically, the transition between duty statuses, and the new system should be at least as good as the current system with respect to effectiveness, efficiency, and equity. Finally, the new system should align with force-management objectives by ensuring that the services meet their RC manpower requirements given that RC members are anticipated to be used more intensively in an operational capacity than they were in the Cold War era.

The 11th QRMC has proposed a new approach for compensating RC members, "total-force" compensation. The Office of the Secretary of Defense (OSD) asked RAND to assess the force-management and cost effects of changing to this approach, and specifically, the effects of the change on AC retention, the flow of prior AC members to the RC, RC participation, and AC and RC personnel costs. This report describes the results of that assessment.

Under the total-force pay approach, RC members would receive one day's basic pay plus allowances for housing and subsistence for each day of RC duty, regardless of RC duty status, paid according to the same schedules as those for AC duty. Accumulation of RC retirement points would be based on one point per day of duty and would be prorated based on a 365-day year rather than the currently used 360-day year. Further, the total-force approach could include other features. For example, the 11th QRMC recommends allowing RC members to begin claiming retirement benefits when they have accumulated 10 years in the reserves beyond the required 20 qualifying years needed for vesting, or at age 60, whichever occurs first. Thus, RC members who joined the military before age 20 could begin receiving benefits before age 50. Other features that could be included are compensation for unreimbursed travel by RC members, compensation for time spent on RC matters that is currently unpaid, an annual bonus for participation in the Reserve, and additional annual participation points.

To assess the force-management and cost implications of the total-force pay approach, we used a model of the career decisions of military personnel developed at RAND for the 10th QRMC, the dynamic retention model (DRM). The DRM models the decisions of individual members to stay or leave the military as a stochastic

dynamic program, using Defense Manpower Data Center (DMDC) data on the military careers of AC and RC members. The analysis described in this report focuses on prior-service personnel, i.e., individuals who began military service in the AC and then left it, perhaps choosing to participate in the RC and possibly choosing to move back and forth between RC and civilian status. For each AC component, we drew a sample from the DMDC data of 25,000 individuals who entered the component in fiscal year (FY) 1990–1991, and we tracked them through the end of FY 2009. Our data and methods are described in greater detail in Appendix A. As shown there, our estimated models fit the data very well.

We used the model parameter estimates to simulate the effects of compensation alternatives on force-management outcomes such as RC participation. We simulated AC retention by year of service, RC affiliation among those with prior AC service, and RC participation by year of service, and we computed AC force size, AC current and retirement costs, RC prior-service force size, and RC prior-service current and retirement costs. These computations, including our methods for calculating cost, are described in Appendix A.

Focusing on prior-service reservists has three advantages. As discussed in Chapter Two, prior-service reservists are the primary source of trained, experienced personnel for the RC, so it is important to understand whether changes in RC compensation would affect not only RC participation but also AC retention and the willingness of outgoing AC members to join the RC. Also, by including AC service, we can analyze incentives intended to increase the RC join rate of AC members at a reenlistment decision point, as well as changes in AC compensation that might be proposed along with changes in RC compensation. Although AC compensation changes are not part of the total-force pay approach proposed by the 11th QRMC, such changes might affect RC participation and interact with RC compensation changes, so this modeling capability is potentially useful. The RC compensation alternatives that RAND was asked to analyze include changes to the RC retirement system, and we capture the behavioral changes for prior-service reservists, the group most likely to be affected by RC retirement changes. We believe that this group should also be included in future analyses. Chapter Two shows overall RC strength in selected years for prior-service and non–prior-service RC participants and compares our simulated prior-service strength with actual overall strength.

The DRM assumes that service members consider how future opportunities affect current decisions; accounts for past career decisions; allows members to differ in their taste for AC and RC service; incorporates the AC and RC compensation systems, including pay and retirement benefits; recognizes that the future is uncertain; and assumes that individuals respond rationally to that uncertainty in evaluating their

options. A particular advantage of the dynamic approach is that it permits assessment of compensation proposals that have never been tried. Thus, it is well suited for assessing the total-force compensation proposal.

Our implementation of the model has limitations that we return to in Chapter Five. We focus on the AC, the flow of prior AC members to the RC, and the participation in the RC by prior-AC service members. Thus, the analysis omits the participation of non–prior-service RC members. The analysis is a steady-state analysis and assumes that real military and civilian pay and benefits and military promotion policies are stable over time. We do not analyze the transition from the current policy to the steady state under a new policy. We assume a constant personal discount rate over time and across members given their branch and whether they are enlisted personnel or officers. The model omits deployment and deployment-related pays and demographic variables such as education and gender as explanatory variables. Finally, the costing analysis omits the changes in cost associated with training and recruitment. However, these costs are minor relative to the cost of current compensation and retirement. Even with these limitations, the policy simulations provide a fairly accurate measure of the change in retention, participation, and cost under policy alternatives relative to the baseline.

The remainder of this report describes our model and analytical results. Chapter Two presents contextual background. Chapter Three describes the total-force pay approach in greater detail and the RC compensation alternatives we considered. Chapter Four summarizes our key results, with greater details provided in Appendix B. We discuss the findings and present our conclusions in Chapter Five.

## 2. Contextual Background

Reservists can be divided into those with and those without prior AC service. Most junior reserve members are non–prior-service members, and the majority of more experienced members are prior-service members. We focus on prior-service reservists, but to place our analysis in context, we compare total RC strength with our simulated prior-service RC strength by year of service.[3]

We present AC and RC force size in FY 1990, FY 2000, and FY 2009 (the most recent years for which data are available) and show overall and prior-service RC force strength by year of service for those years. The overall RC force data are from official statistics, and the prior-service RC force data are derived from our simulations. Such comparisons are imperfect because the overall RC force data are cross-sectional and not in a steady state, while our simulations are longitudinal and assume a steady state.

3. Our data, estimation approach, and simulation methodology are discussed in Appendix A.

Nevertheless, the comparisons provide some general context for our results, specifically in verifying that junior reservists are mainly non–prior-service and experienced reservists are mainly prior-service.

Significant changes in AC and RC force size occurred in FY 1990, FY 2000, and FY 2009 (Table 2.1). The AC and RC were at their Cold War strength in 1990, but by 2000 they were about one-third smaller. The Army National Guard, Army Reserve, and Navy Reserve felt the brunt of the RC force drawdown, with a combined decrease of 260,000 between FY 1990 and FY 2000. The decreases in the Marine Corps Reserve, Air National Guard, and Air Force Reserve were smaller, at 5,000 to 10,000 each. In the years after 2000, Operation Enduring Freedom (Afghanistan, 2001–present) and Operation Iraqi Freedom (2003–2010) required the AC to add 67,000 soldiers and 23,000 Marines, though the AC Navy and Air Force decreased further, losing 39,000 and 24,000 personnel, respectively. During these years, there was little change in RC strength apart from decreases of 20,000 in the Navy Reserve and 4,400 in the Air Force Reserve.

**Table 2.1. AC and RC Strength, by Fiscal Year**

| Component | FY 1990 | FY 2000 | FY 2009 |
|---|---|---|---|
| Active | | | |
| Army | 728,017 | 467,552 | 532,400 |
| Navy | 574,894 | 365,640 | 326,323 |
| Marine Corps | 196,652 | 171,008 | 194,000 |
| Air Force | 530,863 | 351,322 | 317,050 |
| Total | 2,030,426 | 1,355,522 | 1,369,773 |
| Selected Reserve | | | |
| Army National Guard (ARNG) | 444,224 | 353,045 | 358,391 |
| Army Reserve (USAR) | 310,071 | 206,892 | 205,297 |
| Navy Reserve (USNR) | 152,789 | 86,933 | 66,508 |
| Marine Corps Reserve (USMCR) | 44,530 | 39,667 | 38,510 |
| Air National Guard (ANG) | 117,786 | 106,365 | 109,196 |
| Air Force Reserve (USAFR) | 83,813 | 72,340 | 67,968 |
| Total | 1,153,213 | 865,242 | 845,870 |

Figure 2.1 presents our comparisons for these fiscal years. In each panel, the blue line shows total reserve enlisted strength by YOS, and the red line shows prior-service enlisted strength. Year of service is defined by pay entry base date (PEBD).[4] Total reserve enlisted strength by YOS is the actual count of reserve participants as of

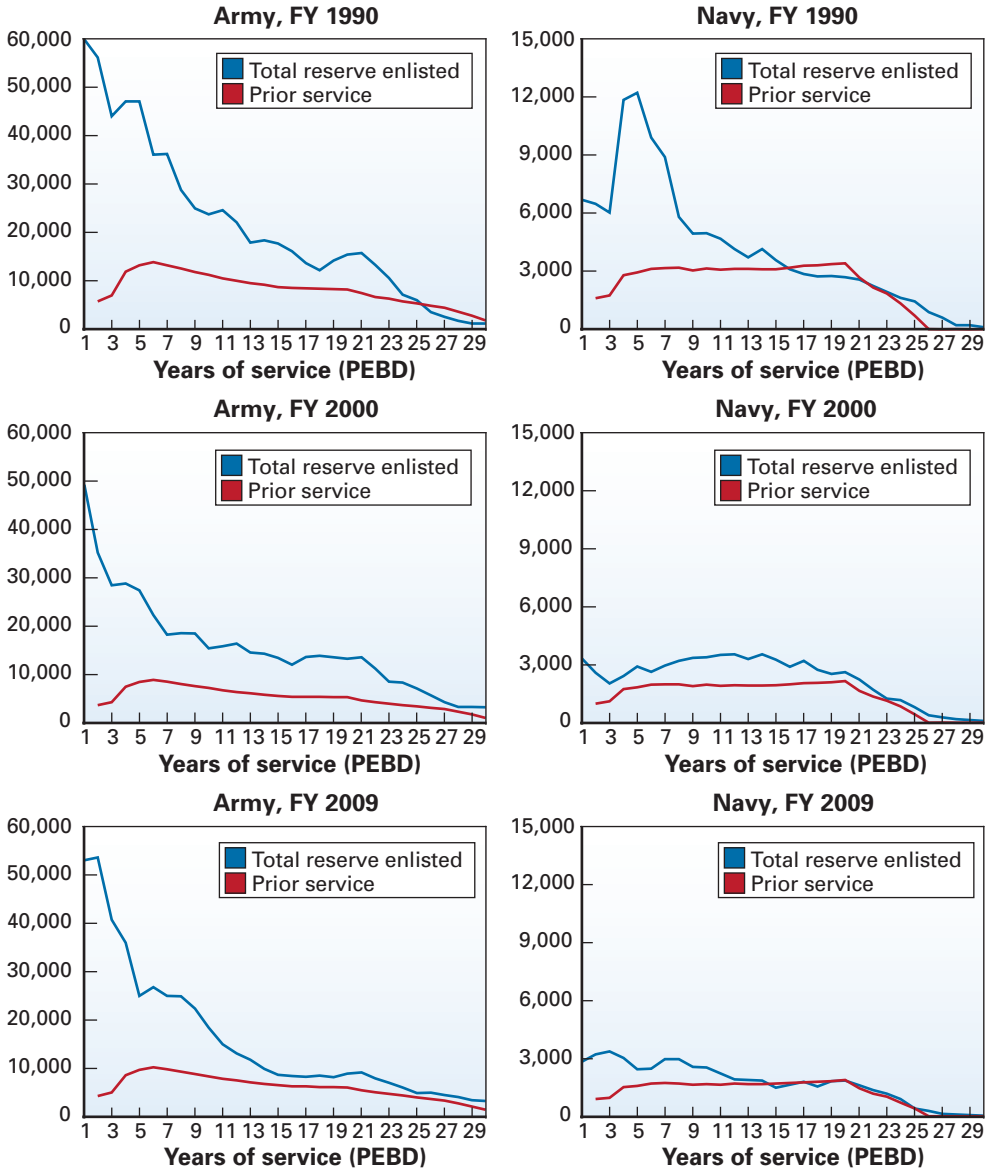


**Figure 2.1. Reserve Enlisted Strength and Predicted Prior-Service Strength, FY 1990, 2000, and 2009**

4. This is customary for the RC. PEBD is a convenient means of including years of AC service as well as years of RC participation. For example, 10 years of PEBD service includes any combination of AC and RC years adding to 10.

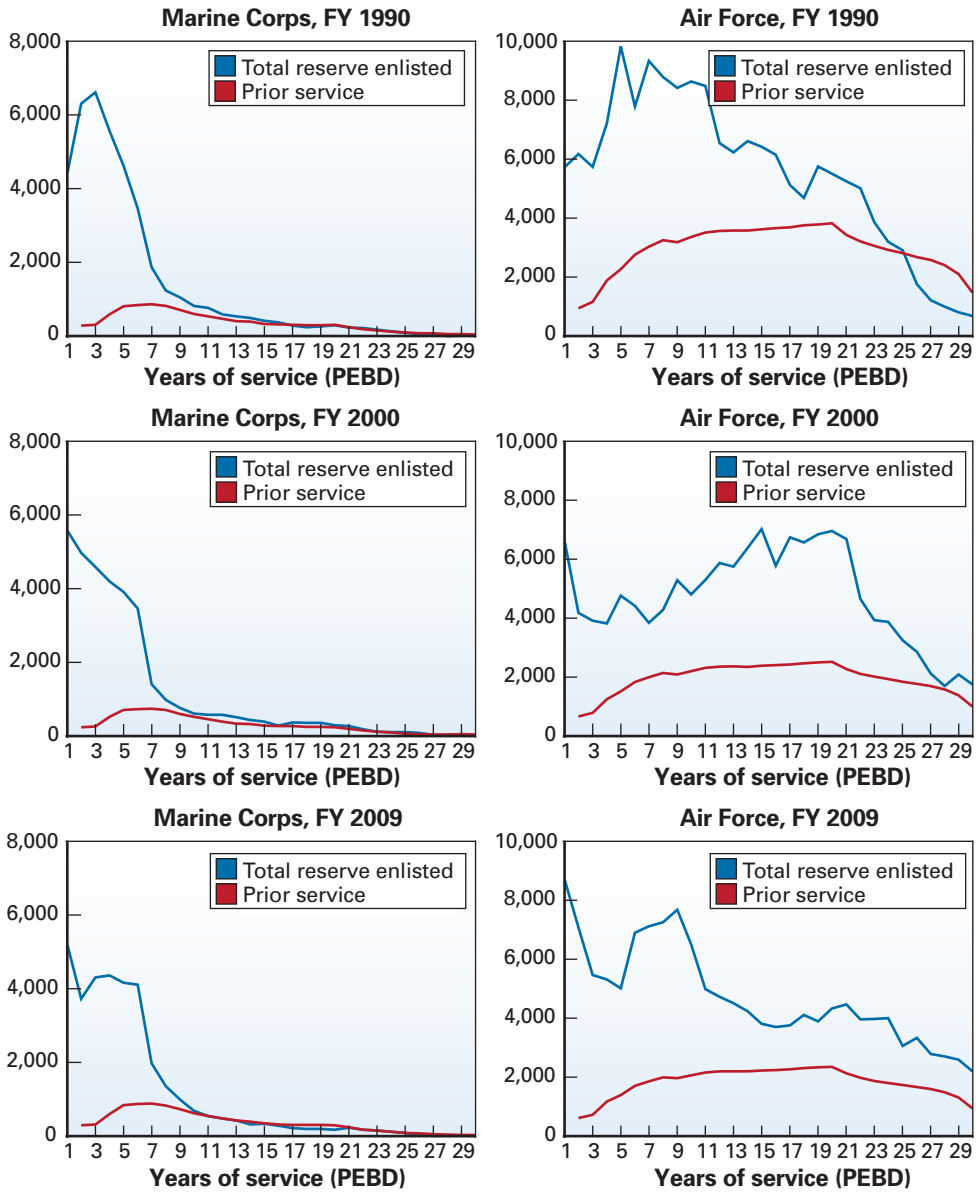


**Figure 2.1—Continued**

September 30, the end of the fiscal year.[5] Prior-service enlisted strength is based on our simulation of RC participation and a scale factor, which changes with changes in AC force size. Changes in AC force size affect the number of individuals leaving the AC, which affects the number of prior-service individuals available to participate in the RC and so affects our estimates of RC force size.[6]

The calculations in Figure 2.1 suggest the following:[7]

- Non–prior-service reservists are prevalent at lower YOS. This is partly a mechanical consequence of the fact that prior-service reservists already have some AC service and so would first appear at higher years of service, say four or more, whereas non–prior-service reservists have no prior years of service when they start in the RC. It is also a consequence of keeping the RC at full strength.
- The majority of RC personnel at higher years of service are usually prior-service personnel who have more years of military experience, higher rank, and more leadership and supervisory responsibility. Because those with more years of service are older and closer to qualifying for RC retirement benefits, they are more likely to be responsive to changes in RC compensation that affect RC retirement benefits. Non–prior-service reservists with higher years of reserve participation may have a taste for reserve service similar to that of prior-service reservists in higher years.

Figure 2.1 also suggests that RC force-size adjustments differ by service. In the Army RC, non–prior-service accessions (reservists in the first year of service) numbered 50,000 to 60,000 in FY 1990, FY 2000, and FY 2009, but the total number of reservists with more than 10 YOS was lower in FY 2009 than in FY 1990 or FY 2000. In FY 2009, most of the reservists with 15 or more YOS appeared to be prior-service reservists.

5. Office of the Assistant Secretary of Defense (Reserve Affairs), undated, 2000, 2009.
6. Our simulation assumes 10,000 AC entrants for each branch of service. These individuals stay on active duty until they choose to leave, and their AC retention generates an AC force. For instance, 10,000 AC Army enlisted entrants might generate a force of 60,000. AC Army enlisted strength was about 620,000 in FY 1990, so we scaled up our results by a factor of 10.33 (620,000/60,000) for FY 1990. AC Army enlisted strength was about 400,000 in FY 2000, for a scale factor of 6.67 (400,000/60,000), and about 460,000 in FY 2009, for a scale factor of 7.67. Precise numbers vary. Other approaches to scaling could be taken; for example, because many individuals serve a term or two before leaving the AC, scaling could be based on AC force size lagged 4 to 8 years. We explored alternative scaling approaches, and the differences with respect to our objective of illustrating the prevalence of prior-service personnel in the RC were minor.
7. Because RC total strengths in Figure 2.1 are based on cross-sectional data and not a steady state, while the RC prior-service strengths are simulated steady-state results, there may be "crossovers" where the simulated steady-state prior-service strength exceeds the actual strength observed at a point in time. For example, we observe a crossover for Air Force enlisted personnel with more than 25 YOS in FY 1990 but not in later years. As noted earlier, comparison of steady-state modeling results with actual cross-sectional data is imperfect but adequate for providing contextual background.

As the Navy RC downsized, it greatly reduced non–prior-service accessions. Table 2.2 confirms this decrease, based on official statistics on prior-service and non–prior-service accessions by the RC for FY 1990, FY 2000, and FY 2009. Navy RC non–prior-service accessions fell from 14,356 in FY 1990 to 3,073 in FY 2000 and 1,034 in FY 2009; prior-service accessions were 59 percent in FY 1990, 83 percent in FY 2000, and 93 percent in FY 2009. The decrease in Navy RC strength from 153,000 in FY 1990 to 87,000 in FY 2000 to 67,000 in FY 2009 evidently left little need for non–prior-service accessions.

In Figure 2.1, the calculations for the Marine Corps RC are similar across the fiscal years, which is consistent with the fact that there has been little change in force size (Table 2.1). At nine or more YOS, nearly all Marines are prior-service, while in the first five YOS, nearly all RC Marines are non–prior-service.

**Table 2.2. RC Enlisted Accessions, by Fiscal Year**

| | FY 1990 | | FY 2000 | | FY 2009 | |
|---|---|---|---|---|---|---|
| | Non–Prior Service | Prior Service | Non–Prior Service | Prior Service | Non–Prior Service | Prior Service |
| **Total Accessions** | | | | | | |
| ARNG | 36,163 | 40,442 | 33,243 | 29,567 | 39,430 | 18,567 |
| USAR | 29,081 | 38,466 | 22,183 | 29,019 | 18,764 | 17,909 |
| USNR | 14,356 | 20,954 | 3,073 | 14,645 | 1,034 | 11,066 |
| USMCR | 7,818 | 3,992 | 6,141 | 3,692 | 5,700 | 3,658 |
| ANG | 4,173 | 8,150 | 5,100 | 5,583 | 4,748 | 5,258 |
| USAFR | 2,338 | 9,514 | 1,730 | 5,924 | 3,210 | 5,817 |
| All | 93,929 | 121,518 | 71,470 | 88,430 | 72,886 | 62,275 |
| **Prior-Service Accessions (percentage of total accessions)** | | | | | | |
| ARNG | — | 53 | — | 47 | — | 32 |
| USAR | — | 57 | — | 57 | — | 49 |
| USNR | — | 59 | — | 83 | — | 91 |
| USMCR | — | 34 | — | 38 | — | 39 |
| ANG | — | 66 | — | 52 | — | 53 |
| USAFR | — | 80 | — | 77 | — | 64 |
| All | — | 56 | — | 55 | — | 46 |

The Air Force RC had a large number of non–prior-service personnel in FY 1990, and during the downsizing in the 1990s, Air Force non–prior-service accessions decreased but non–prior-service reservists continued to participate. By FY 2009, many of the non–prior-service airmen were no longer serving, and the Air Force RC had more or less returned to its FY 1990 shape, although scaled down as consistent with the overall decrease in strength from 202,000 in FY 1990 to 177,000 in FY 2009.

In conclusion, because prior-service reservists make up the majority of experienced reservists and so comprise the majority of those likely to qualify for retirement, our policy analysis of changes to the reserve retirement system is likely to be fairly accurate for the total reserve force. We speculate that non–prior-service reservists who reach mid-career years will also be responsive to changes in reserve retirement benefits and thus will be similar to prior-service reservists. We do not know whether the response to current pay will be similar for the two groups, however.

## 3. Compensation Alternatives

The approach to RC compensation proposed by the 11th QRMC is based on a day of pay for each day of RC duty and a change in RC retirement benefits, with additional components to be determined by DoD and the services, and for those requiring legislative changes, also by Congress. This chapter describes the elements of the proposed modifications in more detail and presents some comparisons of baseline reserve pay versus regular military compensation (RMC). It then describes the alternative packages assessed in this study, which consist of various combinations of these elements.

### Total-Force Pay Approach: Regular Military Compensation and Retired Pay

The total-force pay approach would change the computation of annual basic pay for RC members and would provide a basic allowance for subsistence (BAS) and a basic allowance for housing (BAH) for each day of duty, regardless of duty status, using the AC schedule of rates. In this report, RMC is RC pay based on the AC schedules for basic pay, BAS, BAH, and the tax advantage of the allowances, and baseline pay refers to the current approach for computing RMC for RC members. This section describes the computation and presents comparisons of RMC and baseline pay.

Under the baseline RC compensation system, RC members receive up to 48 "days" of drill pay for 24 days of inactive-duty training with two drills per day and

14 days of pay for annual training, for which a housing allowance is paid, based on the schedule that applies to RC members. Baseline pay for inactive-duty training and annual training comprises 62 days of basic pay (48 + 14) plus the 14 days of tax-free BAH plus the tax advantage associated with it.

Under the total-force approach, each day of duty, regardless of duty status, would result in the payment of one day's worth of basic pay, BAS, and BAH, computed using the schedule for AC members. Thus, over the course of a year, RMC for inactive-duty training and annual training would equal 38 days (24 drill days plus 14 days) of basic pay, BAS, BAH, and the tax advantage associated with getting BAS and BAH tax-free.

We used several sources of information to estimate baseline pay and RMC for the DRM. Because our model uses data for the 1990–1991 entering active-duty cohort and our analysis is a steady-state analysis, the decision of which pay table to use is somewhat arbitrary. For our computations, we used basic pay, BAS, and BAH rates for 2007, as these have been fairly stable over time.

Computing the AC BAH amounts for RC members requires an estimate of the geographic location of RC members, since AC BAH rates are location-specific. Using information provided by DMDC on the current geographic distribution of RC members, the 11th QRMC computed BAH rates for RC members using the AC BAH schedule, and we used these rates to compute RMC for our analysis. Because BAH rates also vary by marital status, we assumed the 2007 marital rates, by grade, for AC members, obtained from the 2007 Green Book,[8] and took a weighted average of single and married BAH rates by grade. The AC marital rates are likely to be lower than those for RC members with prior active service, who tend to be older and have had more time to marry. However, any effect of this factor on our behavioral or cost results is likely to be slight. As described in Appendix A, we roughly estimated the tax advantage by computing the percentage of AC RMC attributable to it, based on information from the 2007 Green Book; we applied the roughly 6 percent that we computed to the RMC of RC members.

Figure 3.1 shows our computation of RC annual baseline pay and RMC for enlisted personnel, by years of service. Figure 3.2 shows the computation for RC officers. The shift from baseline pay to RMC would decrease the pay of both groups substantially. For enlisted personnel, the decrease is 1 percent at 1 YOS, 14 percent at 10 YOS, 17 percent at 20 YOS, and 20 percent at 30 YOS. For officers, the decrease is 27 percent at 1 YOS, 33 percent at 10 YOS, 37 percent at 20 YOS, and

8. Office of the Under Secretary of Defense (Comptroller), 2006.

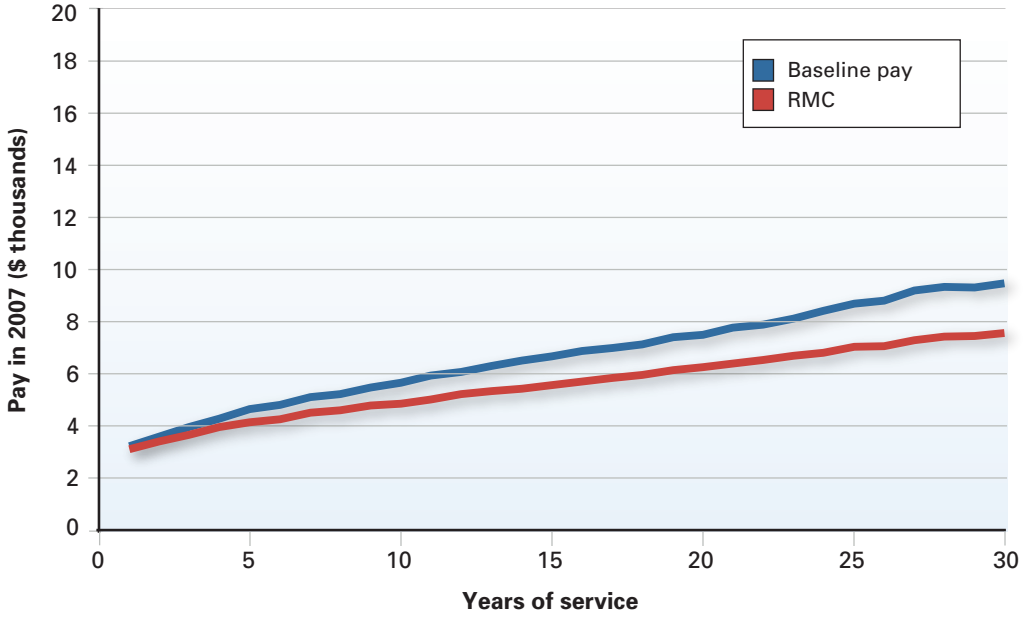


**Figure 3.1. Enlisted RC Baseline Pay and RMC Under the Proposed Total-Force Compensation System**

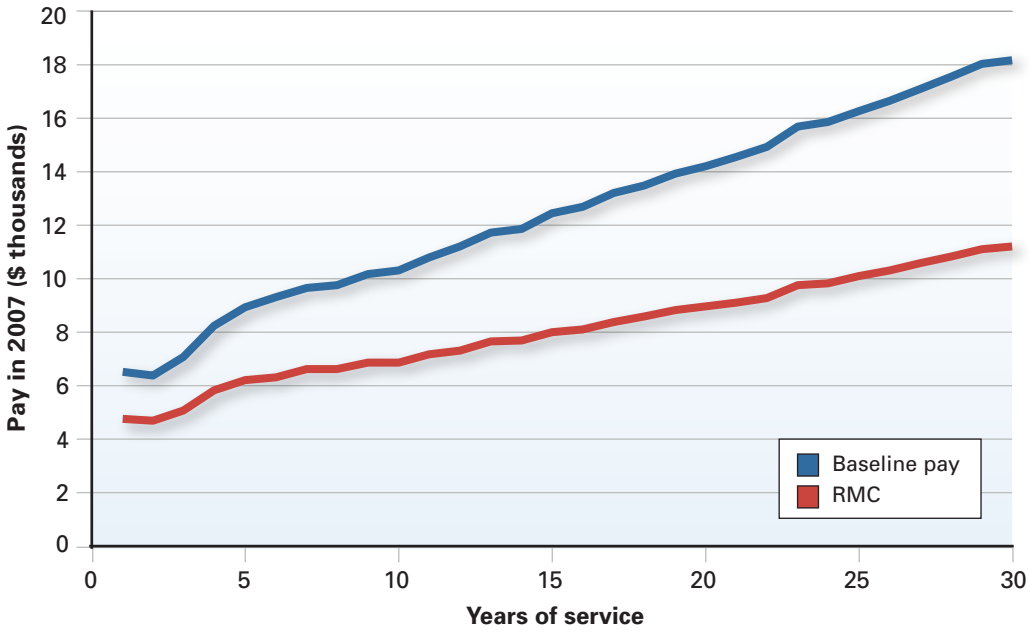


**Figure 3.2. Officer RC Baseline Pay and RMC Under the Proposed Total-Force Compensation System**

38 percent at 30 YOS. These figures are consistent with the changes estimated by the 11th QRMC, which estimates a drop of 3 percent for individuals in pay grade E2 and a 20-percent drop for those in pay grade E8. It is important to note that the compensation packages considered by the 11th QRMC include other elements that operate to offset this decrease.

## Additional Components of the Total-Force Pay Package

In addition to reducing current pay by the move to RMC, the total-force approach would decrease reserve retirement benefits by reducing retirement points. In the baseline case, RC members receive 75 points per year, but under RMC they receive 53 points per year (24 drill days and 14 summer training days, plus 15 annual participation points), a 30-percent decrease.

To offset the reduction in current pay and retirement benefits, the total-force approach would include other elements of pay. These additional elements would enable the RC to maintain current force strength and shape and thus are an essential part of the total-force pay approach. At the same time, such supplemental pay could be used to modify the shape of the force if desired, while sustaining the strength. In the following, we describe other components that could be included in the package. These components can be combined and should not be considered mutually exclusive.

### Eligibility for Retirement Pay at 30 YOS

The 11th QRMC recommends aligning AC and RC retirement more closely by allowing RC members who have attained 20 qualifying years to begin receiving benefits on accumulating 10 additional years in the selected, individual ready, or retired reserve, or at age 60, whichever occurs first. Those who are discharged and have 20 YOS would begin drawing retired pay at age 60, unless they had at least 30 years of service at the time of discharge. For brevity, we refer to this as *retirement at 30 YOS*. Currently, RC members begin receiving benefits at age 60, after 20 qualifying years. Under the total-force approach, a reservist who joined the military at age 20 could begin receiving benefits as early as age 50. This change, without any other change, could increase the discounted present value (DPV) of retirement benefits relative to the current system. Specifically, for members whose 20 years of service are continuous and who entered the military before age 30, the payout will start before age 60, implying that retirement benefits would be paid over more years, so the expected DPV of benefits would be higher. However, many RC members have breaks in service, i.e., they leave the military, then later return. Some members have multiple breaks, and some have breaks for extended periods of time. The more gaps in service, the less likely benefits would begin before age 60.

The total-force pay approach also involves reduced retirement-point accumulation—in our model, the number of points for each year of RC participation is reduced from 75 to 53. This reduction will reduce the retirement annuity and thus the present value of retirement benefits after age 60; hence it will reduce retirement cost. However, under the 30-YOS option, some RC members would receive the annuity for more years, resulting in an increase in cost over those years. The net effect will depend on a number of factors, including the number of AC years of service prior-service members accumulated before entering the reserves and any change in length of RC service in response to the policy change.

Changing the RC retirement eligibility to 30 YOS will change incentives to participate. Members will have a greater incentive to reduce breaks in service and the length of those breaks, and those nearing 30 YOS will have an incentive to increase participation because of the draw produced by the 30-YOS rule, other things being equal.

### Incentive Pay

The military makes considerable use of special and incentive (S&I) pays to manage personnel flexibly and to address recruiting and retention shortfalls—for example, the RC compensation system currently includes affiliation and enlistment bonuses—and incentive pay would be included in the total-force pay approach. For the purposes of our model, incentive pay would be an annual cash payment to selected reservists. It could be paid at the end of the year, after the reservist has satisfied a minimum amount of service, or at the beginning of the year; or part of it could be paid at the beginning of the year, with the remainder spread over the rest of the year.

In our policy simulations, all members would receive incentive pay if the RC offers it. The pay could be targeted to specific personnel, such as those with critical skills or in critical units, and could vary to induce greater participation among certain personnel. One possibility would be to have all RC members receive some incentive pay if they satisfactorily complete the required minimum service each year, with additional incentive pay targeted as needed. The idea is to have enough incentive pay to sustain the current force size and shape, at least as a starting point, and to permit flexibility that would support the possibility of changing the force shape and would help to ensure that manning requirements were met in all occupational areas. Chapter Four presents an assessment of the force-management and cost effects of incentive pay as part of the total-force pay approach. As shown there, incentive pay is necessary to support the current force size.

In our analysis, incentive pay is structured in three ways: as a percentage of annualized basic pay, as a flat dollar amount paid to all RC participants, and as a targeted flat dollar amount paid only to RC members in YOS 8 to 15. The percentage and dollar amounts vary depending on the other components in the total-force pay package (discussed below). The percentage and dollar amounts are determined through an optimization routine that sets them just high enough to hold force size constant.

Figures 3.3 and 3.4 and Tables 3.1 and 3.2 give a more precise idea of how the incentive pay as a percentage of annualized basic pay is calculated. Figure 3.3 shows baseline reserve pay, the new pay line (RMC), and RMC plus incentive pay of 2.3 percent and, alternatively, 3.1 percent of *annualized* basic pay. The RMC plus incentive pay of 2.3 percent of annualized basic pay is higher than baseline pay in YOS 1 to 6 and below baseline pay in later YOS. RMC plus incentive pay of 3.1 percent of annualized basic pay is higher than baseline pay in YOS 1 to 14 and lower in later years. For officers, incentive pay of 7 percent is higher than baseline pay up to 18 YOS, though incentive pay of 6 percent is higher only up to five YOS.

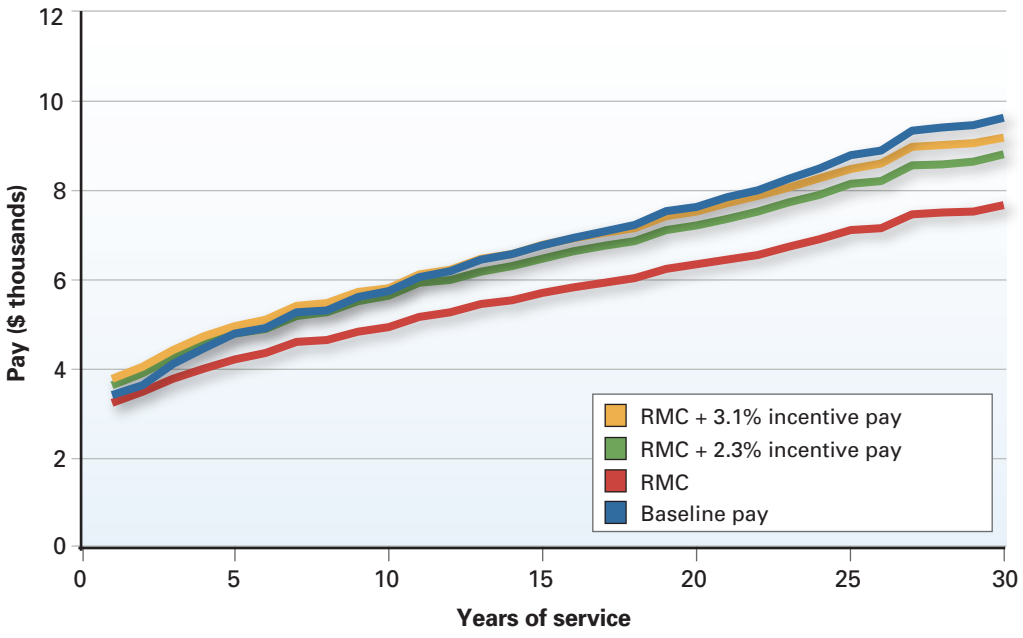


**Figure 3.3. Enlisted RMC plus Percentage Incentive Pay**

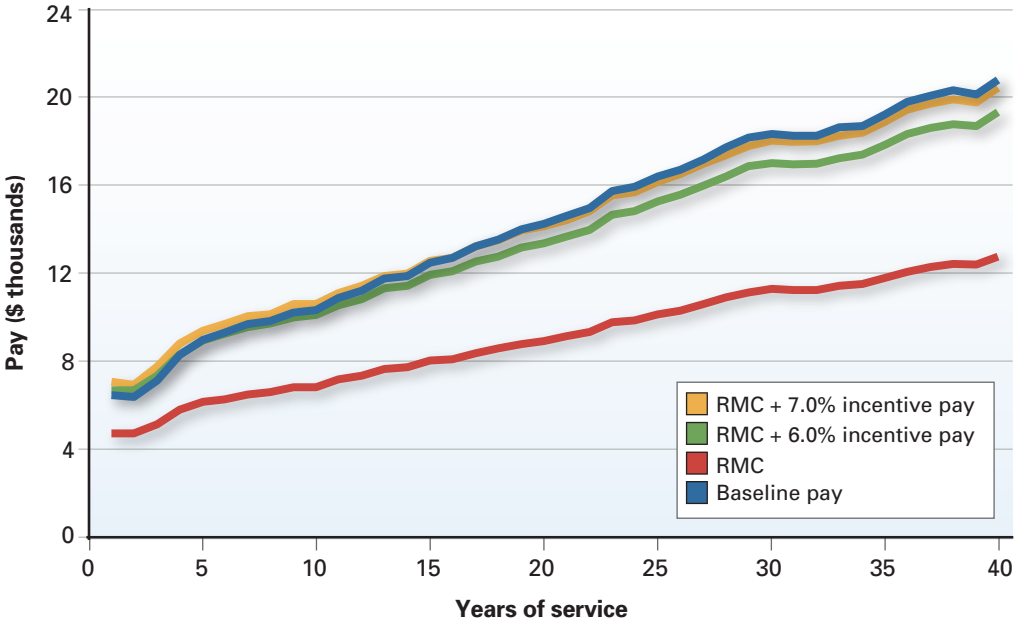


**Figure 3.4. Officer RMC plus Percentage Incentive Pay**

Figures 3.5 and 3.6 and Tables 3.3 and 3.4 show how RMC with flat dollar amounts of incentive pay compares with baseline pay. The specific dollar amounts are those required to hold Army RC force size constant, as discussed in Chapter Four, and the dollar amounts for the other services differ. The flat-dollar incentive increases pay by the same amount above RMC, regardless of YOS. Pay increases relative to the baseline for junior personnel but decreases for senior personnel.

Figures 3.7 and 3.8 and the rightmost columns of Tables 3.3 and 3.4 show how RMC with targeted dollar amounts of incentive pay compares with baseline pay. As with the other two forms of incentive pay, the specific dollar amounts vary with service and status (officer versus enlisted) and are chosen to hold RC force size constant. The specific dollar amounts in the figures and tables in this chapter are illustrative only. Targeted incentive pay increases pay by the same amount, but only during the targeted years, 8 to 15 YOS.

Tables 3.1 and 3.2 provide illustrative calculations of incentive pay. The Monthly Basic Pay column presents average monthly basic pay by YOS. A reservist drilling for two days per month would receive 2/30 of monthly basic pay. In the Annual Basic Pay column, monthly basic pay is multiplied by 12 to annualize it. The next columns show the incentive pay amounts at the given percentages, and the following columns show

## Table 3.1. Illustrative Calculation of Percentage Incentive Pay and RMC: Enlisted Personnel

| YOS | Monthly Basic Pay ($) | Annual Basic Pay ($) | 2.3% Incentive Pay ($) | 3.1% Incentive Pay ($) | Baseline Pay ($) | RMC ($) | RMC + 2.3% Incentive Pay ($) | RMC + 3.1% Incentive Pay ($) |
|---|---|---|---|---|---|---|---|---|
| 1 | 1,415 | 16,976 | 390 | 526 | 3,400 | 3,224 | 3,615 | 3,750 |
| 2 | 1,531 | 18,373 | 423 | 570 | 3,633 | 3,488 | 3,910 | 4,058 |
| 3 | 1,713 | 20,556 | 473 | 637 | 4,086 | 3,782 | 4,255 | 4,419 |
| 4 | 1,858 | 22,298 | 513 | 691 | 4,441 | 4,004 | 4,517 | 4,695 |
| 5 | 1,998 | 23,972 | 551 | 743 | 4,776 | 4,232 | 4,783 | 4,975 |
| 6 | 2,045 | 24,541 | 564 | 761 | 4,897 | 4,334 | 4,899 | 5,095 |
| 7 | 2,200 | 26,402 | 607 | 818 | 5,251 | 4,582 | 5,190 | 5,400 |
| 8 | 2,227 | 26,729 | 615 | 829 | 5,317 | 4,644 | 5,259 | 5,473 |
| 9 | 2,354 | 28,247 | 650 | 876 | 5,599 | 4,832 | 5,482 | 5,708 |
| 10 | 2,410 | 28,916 | 665 | 896 | 5,732 | 4,941 | 5,606 | 5,837 |
| 11 | 2,554 | 30,643 | 705 | 950 | 6,059 | 5,170 | 5,875 | 6,120 |
| 12 | 2,605 | 31,262 | 719 | 969 | 6,180 | 5,271 | 5,990 | 6,240 |
| 13 | 2,721 | 32,647 | 751 | 1,012 | 6,440 | 5,449 | 6,199 | 6,461 |
| 14 | 2,770 | 33,241 | 765 | 1,030 | 6,555 | 5,539 | 6,304 | 6,569 |
| 15 | 2,865 | 34,376 | 791 | 1,066 | 6,770 | 5,694 | 6,485 | 6,760 |
| 16 | 2,927 | 35,126 | 808 | 1,089 | 6,914 | 5,806 | 6,614 | 6,895 |
| 17 | 3,003 | 36,031 | 829 | 1,117 | 7,084 | 5,923 | 6,752 | 7,040 |
| 18 | 3,061 | 36,728 | 845 | 1,139 | 7,218 | 6,025 | 6,869 | 7,164 |
| 19 | 3,185 | 38,226 | 879 | 1,185 | 7,500 | 6,218 | 7,097 | 7,403 |
| 20 | 3,245 | 38,938 | 896 | 1,207 | 7,636 | 6,318 | 7,214 | 7,525 |
| 21 | 3,334 | 40,007 | 920 | 1,240 | 7,837 | 6,458 | 7,378 | 7,698 |
| 22 | 3,401 | 40,807 | 939 | 1,265 | 7,989 | 6,568 | 7,507 | 7,833 |
| 23 | 3,526 | 42,309 | 973 | 1,312 | 8,268 | 6,749 | 7,722 | 8,061 |
| 24 | 3,619 | 43,427 | 999 | 1,346 | 8,480 | 6,899 | 7,898 | 8,245 |
| 25 | 3,754 | 45,052 | 1,036 | 1,397 | 8,783 | 7,099 | 8,135 | 8,496 |
| 26 | 3,796 | 45,556 | 1,048 | 1,412 | 8,878 | 7,165 | 8,213 | 8,577 |
| 27 | 4,006 | 48,071 | 1,106 | 1,490 | 9,341 | 7,453 | 8,559 | 8,943 |
| 28 | 4,029 | 48,344 | 1,112 | 1,499 | 9,392 | 7,487 | 8,598 | 8,986 |
| 29 | 4,053 | 48,632 | 1,119 | 1,508 | 9,447 | 7,526 | 8,644 | 9,034 |
| 30 | 4,138 | 49,653 | 1,142 | 1,539 | 9,639 | 7,657 | 8,799 | 9,196 |

## Table 3.2. Illustrative Calculation of Percentage Incentive Pay and RMC: Officers

| YOS | Monthly Basic Pay ($) | Annual Basic Pay ($) | 6% Incentive Pay ($) | 7% Incentive Pay ($) | Baseline Pay ($) | RMC ($) | RMC + 6% Incentive Pay ($) | RMC + 7% Incentive Pay ($) |
|---|---|---|---|---|---|---|---|---|
| 1 | 2,744 | 32,926 | 1,976 | 2,305 | 6,490 | 4,750 | 6,725 | 7,055 |
| 2 | 2,715 | 32,576 | 1,955 | 2,280 | 6,420 | 4,722 | 6,676 | 7,002 |
| 3 | 3,053 | 36,638 | 2,198 | 2,565 | 7,177 | 5,169 | 7,367 | 7,734 |
| 4 | 3,576 | 42,917 | 2,575 | 3,004 | 8,337 | 5,868 | 8,443 | 8,872 |
| 5 | 3,854 | 46,248 | 2,775 | 3,237 | 8,971 | 6,194 | 8,969 | 9,431 |
| 6 | 4,003 | 48,039 | 2,882 | 3,363 | 9,319 | 6,353 | 9,236 | 9,716 |
| 7 | 4,175 | 50,104 | 3,006 | 3,507 | 9,704 | 6,571 | 9,577 | 10,079 |
| 8 | 4,228 | 50,741 | 3,044 | 3,552 | 9,828 | 6,627 | 9,671 | 10,179 |
| 9 | 4,414 | 52,967 | 3,178 | 3,708 | 10,242 | 6,866 | 10,044 | 10,574 |
| 10 | 4,439 | 53,262 | 3,196 | 3,728 | 10,302 | 6,884 | 10,080 | 10,613 |
| 11 | 4,708 | 56,496 | 3,390 | 3,955 | 10,915 | 7,203 | 10,593 | 11,158 |
| 12 | 4,842 | 58,102 | 3,486 | 4,067 | 11,227 | 7,346 | 10,832 | 11,413 |
| 13 | 5,104 | 61,243 | 3,675 | 4,287 | 11,813 | 7,678 | 11,353 | 11,965 |
| 14 | 5,148 | 61,778 | 3,707 | 4,324 | 11,916 | 7,728 | 11,435 | 12,052 |
| 15 | 5,399 | 64,788 | 3,887 | 4,535 | 12,481 | 8,038 | 11,925 | 12,573 |
| 16 | 5,489 | 65,867 | 3,952 | 4,611 | 12,691 | 8,137 | 12,089 | 12,747 |
| 17 | 5,739 | 68,864 | 4,132 | 4,820 | 13,259 | 8,440 | 12,572 | 13,261 |
| 18 | 5,869 | 70,428 | 4,226 | 4,930 | 13,560 | 8,589 | 12,815 | 13,519 |
| 19 | 6,062 | 72,747 | 4,365 | 5,092 | 13,998 | 8,830 | 13,194 | 13,922 |
| 20 | 6,160 | 73,918 | 4,435 | 5,174 | 14,223 | 8,942 | 13,377 | 14,117 |
| 21 | 6,322 | 75,860 | 4,552 | 5,310 | 14,589 | 9,146 | 13,697 | 14,456 |
| 22 | 6,482 | 77,786 | 4,667 | 5,445 | 14,956 | 9,341 | 14,008 | 14,786 |
| 23 | 6,813 | 81,753 | 4,905 | 5,723 | 15,701 | 9,765 | 14,670 | 15,487 |
| 24 | 6,889 | 82,668 | 4,960 | 5,787 | 15,873 | 9,864 | 14,824 | 15,651 |
| 25 | 7,115 | 85,386 | 5,123 | 5,977 | 16,384 | 10,152 | 15,275 | 16,129 |
| 26 | 7,263 | 87,158 | 5,229 | 6,101 | 16,717 | 10,343 | 15,573 | 16,444 |
| 27 | 7,474 | 89,688 | 5,381 | 6,278 | 17,187 | 10,622 | 16,004 | 16,901 |
| 28 | 7,675 | 92,106 | 5,526 | 6,447 | 17,640 | 10,886 | 16,412 | 17,333 |
| 29 | 7,884 | 94,612 | 5,677 | 6,623 | 18,105 | 11,168 | 16,844 | 17,790 |
| 30 | 7,963 | 95,561 | 5,734 | 6,689 | 18,283 | 11,269 | 17,003 | 17,959 |
| 31 | 7,934 | 95,212 | 5,713 | 6,665 | 18,217 | 11,230 | 16,943 | 17,895 |
| 32 | 7,928 | 95,135 | 5,708 | 6,659 | 18,205 | 11,217 | 16,925 | 17,876 |

**Table 3.2—Continued**

| YOS | Monthly Basic Pay ($) | Annual Basic Pay ($) | 6% Incentive Pay ($) | 7% Incentive Pay ($) | Baseline Pay ($) | RMC ($) | RMC + 6% Incentive Pay ($) | RMC + 7% Incentive Pay ($) |
|---|---|---|---|---|---|---|---|---|
| 33 | 8,089 | 97,074 | 5,824 | 6,795 | 18,567 | 11,432 | 17,257 | 18,227 |
| 34 | 8,136 | 97,632 | 5,858 | 6,834 | 18,671 | 11,495 | 17,352 | 18,329 |
| 35 | 8,375 | 100,497 | 6,030 | 7,035 | 19,202 | 11,812 | 17,842 | 18,847 |
| 36 | 8,625 | 103,497 | 6,210 | 7,245 | 19,763 | 12,141 | 18,351 | 19,386 |
| 37 | 8,739 | 104,871 | 6,292 | 7,341 | 20,016 | 12,297 | 18,589 | 19,637 |
| 38 | 8,826 | 105,909 | 6,355 | 7,414 | 20,210 | 12,413 | 18,767 | 19,827 |
| 39 | 8,767 | 105,207 | 6,312 | 7,364 | 20,081 | 12,331 | 18,643 | 19,695 |
| 40 | 9,115 | 109,384 | 6,563 | 7,657 | 20,854 | 12,800 | 19,363 | 20,457 |

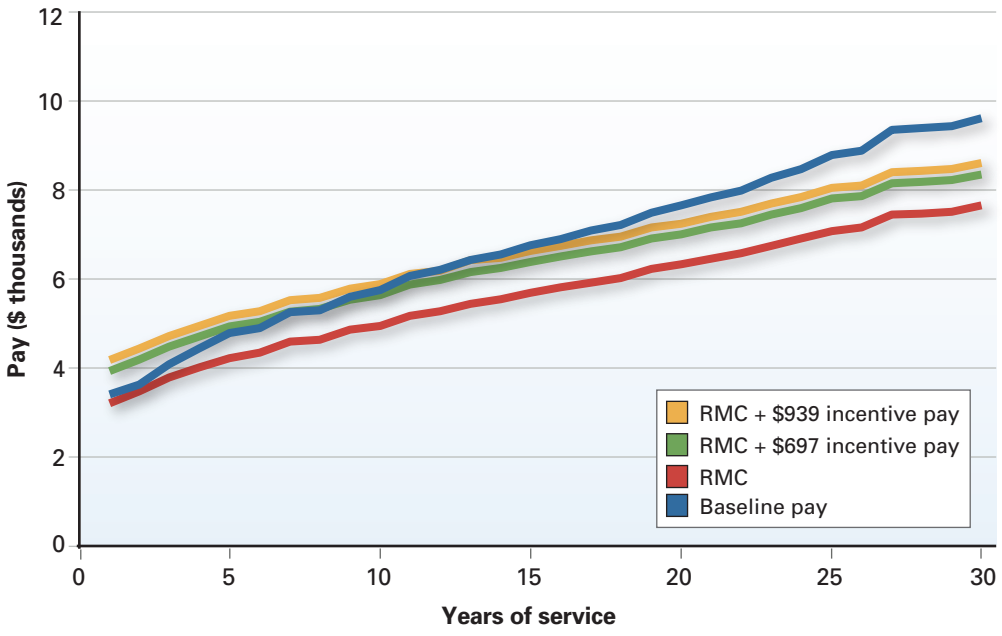


**Figure 3.5. Enlisted RMC plus Dollar Incentive Pay**

baseline pay, RMC, and RMC plus the incentive pays. As discussed earlier, baseline pay and RMC include BAH and BAS and the tax advantage associated with tax-free allowances, as well as pay for both inactive-duty training (drill weekends) and 14 days of active-duty training.

Incentive pay of 2.3 percent ranges from 12 percent of enlisted RMC at low years of service to 15 percent at high years of service. In other words, incentive pay is, on average, equivalent to an annual bonus of 12 to 15 percent of the enlisted reservist's annual RMC. The variation between 12 and 15 percent is due in part to basic pay rising with YOS and in part to higher allowances among those in more senior grades. Similarly, incentive pay of 3.1 percent ranges from 15 to 20 percent of annual RMC as YOS increases. For officers, the incentive payment of 6 percent of annual basic pay is equivalent to a 40- to 50-percent increase over RMC, and the incentive payment of 7 percent is equivalent to a 50- to 60-percent increase over RMC.

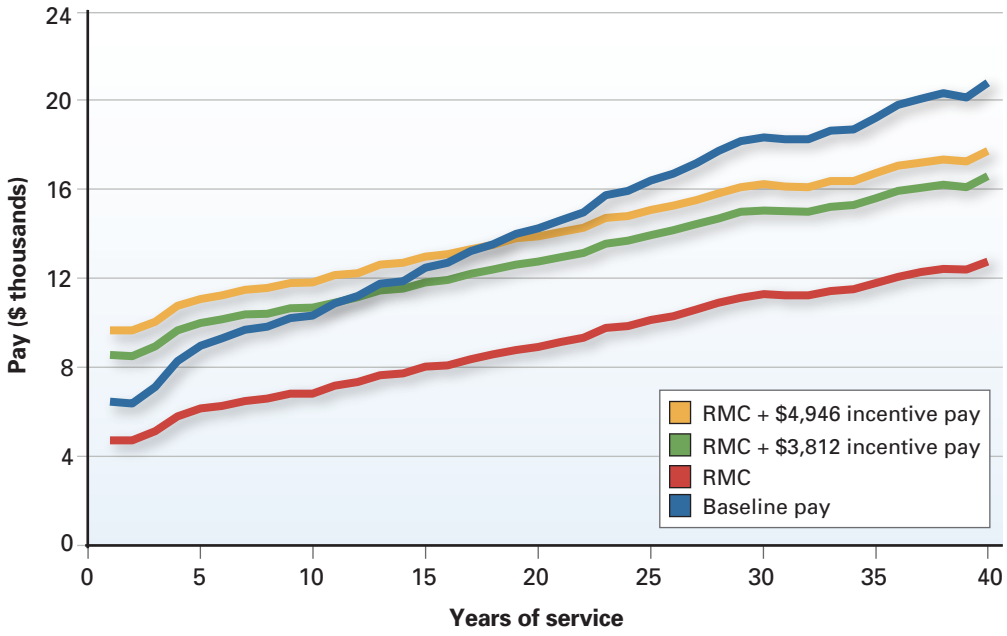


**Figure 3.6. Officer RMC plus Dollar Incentive Pay**

**Table 3.3. Illustrative Calculation of Dollar Incentive Pay and RMC: Enlisted Personnel**

| YOS | Baseline Pay ($) | RMC ($) | RMC + $697 Incentive Pay ($) | RMC + $939 Incentive Pay ($) | RMC + $1,440 Targeted Incentive Pay at 8–15 YOS ($) | RMC + $2,075 Targeted Incentive Pay at 8–15 YOS ($) |
|---|---|---|---|---|---|---|
| 1 | 3,400 | 3,224 | 3,921 | 4,163 | 3,224 | 3,921 |
| 2 | 3,633 | 3,488 | 4,185 | 4,427 | 3,488 | 4,185 |
| 3 | 4,086 | 3,782 | 4,479 | 4,721 | 3,782 | 4,479 |
| 4 | 4,441 | 4,004 | 4,701 | 4,943 | 4,004 | 4,701 |
| 5 | 4,776 | 4,232 | 4,929 | 5,171 | 4,232 | 4,929 |
| 6 | 4,897 | 4,334 | 5,031 | 5,273 | 4,334 | 5,031 |
| 7 | 5,251 | 4,582 | 5,279 | 5,521 | 4,582 | 5,279 |
| 8 | 5,317 | 4,644 | 5,341 | 5,583 | 6,084 | 7,416 |
| 9 | 5,599 | 4,832 | 5,529 | 5,771 | 6,272 | 7,604 |
| 10 | 5,732 | 4,941 | 5,638 | 5,880 | 6,381 | 7,713 |
| 11 | 6,059 | 5,170 | 5,867 | 6,109 | 6,610 | 7,942 |
| 12 | 6,180 | 5,271 | 5,968 | 6,210 | 6,711 | 8,043 |
| 13 | 6,440 | 5,449 | 6,146 | 6,388 | 6,889 | 8,221 |
| 14 | 6,555 | 5,539 | 6,236 | 6,478 | 6,979 | 8,311 |
| 15 | 6,770 | 5,694 | 6,391 | 6,633 | 7,134 | 8,466 |
| 16 | 6,914 | 5,806 | 6,503 | 6,745 | 5,806 | 6,503 |
| 17 | 7,084 | 5,923 | 6,620 | 6,862 | 5,923 | 6,620 |
| 18 | 7,218 | 6,025 | 6,722 | 6,964 | 6,025 | 6,722 |
| 19 | 7,500 | 6,218 | 6,915 | 7,157 | 6,218 | 6,915 |
| 20 | 7,636 | 6,318 | 7,015 | 7,257 | 6,318 | 7,015 |
| 21 | 7,837 | 6,458 | 7,155 | 7,397 | 6,458 | 7,155 |
| 22 | 7,989 | 6,568 | 7,265 | 7,507 | 6,568 | 7,265 |
| 23 | 8,268 | 6,749 | 7,446 | 7,688 | 6,749 | 7,446 |
| 24 | 8,480 | 6,899 | 7,596 | 7,838 | 6,899 | 7,596 |
| 25 | 8,783 | 7,099 | 7,796 | 8,038 | 7,099 | 7,796 |
| 26 | 8,878 | 7,165 | 7,862 | 8,104 | 7,165 | 7,862 |
| 27 | 9,341 | 7,453 | 8,150 | 8,392 | 7,453 | 8,150 |
| 28 | 9,392 | 7,487 | 8,184 | 8,426 | 7,487 | 8,184 |
| 29 | 9,447 | 7,526 | 8,223 | 8,465 | 7,526 | 8,223 |
| 30 | 9,639 | 7,657 | 8,354 | 8,596 | 7,657 | 8,354 |

## Table 3.4. Illustrative Calculation of Dollar Incentive Pay and RMC: Officers

| YOS | Baseline Pay ($) | RMC ($) | RMC + $3,812 Incentive Pay ($) | RMC + $4,946 Incentive Pay ($) | RMC + $8,100 Targeted Incentive Pay at 8–15 YOS ($) | RMC + $11,054 Targeted Incentive Pay at 8–15 YOS ($) |
|---|---|---|---|---|---|---|
| 1 | 6,490 | 4,750 | 8,562 | 9,696 | 4,750 | 4,750 |
| 2 | 6,420 | 4,722 | 8,534 | 9,668 | 4,722 | 4,722 |
| 3 | 7,177 | 5,169 | 8,981 | 10,115 | 5,169 | 5,169 |
| 4 | 8,337 | 5,868 | 9,680 | 10,814 | 5,868 | 5,868 |
| 5 | 8,971 | 6,194 | 10,006 | 11,140 | 6,194 | 6,194 |
| 6 | 9,319 | 6,353 | 10,165 | 11,299 | 6,353 | 6,353 |
| 7 | 9,704 | 6,571 | 10,383 | 11,517 | 6,571 | 6,571 |
| 8 | 9,828 | 6,627 | 10,439 | 11,573 | 14,727 | 17,681 |
| 9 | 10,242 | 6,866 | 10,678 | 11,812 | 14,966 | 17,920 |
| 10 | 10,302 | 6,884 | 10,696 | 11,830 | 14,984 | 17,938 |
| 11 | 10,915 | 7,203 | 11,015 | 12,149 | 15,303 | 18,257 |
| 12 | 11,227 | 7,346 | 11,158 | 12,292 | 15,446 | 18,400 |
| 13 | 11,813 | 7,678 | 11,490 | 12,624 | 15,778 | 18,732 |
| 14 | 11,916 | 7,728 | 11,540 | 12,674 | 15,828 | 18,782 |
| 15 | 12,481 | 8,038 | 11,850 | 12,984 | 16,138 | 19,092 |
| 16 | 12,691 | 8,137 | 11,949 | 13,083 | 8,137 | 8,137 |
| 17 | 13,259 | 8,440 | 12,252 | 13,386 | 8,440 | 8,440 |
| 18 | 13,560 | 8,589 | 12,401 | 13,535 | 8,589 | 8,589 |
| 19 | 13,998 | 8,830 | 12,642 | 13,776 | 8,830 | 8,830 |
| 20 | 14,223 | 8,942 | 12,754 | 13,888 | 8,942 | 8,942 |
| 21 | 14,589 | 9,146 | 12,958 | 14,092 | 9,146 | 9,146 |
| 22 | 14,956 | 9,341 | 13,153 | 14,287 | 9,341 | 9,341 |
| 23 | 15,701 | 9,765 | 13,577 | 14,711 | 9,765 | 9,765 |
| 24 | 15,873 | 9,864 | 13,676 | 14,810 | 9,864 | 9,864 |
| 25 | 16,384 | 10,152 | 13,964 | 15,098 | 10,152 | 10,152 |
| 26 | 16,717 | 10,343 | 14,155 | 15,289 | 10,343 | 10,343 |
| 27 | 17,187 | 10,622 | 14,434 | 15,568 | 10,622 | 10,622 |
| 28 | 17,640 | 10,886 | 14,698 | 15,832 | 10,886 | 10,886 |
| 29 | 18,105 | 11,168 | 14,980 | 16,114 | 11,168 | 11,168 |
| 30 | 18,283 | 11,269 | 15,081 | 16,215 | 11,269 | 11,269 |
| 31 | 18,217 | 11,230 | 15,042 | 16,176 | 11,230 | 11,230 |

**Table 3.4—Continued**

| YOS | Baseline Pay ($) | RMC ($) | RMC + $3,812 Incentive Pay ($) | RMC + $4,946 Incentive Pay ($) | RMC + $8,100 Targeted Incentive Pay at 8–15 YOS ($) | RMC + $11,054 Targeted Incentive Pay at 8–15 YOS ($) |
|---|---|---|---|---|---|---|
| 32 | 18,205 | 11,217 | 15,029 | 16,163 | 11,217 | 11,217 |
| 33 | 18,567 | 11,432 | 15,244 | 16,378 | 11,432 | 11,432 |
| 34 | 18,671 | 11,495 | 15,307 | 16,441 | 11,495 | 11,495 |
| 35 | 19,202 | 11,812 | 15,624 | 16,758 | 11,812 | 11,812 |
| 36 | 19,763 | 12,141 | 15,953 | 17,087 | 12,141 | 12,141 |
| 37 | 20,016 | 12,297 | 16,109 | 17,243 | 12,297 | 12,297 |
| 38 | 20,210 | 12,413 | 16,225 | 17,359 | 12,413 | 12,413 |
| 39 | 20,081 | 12,331 | 16,143 | 17,277 | 12,331 | 12,331 |
| 40 | 20,854 | 12,800 | 16,612 | 17,746 | 12,800 | 12,800 |

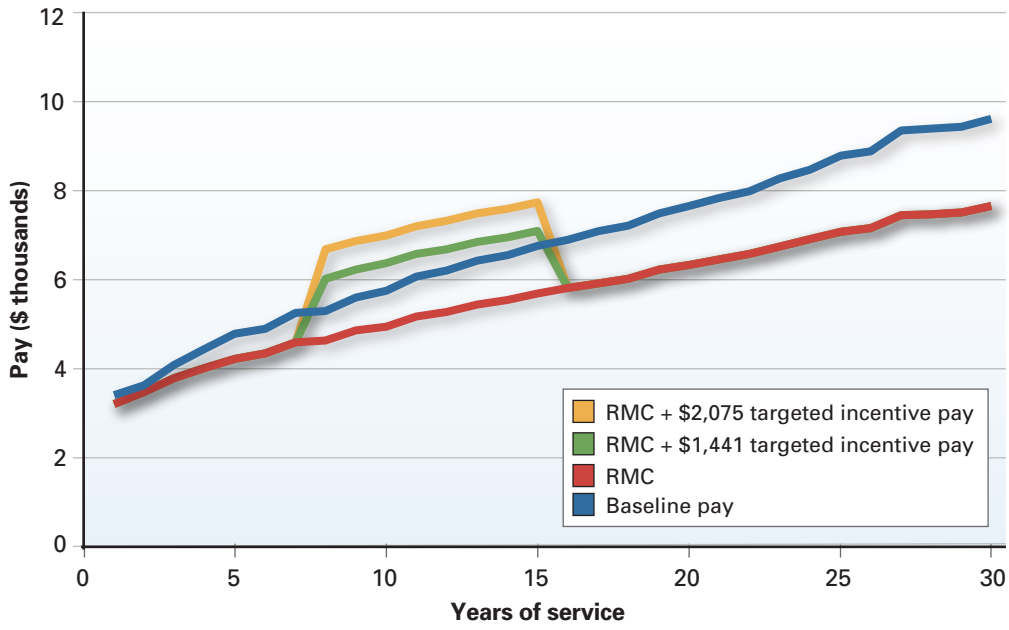


**Figure 3.7. Enlisted RMC plus Targeted Dollar Incentive Pay at 8 to 15 YOS**

The flat incentive pay ranges from $700 to $1,000 for enlisted members and from $3,800 to $5,000 for officers, with the specific amount varying by policy alternative and service, depending on the amount required to hold RC force size constant. Enlisted personnel with fewer than 9 YOS receive higher pay than the baseline when the dollar incentive amount is low ($697 in Table 3.3), and those with fewer than 13 YOS receive higher pay when the incentive amount is high. Officers with fewer than 12 YOS receive higher pay than baseline when the incentive amount is $3,812, and those with fewer than 18 YOS receive higher pay when the incentive amount is $4,946.

As seen in Figures 3.7 and 3.8, the targeted incentive pay raises pay above baseline during the targeted YOS, 8 to 15. For other participants, pay equals RMC, falling short of baseline pay.

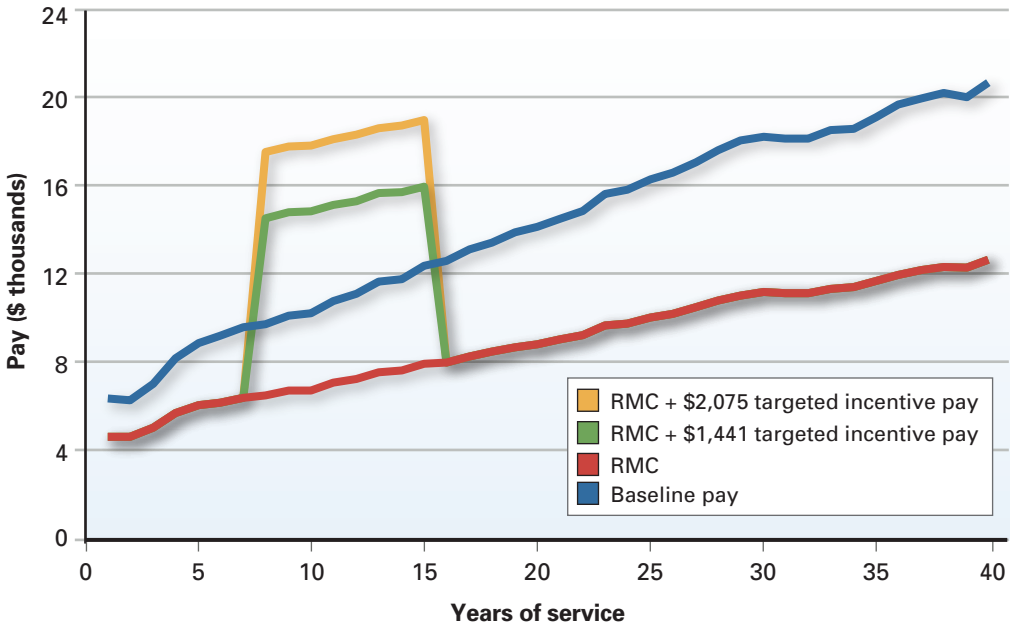


**Figure 3.8. Officer RMC Plus Targeted Dollar Incentive Pay at 8 to 15 YOS**

### Additional Annual Participation Points

Another potential component of the total-force pay package is additional annual participation points. These points would be in addition to the annual 15 given to RC members and would help make up for the decrease in retirement points. Additional points would increase the value of RC retirement pay and would hence improve RC compensation. Like incentive pay, additional points could be targeted or provided across the board to all members. However, because they increase retired pay rather than current compensation, their effect would differ depending on the amount and timing of participation over the RC member's career.

Exploratory analyses we conducted suggested that additional participation points would not be a realistic standalone policy. In some cases, it would take more than a year's worth of additional points (more than 365 additional points) to restore RC participation under a total-force pay approach that included RMC but not other features. However, our presentation of results in Chapter Four includes a variant in which we consider 75 rather than 53 retirement points, a bonus of 22 points. This variant is described later in this chapter.

### Reduced RC Retirement Age

Another option would allow RC retirement benefits to begin before age 60 for qualifying reservists. Lowering the RC retirement age would increase the expected DPV of RC retirement benefits, since they would be received over a longer period. Consequently, we would expect RC participation to increase among those nearing the lower retirement age and to fall among those who had reached it. An exploratory analysis yielded results consistent with this expectation. However, the 11th QRMC did not include this option but instead included the option of allowing retirement pay eligibility at 30 YOS (rather than explicitly at a younger age).

### Unreimbursed Travel

Currently, RC members whose commute for their weekend inactive-duty training exceeds normal commuting distances are not automatically reimbursed for travel expenses. Reimbursement occurs only if they are eligible and if their service secretary authorizes it, according to Section 408a of title 37 of the U.S. code. To be eligible, the RC member must have a critical skill or be in a critical unit or be previously assigned to a unit affected by base realignment or closure. The service can specify the local commuting distance, but the Defense Travel Management Office defines a minimum distance for reimbursement of 150 miles one way. In contrast,

RC members who travel for the two weeks of annual training receive reimbursement based on the round-trip mileage from their home of record to their duty location.

The total-force pay package could include reimbursement of travel expenses for RC travel greater than 50 miles one way, regardless of duty status. At the request of the 11th QRMC, DMDC computed the average distance traveled and the number of RC travelers in different mileage categories (e.g., less than 50 miles one way, 50 to 100 miles, and so forth) for selected enlisted and officer personnel, by grade. This input was used to compute the weighted-average miles traveled by RC officers and enlisted personnel, by grade, conditional on traveling more than 50 miles one way. Using these data together with the 2007 permanent-change-of-station mileage rate, we computed the weighted-average annual travel cost, by YOS. Reimbursing for travel would increase RC compensation for enlisted personnel and officers, as shown in Figures 3.9 and 3.10, respectively. Depending on YOS, compensation would increase by up to 17 percent over RMC for enlisted personnel, and by up to 21 percent over RMC for officers. However, even with reimbursed travel, reserve cash pay would fall short of baseline pay except at the lowest YOS. Chapter Four presents results for this option, and Chapter Five discusses some advantages and disadvantages of reimbursing travel expenses.

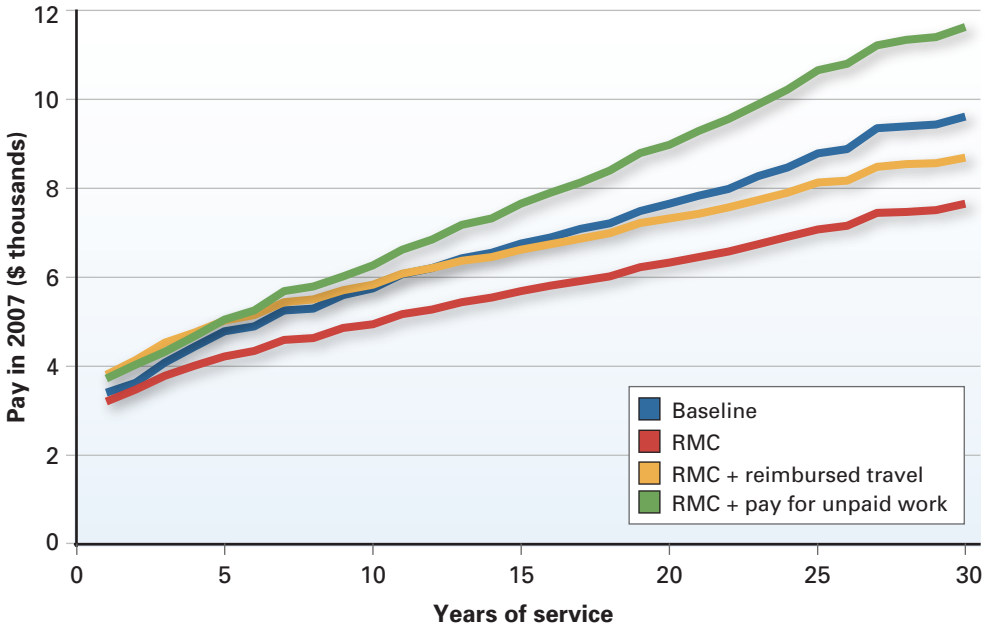


**Figure 3.9. Enlisted Annual RMC: Current RC Compensation System and Proposed Total-Force System**

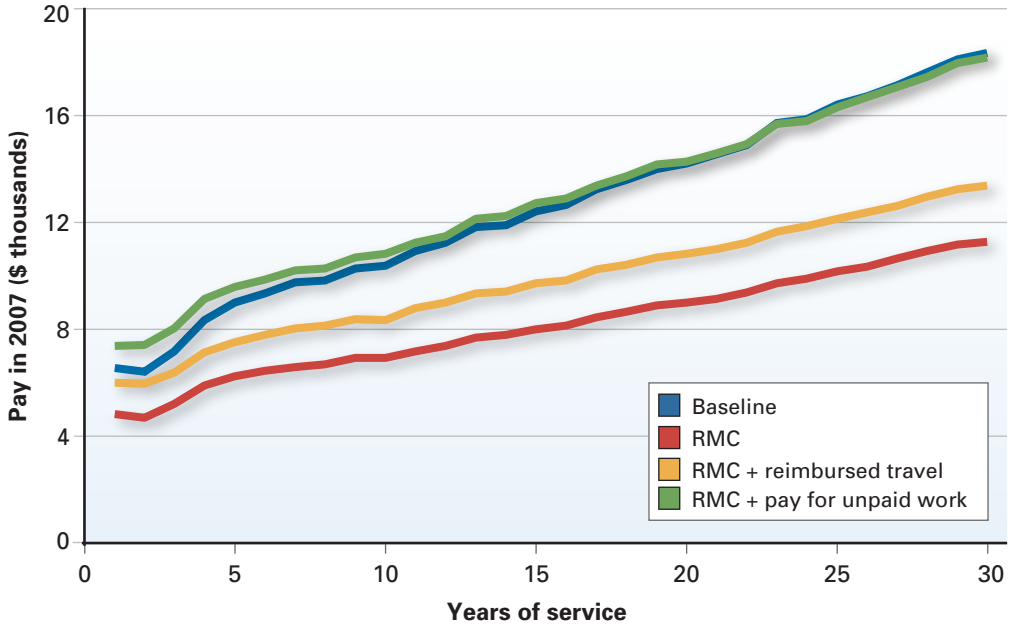


**Figure 3.10. Officer Annual RMC: Current RC Compensation System and Proposed Total-Force System**

### Unpaid Work on RC Business

Respondents in DoD surveys of RC personnel report that they regularly perform RC-related work that is uncompensated. For example, in the December 2009 Status of Reserve Forces survey, RC members who are not full-time reservists spent an average of 8.5 unpaid hours per month performing unit business off duty, when not activated. The 11th QRMC asked DMDC to compute the average number of unpaid hours, by grade, over a several-year period. We used the resulting five-year average of unpaid hours of work on unit business, by grade, during the period June 2005 to June 2009 and converted it to days per year. We then added these days to recompute annual RMC under the total-force approach, assuming unpaid work would now be compensated.

Figures 3.9 and 3.10 show the results for enlisted personnel and officers, respectively. Compensating for unpaid hours substantially increases RMC, exceeding baseline pay for enlisted personnel and equaling baseline pay for officers with more than 10 YOS. In exploratory analysis, we incorporated pay for unpaid work, and not surprisingly, given the large increment in RC compensation, RC participation increased dramatically. In our view, this option is not realistic as an across-the-board policy for all RC members, because it raises issues about the possibility of abuse

without an accountability mechanism in place, the cost of tracking irregular hours, and the greater incentive for RC members to increase hours but not necessarily performance (Lazear, 1986).

## Alternative Compensation Packages

The four elements in the total-force compensation approach are (1) RMC for each day of RC service, regardless of duty status; (2) one retirement point per day of RC service, regardless of duty status; (3) retirement benefits beginning on completion of the 30 YOS (or reaching age 60, whichever occurs sooner) for those who qualify; and (4) supplemental pay in any of several possible forms, including incentive pay, pay for travel in excess of 50 miles (100 miles round trip), and pay for currently unpaid RC unit work. The effects of implementing this approach on AC and RC force size and cost are discussed below. We also explore the importance of separate elements such as the retirement and supplemental pay features of the approach by removing them and reverting to status quo compensation, e.g., the current retirement system and no supplemental pay. The specific alternatives we assessed with our model are summarized in Table 3.5.

**Table 3.5. Summary of Alternative Compensation Packages**

| Alternative | RMC Based on a Day's Pay for Each Day of RC Duty | 53 Retirement Points, Based on a Day's Pay for Each Day of RC Duty | Retirement Benefits Begin on Completion of 30 YOS or Reaching Age 60 | Supplemental Pay |
|---|---|---|---|---|
| 1 | X | X | X | Percentage incentive pay |
| 2 | X | X | X | Flat dollar incentive pay |
| 3 | X | X | X | Targeted incentive pay |
| 4 | X | X | | Percentage incentive pay |
| 5 | X | X | | Flat dollar incentive pay |
| 6 | X | X | | Targeted incentive pay |
| 7 | X | X | X | Travel pay |
| 8 | X | X | X | None |
| 9 | X | X | | None |
| 10 | X | | | None |
| 11 | | X | X | None |

We analyzed 11 different compensation policies and compared them to the current (baseline) compensation policy for enlisted personnel and officers and for each service. The first three represent the core QRMC proposal and include all four elements. They differ in the form of supplemental pay included, as shown in the rightmost column of Table 3.5. The next three alternatives use RMC and 53 points but adhere to the current retirement benefit age of 60, and incentive pay is included. The seventh alternative uses travel reimbursement as supplemental pay. The remaining alternatives show the effects of removing different elements and reverting to the status quo baseline. The eleven policies are described below:

1. RMC is based on one day's pay for each day of RC duty. The expected number of points per year for retirement for a non-deployed reservist is decreased from 75 to 53. Retirement can begin at 30 YOS, which allows reservists to retire sooner than they can under the current system, e.g., as early as age 50 for those with an AC career beginning at age 20. Incentive pay is calculated as a percentage of annualized basic pay determined by an algorithm in our analysis that selects the smallest percentage consistent with holding RC prior-service force size constant at its level under the current system.
2. Same as alternative 1, except that incentive pay is a flat dollar amount.
3. Same as alternative 2, except that incentive pay is a flat dollar amount targeted to members with between 8 and 15 YOS.
4. Same as alternative 1, except that retirement starts at age 60, as it does under current policy. This makes the retirement benefit somewhat less generous than that in alternative 1, but the incentive pay percentage is higher, which, in effect, compensates for the less generous retirement benefit.
5. Same as alternative 4, except that incentive pay is a flat dollar amount.
6. Same as alternative 5, except that incentive pay is a flat dollar amount targeted to members with between 8 and 15 YOS.
7. RMC, number of retirement points, and retirement eligibility are the same as in the core QRMC package, and supplemental pay is included in the form of reimbursement for travel in excess of 50 miles one way (100 miles round trip). Only some reservists would receive travel reimbursement. Chapter Four pre-sents estimates of the overall effects for the RC and includes reservists who do not qualify for travel reimbursement.

8. RMC is based on a day's pay for each day of RC duty; 53 retirement points per year are available; and retirement can start at 30 YOS. The total-force approach affects the calculation of RMC and the number of retirement points, and there is no incentive or other supplemental pay. The shift from baseline pay to RMC results in a decrease in current pay and retirement points. Allowing retirement at 30 YOS tends to increase the value of these benefits relative to the current system, while decreasing retirement points decreases the value of the benefits. The results of the model calculations will show whether the decrease in current pay overwhelms the possible increase in retirement benefits, leading to decreased force size.
9. Same as alternative 8, but without the earlier retirement benefit. This alternative changes to the total-force compensation approach without changing the age at which retirement benefits can begin.
10. This alternative shifts to a day of RMC for each day of reserve service but holds retirement points at the current level, i.e., 75 points per year. This produces a "bonus" of 22 retirement points (over the 53 per year in the total-force approach). The policy also holds the starting retirement age at 60.

The final alternative considers the effects of not using the day's-pay total-force approach in computing RMC but changing retirement points and age of benefit receipt.

11. Retirement points and the move to earlier retirement are the same as those in alternative 1, but pay is kept at its baseline level and there is no incentive pay. This alternative is analyzed to determine whether RC force size will be sustained with these conditions and at what RC cost.

The next chapter presents the results for these alternatives.

# 4. Results

This chapter presents an overview of the results of our policy simulations for each of the four armed service branches, for officers and enlisted personnel. We begin with a discussion of the results for Army enlisted personnel, followed by a discussion of those for enlisted personnel in all the services. We then present a parallel discussion of our results for officers. Tables of detailed results are given in Appendix B.

## Results for Army Enlisted Personnel

Table 4.1 presents the results of the policy simulations for AC and RC Army enlisted personnel, including force size, current cost, retirement cost, and total cost. Total cost is the sum of current and retirement cost, as described in Appendix A. The table shows the baseline value, the new value under the policy being simulated, and the percentage change from the baseline. The first six columns hold prior-service RC force size constant, and the last five do not. The percentage changes in cost shown in all 11 columns are calculated per AC member for AC costs and per RC member for RC costs, so the changes shown adjust for changes in force size in the cases where force size is not held constant or where there are minor differences in force size (in columns 1–6). This is the case for the remainder of the tables in this chapter, which have the same structure as Table 4.1.

None of the policies has much effect on the Army AC—the changes in force size, current cost, and total cost are all within 1 percent of the baseline. This means that the total-force pay approach of the 11th QRMC is not likely to affect the size or cost of the active force. This finding also holds for the other services, as shown in the tables in Appendix B. By implication, then, our discussion of policy alternatives can focus on the RC.

Alternative 1 is the combination of RMC, 53 retirement points per year, retirement at 30 YOS, and incentive pay of 2.27 percent of annualized basic pay. Current cost decreases by 4 percent, but retirement cost increases by 7 percent, because retirement at 30 YOS increases the expected number of years over which retirement benefits will be received. This more than offsets the decrease in retirement benefits resulting from fewer retirement points.[9]

9. Our active and reserve retirement costing follows the practice of the DoD Actuary, except that we compute retirement costs separately for enlisted and officers for each service and component rather than pooling across the AC and across the RC.

## Table 4.1. Results for Army Enlisted Personnel

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | 2.27% | Flat $697 | Targeted $1,611 | 3.09% | Flat $939 | Targeted $2,202 |
| | | | Active | | | |
| Force size, baseline | 458,220 | 458,220 | 458,220 | 458,220 | 458,220 | 458,220 |
| Force size, new | 457,441 | 456,370 | 459,456 | 456,513 | 456,071 | 458,879 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 22.038 | 22.038 | 22.038 | 22.038 | 22.038 | 22.038 |
| Current cost, new | 21.979 | 21.919 | 22.098 | 21.940 | 21.921 | 22.072 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 3.360 | 3.360 | 3.360 | 3.360 | 3.360 | 3.360 |
| Retirement cost, new | 3.320 | 3.304 | 3.346 | 3.327 | 3.323 | 3.362 |
| % change | –1% | –1% | –1% | –1% | –1% | 0% |
| Total cost, baseline | 25.398 | 25.398 | 25.398 | 25.398 | 25.398 | 25.398 |
| Total cost, new | 25.299 | 25.222 | 25.444 | 25.267 | 25.244 | 25.434 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | Reserve | | | |
| Force size, baseline | 171,783 | 171,783 | 171,783 | 171,783 | 171,783 | 171,783 |
| Force size, new | 171,783 | 171,775 | 171,783 | 171,813 | 171,745 | 171,850 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 1.098 | 1.098 | 1.098 | 1.098 | 1.098 | 1.098 |
| Current cost, new | 1.058 | 1.047 | 1.031 | 1.095 | 1.081 | 1.066 |
| % change | –4 | –5 | –6 | 0 | –2 | –3 |
| Retirement cost, baseline | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 |
| Retire cost, new | 0.113 | 0.107 | 0.108 | 0.086 | 0.083 | 0.083 |
| % change | 7 | 2 | 2 | –18 | –21 | –21 |
| Total cost, baseline | 1.203 | 1.203 | 1.203 | 1.203 | 1.203 | 1.203 |
| Total cost, new | 1.171 | 1.155 | 1.139 | 1.182 | 1.164 | 1.150 |
| % change | –3 | –4 | –5 | –2 | –3 | –5 |

## Table 4.1—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| | | Active | | | |
| Force size, baseline | 458,220 | 458,220 | 458,220 | 458,220 | 458,220 |
| Force size, new | 456,123 | 460,878 | 461,096 | 460,916 | 457,471 |
| % change | 0 | 1 | 1 | 1 | 0 |
| Current cost, baseline | 22.038 | 22.038 | 22.038 | 22.038 | 22.038 |
| Current cost, new | 21.901 | 22.197 | 22.228 | 22.213 | 21.969 |
| % change | 0 | 0 | 0 | 0 | 0 |
| Retire cost, baseline | 3.360 | 3.360 | 3.360 | 3.360 | 3.360 |
| Retire cost, new | 3.295 | 3.392 | 3.431 | 3.425 | 3.302 |
| % change | –1 | 0 | 1 | 1 | –2 |
| Total cost, baseline | 25.398 | 25.398 | 25.398 | 25.398 | 25.398 |
| Total cost, new | 25.197 | 25.588 | 25.659 | 25.638 | 25.271 |
| % change | 0 | 0 | 0 | 0 | 0 |
| | | Reserve | | | |
| Force size, baseline | 171,783 | 171,783 | 171,783 | 171,783 | 171,783 |
| Force size, new | 177,107 | 154,290 | 147,611 | 150,231 | 176,456 |
| % change | 3 | –10 | –14 | –13 | 3 |
| Current cost, baseline | 1.098 | 1.098 | 1.098 | 1.098 | 1.098 |
| Current cost, new | 1.123 | 0.829 | 0.783 | 0.800 | 1.140 |
| % change | –1 | –16 | –17 | –17 | 1 |
| Retire cost, baseline | 0.105 | 0.105 | 0.105 | 0.105 | 0.105 |
| Retire cost, new | 0.114 | 0.098 | 0.073 | 0.087 | 0.120 |
| % change | 4 | 4 | –19 | –6 | 11 |
| Total cost, baseline | 1.203 | 1.203 | 1.203 | 1.203 | 1.203 |
| Total cost, new | 1.237 | 0.927 | 0.856 | 0.887 | 1.260 |
| % change | 0 | –14 | –17 | –16 | 2 |

NOTES: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. Prior service RC force size is held constant.

In many cases, percentage changes in retirement cost are larger than those in current cost because of changes in retirement benefit size and years of receipt. Figure 4.1 shows the change in the number of reservists who qualify for retirement benefits by having 20 or more years of creditable service and the year "bin" they fall into. Retirement costs change by more than the change in the number qualifying for retirement, however, because more years of benefits are anticipated under the 30-YOS

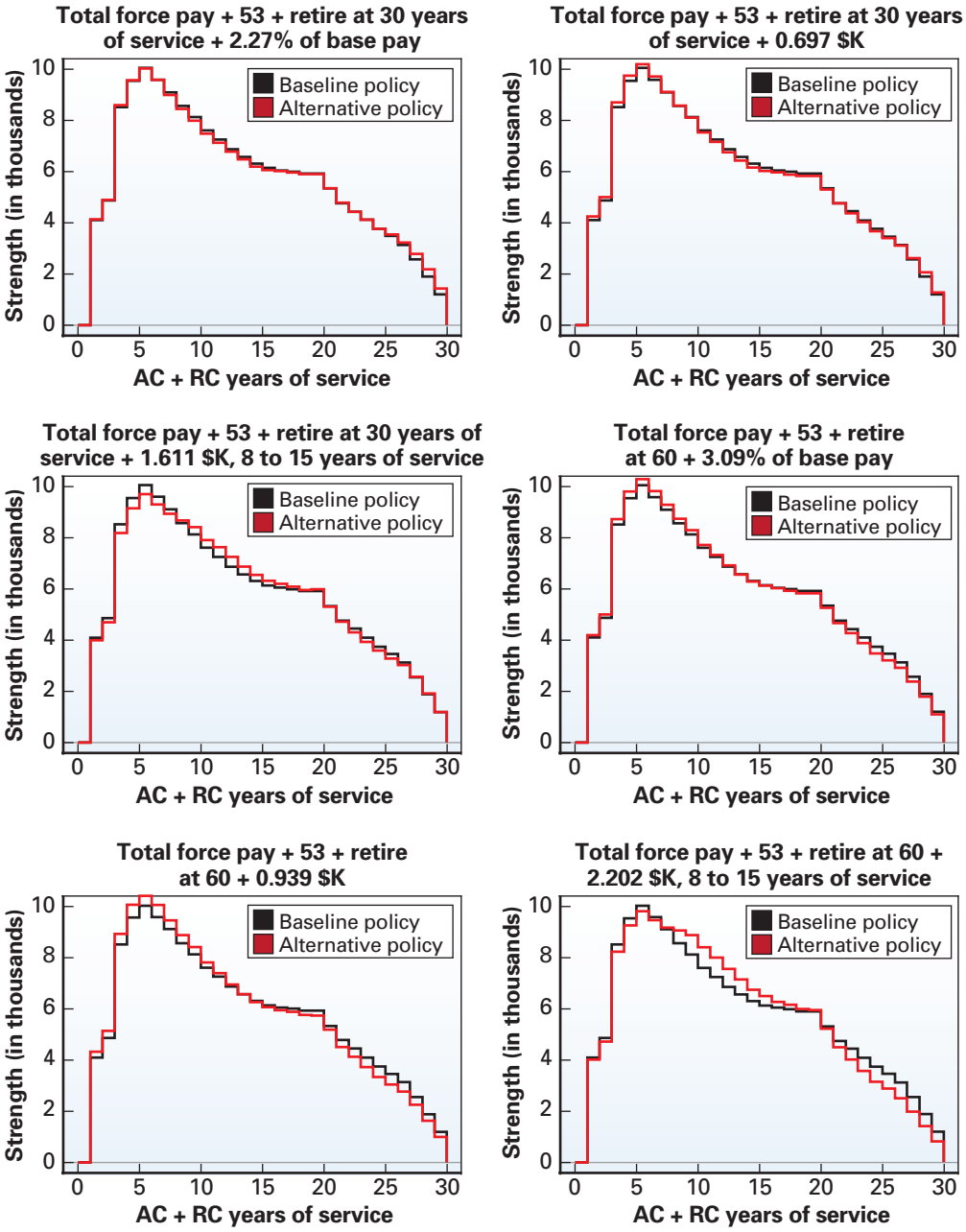


**Figure 4.1. Reserve Force Size Policy Simulations: Army Enlisted Personnel**

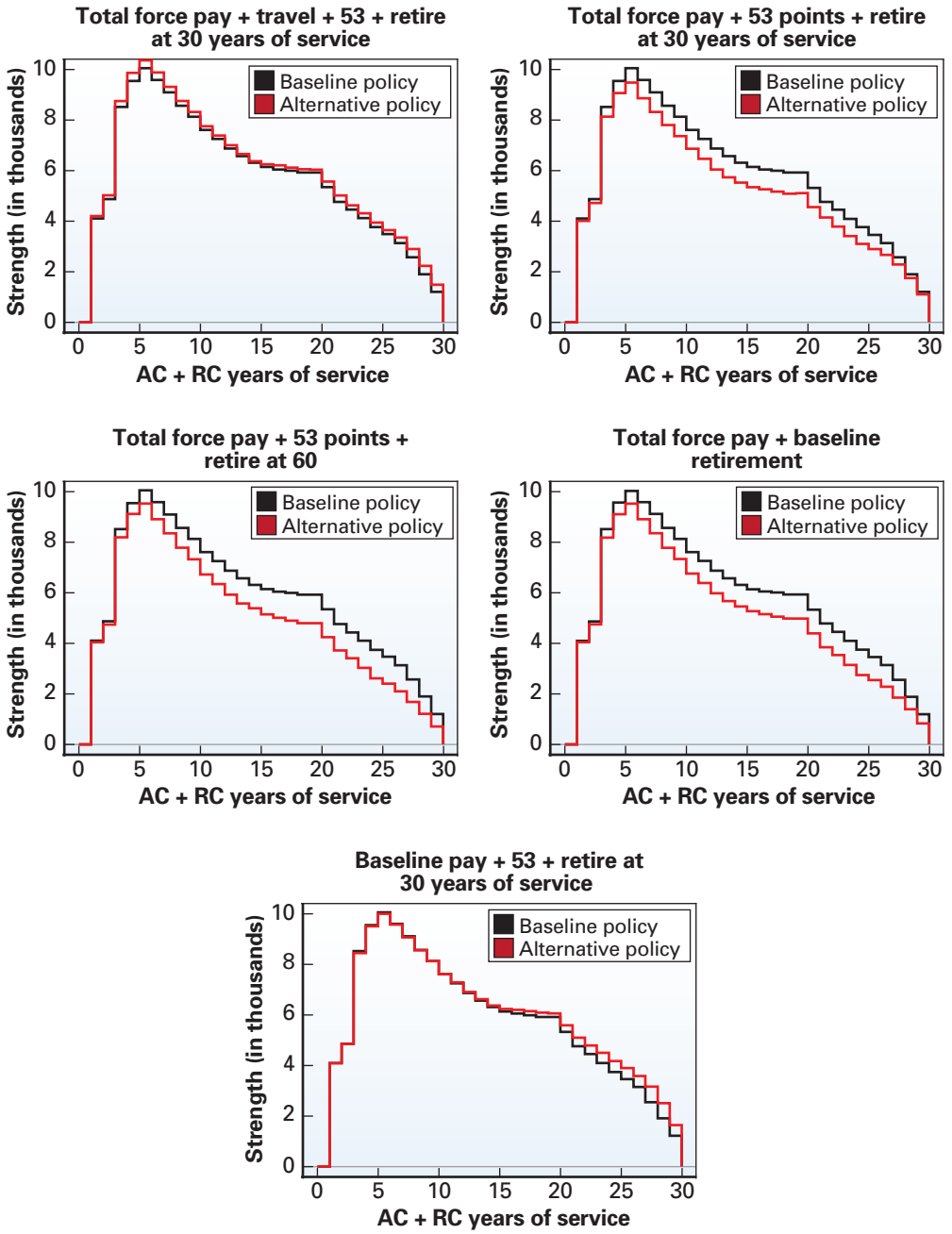


**Figure 4.1—Continued**

retirement plan than under the age-60 retirement plan. Under the 30-YOS plan, the increase in retirement cost from more years of benefits typically dominates the decrease in cost from fewer retirement points, so retirement costs increase. Under the age-60 plan, there is no change in years paid, but there is a decrease in cost resulting from fewer retirement points. These changes in the retirement system tend to amplify the percentage change (plus or minus) in retirement cost, making it larger than the participation response.

Figure 4.1 has a panel for each policy alternative for the Army. (Results for the other services are shown in Figures B.2–B.4 in Appendix B and are discussed in the next subsection). The upper left panel shows reserve participation by YOS under alternative 1. Participation increases at 20 or more YOS, which implies that more of the participating reservists qualify for retirement benefits. Even with the increase in participation and the higher retirement cost, total cost falls by 3 percent because the move from baseline pay to RMC decreases pay, and the decrease becomes greater with years of service. Adding incentive pay to RMC increases pay, and RMC plus incentive pay is higher than baseline pay at low years of service, but lower at high years of service. The opportunity to retire at 30 YOS neutralizes the lower pay at higher years of service. There is a slight decrease in pre–20-YOS participation and a slight increase in post–20-YOS participation (and no change in force size overall).

In alternative 1, cost decreases, while force size remains constant because current compensation for senior reservists decreases. The pay decrease from baseline is roughly $125 at 10 YOS and $400 at 20 YOS, and it is expected to decrease participation. However, the relatively high taste for reserve service at these YOS and the opportunity to retire at 30 YOS keep the decrease in pre–20-YOS participation small. From YOS 20 to 30, the pay decrease ranges from $400 to $800, but the option to retire at 30 YOS more than offsets this decrease, so participation increases. The fact that current pay is lower than baseline pay from YOS 7 to 30 but participation is affected little helps to explain why current cost is lower than at baseline.

Alternative 2 is the same as alternative 1, except that incentive pay is paid as a flat amount, $697. This policy is more cost-effective in terms of achieving a given RC prior-service force size, though the mix of junior and senior personnel changes a bit. Force size is held constant, but total cost per member is 4 percent lower rather than 3 percent lower.

Alternative 3 is even more cost-effective in terms of holding RC force constant. This policy is the same as Alternative 2, but the incentive pay is higher and is paid only to those in YOS 8 to 15. Alternative 3 results in even more RC current cost savings than alternative 2, the same RC retirement savings, and a RC total cost savings of 5 percent. While force size is held constant in the policies considered in alternatives

1 to 3, the effect on RC experience mix is somewhat different. The changes are generally slight, but the untargeted-incentive-pay policy options (1 and 2) result in greater participation among those with more than 20 YOS and a slight decrease in participation prior to 20 YOS. In contrast, the targeted-incentive-pay option increases participation in mid-career prior to 20 YOS but reduces participation of junior personnel and those with more than 20 YOS. Thus, this option produces a force more heavily weighted toward mid-career personnel. Although our measures of merit focus on cost, holding force size constant, the appeal of the three options may also depend on the desired force shape. Nevertheless, any of the force shapes could be changed further by the use of S&I pays.

Alternatives 4 to 6 are like alternatives 1 to 3 except that eligibility for retirement is kept at age 60. However, the number of retirement points decreases, as does the pay upon which retirement benefits are computed, so the value of retirement benefits is lower. Therefore, incentive pay in alternative 4 will have to be higher than in alternative 1 to keep force size constant. Incentive pay in alternative 4 is 3.09 percent of annualized basic pay. As was shown in Figure 3.3, RMC plus incentive pay of 3.09 percent (3.1 percent with rounding) results in pay higher than baseline pay for the first 14 YOS. With early current compensation higher and retirement benefits lower, this policy decreases the back-loading of military compensation. It results in an increase in participation in YOS 1 to 10, little change in YOS 11 to 20, and a decrease in YOS 21 to 30, again holding force size constant. The greater front-loading results in no savings in current cost (0 percent change), but retirement cost per member decreases by 18 percent, and total cost decreases by 2 percent. The issue of back-loading versus front-loading is discussed later in this subsection.

In alternative 5, incentive pay is $939, current cost is 2 percent lower, retirement cost is 21 percent lower, and total cost is 3 percent lower. As in alternative 4, RC force size is held constant, but participation among junior reservists increases, while participation decreases among those with more than 20 YOS. Total RC cost savings are greater when the incentive pay is a flat amount rather than a percentage of annualized basic pay. In alternative 6, the targeted incentive pay is $2,202 for participation during YOS 8 to 15. The cost savings are greater than those in alternative 5 or the percentage incentive pay in alternative 4. The RC force shape also differs. Targeted incentive pay increases participation among mid-career RC personnel and decreases it among the post–20-YOS and junior personnel.

Because service members discount future dollars at a higher rate than the government discounts future costs, as discussed in Appendix A, benefits that are paid in the future are worth less to military members than the government's cost of providing them. For this reason, we expect more-front-loaded options (alternatives 4, 5, and 6) to result in more cost savings than alternatives 1, 2, and 3. However,

cost savings for Army enlisted personnel are not larger under alternatives 4, 5, and 6, but smaller, partly because the force shape changes a bit, even though force size is held constant. Under alternatives 4 to 6, the participation of mid-career reservists (YOS 8 to 20) increases. While the increase is not large, it is sufficient to result in smaller cost savings under alternatives 4 and 5 than under alternatives 1 and 2, and about the same cost savings under alternatives 6 and 3. However, this finding does not hold for all the services, as we show in the next subsection.

Alternatives 7 to 11 do not hold force size constant, although we compute percentage changes in cost as changes in cost per member (as we also do for alternatives 1 to 6). Alternative 7 offers RMC, 53 points, retirement at 30 YOS, and reimbursement for travel in excess of 50 miles one way (100 miles round trip). We use the average reimbursement by YOS in the simulation, and when it is added to RMC, the pay is $400 above baseline pay at YOS 2, tapering down to zero at YOS 12 and below baseline pay beyond YOS 12. The RMC-plus-travel-reimbursement pay is in a sense more generous than needed. Force size increases by 3 percent, and current cost per member is only 1 percent lower, which compares with the 4 percent lower current cost under alternative 1. Retirement cost per member increases by 4 percent, and total cost does not change—the lower current cost only offsets the higher retirement cost.

Alternatives 8 to 10 offer RMC plus either 53 or 75 retirement points, plus retirement at 30 YOS or at age 60, but no incentive pay. As a result, current pay is less than baseline pay, and the decrease in pay is greater at higher YOS. The resulting decrease in force size is substantial, 10 to 14 percent, which underscores the necessity of supplemental pay to preserve force strength. This is the main point of including these alternatives in our calculations. Allowing retirement to begin at 30 YOS is not nearly sufficient to preserve force strength.

A comparison of alternatives 8 and 9 shows how force size and cost change when retirement eligibility begins at 30 YOS rather than at age 60. As seen, force size is greater under alternative 8—a 10 percent drop rather than a 14 percent drop—but retirement cost per member is also higher—a 4 percent increase versus a 19 percent decrease. Total cost per reservist is $6,000 under alternative 8 and $5,800 under alternative 9 (cost per reservist is not shown in Table 4.1, although the percentage changes are calculated as the change in cost per reservist).

A comparison of alternatives 9 and 10 shows the effect of shifting from 75 retirement points (alternative 10) to 53 retirement points (alternative 9). Both alternatives have current pay equal to RMC and retirement at age 60. Not surprisingly, retirement cost is lower when points are reduced from 75 to 53, but so is force size and current cost. Total cost per reservist is $5,800 under a 53-point policy and $5,900 under a 75-point policy.

Finally, alternative 11 assumes baseline pay, 53 points, and retirement at 30 YOS. It results in a 3 percent larger force and a 2 percent higher total cost per reservist. The cost per reservist under alternatives 1, 2, and 3 is $6,817, $6,723, and $6,878, respectively, and it is $7,141 under alternative 11. Thus, the total cost per reservist is higher under the option with baseline pay than under the alternatives that include RMC, decrease points from 75 to 53, make enlisted personnel eligible for retirement at 30 YOS, and provide any of the incentive pays. For the age-60 retirement options, alternatives 4, 5, and 6, the cost per reservist is $6,881, $6,776, and $6,694, respectively, and these costs, too, are lower than that under alternative 11.

## Results for Enlisted Personnel: All Services

Table 4.2 summarizes the results of our simulations for enlisted personnel in all services. It shows the percentage change from baseline for force size, current cost, retirement cost, and total cost per AC or RC member. The percentage changes are highly consistent across the services. Even though we estimated models for each service, and the parameter estimates differ, the relative impact of the policies—i.e., the percentage changes from baseline—is similar across the services. More complete results for the Navy, Air Force, and Marine Corps are given in Appendix B.

Columns 1–6 of Table 4.2 show results for the first six alternative options. The percentage decrease in current cost is largest under alternative 3. The percentage change in retirement cost differs by service and policy, though offering retirement at 30 YOS consistently increases retirement cost per reservist (alternatives 1, 2, and 3), while keeping retirement at age 60 decreases retirement cost (alternatives 4, 5, and 6). The decrease occurs because retirement points are limited to 53 per year instead of 75 and because reserve participation is somewhat higher before 20 YOS and somewhat lower after 20 YOS under the age-60 policy. When current cost and retirement cost are combined, the total cost is lower under the flat-amount incentive policy than under the percentage-of-basic-pay incentive policy, and still lower with targeted incentive pay. The decrease in total cost tends to be larger with retirement at age 60 than with retirement at 30 YOS.

The results for alternatives 1 to 6, where RC force size is held constant, imply that the total-force pay approach is viable, producing a cost savings or no change in cost under either the 30-YOS or age-60 retirement system, provided incentive pay is set at a sufficient level. The more generous retirement policy in terms of the DPV of RC retirement benefits, retirement at 30 YOS, allows incentive pay to be lower than the less generous age-60 policy. The incentive pay percentages and flat amounts are very similar across the services. Under alternative 1, the percentages are 2.27 (Army), 2.49 (Navy), 2.37 (Air Force), and 2.50 (Marine Corps). The percentages for alternative 4 are 3.09 (Army), 3.14 (Navy), 3.05 (Air Force), and 3.39 (Marine Corps). The flat

dollar amounts of incentive pay for retirement at 30 YOS (alternative 2) are $697 (Army), $747 (Navy), $717 (Air Force), and $788 (Marine Corps). The amounts for retirement at age 60 (alternative 4) are $939 (Army), $938 (Navy), $967 (Air Force), and $1,029 (Marine Corps). Finally, the targeted flat amounts of incentive pay for retirement at 30 YOS (alternative 3) are $1,611 (Army), $1,671 (Navy), $1,642 (Air Force), and $1,441 (Marine Corps). The amounts for retirement at age 60 (alternative 6) are $2,202 (Army), $2,075 (Navy), $2,107 (Air Force), and $1,925 (Marine Corps). The similarity in incentive pay across the services under each type of incentive pay implies that a common policy for enlisted personnel—that is, a common schedule or common parameters for setting incentive pay, rather than a single common amount or percentage—is feasible, whichever policy is pursued. A common policy would allow the services to have flexibility in setting incentive pay to meet their manning requirements.

**Table 4.2. Percentage Change from Baseline for All Services: Enlisted Personnel**

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | Percentage | Flat dollar | Targeted dollar | Percentage | Flat dollar | Targeted dollar |
| Force size | | | | | | |
| Army | 0 | 0 | 0 | 0 | 0 | 0 |
| Navy | 0 | 0 | 0 | 0 | 0 | 0 |
| Air Force | 0 | 0 | 0 | 0 | 0 | 0 |
| Marine | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost | | | | | | |
| Army | –4 | –5 | –6 | 0 | –2 | –3 |
| Navy | –2 | –3 | –5 | 0 | –1 | –2 |
| Air Force | –4 | –6 | –9 | –2 | –4 | –7 |
| Marine | –1 | –1 | –4 | 2 | 2 | –1 |
| Retirement cost | | | | | | |
| Army | 7 | 2 | 2 | –18 | –21 | –21 |
| Navy | 8 | 6 | 6 | –18 | –21 | –20 |
| Air Force | 16 | 14 | 17 | –24 | –27 | –22 |
| Marine | 12 | 4 | 9 | –16 | –21 | –24 |
| Total cost | | | | | | |
| Army | –3 | –4 | –5 | –2 | –3 | –5 |
| Navy | –1 | –2 | –3 | –3 | –4 | –5 |
| Air Force | –2 | –4 | –6 | –4 | –6 | –8 |
| Marine | 0 | –1 | –3 | 1 | 0 | –3 |

**Table 4.2—Continued**

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| Force size | | | | | |
| Army | 3 | –10 | –14 | –13 | 3 |
| Navy | 4 | –19 | –24 | –20 | 2 |
| Air Force | 4 | –19 | –24 | –23 | 5 |
| Marine | 4 | –15 | –18 | –15 | 3 |
| Current cost | | | | | |
| Army | –1 | –16 | –17 | –17 | 1 |
| Navy | –1 | –16 | –17 | –17 | 1 |
| Air Force | –3 | –17 | –18 | –18 | 1 |
| Marine | 1 | –16 | –16 | –16 | 1 |
| Retirement cost | | | | | |
| Army | 4 | 4 | –19 | –6 | 11 |
| Navy | 4 | 13 | –11 | –1 | 10 |
| Air Force | 14 | 20 | –23 | –1 | 23 |
| Marine | 4 | 14 | –17 | 2 | 16 |
| Total cost | | | | | |
| Army | 0 | –14 | –17 | –16 | 2 |
| Navy | 0 | –12 | –16 | –14 | 2 |
| Air Force | –1 | –13 | –19 | –16 | 3 |
| Marine | 1 | –13 | –16 | –14 | 3 |

NOTES: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. Prior-service RC force size is held constant.

Figure 4.2 compares the force structures under alternatives 3 and 6. (Results for all alternatives for the Navy, Air Force, and Marine Corps are shown in Appendix B.) The left-hand panels show results for alternative 3, and the right-hand panels show results for alternative 6. Generalizing across the services, alternative 3 has a modest effect on force shape, and alternative 6 typically decreases post–20-YOS participation and participation between YOS 3 and 7 but increases mid-career participation between YOS 8 and 20.

Under alternative 7, the average amount of travel reimbursement, when added to RMC, is higher than RMC plus incentive pay. Force size increases by 3 to 4 percent, and total cost per reservist is unchanged or nearly so. Recall that the simulations include all RC prior-service personnel, and only alternatives 1 to 6 hold RC force size constant. The results for alternative 7 suggest that if travel reimbursement were scaled down such that force size remained constant, total cost per reservist would decrease by several percentage points, similar to the decrease under alternatives 2, 4, and 6.

Alternatives 8, 9, and 10 omit incentive pay and vary the terms of retirement. These policies all result in a decrease in force size, ranging from 10 percent to 24 percent, implying that a shift to RMC plus 53 points must be accompanied by some form of pay supplement to maintain force size.

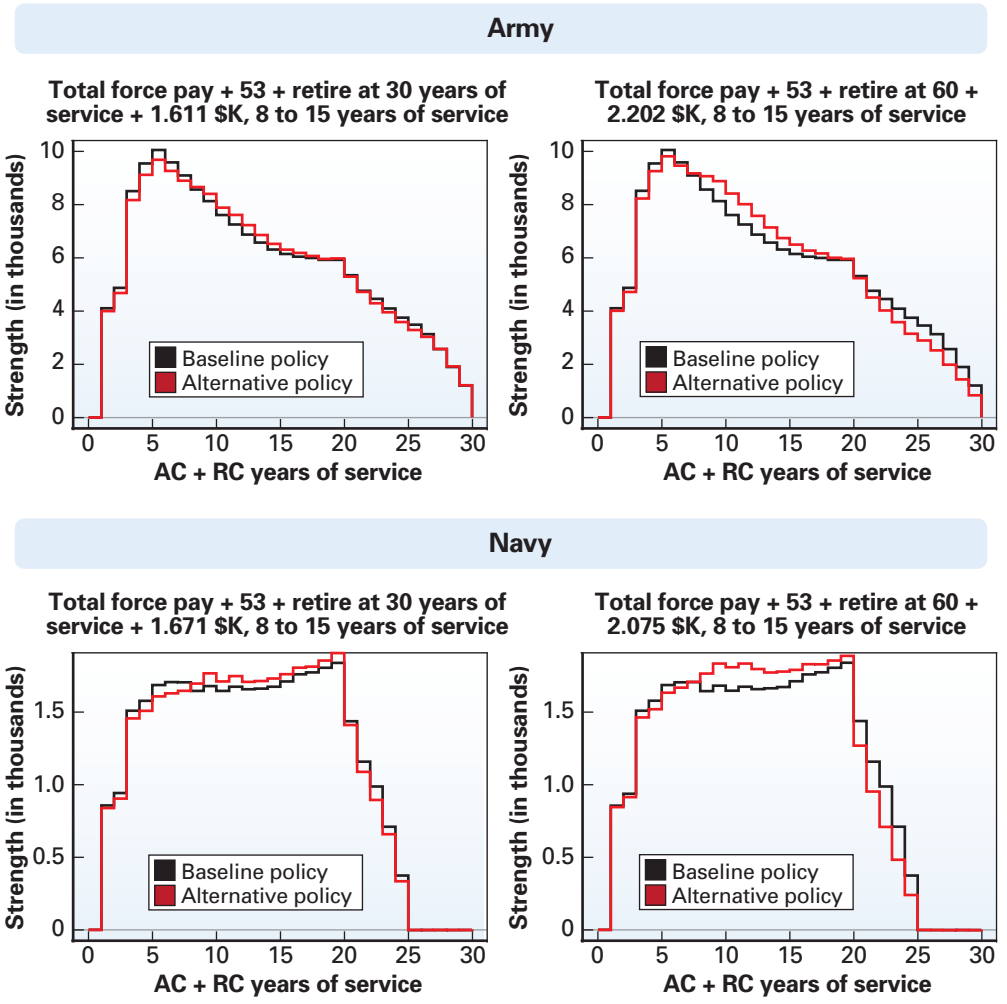


**Figure 4.2. Reserve Force Size Policy Simulations: Enlisted Personnel**

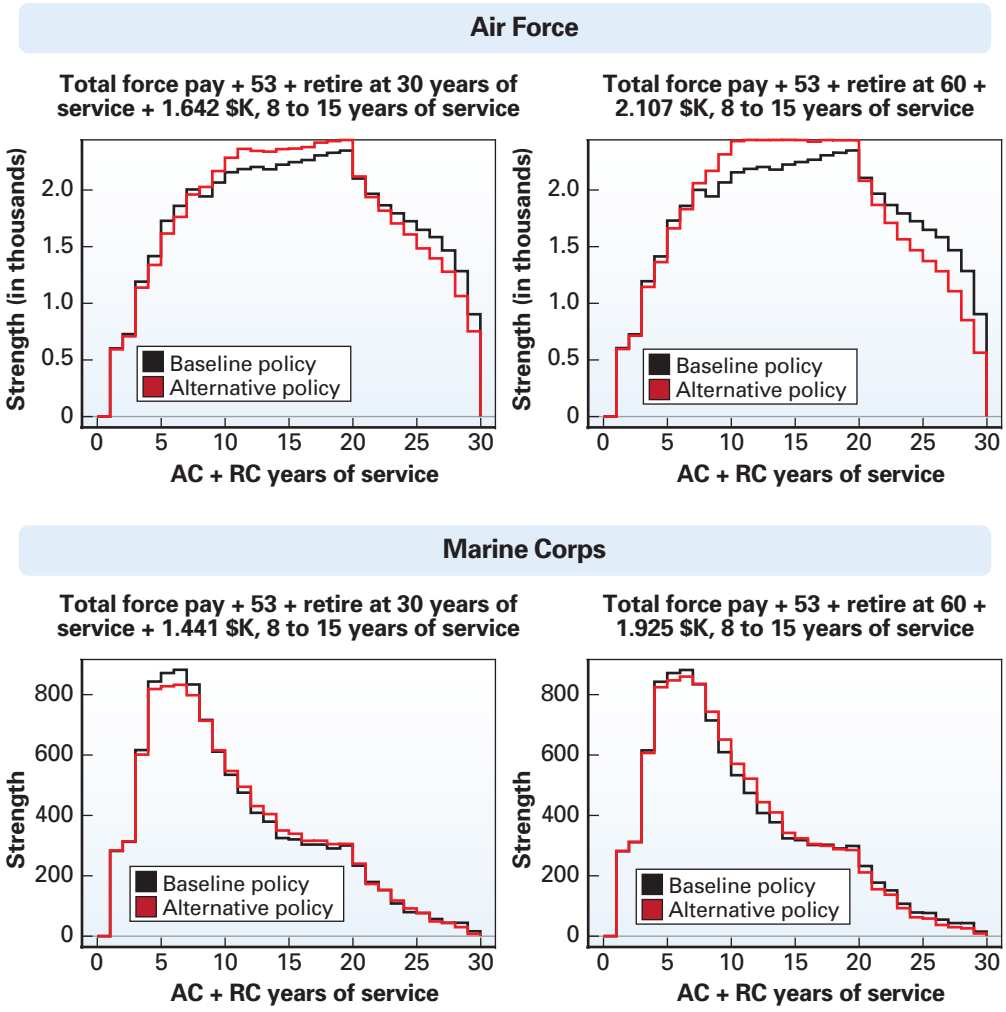


**Figure 4.2—Coninued**

Under alternative 11, force size increases by 2 to 5 percent and total cost per reservist increases 2 to 3 percent. Both current cost and retirement cost increase. The percentage increase in force size is matched with a somewhat smaller increase in total cost per member. In contrast, under alternatives 1 to 6, where force size is constant, total cost decreases in most cases.

## Results for Army Officers

Results for Army officers are shown in Table 4.3 and Figure 4.3. The results are similar to those for Army enlisted reservists, but there are some specific differences.

The policies that offer incentive pay as a percentage of annualized basic pay (alternatives 1 and 4) increase total cost by 1 percent and 3 percent, respectively. Those that offer a flat amount of incentive pay (alternatives 2 and 5) decrease total cost by 3 percent in both cases. The cost decrease is even greater under alternatives 3 and 6, where incentive pay is a flat amount targeted to YOS 8 to 15. These options decrease total cost by 10 percent and 11 percent, respectively. Thus, alternatives 3 and 6 are the most cost-effective in terms of holding RC prior-service force size constant.

However, the sources of the total cost savings under alternatives 3 and 6 differ. Under alternative 3, current cost falls by 15 percent and retirement cost rises by 8 percent. Under alternative 6, current cost falls by 8 percent and retirement cost falls by 17 percent. The right-hand panel in the third row of Figure 4.3 shows that under alternative 6, post–20-YOS participation and participation in YOS 3 to 7 would decrease, and mid-career participation between YOS 8 and 19 would increase. Alternative 3 produces a similar pattern, although the changes are smaller. This suggests that the attractiveness of alternative 6 versus alternative 3 depends in part on whether the reserve organization would accept lower participation among more-junior and post–20-YOS officers and greater participation among mid-career officers. The same pattern appeared in the results for Army enlisted personnel (Figure 4.1).

Under alternative 1, incentive pay is set at 6.18 percent of annualized basic pay. This is higher than the value for enlisted personnel, 2.27 percent. The higher percentage results from the larger absolute decrease in officer pay under the shift from baseline pay to RMC (see Figures 3.1 and 3.2). The flat incentive pay under alternative 2 is $3,812, while the targeted incentive amount is $8,404 (alternative 3). Under alternatives 4, 5, and 6, the incentives are 7.96 percent of annualized basic pay, $4,946, and $11,054, respectively. The difference in incentive pays between enlisted and officer personnel implies that an incentive pay policy should have different tables or parameters for officers and enlisted personnel.

Alternative 7 offers travel reimbursement instead of incentive pay but is otherwise the same as alternative 1. Travel reimbursement is not enough to hold officer prior-service force size constant; it decreases by 6 percent. (Recall that travel reimbursement increased enlisted RC force size by 3 percent.) This implies that travel reimbursement for Army officers is not sufficient to overcome the effect of a decrease in pay under the shift to RMC. However, it might be used in addition to a pay supplement such

## Table 4.3. Results for Army Officers

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | 6.2% | Flat $3,812 | Targeted $8,604 | 8.0% | Flat $4,946 | Targeted $11,054 |
| | | | Active | | | |
| Force size, baseline | 90,795 | 90,795 | 90795 | 90,795 | 90,795 | 90,795 |
| Force size, new | 90,624 | 90,486 | 90612 | 90,646 | 90,558 | 90,502 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 8.659 | 8.659 | 8.659 | 8.659 | 8.659 | 8.659 |
| Current cost, new | 8.629 | 8.619 | 8.634 | 8.640 | 8.639 | 8.628 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 2.177 | 2.177 | 2.177 | 2.177 | 2.177 | 2.177 |
| Retirement cost, new | 2.150 | 2.145 | 2.143 | 2.174 | 2.172 | 2.158 |
| % change | –1 | –1 | –1 | 0 | 0 | –1 |
| Total cost, baseline | 10.836 | 10.836 | 10.836 | 10.836 | 10.836 | 10.836 |
| Total cost, new | 10.779 | 10.764 | 10.778 | 10.814 | 10.811 | 10.787 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | Reserve | | | |
| Force size, baseline | 23,343 | 23,343 | 23343 | 23,343 | 23,343 | 23,343 |
| Force size, new | 23,357 | 23,345 | 23329 | 23,344 | 23,344 | 23,346 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |
| Current cost, new | 0.299 | 0.288 | 0.264 | 0.328 | 0.314 | 0.286 |
| % change | –4 | –8 | –15 | 5 | 0 | –8 |
| Retirement cost, baseline | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 |
| Retirement cost, new | 0.115 | 0.110 | 0.104 | 0.088 | 0.084 | 0.080 |
| % change | 19 | 14 | 8 | –9 | –13 | –17 |
| Total cost, baseline | 0.409 | 0.409 | 0.409 | 0.409 | 0.409 | 0.409 |
| Total cost, new | 0.414 | 0.398 | 0.369 | 0.416 | 0.397 | 0.366 |
| % change | 1 | –3 | –10 | 2 | –3 | –11 |

## Table 4.3—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points | 53 | 53 | 53 | 75 | 53 |
| Start benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| | | | Active | | |
| Force size, baseline | 90,795 | 90,795 | 90,795 | 90,795 | 90,795 |
| Force size, new | 91,405 | 92,055 | 92,414 | 92,254 | 90,497 |
| % change | 1 | 1 | 2 | 2 | 0 |
| Current cost, baseline | 8.659 | 8.659 | 8.659 | 8.659 | 8.659 |
| Current cost, new | 8.728 | 8.806 | 8.860 | 8.841 | 8.611 |
| % change | 0 | 0 | 1 | 0 | 0 |
| Retirement cost, baseline | 2.177 | 2.177 | 2.177 | 2.177 | 2.177 |
| Retirement cost, new | 2.181 | 2.208 | 2.246 | 2.238 | 2.141 |
| % change | –1 | 0 | 1 | 1 | –1 |
| Total cost, baseline | 10.836 | 10.836 | 10.836 | 10.836 | 10.836 |
| Total cost, new | 10.908 | 11.014 | 11.106 | 11.079 | 10.752 |
| % change | 0 | 0 | 1 | 1 | 0 |
| | | | Reserve | | |
| Force size, baseline | 23,343 | 23,343 | 23,343 | 23,343 | 23,343 |
| Force size, new | 22,029 | 20,961 | 20,328 | 20,714 | 23,655 |
| % change | –6 | –10 | –13 | –11 | 1 |
| Current cost, baseline | 0.312 | 0.312 | 0.312 | 0.312 | 0.312 |
| Current cost, new | 0.227 | 0.179 | 0.173 | 0.176 | 0.318 |
| % change | –23 | –36 | –36 | –36 | 1 |
| Retirement cost, baseline | 0.097 | 0.097 | 0.097 | 0.097 | 0.097 |
| Retirement cost, new | 91,405 | 0.110 | 0.082 | 0.090 | 0.117 |
| % change | 1 | 27 | –2 | 5 | 20 |
| Total cost, baseline | 8.659 | 0.409 | 0.409 | 0.409 | 0.409 |
| Total cost, new | 8.728 | 0.289 | 0.255 | 0.266 | 0.435 |
| % change | 0 | –21 | –28 | –27 | 5 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. Prior-service RC force size is held constant.

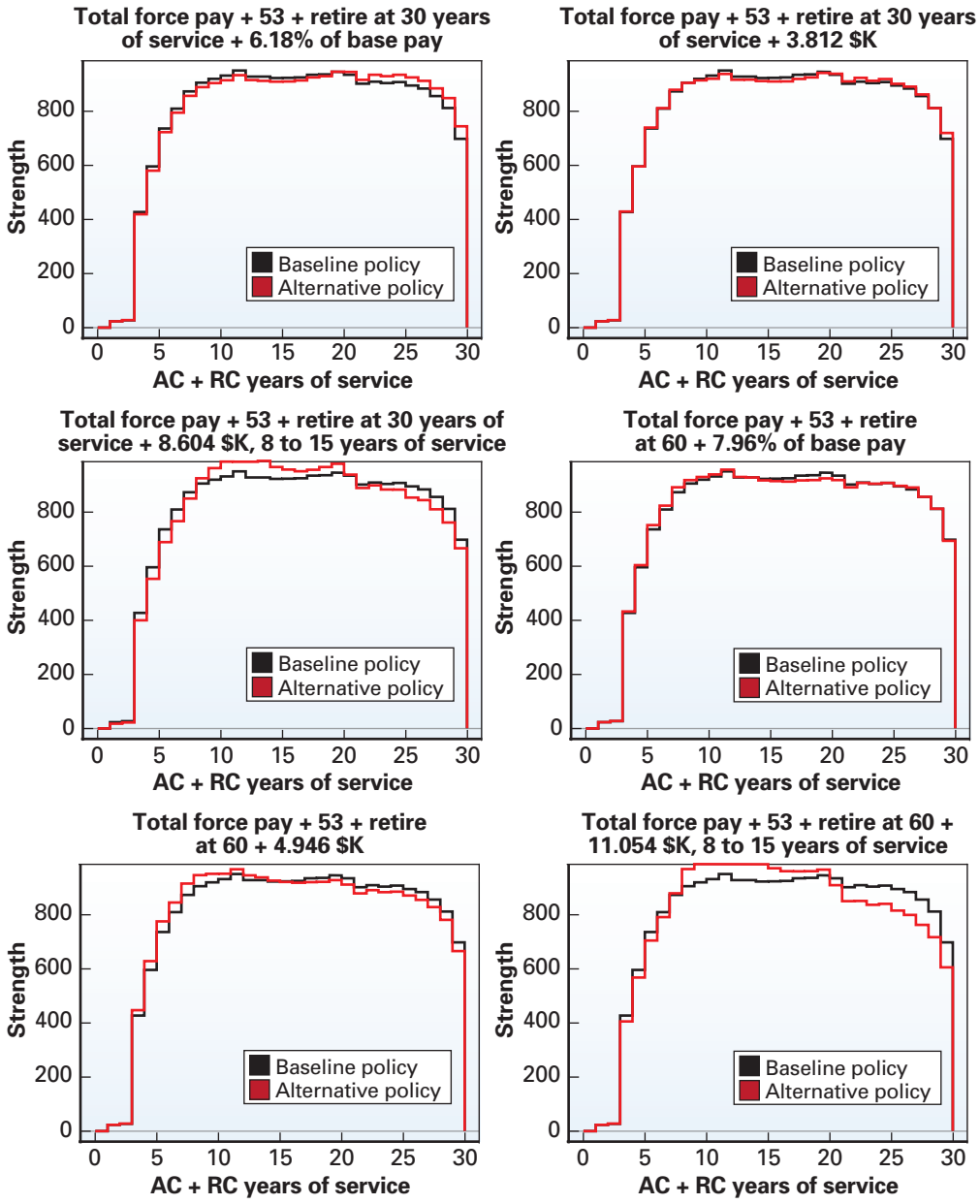


**Figure 4.3. Reserve Force Size Simulations: Army Officers**

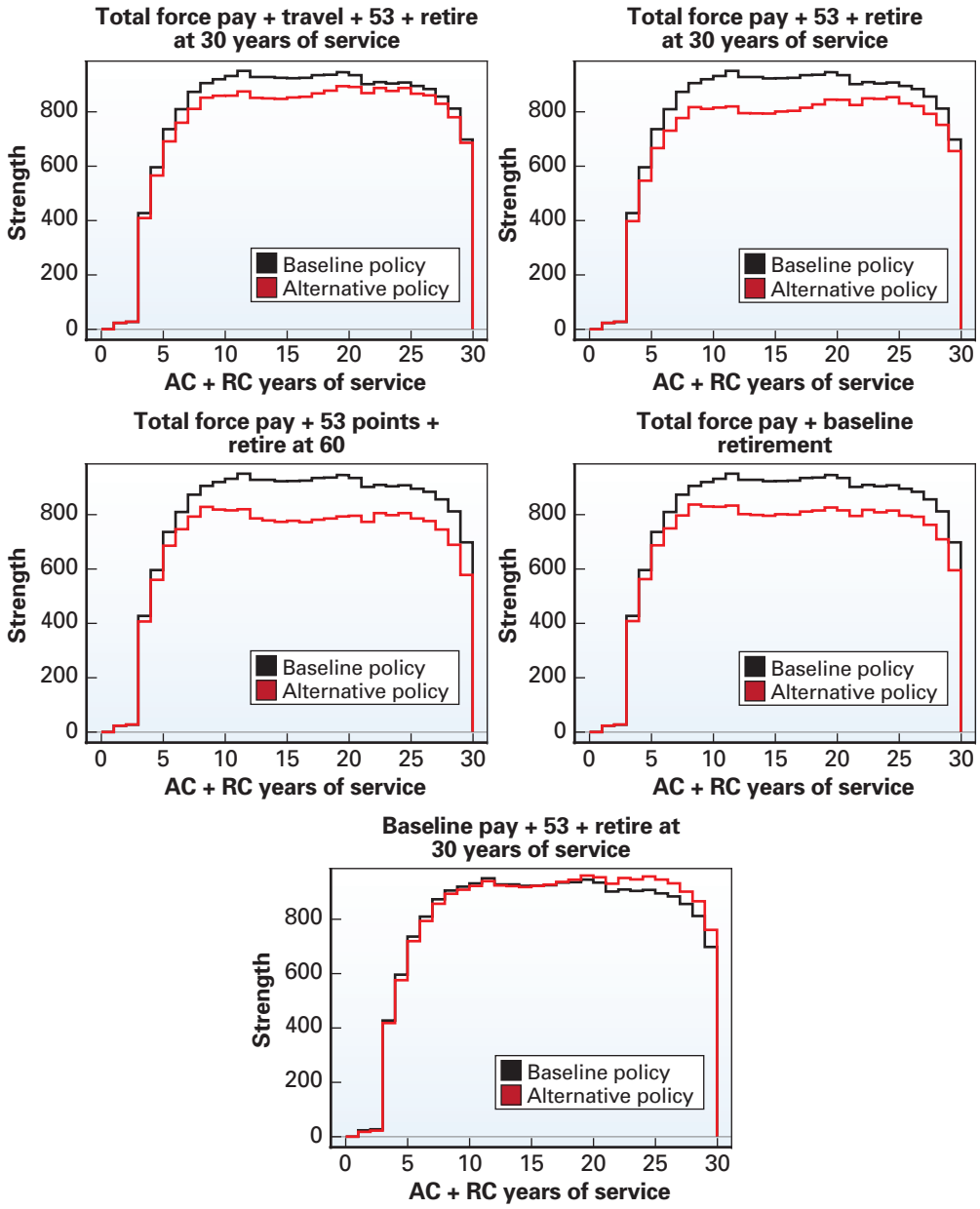


**Figure 4.3—Continued**

as incentive pay designed to hold force size constant. The incentive pay would ensure high enough participation to meet force-size requirements, and travel pay might be used to expand the market area of reserve units as needed.

Under alternatives 8, 9, and 10, the shift to RMC from baseline pay decreases officer force size by 10 to 13 percent. The use of incentive pay could prevent this decrease, as alternatives 1 to 4 demonstrate.

Under alternative 11, officer force size increases by 1 percent and total cost per reservist increases by 5 percent. The larger increase in total cost comes from retirement cost, which is 20 percent higher for officers, as compared with 11 percent higher for enlisted personnel. The difference reflects the fact that more of the officer force structure qualifies for retirement benefits.

### Results for Officers: All Services

Table 4.4 summarizes the results for officers in all services. Like the results for enlisted personnel, the results for officers are consistent across the services. (The complete results for officers in the Navy, Air Force, and Marine Corps are presented in Appendix B.)

Among the alternatives that hold RC force size constant (alternatives 1 to 6), alternative 6 is the most cost-effective. The targeted incentive amount varies by service, ranging from $9,603 for the Marine Corps to $12,756 for the Air Force, and total RC cost is decreased by 8 to 13 percent, depending on service. Current cost decreases by 5 to 11 percent, and retirement costs also decline. Like the result for Army officers, this alternative increases RC participation in YOS 8 to 20 but reduces it in YOS 4 to 7 and beyond 20 YOS.

There is also a savings in total cost if retirement benefits begin at 30 YOS (or age 60, whichever occurs first) and the package includes targeted flat dollar incentive pay (alternative 3). However, except in the Marine Corps, the cost savings are not as great as those under alternative 6, where retirement pay begins at age 60. Allowing reservists to draw retirement benefits at 30 YOS means a longer payout of benefits, although the annuity is smaller, since it is based on 53 points. Furthermore, as seen in Figure 4.4, a higher percentage of reservists qualify for retirement by reaching 20 YOS, relative to the base case. Thus, RC retirement costs increase, offsetting the decrease in current costs.

If RC members begin retirement benefits at 30 YOS but the supplemental pay is an untargeted flat dollar amount (alternative 2), there is little or no change in total cost, except in the Army, where total cost drops by 3 percent. If retirement remains at age 60 (alternative 5), current cost changes little—and even increases slightly for the Navy and Air Force—but retirement costs fall. This suggests that for officers, the total-force pay package with an untargeted flat dollar incentive generally has no effect on RC total cost or results in a drop of 3 percent, depending on retirement eligibility.

Setting incentive pay as a percentage of basic pay so that it varies by grade results in a modest cost increase, regardless of whether retirement begins at 30 YOS

(alternative 1) or at age 60 (alternative 4). The effects on RC participation and on current and retirement costs are similar to those under the alternatives that offer a flat dollar amount of incentive pay (alternatives 2 and 5), but the magnitudes differ. The increase in retirement cost is larger under alternative 1 than under alternative 2, and the decrease in current cost is smaller. The net effect is an increase in total RC cost

**Table 4.4. Percentage Change from Baseline for All Services: Officers**

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | Percentage | Flat dollar | Targeted dollar | Percentage | Flat dollar | Targeted dollar |
| Force size | | | | | | |
| Army | 0 | 0 | 0 | 0 | 0 | 0 |
| Navy | 0 | 0 | 0 | 0 | 0 | 0 |
| Air Force | 0 | 0 | 0 | 0 | 0 | 0 |
| Marine | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost | | | | | | |
| Army | –4 | –8 | –15 | 5 | 0 | –8 |
| Navy | –5 | –9 | –18 | 8 | 1 | –9 |
| Air Force | –10 | –14 | –22 | 7 | 1 | –11 |
| Marine | 1 | –2 | –9 | 5 | 0 | –5 |
| Retirement cost | | | | | | |
| Army | 19 | 14 | 8 | –9 | –13 | –17 |
| Navy | 36 | 30 | 17 | –8 | –13 | –21 |
| Air Force | 28 | 26 | 17 | –7 | –10 | –18 |
| Marine | 14 | 8 | –2 | –12 | –16 | –20 |
| Total cost | | | | | | |
| Army | 1 | –3 | –10 | 2 | –3 | –11 |
| Navy | 6 | 1 | –9 | 4 | –3 | –12 |
| Air Force | 3 | 0 | –9 | 0 | –3 | –13 |
| Marine | 4 | 0 | –8 | 2 | –3 | –8 |

## Table 4.4—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| Force size | | | | | |
| Army | –6 | –10 | –13 | –11 | 1 |
| Navy | –9 | –15 | –21 | –17 | 2 |
| Air Force | –5 | –10 | –15 | –13 | 4 |
| Marine | –10 | –16 | –18 | –15 | –1 |
| Current cost | | | | | |
| Army | –23 | –36 | –36 | –36 | 1 |
| Navy | –23 | –36 | –36 | –36 | 1 |
| Air Force | –24 | –37 | –37 | –37 | 1 |
| Marine | –22 | –36 | –36 | –36 | 1 |
| Retirement cost | | | | | |
| Army | 22 | 27 | –2 | 5 | 20 |
| Navy | 42 | 47 | 4 | 9 | 37 |
| Air Force | 30 | 35 | 1 | 6 | 27 |
| Marine | 18 | 23 | 0 | 9 | 17 |
| Total cost | | | | | |
| Army | –12 | –21 | –28 | –27 | 5 |
| Navy | –7 | –15 | –26 | –25 | 10 |
| Air Force | –5 | –13 | –24 | –22 | 10 |
| Marine | –14 | –24 | –29 | –27 | 4 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. Prior service RC force size is held constant.

for officers. Under alternative 4, the increase in current cost is greater than that under alternative 5, and the decrease in retirement cost is smaller. Here, the effect is a net increase in cost, relative to alternative 5.

As shown in Table 4.4, under alternative 7, RC force size decreases by 5 to 10 percent, depending on service, and total cost decreases, despite the increase in retirement costs. The decrease in force size and current cost is not surprising. Adding travel reimbursement for officers results in pay lower than baseline, even for junior officers.

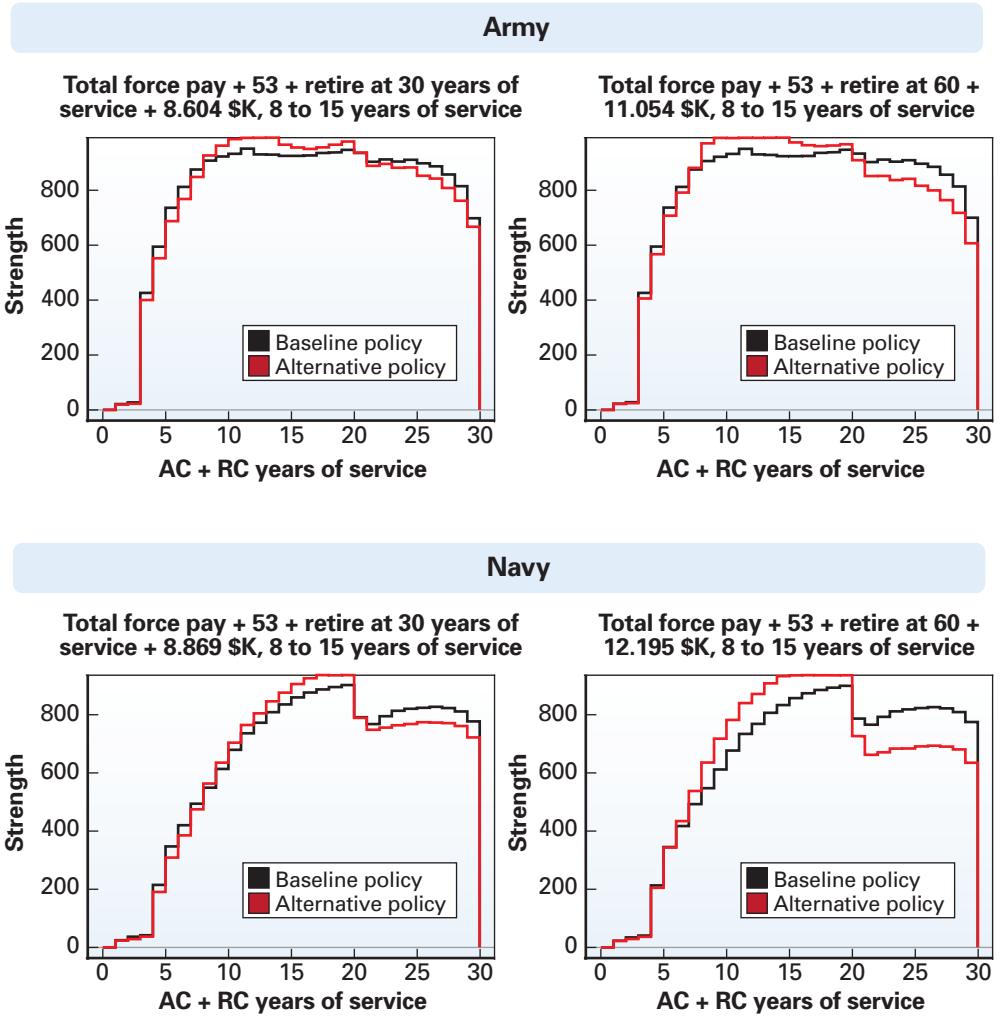


**Figure 4.4. Reserve Force Size Policy Simulations: Officers**

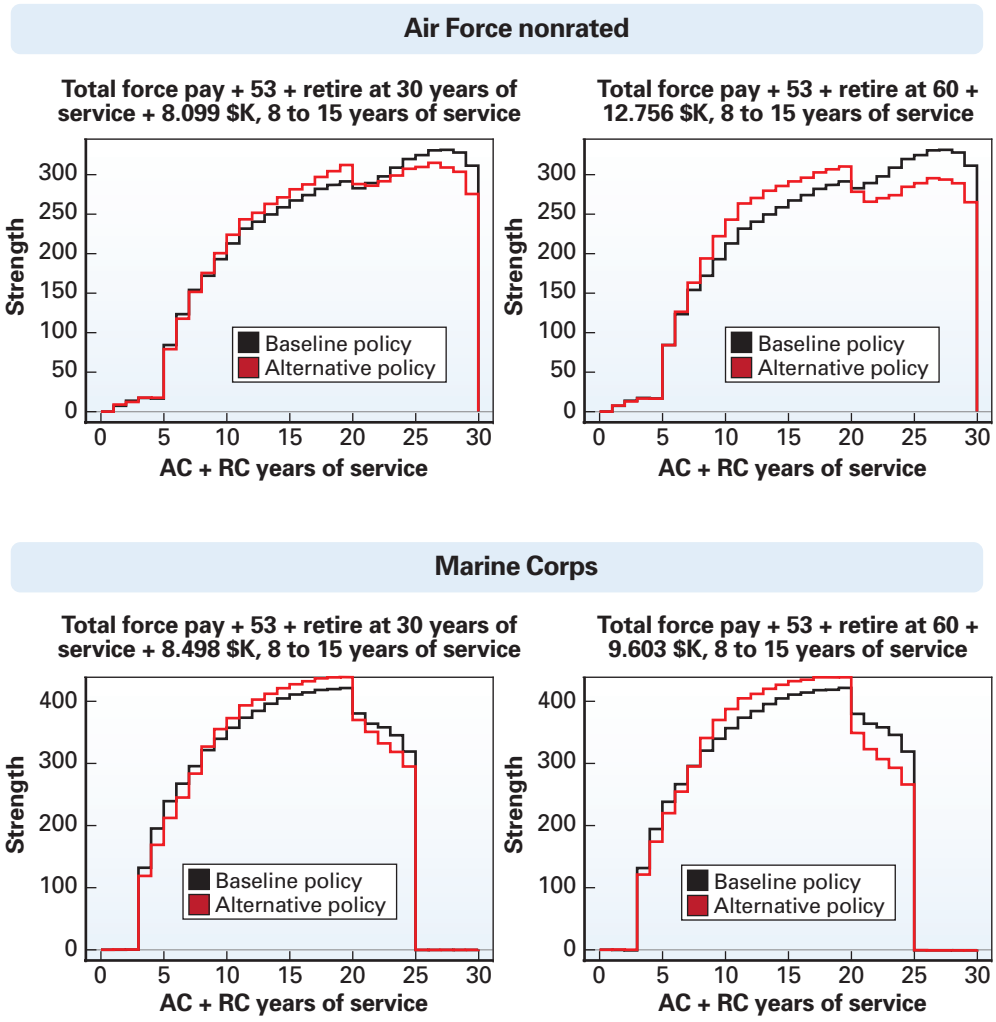


**Figure 4.4—Continued**

Results of the remaining alternatives, 8 to 11, are similar to those for enlisted personnel. Without supplemental incentive pay, the total-force package results in a decrease in RC officer force size, regardless of whether retirement begins at 30 YOS or at age 60. Under alternative 11, maintaining baseline pay for officers while changing retirement to YOS 30 and 53 points increases total cost per prior-service reservist. The cost increase under this option exceeds the change in cost under alternatives 1 and 2, where current pay includes RMC and incentive pay and the retirement provisions are the same.

## 5. Discussion and Conclusions

The 11th QRMC proposal to change RC compensation is an element of a larger movement aiming to transform the policies and practices that support the nation's reserve forces. Reasons for this transformation were given in the report of the Commission on the National Guard and Reserves (CNGR) (CNGR, 2008). They include the diverse and sporadic nature of the security threats now foreseen, which differ from those faced during the Cold War when the basis of today's active and reserve policies was established, and the need for capable homeland defense. They also include having the capability to tap into skills learned in the civilian sector, the need for policies that allow for the flexible use of forces yet recognize the increased job mobility of today's labor force, the need for pay and personnel systems that are competitive with the private sector in amount of compensation and attractiveness of career opportunity, and the need to control costs while meeting force requirements. The impetus for change is summed up in the commission's letter transmitting the report to the Senate and House Armed Services Committees on January 31, 2008:

> The Commission concludes that there is no reasonable alternative to the nation's continued increased reliance on reserve components as part of its operational force for missions at home and abroad. However, the Commission also concludes that this change from their Cold War posture necessitates fundamental reforms to reserve components' homeland roles and missions, personnel management systems, equipping and training policies, policies affecting families and employers, and the organizations and structures used to manage the reserves. These reforms are essential to ensure that this operational reserve is feasible in the short term while sustainable over the long term. In fact, the future of the all-volunteer force depends for its success on policymakers' undertaking needed reforms to ensure that the reserve components are ready, capable, and available for both operational and strategic purposes. (CNGR, 2008, p. 2.)

Among its recommendations, the CNGR stresses the importance of policies that enable the reserves to be strategic—a reserve of manpower including personnel with critical skills—and operational, with units and personnel that are equipped and ready to deploy.

The CNGR report states, "Two critical enablers of an enhanced continuum of service are a reduction in the number of reserve duty status categories and the implementation of an integrated pay and personnel system" (CNGR, 2008, p. 25), The 11th QRMC is addressing the first enabler by recommending a simplified approach to reserve duty status with many fewer statuses than now exist, and by sponsoring studies on compensation, including this one. Broadly, these studies address the following CNGR recommendation:

> In the case of compensation-related proposals, serve specific force management purposes; increase flexibility; provide greater simplification; have a demonstrated systemic benefit; expand choice, volunteerism, and market-based compensation; maximize efficiency; improve the transparency of the costs of compensation over time; draw on the strengths of the private sector; and be fair to service members and their families. (CNGR, 2008, pp. 25–26)

More recently, the *Comprehensive Review of the Future Role of the Reserve Components* recommended:

> Refining the current Reserve pay system so that it more closely mirrors that of the Active Component so as to enhance the further development of DoD and Service-specific continuum of service policies. In particular, consider compensating reservists with a day's pay for a day's work, including entitlements. To enable reservists to maintain current levels of compensation and improve unit readiness, consider use of end-of-year financial incentives based on satisfactory participation. (*Comprehensive Review*, 2011, p. 76)

DoD asked RAND to evaluate a number of possible changes to reserve compensation. Foremost was the shift from the current approach to reserve pay, which is based on pay for four drills per month plus pay for two weeks of training, usually in the summer, to a total-force pay approach based on paying RMC for a day of reserve service in the same way AC personnel are paid and offering earlier retirement benefits, specifically, the opportunity to receive retirement benefits on completing 30 YOS or reaching age 60, whichever occurs first. In addition, RAND was asked to consider supplemental pay, such as incentive pay, reimbursement for travel, pay for currently unpaid reserve work, participation bonuses or incentive pay, and participation points.

Among the proposals we analyzed, the effective and cost-effective proposals contained RMC, 30-YOS or age-60 retirement, and incentive pay. Other pays, e.g., travel reimbursement and pay for currently unpaid work, may have a role but are probably best viewed as pays for specific purposes that would not be expected to reach all, or even the majority, of reservists.

How do the leading QRMC proposals measure up on force management, flexibility, simplification, systemic benefit, expanded choice, market-based compensation, efficiency, transparency, ability to draw on the private sector, and fairness to service members and their families? Before answering this question, it is helpful to review our key findings. First, the policy options can maintain the current prior-service reserve force size and can do so at the same cost or lower cost than the current policy, depending on how the incentive pay is structured. When incentive

pay is a flat dollar amount, regardless of year of service, though differing by service and by officer versus enlisted status, the total cost of RC enlisted personnel and officers across all services drops relative to the baseline by between $80 million and $100 million, as shown in Table 5.1. There is also a cost saving when incentive pay is structured as a percentage of annual basic pay, but the saving is smaller, between $10 to $20 million. The largest cost savings are provided by a targeted, flat dollar incentive paid between YOS 8 and 15: $190 million with retirement after 30 YOS and $220 million with age-60 retirement. Second, the option that is selected must include supplemental pay such as the incentive pay we have analyzed. The move to RMC decreases current pay, and supplemental pay can maintain reserve participation at its current levels. By comparison, a move to earlier retirement alone with RMC is not sufficient to maintain participation, even though it increases the total value of retirement benefits. However, RMC plus incentive pay is sufficient to maintain force size under either retirement system. That is, a shift to RMC will be a viable policy option in terms of maintaining force size only if it is accompanied by supplemental pay such as incentive pay. Third, the policy options that hold RC force size constant have different effects on force shape, but the effects, though noteworthy, are small and unlikely to be disruptive. A policy that includes earlier retirement increases participation of those with 21 to 30 YOS and decreases it in early years of service; a policy that includes retirement at age 60 does the opposite, i.e., increases participation in early years and decreases it in senior years. Overall, both retirement options can provide the current force size, with only marginal change to its shape, at about the same or lower cost than the current system.

## Cost Savings

Table 5.1, based on our detailed results, summarizes the baseline cost, cost savings, and cost savings as a percentage of baseline cost for enlisted and officer personnel. We estimate that current cost totaled $2.51 billion in 2007. Retirement cost totaled $0.45 billion, and total cost was $2.96 billion. A 1-percent decrease in total cost therefore translates to a savings of $30 million. The percentage changes shown in Table 5.1 are not percentage changes in cost per reservist, as in the tables in Chapter Four.

The analysis in Chapter Four found that much of the cost savings under some of the alternatives result from changes in the total cost of enlisted RC personnel, which is to be expected, since they comprise the majority of reservists. For example, RMC with retirement at 30 YOS and a flat dollar incentive pay results in cost savings for enlisted personnel (see Table 4.2) in each service, but not necessarily cost savings for officers. Again, our analysis considers only prior-service personnel and does not include non–prior-service personnel.

## Table 5.1. Baseline Cost and Cost Changes: Enlisted Personnel and Officers (2007 $ billions)

| | Current Cost | Retirement Cost | Total Cost |
|---|---|---|---|
| Baseline cost | | | |
| Army | 1.41 | 0.20 | 1.61 |
| Navy | 0.49 | 0.13 | 0.62 |
| Air Force | 0.46 | 0.09 | 0.55 |
| Marine Corps | 0.16 | 0.03 | 0.19 |
| Total | 2.51 | 0.45 | 2.96 |
| Cost change under policy alternatives | | | |
| RMC + 53 points + retirement at 30 YOS + targeted flat dollar incentive pay[a] | | | |
| Army | –0.11 | 0.01 | –0.10 |
| Navy | –0.06 | 0.02 | –0.04 |
| Air Force | –0.05 | 0.02 | –0.04 |
| Marine Corps | –0.01 | 0.00 | –0.01 |
| Total | –0.24 | 0.04 | –0.19 |
| Change (percentage of baseline) | –9.4 | 9.5 | –6.6 |
| RMC + 53 points + retirement at age 60 + targeted flat dollar incentive pay[a] | | | |
| Army | –0.06 | –0.04 | –0.10 |
| Navy | –0.03 | –0.03 | –0.06 |
| Air Force | –0.03 | –0.02 | –0.05 |
| Marine Corps | –0.01 | –0.01 | –0.01 |
| Total | –0.13 | –0.09 | –0.22 |
| Change (percentage of baseline) | –5.1 | –19.8 | –7.3 |
| RMC + 53 points + retirement at 30 YOS + flat dollar incentive pay[a] | | | |
| Army | –0.07 | 0.02 | –0.06 |
| Navy | –0.03 | 0.03 | 0.00 |
| Air Force | –0.04 | 0.02 | –0.02 |
| Marine Corps | 0.00 | 0.00 | 0.00 |
| Total | –0.14 | 0.07 | –0.08 |
| Change (percentage of baseline) | –5.7 | 14.5 | –2.7 |
| RMC + 53 points + retirement at age 60 + flat dollar incentive pay[a] | | | |
| Army | –0.02 | –0.04 | –0.05 |
| Navy | 0.00 | –0.02 | –0.02 |
| Air Force | –0.01 | –0.02 | –0.03 |
| Marine Corps | 0.00 | –0.01 | 0.00 |
| Total | –0.03 | –0.08 | –0.10 |
| Change (percentage of baseline) | –1.0 | –17.1 | –3.5 |

**Table 5.1—Continued**

| | Current Cost | Retirement Cost | Total Cost |
|---|---|---|---|
| RMC + 53 points + retirement at 30 YOS + percentage incentive pay[a] | | | |
| Army | –0.05 | 0.03 | –0.03 |
| Navy | –0.02 | 0.04 | 0.02 |
| Air Force | –0.02 | 0.02 | 0.00 |
| Marine Corps | 0.00 | 0.00 | 0.00 |
| Total | –0.10 | 0.09 | –0.01 |
| Change (percentage of baseline) | –3.8 | 19.3 | –0.3 |
| RMC + 53 points + retirement at age 60 + percentage incentive pay[a] | | | |
| Army | 0.01 | –0.03 | -0.01 |
| Navy | 0.02 | –0.01 | 0.01 |
| Air Force | 0.00 | –0.01 | -0.01 |
| Marine Corps | 0.01 | 0.00 | 0.00 |
| Total | 0.04 | –0.06 | –0.02 |
| Change (percentage of baseline) | 1.7 | –13.2 | –0.6 |

a. By design, RC force size has been held constant.

The results in Table 5.1 show that the total-force pay approach where RMC is coupled with incentive pay yields cost savings when the incentive pay is structured in terms of a flat dollar amount, and the cost savings are larger when the flat dollar amount is targeted to personnel in specific years of service. Furthermore, the cost savings are larger with retirement at age 60 rather than earlier, at 30 YOS. When incentive pay is structured as a percentage of annual basic pay, the cost savings are more modest.

These policies differ in terms of the level of current pay. Illustrative examples are given in Chapter Three. Incentive pay based on a percentage of annual basic pay grows with YOS. This is a desirable structure to the extent that the gap between RMC and baseline pay also grows with YOS. Thus, to the extent that there is interest in restoring baseline pay, incentive pay that grows with YOS is attractive. Incentive pay that is a flat dollar amount does not vary with YOS and simply shifts the RMC curve up. Consequently, restoring baseline pay for more-senior personnel will mean overpayment relative to baseline pay for junior personnel, or conversely, restoring baseline pay for junior personnel will mean underpayment for senior personnel. The flat dollar approach leads to greater cost savings, also an attractive feature. One approach, not modeled here, to achieving cost savings as well as moving toward restoring baseline pay is to set more than one flat dollar incentive pay, say two or three, that would increase with YOS.

Incentive pay that is targeted to specific YOS can yield additional savings, because the total dollar amount needed to keep prior-service RC force size constant is less than the amount needed under either of the nontargeted alternatives. However, it may be difficult for this kind of incentive to gain acceptance, as service members outside the targeted range would stand to earn considerably less than their more senior or junior peers. This issue could be addressed by judicious allocation of some portion of the cost savings toward special or incentive pays for service members outside the targeted range, both prior-service and non–prior-service. That is, like prior-service reservists, non–prior-service reservists would not receive targeted incentive pay until YOS 8 to 15, but special or incentive pays such as reserve enlistment or affiliation bonuses could be used in earlier years, as needed to sustain non–prior-service participation.

As shown in Table 5.1, for RMC plus a targeted incentive and the 30-YOS retirement option, current cost decreases by 9.4 percent from baseline, or $240 million; retirement cost increases by 9.5 percent, or $40 million; and total cost savings are 6.6 percent, or $190 million. With the age-60 retirement option, current cost savings are 5.1 percent, or $130 million; retirement cost savings are 19.8 percent, or $90 million; and total cost savings are 7.3 percent or $220 million.

Current cost savings are more modest if the incentive pay is structured as a flat dollar amount and is untargeted. With RMC and earlier retirement, current cost savings are $0.14 billion annually, or 5.7 percent of baseline cost; with RMC plus retirement at age 60 with a flat dollar incentive pay supplement, cost savings are $0.03 billion, or 1.0 percent of baseline cost. When the incentive pay is structured as a percentage of annual basic pay, the cost savings are even more modest for earlier retirement and are actually negative (i.e., current costs increase) for retirement at age 60.

As discussed in Chapter Four, retirement cost is higher than baseline retirement cost under the 30-YOS retirement alternatives and is lower under those with retirement at age 60. The difference in retirement cost makes some difference in total cost savings.

## Relation to CNGR Objectives for Compensation Reform

The policy options under consideration by the 11th QRMC and our findings on them imply the following with respect to the CNGR objectives for compensation reform:

- **Force management.** Overall, the $80 million to $100 million of cost savings if incentive pay is structured as a flat dollar, or $190 million to $220 million if incentive pay is targeted between YOS 8 and 15, can potentially be programmed for special and incentive pays, professional military education and development programs, and reserve family support programs that address persistent and emergent high-priority RC force-management objectives. The cost savings can also be directed toward enlistment and affiliation bonuses for non–prior-service personnel to sustain their participation in the face of a shift to RMC.
- **Flexibility.** A change to RMC plus incentive pay would increase flexibility to the extent that incentive pay was structured to promote flexibility. Our findings imply that supplemental pay such as incentive pay must be part of a policy package that shifts from current reserve pay to RMC if force size is to be sustained, but we do not define how best to use incentive pay. The RC has, or can obtain, detailed information to identify promising possibilities for where and when to add incentive pay to a reservist's RMC. Our analysis also found that RMC plus a flat across-the-board or targeted dollar incentive could obtain the current force at less cost, and the cost savings could be another source of funds to support flexibility. For instance, although the idea of a continuum of service is widely supported, what it means in practice is still being defined. The cost savings could help to pay for continuum-of-service policies and programs.
- **Simplification.** Without doubt, the shift to RMC would be a significant simplification of reserve compensation. A reservist who first served in an AC, would no longer need to learn a new pay system, as is now the case. A reservist who transitions from inactive to active status would no longer encounter a difference in pay rates.
- **Transparency.** Transparency is similar to simplification. RMC would put RC compensation on the same pay schedules as AC compensation. These schedules are widely available on the Internet and seem easy to understand. However, the published schedules show AC compensation on a monthly basis, whereas reservists would be paid per day of reserve service. This suggests that transparency would be improved for reservists if daily-rate schedules were also published.
- **Fairness to service members and their families.** The proposals under consideration would be as fair to service members and their families as the current system, and perhaps more so. This of course depends what is meant

by "fairness" and, further, how fairness interacts with the objective of force readiness. To the extent that the current system provides individuals with equal opportunity to join the reserves, join a particular reserve unit, and enter a given specialty, the alternatives under consideration can be expected to do the same. Further, the proposed systems, like the current system, would have pay and retirement benefit schedules that are common across specialties, units, and components. Importantly, paying RMC to RC members in the same way RMC is paid to AC members highlights the equality of payment for service from either component. However, a shift from the current system to one involving RMC and incentive pay could lead to greater differentiation in pay among reservists. Currently, some reservists may be paid more than necessary to secure their services—this is called *economic rent*. The shift from baseline pay to RMC decreases pay, but these reservists would still be willing to participate. Reservists of a second type are on the margin—perhaps their specialty is undermanned or suffers from high turnover—and incentive pay would be needed to sustain their participation. Under RMC plus incentive pay, both types of reservists would be paid more efficiently. The first type would have less rent, and in this sense, the new system would be fairer.

- **Efficiency.** A direct measure of efficiency is meeting an objective at least cost. Applying the concept of efficiency can be complicated when an objective has many dimensions and cost includes direct and indirect costs, including externalities. Our research provides one reading on efficiency. We show that the main proposals under consideration in the 11th QRMC can keep reserve force strength at current levels and do so at the same or lower personnel cost. There might be some change in force shape, i.e., greater or less participation at junior or senior levels, but these changes are small. Being able to reproduce the current force size and shape at lower cost suggests that there would be few indirect costs or externalities, but claiming so outright goes beyond the scope of our model and findings. For instance, the shift to RMC will by itself decrease reserve pay and would therefore decrease participation. Our analysis shows that incentive pay can restore participation, a finding based on applying an average amount of incentive pay to all reservists at each YOS (or in the targeted range). But in actual application of incentive pay, the amount could differ across reservists, with some reservists possibly receiving no incentive pay and others receiving a relatively large amount. The reservists receiving no incentive pay would experience a pay cut, and if they have a strong loss aversion, their

willingness to stay in the reserves could be less than our model predicts. In that case, they would ultimately need to receive some incentive pay to support their participation.

- **Market-based compensation.** The CNGR has identified market-based compensation as a goal of reformed reserve compensation. Hallmarks of market-based compensation are its capacity to attract workers, retain them as long as desired, motivate them to exert effort and direct that effort where desired, reveal their abilities, communicate information to their supervisors and fellow workers, provide incentives and opportunities for advancement, treat workers in similar circumstances similarly, and separate workers efficiently. There is no single best form of market-based compensation; its form depends on the objectives of the organization and the nature of the job. In comparison with market-based compensation, the military compensation system has been criticized for having too little differentiation in pay across specialties, careers that were too similar in length despite differences in recruiting and training cost and gains from on-the-job experience, weak incentives for innovation and risk taking, and retirement benefits that back-load too much of total compensation. Contrary to these assertions, the military compensation system has also been defended as fair, scalable in times of war and peace, capable of recruiting and retaining personnel to meet manning requirements, and effective in separating personnel. Without attempting to settle these differences here, we can safely observe that RMC, incentive pay, and funds available from cost savings have the potential to add flexibility to reserve compensation and better serve reserve force manning objectives. In this very general sense, the QRMC proposals respond to the idea of market-based compensation.

The CNGR mentions three other desirable elements of a new system: systemic benefit, expanded choice, and ability to draw on the private sector.

The systemic benefit of the compensation options under consideration in the 11th QRMC comes from the assurance of being able to maintain force size with little effect on force shape, while having resources to implement or expand programs that promote greater flexibility to manage personnel.

The shift to RMC plus incentive pay does not by itself expand choice, nor does it diminish it. Today, an individual can choose which reserve component to participate in, which unit to join, and which occupation to enter, but as with the AC, these choices also depend on organization factors, namely, whether there are openings in the component, unit, and occupation desired. Expanded choice might take the form

of different reserve contracts than currently exist. For instance, contracts could call for a high versus low expectation of activation or could contain incentives for reservists to be medically ready, to remain duty-qualified, or to acquire certain skills and knowledge such as language skills or knowledge of an area's culture. New contracts might also help the reserves to obtain certain civilian expertise on retainer, as has been suggested under the banner of continuum of service.

We cover the ability to draw on the private sector above in arguing that incentive pay and cost savings could be used for greater differentiation in pay and the introduction of novel contracts, changes that could improve the reserves' ability to draw on the private sector. Still, meeting overall reserve manning requirements is of fundamental importance, and our findings show that RMC plus incentive pay can do that.

## Limitations of Our Modeling

Our model provides a cohesive framework for active retention and reserve participation, and our parameter estimates are precise, but no model is perfect. Here are some of the limitations of our modeling.

We have not analyzed non–prior-service reservists. We expect that a policy shift to total-force pay will require the use of incentive pay to maintain non–prior-service participation. We have estimated incentive pays that maintain prior-service participation, but we do not know if they are sufficient to hold force size constant for non–prior-service reservists. Also, while targeted incentive pay achieves the greatest cost saving with respect to prior-service participation, many non–prior-service reservists have short reserve careers, as shown in Chapter Two. This suggests that targeted incentive pay over YOS 8 to 15 might have little influence on these reservists at the outset of their career, as many of them probably do not expect to participate in the reserves as many as eight years. Enlistment or affiliation bonuses might be required to sustain non–prior-service participation, and the breadth and size of such bonuses have not been determined. However, the participation history of non–prior-service reservists that do reach mid-career reveals their preference to serve in the reserves, so their response to policy alternatives may be similar to that of prior-service reservists, which we have analyzed.

Our analysis is steady-state and assumes that real military and civilian pay and benefits and military promotion policies are stable over time. This is a useful approximation given the historical stability of military pay and the vital necessity under an all-volunteer force of keeping military pay competitive with outside opportunities. However, our analysis does not account for changes in economic conditions and demographic trends that could affect retention and participation. Also, we have used

military and civilian pay as of FY 2007. Had we chosen other years, our results might have been somewhat different, but the structures of military pay tables and civilian pay have been fairly stable over the past 20 years. As a result, the use of pay tables for other years probably would have led to little difference in our estimates of the *change* from baseline in retention, reserve participation, and cost.

The analysis assumes a constant personal discount rate over time and across members. We estimate the discount rate by branch of service, for officers and for enlisted personnel. Within any of these groups, however, discount rates may differ across members and might decrease with age. (Frederick et al. [2002] survey the literature.) Having a single discount rate might mask variation in the range of response to a policy proposal, though we think much of this would average out.[10]

The analysis does not consider deployment and deployment-related pays. We think the inclusion of deployment would have a small effect on the changes in participation and cost that we simulate under the policy alternatives we consider. The payment of deployment-related pay is a compensation for the arduous duty, risk, and separation associated with deployment and helps to keep RC participation at its ex ante level. That is, it is a compensating variation, not simply higher pay with nothing else changed. Still, deployment increases the number of duty days, which means the reservist will accumulate more points toward retirement and have a higher retirement benefit. We expect that this would increase reserve participation in the baseline and under any of the policy scenarios, yet would result in little difference in the change in participation and cost.

We use average civilian pay in estimating the model, whereas individuals no doubt have private information about their civilian pay opportunities. Similarly, they have private information about their military promotion opportunities. To some extent, differences in civilian pay opportunities and internal military promotion opportunities reflect differences in personnel ability. However, available research suggests that incorporating metrics of ability, such as Armed Forces Qualification Test (AFQT) scores, would not change our overall conclusions. More specifically, previous research (Cawley et al., 1999) finds positive returns of AFQT-component test scores to log wage but concludes that there are no consistent patterns across ages or tests in these returns. Buddin et al. (1992) find that an AFQT score hastens the time to promotion, which increases retention, but AFQT has a negative direct effect on retention; the effects of AFQT "net out" and so explain the traditional result that AFQT has little effect on retention. Although promotion and AFQT have been omitted from our modeling, this probably has little impact on our estimates of policy effects relative to

10. We will try to allow for discount-rate heterogeneity in future work. It remains to be seen whether the data are sufficiently rich to identify the parameters of a discount-rate distribution.

baseline, because the simulated policies seem unlikely to alter the promotion speeds or the AFQT mix of individuals joining the military.

Our costing omits costs associated with training and recruitment. However, relative to the cost of current compensation and retirement, these costs are minor, and given our focus on options that hold RC force size constant, they are not likely to change much.

By and large, we think our modeling is accurate within its context. Although relaxing the limitations would affect the results, the impact on the changes in retention, participation, and cost seem likely to be minor.

### The Challenge of Implementation

The implementation of a policy change raises many challenges. Our analysis has focused on steady-state participation and cost comparisons, not on the dynamics of implementation. But specific questions will come up if the new policy is to be implemented: Would the policy be phased in over a decade, a few years, or immediately? What would be done to inform reserve leaders and reservists of the change and to explain the reasons for it? To what extent could the reserves count on using some of the cost savings for reserve uses? What would be done to monitor the introduction of the new system, and what would be done to obtain input from reservists before and during the phase-in? Also, what assurance would there be that incentive pay would be set adequately? Implementation will require ongoing monitoring and response to ensure that the new policy operates as effectively as possible. The major "regulator" of the policy is incentive pay, which can change as conditions change, e.g., force size, economic activity, the demographics of personnel, and involvement in military operations, so it is important to allocate incentive pay effectively. These questions will require input from many groups and may require further analysis.

## Appendix A. Data and Methods

The changes to reserve compensation considered in the 11th QRMC affect current and future reserve compensation, including retirement benefits. Analyzing these changes required longitudinal data on service members and a model capable of showing how current and future compensation can affect current decisions, such as the decision to participate in the reserves. This appendix describes our data and model and discusses the parameter estimates we obtained by applying the model to the data. The appendix also includes charts indicating the model's goodness of fit and describes the outputs produced by our analysis, including cost.

## Data

Our primary dataset is the Work Experience File (WEX), a longitudinal file maintained by DMDC. WEX data come from the active-duty master file and the RC common personnel data system file. WEX tracks by month the military career of every member of the armed forces, active and reserve, who was in service in FY 1990 or entered service later. For each AC component, we drew samples of 25,000 individuals who entered the component in FY 1990–1991, constructed each service member's history of AC and RC participation, and used these records in estimating the model. These earliest WEX cohorts have the greatest amount of information about military careers. Our analytical file ends in FY 2009 and has up to 20 calendar years of data on each person. We use WEX variables to identify an individual's component and branch of service (e.g., AC Army, RC Army Reserve) by year from the date of entry onward. An AC entrant serves some number of years in the AC and then departs, perhaps choosing to participate in the RC and possibly moving back and forth between the RC and civilian status. We use PEBD and component/branch in counting years of AC service and years of RC participation following AC service.[11]

We augmented WEX records with data on AC, RC, and civilian pay. We compute AC, RC, and civilian average pay by year based on the individual's years of AC, RC, and total experience, respectively. AC and RC pay are also related to military retirement benefits, as discussed below. We use 2007 military pay tables, but because military pay tables have been fairly stable over time, with few changes to their structure,[12] we do not expect our results to be sensitive to the choice of year.

Our measure of AC pay is based on RMC, which includes basic pay, BAH, BAS, and an adjustment deriving from the allowances not being subject to federal income tax. We compute AC pay lines for enlisted members and for officers by branch of service. RMC in general depends on AC years of service, pay grade, and dependents status, but pay grade and dependents status are omitted from our model. This means that we do not include probabilities of promotion, up-or-out rules, marriage, or divorce/separation.[13] The AC pay variable at a given year of service is the average

11. The WEX record also includes a member's age, gender, and "transactions" indicating entry/exit day by service component, pay grade, primary occupational code, and unit identification code.

12. An exception was the structural adjustment to the basic pay table in FY 2000 that gave larger increases to mid-career personnel who had reached their pay grade relatively quickly (after fewer years of service). A second exception was the expansion of the BAH, which increased in real value between FY 2000 and FY 2005.

13. Pay grades, promotion probabilities, and up-or-out rules were included in our model for the 10th QRMC, but they have been omitted here because the RC compensation changes under consideration are not aimed at changing promotion speed or up-or-out rules, and the model runs faster without these features.

RMC at that year, where the average is taken over the number of service members in each pay grade at that year and whether or not the members have dependents. Information on grade distribution and dependents comes from the Green Book for FY 2007 (Office of the Under Secretary of Defense, 2006). We obtain a rough estimate of the tax advantage by computing the percentage of AC RMC that is attributable to it and applying that percentage (roughly 6 percent) to the RMC of AC members. While greater precision in estimating the tax advantage would improve our estimates of AC RMC, our purpose is not to provide such an estimate per se, but to provide an input to our model. We believe that our parameter estimates are not sensitive to our approach to computing the tax advantage.

RC pay is based on years of AC service and years of RC participation, and we averaged it over pay grade and dependents status, using RC strength information from the 2007 Official Guard and Reserve Manpower Strengths and Statistics Report (Office of the Assistant Secretary of Defense, Reserve Affairs, undated) Reserve pay in a year is calculated as the sum of drill pay for four drills per month, 12 times a year, plus pay for 14 days of active-duty training, typically done in the summer. Drill pay is 1/30 of monthly basic pay for each drill period, or 4/30 per weekend. During each day of active-duty training, the reservist receives basic pay plus BAS. Single members receive BAH for a service member without dependents, while married members receive BAH for a service member with dependents. In our calculation, RC members receive BAH RC/T (Reserve Component/transit), a housing allowance for certain circumstances, including being on active duty less than 30 days. Given years of service and grade, we compute a reservist's annual pay as:

(12 × weekend drill pay) + (14 × (BAS + daily basic pay))
+ (%married × BAH RC/T for those with dependents)
+ (%single × %on base × BAH RC/T for those without dependents)
+ tax advantage

To incorporate the tax advantage, we use the same adjustment as for AC annual pay, 6 percent. Some reservists receive special and incentive pays such as bonuses, but these are not included. Also, the model does not address the activation and deployment of reservists, although this is an area for future work.[14]

Our model includes AC and RC retirement benefits. Eligibility for AC retirement benefits requires 20 years of AC service. We compute the AC retirement benefit according to the formula 0.025 × years of AC service × high-three basic pay (average

14. The pay of approximately 85 percent of activated reservists is higher than the sum of their reserve pay and civilian earnings when not activated (Loughran et al., 2006).

basic pay in the highest three years of basic pay). Under this formula, a service member retiring at 20 YOS receives 50 percent of high-three basic pay; one retiring at 30 YOS receives 75 percent of high-three basic pay.

Eligibility for RC retirement benefits requires 20 years of creditable service. Years of creditable service include AC years plus years of RC participation where the reservist earned at least 50 points. A reservist receives 15 points for affiliating with a selected reserve unit, plus one point per drill and one point per day of active-duty training. For example, a reservist who attends all drills and active-duty training might accumulate 77 points (15 + 12 × 4 + 14) and therefore will have a creditable year. We assume an RC participant accumulates 75 points per year. Unlike AC retirement benefits, which start as soon as the AC member retires from service, RC retirement benefits begin at age 60.[15] The formula for RC retirement benefits is the same as that for AC retirement benefits, with several provisos: RC retirement points are converted into YOS (for the purpose of retirement) by dividing total points by 360, and a year of AC service counts as a full year. Reservists who qualify for reserve retirement benefits can transfer to the "retired reserve," which means that their high-three pay is based on the basic pay table in place on their sixtieth birthday, and their basic pay is based on their pay grade and years in grade, where the latter include years in the retired reserve.[16]

Civilian pay is based on average earnings in 2007 of male, year-round full-time workers, by educational attainment.[17] For enlisted RC members, civilian earnings are those of associate's degree holders. For officers, civilian earnings are those of workers with a bachelor's degree or more.

## Model

We developed a dynamic model of AC retention and RC participation for the 10th QRMC (Asch et al., 2008) and have rewritten its code to improve its speed and convergence. The first application of dynamic stochastic programming to the retention of military personnel was a model of Air Force officer retention developed by

15. As noted in the text, recent legislation affects the retirement date. If the RC member has been deployed in the period beginning on January 28, 2008, retirement age is decreased by three months for every 90 consecutive days of deployment. This change is not included in our model because the model does not include deployment.

16. In addition, military retirees, including reserve retirees receiving retired pay, are eligible to receive health care through TRICARE for the remainder of their lives, as can their spouses, and coverage continues for the spouse if the retiree dies and she or he does not remarry. "Gray area" retirees, members of the retired reserve who are not drawing retired pay, may purchase TRICARE coverage under the TRICARE Retired Reserve (TRR) program until they become eligible for TRICARE. We do not model the health benefit, however.

17. Table 687 in U.S. Census Bureau, 2008, reports average earnings by age group (18–24, 25–34, 35–44, 45–54, 55–64, 65 and older). We fit a line to the averages to obtain earnings by age.

Gotz and McCall (1984). Our model extends the Gotz/McCall model in two ways. First, it allows individuals leaving AC to choose whether to participate in the RC or be a civilian, whereas the Gotz/McCall model did not consider reserve and civilian as separate statuses. In our model, the individual revisits the reserve/civilian choice in each period and can move back and forth between statuses, a behavior seen in WEX data. A civilian holds a job and receives a civilian wage, and a reservist holds a job and also receives reserve compensation and accumulates retirement points.[18] Second, our model allows reserve and civilian statuses to have a common random shock (because under either status the individual holds a civilian job) as well as reserve-specific and civilian-specific shocks. The model allows for this with a nested specification in which reserve and civilian statuses have their own shocks as well as a common shock. Our parameter estimates confirm that this specification is statistically superior to one that does not allow for a common shock.

The model assumes that an individual maximizes utility over a finite planning horizon from age 20 to age 60, and time is in discrete periods (years). At the onset of each year, the individual is in one of three statuses—active, reserve, or civilian—and chooses what status to enter in the coming year. An active member can choose among all three statuses, but an individual who has left active duty may not reenter it. Thus, a reservist or a civilian can choose between only reserve and civilian statuses.

The value of each alternative at the outset of a year depends on current pay, the individual's preference for the alternative, random shock(s) associated with the alternative, and the discounted expected value of the choice next year given the alternative chosen this year.

Current pay differs across alternatives. Active pay is RMC given years of active duty, civilian pay is the average civilian wage given years of experience and education, and reserve pay is the civilian wage plus RC pay given years of active and reserve service. Civilian experience is normalized to be years since age 20.

Each person has two tastes, or preferences, one for AC service and one for RC service. The tastes are differential from the civilian taste, which is assumed to be zero, and are denoted in the same monetary units as the pay, e.g., an individual in the RC receives the monetary value of his reserve taste. The tastes are constant over time but differ across individuals, who are heterogeneous in their tastes. Tastes are not observed, but the model imposes structure on tastes by assuming that they have a bivariate normal distribution among AC entrants. Given this distribution, AC and RC tastes can have different means and different variances, and they may

18. We recognize that some reservists are in college full time or part time. By assuming that reservists work full time at civilian jobs, we are in effect assigning an opportunity cost of time to those in school. The opportunity to enroll in college is enhanced by reserve educational benefits.

be correlated. Other things equal, a higher AC taste increases AC retention, and a higher RC taste increases RC participation. The taste distribution evolves over time among those staying on active duty as those with lower AC taste tend to leave the military. For similar reasons, the evolution of RC taste distribution is conditional on years of AC and RC service. Individuals with higher RC taste are more likely to have more years of RC participation during their career, just as individuals with higher AC tastes have more years of AC service. If AC and RC tastes are positively correlated, which we find, they will be relatively high among individuals with high AC and RC YOS. When estimating the model, we seek to identify the parameters of the taste distribution of AC entrants. This can be thought of as the distribution of tastes for the population of AC entrants, or the a priori taste distribution.

We assume a random shock in each year for each feasible status and a reserve/civilian nest shock. The individual observes the shocks for the upcoming year but does not know the shocks in future years. Instead, he or she is assumed to know the distributions from which shocks are drawn, and the distributions are the same in all years. The individual uses this information in making an assessment of the value of future choices. We, as researchers, do not observe the shocks. Instead, we use the assumed structure of the model, including the form of the shock distributions, together with data about AC retention and RC participation by year for each individual and about military pay and retirement benefits, to estimate the parameters of the model (described below).

The discounted expected value of future choices assumes that an optimal choice is made in every future year. The alternative chosen in any year can affect value of the choice in all future years. For example, participating in the reserves for another year adds a year of reserve service and increases reserve pay in future periods, moves the individual a year closer to retirement eligibility, and increases retirement benefits should the individual become eligible. Similarly, past participation in the reserves means that current reserve pay is higher. Thus, in the dynamic framework, history matters, as does the future. The model's planning horizon extends to age 60, the age at which eligible reservists start to receive retirement benefits.

To understand how the model works, consider a 50-year-old former-AC member who can choose between reserve and civilian alternatives and who has fewer than 20 years of AC service and fewer than 30 total YOS. The choice depends on the value of each alternative. The value of the reserve alternative depends on the sum of the reserve pay, reserve taste, and reserve shock in the coming year plus the discounted value of the reserve/civilian choice in the next year given reserve status in the coming year. Similarly, the value of the civilian alternative depends on the civilian pay and civilian shock in the coming year and the discounted value of the reserve/civilian

choice in the next year, given civilian status in the coming year. Either way, the choice in the next year, viewed from the current year, is similar to the choice in the current year but differs in that the values of next year's shocks are not known in the current year. Because these values are not known, the best the individual in the current year can do is to compute an expected value of making the optimal choice next year.

Given the randomness of the shocks, there is some chance that next year the value of the reserve alternative will exceed the value of the civilian alternative and some chance of the reverse. These chances and the values of the reserve and civilian alternatives next year depend on the choice made in the current year. As mentioned, choosing the reserve in the current year causes reserve pay to be higher next year and to be at that higher amount in every future year; reserve retirement eligibility will be a year closer and reserve retirement benefits will be higher; and civilian pay will also be higher because of another year of experience. Choosing civilian status in the coming year leaves reserve pay and retirement unchanged next year, while civilian pay will increase because of experience.

The value of the reserve/civilian choice next year depends on the value of the reserve alternative versus the civilian alternative in the year after next. As in the current year, those values depend on then-year pay, shocks, taste, and the discounted expected value of the optimal choice in the following year. This recursive decision-making structure continues until the final decision at age 59. At age 60, the individual makes no further reserve/civilian decisions but becomes a civilian. The model reaches its terminal year, and the individual receives whatever payoffs are available at that point.

In our example, every possible terminal state that a member could achieve involves 40 years of experience (the individual has completed a 40-year career), at least one year of AC service (everyone begins in an AC), and some combination of AC and RC years up to the limit allowed by the model for those who leave the AC and participate in the RC, namely, 30 total YOS. If there are fewer than 20 years of creditable service, the reserve retirement benefit is zero. If there are 20 or more years of creditable service, the reserve retirement benefit is computed as described above. The model assumes the benefit will be received for the remainder of the individual's life and computes the present discounted value of the retirement benefit as of age 60, using the personal discount rate.

Knowing the payoffs in all the possible end states, we can write an expression for the value of the optimal reserve/civilian choice at age 59 for each possible state at that age. The possible states are defined by years of AC service, years of RC service, and years of experience. Because the individual in the current year does not know the shocks in future years, e.g., at age 59, the expression for the value of the optimal

choice is an expected value. In particular, it is the expected value of the maximum of the value of the reserve alternative and the civilian alternative at age 59.

With expressions for the value of the optimal choice at age 59 given one's state at age 59, the same approach is used to obtain such expressions for the optimal choice at age 58 given one's possible states at age 59 and current state at age 58. Following this process, rules for optimal decisions are obtained back to age 50, the age in our example. At age 50, then, we have expressions for the values of the reserve and civilian alternatives given one's state at age 50, and these expressions embed the discounted expected values of choices in future years.

The same approach applies for an individual on active duty, though that individual has a larger number of possible terminal states. Even so, the number of terminal states is finite, and again we can devise rules for the optimal choice at age 59 given one's state at 59 and then use these rules to devise rules at 58, and so on. AC decisionmaking is somewhat different, however, in that the model assumes that the AC member evaluates the alternatives of remaining on active duty or choosing to leave, and if the latter, choosing the better of the reserve and civilian alternatives. The model treats the reserve and civilian alternatives as belonging to a nest, and there is a nest-specific shock in addition to the reserve and civilian alternatives having their own random shocks. The nest shock is in effect a common shock to the reserve and civilian alternatives. Given the expected value of the choice between reserve and civilian and the nest shock, the individual decides whether to continue on active duty or to leave the military and take the better alternative in the nest.

To summarize, the AC/RC DRM incorporates information about AC, RC, and civilian pay and AC and RC retirement benefits, assumes individuals are heterogeneous in their tastes for AC and RC service, builds in uncertainty in the form of random shocks affecting each choice, and assumes that individuals act rationally over a multi-year horizon and reoptimize each year given information available in that year and their state in that year.

## Estimation

### Method

We estimate parameters for the probability densities of the two shock terms and the probability density of the population distribution of the tastes for active and reserve service relative to a civilian alternative. As mentioned, the population consists of service members at the outset of the AC service. The densities for the two shock terms are assumed to be extreme-value with mode zero; thus two shape parameters need to be estimated: one for the nest and one specific to the civilian/

reserve alternatives in the nest. The density for the population distribution of taste is assumed to be bivariate normal with five parameters, the means and standard deviations of active and reserve taste and the correlation between active and reserve taste. We also estimate a per-period personal discount factor. Thus the basic model has eight parameters.

In addition, we estimate parameters for switching costs. These reflect the cost associated with switching from one state to another.

The model is estimated by maximum likelihood. Writing a likelihood function is fairly straightforward, as using extreme-value distributed shock terms allows us to solve the dynamic program analytically given values for active and reserve taste. The solution of the dynamic program gives us closed-form solutions for the probability of choosing each of the two or three alternatives available at any given time. That is, given values for the active taste, the reserve taste, the discount rate, the current time period, the current state, and the parameters of the shock distributions, we can compute the probability of entering any state in the following period. If we observe a career consisting of some sequence of active, civilian, and reserve states, we can write out a series of expressions for the probability of being in the observed state in the observed period, which when multiplied gives the likelihood of observing a particular career sequence. We then can numerically integrate out the unobserved heterogeneity in active taste and reserve taste, assuming some population distribution for taste.

Numerical optimization is done using a BHHH standard hill-climbing algorithm (Berndt et al., 1974).

Standard errors are computed using numerical differentiation of the likelihood function at the parameter estimates to produce the matrix of second derivatives, the Hessian matrix. The standard errors are computed using the customary method, i.e., the square root of the absolute values of the diagonal of the inverse of the Hessian.

### Some Technical Details

Instead of estimating the parameters directly, we estimate the natural logarithm of each parameter, with the exception of the correlation, for which we estimate the inverse hyperbolic tangent. We do this to make things easier for the numerical optimization, in that it is easier to solve a problem where any of the entities can take on any real value, positive or negative, rather than being constrained to be positive or in the interval [-1,1]. Using the natural logarithm is better than using, say, the absolute value, as it is a smooth transformation; numerical differentiation routines are apt to become confused when confronted with values near zero if

an absolute-value transformation is used. The inverse hyperbolic tangent provides a convenient means of transforming a number on the real line to one that falls within the interval [-1,1].

One of the necessary steps for computing the likelihood function is to integrate out the unobserved heterogeneity in active taste and reserve taste. Unfortunately, this cannot be done analytically. We do this using a variant of Monte Carlo integration using samples of a standard bivariate normal distribution generated by a Halton sequence. A Halton sequence is an example of a "low-discrepancy" sequence, a deterministic sequence that produces samples from a distribution with desirable properties in terms of being well distributed throughout a distribution. Care must be taken in selecting a Halton sequence that has desirable properties; because the sequence is deterministic, a poor choice of generating parameters can lead to generating a sequence that only covers part of a distribution or produces a distinct pattern of coverage as opposed to a pseudo-random "pattern." We draw 23 points from a standard bivariate normal distribution, and we use these same points (suitably transformed) every time we perform a numerical integration. Figure A.1 shows the distribution of our sample points. We perform the pseudo–Monte Carlo integration by computing the likelihood at each one of these points and taking the average.

We transform the samples of the standard normal bivariate distribution by multiplying by the Cholesky decomposition of the variance-covariance matrix implied by the parameters of the population distribution of taste.[19] (If the optimizer attempts to use values of the parameters that produce a variance-covariance matrix that cannot be decomposed, the likelihood function returns a value of negative infinity, causing the optimizer to seek values closer to previously used feasible values for the population distribution.) This allows us to stick with the "same" sample points from iteration to iteration and results in a smooth and well-behaved integration routine that produces results that vary smoothly with changes in input parameters. This would not be the case if we, for example, performed a fresh draw of the random sequence at each iteration.

19. Train (2003) describes the Cholesky decomposition. It is also described in the RAND study for the 10th QRMC (Asch et al.,2008, pp. 98–99).

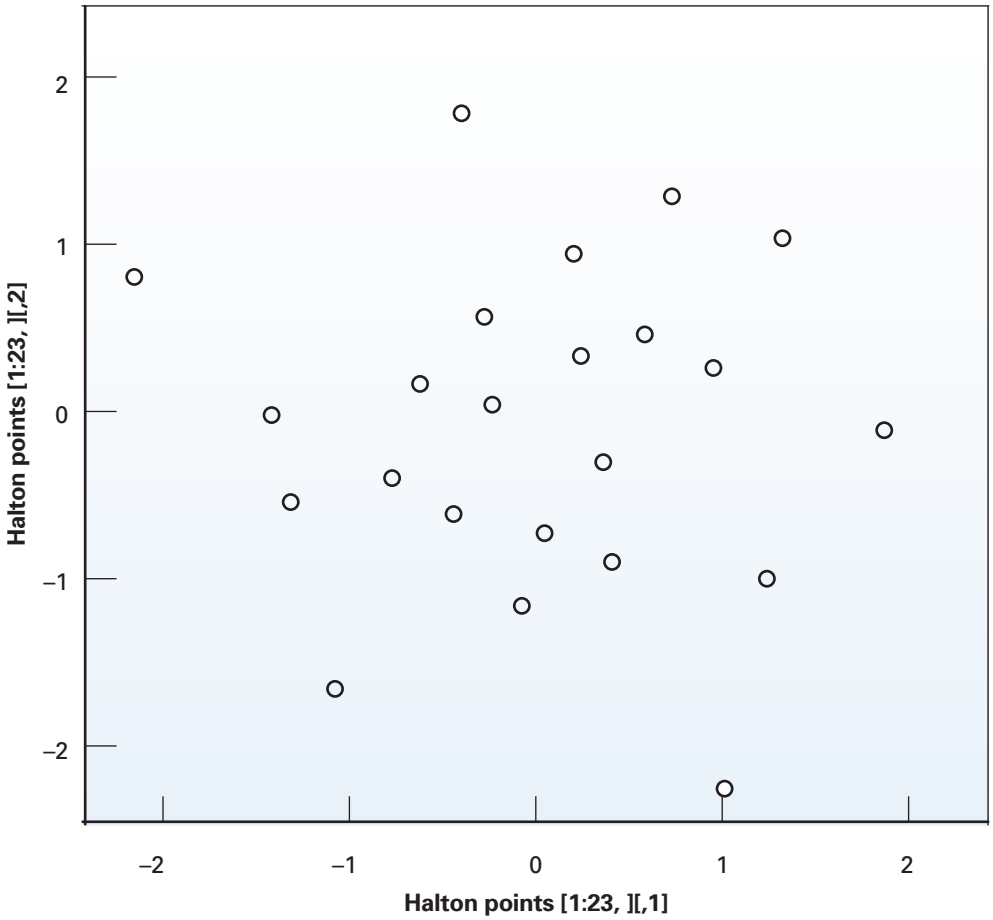


**Figure A.1. Halton Sequence for the Standard Bivariate Normal Distribution**

## Parameter Estimates

### Estimates and Standard Errors

Tables A.1 and A.2 provide the raw and transformed parameter estimates for enlisted personnel, and Tables A.3 and A.4 do so for officers. The estimates for each service are highly statistically significant. Our discussion focuses on the transformed estimates.

## Table A.1. Parameter Estimates and Standard Errors (SE) for Enlisted Personnel, by Service

| | Army | | Navy | | Air Force | | Marines | |
|---|---|---|---|---|---|---|---|---|
| Coefficient | Estimate | SE | Estimate | SE | Estimate | SE | Estimate | SE |
| ln(Tau) | 3.494 | 0.071 | 3.803 | 0.065 | 3.137 | 0.063 | 3.753 | 0.088 |
| ln(Lambda) | 2.751 | 0.072 | 2.206 | 0.078 | 2.001 | 0.056 | 2.979 | 0.119 |
| ln(–1*(Mean Active Taste)) | 2.752 | 0.048 | 2.806 | 0.051 | 1.902 | 0.028 | 3.079 | 0.068 |
| ln(–1*(Mean Reserve Taste)) | 3.111 | 0.062 | 3.406 | 0.070 | 2.773 | 0.047 | 4.791 | 0.128 |
| ln(SD Active Taste) | 1.788 | 0.082 | 1.295 | 0.106 | 1.213 | 0.085 | 0.779 | 0.149 |
| ln(SD Reserve Taste) | 2.524 | 0.079 | 2.678 | 0.087 | 2.170 | 0.067 | 4.188 | 0.134 |
| atanh(Taste Correlation) | 0.819 | 0.021 | 1.118 | 0.034 | 0.752 | 0.018 | 1.225 | 0.031 |
| ln(–1*(Leave Active in First Two Years)) | 4.005 | 0.068 | 3.968 | 0.067 | 3.541 | 0.061 | 4.441 | 0.088 |
| ln(–1*(Switch Civilian to Reserve)) | 4.206 | 0.072 | 3.612 | 0.079 | 3.608 | 0.056 | 4.343 | 0.118 |
| ln(-1*(Leave Active After First Two Years)) | 2.705 | 0.076 | 2.418 | 0.088 | 2.381 | 0.061 | 2.881 | 0.123 |
| ln(Beta) | –0.113 | 0.005 | –0.097 | 0.004 | –0.161 | 0.005 | –0.083 | 0.005 |
| –1*Log Likelihood | 122,056 | | 93,692 | | 101,408 | | 80,278 | |
| N | 29,619 | | 29,942 | | 29,928 | | 29,931 | |

NOTE: Tau is the shape parameter of the nest error; Lambda is the shape parameter of the error specific to each alternative in the nest—here, "reserve" and "civilian"; Leave Active in First Two Years is a switching cost; Switch Civilian to Reserve is a switching cost; Leave Active After First Two Years is a switching cost; Beta is the personal discount factor.

## Table A.2. Transformed Parameter Estimates for Enlisted Personnel, by Service

| Coefficient | Army | Navy | Air Force | Marines |
|---|---|---|---|---|
| Tau | 32.924 | 44.835 | 23.027 | 42.662 |
| Lambda | 15.655 | 9.079 | 7.398 | 19.668 |
| Mean Active Taste | –15.680 | –16.548 | –6.697 | –21.741 |
| Mean Reserve Taste | –22.446 | –30.152 | –16.012 | –120.448 |
| SD Active Taste | 5.980 | 3.650 | 3.364 | 2.180 |
| SD Reserve Taste | 12.482 | 14.549 | 8.755 | 65.913 |
| Taste Correlation | 0.674 | 0.807 | 0.636 | 0.841 |
| Leave Active in First Two Years | –54.866 | –52.870 | –34.505 | –84.852 |
| Switch Civilian to Reserve | –67.083 | –37.055 | –36.885 | –76.915 |
| Leave Active After First Two Years | –14.953 | –11.228 | –10.813 | –17.831 |
| Beta | 0.893 | 0.907 | 0.852 | 0.920 |

NOTES: Transformed parameters are denominated in thousands of dollars, with the exception of Taste Correlation and Beta. Tau is the shape parameter of the nest error; Lambda is the shape parameter of the error specific to each alternative in the nest—here, "reserve" and "civilian"; Leave Active in First Two Years is a switching cost; Switch Civilian to Reserve is a switching cost; Leave Active After First Two Years is a switching cost; Beta is the personal discount factor.

## Table A.3. Parameter Estimates and Standard Errors (SE) for Officers, by Service

| | Army | | Navy | | Air Force | | Marine Corps | |
|---|---|---|---|---|---|---|---|---|
| Coefficient | Estimate | SE | Estimate | SE | Estimate | SE | Estimate | SE |
| ln(Tau) | 4.765 | 0.117 | 4.894 | 0.149 | 5.029 | 0.295 | 4.505 | 0.160 |
| ln(Lambda) | 3.684 | 0.126 | 2.447 | 0.184 | 3.221 | 0.464 | 2.623 | 0.165 |
| ln(–1*(Mean Active Taste)) | 2.731 | 0.173 | 3.283 | 0.175 | 2.836 | 0.692 | 2.573 | 0.119 |
| ln(–1*(Mean Reserve Taste)) | 4.558 | 0.113 | 4.083 | 0.143 | 4.508 | 0.377 | 3.713 | 0.045 |
| ln(SD Active Taste) | 3.241 | 0.147 | 2.197 | 0.327 | 3.219 | 0.478 | 1.892 | 2.640 |
| ln(SD Reserve Taste) | 4.297 | 0.127 | 3.645 | 0.193 | 4.282 | 0.446 | 3.352 | 0.203 |
| atanh(Taste Correlation) | 0.938 | 0.033 | 0.885 | 0.040 | 0.939 | 0.103 | 0.414 | 0.086 |
| ln(–1*(Leave Active in First 3–4 Years)) | 6.089 | 0.115 | 5.932 | 0.154 | 6.085 | 0.311 | 7.609 | 122.7 |
| ln(–1*(Switch Civilian to Reserve)) | 4.509 | 0.132 | 3.108 | 0.194 | 4.032 | 0.468 | 3.101 | 0.200 |
| ln(Beta) | –0.063 | 0.004 | –0.056 | 0.004 | –0.057 | 0.011 | –0.066 | 0.003 |
| –1*Log Likelihood | 14,310 | | 12,739 | | 2,142 | | 4,462 | |
| N | 3,442 | | 3,170 | | 643 | | 923 | |

NOTE: Tau is the shape parameter of the nest error; Lambda is the shape parameter of the error specific to each alternative in the nest—here, "reserve" and "civilian"; Leave Active in First Two Years is a switching cost; Switch Civilian to Reserve is a switching cost; Beta is the personal discount factor.

## Table A.4. Transformed Parameter Estimates for Officers, by Service

| Coefficient | Army | Navy | Air Force | Marine |
|---|---|---|---|---|
| Tau | 117.380 | 133.477 | 152.782 | 90.483 |
| Lambda | 39.786 | 11.557 | 25.049 | 13.780 |
| Mean Active Taste | –15.349 | –26.658 | –17.056 | –13.105 |
| Mean Reserve Taste | –95.395 | –59.299 | –90.761 | –40.983 |
| SD Active Taste | 25.567 | 8.997 | 24.997 | 6.633 |
| SD Reserve Taste | 73.484 | 38.298 | 72.374 | 28.549 |
| Taste Correlation | 0.734 | 0.71 | 0.735 | 0.392 |
| Leave Active in First Two Years | –440.943 | –376.848 | –439.102 | –2016.261 |
| Switch Civilian to Reserve | –90.837 | –22.371 | –56.369 | –22.214 |
| Beta | 0.949 | 0.945 | 0.945 | 0.936 |

NOTES: Transformed parameters are denominated in thousands of dollars, with the exception of Taste Correlation and Beta. Tau is the shape parameter of the nest error; Lambda is the shape parameter of the error specific to each alternative in the nest—here, "reserve" and "civilian"; Leave Active in First Two Years is a switching cost; Switch Civilian to Reserve is a switching cost; Beta is the personal discount factor.

### Tastes

The mean taste for service in an active component is negative. For example, it is between -$7,000 and -$21,000 for enlisted personnel. Although the mean taste could be positive or negative, a negative mean taste is not surprising given the demands and risks of military service. The military must offer relatively high pay to compensate for the negative taste and attract and retain a sufficient number of volunteers to meet manning requirements. For instance, the 10th QRMC estimated that current military compensation was above the seventieth percentile of the civilian wage distribution for workers of similar education and experience. The standard deviation of AC enlisted taste is $2,000 to $6,000. Mean AC taste for officers is approximately in the same range as that for enlisted personnel, though the standard deviation of taste is large, e.g., $6,000 to $26,000.

Mean RC taste is also negative and less than mean AC taste. Mean RC taste for enlisted personnel is –$16,000 to –$30,000, except in the Marine Corps, where it is –$120,000, and the standard deviation of RC taste is several times larger than that of AC taste.[20] The lower RC taste may reflect the difficulty of balancing reserve participation with a civilian career and family life. The lower mean taste is consistent with only a fraction of those who served in an AC joining an RC after they leave the active force. However, the correlation between AC and RC taste is positive and "high"—it is 0.67 for Army enlisted personnel, for instance—implying that individuals who are likely to have longer careers in the AC are also more likely to participate in the RC. The higher standard deviation of RC taste suggests that RC taste may play a more prominent role in RC participation than AC taste does in AC retention; individuals with a high RC taste are those most likely to participate continuously or repeatedly in an RC.

The standard deviation of the shock for AC and for the reserve/civilian nest is equal to $\left(\pi / \sqrt{6}\right)\text{Tau} \approx 1.28\,\text{Tau}$. For enlisted members, the standard deviation of the shock is roughly three times the size of the mean AC taste, and for officers, it is six or seven times the mean AC taste. A combination of large negative AC shocks and/or large positive reserve/civilian shocks might induce an AC member to leave the service, for example. But if both the AC and reserve/civilian shocks were either positive or negative, the shocks would tend to cancel each other and might have little effect on AC retention. Once an individual has left the AC, he or she chooses between reserve and civilian status. At this point, the common shock to these statuses no longer influences behavior; because the shock is common, it nets out of

20. This does not mean that members of the Marine Corps Reserve (MCR) have a low taste for reserve service. The MCR is relatively small, with about 39,000 members, and a mean taste of –$120,000 implies that only those Marines with the highest taste for reserve service participate in the MCR.

the choice. Apart from the common shock, the reserve and civilian alternatives have their own shocks. The standard deviation of these shocks is half or less the size of the mean reserve taste. These shocks are a determinant of the choice between reserve and civilian status, and they affect the expected value of their maximum. However, the standard deviation of these shocks is not as large as that of the common shock, so the common shock is likely to be more influential in the choice between AC and the reserve/civilian nest.

Estimates of the personal discount factor are around 0.90 for enlisted members, though lower for the Air Force (0.86), and about 0.94 for officers. The personal discount factor is 1/(1 + personal discount rate), and factors of 0.90 and 0.94 imply personal discount rates of 11.1 percent and 6.4 percent, respectively.

The switching costs are implicit, i.e., the individual does not pay them outright but behaves as though they must be incurred. The switching cost estimate for leaving the AC in the first two years reflects the military's reluctance to lose a good, trained recruit and the fact that a member leaving early might have to repay part of an enlistment bonus and might forgo an educational benefit supplement. After the first two AC years, the cost of switching from AC to RC might reflect the cost of locating a suitable RC opening, i.e., an opening in a unit located near where the individual wants to live and at a suitable level of responsibility (rank) given years of AC service. The switching cost from civilian to RC also might reflect the cost of locating a suitable unit and an opening within it, as well as the possible impact of RC participation on civilian career opportunities and family life.

## Approach to Simulation

Using our empirically grounded parameter estimates, the model simulates behavior under alternative policies. We first create a synthetic population of some number—we use 10,000—by randomly drawing tastes from the estimated AC/RC taste distribution. Each pair of AC and RC taste draws represents an individual entering active duty. We also draw shocks for each year for each synthetic individual from the shock distributions. We assume that the synthetic individuals follow the logic of the model,[21] and we specify the compensation policy for the simulation. Our point of departure is the simulation of behavior under the current compensation policy, the baseline, and we then simulate under the policy alternatives. The simulations produce a 40-year record of AC retention and RC participation for each member of the synthetic population under each compensation policy.

21. The synthetic individual knows only the shocks in the current year and not those in future years. Shocks in a future year are revealed to the individual when that year is reached.

We use the datasets of simulated behavior to tabulate AC retention and RC participation and, along with information on compensation, to compute policy cost. The outputs of the simulations include graphs of AC retention by year of service, RC participation by year of active-plus-reserve service, and the following measures:

- AC force size
- AC current cost
- AC retirement cost
- AC total cost
- RC prior-service force size
- RC prior-service current cost
- RC prior-service retirement cost
- RC prior-service total cost.

Under the assumption of a steady state, the AC force size of the simulated population is the count of individuals present in each year up to year 40.[22] This count, which is based on our synthetic population, is scaled up to AC force size (see below). AC current cost is computed as RMC at each year of service times the number in AC in that year, summed over all years. AC retirement cost is computed as a normal cost percentage of the basic pay bill for the AC force. This approach is consistent with the practice of the DoD Actuary and gives an amount, an accrual charge, sufficient to cover the retirement liability of AC service members who retire from the AC plus a portion of the retirement liability of AC members who retire from the RC. AC current and retirement costs are also scaled up. AC total cost is the sum of AC current cost and AC retirement cost.

RC prior-service force size is based on the count of simulated individuals participating in the RC at each year of service, scaled up to the RC force size in the benchmark year. As mentioned, RC YOS is based on active plus reserve years.[23] RC

22. All individuals begin in the AC at time zero and can have an AC career of up to 40 years. An AC career is normally limited to a maximum of 30 years, but waivers permit longer service. We allow for a 40-year career, and in our simulations only a small percentage have careers longer than 30 years. This small percentage is consistent with actual data. We limit RC careers to 30 years of AC plus RC. We explored allowing reservists to have as many as 40 years, but this led to counts of RC participation beyond 30 years that were higher than in the actual data. Limiting RC careers to 30 years avoided this problem and produced results consistent with the actual data.

23. As an example of this count, consider someone who over the course of 40 years (ages 20 to 60) had 5 years of AC and 5 years of RC service. This individual would be present in the RC at YOS 6 (5 + 1), 7 (5 + 2), 8, 9, and 10. (Participation in the RC could have occurred in nonconsecutive calendar years.) In each of these

current cost equals the product of RC pay by year of service plus any addition to current compensation under the compensation alternative being considered times the number of reservists at that year, summed over years and scaled up. Several of the total-force pay alternatives include incentive pay or other supplemental pay, and we include the costs of these additional forms of current compensation in our computation of RC current cost. RC retirement cost, which is also scaled up, is based on the reserve retirement liability for the simulated reserve force less the funding credited to the reserve retirement account from the accrual charges made during its AC service. This follows the practice of the DoD Actuary. Specifically, the amount transferred from the AC retirement fund to the RC retirement fund is based on calculations involving the number of AC members who leave at each year of AC service and subsequently qualify for RC retirement.[24] RC total cost is the sum of RC current cost and RC retirement cost.

## Model Fit

Figures A.2 and A.3 show the model fit for enlisted personnel and officers, respectively, by branch of service. In the left-side panels for each service, small circles are used to show actual AC retention and a line is used to show simulated retention. In the right-side panels, the circles indicate RC participants at each year of service (including both AC years and RC years), and the lines show RC participants as simulated by the model. The simulations, which are based on the current compensation system,[25] are quite close to the actual data, providing evidence that the model fits the data well. In all cases, the model accurately predicts the percentage of members who reach 20 YOS in the AC and the RC.

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years, the individual would be counted in the steady-state RC force. Because everyone begins in the AC, the smallest RC YOS entry is 2 (1 + 1).

24. The actuarial calculation is made for AC leavers by AC year of service. For example, consider 100 AC service members in YOS 10 and suppose that 80 later qualify for AC retirement and six leave the AC at the end of YOS 10 and later qualify for RC retirement. With our simulated population, we can determine the YOS and pay at which they retire, and from survival tables we know how long they are likely to live. This allows us to compute the total retirement liability of RC retirees. Our understanding is that 6 percent of the AC accrual charges during AC years 1 through 10 are transferred to the RC retirement fund on behalf of the six individuals who will retire from the RC.

25. This system has remained in place, though with some changes, over the 20-year period represented in our data, including a change in FY 2000 to allow members who entered after August 1986 to choose at 15 YOS between the high-three retirement system and the REDUX retirement system with a bonus. In the late 1990s, military pay lagged civilian pay, and Congress mandated a catch-up basic pay increase for FY 2000 and higher-than-usual basic pay increases over the next six years. Higher-than-usual increases in fact continued through FY 2009. The BAH was increased in FY 2003 and 2004, and bonuses were used extensively in 2005–2008. Military retirement benefits and eligibility rules did not change. TRICARE for life was implemented, giving military retirees continued eligibility for TRICARE after becoming eligible for Medicare.

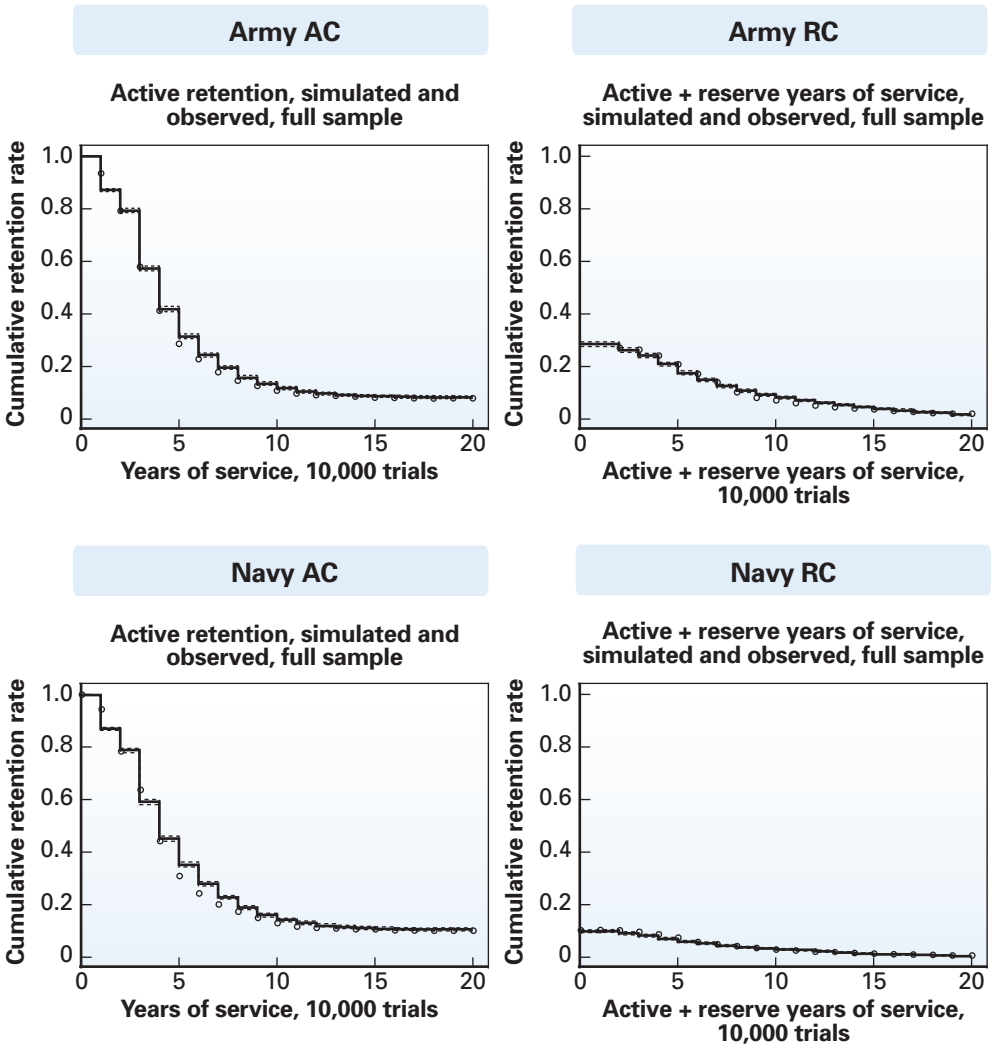


**Figure A.2. Model Fit for Enlisted Personnel**

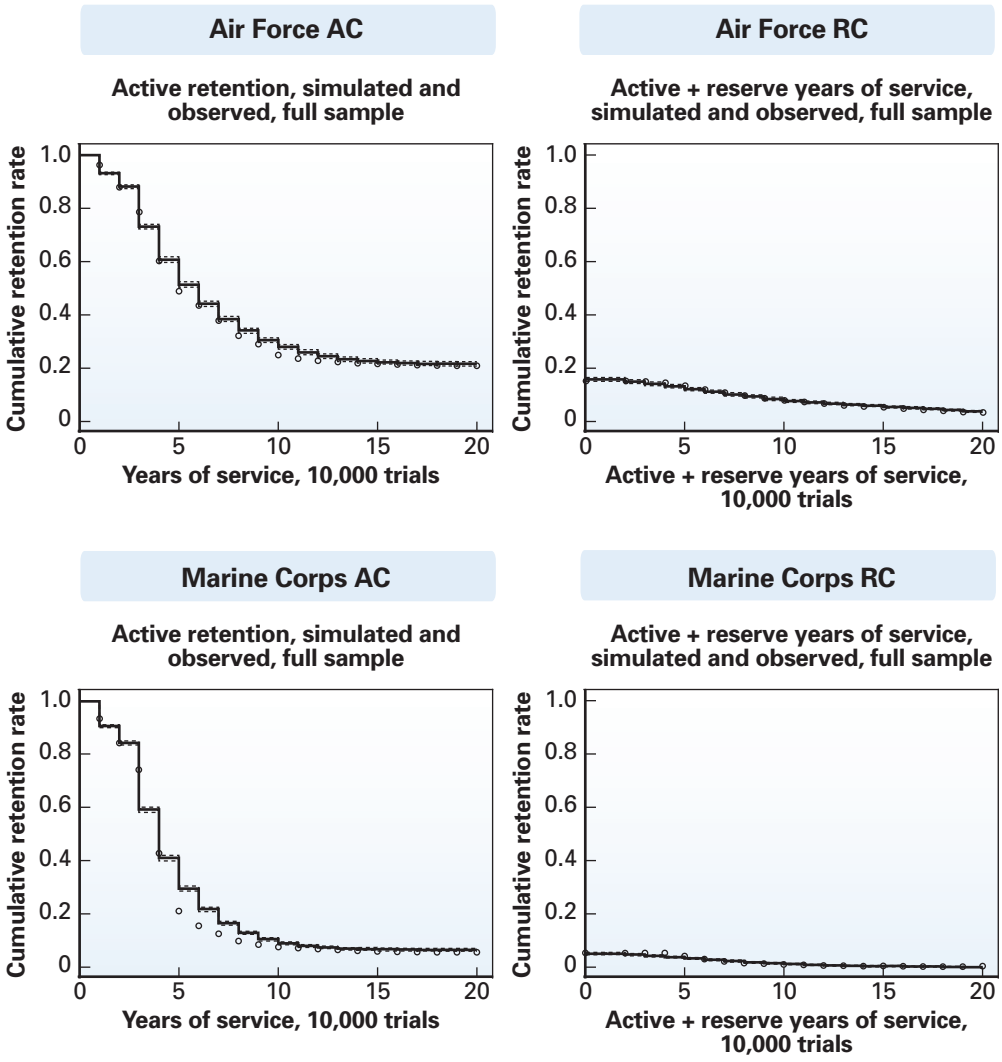


**Figure A.2—Continued**

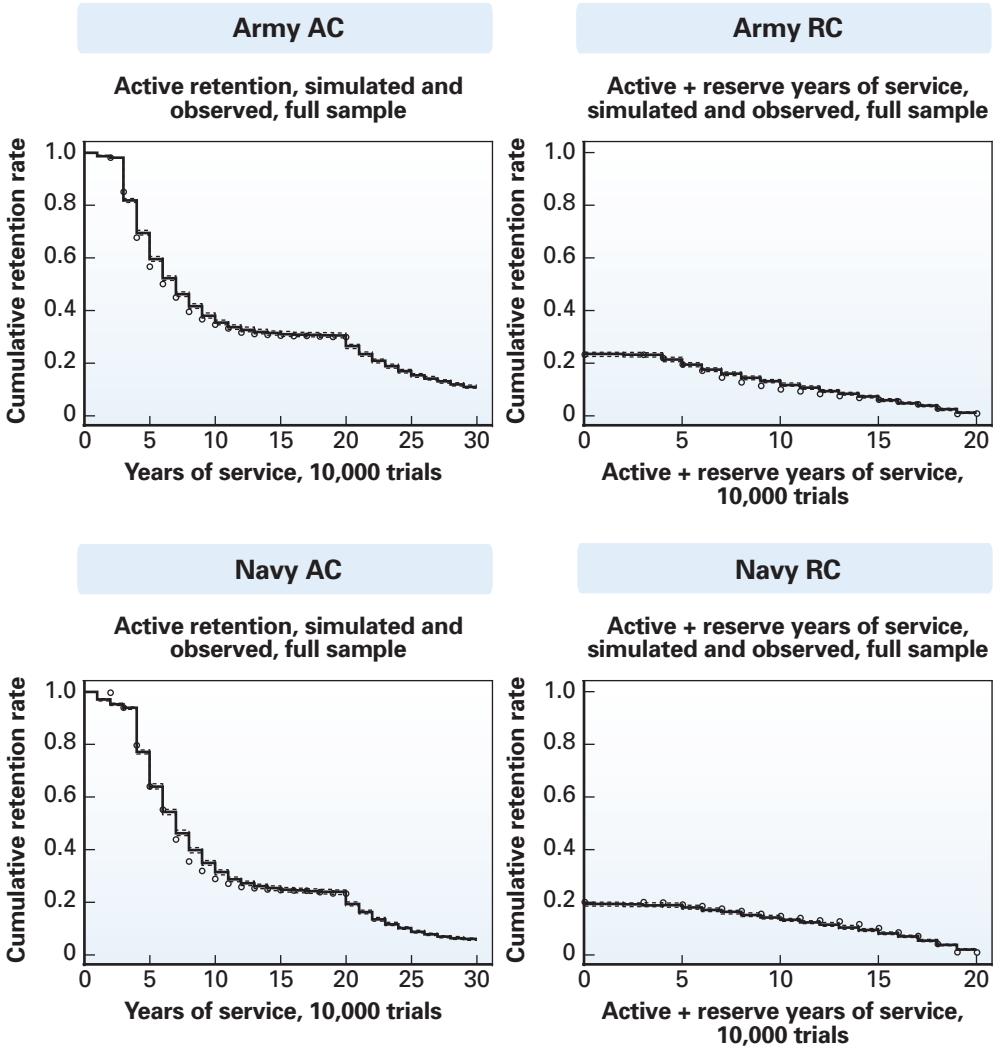


**Figure A.3. Model Fit for Officers**

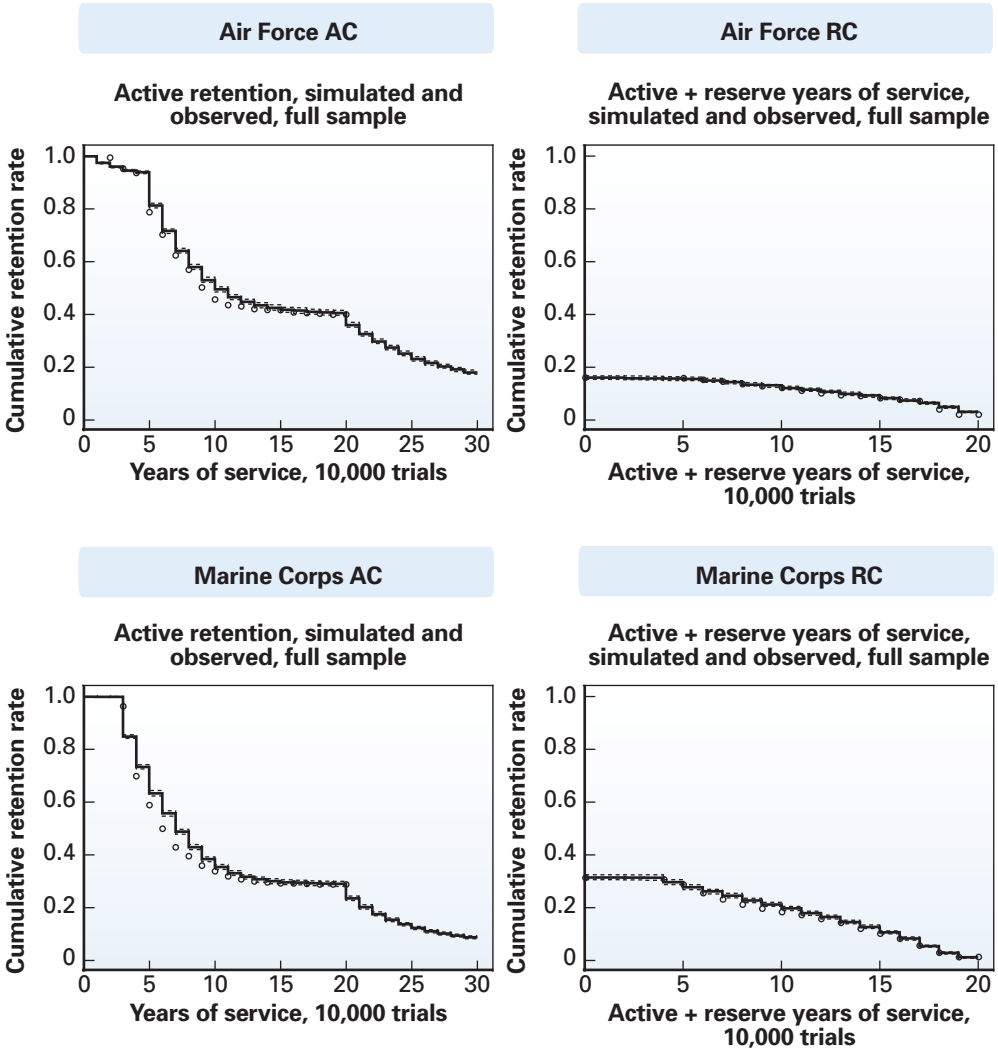


**Figure A.3—Continued**

### Summary

For our simulations, we use WEX data for AC entrants in FY 1990 and FY 1991 and follow them to FY 2009. These data are augmented with data on AC, RC, and civilian pay.

We use a stochastic DPM of AC retention and RC participation. The model embeds information about AC and RC compensation, including retirement, and assumes that individuals behave rationally in the face of future uncertainty. Individuals may differ in their tastes for AC and RC service and face different circumstances each year, represented as random shocks. An individual knows the shocks in the current year but not those in future years. Each year, the individual makes the optimal decision given his state (years of AC service, years of RC service, and total experience), status (active, reserve, civilian), and assessment of the choices in future years, assuming that they, too, will be made optimally.

We estimate the model using the WEX data, thereby grounding the parameter estimates in actual behavior. The model fits the data well for both the AC and RC. The estimated parameters include mean AC and RC taste, AC and RC taste variances and covariance, parameters for the shock distributions, the personal discount factor, and the switching costs. We apply the estimated model to simulate AC retention and RC participation under the current (baseline) and alternative compensation policies.

## Appendix B. Additional Results

This appendix shows the effects for Army enlisted personnel and officers of using the RMC pay approach for the RC on AC retention and RC participation (Figure B.1). The purpose is to demonstrate the importance of including additional components in the total force compensation package. This appendix also presents tables of simulation results for enlisted personnel and officers in the Navy, Air Force, and Marine Corps, similar to Figures 4.1 and 4.3, as well as Tables 4.1 and 4.3 that were shown for the Army (Figures B.2–B.7).

Finally, the appendix shows comparisons of results by service when we simulate the effects of changing RC retirement eligibility to YOS 30 (or age 60, whichever occurs first) versus changing RC retirement eligibility to an immediate annuity. Figures B.8 and B.9 show the AC results for enlisted personnel and officers, respectively, and Figures B.10 and B.11 show the RC results, respectively. More specifically, we consider alternative 11 (see Table 3.5) and compare the results to a similar alternative

but where RC members are eligible for an immediate annuity upon reaching 20 years of creditable service. The purpose of this analysis is to illustrate that a package that includes an immediate annuity induces greater RC participation among those with fewer than 20 years and less participation among those with more than 20 years. That is, an immediate annuity induces more junior RC members to stay in service and then also induces them to leave once they reach 20 years. Thus, this alternative results in a more junior RC force than the 30-year alternative.

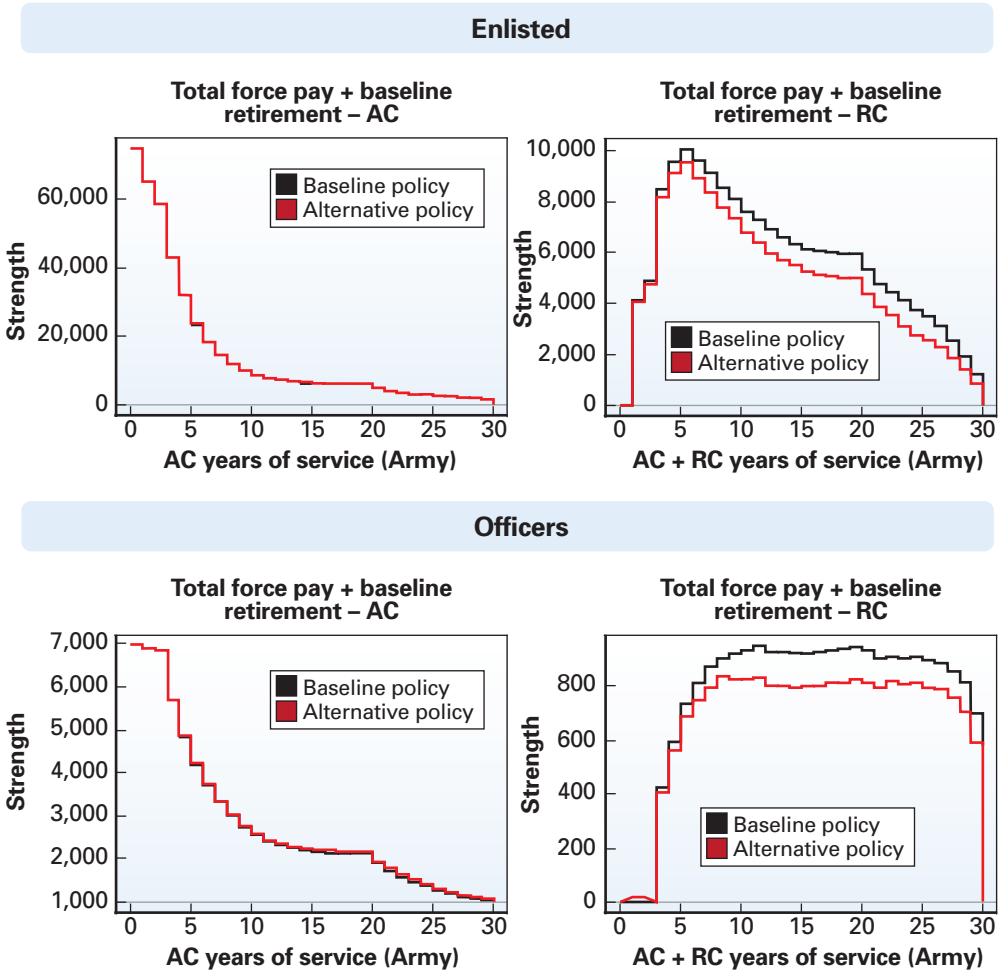


**Figure B.1. Policy Simulations for Army Enlisted Personnel and Officers: The Effect of Total Force Pay and Baseline Retirement**

## Table B.1. Results for Navy Enlisted Personnel

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | 2.49% | Flat $747 | Targeted $1,671 | 3.14% | Flat $938 | Targeted $2,075 |
| **Active Component** | | | | | | |
| Force size, baseline | 272,208 | 272,208 | 272,208 | 272,208 | 272,208 | 272,208 |
| Force size, new | 271,862 | 271,702 | 272,616 | 271,973 | 271,665 | 272,192 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 13.338 | 13.338 | 13.338 | 13.338 | 13.338 | 13.338 |
| Current cost, new | 13.307 | 13.299 | 13.356 | 13.326 | 13.309 | 13.338 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 2.241 | 2.241 | 2.241 | 2.241 | 2.241 | 2.241 |
| Retirement cost, new | 2.208 | 2.207 | 2.226 | 2.238 | 2.231 | 2.239 |
| % change | –1 | –1 | –1 | 0 | 0 | 0 |
| Total cost, baseline | 15.579 | 15.579 | 15.579 | 15.579 | 15.579 | 15.579 |
| Total cost, new | 15.515 | 15.505 | 15.582 | 15.564 | 15.540 | 15.577 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| **Reserve Component** | | | | | | |
| Force size, baseline | 35,229 | 35,229 | 35,229 | 35,229 | 35,229 | 35,229 |
| Force size, new | 35,147 | 35,241 | 35,237 | 35,200 | 35,229 | 35,246 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 0.223 | 0.223 | 0.223 | 0.223 | 0.223 | 0.223 |
| Current cost, new | 0.217 | 0.215 | 0.212 | 0.223 | 0.220 | 0.218 |
| % change | –2 | –3 | –5 | 0 | –1 | –2 |
| Retirement cost, baseline | 0.040 | 0.040 | 0.040 | 0.040 | 0.040 | 0.040 |
| Retirement cost, new | 0.043 | 0.042 | 0.042 | 0.032 | 0.031 | 0.032 |
| % change | 8 | 6 | 6 | –18 | –21 | –20 |
| Total cost, baseline | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 |
| Total cost, new | 0.259 | 0.257 | 0.254 | 0.255 | 0.251 | 0.249 |
| % change | –1 | –2 | –3 | –3 | –4 | –5 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. Prior service RC force size is held constant.

## Table B.1—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| **Active** | | | | | |
| Force size, baseline | 272,208 | 272,208 | 272,208 | 272,208 | 272,208 |
| Force size, new | 271,718 | 272,583 | 272,764 | 272,768 | 272,064 |
| % change | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 13.338 | 13.338 | 13.338 | 13.338 | 13.338 |
| Current cost, new | 13.297 | 13.358 | 13.379 | 13.380 | 13.319 |
| % change | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 2.2410 | 2.2410 | 2.2410 | 2.2410 | 2.2410 |
| Retirement cost, new | 2.2055 | 2.2333 | 2.2609 | 2.2609 | 2.2103 |
| % change | –1 | 0 | 1 | 1 | –1 |
| Total cost, baseline | 15.579 | 15.579 | 15.579 | 15.579 | 15.579 |
| Total cost, new | 15.503 | 15.591 | 15.640 | 15.640 | 15.529 |
| % change | 0 | 0 | 0 | 0 | 0 |
| **Reserve** | | | | | |
| Force size, baseline | 35,229 | 35,229 | 35,229 | 35,229 | 35,229 |
| Force size, new | 36,596 | 28,474 | 26,914 | 28,190 | 35,892 |
| % change | 4% | –19% | –24% | –20% | 2% |
| Current cost, baseline | 0.223 | 0.223 | 0.223 | 0.223 | 0.223 |
| Current cost, new | 0.230 | 0.151 | 0.141 | 0.148 | 0.228 |
| % change | –1 | –16 | –17 | –17 | 1 |
| Retirement cost, baseline | 0.040 | 0.040 | 0.040 | 0.040 | 0.040 |
| Retirement cost, new | 0.043 | 0.036 | 0.027 | 0.031 | 0.044 |
| % change | 4 | 13 | –11 | –1 | 10 |
| Total cost, baseline | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 |
| Total cost, new | 0.273 | 0.187 | 0.168 | 0.180 | 0.273 |
| % change | 0 | –12 | –16 | –14 | 2 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.

## Table B.2. Results for Air Force Enlisted Personnel

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | 2.37% | Flat $717 | Targeted $1,642 | 3.05% | Flat $967 | Targeted $2,107 |
| **Active** | | | | | | |
| Force size, baseline | 263,351 | 263,351 | 263,351 | 263,351 | 263,351 | 263,351 |
| Force size, new | 263,098 | 262,794 | 262,967 | 263,025 | 262,385 | 262,842 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 13.559 | 13.559 | 13.559 | 13.559 | 13.559 | 13.559 |
| Current cost, new | 13.540 | 13.523 | 13.527 | 13.541 | 13.504 | 13.521 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 3.053 | 3.053 | 3.053 | 3.053 | 3.053 | 3.053 |
| Retirement cost, new | 3.031 | 3.027 | 3.020 | 3.049 | 3.039 | 3.033 |
| % change | –1 | –1 | –1 | 0 | 0 | 0 |
| Total cost, baseline | 16.611 | 16.611 | 16.611 | 16.611 | 16.611 | 16.611 |
| Total cost, new | 16.571 | 16.549 | 16.547 | 16.590 | 16.543 | 16.554 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| **Reserve** | | | | | | |
| Force size, baseline | 52,299 | 52,299 | 52,299 | 52,299 | 52,299 | 52,299 |
| Force size, new | 52,483 | 52,338 | 52,229 | 52,221 | 52,202 | 52,332 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 0.364 | 0.364 | 0.364 | 0.364 | 0.364 | 0.364 |
| Current cost, new | 0.350 | 0.341 | 0.332 | 0.358 | 0.351 | 0.340 |
| % change | –4 | –6 | –9 | –2 | –4 | –7 |
| Retirement cost, baseline | 0.042 | 0.042 | 0.042 | 0.042 | 0.042 | 0.042 |
| Retirement cost, new | 0.050 | 0.048 | 0.050 | 0.032 | 0.031 | 0.033 |
| % change | 16 | 14 | 17 | –24 | –27 | –22 |
| Total cost, baseline | 0.407 | 0.407 | 0.407 | 0.407 | 0.407 | 0.407 |
| Total cost, new | 0.400 | 0.390 | 0.382 | 0.390 | 0.381 | 0.373 |
| % change | –2 | –4 | –6 | –4 | –6 | –8 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. Prior service RC force size is held constant.

## Table B.2—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| **Active** | | | | | |
| Force size, baseline | 263,351 | 263,351 | 263,351 | 263,351 | 263,351 |
| Force size, new | 262,277 | 265,355 | 265,750 | 265,750 | 262,644 |
| % change | 0 | 1 | 1 | 1 | 0 |
| Current cost, baseline | 13.559 | 13.559 | 13.559 | 13.559 | 13.559 |
| Current cost, new | 13.490 | 13.683 | 13.711 | 13.711 | 13.507 |
| % change | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 3.0527 | 3.0527 | 3.0527 | 3.0527 | 3.0527 |
| Retirement cost, new | 3.0129 | 3.0941 | 3.1261 | 3.1261 | 3.0110 |
| % change | –1 | 1 | 1 | 1 | –1 |
| Total cost, baseline | 16.611 | 16.611 | 16.611 | 16.611 | 16.611 |
| Total cost, new | 16.502 | 16.777 | 16.837 | 16.837 | 16.518 |
| % change | 0 | 0 | 0 | 0 | 0 |
| **Reserve** | | | | | |
| Force size, baseline | 52,299 | 52,299 | 52,299 | 52,299 | 52,299 |
| Force size, new | 54,637 | 42,394 | 39,778 | 40,529 | 54,912 |
| % change | 4 | –19 | –24 | –23 | 5 |
| Current cost, baseline | 0.364 | 0.364 | 0.364 | 0.364 | 0.364 |
| Current cost, new | 0.370 | 0.244 | 0.227 | 0.231 | 0.386 |
| % change | –3 | –17 | –18 | –18 | 1 |
| Retirement cost, baseline | 0.042 | 0.042 | 0.042 | 0.042 | 0.042 |
| Retirement cost, new | 0.050 | 0.041 | 0.025 | 0.032 | 0.055 |
| % change | 14 | 20 | –23 | –1 | 23 |
| Total cost, baseline | 0.407 | 0.407 | 0.407 | 0.407 | 0.407 |
| Total cost, new | 0.420 | 0.286 | 0.251 | 0.264 | 0.441 |
| % change | –1 | –13 | –19 | –16 | 3 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. Prior service RC force size is held constant.

## Table B.3. Results for Marine Corps Enlisted Personnel

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | 2.50% | Flat $788 | Targeted $1,441 | 3.39% | Flat $1,029 | Targeted $1,925 |
| **Active** | | | | | | |
| Force size, baseline | 182,366 | 182,366 | 182,366 | 182,366 | 182,366 | 182,366 |
| Force size, new | 182,366 | 182,209 | 182,388 | 182,117 | 182,104 | 182,312 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 8.482 | 8.482 | 8.482 | 8.482 | 8.482 | 8.482 |
| Current cost, new | 8.482 | 8.471 | 8.483 | 8.466 | 8.465 | 8.478 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 1.075 | 1.075 | 1.075 | 1.075 | 1.075 | 1.075 |
| Retirement cost, new | 1.072 | 1.068 | 1.073 | 1.069 | 1.069 | 1.073 |
| % change | 0 | –1 | 0 | 0 | 0 | 0 |
| Total cost, baseline | 9.557 | 9.557 | 9.557 | 9.557 | 9.557 | 9.557 |
| Total cost, new | 9.553 | 9.539 | 9.556 | 9.535 | 9.534 | 9.551 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| **Reserve** | | | | | | |
| Force size, baseline | 10,615 | 10,615 | 10,615 | 10,615 | 10,615 | 10,615 |
| Force size, new | 10,593 | 10,615 | 10,606 | 10,705 | 10,628 | 10,625 |
| % change | 0 | 0 | 0 | 1 | 0 | 0 |
| Current cost, baseline | 0.063 | 0.063 | 0.063 | 0.063 | 0.063 | 0.063 |
| Current cost, new | 0.062 | 0.062 | 0.060 | 0.065 | 0.064 | 0.062 |
| % change | –1 | –1 | –4 | 2 | 2 | –1 |
| Retirement cost, baseline | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 |
| Retirement cost, new | 0.007 | 0.006 | 0.007 | 0.005 | 0.005 | 0.005 |
| % change | 12 | 4 | 9 | –16 | –21 | –24 |
| Total cost, baseline | 0.069 | 0.069 | 0.069 | 0.069 | 0.069 | 0.069 |
| Total cost, new | 0.069 | 0.069 | 0.067 | 0.070 | 0.069 | 0.067 |
| % change | 0 | –1 | –3 | 1 | 0 | –3 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. Prior service RC force size is held constant.

## Table B.3—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| **Active** | | | | | |
| Force size, baseline | 182,366 | 182,366 | 182,366 | 182,366 | 182,366 |
| Force size, new | 182,280 | 182,449 | 182,312 | 182,312 | 182,411 |
| % change | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 8.482 | 8.482 | 8.482 | 8.482 | 8.482 |
| Current cost, new | 8.475 | 8.488 | 8.480 | 8.480 | 8.484 |
| % change | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 1.0745 | 1.0745 | 1.0745 | 1.0745 | 1.0745 |
| Retirement cost, new | 1.0691 | 1.0753 | 1.0742 | 1.0742 | 1.0719 |
| % change | 0 | 0 | 0 | 0 | 0 |
| Total cost, baseline | 9.557 | 9.557 | 9.557 | 9.557 | 9.557 |
| Total cost, new | 9.545 | 9.563 | 9.554 | 9.554 | 9.556 |
| % change | 0 | 0 | 0 | 0 | 0 |
| **Reserve** | | | | | |
| Force size, baseline | 10,615 | 10,615 | 10,615 | 10,615 | 10,615 |
| Force size, new | 11,018 | 9,049 | 8,710 | 9,036 | 10,980 |
| % change | 4 | –15 | –18 | –15 | 3 |
| Current cost, baseline | 0.063 | 0.063 | 0.063 | 0.063 | 0.063 |
| Current cost new | 0.066 | 0.045 | 0.043 | 0.045 | 0.066 |
| % change | 1 | –16 | –16 | –16 | 1 |
| Retirement cost, baseline | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 |
| Retirement cost, new | 0.007 | 0.006 | 0.004 | 0.005 | 0.007 |
| % change | 4 | 14 | –17 | 2 | 16 |
| Total cost, baseline | 0.069 | 0.069 | 0.069 | 0.069 | 0.069 |
| Total cost, new | 0.073 | 0.051 | 0.047 | 0.050 | 0.073 |
| % change | 1 | –13 | –16 | –14 | 3 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.

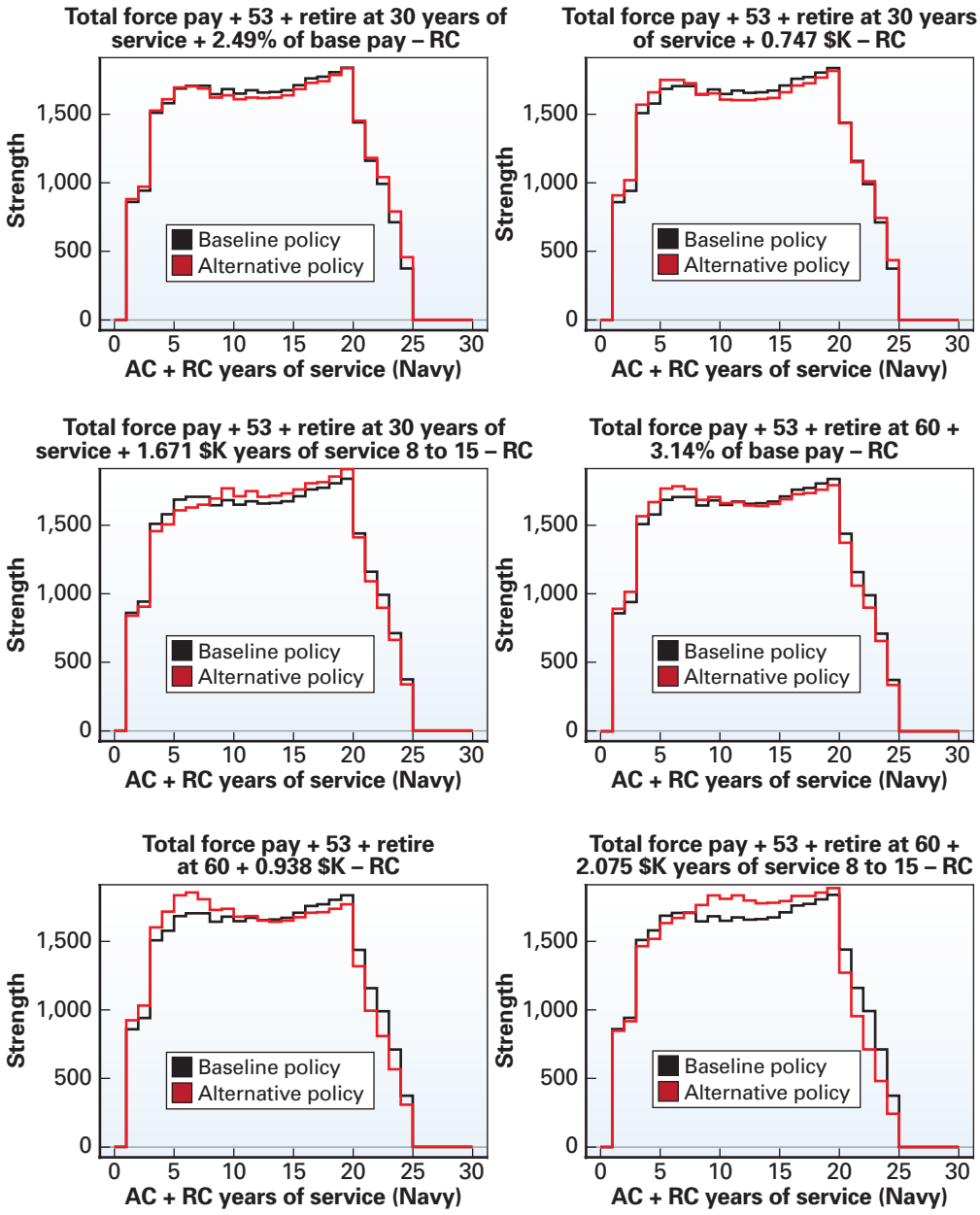


**Figure B.2. Reserve Force Size Policy Simulations: Navy Enlisted Personnel**

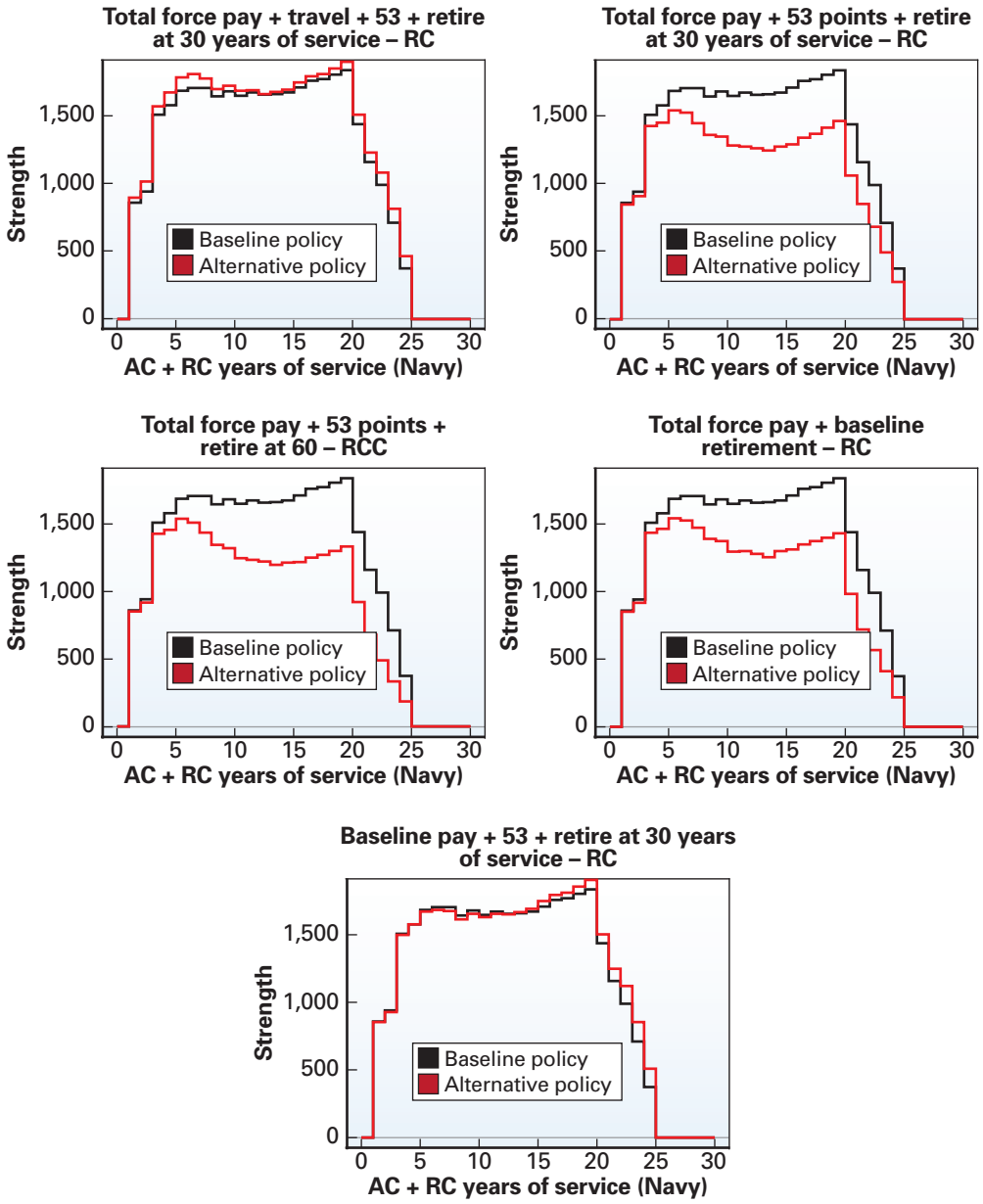


**Figure B.2—Continued**

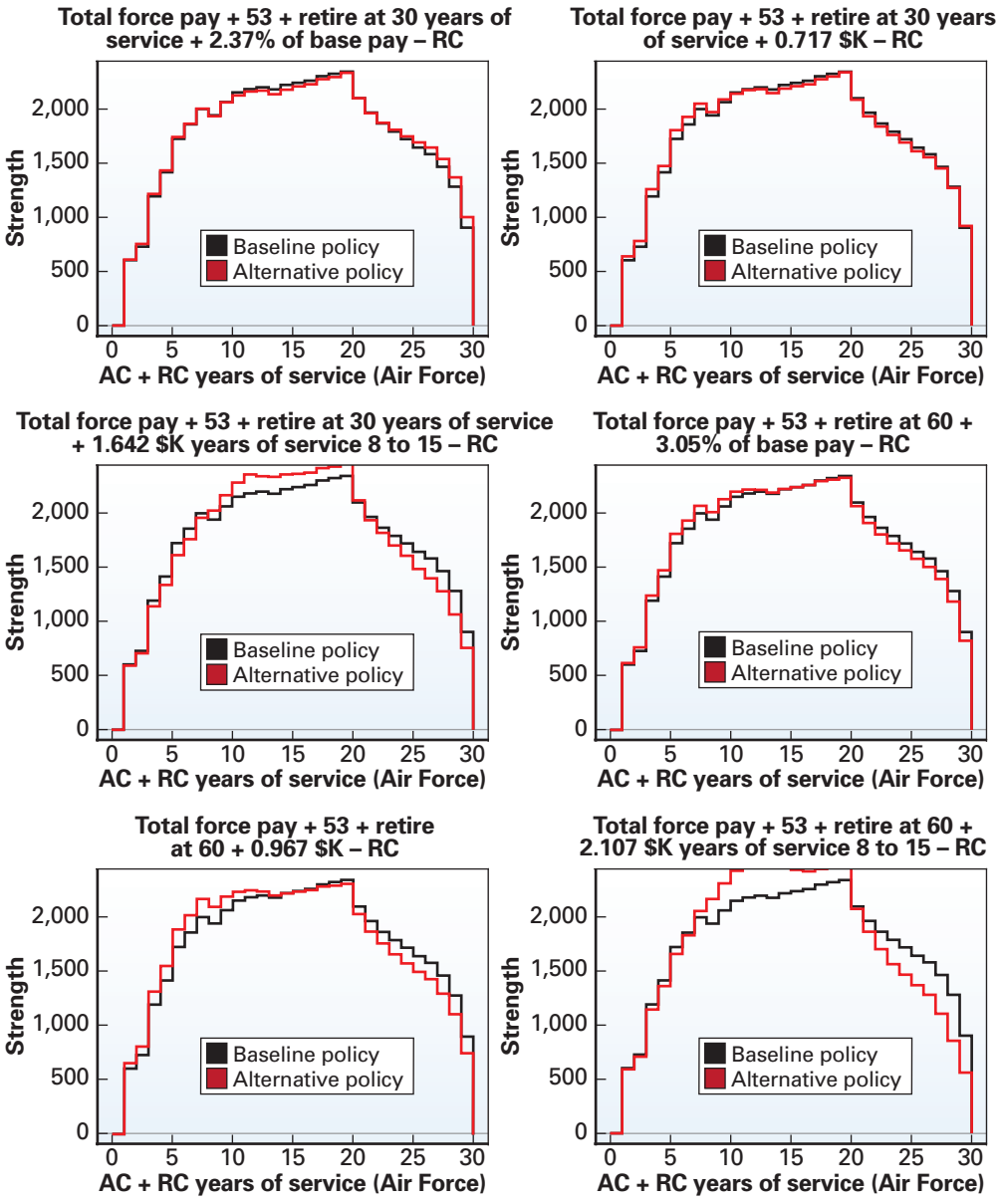


**Figure B.3. Reserve Force Size Policy Simulations: Air Force Enlisted Personnel**

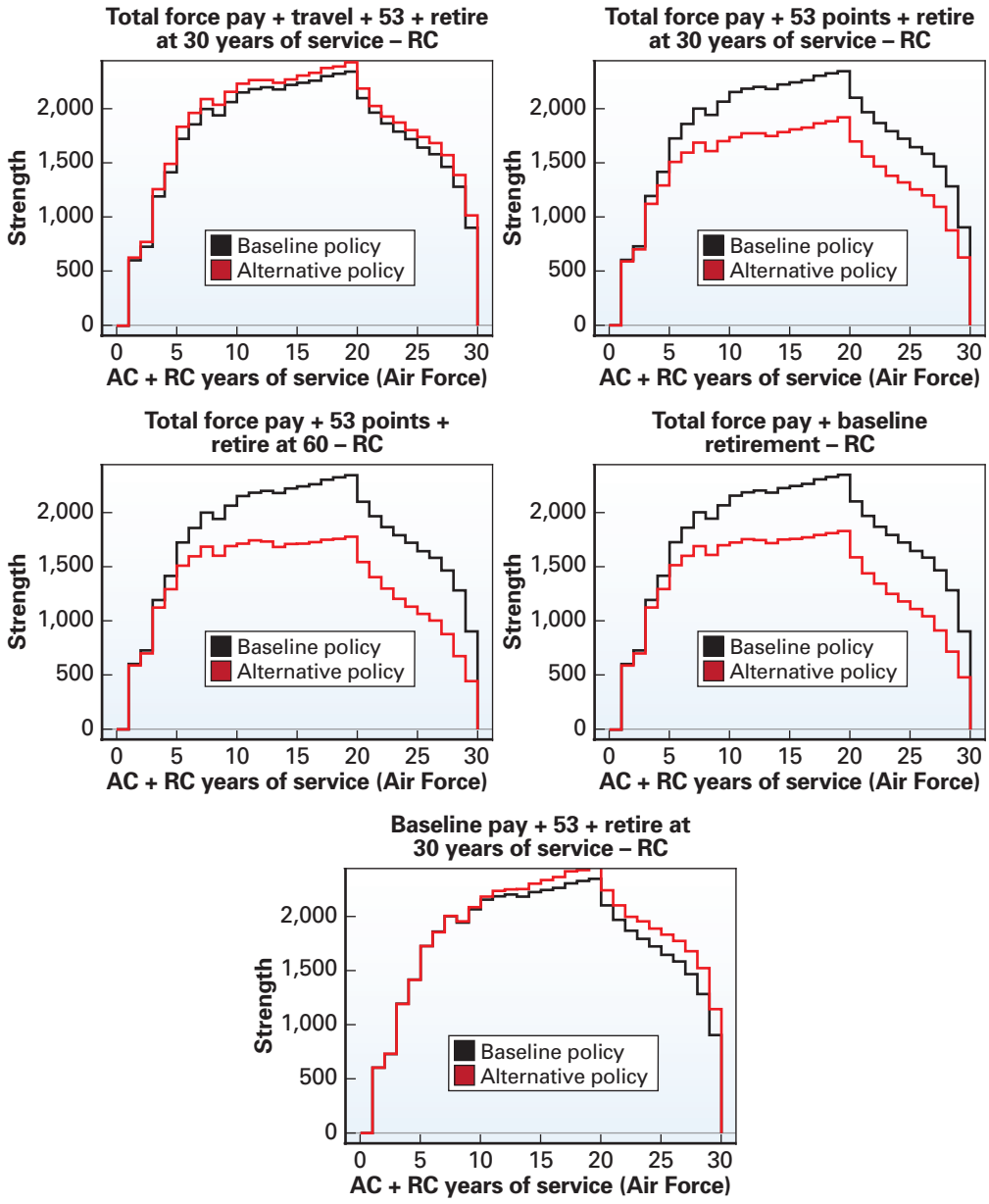


**Figure B.3—Continued**

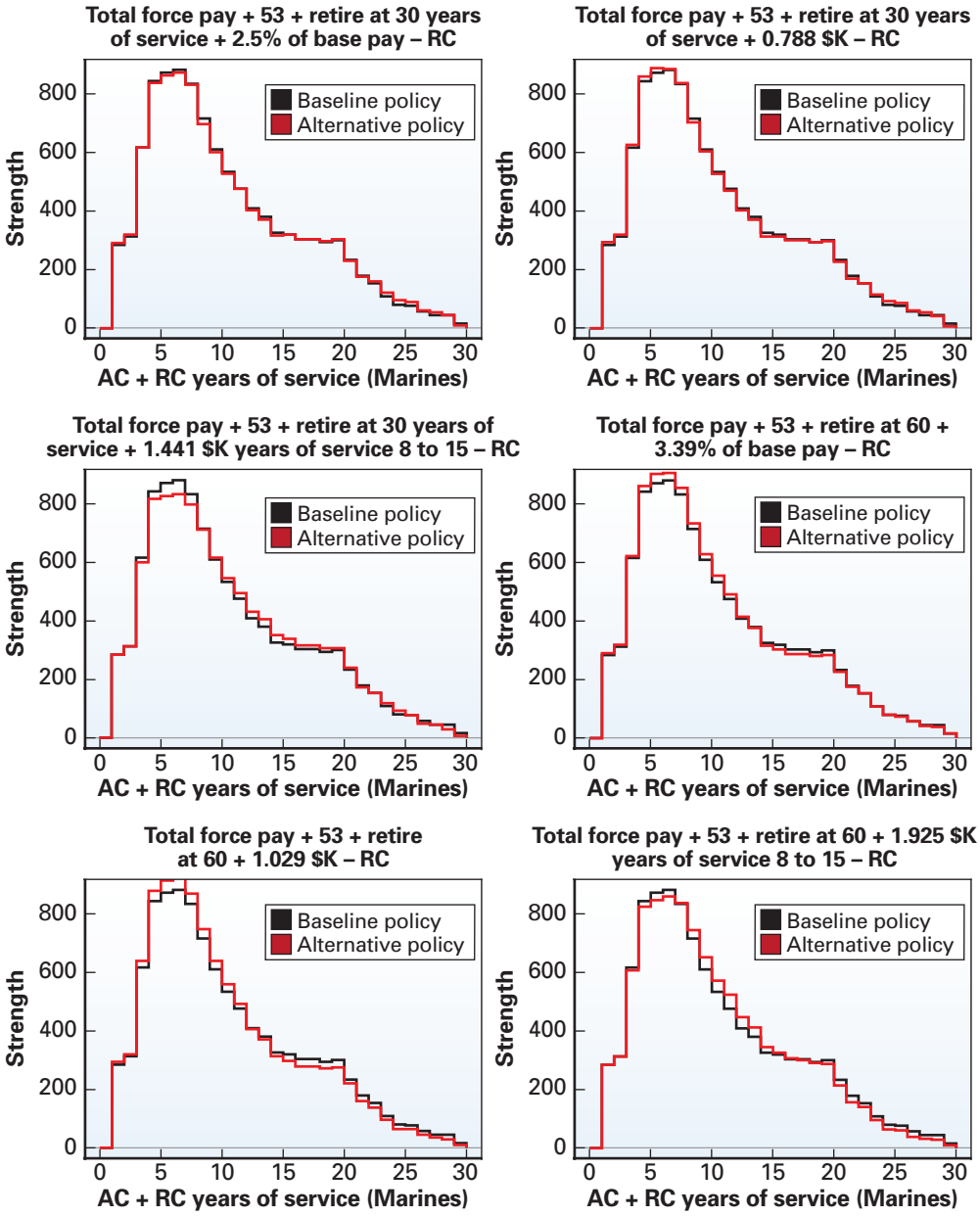


**Figure B.4. Reserve Force Size Policy Simulations: Marine Corps Enlisted Personnel**

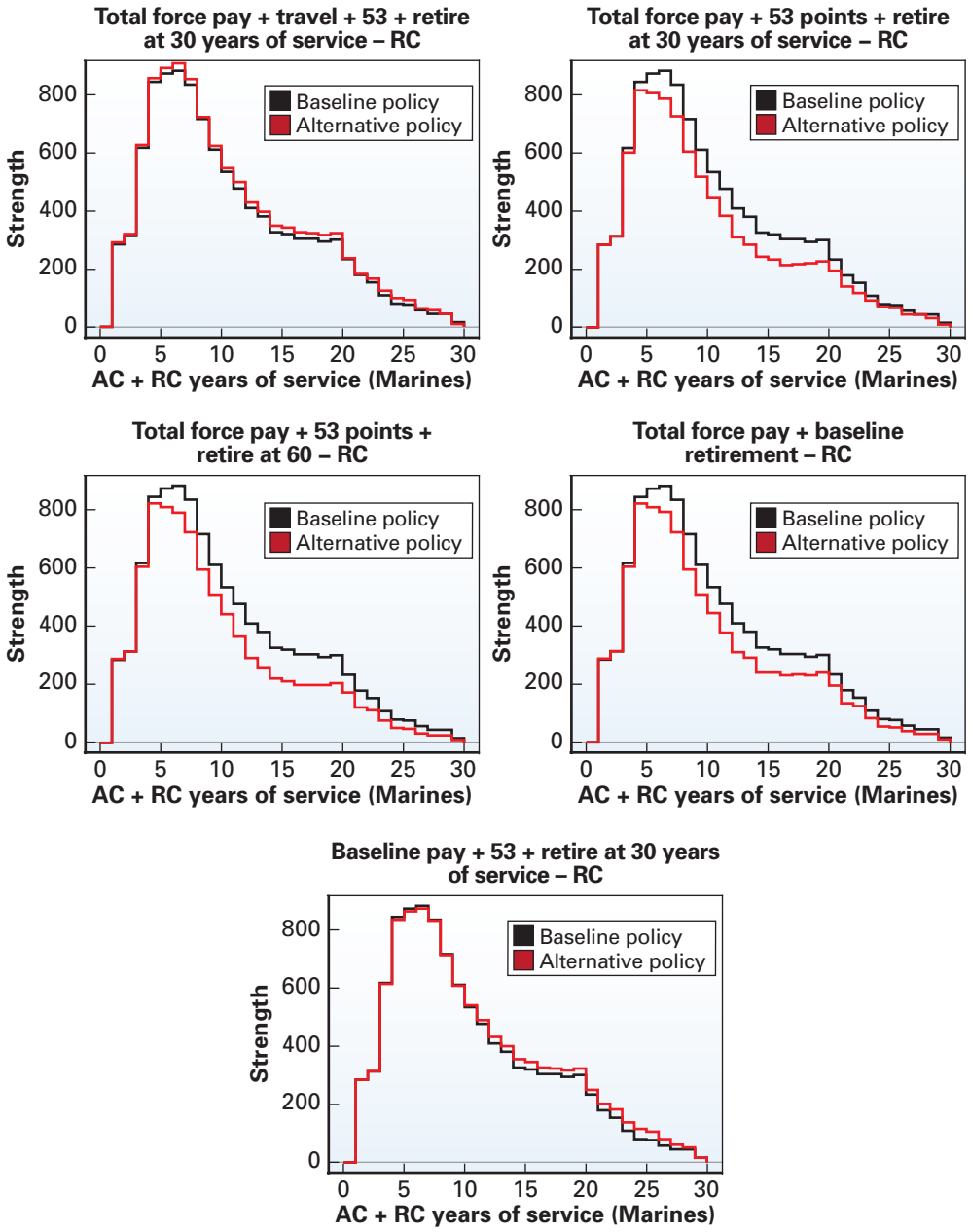


**Figure B.4—Continued**

## Table B.4. Results for Navy Officers

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | 5.94% | Flat $3,806 | Targeted $8,869 | 8.56% | Flat $5,294 | Targeted $12,195 |
| **Active** | | | | | | |
| Force size, baseline | 52,031 | 52,031 | 52,031 | 52,031 | 52,031 | 52,031 |
| Force size, new | 51,902 | 51,820 | 51,661 | 52,031 | 51,923 | 51,687 |
| % change | 0 | 0 | –1 | 0 | 0 | –1 |
| Current cost, baseline | 4.504 | 4.504 | 4.504 | 4.504 | 4.504 | 4.504 |
| Current cost, new | 4.480 | 4.476 | 4.462 | 4.503 | 4.497 | 4.477 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 |
| Retirement cost, new | 0.999 | 0.996 | 0.988 | 1.045 | 1.040 | 1.022 |
| % change | –4 | –4 | –4 | 0 | 0 | –1 |
| Total cost, baseline | 5.546 | 5.546 | 5.546 | 5.546 | 5.546 | 5.546 |
| Total cost, new | 5.479 | 5.472 | 5.450 | 5.548 | 5.537 | 5.499 |
| % change | –1 | –1 | –1 | 0 | 0 | 0 |
| **Reserve** | | | | | | |
| Force size, baseline | 19,028 | 19,028 | 19,028 | 19,028 | 19,028 | 19,028 |
| Force size, new | 19,035 | 19,030 | 18,957 | 19,028 | 19,028 | 19,019 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 0.265 | 0.265 | 0.265 | 0.265 | 0.265 | 0.265 |
| Current cost, new | 0.252 | 0.241 | 0.217 | 0.285 | 0.267 | 0.241 |
| % change | –5 | –9 | –18 | 8 | 1 | –9 |
| Retirement cost, baseline | 0.089 | 0.089 | 0.089 | 0.089 | 0.089 | 0.089 |
| Retirement cost, new | 0.121 | 0.116 | 0.104 | 0.081 | 0.077 | 0.070 |
| % change | 36 | 30 | 17 | –8 | –13 | –21 |
| Total cost, baseline | 0.353 | 0.353 | 0.353 | 0.353 | 0.353 | 0.353 |
| Total cost, new | 0.373 | 0.357 | 0.320 | 0.367 | 0.344 | 0.311 |
| % change | 6 | 1 | –9 | 4 | –3 | –12 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. RC force size is held constant.

## Table B.4—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| **Active** | | | | | |
| Force size, baseline | 52,031 | 52,031 | 52,031 | 52,031 | 52,031 |
| Force size, new | 52,260 | 52,508 | 52,990 | 52,815 | 51,841 |
| % change | 0 | 1 | 2 | 2 | 0 |
| Current cost, baseline | 4.504 | 4.504 | 4.504 | 4.504 | 4.504 |
| Current cost, new | 4.524 | 4.555 | 4.619 | 4.600 | 4.472 |
| % change | 0 | 0 | 1 | 1 | 0 |
| Retirement cost, baseline | 1.042 | 1.042 | 1.042 | 1.042 | 1.042 |
| Retirement cost, new | 1.018 | 1.034 | 1.090 | 1.078 | 0.996 |
| % change | –3 | –2 | 3 | 2 | –4 |
| Total cost, baseline | 5.546 | 5.546 | 5.546 | 5.546 | 5.546 |
| Total cost, new | 5.542 | 5.589 | 5.709 | 5.678 | 5.468 |
| % change | –1 | 0 | 1 | 1 | –1 |
| **Reserve** | | | | | |
| Force size, baseline | 19,028 | 19,028 | 19,028 | 19,028 | 19,028 |
| Force size, new | 17,294 | 16,086 | 15,068 | 15,718 | 19,437 |
| % change | –9 | –15 | –21 | –17 | 2 |
| Current cost, baseline | 0.265 | 0.265 | 0.265 | 0.265 | 0.265 |
| Current cost, new | 0.185 | 0.143 | 0.133 | 0.139 | 0.274 |
| % change | –23 | –36 | –36 | –36 | 1 |
| Retirement cost, baseline | 0.089 | 0.089 | 0.089 | 0.089 | 0.089 |
| Retirement cost, new | 0.115 | 0.110 | 0.073 | 0.080 | 0.124 |
| % change | 42 | 47 | 4 | 9 | 37 |
| Total cost, baseline | 0.353 | 0.353 | 0.353 | 0.353 | 0.353 |
| Total cost, new | 0.300 | 0.253 | 0.206 | 0.219 | 0.398 |
| % change | –7 | –15 | –26 | –25 | 10 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.

## Table B.5. Results for Unrated Air Force Officers

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | 5.04% | Flat $3,264 | Targeted $8,099 | 8.41% | Flat $5,460 | Targeted $12,756 |
| **Active** | | | | | | |
| Force size, baseline | 32,748 | 32,748 | 32,748 | 32,748 | 32,748 | 32,748 |
| Force size, new | 32,676 | 32,665 | 32,631 | 32,717 | 32,683 | 32,640 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 3.163 | 3.163 | 3.163 | 3.163 | 3.163 | 3.163 |
| Current cost, new | 3.154 | 3.154 | 3.153 | 3.159 | 3.158 | 3.158 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 0.842 | 0.842 | 0.842 | 0.842 | 0.842 | 0.842 |
| Retirement cost, new | 0.827 | 0.827 | 0.825 | 0.842 | 0.840 | 0.835 |
| % change | –2 | –2 | –2 | 0 | 0 | –1 |
| Total cost, baseline | 4.005 | 4.005 | 4.005 | 4.005 | 4.005 | 4.005 |
| Total cost, new | 3.982 | 3.981 | 3.979 | 4.001 | 3.998 | 3.993 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| **Reserve** | | | | | | |
| Force size, baseline | 6,500 | 6,500 | 6,500 | 6,500 | 6,500 | 6,500 |
| Force size, new | 6,528 | 6,500 | 6,500 | 6,503 | 6,502 | 6,495 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 0.092 | 0.092 | 0.092 | 0.092 | 0.092 | 0.092 |
| Current cost, new | 0.083 | 0.080 | 0.073 | 0.099 | 0.094 | 0.082 |
| % change | –10 | –14 | –22 | 7 | 1 | –11 |
| Retirement cost, baseline | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 |
| Retirement cost, new | 0.061 | 0.059 | 0.055 | 0.044 | 0.042 | 0.039 |
| % change | 28 | 26 | 17 | –7 | –10 | –18 |
| Total cost baseline | 0.140 | 0.140 | 0.140 | 0.140 | 0.140 | 0.140 |
| Total cost new | 0.144 | 0.139 | 0.128 | 0.139 | 0.136 | 0.121 |
| % change | 3 | 0 | –9 | 0 | –3 | –13 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. RC force size is held constant.

## Table B.5—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| **Active** | | | | | |
| Force size, baseline | 32,748 | 32,748 | 32,748 | 32,748 | 32,748 |
| Force size, new | 32,857 | 33,029 | 33,327 | 33,255 | 32,542 |
| % change | 0 | 1 | 2 | 2 | –1 |
| Current cost, baseline | 3.163 | 3.163 | 3.163 | 3.163 | 3.163 |
| Current cost, new | 3.178 | 3.199 | 3.237 | 3.228 | 3.136 |
| % change | 0 | 0 | 1 | 0 | 0 |
| Retirement cost, baseline | 0.842 | 0.842 | 0.842 | 0.842 | 0.842 |
| Retirement cost, new | 0.837 | 0.844 | 0.868 | 0.864 | 0.821 |
| % change | –1 | –1 | 1 | 1 | –2 |
| Total cost, baseline | 4.005 | 4.005 | 4.005 | 4.005 | 4.005 |
| Total cost, new | 4.015 | 4.043 | 4.105 | 4.092 | 3.957 |
| % change | 0 | 0 | 1 | 1 | –1 |
| **Reserve** | | | | | |
| Force size, baseline | 6,500 | 6,500 | 6,500 | 6,500 | 6,500 |
| Force size, new | 6,199 | 5,882 | 5,512 | 5,670 | 6,765 |
| % change | –5 | –10 | –15 | –13 | 4 |
| Current cost, baseline | 0.092 | 0.092 | 0.092 | 0.092 | 0.092 |
| Current cost, new | 0.067 | 0.053 | 0.050 | 0.051 | 0.097 |
| % change | –24 | –37 | –37 | –37 | 1 |
| Retirement cost, baseline | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 |
| Retirement cost, new | 0.059 | 0.058 | 0.041 | 0.044 | 0.063 |
| % change | 30 | 35 | 1 | 6 | 27 |
| Total cost, baseline | 0.140 | 0.140 | 0.140 | 0.140 | 0.140 |
| Total cost, new | 0.126 | 0.111 | 0.090 | 0.095 | 0.160 |
| % change | –5 | –13 | –24 | –22 | 10 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.

## Table B.6. Results for Marine Corps Officers

| | Policy Alternative | | | | | |
|---|---|---|---|---|---|---|
| | 1[a] | 2[a] | 3[a] | 4[a] | 5[a] | 6[a] |
| Pay | RMC | RMC | RMC | RMC | RMC | RMC |
| Retirement points per year | 53 | 53 | 53 | 53 | 53 | 53 |
| Start of benefits | 30 YOS | 30 YOS | 30 YOS | Age 60 | Age 60 | Age 60 |
| Incentive pay | 7.00% | Flat $4,191 | Targeted $8,498 | 7.87% | Flat $4,582 | Targeted $9,603 |
| **Active** | | | | | | |
| Force size, baseline | 20,709 | 20,709 | 20,709 | 20,709 | 20,709 | 20,709 |
| Force size, new | 20,680 | 20,633 | 20,607 | 20,679 | 20,634 | 20,604 |
| % change | 0 | 0 | 0 | 0 | 0 | –1 |
| Current cost, baseline | 1.862 | 1.862 | 1.862 | 1.862 | 1.862 | 1.862 |
| Current cost, new | 1.856 | 1.852 | 1.849 | 1.860 | 1.856 | 1.851 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirement cost, baseline | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 |
| Retirement cost, new | 0.462 | 0.461 | 0.459 | 0.472 | 0.472 | 0.466 |
| % change | –2 | –2 | –3 | 0 | 0 | –1 |
| Total cost, baseline | 2.336 | 2.336 | 2.336 | 2.336 | 2.336 | 2.336 |
| Total cost, new | 2.318 | 2.314 | 2.308 | 2.332 | 2.328 | 2.317 |
| % change | –1 | –1 | –1 | 0 | 0 | 0 |
| **Reserve** | | | | | | |
| Force size, baseline | 7,561 | 7,561 | 7,561 | 7,561 | 7,561 | 7,561 |
| Force size, new | 7,525 | 7,561 | 7,565 | 7,561 | 7,561 | 7,561 |
| % change | 0 | 0 | 0 | 0 | 0 | 0 |
| Current cost, baseline | 0.095 | 0.095 | 0.095 | 0.095 | 0.095 | 0.095 |
| Current cost, new | 0.096 | 0.093 | 0.087 | 0.100 | 0.096 | 0.090 |
| % change | 1 | –2 | –9 | 5 | 0 | –5 |
| Retirement cost, baseline | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 |
| Retirement cost, new | 0.027 | 0.026 | 0.024 | 0.021 | 0.020 | 0.019 |
| % change | 14 | 8 | –2 | –12 | –16 | –20 |
| Total cost, baseline | 0.120 | 0.120 | 0.120 | 0.120 | 0.120 | 0.120 |
| Total cost, new | 0.123 | 0.119 | 0.110 | 0.121 | 0.116 | 0.110 |
| % change | 4 | 0 | –8 | 2 | –3 | –8 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.
a. RC force size is held constant.

## Table B.6—Continued

| | Policy Alternative | | | | |
|---|---|---|---|---|---|
| | 7 | 8 | 9 | 10 | 11 |
| Pay | RMC | RMC | RMC | RMC | Baseline |
| Retirement points per year | 53 | 53 | 53 | 75 | 53 |
| Start of benefits | 30 YOS | 30 YOS | Age 60 | Age 60 | 30 YOS |
| Incentive pay | Travel | None | None | None | None |
| **Active** | | | | | |
| Force size, baseline | 20,709 | 20,709 | 20,709 | 20,709 | 20,709 |
| Force size, new | 20,958 | 21,149 | 21,192 | 21,152 | 20,716 |
| % change | 1 | 2 | 2 | 2 | 0 |
| Current cost, baseline | 1.862 | 1.862 | 1.862 | 1.862 | 1.862 |
| Current cost, new | 1.888 | 1.910 | 1.917 | 1.913 | 1.860 |
| % change | 0 | 0 | 1 | 1 | 0 |
| Retirement cost, baseline | 0.473 | 0.473 | 0.473 | 0.473 | 0.473 |
| Retirement cost, new | 0.476 | 0.486 | 0.495 | 0.493 | 0.463 |
| % change | –1 | 0 | 2 | 2 | –2 |
| Total cost, baseline | 2.336 | 2.336 | 2.336 | 2.336 | 2.336 |
| Total cost, new | 2.364 | 2.395 | 2.412 | 2.406 | 2.323 |
| % change | 0 | 0 | 1 | 1 | –1 |
| **Reserve** | | | | | |
| Force size, baseline | 7,561 | 7,561 | 7,561 | 7,561 | 7,561 |
| Force size, new | 6,793 | 6,324 | 6,203 | 6,392 | 7,454 |
| % change | –10 | –16 | –18 | –15 | –1 |
| Current cost, baseline | 0.095 | 0.095 | 0.095 | 0.095 | 0.095 |
| Current cost, new | 0.067 | 0.051 | 0.050 | 0.052 | 0.095 |
| % change | –22 | –36 | –36 | –36 | 1 |
| Retirement cost, baseline | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 |
| Retirement cost, new | 0.026 | 0.025 | 0.020 | 0.022 | 0.028 |
| % change | 18 | 23 | 0 | 9 | 17 |
| Total cost, baseline | 0.120 | 0.120 | 0.120 | 0.120 | 0.120 |
| Total cost, new | 0.092 | 0.076 | 0.070 | 0.074 | 0.122 |
| % change | –14 | –24 | –29 | –27 | 4 |

NOTE: Costs are in billions of dollars; percentage changes in costs are changes in costs per member.

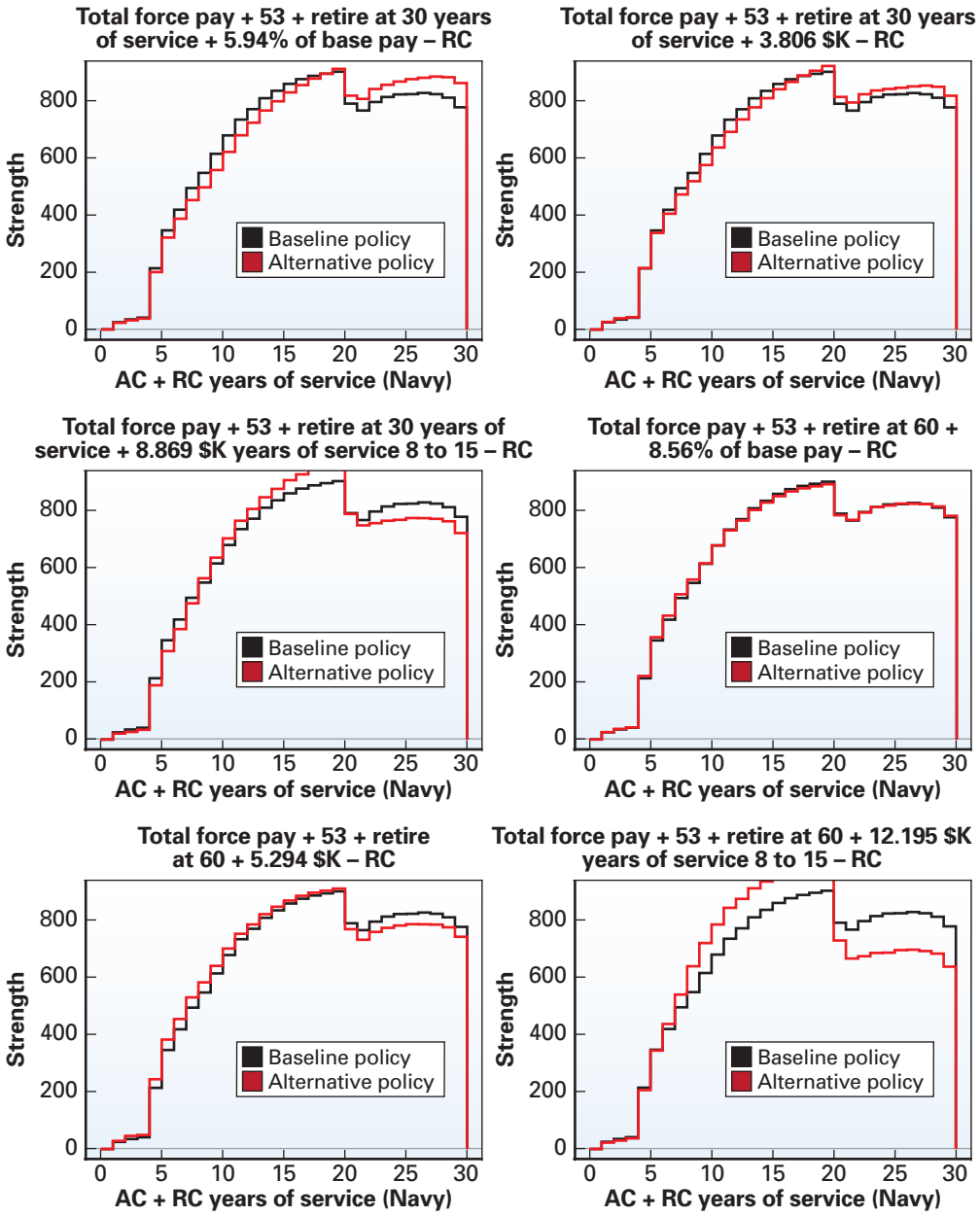


**Figure B.5. Reserve Force Size Simulations: Navy Officers**

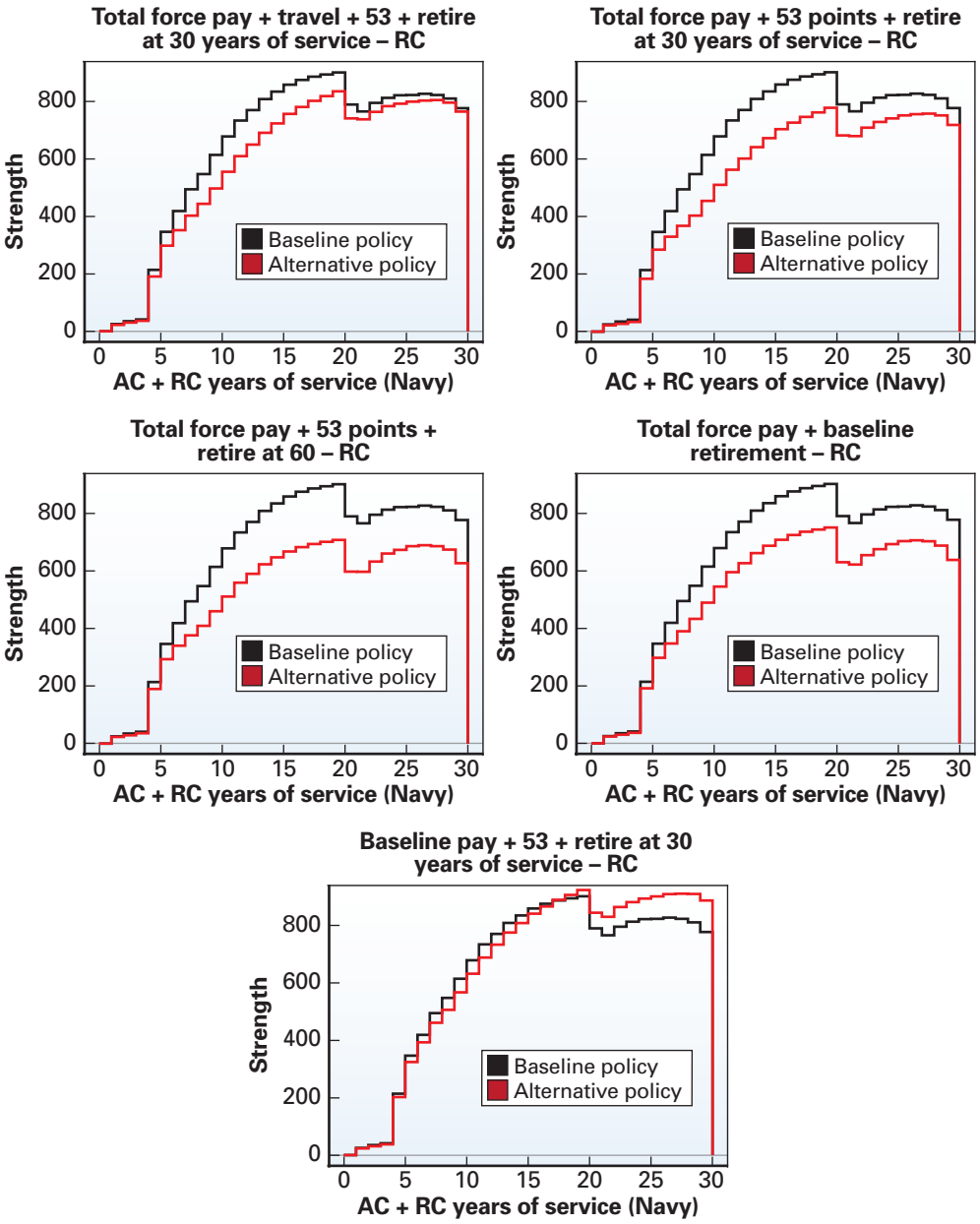


**Figure B.5—Continued**

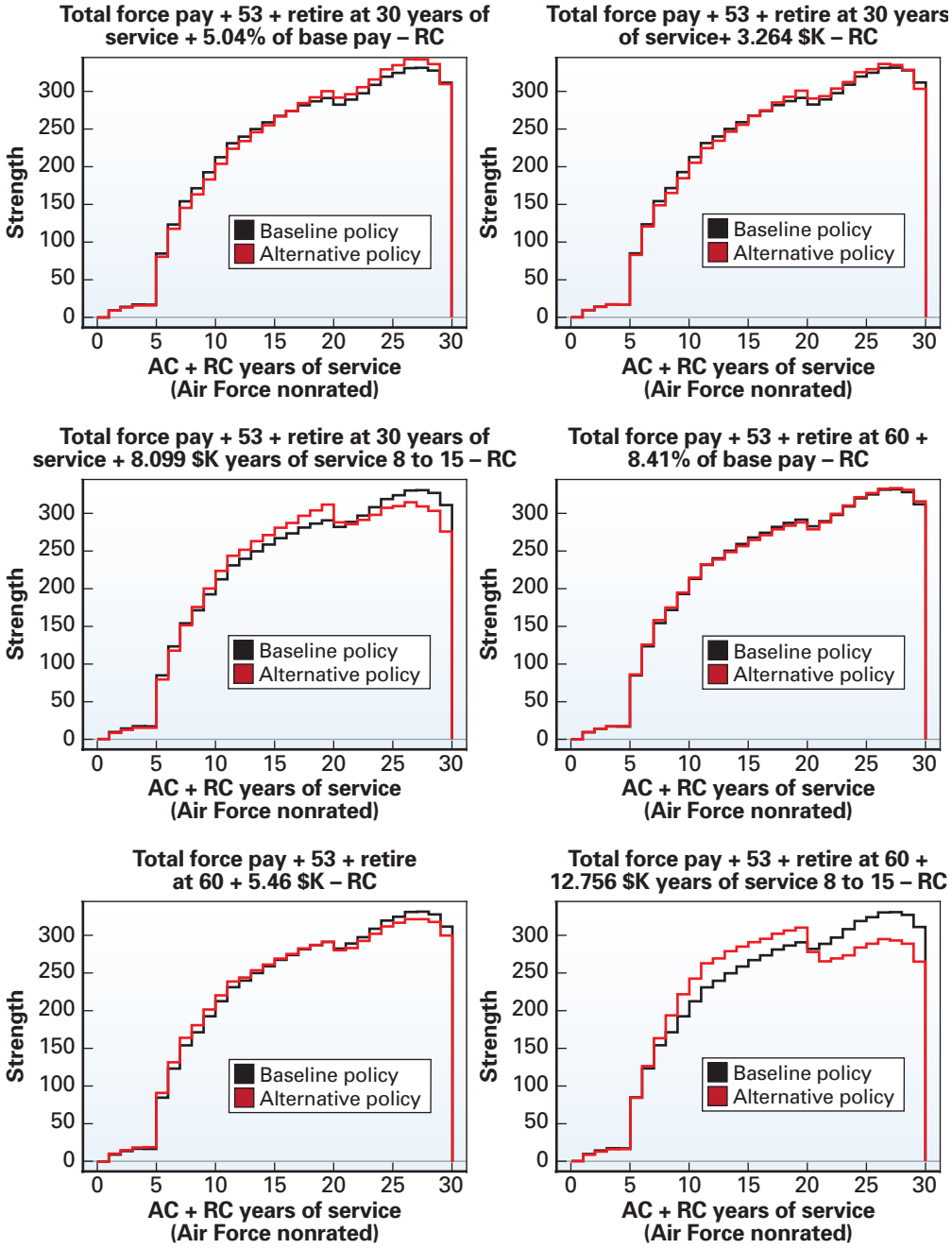


**Figure B.6. Reserve Force Size Simulations: Air Force Officers**

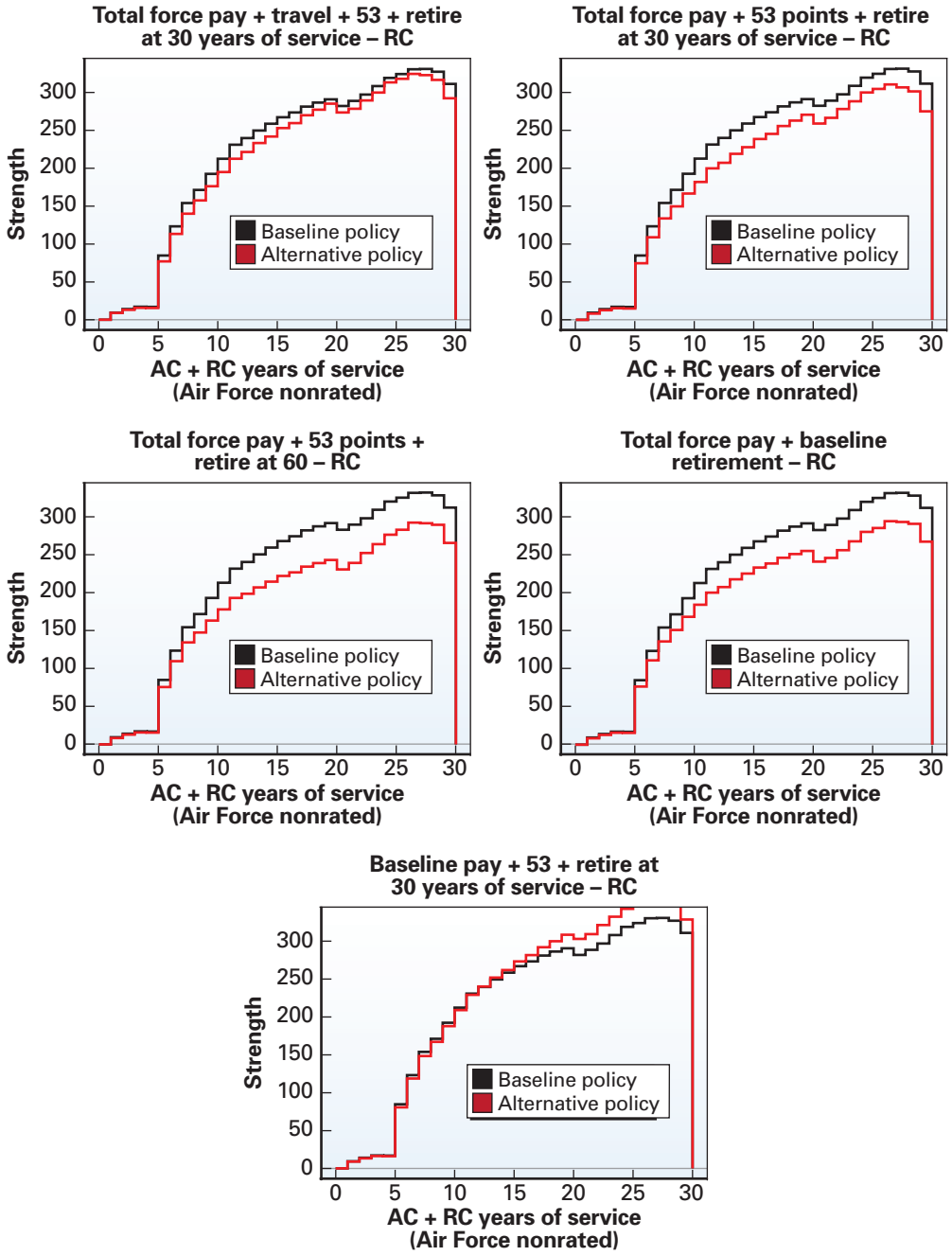


**Figure B.6—Continued**

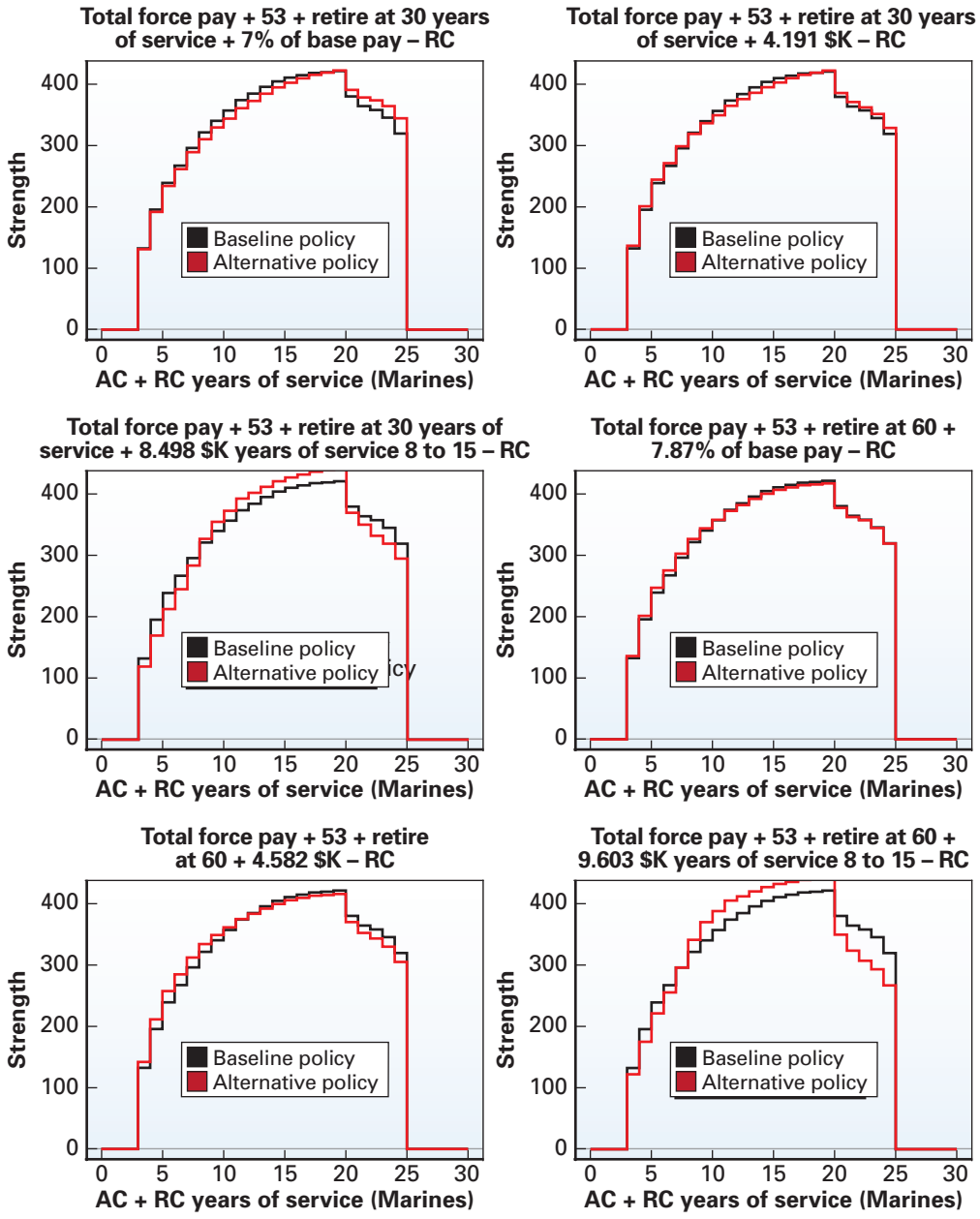


**Figure B.7. Reserve Force Size Simulations: Marine Corps Officers**

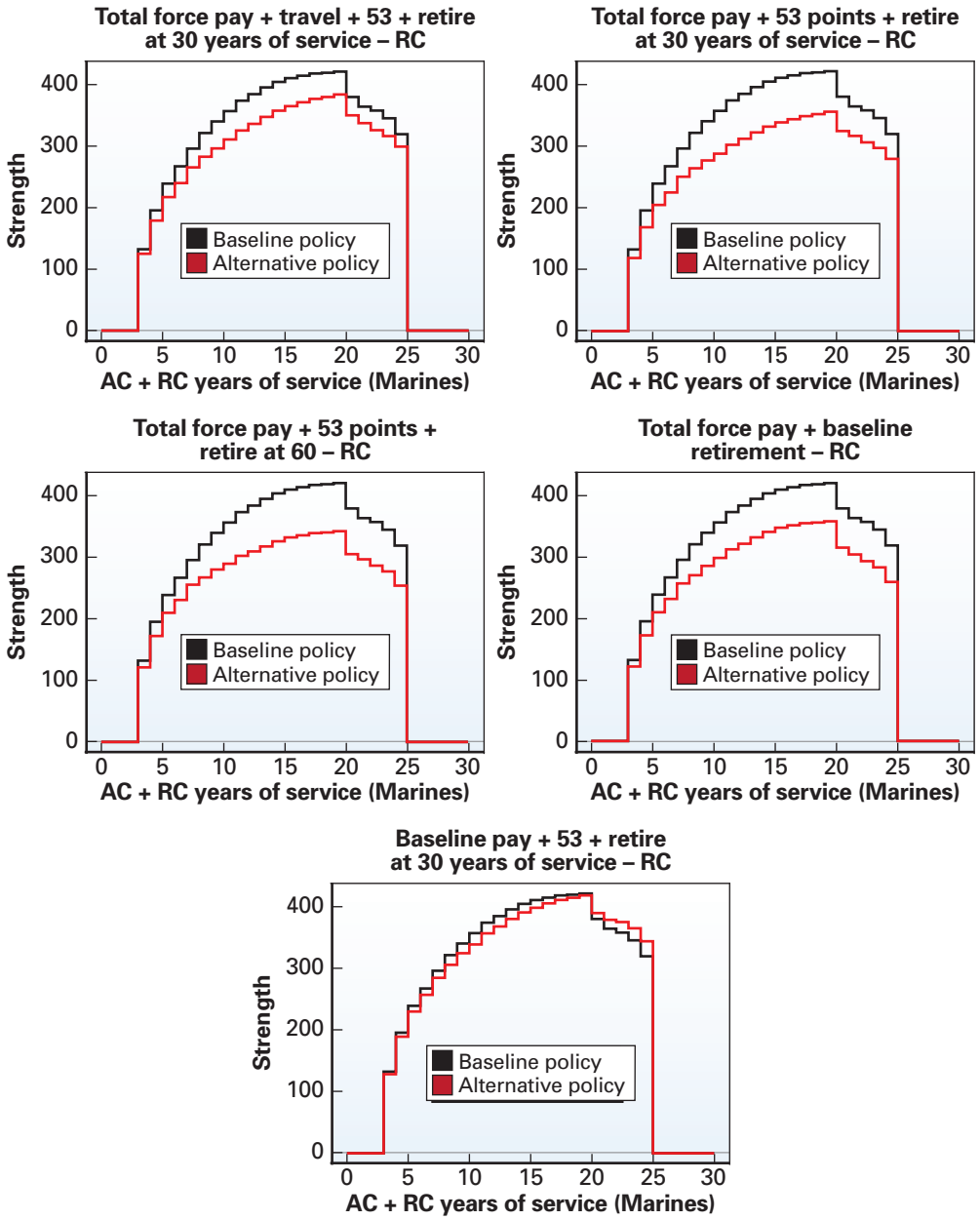


**Figure B.7—Continued**

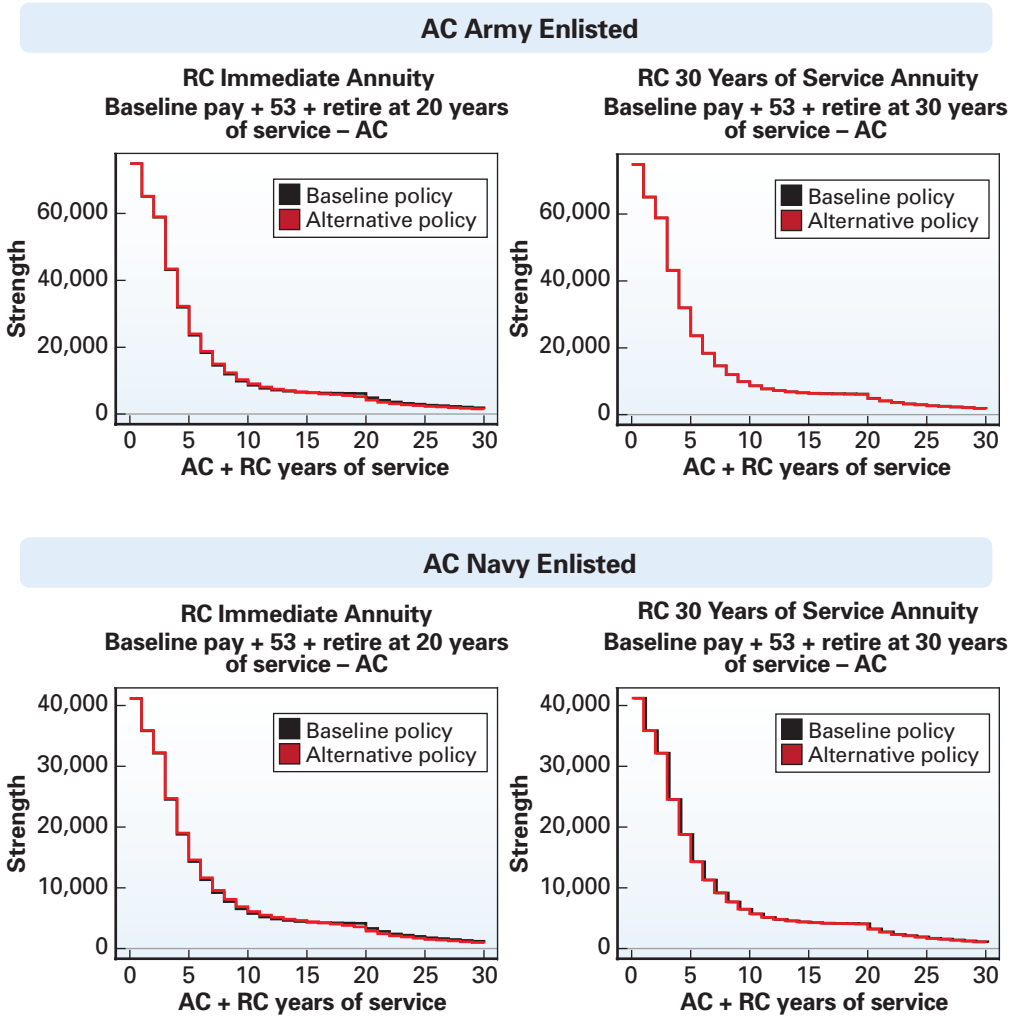


**Figure B.8. Active Force Size Simulations for Enlisted Personnel by Service: Immediate Annuity for RC Members Versus 30-Year Retirement Eligibility**

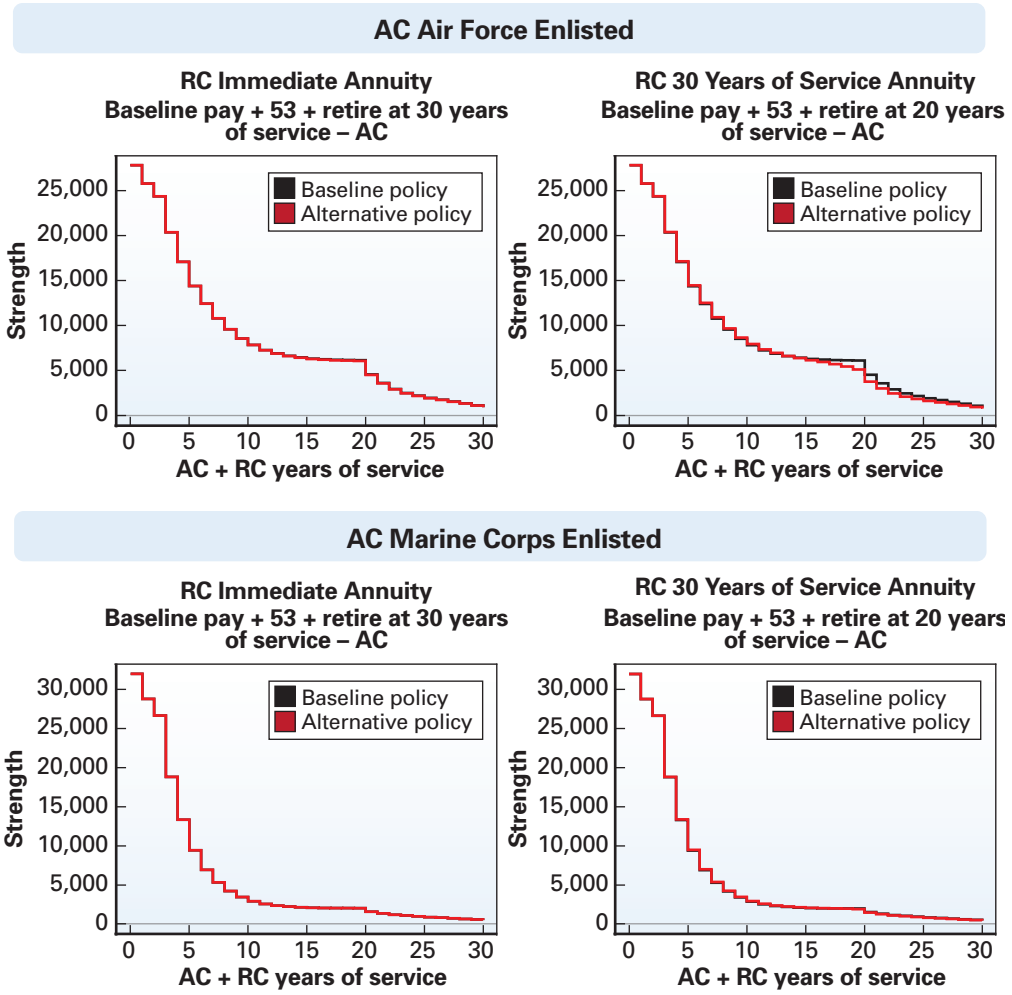


**Figure B.8—Continued**

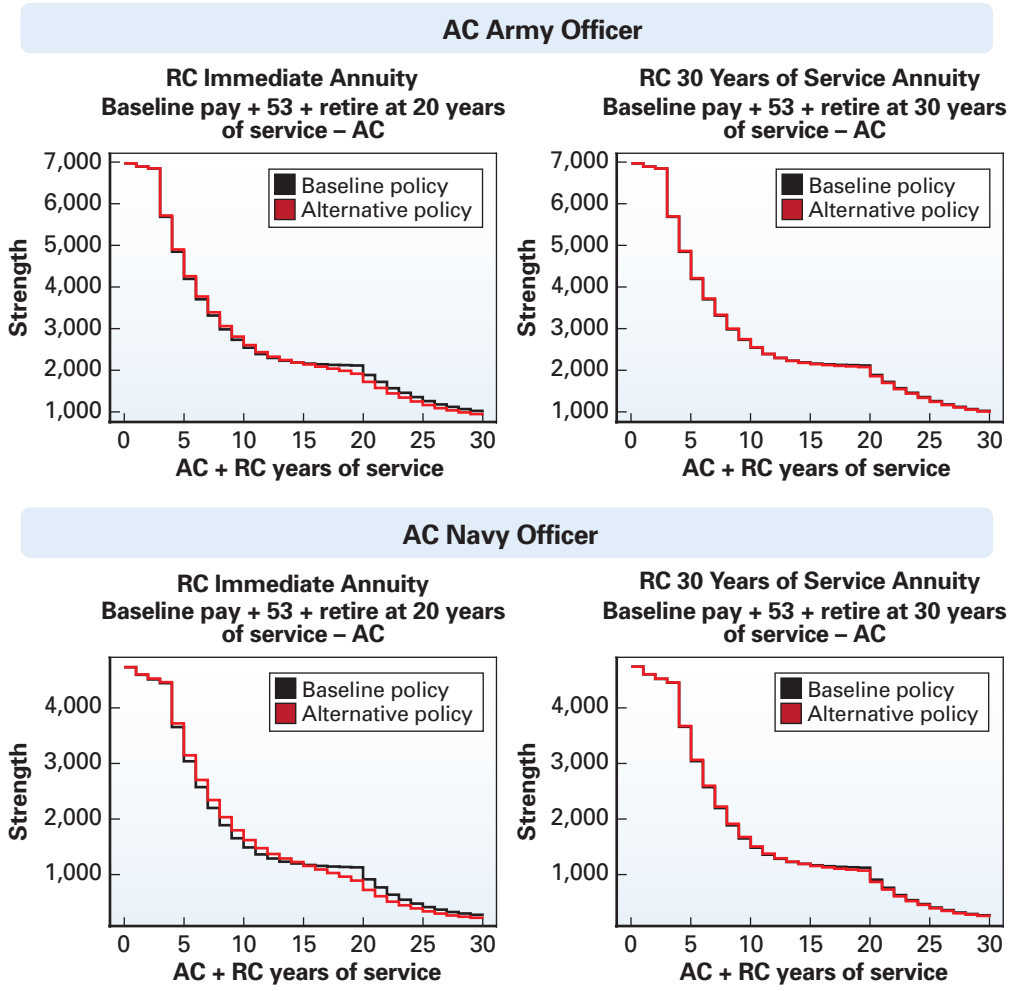


**Figure B.9. Active Force Size Simulations for Officers by Service: Immediate Annuity for RC Members Versus 30-Year Retirement Eligibility**

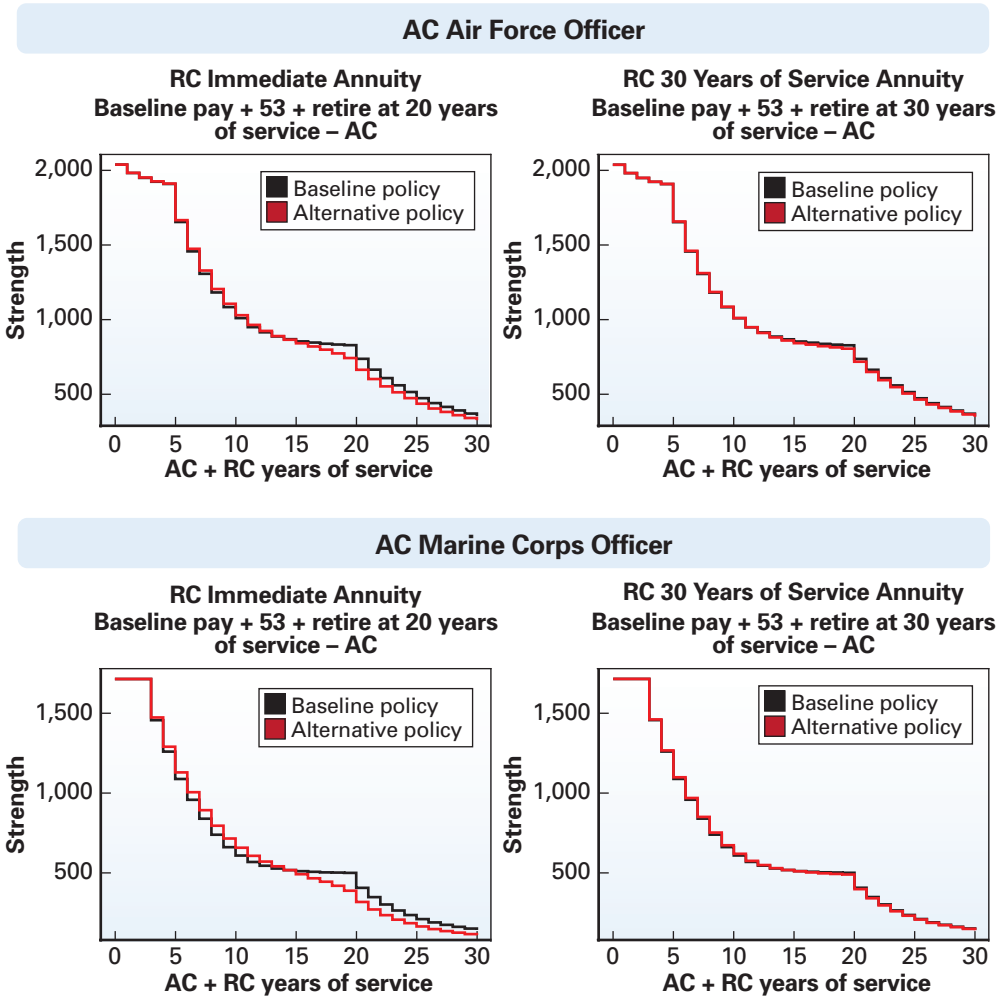


**Figure B.9—Continued**

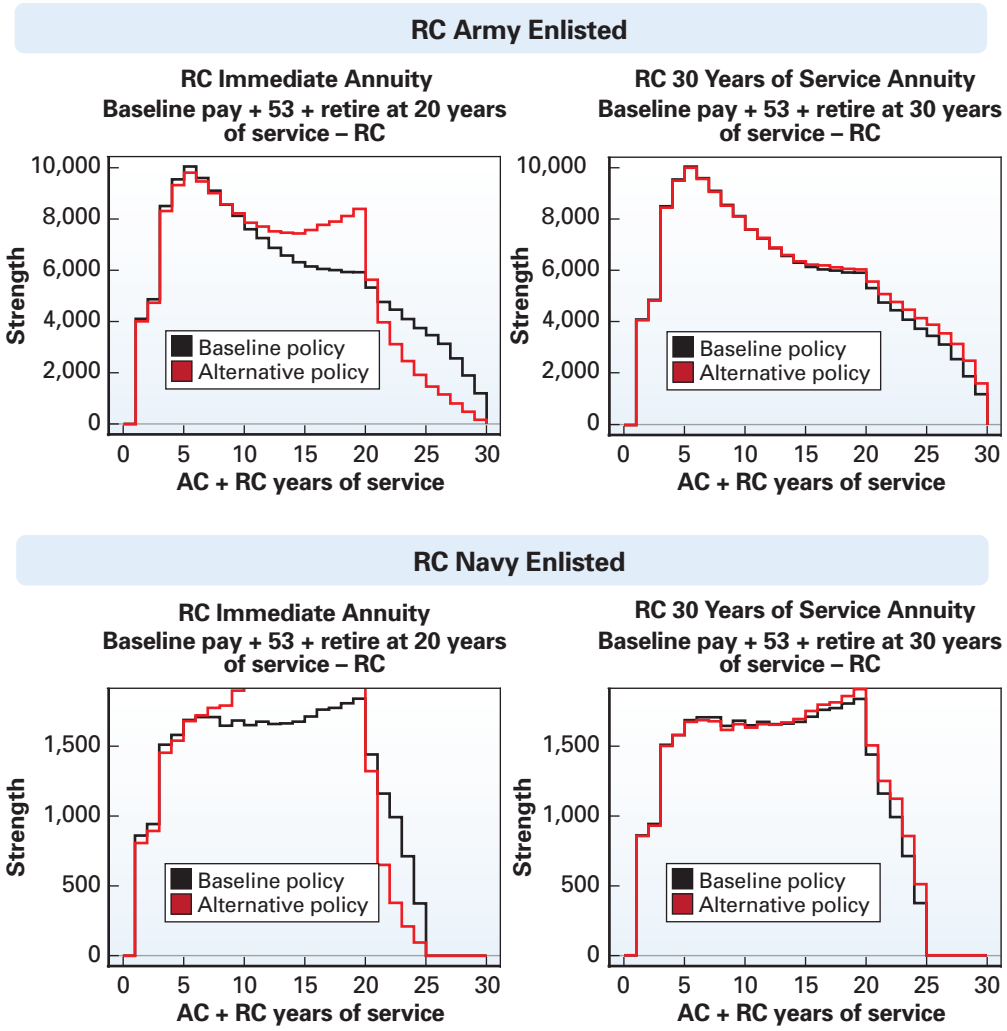


**Figure B.10. Reserve Force Size Simulations for Enlisted Personnel by Service: Immediate Annuity for RC Members Versus 30-Year Retirement Eligibility**

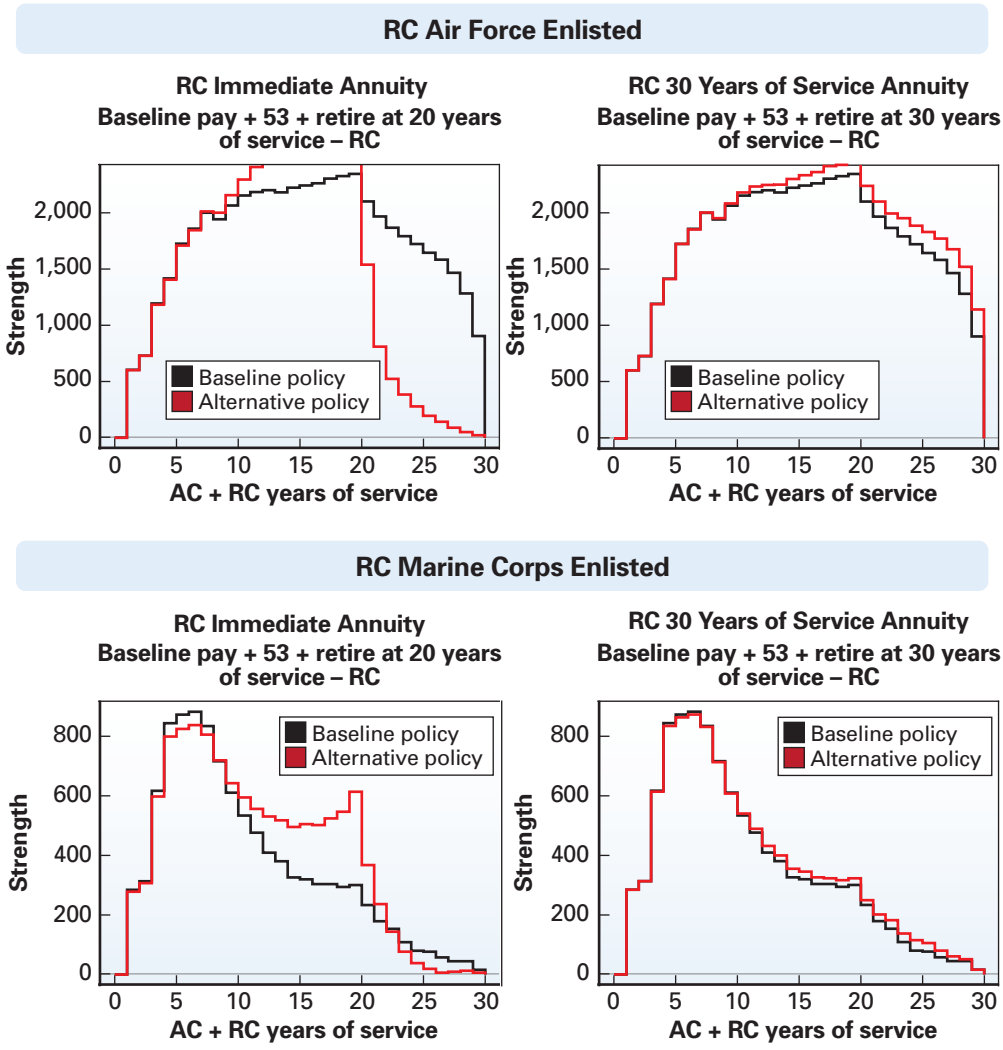


**Figure B.10—Continued**

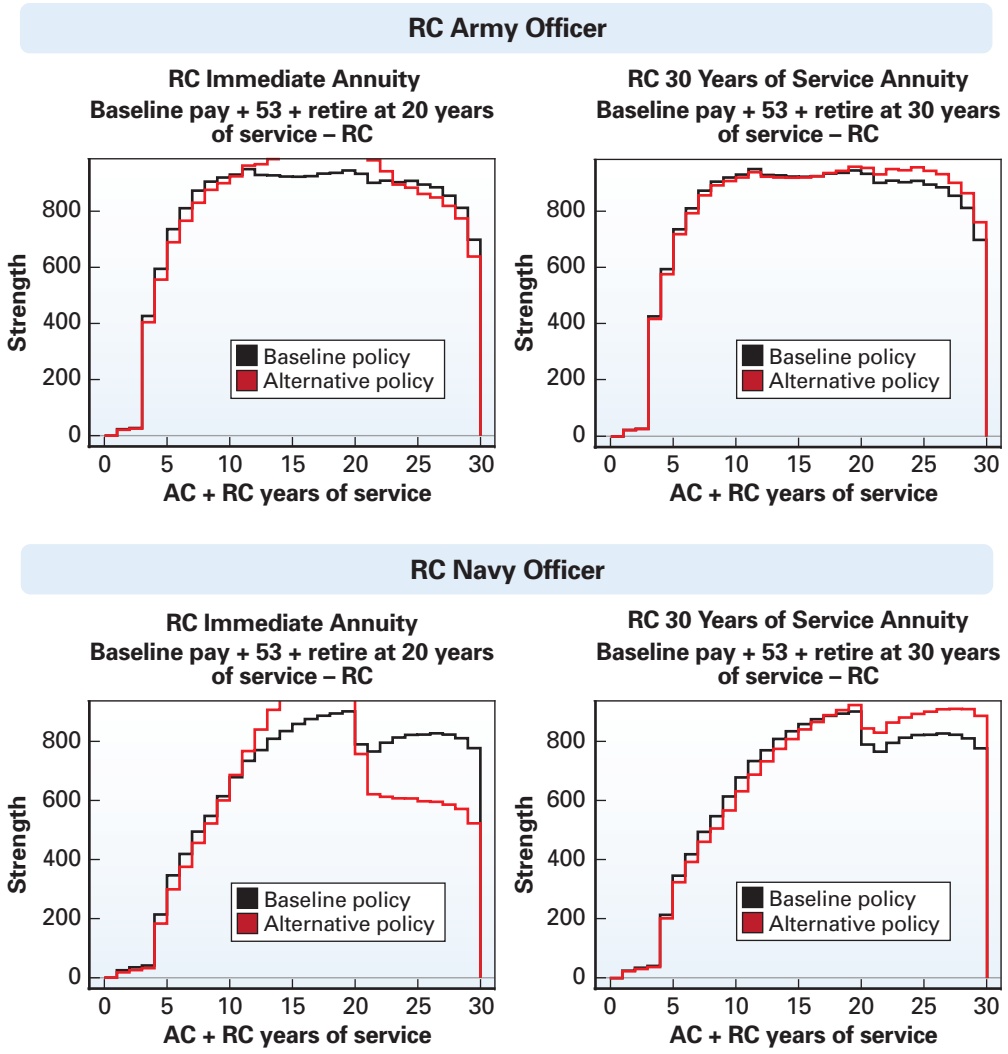


**Figure B.11. Reserve Force Size Simulations for Officers by Service: Immediate Annuity for RC Members Versus 30-Year Retirement Eligibility**

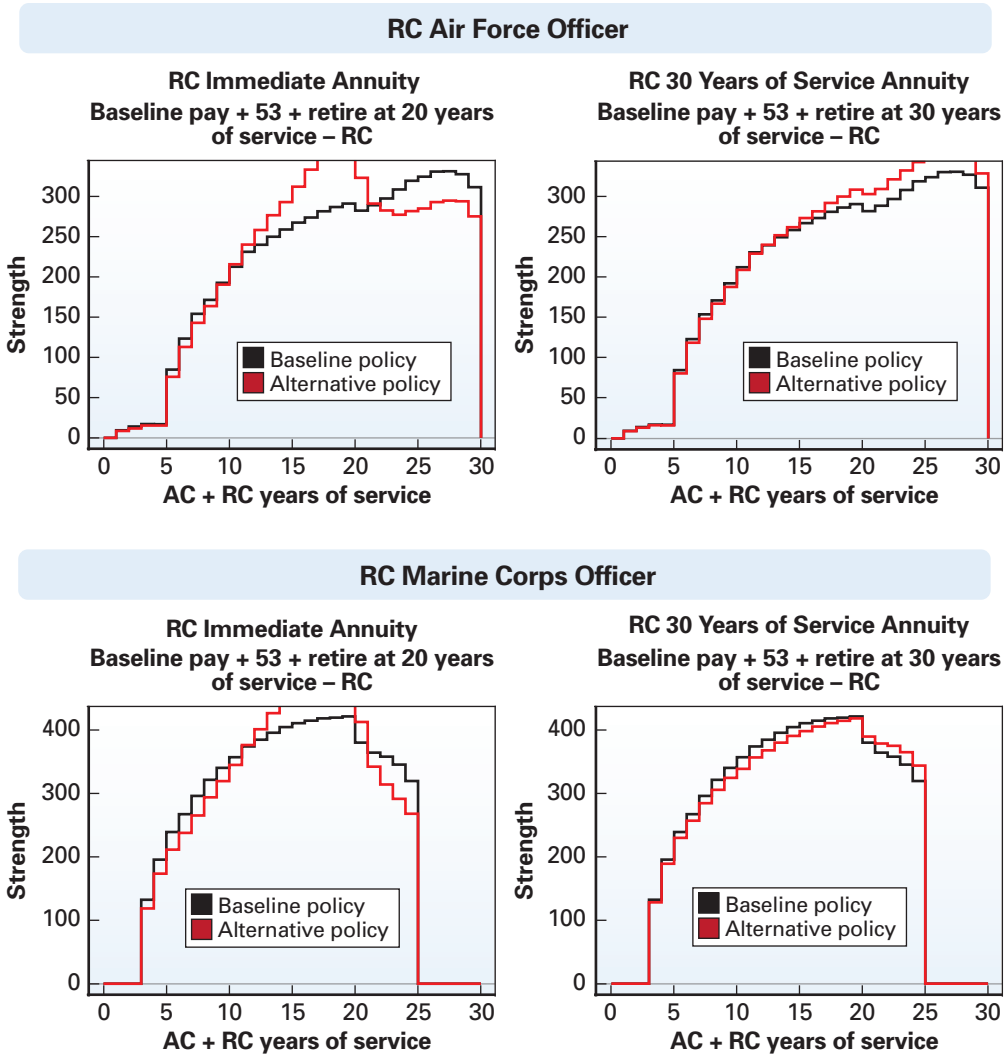


**Figure B.11—Continued**

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