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# An Analysis of the Effect of the Continuation Pay Bonus on Active Duty Marine Personnel

March 2024

**Capt Cullen M. Martin, USMC**

Thesis Advisors: Dr. Sae Young Ahn, Assistant Professor
Dr. Marigee Bacolod, Associate Professor

Department of Defense Management

**Naval Postgraduate School**



Prepared for the Naval Postgraduate School, Monterey, CA 93943.




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# ABSTRACT

As part of its efforts to modernize the military retirement system in 2018, the Department of Defense introduced the Blended Retirement System. One critical component of this new retirement system is the continuation pay (CP) bonus. The CP bonus is a retention incentive and force shaping tool offered to Marines at 12 years of service. Taking the CP bonus obligates a four year pay back. In this thesis, I explore the impact of the Marine Corps' bonus multiplier change from 2.5x to 5.0x beginning in 2023. Using data from the Total Data Force Warehouse from 2018 to 2023, I find a 5.9 percentage point increase in the likelihood of eligible Marines taking the CP bonus when the multiplier was changed from 2.5x to 5.0x. Employing linear probability models, I also find that Marines who are female, enlisted, married, and a minority are more likely to take up the CP bonus. Furthermore, I find that above average performers are more likely to take the CP bonus and demonstrate greater sensitivity to the change in multiplier rate. Lastly, I calculate the true cost of the multiplier rate change at $20,819 per year for enlisted Marines and $72,430 for officers.

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# LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| BRS | Blended Retirement System |
| CP | Continuation Pay |
| DRM | Dynamic Retention Model |
| EDIPI | Electronic Data Interchange Personal Identifier |
| FITREP | Fitness Report |
| LPM | Linear Probability Model |
| NDAA | National Defense Authorization Act |
| QRMC | Quadrennial Review of Military Compensation |
| SRB | Selective Retention Bonus |
| TM2030 | Talent Management 2030 |
| TSP | Thrift Savings Plan |
| YOS | Years of Service |

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# I. INTRODUCTION

## A. BACKGROUND

The 2016 National Defense Authorization Act (NDAA) called for an update to the traditional military retirement system to be implemented in 2018 (National Defense Authorization Act, 2016). This new system, known as the Blended Retirement System (BRS), replaces the legacy, or "High 3" retirement system and offers more flexibility. Marines serving as of December 31, 2017, were grandfathered into the legacy retirement system, while Marines with less than 12 years of service (YOS) as of January 1, 2018 were given the option to switch to the BRS. The BRS continues to serve as the current military retirement system. In February 2022, the Marine Corps published MARADMIN 084/22, stating the continuation pay (CP) bonus monthly multiplier rate would increase from 2.5x to 5.0x in 2023. (U.S. Marine Corps, 2022).

The BRS introduces a modern approach to retirement with a defined benefit pension, defined contribution to the Thrift Savings Plan (TSP), and CP bonus. It modifies the legacy system by lowering the defined benefit multiplier from 2.5x to 2.0x, meaning at 20 YOS a pension is worth 40% of the average basic pay instead of the usual 50%. Additionally, the BRS allows for a partial lump sum payment upon retirement, with options to receive 50% or 25% of the pension's present value up to age 67. The purpose of this lump sum is to assist Marines with significant financial needs at retirement, such as buying a house or starting a business. At age 67 the full pension resumes. The defined contribution aspect enhances retirement savings through TSP contributions by including automatic and matching contributions up to 5%, a feature not available in the legacy system. These matching contributions are available in both traditional and Roth options. The BRS aims to offer flexibility and portability, catering to both career and non-career military personnel.

The final differentiating factor between the legacy system and the BRS is the CP bonus. The CP bonus is a retention tool designed to incentivize retention within mid-career Marines and is based on a multiplier of monthly pay at 12 YOS. Initially, the

NDAA set the minimum multiplier to 2.5x and the maximum to 13x. The Marine Corps opted for the minimum; a 2.5x multiplier of monthly basic pay, for active component Marines. This multiplier remained constant until it was announced via MARADMIN in February 2022 that it would be increased to a 5.0x multiplier starting in 2023. Accepting the CP bonus obligates a Marine to an additional four YOS. While not intended to replace specific military occupational specialty incentives, the CP bonus serves to increase overall retention, targeting a critical point in a Marines' career and aligning with the BRS's broader objective to provide a more flexible retirement system.

The Marine Corps is moving towards a more mature force. This is identified in Talent Management 2030 (TM2030) by prior Commandant of the Marine Corps, General Berger, and reiterated by his successor, General Smith. The CP bonus aligns with TM2030's aim to "incentivize the retention of the right numbers of the most capable" (Berger, 2021, p.18).

## B. RESEARCH PURPOSE

The purpose of my research is to analyze the CP bonus take up rates with the 2.5x multiplier and 5.0x multiplier. I also analyze different demographic groups' sensitivity to the change in multiplier rate. Lastly, I analyze the performance of Marines who take up the CP bonus.

## C. RESEARCH QUESTIONS

- How do the CP bonus take up rates respond to the change in multiplier rate?
- Are there demographic groups particularly more sensitive to the multiplier rate change?
- Do fitness report (FITREP) scores affect the decision to take up the CP bonus?

## D. IMPORTANCE OF RESEARCH

The Marine Corps experienced a significant policy shift by increasing the CP multiplier in 2023. My research leverages the opportunity presented by this policy shift to examine how increasing the CP bonus multiplier affects take up rates. My analysis aims to provide insights into the effectiveness of the CP bonus as a tool for retention.

Under TM2030, the Marine Corps aims to develop a force characterized by greater seniority. (Berger, 2021). First term Marines currently make up most of the Marine Corps and retention models are characterized by continuous turnover within junior ranks. TM2030 marks a strategic shift, emphasizing the retention of high performing Marines over the recruitment of new Marines. This approach positions the CP bonus as a crucial incentive, particularly aimed at mid-career Marines. By offering the CP bonus at the 12 YOS mark, the goal is to encourage Marines to commit to an additional four years of service, thereby filling the vital mid-career billets. Furthermore, as the population of Marines enrolled in the legacy retirement system decreases and those participating in the BRS increases, the impact of the CP bonus is expected to increase significantly.

Answering these research questions and understanding the impact the CP bonus has on retention will help align career milestones and better complement the current special and incentive pays the Marine Corps offers. Additionally, this research can inform adjustments to the YOS eligibility or further modifications to the multiplier to effectively influence different groups of Marines and enhance retention behavior.

## E. BENEFITS AND LIMITATIONS

To better understand how adjusting the CP bonus affects retention, it is imperative for leadership to analyze the impacts thoroughly, thereby facilitating more strategic decisions in recruitment and retention within the Marine Corps. For instance, if an increase in the CP bonus multiplier significantly enhances the likelihood of Marines accepting the bonus and the Marine Corps aims to retain a specific percentage of its personnel, adjusting the CP bonus multiplier to the necessary level to achieve this target becomes feasible. Furthermore, recognizing the sensitivity of certain demographic groups

to changes in the multiplier rate enables the Marine Corps to anticipate higher acceptance rates from these groups. In contrast, other demographic groups might respond more favorably to alternative forms of incentives. This nuanced understanding allows for tailored approaches in retention strategies, ensuring the Marine Corps effectively meets its force shaping objectives.

The limitation to my research is the abbreviated time period available for analysis. While the BRS is five years old, the CP bonus multiplier remained unchanged until 2023. The number of observations limits my research and analysis. Furthermore, there has only been one multiplier rate change. With each subsequent change to the CP bonus multiplier rate, the Marine Corps can conduct more research to understand how it affects take up rates and sensitivity.

## F. ORGANIZATION OF REPORT

I organize this thesis in five chapters. Chapter I is the introduction, which covers the background of research and changes in policy leading up to this thesis. Chapter II is the literature review, which covers current literature surrounding the topic of CP bonus, BRS, TSP, and other work consisting of retention incentives. Chapter III covers the data cleaning process along with the methodology for my research. Chapter IV contains my research and findings. Chapter V contains my conclusion and recommendations for future research.

# II. LITERATURE REVIEW

## A. INTRODUCTION

This chapter begins by describing when and why the BRS was implemented, and the initial suggested CP rates. It also discusses the opt in rates of those who were given the choice of opting into BRS or staying in the legacy retirement system. Next, the chapter describes current research that has been conducted on the success, or lack thereof, of the BRS since implementation, as well as recommendations for improvement. The chapter then delves into how well other forms of bonuses or retirement plan changes have impacted retention in the past. Lastly, this chapter discusses service member financial education and the importance of understanding that current planning can lead to future success.

## B. EARLY RESEARCH

Leading up to the BRS implementation, Asch et al. (2017), of the RAND Corporation, analyzed the optimal multiplier needed to retain service members in all branches of the military. Using a stochastic dynamic programming model, called the Dynamic Retention Model (DRM), they estimated the effects of the BRS on retention rates. The DRM is a tool used to simulate and predict service members' retention behavior under different compensation and pension systems. It holds the overall structure of a military career, like progression of pay and promotions, constant. By forecasting how changes in the retirement system might influence service members' decision to stay in or leave the military, the DRM found that the BRS would likely have positive effects on retention rates, particularly for mid-career servicemembers due to the added CP bonus that came with the implementation of the BRS. Asch et al. found that a CP multiplier rate of 3.4x monthly pay for enlisted Marines, and 9.71x monthly pay for officers offered at 12 YOS was determined as best fit for the size and retention profile of the Marine Corps. Though this research was published prior to the BRS implementation, the Marine Corps still opted for a 2.5x multiplier for both enlisted and officers.

Prior to BRS implementation, Moynihan (2016) analyzed how manpower levels were affected by a modernized retirement system. He administered a survey via LimeSurvey to active-duty Marines within I Marine Expeditionary Force to compare their expected retention under the legacy retirement system versus the new BRS. He used a Kaplan-Meier survival analysis and probit regression models for expected lengths of service and various probit regression models to evaluate retirement decisions (Moynihan, 2016). In his work, Moynihan found that under the BRS, enlisted Marines experienced more retention until year 15, when the legacy retirement system showed higher retention. Officers, on the other hand, were retained better under the legacy retirement system for the duration of a 20-year career. The major shortcoming of this study was the small participant sample in comparison to the potential survey population: "The sample size of the survey was 41,615 Marines. Of the sample size, only 1,152 Marines participated in the survey" (Moynihan, 2016, p. 25). The Marines who did respond might have had a higher inclination to stay in the Marine Corps, potentially skewing the expected retention numbers. Additionally, the likelihood of retention could vary among Marines stationed in different geographic regions.

In one of the first studies of the BRS post implementation, Brockert (2019) studied the transition from the legacy retirement system to the BRS and identified factors that influence Marines to opt-in or opt-out of the BRS. The opt-in period was from January 1, 2018, to December 31, 2018. In his work, Brockert (2019) separated eligible Marines into three categories:

> The first category is comprised of servicemembers who joined the military on January 1, 2018, or later; they were automatically enrolled in the BRS. The second category is comprised of servicemembers with twelve or more years of service as of December 31, 2017; they were automatically grandfathered under the legacy High-3 retirement system. The third and final category is comprised of servicemembers with less than 12 years of service as of December 31, 2017; they were provided the option of enrolling in the BRS or remaining under the legacy High-3 retirement plan. (p. 2)

In his work, Brockert (2019) found that 49.29% of eligible Marines opted into the BRS, 27.51% opted out, and 23.2% did not register a choice in Marine Online. He also

found a positive correlation between opting into the BRS and several factors, including an increase in the number of dependents, recent re-enlistment, recent promotion, younger age, career designation, and having a higher cognitive ability. Brockert emphasized the importance of financial literacy and education for service members, particularly in the context of retirement planning and recommended that the military provide more resources and training to help service members make informed decisions about their retirement options. The primary shortcoming of this study was that 23.2% of eligible Marines failed to make an opt in decision, which skewed the findings.

In the report of the Thirteenth Quadrennial Review of Military Compensation (QRMC), the third chapter was dedicated to analyzing the BRS and CP bonus. Per the QRMC,

> Growing criticism of this plan has focused on three concerns: (1) the one-size-fits-all nature of the plan made it an inflexible force-shaping tool, (2) the plan was inefficient because service members, who are generally younger, place a higher value on current income over deferred income, and (3) the legacy system was inequitable because most officers and enlisted personnel do not reach the 20 years of service required to receive benefits. (U.S. Department of Defense, 2020, p. 23)

The report focused its analysis on contribution patterns of participants who were automatically enrolled into the BRS and participants who opted into the BRS. By analyzing data from the Defense Data Manpower Center on TSP contributions, the QRMC found E-5s and higher were more likely to contribute over 5% to their TSP, while those junior in rank contributed less. The report also emphasized service members who do not complete 20 YOS would leave the service with more in the BRS than they would have had in the legacy retirement system.

In June 2023 the Marine Corps sponsored the BRS Symposium, which consisted of researchers, panelists, active-duty military officers, and various compensation experts. The BRS symposium came together to evaluate the health and future viability of the modern all-volunteer, all-recruited U.S. military (U.S. Marine Corps, 2023). The BRS Symposium report highlighted that the BRS is "highly competitive when compared to civilian alternatives" and "rather than comparing the BRS to the legacy retirement

system, more emphasis should be placed on comparing it to civilian alternatives" (U.S. Marine Corps, 2023, p. 1). The BRS Symposium determined that the "military retirement system alone will not ever inspire the 'irrational call to service,' upon which the all-volunteer force depends on," but that the BRS can, however, be "highly adaptive and agile to market conditions" (U.S. Marine Corps, 2023, p. 1). The consensus at the BRS Symposium was that junior Marines tend to undervalue the generosity of military pay and benefits, and they apply a very high discount rate to the value of retirement benefits. The BRS Symposium report concluded that "any successful effort to better explain the relative generosity of the BRS and other retirement benefits is likely to cause a greater proportion of service members (and their spouses) to remain in service until full retirement vesting" (U.S. Marine Corps, 2023, p. 4).

## C. HOW RETIREMENT PLANS AND BONUSES AFFECT RETENTION

Cunha and Menichini (2014) explored the retirement plan decisions of about 90,000 service members in the U.S. Military when High-3 retirement plan participants were offered the choice to switch to the Redux retirement plan. The Redux was offered 23 years ago under NDAA 2000 but is still an important topic to study because it involved many service members making choices over large sums of money. They examined the relationship between retirement plan choice and personal discount rates. Cunha and Menichini found that individuals who choose the Redux plan tended to be younger, have lower levels of education, and have shorter expected careers in the military. These individuals also tended to have higher personal discount rates and placed less value on future benefits compared to present benefits. Cunha and Menichini found that the government saved money by offering the Redux plan, but the savings were relatively small compared to the potential costs of reduced retention and decreased morale among military personnel. They concluded that "while we show in the vast majority of cases the present value of High-3 is considerably larger than that of the Redux, more than 40 percent of service members in our database chose Redux" (Cunha & Menichini, 2014, p. 16). They also concluded the likelihood of choosing Redux was "significantly related to most observable demographic characteristics" (Cunha & Menichini, 2014, p. 16).

Runnells (2023) studied another bonus offered in the Marine Corps called the Selective Retention Bonus (SRB). The SRB differs from the CP bonus because it is offered only to select MOSs when Marines reenlist, as opposed to being offered to every Marine exactly at 12 YOS, like the CP bonus. In his work, Runnells (2023) investigated the impact of the SRB on the retention of talented Marines in the Marine Corps. He used data from the Marine Corps Manpower Management Enlisted Assignment System and ran a Linear Probability Model (LPM) to analyze the patterns and correlations with reenlisting and the SRB. Runnells found that the SRB had a positive impact on the retention of talented Marines in the Marine Corps. For the purposes of this study, talent was broken down into four tiers based on various scores and was calculated by the following formula.

- RawScore = Physical Fitness Test + Combat Fitness Test + Rifle Proficiency * 100 + Conduct * 100 + Marine Corps Martial Arts Level * 10.

Runnells found that an increase in the SRB correlated with an increase in the total quantity and quality of Marines who reenlisted and that for "every $10,000 that the Marine Corps offers eligible Marines correlated to an 8.1 percentage point increase in the probability of reenlistment for the Marines in the top 10 percent" (Runnells, 2023, p. 2). He also found that "every $10,000 that the Marine Corps offers to eligible Marines correlates with tier 1 Marines reenlisting 18 days earlier than tier 1 Marines not eligible for a bonus" (Runnells, 2023, p. 2). Runnells recommended that the Marine Corps continue to use the SRB as a tool for retaining talented Marines and suggested that future research should focus on the effectiveness of different bonus structures and the impact of the SRB on other aspects of talent management in the Marine Corps.

Cavanaugh (2018) studied the intricacies of the TSP in relation to the BRS and the legacy retirement system. His research sought to discern the pivotal factors that influence eligible service members when deciding between the legacy HIGH-3 system or the BRS. In his work, Cavanaugh used a voluntary and anonymous 37-question survey administered via LimeSurvey. The survey was open for one week, from September 28,

2017, to October 6, 2017, and was administered to approximately 1,305 active duty students at the Naval Postgraduate School. The responses were categorized into demographics, resources, general financial knowledge, and TSP-specific scenarios. The analysis was drawn from both descriptive statistics and insights from existing literature. His key findings suggested that not all service members possess in-depth financial knowledge and understanding the TSP is critical for service members to optimize their future financial standing. Cavanaugh emphasized the significance of continuous financial education and advocating for a reevaluation of training topics if current financial knowledge remains stagnant. He also encouraged a thorough analysis of the TSP to ensure its sustained relevance for uniformed service members. Cavanaugh concluded by promoting the TSP as a valuable tool for service members and recommended future studies to explore its broader implications within the military financial framework.

## D. CONTINUATION PAY BONUS

While there has been plenty of work on the BRS, little research has been done on the effect of the CP bonus in regard to retention. The multiplier rate change from 2.5x to 5.0x was offered to entice experienced Marines to stay in the service, yet there is no study quantifying the effect of these changes on retention among Marines besides the RAND study by Asch et al. (2017), which was written prior to the BRS implementation and multiplier rate changes. Understanding the sensitivity that different groups of Marines had to this multiplier rate change will help guide leadership in making future multiplier rate changes as retention ebbs and flows.

This thesis attempts to analyze whether the Marine Corps is retaining Marines with the qualities that align to those we are striving to retain under TM2030. Further multiplier rate changes or even time in service requirements surrounding the CP bonus will likely occur as leadership seeks to shape the force. This thesis will serve as a reference to the sensitivity different groups of Marines experience with changes to the CP bonus.

## E. SUMMARY

In this literature review, the focus is on understanding the BRS, its impact on service member retention, and the role of financial incentives and education in the U.S. Marine Corps. Key studies, such as those by Asch et al. (2017), Moynihan (2016), and Brockert (2019), provide insights into how the BRS affects service lengths and retention decisions. They reveal that the BRS, particularly with its CP bonus, is likely to positively affect retention rates, especially for mid-career servicemembers. The research also highlights that service members' decisions are influenced by various factors, including financial literacy, the attractiveness of immediate benefits over future gains, and personal circumstances such as the number of dependents and career milestones.

The studies further illustrate that while the BRS is competitive, it is often undervalued by junior service members who prioritize current income over deferred benefits. This underscores the importance of effective communication and education about the BRS's benefits to enhance its perceived value. Additionally, the research indicates that changes in retirement systems, like the shift from the legacy system to the BRS, can significantly impact manpower levels and retention patterns, with enlisted Marines and officers showing different responses to these changes.

Other aspects of military compensation, such as the SRB and TSP, are also explored, indicating their respective roles in influencing retention and financial decision-making. These findings suggest that more nuanced approaches and continuous adaptation are essential in military compensation policies to retain talent effectively. This review provides a foundation for expecting detailed insights into the effectiveness of the CP bonus and its role in the broader context of military retention and compensation strategies.

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# III. DATA AND METHODOLOGY

## A. DESCRIPTION OF DATA

Manpower and Reserve Affairs provides the data for this research. I combine three separate data extracts for analysis. The first dataset contains the decision of individual Marines to take or reject the CP bonus. The primary variable consists of a binary zero or one, indicating whether the Marine takes the CP bonus. The first dataset also identifies electronic data interchange personal identifier (EDIPI), the date at which a Marine was eligible to receive the bonus, their rank, what component they serve in, and a reserve component code. I retain four variables and 5,420 observations of Marines eligible for the CP bonus from this first dataset.

The second dataset contains all the demographic variables I use for my research. This includes EDIPI, age, sex, marital status, race, ethnicity, geographic location code, expiration of contract, number of dependents, and date of present rank. I exclude variables I did not need for this analysis and reduce this second dataset to nine variables and 4,562 observations.

The third dataset contains FITREP scores for the same Marines in my first and second datasets. This dataset contains EDIPI, date of rank, grade during report, primary MOS, occasion from, occasion to, occasion code, duty type, special case code, recommend for promotion, physical fitness test code, qualification code, scores for all the traits Marines are graded on for FITREPs, average score at processing, high at processing, number of reports at processing, reporting senior average, reporting senior high, and reporting senior report quantity. I exclude many variables that I do not use for analysis. This third dataset has eight variables and 79,210 observations. This dataset has more observations than the prior two because every Marine has multiple FITREPs.

After merging my three datasets by EDIPI, I address missing data and inconsistencies. Due to the data pull occurring in October of 2023, 173 Marines eligible for the CP bonus in November and December of 2023 are excluded. Additionally, the data pull does not capture 858 active-reserve component Marines because they are coded

differently. This leads my study to focus solely on active component Marines. The second dataset also lacks FITREP data for five Marines. Post-cleaning, merging, and removing missing information, the final dataset contains 4,209 observations, encompassing Marines' CP bonus decisions, demographics, and FITREP scores.

I use R, version 4.2.2 for my data analysis. I create an indicator variable to indicate whether Marines took the CP bonus under the 5x multiplier rate. I create additional indicator variables for officer status, gender, and marital status.

In the regressions that follow, I use the FITREP score closest to each Marine's CP bonus eligibility date. To accurately categorize the FITREP scores, I divide Marines into high and low groups based on the median FITREP score of 3.631. I then address the "hard grader" bias some Marines experience by subtracting each Marine's reporting senior's average from their FITREP score. I divide Marines into high and low groups based on the median of that adjusted FITREP score, which is -0.007.

## B. BONUS AMOUNTS

Figure 1 presents a comparison of the dollar amount associated with the 2.5x and 5.0x CP bonus. I use nominal dollars, not real dollars, for this figure.

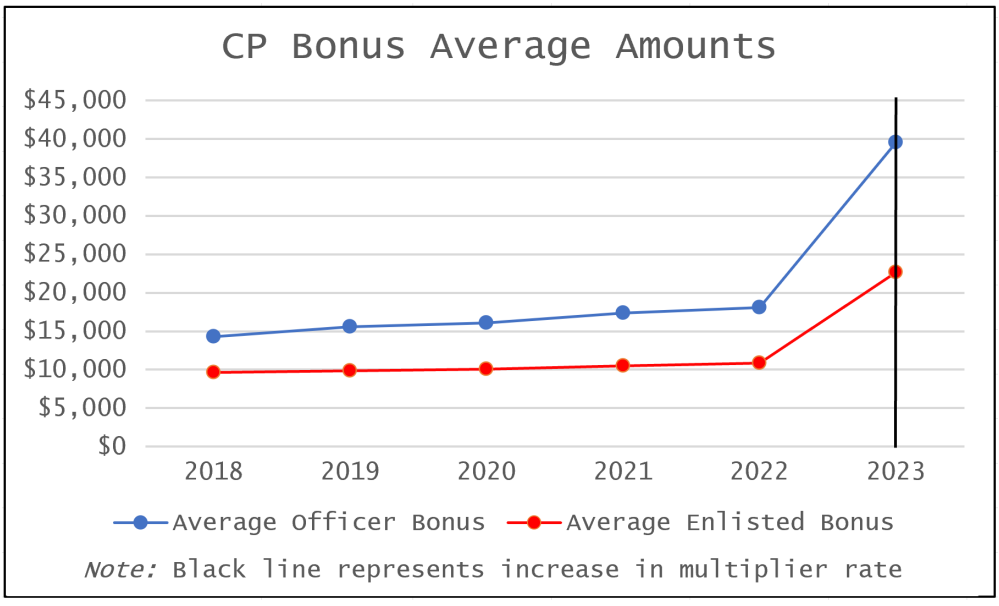


Figure 1. Average Bonus Amounts

## C. SUMMARY STATISTICS

Table 1 offers a clear picture of the final dataset composition, Table 2 shows the summary statistics of the two FITREP variables I use, Figure 2 shows the percentage of eligible Marines who take the CP bonus from 2018 to 2023, and Table 3 shows the variables I use for regression analysis.

Table 1. Demographic Summary Statistics

| | Count | Mean | SD |
|---|---|---|---|
| **Take CP Bonus** | | | |
| Yes | 2290 | 0.544 | 0.010 |
| No | 1919 | 0.456 | 0.011 |
| **Bonus Type** | | | |
| 2.5x | 2962 | 0.704 | 0.008 |
| 5.0x | 1247 | 0.296 | 0.013 |
| **Gender** | | | |
| Male | 3851 | 0.915 | 0.004 |
| Female | 358 | 0.085 | 0.015 |
| **Rank** | | | |
| Officer | 1876 | 0.446 | 0.011 |
| Enlisted | 2333 | 0.554 | 0.010 |
| **Ethnicity** | | | |
| White | 3498 | 0.831 | 0.006 |
| Asian | 172 | 0.041 | 0.015 |
| Black | 539 | 0.128 | 0.014 |
| **Marital Status** | | | |
| Married | 3000 | 0.713 | 0.008 |
| Single | 1209 | 0.287 | 0.013 |
| **Dependents** | | | |
| 0 | 1221 | 0.290 | 0.013 |
| 1 | 949 | 0.225 | 0.014 |
| 2 | 752 | 0.179 | 0.014 |
| 3 | 819 | 0.195 | 0.014 |
| 4+ | 468 | 0.111 | 0.015 |
| N | 409 | | |

Table 1 shows that since 2018, 54.4% of the eligible Marines take the CP bonus. So far, only 29.6% of the CP bonuses offered are at the 5x multiplier. Table 1 also shows at 12 YOS, most eligible Marines are male, enlisted, white, and married.

Table 2. Summary Statistics of FITREP Scores

| | Min | 1st Quartile | Median | Mean | 3rd Quartile | Max |
|---|---|---|---|---|---|---|
| **FITREP Scores** | 1.462 | 3.352 | 3.631 | 3.665 | 3.961 | 5.476 |
| **Adjusted Scores** | -1.231 | -0.063 | -0.007 | -0.029 | 0.003 | 1.205 |
| *Note:* Adjusted Scores = FITREP score – reporting senior average | | | | | | |

Table 2 shows the summary statistics of both the raw FITREP scores and adjusted FITREP scores. The median FITREP score is 3.631 and the median adjusted FITREP score is -0.007.

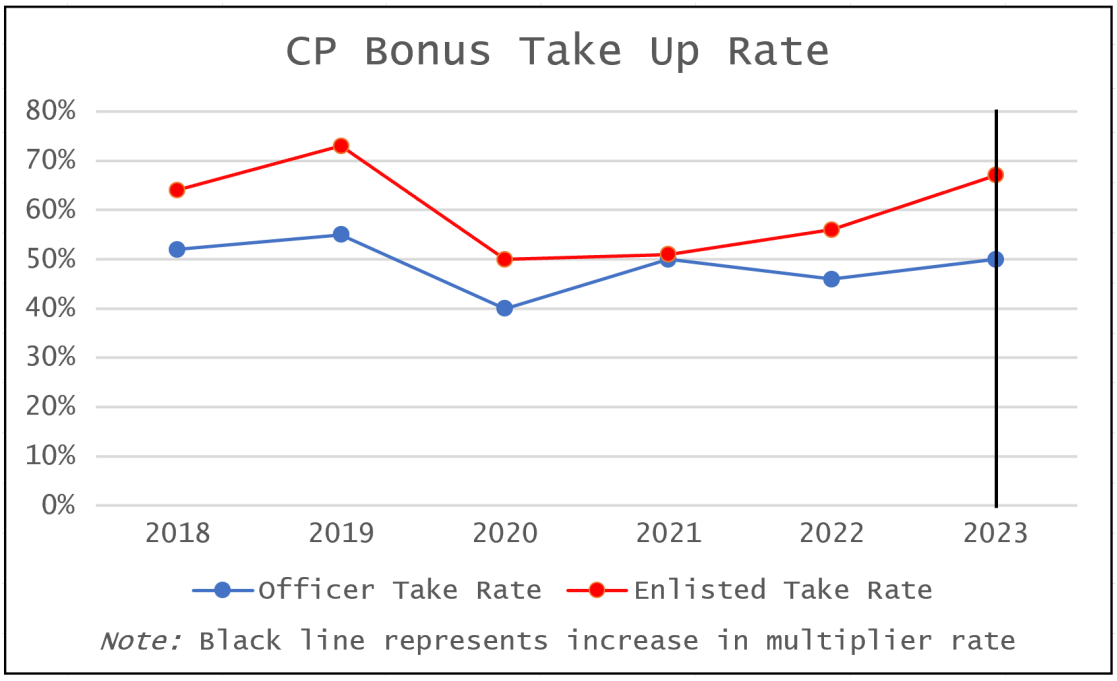


Figure 2. Percentage of Eligible Marines Who Accepted the CP Bonus

Figure 2 depicts the percentage of Marines who take the CP bonus from 2018 to 2023. It shows take up rates initially spike in 2019, decrease, or remain steady, then spike again in 2023. Figure 2 also shows enlisted Marines have a higher take up rate than officers.

## D. METHODOLOGY

My thesis aims to identify how the increase in multiplier rate affects take up rates. I use LPMs to estimate five regressions. I use LPMs rather than probit or logit models due to the direct interpretability, which simplifies understanding the impact of several factors on Marines' likelihood to take up the CP bonus. This approach enhances the practical relevance of the findings and makes it easier to translate the results into actionable insights for leadership. I do not make any adjustments to the standard error. The first three regressions focus on the impact the 5x multiplier has on take up rates within different demographic groups. The fourth and fifth focus on the FITREP scores of those eligible for the CP bonus.

My parameters of interest are the coefficient on the 5.0x CP bonus and the coefficient on the interaction of the 5.0x CP bonus. I hypothesize that these coefficients will be positive, meaning a higher bonus is associated with a higher take up rate.

I estimate the following regression models:

- $Take\_CP_i = \alpha + \beta_1 \times Five\_X\_CP_i + \varepsilon_i$ (1)
- $Take\_CP_i = \alpha + \beta_1 \times Five\_X\_CP_i + \beta_2 \times Male_i + \beta_3 \times Enlisted_i + \beta_4 \times Married_i + \beta_5 \times Race_i + \beta_6 \times Number\_Dependents_i + \varepsilon_i$ (2)
- $Take\_CP_i = \alpha + \beta_1 \times Five\_X\_CP_i + \beta_2 \times Male_i + \beta_3 \times Enlisted_i + \beta_4 \times Married_i + \beta_5 \times Race_i + \beta_6 \times Number\_Dependents_i + \beta_7 \times (Enlisted_i \times Five\_X\_CP_i) + \varepsilon_i$ (3)
- $Take\_CP_i = \alpha + \beta_1 \times Five\_X\_CP_i + \beta_2 \times FITREP_i + \beta_3 \times (FITREP_i \times Five\_X\_CP_i) + \varepsilon_i$ (4)

- $Take\_CP_i = \alpha + \beta_1 \times Five\_X\_CP_i + \beta_2 \times Adjusted\_FITREP_i + \beta_3 \times (Adjusted\_FITREP_i \times Five\_X\_CP_i) + \varepsilon_i$ (5)

Table 3. Variables Used for Regression Analysis

| **Bonus** | |
|---|---|
| Take_CP | Indicator variable, 1 if Marine takes bonus |
| Five_X_CP | Indicator variable, 1 if bonus offered was 5x |
| **Controls** | |
| RaceAsian | Indicator variable, 1 if Marine is Asian |
| RaceBlack | Indicator variable, 1 if Marine is Black |
| Male | Indicator variable, 1 if Marine is male |
| Enlisted | Indicator variable, 1 if Marine is an officer |
| Married | Indicator variable, 1 if Marine is married |
| Number_Dependents | Marine's number of dependents |
| **Performance** | |
| FITREPHigh | Indicator variable, 1 if Marine scored above median |
| Adjusted_FITREPHigh | Indicator variable, 1 if Marine scored above adjusted FITREP median |

Table 3 shows the variables I use for regression analysis. The Race variable includes Asian, Black, and White, with White designated as the reference category for analysis. The coefficients for RaceAsian and RaceBlack reflect their comparative differences to RaceWhite.

# IV. ANALYSIS

## A. DEMOGRAPHIC REGRESSIONS

Table 4 reports the coefficients from estimating Equation (1), (2), and (3), which I describe in Chapter III. The first column does not include any control variables. I add control variables in column 2. I add an interaction term between the 5.0x CP variable and enlisted variable in the third column.

Table 4. Demographic Regressions Used

| | *Dependent variable:* | | |
|---|---|---|---|
| | Take_CP | | |
| | (1) | (2) | (3) |
| Five_X_CP | 0.059*** | 0.083*** | 0.039 |
| | (0.017) | (0.017) | (0.024) |
| Male | | -0.055** | -0.058** |
| | | (0.027) | (0.027) |
| Enlisted | | 0.097*** | 0.072*** |
| | | (0.015) | (0.018) |
| Married | | 0.078*** | 0.077*** |
| | | (0.022) | (0.022) |
| RaceAsian | | 0.067* | 0.064* |
| | | (0.038) | (0.038) |
| RaceBlack | | 0.072*** | 0.073*** |
| | | (0.023) | (0.023) |
| Number_Dependents | | 0.043*** | 0.043*** |
| | | (0.007) | (0.007) |
| Five_X_CP:Enlisted | | | 0.082** |
| | | | (0.033) |
| Constant | 0.527*** | 0.378*** | 0.394*** |
| | (0.009) | (0.029) | (0.030) |
| Observations | 4,209 | 4,209 | 4,209 |
| $R^2$ | 0.003 | 0.049 | 0.050 |
| Adjusted $R^2$ | 0.003 | 0.047 | 0.049 |
| Residual Std. Error | 0.497 (df = 4207) | 0.486 (df = 4201) | 0.486 (df = 4200) |
| F Statistic | 12.234*** (df = 1; 4207) | 30.877*** (df = 7; 4201) | 27.820*** (df = 8; 4200) |
| *Note:* | | | *p<0.1; **p<0.05; ***p<0.01 |

Column 1 of Table 4 reports a positive and statistically significant increase in the likelihood of Marines taking the CP bonus if offered the 5.0x multiplier. The coefficient on the Five_X_CP variable in column 1 indicates that a Marine offered a CP bonus with the 5.0x multiplier is 5.9 percentage points more likely to take it, compared to a Marine offered the 2.5x multiplier.

Column 2 of Table 4 also reports a positive and statistically significant increase in the likelihood of Marines taking the CP bonus if offered a 5.0x multiplier. The coefficient on the Five_X_CP variable in column 2 indicates that with the control variables added, a Marine offered a CP bonus with the 5.0x multiplier is 8.3 percentage points more likely to take it, compared to a Marine offered the 2.5x multiplier. Column 2 also reports a negative and statistically significant coefficient for males. The coefficient on the Male variable indicates males are 5.5 percentage points less likely to take either form of CP bonus compared to females. In my data, the population is 91.5% male and 8.5% female. This gender distribution aligns closely with the demographic profile of the Marine Corps released by Military One Source in 2022, which reports a composition of 90.6% male and 9.4% female (Military OneSource, 2022). The higher likelihood of female Marines to take up the CP bonus at 12 YOS underscores a significant commitment to their careers. This contrasts with males, who, despite representing a much larger proportion of the population, exhibit more hesitation with taking the CP bonus. This suggests that the small number of female Marines who reach this career milestone are committed to remaining in the Marine Corps.

Additionally, in column 2 of Table 4 the coefficients on the control variables Enlisted, Married, Asian, and Black show a positive and statistically significant relationship with taking the CP bonus when offered either multiplier rate, compared to Marines who are officers, single, white. Lastly, the coefficient on Number_Dependents shows there is a positive and statistically significant increase in the likelihood of a Marine taking the CP bonus as their number of dependents increases, when offered either multiplier rate.

Column 3 of Table 4 has the same variables and similar coefficients as column 2, but with the addition of an interaction term between the Five_X_CP and Enlisted

variable. The coefficient on the Five_X_CP multiplier loses its statistical significance, but the positive and statistically significant coefficient on the interaction term shows an 8.2 percentage point increase in the likelihood that an enlisted Marine will take the CP bonus if offered the 5.0x multiplier.

## B. DEMOGRAPHIC INTERACTION TERMS

In my analysis I use interaction terms between the Five_X_CP variable and each control variable to explore if different demographic groups of Marines are more sensitive to the CP bonus multiplier change. Table 5 reports these interaction term coefficients. By interacting the control variables with the 5.0x multiplier variable, I determine whether the impact of changing the CP bonus multiplier shows variation in take up rates across different demographic groups. I further examine this relationship through two-tailed t-tests, as shown in Table 6. In the two-tailed t-tests, I restrict the sample to only those who take up the CP bonus and test for the equality of means under both the 2.5x and 5.0x multiplier rate regimes. By specifying a null hypothesis that there is no difference between the two means, and an alternative hypothesis that there is a difference, I can evaluate whether the increase in the CP bonus multiplier from 2.5x to 5.0x has a statistically significant effect on take up rates.

Table 5. Demographic Regressions with Interaction Terms

| | *Dependent variable:* |
|---|---|
| | Take_CP |
| Five_X_CP | -0.037 |
| | (0.062) |
| Male | -0.062* |
| | (0.033) |
| Enlisted | 0.082*** |
| | (0.018) |
| Married | 0.163*** |
| | (0.021) |
| RaceAsian | 0.055 |
| | (0.045) |
| RaceBlack | 0.077*** |
| | (0.027) |
| Five_X_CP:Male | 0.063 |
| | (0.060) |
| Five_X_CP:Enlisted | 0.079** |
| | (0.034) |
| Five_X_CP:Married | 0.011 |
| | (0.037) |
| Five_X_CP:RaceAsian | 0.037 |
| | (0.085) |
| Five_X_CP:RaceBlack | -0.004 |
| | (0.052) |
| Constant | 0.406*** |
| | (0.035) |
| Observations | 4,209 |
| $R^2$ | 0.041 |
| Adjusted $R^2$ | 0.039 |
| Residual Std. Error | 0.488 (df = 4197) |
| F Statistic | 16.456*** (df = 11; 4197) |
| *Note:* | *p<0.1; **p<0.05; ***p<0.01 |

Table 5 reports that there is only a statistically significant change in take up rates when interacting the Enlisted variable with the Five_X_CP variable. The coefficient on this interaction term shows enlisted Marines are 7.9 percentage points more likely to take up the CP bonus when offered the 5.0x multiplier compared to the 2.5x multiplier. The coefficients of the Male, Married, RaceAsian, and RaceBlack are not statistically significant, meaning there is no evidence to strongly support a change in take up rates due to the change in multiplier rate.

Table 6. Balance Table of Two-Tailed T-Tests

| variable | t_value | p_value |
|---|---|---|
| Male | -1.07 | 0.2868 |
| Enlisted | 0.38 | 0.7043 |
| Married | 1.71 | 0.0875 |
| Black | 1.90 | 0.0579 |
| Asian | 0.05 | 0.9575 |

Table 6 shows the results of my two-tailed t-tests. My results reveal that none of the demographic groups I test exhibit statistically significant differences at the 0.05 threshold, with p-values of 0.2868, 0.7043, 0.0875, 0.0579, and 0.9575, respectively. The closest to reaching statistical significance is the Black demographic, with a P value just above the threshold. The absence of statistically significant results suggests that the increase from a 2.5x to 5.0x multiplier rate does not lead to a distinguishable change in take up rates among the specified demographic groups within the sample of Marines.

Comparing the results of my LPM and two-tailed t-tests reveals distinct insights into the CP bonus take up rates. The LPM, which controls for a range of factors, shows a statistically significant effect only for enlisted Marines under the 5.0x multiplier, while other demographic groups experience no change in take up rates. However, the two-tailed t-tests, which consider each variable independently, yield no significant differences. This indicates that the 5.0x multiplier rate alone does not affect take up rates. In the two-tailed t-tests, the Black variable nears significance, which hints at an effect obscured by the LPM. Given these observations, I exclude the statistically insignificant interaction terms from my final models based on the principle that including statistically insignificant variables can complicate the model without adding value.

## C. FITREP REGRESSIONS

Table 7 reports the coefficients from estimating Equation (4) and (5), which I describe in Chapter III. The first column includes the same control variables found in Table 4, with the addition of a FITREP variable and an interaction term between that 5.0x CP variable and the FITREP variable. The second column contains the same control variables as the first, but I change the FITREP variable to the adjusted FITREP variable, which I describe in Chapter III. I also add an interaction term between the 5.0x CP variable and the adjusted FITREP variable.

Table 7. FITREP Regressions Used

| | *Dependent variable:* | |
|---|---|---|
| | Take_CP | |
| | (4) | (5) |
| Five_X_CP | 0.106*** | 0.037 |
| | (0.024) | (0.025) |
| Male | -0.054** | -0.055** |
| | (0.027) | (0.027) |
| Enlisted | 0.120*** | 0.096*** |
| | (0.016) | (0.015) |
| Married | 0.073*** | 0.077*** |
| | (0.022) | (0.022) |
| RaceAsian | 0.063* | 0.066* |
| | (0.038) | (0.038) |
| RaceBlack | 0.075*** | 0.072*** |
| | (0.023) | (0.023) |
| Number_Dependents | 0.044*** | 0.043*** |
| | (0.007) | (0.007) |
| FITREPHigh | 0.109*** | |
| | (0.018) | |
| Five_X_CP:FITREPHigh | -0.048 | |
| | (0.033) | |
| Adjusted_FITREPHigh | | -0.029 |
| | | (0.018) |
| Five_X_CP:Adjusted_FITREPHigh | | 0.084** |
| | | (0.033) |
| Constant | 0.312*** | 0.393*** |
| | (0.031) | (0.030) |
| Observations | 4,209 | 4,209 |
| $R^2$ | 0.058 | 0.050 |
| Adjusted $R^2$ | 0.056 | 0.048 |
| Residual Std. Error (df = 4199) | 0.484 | 0.486 |
| F Statistic (df = 9; 4199) | 28.650*** | 24.771*** |
| *Note:* | *p<0.1; **p<0.05; ***p<0.01 | |

The first column of Table 7 reports similar coefficients on the control variables as Table 4. However, the coefficient on the FITREPHigh variable in column 1 of Table 7 reports a 10.9 percentage point increase in the likelihood of a Marine with a high FITREP taking the CP bonus when offered either multiplier rate, compared to a Marine with a low FITREP. This result is statistically significant. The interaction term between Five_X_CP

and FITREPHigh is not statistically significant, meaning there is no evidence of a change in the likelihood that a Marine with a high FITREP will take the 5.0x CP bonus over the 2.5x CP bonus.

The second column in Table 7 reports similar coefficients on the control variables, but the Five_X_CP variable loses significance. The second column also replaces the FITREPHigh variable with the Adjusted_FITREPHigh variable. The coefficient on the Adjusted_FITREPHigh variable is not statistically significant, meaning there is no evidence of a change in the likelihood of a Marine with a high adjusted FITREP taking either CP bonus. However, the coefficient on the interaction between Five_X_CP and Adjusted_FITREPHigh is statistically significant. This coefficient reports an 8.4 percentage point increase in the likelihood of a Marine with a high adjusted FITREP taking the 5.0x CP bonus over the 2.5x CP bonus.

In TM2030, General Berger emphasizes the importance of retaining top talent. He advocates for strategies that "incentivize the most talented and high performing individuals to remain with the organization" (Berger, 2021, p. 3). The results I present in Table 5 corroborate this assertion, illustrating that the CP bonus positively influences high performers to stay. Notably, the results indicate an increased likelihood of high performers opting for the CP bonus as the multiplier rate increases. This tendency suggests that increasing the CP bonus multiplier rate successfully aligns with General Berger's envisioned incentives for talent management.

## D. COSTS TO THE MARINE CORPS

It is important to emphasize that taking the CP bonus obligates a Marine to an additional four YOS, so taking the CP bonus is correlated with retention. As the number of Marines participating in the BRS increases annually, directly comparing the take up rates of the CP bonus across different years presents challenges; however, by using Figures 1 and 2, I calculate a simple cost estimate using 2023 as the base year to show the cost per additional Marine retained.

### 1. Enlisted Costs

I find that in 2022, the average CP bonus amount for enlisted Marines is $10,830. For 2023, the average amount increases to $22,699. Between 2022 and 2023 the take up rate rises from 56% to 67%. This increase in take-up rates corresponds to an additional average cost of $11,869 per enlisted Marine who takes up the CP bonus.

I find that in 2023, 701 enlisted Marines are eligible for the CP bonus. Applying the take-up rate from 2022 (56%) to this population results in an estimate of 393 enlisted Marines accepting the CP bonus, while the 2023 rate (67%) results in 470 enlisted Marines accepting the CP bonus. The total cost incurred by the Marine Corps to secure take ups is $4,256,190 in 2022, and $10,668,530 in 2023. This increase in expenditure amounts to $6,412,340 for the Marine Corps to retain an additional 77 enlisted Marines in 2023. This equates to an average cost of $83,277 per enlisted Marine retained.

### 2. Officer Costs

I find that the average bonus amount for officers in 2022 is $18,072 while the average in 2023 is $39,518. Between 2022 and 2023 take up rates increase from 46% to 50. This increase in take-up rates corresponds to an additional average cost of $21,466 per officer who accepts the bonus.

I find that in 2023, 608 officers are eligible for the CP bonus. Applying the take up rate from 2022 (46%) to this population results in an estimated 280 officers accepting the CP bonus, while the 2023 rate (50%) results in 304 officers accepting the CP bonus. The total cost incurred by the Marine Corps to secure take ups in 2022 is $5,060,160. The total cost in 2023 is $12,013,472. The increase in expenditure amounts to $6,953,312 for the Marine Corps to retain an additional 24 officers in 2023. This equates to an average cost of $289,721 per officer retained.

### 3. True Costs

Though $83,277 for an enlisted Marine and $289,721 for an officer seems high, it is important to note that this cost is spread over the four extra years of retention. The true cost is really $20,819 per year for an enlisted Marine and $72,430 per year for an officer.

After their extra four years, a Marine may become even more likely to reenlist again because they will be closer to the 20-year mark. Another reenlistment will lower the cost per year further. The counterfactual to this calculation is that if the Marine does not take the CP bonus and does not reenlist, how much would it cost to fill that vacancy with a junior Marine and keep him or her until 12 YOS? This is a value proposition the Marine Corps must decide on, but it seems under TM2030, the Marine Corps is willing to pay an appropriate amount to retain mid-career Marines. Based on my data, it seems enlisted Marines are being offered enough of a bonus to be retained while the bonus being offered to officers is insufficient to influence retention.

# V. CONCLUSION

## A. SUMMARY

The models I estimate in this thesis demonstrate the efficacy of the CP bonus as a tool for retaining mid-career Marines, which is consistent with the objectives set forth in TM2030. My cost analysis provides a stark perspective on the financial implications of the CP bonus. Only the Marine Corps can deem the cost to retain an additional Marine; however, it seems the CP bonus perfectly aligns with the goals of TM2030. Understanding the cost to retain an additional Marine gives leadership the ability to forecast future costs and associated retention levels. If the goal of the CP bonus is to keep more senior enlisted Marines, then it is effective, however, if the goal is to keep senior officers, then it is not as effective.

### 1. Research Questions

- How do the CP bonus take up rates respond to the change in multiplier rate?

I find that the CP bonus take up rates increase with the introduction of the 5.0x multiplier, indicating the effectiveness of increased financial incentives for Marines.

- Are there demographic groups particularly more sensitive to the multiplier rate change?

Although my analysis indicates that female, enlisted, married, and minority Marines are more likely to take up the CP bonus regardless of the multiplier amount, I find no conclusive evidence to suggest that any specific demographic group is more sensitive to the multiplier rate change from 2.5x to 5.0x. The interaction term for the 5.0x CP bonus multiplier and enlisted status in Table 5 suggests higher take up rates among enlisted Marines; however, the lack of statistical significance in the subsequent two-tailed t-tests in Table 6 does not confirm a greater sensitivity to the multiplier rate increase.

- Do fitness report (FITREP) scores affect the decision to take up the CP bonus?

I find that above-average performers show a higher likelihood of accepting the CP bonus and display higher sensitivity levels to the change in the multiplier rate. This indicates that performance metrics are a significant factor in the decision to take up the CP bonus.

## B. RECOMMENDATIONS

Balancing retention and costs is crucial for maintaining a capable and ready force. I recommend that the Marine Corps continues to use the CP bonus as a mid-career force shaping tool; however, it is important to conduct a detailed analysis of the costs associated with each additional YOS the CP bonus obtains. This analysis should guide the adjustment of the multiplier rate, setting it to a level that effectively retains the desired number of mid-career Marines while also ensuring fiscal responsibility.

I also recommend that the Marine Corps explores changing the multiplier rate based on rank. As I discuss in Chapter IV, in 2023, 67% of eligible enlisted Marines and 50% of eligible officers take the bonus. Enlisted Marines are more likely to take up the CP bonus than officers and are more sensitive to the multiplier rate change. If the Marine Corps wants to increase officer retention, they need to increase the bonus amount for officers.

## C. FURTHER RESEARCH

I recommend the following BRS and CP bonus related topics for future studies:

- Investigate if CP bonus take up rates in 2024 are similar to those in 2023.
- Compare the costs associated with an increasing number of CP bonuses and a decreasing number of legacy pensions.
- Develop a system to estimate take up rates and costs in the future to properly forecast retention rates with associated costs.

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Acquisition Research Program
Naval Postgraduate School
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