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**DATA-DRIVEN ENLISTED DECISION MAKING: A REPORT ON  
THE EFFECTIVENESS OF SELECTIVE RETENTION BONUSES**

by

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November 2023

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## **ABSTRACT**

In Talent Management 2030, the Commandant outlines his plan to recalibrate enlisted personnel management in the Marine Corps from one of “recruit and replace” to an “invest and retain” model. Central to this strategy is the offering of bonuses of various kinds to encourage the reenlistment of first-term (FTAP) Marines, including Selected Reenlistment Bonus (SRB) that differentially target occupational specialties and pay grades. Using USMC manpower data covering fiscal years 2015 to 2020, we examine the extent to which the amounts of bonuses offered increase the likelihood that a “high quality” first-term Marine will reenlist. Although evidence of a positive effect is found by examining a cohort of first-term Marines who score highly on two components of the tier score, attributing effects due to the offering of bonuses is challenging due to the likely existence of confounding factors. Separate examination of three infantry specialties (Rifleman, Machine Gunner, and Mortarman) does not find conclusive evidence that reenlistment rates respond positively to the amounts of bonuses offered. A “menu of contracts” approach as an alternative to the SRB is found not to be feasible due to the lack of quality information and heterogeneity of the FTAP population within specialties and paygrades.

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## I. INTRODUCTION

Reenlistment bonuses have long been used to encourage military personnel who are regarded as high quality, or possessing skills that are in demand, to continue their service.

Many studies have been conducted which find that offering monetary incentives to reenlist increases reenlistment rates. In a recent study, Arkes et al. (2019) consider the effect of retention bonuses along with other factors in their Retention Analysis Model for Navy service members. Studies as early as Jehn et al. (1975) recognize the importance of weighing the cost of bonuses versus their benefits and argue for using bonuses to encourage the reenlistment of the most productive servicemembers, instead of as a tool to simply meet force-strength goals.

The Marine Corps is interested in examining how selective reenlistment bonuses (SRBs) can be used to improve retention of targeted Marines. Although basic pay is the same for all enlisted Marines in a given paygrade, the Marine Corps differentiates its bonus quantities by primary military occupational specialty (PMOS), rank, and reenlistment zone. A “menu of contracts” approach provides an alternate way to differentially reward performance and still comply with federal law. In this approach, we construct reenlistment contracts of different durations that pay different bonuses if different career milestones are met. The intent would be to structure the incentives such that Marines who believe they are high quality and have confidence in their ability to get promoted to take the contracts with the most generous potential bonus. For this project we will conduct a cost effectiveness analysis of this approach compared with the status quo.

The purpose of this project is to answer the following questions:

(1) To what extent can we attribute variation in reenlistment rates to the SRB? Are there other attributes of pre-accession Marines that can be used to identify and incentivize high-quality Marines to reenlist?

(2) To what extent would a menu of contracts approach to the First Term Alignment Program (FTAP) and Subsequent Term Alignment Program (STAP) improve the effectiveness of the SRB budget?

(3) Given the estimated responsiveness of Marines to bonus levels and the distribution of boat spaces, how should the SRB budget be allocated to maximize its effectiveness?

We discuss our conclusions in Chapter VI below. Addressing the effects of the SRB on enlistment behavior of FTAP Marines is challenging for several reasons. First, the information available for analysis consists of three manpower-related data sets covering fiscal years 2015 to 2020 that are merged, often under conditions of ambiguity, which imparts a degree of uncertainty to our inferences. Second, underlying factors over an extended time, such as economic conditions, that are not captured in the data may influence enlistment behavior and may do so differently across occupational specialties. Nonetheless, we find some indications that the SRB is beneficial in increasing the rate of reenlistments among certain classes of high-quality FTAP Marines. We do not find the effect across all occupational specialties, however, including three Infantry specialties (Rifleman, Machine Gunner, and Mortarman) that we examine in detail.

Although a menu of contracts approach holds promise as an alternative to the SRB, or in conjunction with it, the main obstacle to making this approach feasible is that the Marine Corps does not currently have a suitable means for eliciting information about the quality of an FTAP Marine, coupled with heterogeneity of within a given specialty and within paygrades. It is possible, however, that a menu of contracts approach may be effective for certain specialties.

It is difficult to discern, solely from the manpower data that we used in our analysis, what a better allocation of SRB resources would be. We suggest that the Marine Corps develop quantified goals for reenlistment of high-quality Marines for each occupational specialty, and base resource allotment decisions on the amounts of shortfall in the last several prior years, with careful study of the outcomes that result from the allotments.

## II. LITERATURE REVIEW

Studies that examine the effect of bonuses on performance (Chung, et al, 2014), productivity (Kissan and Kalwani, 1998), retention (Swain, et al, 2019), and recruitment (Mantler, et al, 2006) are relatively plentiful in the labor economics literature. Researchers are sometimes able to exploit natural experiments to estimate causal effects, but many simply establish correlation between bonus levels and retention levels.

One particularly popular field for such applications is that of school teachers. Springer, et al., (2016) reports that a retention bonus program offered to effective teachers increased retention of quality teachers and, in turn, improved student outcomes. See similar studies of rural teachers in Peru (Castro and Esposito, 2021); teachers in underperforming schools in North Carolina (Clotfelter, et al, 2008); and teachers in traditionally difficult to staff fields such as special education and others (Feng, et al, 2018). However, not all studies necessarily find a significant link between bonuses and retention. Like the SRB, these retention programs typically require teachers to agree to an additional time. Additionally teachers, are government employees and they typically have competing opportunities for non-government or non-military, employment. The prospects of non-military employment for Marines probably vary more than teachers and tend to vary widely by the Marine's occupational field.

Another comparatively active field for the analysis of individuals' responses to retention bonuses is the military. Asche, et al (2010) provides an overview of the practices and effectiveness of all of the armed services with respect to reenlistment incentives. See Coates, et al (2011) for an Army officer application; see Lakhani (1988) and Hogan et al (2005) for Army enlisted studies; while Joffiron and Wozny (2015) provide a recent enlisted Air Force application. These studies generally find a positive correlation between bonus levels and apparent responsiveness to reenlist; however it is typically difficult for the researchers to, for example, disentangle the behavior of those for whom the bonus was the significant factor in deciding to reenlist from those who would have reenlisted anyway. That said, Wozny (2015) is an exception in that they are able to leverage certain variations in bonus levels within communities to avoid some of the problems with endogeneity in the data.

A number of NPS theses address particular aspects of the Marine Corps SRB process. For example, Cole (2014) and Crider (2015) provide early analyses of the reenlistment tier system shortly after initial implementation. Fuzy (2019) examines the effectiveness of the aviation maintenance reenlistment kickers, while Arellano provides a thorough background of the menu of bonuses, special pays, and allowances available to Marines. Our analysis extends these efforts by focusing on the responsiveness of the highest quality Marines to bonus and kicker levels.

Finally, any deliberate statistical study of the relationship between SRB bonus levels and individual responsiveness must deal with the challenges that Arkes (2018) outlines. He notes four sources of bias that include reverse causality, endogeneity of the timing of the reenlistment decision, measurement error, and unobserved heterogeneity due to the existence of demand constraints (2018, pg 476). Given the manner in which the USMC executes its SRB program, the timing of the reenlistment decision is less of a concern because the Marines are only ever offered one SRB during the period in which they are eligible to reenlist. Though, all PMOSs that offer an SRB also offer an early reenlistment kicker. For the same reasons, the measurement error is also less of a concern. However, any study of the USMC process must deal with reverse causality as well as the unobserved heterogeneity problem that arises due to the demand constraints.

### III. RUNNELLS SUMMARY

The purpose of this chapter is to briefly report the findings of Captain Robert Runnell's thesis (2023) and outline how his work informs our subsequent analysis. We think of Runnell's work as an initial exploration of the problem. See Chapter 2 (especially pp. 3-10) of his thesis for a thorough description of the USMC reenlistment process, as well as an additional literature review (pp. 10-18).

Runnells examines the reenlistment behavior of first-term Marines from 2015 to 2020. His data includes individual reenlistment-package level data from the Total Force Retention System as well as individual performance and demographic data from the Total Force Data Warehouse. In addition, he has aggregate level data that describes the execution of the First-Term Alignment Plan by Fiscal Year, Paygrade, and Primary Military Occupational Specialty. Finally, his data also contains the bonus level, if any, for each PMOS by paygrade and Fiscal Year. Approximately 150,000 first-term Marines were eligible for reenlistment during this time. Our subsequent analysis relies on these same sources of data.

While Runnells develops a number of regression models, his strongest findings relate to high quality Marines. Since the Marine Corps does not save tier composite scores for Marines who neglect to submit a reenlistment package (RELM), an analyst must estimate the score for those Marine from constituent parts. Runnells had reason to question his ability to fully recreate the tier composite score from the available data, so instead he declares a Marine to be "high quality" if he or she is in the top tenth percentile in proficiency marks and physical fitness test scores. He finds that for every \$10,000 in bonuses offered, these high-quality Marines exhibit an increase in the probability of reenlistment of 8.1 percentage points. He also finds that when early reenlistment kickers are included in the analysis, every \$10,000 in bonus money is correlated with a reduction in the time to reenlist among high quality Marines of approximately 18 days. That same \$10,000 in bonus money available is correlated with a reduction in the time to reenlist any Marine an average of approximately six days.

Finally, Runnells implements PMOS-level regressions that seek to determine the relationship between bonuses and how quickly higher quality Marines tend to reenlist. He finds that PMOSs that offer a bonus tend to have a higher proportion of Tier 1 reenlistees by September 30. He compares PMOS performance on 31 December and finds that those PMOSs that offer a bonus have a similarly higher proportion of Tier 1 reenlistees, and finds that PMOSs that offer a bonus are modestly more likely to have reached 95% of their reenlistment goals by then.

The primary limitation to Runnell's work is that it primarily establishes correlation between the treatment and response variables and is generally subject to the same criticism as Arkes (2018). Furthermore, while his thesis attempts to place a greater emphasis on quality of reenlistee than previous studies, he found it challenging to overcome several limitations in the data. For example, the Marine Corps only archives a Marine's tier composite score if that Marine submits a RELM. Thus, the analyst must painstakingly estimate the tier composite score for the vast majority of Marines who opt to not submit any sort of reenlistment package. In addition, the fact that the most important details of the Marine's reenlistment package resides in the Total Force Retention System (TFRS), while their personnel file resides in the Total Force Data Warehouse (TFDW) results in a process to match observations across those systems that is surprisingly challenging.

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## **IV. ANALYSIS OF 03XX OCCUPATIONAL FIELD**

### **A. BACKGROUND**

Using statistical models, Runnells (2023) finds that offering a SRB increases the probability that a high-quality Marine will reenlist at the end of his or her first term. Because this finding is based on observational data from fiscal years 2015 to 2020, it cannot be causally attributed to the SRB. Other circumstances that affect a first-term Marine’s reenlistment decision may change over time and across PMOSs. As Runnells notes, experimental data is the “gold standard” for making causal inferences, but logistically it is impossible to produce reenlistment data with SRB availability as a controlled variable. Instead, we examine year-to-year changes in MOSs that also experienced substantial changes in SRBs that were offered, with the assumption that extraneous factors that affected reenlistment decisions did not change greatly over short durations of time. We identify three of the PMOSs associated with Infantry as good candidates for this exercise: 0311 (Rifleman), 0331 (Machine Gunner), and 0341 (Mortarman).

### **B. DATA PREPARATION**

Runnells (2023) outlines in Chapter III of his thesis the process he used to merge data from TFDW and two different TFRS data sets to build profiles of first-term Marines who are eligible for reenlistment each fiscal year from 2015 to 2020. It is an imperfect process due to the nature of the data sets. As a benchmark Runnells compares the numbers of reenlisted Marines to the corresponding numbers from the Boat-Space Reports (BSRs) in his Table 4. Averaging the absolute values of percentage differences for each of the years 2015 to 2020 gives a mean average percentage error (MAPE) of 1.61, which serves as a measure of discrepancy between the sizes of the reconstructed cohorts used in statistical analyses and their known sizes from the BSRs. With a MAPE falling between one and two percent, the reader is informed that estimates based on reconstructed cohorts are subject to a small magnitude of error due to imperfect data alignment.

We follow the process used by Runnells to create a data set for our analyses, but with attention to including additional cases that may constitute re-enlisters. They include instances where re-enlistment date is present but the re-enlistment status is not recorded as “Accepted”. Similarly, they include instances where the re-enlistment status is recorded as “Accepted” but the re-enlistment date is missing yet recoverable from the original data. The resulting data set, which is benchmarked against the BSRs in Table 1 below, achieves a MAPE of 0.76, or less than one percent deviation from the BSRs on average.

Table 1. Comparison of boat-space reports (BSRs) and data set reconstruction following Table 4 of Runnells (2023)

Reenlistment Year	BSR # Reenlisted	Dataset # Reenlisted	Difference (%)	Dataset # Not Reenlisted
2015	4,944	4,907	-0.75	17,833
2016	5,251	5,237	-0.27	18,453
2017	6,134	6,200	1.08	20,079
2018	5,063	4,984	-1.56	17,978
2019	5,465	5,455	-0.18	18,850
2020	5,570	5,389	-0.70	19,967
	32,284	32,172	0.76	113,190

The column to the right in Table 1 shows the numbers of first-term Marines eligible for reenlistment in a particular year who did not re-enlist. Non-reenlistment may be indicated in the data for a variety of reasons:

- Decision of a Marine not to apply for reenlistment;
- Decision of a Marine to apply but then not accept reenlistment;
- Disapproval of a Marine’s application for reenlistment;
- Extension of a Marine’s contract past the current year;
- Reenlistment status that cannot be resolved from the data.

Although we are often able to accurately classify non-reenlistment reasons, the TFDW and TFRS datasets do not always provide sufficient resolution for this purpose.

### C. ESTIMATION OF TIER SCORES

Tier scores are traditional metrics used by the Marine Corps to recognize quality in the pool of first-term enlistees. Starting in 2021 the Marine Corps transitioned to the Junior Enlisted Performance Evaluation System (JEPES). Because the transition does not affect our analysis, which is limited to the years 2015 to 2020, we use tier scores to assess the effectiveness of the SRB in retaining high-performing Marines.

Tier scores are calculated using an additive function of the Physical Fitness Test (PFT), Combat Fitness Test (CFT), Rifle Score, Marine Corps Martial Arts Belt (MCMAP) score, Proficiency (PRO) marks, Conduct (CON) marks, and 100 points awarded for meritorious promotion. Within each MOS, the cohort eligible for first-term reenlistment is assigned to one of four categories: Tier I (top 10 percent), Tier II (next 30 percent), Tier III (next 50 percent), or Tier IV (lower 10 percent). Components of a tier score calculation are measured at varying points in time and are subject to change even over short time intervals.

Because our study aims to determine whether the availability of an SRB increases the quality of Marines who are subsequently enlisted, we turn to the tier score, or categories derived from it, as a measure of effectiveness. However, our data provides composite scores, which are not precisely the same as those used for setting tier categories, and those for only about half of the first-term Marines eligible for reenlistment. Runnells (2023) used measured components of the composite scores that were provided for most Marines eligible for first-term reenlistment to derive substitute tier categories upon which he based his analyses. There are several limitations to this approach, the first being that the components were often measured substantially earlier than the reference date, which is July 1 of the fiscal year prior to reenlistment. The second limitation is that accuracy of the Rifle Score was regarded as suspect, which prompted Runnells to omit this component from his calculation. The third limitation is that information on meritorious promotions that positively impact tier category placement, and factors such as disciplinary actions that negatively impact tier category placement, were not available from the data.

Our approach, which contends with the same limitations, differs from that of Runnells (2023) in several respects. First, we use linear regression of the actual tier

scores of Marines who submitted a reenlistment application on the available components to construct an estimated tier scores for all Marines. Second, we examine the use of the Rifle Score in this construction. We compare models with and without Rifle Score as a predictor variable, and we choose the model that gives more accurate predictions. We also limit the data to cases for which the reported tier score was computed within 30 days of July 1 of the fiscal year prior to the end of the current contract, which reduced the number of cases with usable tier scores to 95,073. This restriction ensures that the tier scores are close to what the Marine Corps would have used in setting tier categories. We randomly sample 70,000 of these as a training set for model estimation and use the remaining 25,073 observations as a test set to assess model accuracy.

Table 2 shows the estimated coefficients of the two models, the mean-squared errors (MSEs) calculated on the test set, and the coefficients of determination (R-squared) for the two models. All predictors are highly statistically significant, which is not surprising given the large sample size and the fact the tier score directly uses each of them. Rifle Score emerges as the most important predictor (smallest p-value), although the model achieves an R-squared value of only 30 percent. We use the model with Rifle Score included as a predictor for its marginal improvement over the model which excludes this variable and achieves an R-squared value of 24.4 percent. A histogram of the residuals is shown in Figure 1: it exhibits bimodality, which may reflect the influence of tier score factors that are not included in the regressions.

Table 2. Linear regressions to predict tier scores from components both with and without Rifle Score included as a predictor variable.

Variable	Coefficient with Rifle Score	Coefficient w/out Rifle Score
(Intercept)	435.45	551.34
PFT Score	0.23	0.24
CFT Score	0.53	0.53
PRO Score	7.32	9.77
CON Score	9.26	9.13
MCMAP Score	0.50	0.54
Rifle Score	0.72	--
MSE	66.7	69.2
R-Squared	.300	.244

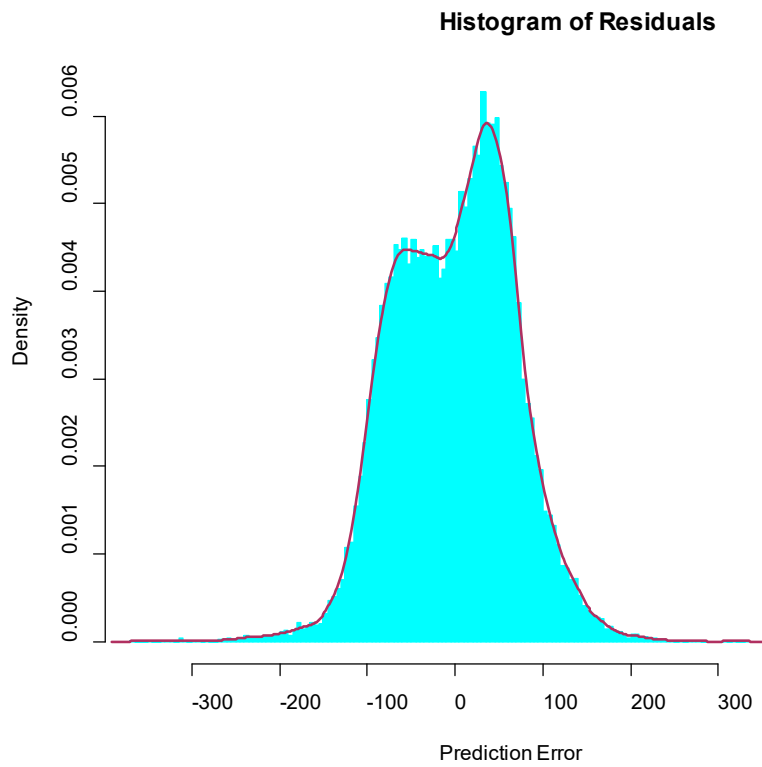


Figure 1. Histogram of the tier score regression residuals with Rifle Score included as a predictor variable.

**D. FIRST-TERM REENLISTMENT**

The process of applying for first-term reenlistment was explained in depth by Runnells (2023). A first-term Marine’s decision on whether to apply for reenlistment depends on many factors, not all of which are monetary, including the Marine’s desire to serve past the end of contract, competing employment opportunities in the civilian sector, and level of confidence that the application would be approved. Additionally, the Marine Corps cannot reenlist all first-term Marines at the end of their contracts, which would distort the salary structure and leave little opportunity for new recruits to enter the Marine Corps. Knowing this, a FTAP Marine who scores low on components that comprise the tier score or has other unfavorable factors may elect not to apply for reenlistment.

**E. DATA SUMMARY OF INFANTRY SPECIALTIES**

We now consider the reenlistment patterns of first-term Marines in three of the Infantry PMOSs: 0311 (Rifleman), 0331 (Machine Gunner), and 0341 (Mortarman). These three specialties are similar in that they did not offer SRB bonuses to those who transferred laterally from another PMOS during the period of study. A small number (23) of lateral transfers into PMOS 0311 did occur, without an SRB, but none occurred into the other two PMOSs during that time. Table 3 shows the total number of FTAP Marines in each of the three PMOSs during the period of study. Riflemen account for nearly 72 percent of this group.

Table 3. Total numbers of FTAP Marines in three Infantry specialties, 2015–2020.

PMOS	FTAP
0311	18,392
0331	3,481
0341	3,680
Total	25,553

We present a series of tables and figures that pertain to each of the three specialties. Because we focus most of our discussion on the 0311 PMOS, we present tables and figures that pertain to this specialty in this section. Parallel tables and figures that pertain to the other two specialties that we discuss can be found in Appendix A (0331

PMOS) and Appendix B (0341 PMOS) at the end of this report. Table 4 presents the main bonuses offered to the 0311 PMOS during the period of study, and Figure 2 displays this information in graphical terms. Analogously, Tables 11 and 15 present bonus information for the 0331 and 0341 PMOSs in their respective appendices, and similarly for Figures 5 and 6. SDA is a special-duty assignment kicker. Several other kickers are not shown that do not apply to this PMOS. A Marine may qualify for no more than one kicker, but a kicker and an SRB together may be offered. To qualify for the Early Reenlistment Kicker a Marine must submit for reenlistment between July 1 and September 30 of the fiscal year preceding his or her reenlistment year.

Table 4. Bonuses offered to the 0311 PMOS (Rifleman), in non-inflation adjusted U.S. dollars.

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
SRB						
E3	8,250	12,000	4,250	8,500	4,000	6,400
E4	9,250	14,000	4,750	9,750	4,500	7,200
E5	10,250	15,000	5,250	10,750	5,000	8,000
Early Kicker						
E3	0	0	0	8,000	8,000	8,000
E4	0	0	0	8,000	8,000	8,000
E5	0	0	8,000	8,000	8,000	8,000
SDA						
E3	0	0	0	20,000	0	0
E4	0	0	0	20,000	20,000	0
E5	0	0	0	20,000	20,000	0

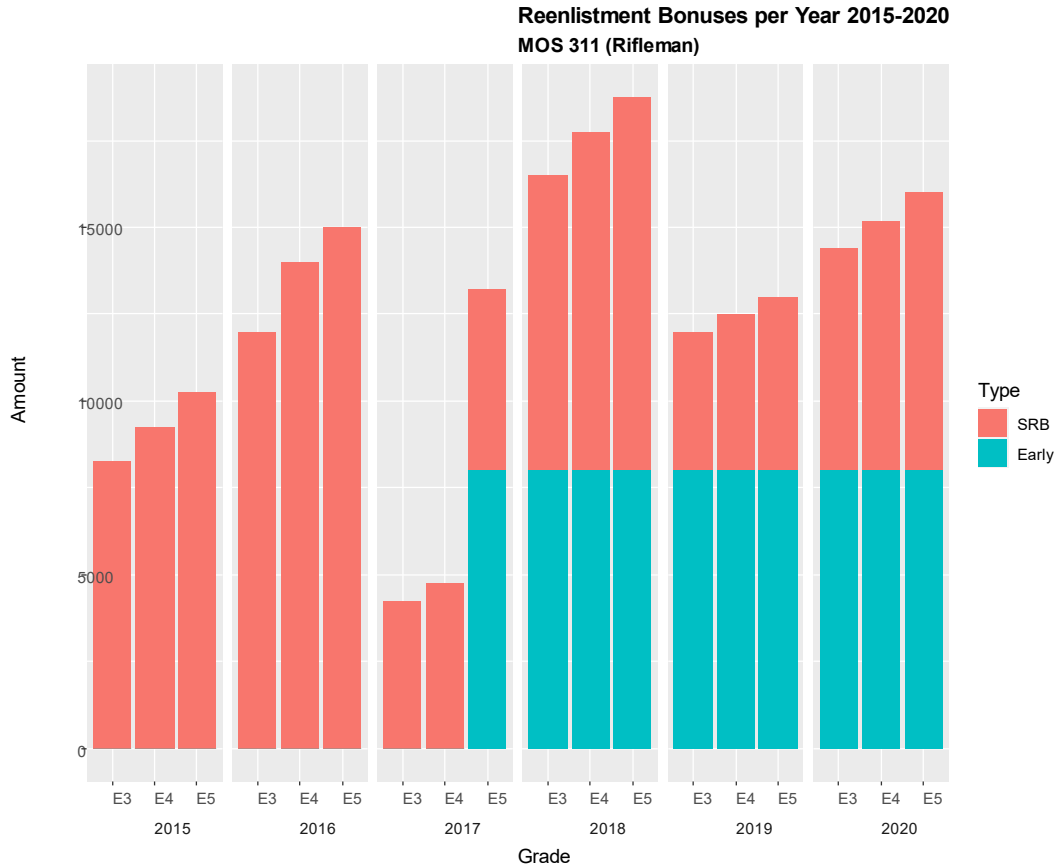


Figure 2. Bonuses offered to the 0311 PMOS (Rifleman), in non-inflation adjusted U.S. dollars. Kicker bonuses (SDA and Early) are mutually exclusive; only the Early Kicker is shown.

In addition to SRBs offered to FTAP reenlisters who remain with their MOS, lateral bonuses for those who transfer (“lateral”) to a different PMOS may also apply. Those who seek a lateral transfer presumably are qualified for the new specialties. Table 5 shows the averages of all bonuses received by FTAP Marines in the 0311, 0331, and

Table 5. Average total bonuses (non-inflation adjusted U.S. dollars) received by FTAP Marines who lateraled out of their specialties.

Origin	FY 2015	FY2016	FY2017	FY2018	FY2019	FY2020
0311	44,819	41,564	36,726	70,381	71,459	65,970
0331	48,885	41,548	33,318	75,050	72,483	68,826
0341	40,900	37,843	27,897	59,543	73,154	68,794

0341 PMOSs who transferred during the study period, which are substantially larger than the bonuses offered by their current specialties. These bonuses increased substantially starting in FY2018. Table 6 shows the four most frequent MOSs into which these FTAP Marines lateraled during the combined period.

Table 6. Most frequent MOS destinations of lateral transfers.

<b>Origin PMOS</b>	<b>Destination PMOS</b>				
	0365	0372	2236	0211	
0311	47	228	106	37	418
0331	5	70	45	12	132
0341	7	65	16	12	100

PMOS 0365: Infantry Squad Leader

PMOS 0372: The Marine Raiders (Critical Skills Operator)

PMOS 2236: Explosive Ordnance Disposal (EOD) Technician

PMOS 0211: Counterintelligence/Human Intelligence

Aside from lateral bonuses, year-to-year changes in the combined levels of the Early Kicker and SRB would lead us to anticipate similar movement in reenlistment rates if reenlistment probabilities are positively affected. For example, in the 0311 PMOS it would imply higher reenlistment rates in 2018 than in the adjacent years, particularly for the E3 and E4 pay grades. Table 7 gives a detailed analysis of the FTAP cohorts for this specialty with respect to submission and acceptance of reenlistment. We emphasize that, although Table 1 indicates reasonable agreement between our data processing and “official” tabulations found in the Boat Space Reports, at finer levels of aggregation the relative differences may be larger.

There is evidence that bonuses do affect submissions for reenlistment in the 0311 MOS, but not necessarily reenlistments. Focusing on the E5 pay grade, the submission rate increased from 24.0% to 34.7% from FY2016 to FY 2017, but the E3 and E4 pay grades saw lesser increases. Although the total bonus package for E5 reenlisters decreased (\$15,000 to \$13,250), it was a much smaller relative decrease than for E3 and E4 reenlisters. Other factors of a non-monetary nature also may explain some of the year-to-year variability in submission rates, and its weak association with variability in

reenlistment rates. In FY2017, only 27% of the E5 FTAP cohort in the 0311 specialty reenlisted, which means that almost seven percent of the cohort declined reenlistment offers. Although the reasons for this are not easily understood from the data, several observations can be made. First, the numbers of E5 FTAP Marines in this specialty increased rapidly, from 52 in FY2015 to 104 in FY2016 and to 225 in FY2017, more than doubling each year. A rapid increase of this pay grade in such a short order of time may have introduced factors that correlate with reenlistment behavior. Second, offering an Early Kicker may encourage some marginally inclined FTAP Marines to submit for reenlistment as insurance while they consider other options.

Another factor concerns the FTAP reenlistment quotas determined each year for every PMOS, which are found in the Boat Space Reports (BSRs). The FTAP quotas for the Infantry PMOSs are shown at the bottom of Tables 7A, 7B, and 7C. Subtracting the numbers of those who lateral out from total reenlistments usually tracks the fulfilled FTAP quotas. In FY2018, for example, the number of non-lateral reenlistments ( $471 - 81 = 390$ ) and the fulfilled quota ( $390 - 1 = 389$ ) in the 0311 PMOS are in near agreement. Presumably, these quotas are known to potential reenlisters and may influence their decisions. We mention this because the quotas can change substantially from year to year, which in turn may explain some of the variability in reenlistment rates.

One of the intended purposes of the SRB is to increase retention of “high-quality” Marines, which are understood to be Marines that are in Tier I (top ten percent of the tier score). This group tends to be more concentrated in the higher pay grades, which makes insights gained by analyzing the relationship between pay grade and reenlistment relevant. This relationship is also important because it reveals an underlying dynamic. The Marine Corps sets FTAP quotas to balance its paygrade structure and to provide enlistment opportunities to new Marines. At the same time, it prioritizes retention of high-quality FTAP Marines, who tend to be at the higher end of the salary scale. If the latter endeavor is successful for an extended time, there may be pressure to reduce FTAP quotas to meet the former objective.

Table 7. Reenlistment analysis of the 0311 PMOS (Rifleman) during the period of study. The table does not show 23 Marines who lateraled into the 0311 PMOS during the six-year period. Total reenlistment includes Marines who lateraled out, but the BSR FTAP Quota does not include them.

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>2672</b>	<b>3275</b>	<b>3678</b>	<b>2763</b>	<b>3157</b>	<b>2847</b>
E3	1381	1866	1837	1133	1436	1214
E4	1166	1234	1528	1285	1459	1362
E5	52	104	225	295	197	197
Other	73	71	88	50	65	74
<b>Submitted for Reenlistment</b>	<b>461</b>	<b>621</b>	<b>826</b>	<b>640</b>	<b>707</b>	<b>557</b>
E3	12.0	15.4	18.2	18.8	16.7	15.4
E4	23.2	25.0	26.8	25.4	27.2	23.1
E5	38.5	24.0	34.7	32.9	31.0	26.9
<b>Reenlistment Regular</b>	<b>315</b>	<b>359</b>	<b>407</b>	<b>291</b>	<b>389</b>	<b>290</b>
E3	9.0	9.6	10.7	10.2	11.2	10.0
E4	15.6	13.7	12.2	12.1	14.3	11.5
E5	17.3	10.6	10.7	6.8	10.2	6.6
<b>SDA</b>	<b>0</b>	<b>8</b>	<b>91</b>	<b>92</b>	<b>62</b>	<b>54</b>
E3	0.0	0.1	1.6	2.0	0.8	1.3
E4	0.0	0.5	3.8	4.0	3.2	2.3
E5	0.0	0.0	1.8	6.1	2.0	3.0
<b>Lateral Out</b>	<b>62</b>	<b>93</b>	<b>126</b>	<b>81</b>	<b>101</b>	<b>100</b>
E3	0.4	0.6	0.9	0.5	0.5	0.4
E4	4.1	5.7	5.2	3.0	4.6	4.9
E5	15.4	11.5	13.8	12.5	13.7	14.2
<b>Total Reenlistment</b>	<b>382</b>	<b>472</b>	<b>638</b>	<b>471</b>	<b>561</b>	<b>454</b>
E3	9.5	10.5	13.4	13.0	12.5	11.8
E4	19.9	20.3	21.4	19.1	22.0	19.1
E5	36.5	24.0	27.6	25.8	27.9	24.4
<b>BSR FTAP Quota</b>	<b>348</b>	<b>392</b>	<b>515</b>	<b>390</b>	<b>484</b>	<b>481</b>
<b>BSR FTAP Remain</b>	<b>22</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>13</b>	<b>76</b>

As explained earlier and in Runnells (2023), our data does not have complete tier score information, although this information is available for Marines who reenlisted. To do a more complete analysis of high-quality Marines, including those who did not reenlist, it is necessary to use the estimated tier scores. We also consider Runnell's alternate definition of a high-quality Marine as having both a PFT score and a PRO score

in the top ten percent, which we call the “Special High Performance” group. Runnells (2023) finds a quantifiable, positive effect on the probability of reenlistment for those Marines in relation to the amount of bonuses offered.

Table 8 gives a detailed breakdown of the “Top Ten” sub-cohort of the 0311 PMOS. Similar tables for the 0331 and 0341 specialties can be found in Tables 8A and 9A, and 8B and 9B in the respective appendices. From Table 8 several observations can be made about reenlistments of the Top Ten group. We again emphasize that our designation of the Top Ten group is based on estimated tier scores that differ substantially from what the Marine Corps used to set tier categories. First, submissions for reenlistment increased substantially after FY2016, but “regular” reenlistments decreased during the same period. This high-performance group increased its preference for lateral transfers and Special Duty Assignments (SDAs), possibly due to the generous bonuses offered by the targeted specialties and assignments. Acceptance of offers also decreased during this same period, from 91.8% in FY2016 to 81.6% in FY2017.

Table 8. Reenlistment analysis of the “Estimated Top Ten Percent” group of the 0311 PMOS (Rifleman)

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>268</b>	<b>328</b>	<b>368</b>	<b>277</b>	<b>316</b>	<b>285</b>
<b>Submitted for Reenlistment</b>	94 (35.1)	97 (29.6)	152 (41.3)	100 (36.1)	119 (37.7)	97 (34.0)
<b>Reenlistment:</b>						
<b>Regular</b>	56 (20.9)	52 (15.9)	50 (13.6)	32 (11.6)	52 (16.5)	32 (11.2)
<b>SDA</b>	0 (0.0)	2 (0.6)	19 (5.2)	9 (3.2)	9 (2.8)	9 (3.2)
<b>Lateral Out</b>	25 (9.3)	31 (9.5)	51 (13.9)	35 (12.6)	33 (10.4)	41 (14.4)
<b>Total Reenlistment</b>	<b>84</b> (31.3)	<b>89</b> (27.1)	<b>124</b> (33.7)	<b>77</b> (27.8)	<b>98</b> (31.0)	<b>84</b> (29.5)
<b>Acceptance Rate</b>	<b>89.4%</b>	<b>91.8%</b>	<b>81.6%</b>	<b>77.0%</b>	<b>82.4%</b>	<b>86.6%</b>

Figure 3 gives an illustration of the FY2018 reenlistment cycle starting on 7/1/2017 and continuing to 6/30/2018. The first quarter of this cycle is the “Early Kicker” period during which submissions for reenlistment must be made to qualify for the Early Kicker Bonus, which was \$8000 for the E3 to E5 pay grades that year. The BSR quota was 390, which was almost fully met at the end of the third quarter of FY2018. Rates of submission were high during the Early Kicker period, decreasing almost immediately after 9/30/2017. The approval rate was somewhat lower, but continued at its highest rate until mid-November which may be the point at which the Marine Corps finished processing the Early Kicker submissions. From mid-November to about the end of January there were only a few approvals, after which the pace picked up again. The red dots shown on the submissions plot are the applications made by Top Ten Marines who declined reenlistment offers. Of the 21 Marines in this category, 14 (66.7%) made their submissions during the Early Kicker period, which nearly matches the percentage of submissions made during the Early Kicker period overall.

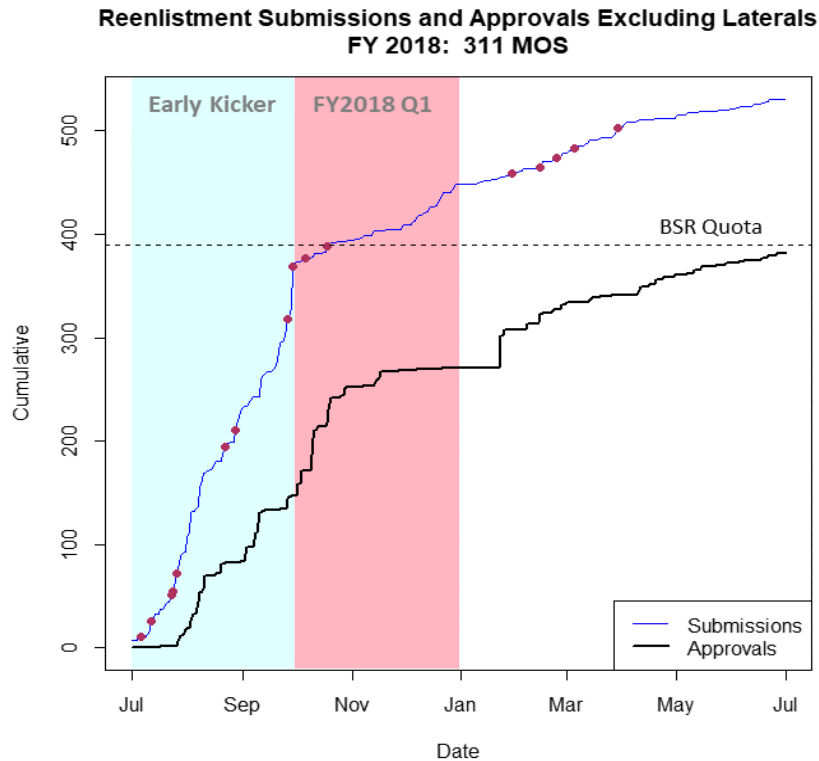


Figure 3. Illustration of the 0311 PMOS FTAP reenlistment cycle for FY2018. Red dots show submissions made by FTAP Marines in the Estimated Top Ten Percent sub-cohort who declined offers of reenlistment.

The Top Ten group shows a pattern of submission for reenlistment that is similar to the pattern of the E5 paygrade, peaking in FY2017 at 41.3%, but showing no clear relationship between reenlistment rates and the size of bonuses offered. Differences between submissions and reenlistments were largest in FY2017 (7.6%) and FY2018 (8.3%), with the latter being the year with the most generous bonuses for reenlistment in the 0311 PMOS. The Special High Performance group, consisting of FTAP Marines who scored in the top ten percent of the PFT and PRO scores, is described in Table 9, which also exhibits a pattern similar to the Top Ten group with slightly lower reenlistment rates.

Table 10 shows the tier composition of FTAP Marines who reenlisted, for the three Infantry specialties of interest (0311, 0331, and 0341) and for reenlisters across all specialties. Percentages of Tier I Marines, and Tiers I and II combined show notable declines for the 0311 PMOS, particularly in going from the first three years to the last three years of the period shown. The declines are also steeper than for the Marine Corps

Table 9. Reenlistment analysis of the “Special High Performance” group of the 0311 PMOS (Rifleman)

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>179</b>	<b>206</b>	<b>223</b>	<b>155</b>	<b>195</b>	<b>143</b>
<b>Submitted for Reenlistment</b>	51 (28.5)	62 (30.1)	87 (39.0)	63 (40.6)	70 (35.9)	48 (33.6)
<b>Reenlistment:</b>						
<b>Regular</b>	34 (19.0)	32 (15.5)	29 (13.0)	20 (12.9)	32 (16.4)	17 (11.9)
<b>SDA</b>	0 (0.0)	2 (1.0)	9 (4.0)	8 (5.2)	5 (2.6)	4 (2.8)
<b>Lateral Out</b>	10 (5.6)	18 (8.7)	25 (11.2)	19 (12.3)	13 (6.7)	18 (12.6)
<b>Total Reenlistment</b>	<b>45</b> (25.1)	<b>54</b> (26.2)	<b>66</b> (29.6)	<b>47</b> (30.3)	<b>52</b> (26.7)	<b>40</b> (28.0)
<b>Acceptance Rate</b>	<b>88.2%</b>	<b>87.1%</b>	<b>75.9%</b>	<b>74.6%</b>	<b>74.3%</b>	<b>83.3%</b>

overall. Starting in FY2018, Tier III Marines are the largest group for this specialty, which is not the case for the first three years shown.

Table 10. Tier composition (percentages) of FTAP reenlistments, using USMC-assigned tier categories. Cumulative percentages are shown in parentheses. The category “All” refers to all 181 PMOSs represented during the study period.

MOS	Tier	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	
0311		27.9	29.6	27.3	21.0	22.8	23.4	
	I	(27.9)	(29.6)	(27.3)	(21.0)	(22.8)	(23.4)	
		38.9	37.6	35.8	33.7	36.1	36.4	
	II	(66.8)	(67.2)	(63.2)	(54.7)	(58.9)	(59.8)	
		31.3	32.1	35.4	42.2	39.3	37.0	
	III	(98.0)	(99.3)	(98.5)	(96.9)	(98.2)	(96.8)	
		2.0	0.7	1.5	3.1	1.8	3.2	
	IV	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	
	0331		35.7	20.7	24.4	18.8	22.0	26.0
		I	(35.7)	(20.7)	(24.4)	(18.8)	(22.0)	(26.0)
		31.4	38.0	44.5	35.6	37.3	33.0	
II		(67.1)	(58.7)	(68.9)	(54.5)	(59.3)	(59.0)	
		30.0	40.2	24.4	40.6	38.1	36.0	
III		(97.1)	(98.9)	(93.3)	(95.0)	(97.5)	(95.0)	
		2.9	1.1	6.7	5.0	2.5	5.0	
IV		(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	
0341			25.6	26.4	18.9	25.0	22.4	17.7
		I	(25.6)	(26.4)	(18.9)	(25.0)	(22.4)	(17.7)
		34.1	30.9	38.6	39.8	34.7	38.9	
	II	(59.8)	(57.3)	(57.5)	(64.8)	(57.1)	(56.6)	
		39.0	39.1	39.4	34.1	38.8	38.9	
	III	(98.8)	(96.4)	(96.9)	(98.9)	(95.9)	(95.6)	
		1.2	3.6	3.1	1.1	4.1	4.4	
	IV	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	
	All		28.4	24.4	24.4	24.4	23.3	23.5
		I	(28.4)	(24.4)	(24.4)	(24.4)	(23.3)	(23.5)
		41.2	40.6	39.5	40.8	41.9	42.1	
II		(69.6)	(65.0)	(63.8)	(65.3)	(65.2)	(65.6)	
		29.0	33.1	34.2	32.8	33.5	32.7	
III		(98.6)	(98.0)	(98.0)	(98.0)	(98.7)	(98.3)	
		1.4	2.0	2.0	2.0	1.3	1.7	
IV		(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	

Figure 4 gives a graphical representation of information provided in Table 10, focusing on the “Top Forty Percent” FTAP Marines with respect to the actual tier scores used by the Marine Corps. Infantry PMOSs tend to reenlist smaller percentages of this group than does the Marine Corps overall. It is important to note that these summaries apply to FTAP Marines from the respective PMOSs who reenlisted, including those who lateraled out of their original PMOSs in which E5 and high-performing Marines tend to be highly represented. Laterals do not negatively impact the Marine Corps’ overarching goal of achieving high retention of this group, although they may impact individual specialties.

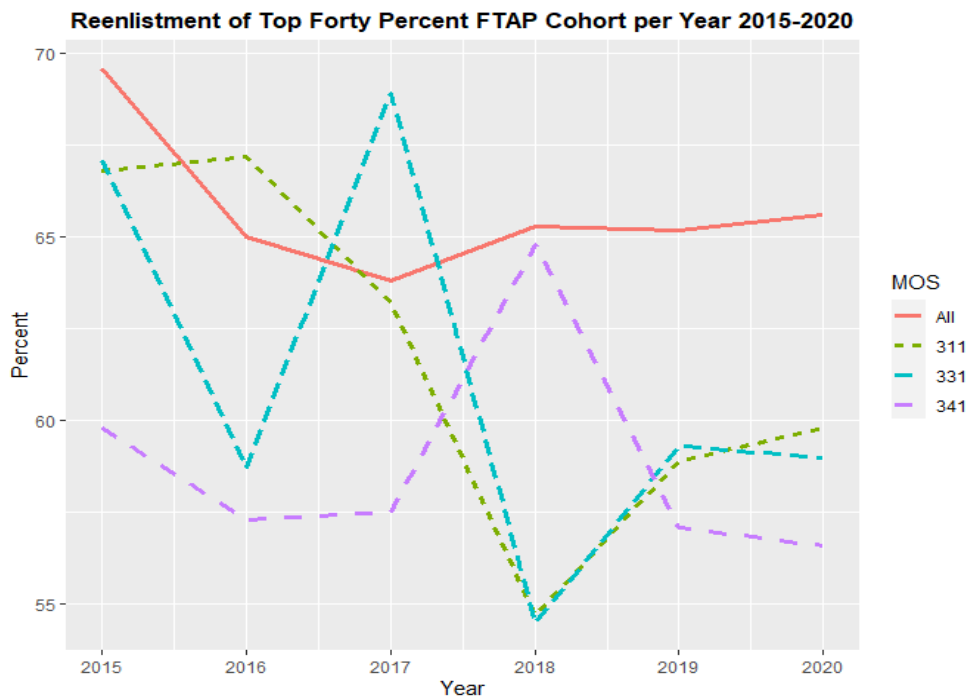


Figure 4. Percentages of FTAP reenlistments that are in the top forty percent (Tiers I and II) with respect to the actual tier scores used by the USMC. The category “All” refers to all 181 specialties represented in the data.

## F. STATISTICAL ANALYSIS

We use Spearman rank correlation (Conover 1999) to assess the effectiveness of bonuses in increasing the likelihood that a high-quality FTAP Marine will reenlist. This is done separately with PMOSs that have sufficient sample size to calculate the test statistics. Our analysis of bonuses is limited to the SRB and the Early Kicker, as they are

available to FTAP Marines without special qualifications. We also omit lateral bonuses and kicker bonuses of types other than “early,” as it is difficult to know which Marines qualified for these bonuses outside of those who received them. Each Marine is scored as either 0 or 1 if they did not or did reenlist, respectively. The sum of the Early Kicker and SRB was obtained for each of the six years (FY2015 to FY2020) and applied on an individual basis. This was done separately for the E4 and E5 pay grades. We omit the E3 paygrade as only small numbers scored in the top ten percent of the estimated tier score (“Top Ten” group) or in the top ten percent of both the PFT and PRO score (“Special High Performance” group) in any PMOS. We also limit our analysis to 75 PMOSs that had at least 50 FTAP Marines in each of the study years. These MOSs accounted for about 92% of all FTAP Marines. The three Infantry specialties (0311, 0331, and 0341) are included in this set.

For the Top Ten group, only 50 of the 75 PMOSs produce a usable analysis. This may occur due to sample-size issues or a lack of variability in bonuses offered during the six-year period. Among the 50 usable results, three produce p-values (upper-tail tests for positive association) that are less than .05: PMOS 481 (Landing Support Specialist) with a p-value of .0033, PMOS 1341 (Engineer Equipment Mechanic) with a p-value of .0003, and MOS 1345 (Engineer Equipment Operator) with a p-value of (.0388). When a Benjamini-Hochberg correction is applied to the p-values to account for multiple testing, only the adjusted p-value for PMOS 1341 (.0138) is less than .05. The Benjamini-Hochberg correction (Faraway, 2015), which is the least severe among widely used multiple testing corrections, controls the false discovery rate instead of the simultaneous Type 1 error probability for which Bonferroni or Holm corrections are used. This discovery points to specialties affiliated with Engineer Equipment as showing association between bonuses offered and reenlistment rates. Not unexpectedly, none of the Infantry PMOSs show significant p-values.

For the Special High Performance group, 50 of the 75 PMOSs have calculated p-values, among which six are less than .05. Upon applying a Benjamini-Hochberg correction; however, none of the p-values remain statistically significant. Although Runnells (2023) did find a beneficial effect of bonuses on reenlistment rates in this group using a model that combined data across all PMOSs, our analysis, which focuses on

PMOSs individually, cannot confirm this finding. The 50 estimated correlations are positive 23 times and negative 27 times, which is consistent with a pattern of uncorrelatedness taken across the entire set of PMOSs.

## **G. SUMMARY**

Appropriately, Runnells (2023) points out that statistical analysis alone cannot untangle the issues that prevent causal inferences from being drawn about factors that may affect an FTAP Marine's decision on reenlistment. Judgment calls that had to be made on how to merge data sets also add a layer of uncertainty to our analysis. Nonetheless, retention of high-quality FTAP Marines has been prioritized by the Marine Corps, and it is important to have a sense of confidence that the substantial resources devoted to reenlistment bonuses are having the intended effect. Although our study provides only modest support for this assertion, it does not mean that the assertion is untrue. A better understanding of the attitudes of Marines in submitting for reenlistment, and accepting a reenlistment offer if one is given, would provide more direct insight. Our sense is that several factors other than bonuses may be at play, such as the role of FTAP quotas in this process, and the extent to which offering an Early Kicker may encourage some Marines to submit for reenlistment as insurance in case better employment opportunities do not become available later.

## V. MENU OF CONTRACTS

Wang, et al (2022) provide an overview of their innovative “menu of contracts” approach to the retention of naval aviators. In short, they propose to revamp the Aviation Department Head Retention Bonus (ADHRB) in a way that both incentivizes high quality officers to retain and more efficiently employs the resources in that program. As part of Runnells’s initial thesis research we consider the feasibility of this concept for the USMC SRB program. Ultimately, we find that under current institutional conditions, a menu of contracts scheme is infeasible or otherwise unlikely to bring success to the SRB program.

### A. NAVAL AVIATION AND THE ADHRB

The typical career path for naval aviators involves screening for promotion to Lieutenant Commander (O-4), when the officers are in their ninth or tenth year of service. Upon selection to O-4, officers that want to be considered for a department head tour submit packages to a board that meets the following fiscal year. Officers selected for department head are then offered department head billets while officers not considered or not selected fill other billets. It is important to acknowledge that a successful department head tour is a critical requirement for consideration for promotion to the next rank and for command.

The objective of the ADHRB is to incentivize pilots to complete a department head tour. It is generally offered prior to the officer’s promotion board to O-4 and requires that the officer agree to five years of service and to seek and fill a department head tour. The bonus is distributed in a lump sum annually over the five-year term. If the officer fails to be selected for promotion or fails to be selected for department head, they do not surrender any bonus payments they have already received, but they cease receiving any additional payments.

As currently executed, several weakness limit the efficiency and effectiveness of the ADHRB. Primarily, the program suffers from adverse selection in that the Navy is unable restrict eligibility for the bonus to only those officers destined fill a department head billet. This occurs for at least two reasons. The first is practical. When it comes time to offer the bonus to encourage retention, the Navy simply does not know exactly who

among the officers will be selected for department head two or more years later. The second is legal. To pay government employees who work the same job under the same conditions differently, even on the basis of past performance, runs afoul of the U.S Equal Pay Act. In addition, moral hazard undermines the effectiveness of the program in that high quality officers are paid just as much any other officer who accepts the bonus. Though this effect is not as great as the adverse selection problem. Suffice it to say, a bonus structure that is better able to target high quality officers and reward them significantly more than their counterparts would, all else equal, be superior to the incumbent program.

The authors propose to offer officers at the ADHRB a menu of contracts. One contract pays off substantially if the officer serves as a department head. Let  $A$  be that payoff. An officer who fails to get selected for department head (or fails to serve in that billet) would receive a low amount  $B$ . The other contract has a lower top payout, but a higher floor. This contract pays out  $C$  if the officer serves as a department head and it pays out  $D$  if the officer fails to do so. The bonus payouts must have the following relationship:  $A > C > D > B$ .

With appropriately weighted bonuses, the officers who believe themselves to be high quality and more than likely to be selected for department head will select the first contract and be rewarded when their expectations come to fruition. True lower performers who have lower expectations of being selected for department head will find the second contract less risky for them. Any temptation for a lower quality performer to try to cash in on the first contract will be tempered by the low payout for failing to make department head. In this manner, both the adverse selection and moral hazard problems are addressed in a manner that complies with federal laws regarding equal pay.

## **B. USMC AND THE FIRST TERM ALIGNMENT PLAN**

Consider the case for the Marine Corps and the first-term reenlistment problem. Much like the above case, while the Marine Corps does know something about the performance of the Marines in the FTAP population, the institution does not know for sure how well many of the eligible Marines will perform as members of the career force. In addition, the institution is generally unaware of the Marines' civilian employment

opportunities. As it is currently executed, the FTAP and SRB programs suffer from the same adverse selection and moral hazard problems as the Navy's ADHRB. So we examine the extent to which a menu of contracts approach could work for the SRB program.

Ultimately, we find that while the menu of contracts approach holds promise for a variety of settings, under existing institutional conditions it is not feasible to implement at the FTAP because the institution lacks a sufficiently uniform quality-revelation event and there is too much heterogeneity among those in the FTAP population, even within PMOSs, especially with respect to paygrade.

The most important aspect that renders this approach infeasible for the FTAP and the SRB is that the USMC enlisted career progression lacks an event like the Navy's department head selection board that reveals to the institution the quality of the member. While the Navy's department head board considers every applicant that was eligible for the bonus, there is no such board that convenes for all Marines in all PMOSs early in their stint in the career force. We consider that selection for promotion to staff sergeant as that event, but the PMOSs vary widely with respect to when Marines are considered for promotion. Not to mention the fact that the FTAP population includes lance corporals, corporals, and sergeants, who all vary widely in the probability they could make staff sergeant in their second term. If, say, only sergeants were eligible to reenlist, and the process was such that we could expect all sergeants to be considered for promotion to the next rank during the second year of their subsequent enlistment term, then we could structure a menu of contracts contingent on promotion. However, this is severely undermined by the fact that Marines vary so widely by PMOS and paygrade at that stage in their careers.

While a menu of contracts might not work for all PMOSs, it is possible that something could work for certain communities. For example, it might be possible to structure bonus contracts for aircraft maintenance Marines contingent upon obtaining a particular maintenance certification. This would have the benefit of revealing information about the quality of the Marine that was not necessarily apparent to the institution at the time of reenlistment and therefore serve the same role as the department headboard in the

Navy. However, the ability of the Marine to obtain the certification may not be entirely independent of one's unit or operational tempo, etc.

## VI. CONCLUSION

The Marine Corps has an interest in encouraging high-quality FTAP Marines to continue their service by reenlisting at the end of their contracts. To this end, the Marine Corps offers financial incentives in the form of reenlistment bonuses to encourage early reenlistment, acceptance of special assignments or duties, and remaining in or transferring into selected occupational specialties. Our analysis of manpower data supplied by the Marine Corps does not, however, find a strong signal that these incentives have increased rates of reenlistment of FTAP Marines that are in high-performance categories. Some evidence of this effect is found among Marines who score high on two components of the tier score (PFT score and PRO score) and in isolated specialties (e.g., those associated with Engineering Equipment). This finding does not disprove the hypothesis that such an effect exists on a broader basis. Similarly, it is not possible to decouple effects that are discovered from other factors that may affect reenlistment decisions.

Overall, the percentage of FTAP reenlistments from the top two tiers, which consist of Marines who scored in the top forty percent of the tier score, has remained steady overall, and slightly decreasing in some large specialties such as PMOS 311 (Rifleman), from FY2015 to FY2020, despite an increasing tendency to offer selective retention bonuses (SRBs). Again, this does not disprove that the bonuses were effective, because it is difficult to know what would have happened if the bonuses were not offered. Reasons for year-to-year variability in reenlistment rates are difficult to discern as they do not closely track variability in the amounts of bonuses offered.

It is reasonable to assume that financial incentives to reenlist are cumulative from the perspective of an FTAP Marine. The two broadly applicable bonuses for these Marines are SRBs and early reenlistment kickers for a Marine's current specialty. Other kickers, such as for aircraft maintenance and special duty assignments; and lateral SRBs for other specialties, appeal only to Marines with the appropriate qualifications. From the data, we are unable to identify FTAP Marines who did not reenlist but would have been attentive to these latter incentives. Our analysis considers only the early kicker and SRB taken together as a cumulative bonus, although we recognize that they may induce

specific behaviors. Early kickers are effective in encouraging FTAP Marines to submit applications for reenlistment earlier, but that does not mean that they would accept a reenlistment offer if made.

By law, the Marine Corps cannot offer financial incentives that differentially reward individual FTAP Marines by their perceived quality. The SRB is offered equally to all Marines of a given specialty, differentiating by paygrade only, which does to some extent correlate with the quality of a Marine. Additionally, the Marine Corps can exercise discretion in which applications for reenlistment it chooses to accept. Other approaches to encourage reenlistment by high-quality FTAP Marines may also be considered, including a menu of contracts system. The main obstacle to making this approach feasible is that the Marine Corps does not currently have a suitable means for eliciting information about the quality of an FTAP Marine, coupled with heterogeneity of within a given specialty and within paygrades. It is possible, however, that a menu of contracts approach may be effective for certain specialties.

It is difficult to discern, solely from the manpower data that we used in our analysis, what a better allocation of SRB resources would be. There is evidence that large bonuses attract reenlistments from Marines in the top ten percent of the estimated tier scores that we construct, specifically with respect to lateral transfers or special duty assignments. These bonuses are offered by specialties that represent promotions (e.g., Infantry Squad Leader) or require skills that are in high demand, such as Explosive Ordnance Disposal. The number of FTAP Marines who are qualified to respond to these incentives is not large, and it is not clear what lessons can be generalized from them to the broader FTAP population. We suggest that the Marine Corps develop quantified goals for reenlistment of high-quality Marines for each occupational specialty, and base resource allotment decisions on the amounts of shortfall in the last several prior years, with careful study of the outcomes that result from the allotments.

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## APPENDIX A: FIGURES AND TABLES FOR 0331 PMOS

Table 11. Bonuses offered to the 0331 PMOS (Machine Gunner), in non-inflation adjusted US dollars.

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>SRB</b>						
E3	8,250	12,000	4,250	8,500	6,400	6,400
E4	9,250	14,000	4,750	9,750	7,200	7,200
E5	10,250	15,000	5,250	10,750	8,000	8,000
<b>Early Kicker</b>						
E3	0	0	0	8,000	8,000	8,000
E4	0	0	0	8,000	8,000	8,000
E5	0	0	0	8,000	8,000	8,000
<b>SDA</b>						
E3	0	0	0	0	0	0
E4	0	0	0	20,000	20,000	0
E5	0	0	0	20,000	20,000	0

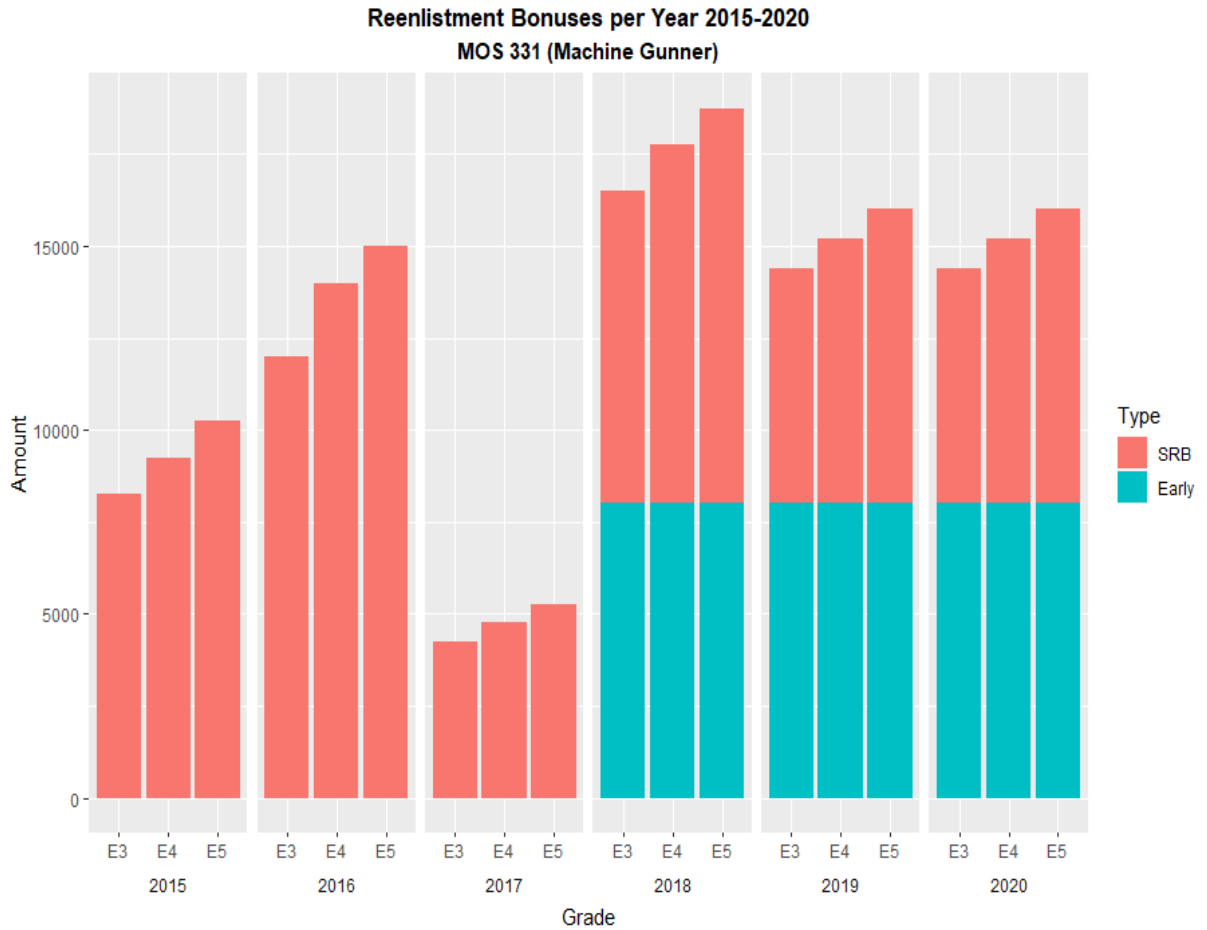


Figure 5. Bonuses offered to the 0331 PMOS (Machine Gunner), in non-inflation adjusted U.S. dollars. Kicker bonuses (SDA and Early) are mutually exclusive; only the Early Kicker is shown.

Table 12. Reenlistment analysis of the 0331 PMOS (Machine Gunner) during the period of study. No Marines lateraled into the 0331 PMOS during the six-year period. Total reenlistment includes Marines who lateraled out, but the BSR FTAP Quota does not include them.

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>571</b>	<b>607</b>	<b>624</b>	<b>520</b>	<b>611</b>	<b>548</b>
E3	196	174	127	105	134	174
E4	337	386	413	369	417	330
E5	22	33	72	38	49	31
Other	16	14	12	8	11	13
<b>Submitted for Reenlistment</b>	<b>95</b>	<b>120</b>	<b>152</b>	<b>138</b>	<b>147</b>	<b>124</b>
E3	9.7	12.6	15.7	17.1	11.9	14.9
E4	21.4	22.8	26.6	29.5	26.1	27.0
E5	18.2	30.3	30.6	28.9	40.8	29.0
<b>Reenlistment Regular</b>	<b>65</b>	<b>70</b>	<b>80</b>	<b>52</b>	<b>79</b>	<b>69</b>
E3	7.1	9.2	11.8	9.5	7.5	10.3
E4	14.5	13.0	13.3	11.4	15.1	14.2
E5	9.1	12.1	13.9	0.0	12.2	12.9
<b>SDA</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>28</b>	<b>8</b>	<b>8</b>
E3	0.0	0.0	0.8	2.9	0.0	1.7
E4	0.0	0.3	1.0	5.4	1.4	1.2
E5	0.0	3.0	1.4	13.2	4.1	3.2
<b>Lateral Out</b>	<b>13</b>	<b>21</b>	<b>40</b>	<b>25</b>	<b>30</b>	<b>23</b>
E3	0.0	0.0	0.8	1.0	0.7	0.6
E4	3.3	4.7	7.3	5.1	4.6	5.8
E5	9.1	9.1	12.5	13.2	20.4	9.7
<b>Total Reenlistment</b>	<b>79</b>	<b>97</b>	<b>128</b>	<b>106</b>	<b>119</b>	<b>100</b>
E3	7.7	9.8	13.4	13.3	8.2	12.6
E4	17.8	18.7	21.5	22.0	21.6	21.2
E5	18.2	24.2	30.6	28.9	36.7	25.8
<b>BSR FTAP Quota</b>	<b>70</b>	<b>96</b>	<b>109</b>	<b>79</b>	<b>105</b>	<b>93</b>
<b>BSR FTAP Remain</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>12</b>	<b>0</b>

Table 13. Reenlistment analysis of the “Estimated Top Ten Percent” group of the 0331 PMOS (Machine Gunner)

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>58</b>	<b>61</b>	<b>63</b>	<b>53</b>	<b>62</b>	<b>55</b>
<b>Submitted for Reenlistment</b>	15 (25.9)	18 (29.5)	31 (49.2)	22 (41.5)	23 (37.1)	18 (32.7)
<b>Reenlistment: Regular</b>	7 (12.1)	8 (13.1)	10 (15.9)	3 (5.7)	11 (17.7)	5 (9.1)
<b>SDA</b>	0 (0.0)	0 (0.0)	1 (1.6)	5 (9.4)	0 (0.0)	2 (3.6)
<b>Lateral Out</b>	7 (12.1)	5 (8.2)	13 (20.6)	11 (20.8)	9 (14.5)	9 (16.4)
<b>Total Reenlistment</b>	<b>14</b> (24.1)	<b>15</b> (24.6)	<b>26</b> (41.3)	<b>20</b> (37.7)	<b>20</b> (32.3)	<b>16</b> (29.1)
<b>Acceptance Rate</b>	<b>93.3%</b>	<b>83.3%</b>	<b>83.9%</b>	<b>90.9%</b>	<b>87.0%</b>	<b>88.9%</b>

Table 14. Reenlistment analysis of the “Special High Performance” group of the 0331 PMOS (Machine Gunner)

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>16</b>	<b>17</b>	<b>21</b>	<b>16</b>	<b>26</b>	<b>17</b>
<b>Submitted for Reenlistment</b>	6 (37.5)	3 (17.6)	9 (42.9)	8 (50.0)	7 (26.9)	7 (41.2)
<b>Reenlistment:</b>						
<b>Regular</b>	3 (18.8)	1 (5.8)	4 (19.0)	1 (6.3)	2 (7.7)	3 (17.6)
<b>SDA</b>	0 (0.0)	0 (0.0)	0 (0.0)	3 (18.8)	0 (0.0)	1 (5.8)
<b>Lateral Out</b>	2 (12.5)	1 (5.8)	5 (23.8)	4 (25.0)	4 (15.4)	3 (17.6)
<b>Total Reenlistment</b>	<b>5</b> (31.2)	<b>3</b> (17.6)	<b>9</b> (42.9)	<b>8</b> (50.0)	<b>6</b> (23.1)	<b>7</b> (41.2)
<b>Acceptance Rate</b>	<b>83.3%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>85.7%</b>	<b>100%</b>

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## APPENDIX B: FIGURES AND TABLES FOR 0341 PMOS

Table 15. Bonuses offered to the 0341 PMOS (Mortarman), in non-inflation adjusted U.S. dollars.

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>SRB</b>						
E3	8,250	12,000	4,250	8,500	4,000	6,400
E4	9,250	14,000	4,750	9,750	4,500	7,200
E5	10,250	15,000	5,250	10,750	5,000	8,000
<b>Early Kicker</b>						
E3	0	0	0	0	0	8,000
E4	0	0	0	8,000	0	8,000
E5	0	0	0	8,000	0	8,000
<b>SDA</b>						
E3	0	0	0	0	0	0
E4	0	0	0	20,000	20,000	0
E5	0	0	0	20,000	20,000	0

**Reenlistment Bonuses per Year 2015-2020  
MOS 341 (Mortarman)**



Figure 6. Bonuses offered to the 0341 PMOS (Mortarman), in non-inflation adjusted U.S. dollars. Kicker bonuses (SDA and Early) are mutually exclusive; only the Early Kicker is shown.

Table 16. Reenlistment analysis of the 0341 PMOS (Mortarman) during the period of study. No Marines lateraled into the 0341 PMOS during the six-year period. Total reenlistment includes Marines who lateraled out, but the BSR FTAP Quota does not include them.

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>583</b>	<b>671</b>	<b>639</b>	<b>551</b>	<b>622</b>	<b>614</b>
E3	163	165	99	96	120	130
E4	395	450	471	376	446	414
E5	19	46	58	70	51	57
Other	6	10	11	9	5	13
<b>Submitted for Reenlistment</b>	<b>111</b>	<b>148</b>	<b>173</b>	<b>124</b>	<b>147</b>	<b>127</b>
E3	15.3	12.1	16.2	8.3	20.0	9.2
E4	20.3	24.7	28.0	23.9	24.2	24.6
E5	26.3	34.8	43.1	37.1	29.4	26.3
<b>Reenlistment:</b>						
<b>Regular</b>	<b>79</b>	<b>93</b>	<b>92</b>	<b>39</b>	<b>61</b>	<b>73</b>
E3	10.4	7.9	13.1	4.2	11.7	8.5
E4	14.7	15.3	15.1	8.2	9.9	13.8
E5	21.1	23.9	13.8	5.7	5.9	8.8
<b>SDA</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>25</b>	<b>16</b>	<b>14</b>
E3	0.0	0.0	0.0	0.0	0.0	0.0
E4	0.0	0.0	2.8	5.1	3.1	3.4
E5	0.0	0.0	5.2	8.6	3.9	0.0
<b>Lateral Out</b>	<b>13</b>	<b>23</b>	<b>22</b>	<b>24</b>	<b>20</b>	<b>28</b>
E3	0.0	1.8	0.0	1.0	0.0	0.0
E4	3.3	3.8	3.0	3.7	3.4	4.6
E5	0.0	6.5	13.8	12.9	9.8	15.8
<b>Total Reenlistment</b>	<b>92</b>	<b>117</b>	<b>132</b>	<b>89</b>	<b>98</b>	<b>115</b>
E3	10.4	9.7	13.1	5.2	11.7	8.5
E4	18.0	19.3	21.0	17.0	16.6	21.7
E5	21.1	30.4	34.5	28.6	19.6	24.6
<b>BSR FTAP Quota</b>	<b>86</b>	<b>97</b>	<b>113</b>	<b>66</b>	<b>91</b>	<b>84</b>
<b>BSR FTAP Remain</b>	<b>0</b>	<b>17</b>	<b>20</b>	<b>0</b>	<b>15</b>	<b>2</b>

Table 17. Reenlistment analysis of the “Estimated Top Ten Percent” group of the 0341 PMOS (Mortarman)

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>59</b>	<b>68</b>	<b>64</b>	<b>56</b>	<b>63</b>	<b>62</b>
<b>Submitted for Reenlistment</b>	18 (30.5)	24 (35.3)	29 (45.3)	28 (50.0)	23 (36.5)	21 (33.9)
<b>Reenlistment Regular</b>	13 (22.0)	15 (22.1)	13 (20.3)	5 (8.9)	8 (12.7)	7 (11.3)
<b>SDA</b>	0 (0.0)	0 (0.0)	1 (1.6)	6 (10.7)	5 (7.9)	2 (3.2)
<b>Lateral Out</b>	2 (3.4)	5 (7.4)	10 (15.6)	11 (19.6)	7 (11.1)	10 (16.1)
<b>Total Reenlistment</b>	<b>15</b> (25.4)	<b>20</b> (29.4)	<b>24</b> (37.5)	<b>23</b> (41.7)	<b>20</b> (31.7)	<b>19</b> (30.6)
<b>Acceptance Rate</b>	<b>83.3%</b>	<b>83.3%</b>	<b>82.8%</b>	<b>82.1%</b>	<b>87.0%</b>	<b>90.5%</b>

Table 18. Reenlistment analysis of the “Special High Performance” group of the 0341 PMOS (Mortarman)

	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Cohort</b>	<b>36</b>	<b>38</b>	<b>41</b>	<b>46</b>	<b>35</b>	<b>40</b>
<b>Submitted for Reenlistment</b>	9 (25.0)	12 (31.6)	18 (46.9)	21 (45.7)	14 (40.0)	14 (35.0)
<b>Reenlistment Regular</b>	5 (13.9)	9 (23.7)	13 (31.7)	6 (13.0)	6 (17.1)	7 (17.5)
<b>SDA</b>	0 (0.0)	0 (0.0)	1 (2.4)	5 (10.9)	3 (8.6)	1 (2.5)
<b>Lateral Out</b>	2 (5.5)	3 (7.9)	3 (7.3)	4 (8.7)	3 (8.6)	4 (10.0)
<b>Total Reenlistment</b>	<b>7</b> (19.4)	<b>12</b> (31.6)	<b>17</b> (41.5)	<b>16</b> (34.8)	<b>12</b> (34.3)	<b>12</b> (30.0)
<b>Acceptance Rate</b>	<b>77.8%</b>	<b>100%</b>	<b>94.4%</b>	<b>76.2%</b>	<b>85.7%</b>	<b>85.7%</b>

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