



ACQUISITION RESEARCH PROGRAM SPONSORED REPORT SERIES

Effect of Special Duty Assignments on Enlisted Marines' Performance and Retention

March 2023

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

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ABSTRACT

There has been limited research on the impact of special duty assignment (SDA) on enlisted Marine performance, promotion, and retention. As the Marine Corps increases its focus on talent management and improving the education and training of its force, it is important to understand how the current SDA policy affects its enlisted force. This study analyzed personnel records and performance data from 2009–2021, using econometric methods to match SDA Marines to non-SDA Marines who share similar characteristics. Event study and multiple fixed-effect regression analyses determined the effect that being assigned an SDA has on the job performance and human capital attainment of enlisted Marines within the study. The results indicate SDA Marines are retained and promoted at a higher rate than non-SDA Marines, while also receiving significantly lower job performance markings. During their assignment, SDA Marines received fitness reports averaging 1.3 relative value points lower than their non-SDA peers, with this gap continuing until two years post-SDA. Additionally, SDA Marines' personal education attainment grew at a slower rate in comparison to non-SDA Marines. Based on these findings, it is recommended the Marine Corps continue to seek highly qualified Marines to pursue SDA billets, while prioritizing the retention and promotion of its highest performing Marines regardless of their SDA status.



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TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	PURPOSE OF THIS STUDY	2
B.	SCOPE AND METHODOLOGY	2
C.	RESULTS AND FINDINGS	4
D.	ORGANIZATION OF CHAPTERS.....	5
II.	INSTITUTIONAL BACKGROUND	7
A.	MILITARY OCCUPATIONAL ASSIGNMENT OVERVIEW	7
B.	SPECIAL DUTY ASSIGNMENT VOLUNTEER PROCESS	7
C.	NON-VOLUNTEER SPECIAL DUTY ASSIGNMENT SELECTION SCREENING TEAM	9
D.	MMEA INITIATIVES	10
E.	SPECIAL DUTY, TYPE-1, AND TYPE-2 BILLET ASSIGNMENT DESCRIPTIONS.....	12
1.	Special Duty Assignments	12
2.	TYPE-1 Billet Assignments.....	14
3.	TYPE-2 Billet Assignments.....	15
F.	BONUSES.....	16
G.	CAREER IMPLICATIONS	16
H.	STAFF NON-COMMISSIONED ENLISTED PROMOTION BOARDS.....	17
I.	PROMOTION BOARD RESULTS	18
J.	DISCUSSION	20
III.	LITERATURE REVIEW	23
A.	FIRM SPECIFIC HUMAN CAPITAL.....	23
B.	DUTY ASSIGNMENT OUTCOME STUDIES.....	24
C.	ASSIGNMENT AND EVENT OUTCOME STUDIES.....	25
D.	ENLISTED MARINE PROMOTION AND RETENTION	26
E.	SUMMARY	27
IV.	DATA AND METHODOLOGY	29
A.	DATA DESCRIPTION	29
1.	Data Sources	29
2.	Data Cleaning and Merging.....	29
3.	Job Performance, Human Capital, and Retention Outcomes Variables.....	32



B.	METHODOLOGY	36
1.	Matching Process	36
2.	Matching Results.....	37
C.	MODELS	42
V.	RESULTS	45
A.	PERFORMANCE OUTCOMES.....	45
1.	Job Performance: Fitness Reports	45
2.	Job Performance: Physical Fitness and Misconduct	47
B.	HUMAN CAPITAL OUTCOMES.....	49
1.	Education	49
2.	Deployment Experience.....	50
3.	Promotions.....	51
C.	RETENTION OUTCOMES	53
D.	MILITARY OCCUPATIONAL SPECIALTY SUB-GROUP ANALYSIS	55
VI.	CONCLUSION	59
A.	SUMMARY	59
B.	RECOMMENDATIONS.....	60
C.	LIMITATIONS.....	61
D.	FURTHER RESEARCH.....	61
	APPENDIX A. DEPENDENT OUTCOME STATISTICS CONSISTENT DATASET, 12 MONTHS PRIOR TO SDA EVENT	63
	APPENDIX B. DEPENDENT OUTCOME STATISTICS RETENTION DATASET, 12 MONTHS PRIOR TO SDA EVENT	65
	APPENDIX C. EFFECT ON EDUCATION LEVEL ATTAINMENT BY MOS FIELD ASSIGNED SPECIAL DUTY ASSIGNMENTS	67
	APPENDIX D. EFFECT ON RANK CHANGE BY MOS FIELD FOR SDA MARINES.....	69
	APPENDIX E. EFFECT ON RETENTION BY SPECIAL DUTY ASSIGNMENT TYPE	71
	APPENDIX F. EFFECT ON RETENTION FOR MARINES ASSIGNED SPECIAL DUTY ASSIGNMENTS BY MOS FIELD.....	73



LIST OF REFERENCES.....75



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LIST OF FIGURES

Figure 1.	FY23-24 Volunteer and HSST Timeline. Source: Manpower Management Enlisted Assignments [MMEA] (2022).	8
Figure 2.	SDA Volunteer Snapshot. Source: MMEA (2022).	11
Figure 3.	Ratio Difference, SDA Volunteers and Non-volunteers. Source: MMEA (2022).	11
Figure 4.	Time In Grade Requirements. Source: Headquarters, Marine Corps (2012).	17
Figure 5.	FY-21 Enlisted Promotion Board Results. Adapted from Manpower & Reserve Affairs Enlisted Promotions (2022).	19
Figure 6.	FY-22 Enlisted Promotion Board Results. Adapted from Manpower & Reserve Affairs Enlisted Promotions (2022).	20
Figure 7.	Consistent Sample Relative Value at Processing over Time. Data from TFDW & MMRP-30.	45
Figure 8.	Consistent Sample Relative Value Cumulative over Time. Data from TFDW & MMRP-30.	46
Figure 9.	Consistent Sample Physical Fitness Score over Time. Data from TFDW.	48
Figure 10.	Consistent Sample Education Attainment over Time. Data from TFDW.	50
Figure 11.	Consistent Sample Deployment Experience. Data from TFDW.	51
Figure 12.	Consistent Sample Human Capital Rank Change. Data from TFDW.	52
Figure 13.	Retention Sample SDA and Non-SDA Comparison. Data from TFDW.	54
Figure 14.	Retention Sample SDA Billet Type and Non-SDA Comparison. Data from TFDW.	55
Figure 15.	Retention Sample MOS Groups and Non-SDA Comparison. Data from TFDW.	57



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ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF DEFENSE MANAGEMENT
NAVAL POSTGRADUATE SCHOOL

LIST OF TABLES

Table 1.	SDA and T1 Bonuses FY 2022. Adapted from Headquarters, United States Marine Corps (2022a).	16
Table 2.	Full Dataset Descriptive Statistics for Non-SDA and SDA Marines	31
Table 3.	Full Dataset Pre-match Outcome Statistics by SDA Type	35
Table 4.	Descriptive Statistics for Consistent Sample Post Matching, 12 Months Prior to SDA Event.....	39
Table 5.	Descriptive Statistics for Retention Sample Post Matching, 12 Months Prior to SDA Event.....	41
Table 6.	Effects on Job Performance: Fitness Reports for SDA Marines.....	47
Table 7.	Effects on Job Performance: PFT and Misconduct for SDA Marines.....	49
Table 8.	Effects on Human Capital Attainment for SDA Marines	52
Table 9.	Effect on Retention for Marines Assigned an SDA.....	53
Table 10.	Effect on Job Performance for SDA Marines by MOS Field	56



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NAVAL POSTGRADUATE SCHOOL

LIST OF ACRONYMS AND ABBREVIATIONS

AFQT	Armed Forces Qualification Test
AMOS	Additional Military Occupational Specialty
BRC	Basic Recruiters Course
CFT	Combat Fitness Test
CMC	Commandant of the Marine Corps
CPG	Commandant's Planning Guidance
EFMP	Exceptional Family Member Program
FITREP	Fitness Report
FMF	Fleet Marine Force
FY	Fiscal Year
GCT	General Classification Test
HQMC	Headquarters, United States Marine Corps
HSST	Headquarters Marine Corps Special Duty Assignment Selection Team Screening Process
LASSO	Least Absolute Shrinkage and Selection Operator
LPM	Linear Probability Model
M&RA	Manpower and Reserve Affairs
MARADMIN	Marine Administrative Message
MARSOC	Marine Special Operations Command
MCMAP	Marine Corps Martial Arts Program
MCO	Marine Corps Order
MCSF	Marine Corps Security Forces
MMEA	Manpower Management Enlisted Assignments
MMRP	Manpower Management Performance Evaluation
MOS	Military Occupational Specialty
MSG	Marine Embassy Security Guard
PES	Performance Evaluation System
PFT	Physical Fitness Test
PMOS	Primary Military Occupational Specialty
PROCON	Proficiency and Conduct



RCT	Randomized Control Trial
RELVALCUM	Cumulative Relative Value
RELVALPROC	Relative Value at Processing
RS	Reporting Senior
SCREENMAN	Selecting, Screening, and Preparing Enlisted Marines for Screenable Billets and Independent Duty Assignments
SDA	Special Duty Assignment
SDAP	Special Duty Assignment Pay
SNCO	Staff Non-commissioned Officer
SOCS	Marine Special Operations Command
T1	Type-1 Billet
T2	Type-2 Billet
TFDW	Total Force Data Warehouse
TFRS	Total Force Retention System
TIG	Time in Grade
TIS	Time in Service
TOS	Time on Station
USMC	United States Marine Corps
VSI	Volunteer Supplemental Incentive
YOS	Years of Service



I. INTRODUCTION

Aside from conducting combat operations, the more common images of Marines to the American populace are of either disciplined drill instructors or stoic embassy guards standing watch in a foreign country. Some civilians may have even interacted with Marine recruiters in their local community assigned recruiting duty. The enlisted Marines in these occupations are on special duty assignments (SDA). Marines serving in SDA billets fulfill critical roles in preserving the United States Marine Corps (USMC) organization. The Commandant of the Marine Corps (CMC) specifically designates the role of drill instructor, embassy security guard, and recruiter as SDA billets. The 2022 Operational Approach Strategy released by USMC Manpower Management Enlisted Assignments (MMEA) states these billets are its top staffing priority. While these billets require an extra degree of responsibility, the tasks they are responsible for accomplishing are outside of any Marine's primary military occupational specialty (PMOS) and that specific occupational field community. Serving in an SDA requires a Marine to take a hiatus from operating or gaining experience in their PMOS field. There has been little research on how serving in an SDA affects the human capital of enlisted Marines.

On 3 November 2021, CMC released Talent Management 2030 (TM 2030), a plan that outlines bold initiatives by USMC. The intent of TM 2030 is for the USMC to transition away from its rigid "get promoted up or get out" legacy manpower system it has utilized to manage its personnel for decades. It challenges the organization to adopt retention and human capital systems more commonly observed in the private sector. The Marine Corps has prioritized the recruitment of new prospective Marines to sustain its force size, while applying minimal efforts in the retention of skilled and top performing Marines already within the organization (Berger, 2021). Since the Vietnam War, the Marine Corps has accomplished its top manpower priorities of recruiting and training new Marines by using its existing manpower pool, removing Marines from potential Fleet Marine Force (FMF) billets in their PMOS, and placing them into SDA billets to achieve organizational goals. The SDA policy is a no fail mission. This creates a competition of priorities within the organization. The Marine Corps must either prioritize the recruitment and training of



new enlisted Marines or focus its investment on combat capabilities and experience amongst existing personnel. To balance these priorities, the USMC personnel monitors and planners must ensure manpower requirements and personnel qualifications are met for USMC operating forces, while also filling SDA billets with qualified Marines.

The TM 2030 plan defines talent management as “the act of aligning talents of individual Marines with needs of the service to maximize the performance of both” (Berger, 2021, p. 4). The TM 2030 plan directed USMC Manpower & Reserve Affairs (M&RA) to “create a talent management system that will recruit, develop, retain, and incentivize the most talented and best performing Marines” (p. 4). If the Marine Corps is to achieve its goals of talent management, it is necessary to evaluate the effect of SDA billet selection policies on its overall human capital.

A. PURPOSE OF THIS STUDY

The selection process for SDAs was not specifically referenced for change within TM 2030. Performing an econometric study to understand the effects of the current SDA process, selection, and billet fulfillment on the talent management of enlisted Marine manpower will inform future policy recommendations. Additionally, this study will inform future and on-going human capital studies within the Marine Corps specifically related to enlisted Marine retention. The purpose of this study is to assess how job performance is affected by the SDA policy and if the policy results in the promotion and retention of the most talented enlisted Marines.

B. SCOPE AND METHODOLOGY

The following research questions are addressed within this thesis:

- What is the difference in performance, promotion, and retention between active duty enlisted SDA Marines and non-SDA Marines?
- Does the SDA policy result in the retention of the most talented and highest performing Marines?



- What is the difference in retention, performance, and promotion between SDA Marines and non-SDA Marines within the same MOS community?
- What is the difference in performance, promotion, and retention between the different SDA groups?

I hypothesize Marines that are assigned an SDA tour receive lower performance markings and outcomes during that assignment period compared to their peers but experience higher levels of promotion and years of retention upon their return to the FMF. The exploration of these research questions will provide an understanding of the effect of the current SDA policy on the Marine Corps and if it is effectively achieving talent management retention or hindering it within the enlisted ranks. This research is relevant to the 2019 Commandant's Planning Guidance (CPG) and the TM 2030 initiatives that have signaled force wide manpower shaping actions. These initiatives could potentially lead to changes in SDA selection policies, enlisted Marine retention goals, and promotion boards.

Answering the above questions could potentially result in confirmation of the legacy status quo talent retention and promotion process effectiveness. Conversely, study findings may encourage additional inquiry and research into the current promotion board CMC priorities to ensure the most qualified Marines by PMOS are promoted and retained. It could also provide justification for a tailored re-enlistment program that optimizes the deferment of SDA duty for certain PMOS qualified Marines in addition to other personnel retention initiatives.

The study data consists of demographic, performance, and enlistment data for active-duty enlisted Marines, with accessions from October 2009 through October 2021 from the Marine Corps' Total Force Data Warehouse (TFDW) and Manpower Management Performance Evaluation (MMRP-30). By using this data, it is possible to analyze and compare the performance, promotion, and retention trends of Marines who completed an SDA and Marines that have not. The TFDW data enables the identification of SDA Marines while the MMRP-30 data provides fitness report (FITREP) performance data. A more in-depth discussion and explanation of performance outcomes and methodologies can be found within Chapter IV.



To facilitate a comparison that is fair and impartial between SDA to non-SDA Marines, I employ a predictive matching strategy to match non-SDA Marines to those who have completed an SDA based on their months in service and rank. In addition to matching individuals on the exact same service length and rank, my propensity score matching strategy also utilizes least absolute shrinkage and selection operation (LASSO) to determine the optimal set of SDA selection characteristics and uses the predicted propensity score to further match SDA and non-SDA Marines in each exact-match month-in-service and rank matching group. The observable window of time during which I study differences between the SDA Marines and their matched comparisons is relative to the SDA AMOS assignment date. This matching strategy enables comparative analysis of performance and human capital outcomes during the observation window. I also perform a sub-group analysis related to MOS fields and SDA communities. To evaluate the SDA impact on enlisted Marine job performance, human capital attainment, and service longevity, I explore these differences in outcomes through event study estimates, multiple linear regression with fixed effects, and linear probability models.

C. RESULTS AND FINDINGS

As predicted in paragraph B of this chapter, Marines assigned to an SDA possess lower performance outcomes in comparison to their non-SDA peers while serving in the SDA duty. However, they are more likely to be promoted and have a greater probability of being retained when compared to non-SDA Marines.

During their 36-month SDA, Marines perform on average 1.3 points lower on their FITREP relative values than their non-SDA peers. After spending 24 months in the FMF post-SDA, Marine FITREP relative values improve and begin to outperform their non-SDA peers. Additionally, I find 55% of SDA Marines remain in service 4 years after their SDA billet assignment, compared to only 32% of their non-SDA counterparts. Results also indicate there is a statistically significant penalty on the education level attainment of SDA assigned Marines that continues to grow as they remain in service compared to their peers.

Based on my research, I recommend the Marine Corps maintain its current SDA process but annually examine and modify its promotion board precept as required. This



will ensure the highest performing and most qualified Marines are selected for promotion. Furthermore, I recommend the Marine Corps continue to prioritize the retention of Marines who possess higher levels of human capital, while also exploring programs that provide opportunities for SDA Marines to improve their personal human capital.

D. ORGANIZATION OF CHAPTERS

In Chapter II, I provide an in-depth institutional background that explains initial Military Occupational Specialty (MOS) selection, current SDA selection process, along with billet prerequisite requirements. This chapter also includes an explanation of how Marines are screened and selected for an SDA. It also provides an overview of the promotion board precepts related to SDA and recent promotion results. Additionally, this chapter covers relevant initiatives to the SDA selection process. Within Chapter III, I discuss related literature of firm specific human capital, special duty and military duty assignment outcomes, and pertinent enlisted Marine studies. In Chapter IV, I describe in detail the data and methodologies used to answer the posed research questions. In Chapter V, I present and discuss the findings of my research. In Chapter VI, I provide recommendations for future USMC human resource policies related to SDA and talent management, along with future research recommendations in my closing remarks.



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II. INSTITUTIONAL BACKGROUND

This chapter provides an overview of MOS assignment, SDA volunteer and selection process, along with institutional specific information related to the USMC enlisted promotion process. This chapter also explains the prerequisite requirements for SDA and Type-1(T1) billets of interest to this study.

A. MILITARY OCCUPATIONAL ASSIGNMENT OVERVIEW

A Basic MOS is assigned to every Marine prior to boot camp. Upon completing boot camp Marines complete training within their PMOS. Marines are then assigned to a FMF unit where they are to use their PMOS. If a Marine completes an SDA school, they receive the corresponding SDA MOS code within their record in the Additional Military Occupational Specialties (AMOS) category. SDA billet duties include the following with associated AMOS: Drill Instructors (0911), Recruiter (8411), and Marine Embassy Security Guard (8156). The MOS Manual NAVMC 1200.1E defines AMOS as any existing MOS awarded to a Marine who already holds a PMOS. Marines are not promoted within their AMOS categories. For example, if an enlisted Marine has a PMOS of 0311 (Infantry) and completes an SDA tour as a drill instructor, they will have an AMOS of 0913 permanently added to their record, while retaining a PMOS of 0311. On a promotion board, that same Marine will only compete against Marines within the PMOS of 0311, regardless of their SDA experience.

B. SPECIAL DUTY ASSIGNMENT VOLUNTEER PROCESS

Enlisted Marines from every PMOS with at least six months of time on station (TOS) can volunteer for an SDA billet each year. The Marine Corps views SDA billets mission essential and ensures full manning to all applicable billet vacancies. Headquarters Marine Corps (HQMC) MMEA Special Duty Assignments Unit (MMEA-25) solicits volunteers via annual Marine administrative message (MARADMIN), along with supplemental road show visits to USMC installations.



The 2022 MARADMIN targeting potential volunteers advertises “an SDA tour is intellectually rewarding and physically and mentally challenging, but a successful SDA tour is a hallmark of a competitive Marine and makes him or her exceptionally qualified for promotion, while providing additional opportunities for meritorious promotions, financial incentives, duty station location preferences” (Headquarters, United States Marine Corps [USMC], 2022b, p. 1). Marines can volunteer for a specific SDA program of their choosing during the volunteer period and will be selected to attend the requisite AMOS school if found qualified during the screening process. Figure 1 outlines MMEA-25 timeline utilized for fulfilling SDA billeting requirements. If MMEA-25 does not receive enough volunteers to fill SDA billet vacancies, it then conducts a screening of eligible Marines to fill remaining SDA billets.

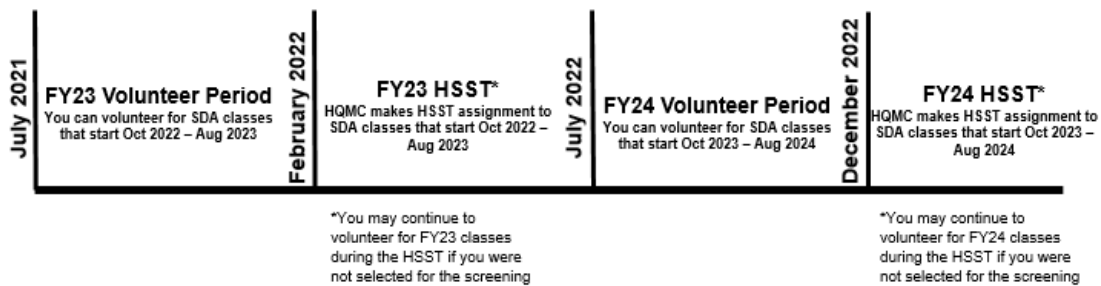


Figure 1. FY23-24 Volunteer and HSST Timeline. Source: Manpower Management Enlisted Assignments [MMEA] (2022).

The latest version of Marine Corps Order (MCO) 1326.6, *Selecting, Screening, and Preparing Enlisted Marines for Screen-able Billets and Independent Duty Assignments* (SCREENMAN) was published in 2021. The SCREENMAN establishes “policy and procedures for assignment of enlisted Marines to screen-able billets that provide the Marine Corps with the capability to recruit, train, and educate Marines and safeguard national assets” (USMC, 2021b, p. 1).

To be considered qualified, Marine volunteers must complete the SDA screening checklist, derived from the SCREENMAN. The checklist ensures volunteers are not only qualified in terms of physical fitness, leadership performance, and disciplinary misconduct



record, but also in terms of financial and personal life stability. These prerequisite requirements must be met before a Marine can be assigned to an SDA school. This checklist also requires concurring endorsements from the volunteering Marine's PMOS monitor, their unit's medical officer, and their Commanding Officer (CO) prior to final acceptance by MMEA-25.

If selected for an SDA, the Marine's unit CO must reaffirm the Marine currently meets the minimum requirements to attend their selected SDA school. During this period the unit CO can potentially request the Marine's SDA orders to be cancelled or delayed if they find the Marine not meeting one or more eligibility requirements (USMC, 2021b).

C. NON-VOLUNTEER SPECIAL DUTY ASSIGNMENT SELECTION SCREENING TEAM

The HQMC SDA Selection Team (HSST) within MMEA-25 identifies, selects, and directs non-volunteer Marines to an SDA (USMC, 2021b). To meet the billet vacancy requirements following the SDA volunteer period the HSST uses its personnel management system to identify eligible Marines for screening (T. Husar, personal communication, July 22, 2022). Their process requires filtering a starting population of over 150,000 enlisted Marines each Fiscal Year (FY). Marines are evaluated and sorted from the original list. Marines are disqualified and removed from the list if they fail to meet specific criteria, such as rank requirements, medical requirements, possess a current Physical Fitness Test (PFT) third class score lower than 199, have a duty status code that renders them ineligible, etc. Marines are also removed from the list if they have already completed an SDA, hold a critical PMOS at minimal manning levels, or are in receipt of orders to a new duty station. The population identified for eligibility for screening at the conclusion of the filtering process results in a population ranging between 8,000 and 10,000 Marines (Husar, 2022).

The HSST disseminates the list of Marines to each applicable PMOS monitor to further validate and screen the list for eligibility. The PMOS monitor's validation confirms which Marines from within their community are eligible to be officially screened for an SDA that year by the HSST, while concurrently ensuring adequate manning levels are met



within the applicable PMOS community. Marines still on this list subsequently go through the same SCREENMAN checklist process as the SDA volunteers at the unit level, and their completed checklist package is returned to MMEA-25 for final screening and selection determination. The HSST will assign the SDA school based on the current billet vacancy needs of the Marine Corps, while also weighing individual preference, CO recommendations, and individual qualifications. These selected non-volunteer Marines are not given duty location preferences and receive a smaller bonus compared to SDA volunteers. As with volunteers, a 45-day re-certification is conducted by their CO prior to SDA school departure.

If Marines are selected to attend an SDA school, they are required to re-enlist, as there is a re-enlistment obligation that accompanies an assignment to an SDA. If a Marine declines to accept the orders to the SDA school, ultimately refusing re-enlistment, they are given a re-enlistment code of RE-3O (Headquarters, USMC, 2021a). Marines that receive a RE-3O are disqualified to re-enlist in the USMC Corps, lose access to other USMC career opportunities, and must end their service upon their current EAS without exceptions.

D. MMEA INITIATIVES

MMEA increased SDA volunteerism by 141% from FY-21 to FY-24 decreasing its reliance on the HSST process as shown in Figure 2 (MMEA, 2022). MMEA attributes this positive increase in SDA volunteers due to its various initiatives aimed at Key Leader Engagements, Townhalls, SDA solicitation briefs, target marketing, and other incentives.



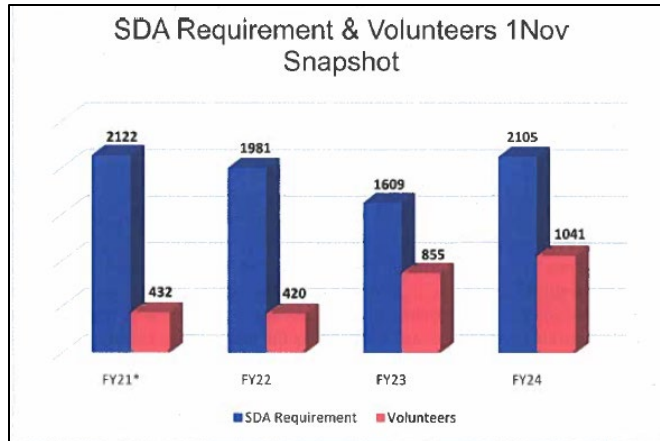


Figure 2. SDA Volunteer Snapshot. Source: MMEA (2022).

The increase in volunteerism for an SDA reduces the overall need for involuntary assignment and screening to fill vacant SDA billets. MMEA data analysis of historical SDA records found Marines that volunteer graduate from SDA schoolhouses at a significantly higher rate than Marines that are screened for involuntary selection to the SDA school. The data visual provided by MMEA in Figure 3 depicts the ratio difference between volunteers and non-volunteers. During the last three FY, it required three aspiring volunteers to yield two SDA graduates but requires ten non-volunteer HSST Marines to be identified and fully screened to yield two SDA graduates.

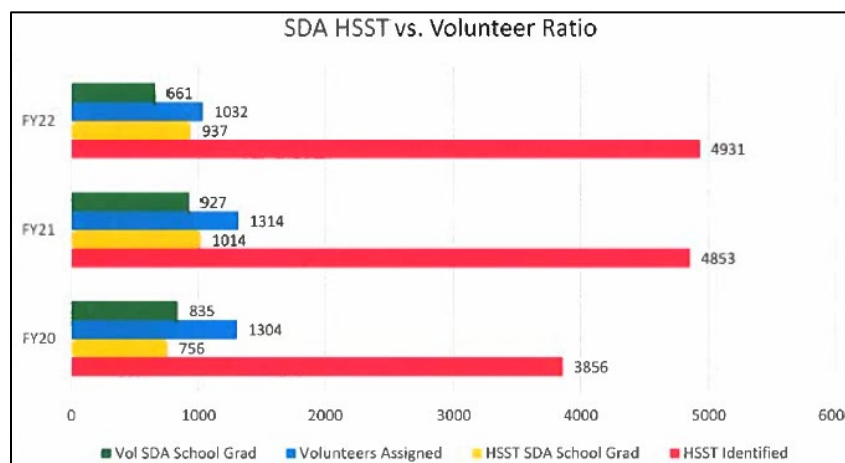


Figure 3. Ratio Difference, SDA Volunteers and Non-volunteers. Source: MMEA (2022).

E. SPECIAL DUTY, TYPE-1, AND TYPE-2 BILLET ASSIGNMENT DESCRIPTIONS

In addition to listing the requirements necessary to be selected to an SDA, the SCREENMAN also provides the requirements necessary for selection to other enlisted billets defined as requiring exceptional responsibility. MMEA-25 assigns all volunteers and directed selectees for screen-able billets are for active-duty enlisted Marines (USMC, 2021b). While SDA and T1 assignment process remain similar, the Type-2 (T2) billet assignment process differs. T2 billets are filled by volunteers after Marines are vetted by their unit CO and a billet specific designation process. Due to AMOS population size, and similar screening process, only SDA and specific T1 billet assignments will be the focus of this study. The following paragraphs outline the difference between these types of billets and their qualifications as provided in the SCREENMAN.

1. Special Duty Assignments

These assignments include Recruiter, Drill Instructor, and Marine Security Guard (MSG) Detachment Commander. These duties incur a normal tour length of 36 months.

As mentioned, Marines with a disciplinary record will be closely scrutinized before selection to an SDA, as previous misconduct is not an automatic disqualifier. Marines with adverse documentation require a positive endorsement by their current CO during the screening process to determine whether the Marine is suitable for an SDA. Family stability, financial stability, single parents, exceptional family member program (EFMP), and dual military households are not disqualifying factors, but COs must accurately annotate as to whether any instability will or will not be resolved prior to the end of the screening process. CO's may recommend an exception to SCREENMAN policy or waiver for Marines who fail to meet any selection requirements if they believe the Marine being screened will be successful on SDA duty despite the deficiency. More specific requirements and descriptions of these duties are outlined below.

a. Recruiting Duty

Marines selected for Recruiter are responsible for ensuring the Marine Corps continually enlists high quality Marines. The SCREENMAN states "finding quality



individuals that desire to become Marines is the responsibility of the men and women on recruiting duty” (USMC, 2021b, p. 15).

Any Marines between the ranks of Corporal (E-4) to Gunnery Sergeants (E-7) can either volunteer or be selected for recruiting duty (USMC, 2021b). It is recommended prospective Recruiters have a General Classification Test (GCT) score above 90. The only fitness standards required for selection are to not be overweight and pass a PFT upon reporting to Basic Recruiters Course (BRC).

Once selected, prospective recruiters will attend BRC, which occurs six times during the FY. Marines that pass BRC are equipped with the training necessary to be successful on recruiting duty. Recruiters receive the AMOS of 8411.

b. Drill Instructor Duty

Drill Instructors are “the first Marines a newly recruit meets upon their reporting to basic training and the training of recruits the primary responsibility of the Marines on Drill Instructor duty” (USMC, 2021b, p. 22).

All Sergeants (E-5) to E-7s can volunteer for an SDA tour as a drill instructor, but only E-5 to E-6 can be involuntarily selected. The grade of E-4 requires additional vetting to be approved for duty if they meet the requirements necessary (USMC, 2021b). It is recommended prospective Drill Instructors have GCT scores above 90. To be selected during the screening process potential selectees must score at least 235 on the PFT before attending the Drill Instructor School, along with not being overweight.

Drill Instructor school occurs four times throughout the FY and is nearly three months long per course. Upon school graduation new drill instructors receive the AMOS of 0911.

c. Marine Security Guard Detachment Commander Duty

According to the SCREENMAN “the mission of MSG is to provide protection to mission personnel and prevent the compromise of national security information and equipment at designated diplomatic and consular facilities” (USMC, 2021b, p. 28). MSG



Detachment Commanders accomplish their assigned mission through the management of MSG Detachment Watch standers (Type 1 billet).

Staff Sergeant (E-6) to Master Gunnery Sergeant (E-9) Marines are eligible for assignment as Detachment Commanders. Marines should possess a GCT score above 100. Marines must score a second class PFT, scoring 200 or higher, before attending MSG school. MSG school occurs five times per FY, with each course lasting approximately two months (USMC, 2021b). Both MSG Detachment Commanders and Watch Standers receive the same AMOS of 8156 upon completion of their school, equipped with the requisite skillset to protect diplomatic facility personnel and national assets.

2. TYPE-1 Billet Assignments

The SCREENMAN defines T1 billet assignments as “screen-able billets that include challenging duties primarily associated with specific occupational fields, that may not be available to all Marines, include MSG Watch Stander, Marine Combat Instructor, Marine Corps Security Forces (MCSF) Guard, Staff Non-Commissioned Officer (SNCO) Academy Faculty Advisor, Formal Schools Instructor, Marines on Independent Duty, and duty with Marine Special Operations Command (SOCS)” (USMC, 2021b, p. 11). Upon completion of the applicable T1 billet school the Marines will complete a 36-month tour before returning to their PMOS. MSG Watch Stander and Combat Instructor duties are outlined below, as they are both promotion precepted billets, and vacancies within these billets are screened against the entire population of enlisted Marines. The other T1 billets assignment criteria and selection are more exclusive when compared to SDA billet prerequisites. Those billet outlines are provided within the appendix.

a. Marine Security Guard Watch Stander Duty

The overall mission for an MSG Watch Stander is the same as the MSG Detachment Commander billet. The only difference is the MSG Watch Standers achieve their assigned mission by following the orders directed from their Detachment Commanders (USMC, 2021b).



Marines between Private First Class (E-2) and E-5 ranks can volunteer or be selected to this billet. Prospective volunteers for Watch Stander duty should have a GCT score above 90. Physical fitness qualifications and height/weight standards require volunteers and selectees to be able to achieve a PFT score of at least 200 points prior to MSG school. Watch Stander school occurs concurrently with the Detachment Commander school outlined previously. Upon graduation the new MSG Watch Standers also receive the AMOS of 8156.

b. Marine Combat Instructor Duty

Marines selected for Combat Instructor teach entry-level infantry Marines and non-infantry Marines basic combat skills. They also teach advanced infantry skills and designated infantry leader course, all while these instructors reinforce the “values instilled during recruit training by setting an example with professional conduct, knowledge, bearing, and attitude” (USMC, 2021b, p. 41).

E-4 to E-7 from all PMOS can be assigned or volunteer to be a combat instructor. It is recommended that prospective Combat Instructors possess a GCT score above 90. Marines must achieve a PFT score of at least 200 points prior to attending instructor school. Upon completion of school, combat instructors receive the AMOS of 0913.

3. TYPE-2 Billet Assignments

T2 billets include a plethora of niche billets the Marine Corps designates necessary for screening and selection, to include, but not limited to “Equal Opportunity Advisor, Martial Arts Instructor, Force Fitness Readiness Center Instructor, Marine Corps Shooting Team Competitor” (USMC, 2021b, p. 74). Marines that are screened and ultimately assigned to a T2 billet are in occupational fields and programs commonly unrelated to a Marine’s PMOS.

The outcome effects related to these assignments are not of specific interest to this study as they are billets that are typically volunteered for on a command level basis or solicited annually through naval messages in a dissimilar fashion to SDA and T1 billets, and their observation within the dataset sample is insubstantial. T2 billets are also not



specifically designated or detailed within the enlisted promotion board post-brief results, unlike SDA and T1 billets.

F. BONUSES

A distinct difference in compensation between Marines serving in SDA or T1 billets and Marines serving in their PMOS is the monetary bonus provided to SDA and T1 Marines. Marines serving in SDA and T1 billets are allotted special duty assignment pay (SDAP) during their 36-month tour, provided to both volunteers and involuntarily selected Marines. Marines that volunteer for an SDA receive a Voluntary Supplemental Incentive (VSI), while non-volunteers will not. These amounts fluctuate per FY to meet assignment and billet selection needs of MMEA-25. Table 1 provides the allotted bonus payments to SDA and T1 billet holders in FY-22 (Headquarters, United States Marines Corps, 2022a).

Table 1. SDA and T1 Bonuses FY 2022. Adapted from Headquarters, United States Marine Corps (2022a).

Billet	SDAP	VSI (volunteers only)
Recruiter (8411)	\$375 monthly	\$10,000 lump sum
Drill Instructor (0911)	\$300 monthly	\$10,000 lump sum
MSG Detachment Commander (8156)	\$300 per month	\$10,000 lump sum
MSG Watch Standers (8156)	\$75 per month	-
Combat Instructors (0913)	\$300 per month	-

G. CAREER IMPLICATIONS

At the completion of their 36-month SDA or T1 assignment Marines return to their PMOS within the FMF at a billet commiserate with their current grade, while retaining their AMOS for the entirety of their career. A key selling point of the volunteer MMEA-25 SDA recruitment effort is to advertise not only the availability of bonuses, but the



increased opportunities for meritorious promotion boards and the promotion preference afforded SDA Marines on traditional promotion boards, as mentioned previously in Section B of this chapter.

H. STAFF NON-COMMISSIONED ENLISTED PROMOTION BOARDS

The latest full publication in 2012 of MCO P 1400.32D outlines enlisted promotion policy, procedures, and the system utilized by the Marine Corps “to advance the best qualified Marines to the next higher grade” (USMC, 2012, p. 22). This promotion order policy ensures “MOS vacancies in the enlisted rank structure will be continuously occupied by Marines who are fully qualified to perform the duties and responsibilities of the next higher grade” (p. 22). Each FY a selection board will convene to identify which Marines are qualified to be promoted to the ranks of E-6 to E-9. Figure 4 outlines the time in grade (TIG) and time in service (TIS) requirements necessary for selection to the appropriate next higher grade (USMC, 2012).

1. Minimum TIG/TIS requirements:				
<u>USMC & USMCR</u> <u>PROMOTION TO</u>	<u>REGULAR PROMOTION</u>		<u>MERITORIOUS PROMOTION</u>	
	<u>TIG</u>	<u>TIS</u>	<u>TIG</u>	<u>TIS</u>
SgtMaj/MGySgt	3 YRS	10 YRS	--	--
1stSgt	4 YRS	8 YRS	--	--
MSgt	4 YRS	8 YRS	N/A	8 YRS
GySgt	3 YRS	6 YRS	N/A	6 YRS
SSgt	27 MOS	4 YRS	N/A	4 YRS
Sgt	12 MOS	24 MOS	N/A	18 MOS
Cpl	8 MOS	12 MOS	N/A	6 MOS
LCpl	8 MOS	9 MOS	N/A	NONE
PFC	6 MOS	6 MOS	N/A	NONE

2. The TIG requirements are Marine Corps developed measures of promotion eligibility. The TIG requirements may be reduced 6 months for SNCOs, if the needs of the Marine Corps dictate and as directed by the CMC.

Figure 4. Time In Grade Requirements. Source: Headquarters, Marine Corps (2012).

To ensure all regulations are followed and relevant factors are considered during the selection process, members of the promotion board are provided supplementary guidance in addition to the enlisted promotion order.



Each promotion board receives supplemental guidance for the specific FY board they are overseeing. This supplemental guidance is also referred to as the Precept. The Precept letter specifically authored by the CMC. The Precept emphasizes the careful consideration and evaluation of Marines with combat or crisis experience, minimum professional military education requirements, and their overall performance records. The guidance highlights the need for close screening and evaluation of Marines with records of misconduct including alcohol abuse, drug policy violations, sexual assault, etc.

The Precept supplementary guidance compilation provided by Manpower Personnel Management Enlisted Promotions, last updated in 2022, denotes the requirement for the board to review Marines that are currently serving in or previously completed an SDA or T1 billet, as “highly qualified” for promotion. The designation of “highly qualified” pertains to SDA or T1 Marines regardless as to when they served in that duty. The term “precepted” and highly qualified is used synonymously throughout the order and promotion board brief results.

The Precept also notes certain PMOS fields historically do not have an opportunity to serve in SDA or T1 billets due to extensive school training and perishable PMOS skills associated with certain PMOS. Marines in these fields are not denied the opportunity to serve in SDA or T1 billets, but they are routinely not assigned as such. Thus, the Precept attempts to ensure these Marines are given equal promotion consideration to their peers who may have served in SDA or T1 billets.

I. PROMOTION BOARD RESULTS

Recent post promotion board selection statistics highlight the value associated with an SDA or T1 Marine being labeled as “precepted.” The promotion board results from M&RA Enlisted Promotions, displayed in Figure 5 report the total number of Marines briefed on the promotion board and what percentage of that total were selected. The board provides the selection percentage total for both non-precepted and precepted Marines. The E-6 promotion board in FY-21 resulted in the majority of selectees who were non-precepted, while the E-7 selection board marks the first rank where precepted Marines constituted the majority of those selected.



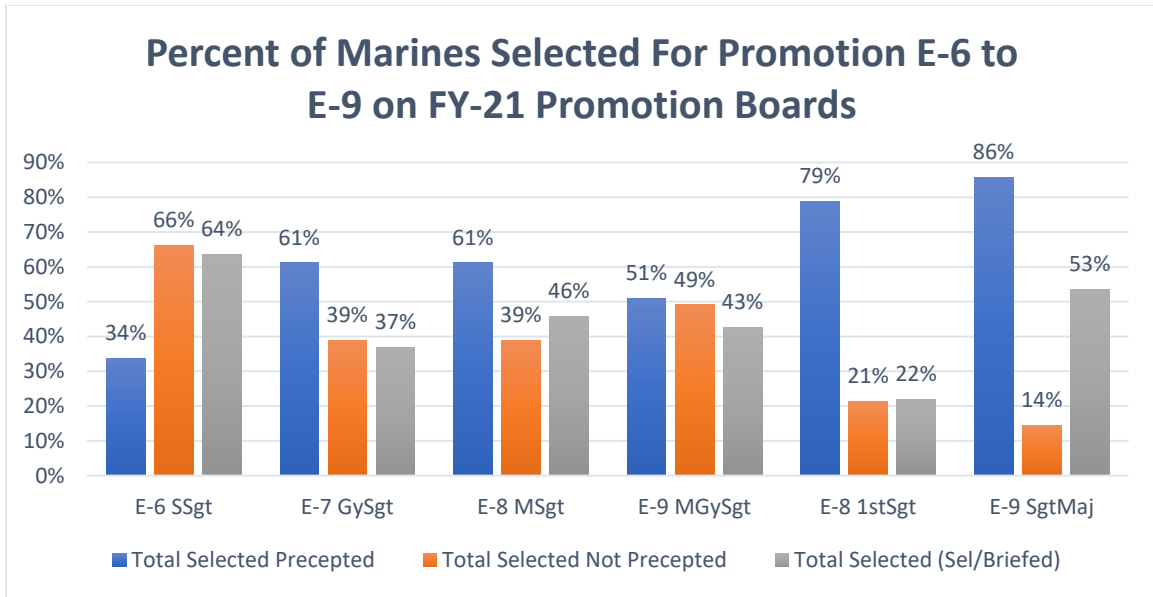


Figure 5. FY-21 Enlisted Promotion Board Results. Adapted from Manpower & Reserve Affairs Enlisted Promotions (2022).

The promotion board results for E-8 Master Sergeant (MSgt) and E-9 Master Gunnery Sergeant (MGySgt) also demonstrate a precepted majority selected, even for ranks synonymous with PMOS expertise. MCO P 1400.32D defines MSgt and MGySgt as technical experts in their fields “possessing outstanding proficiency in their assigned MOS, combined with an exceptionally high degree of leadership and supervisory ability to act as enlisted assistants to the commander in all administrative, technical, and tactical requirements of their occupational specialty” (USMC, 2012, p. 96).

The promotion board results for E-8 First Sergeants (1stSgt) further illustrate the importance of attaining a precept status to be selected to that rank. Being a 1stSgt is a prerequisite to become an E-9 Sergeant Major (SgtMaj). The need for a Marine to have a precept status in this career track is greater than the MSgt and MGySgt career track. MCO P1400 defines Marines qualified to fulfill the ranks of 1stSgt and SgtMaj as being “the principal enlisted advisors to their commanders, with their primary requisite being outstanding leadership combined with the ability to act independently as the principal enlisted assistant to the commander in all administrative, technical, and tactical requirements of the organization” (2012, p. 96).



As shown in Figure 6, the same promotion trend was observed in the FY-22, which is consistent with post promotion board statistics from FY-17 to FY-20. The pertinent FY-22 E-6 promotion board results statistics were unavailable at the time of this research.

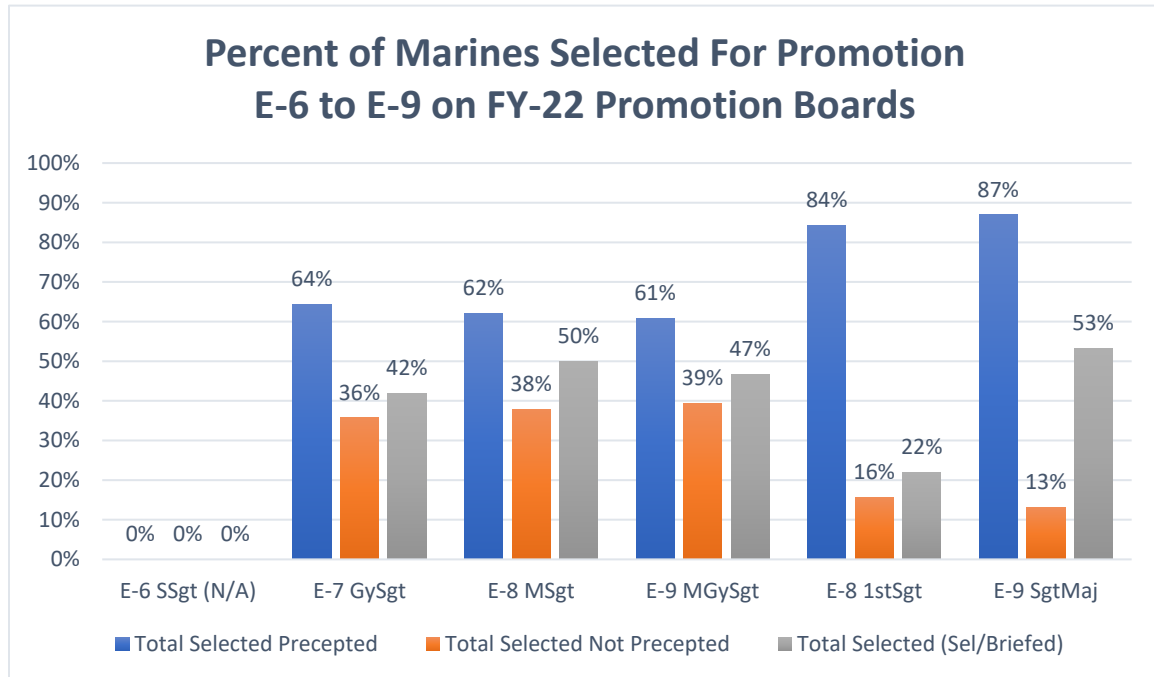


Figure 6. FY-22 Enlisted Promotion Board Results. Adapted from Manpower & Reserve Affairs Enlisted Promotions (2022).

J. DISCUSSION

To align with promotion board precept designation and definitions, I group the four separate screen-able billet AMOS of Drill Instructor (0911), Recruiter (8411), Marine Security Guard Commander and Watcher Stander (8156), and Combat Instructor (0913). These billets do not require specific PMOS community prerequisite training and qualifications for selection to fill these billets per the SCREENMAN. Upon the completion of their SDA or T1 billet, these Marines return to their PMOS and will compete on all future promotion boards amongst their PMOS peers.

Even though they have been considered as precepted on SNCO promotion boards, the T1 billets of MCSF guards and SOCS Marines will not be included in this SDA study.



They are not included due to their unique MOS prerequisite requirements necessary to be screened and selected. T2 billets will not be studied due to their minimal representation within the dataset and non-specific precept status on SNCO promotion boards.



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III. LITERATURE REVIEW

While many researchers have studied the association between different measures of worker characteristics and retention, performance and promotion outcomes, few scholars have looked at the effects of Special Duty Assignments on job outcomes. This thesis addresses that gap, and reviews four related areas of research. First, I summarize an assessment of firm-specific human capital investment and its relevance to the Marine Corps. Second, I review the literature on special duty outcome studies. Third, I review literature on how military duty assignments effect on job performance outcomes. Lastly, I review the literature on enlisted Marine retention and promotion.

A. FIRM SPECIFIC HUMAN CAPITAL

The SDA process utilized by the USMC develops individuals' firm-specific human capital. PMOS skills are likened to general human capital, as they commonly have direct transferability and demand within the civilian sector job market. However, Marines that participate in an SDA billet can transfer their duty time and experience into a form of firm-specific human capital that primarily has value within the USMC. Firm-specific human capital is valuable to both the USMC and it puts SDA Marines at an advantage, within the USMC compared to those without this type of capital. However, a Marine's SDA experience is of less value to non-USMC affiliated organizations that place a greater value on general capital (Lazear, 2009). As the USMC does not outsource many of its functions to non-military personnel nor does it enable lateral entry from the civilian sector, it depends upon existing human capital from within its ranks to accomplish its essential tasks such as recruiting, military instruction, and embassy security. The USMC compensates its Marines, via bonuses, when they accept SDA orders, as those enlisted Marines are making a firm-specific investment (Morris et al., 2017). Reid (2021) argues the "precepted" status afforded SDA Marines increases their chances for promotion, communicating the application and development of their PMOS skill in an operating environment to be far less beneficial than serving in an SDA.



Glaser (2011) studied firm-specific human capital effect on retention and promotion of USMC Officers. Using USMC officer administrative data on initial school training performance and job retention, Glaser estimated a hazard ratio with a time-varying coefficient model concluding higher performing officers, who acquired specific USMC capital early on in their career, exhibited higher rates of retention in comparison to their officer peers that performed less proficiently in early career training. Unlike the officers in Glaser's study that acquire valuable USMC organization specific capital during their initial entry level training, special duty assignments provide an opportunity to enlisted Marines to increase their firm-specific human capital after already completing several years of service.

B. DUTY ASSIGNMENT OUTCOME STUDIES

In 2019 the USMC Directorate of Analytics and Performance Optimization conducted a study to better understand the adverse health related outcomes of Marines who served on SDAs, focusing on issues of divorce, unhealthy habits, and mental health diagnoses (Directorate, 2019). They found that Marines serving special duty assignments have an increased propensity for adverse health hazard related outcomes compared to non-SDA peers after they serve. Using data from 2008 to 2018, they documented that certain SDA billets lead to a longer career length in comparison to Marines that had not served in SDAs. SDA Marines also had a higher chance of promotion in comparison to their non-SDA peers. Notably they found over 50% of Marines who serve on an SDA separate at the rank of E-5, compared to 33% of their non-SDA peers. However, this study did not control for demographic factors related to gender, race, education level, or service experience, that may be correlated with retention or selection into an SDA. As such, it is not clear whether SDA status or other factors correlated with SDA status drive the observed change in retention. Additionally, the study does not explore outcomes related to performance in the comparison of two populations, besides the greater probability for promotion afforded SDA Marines.

Moreno (2013) studied SDAP bonus levels, and whether those pay bonuses suggest Marines in SDA billets are of higher quality. He found higher bonus levels do not imply



higher quality. Both OLS and individual fixed effect models show quality is lower when the bonus is higher in the case of SDA recruiters. His study was unable to determine whether the SDAP bonus levels effectively incentivize SDA billets and the study does not explore future promotion and retention bonus pay related effects.

Eliason (2021) researched the relationship between SDA Marine recruiter quality and those they enlisted. Using five different metrics to define high quality for both recruiters and enlistees, he found a positive estimated effect in relation to high quality recruiters recruiting higher quality new Marines. He recommends the USMC improve the overall quality of the enlisted Marine fulfilling the recruiter SDA billet to improve the overall quality of enlistee accessions, to both screen for quality in volunteers and identify high quality non-volunteers. He notes in his research the dataset limitation that prevents the ability to study potential quality differences between Marine recruiters that volunteered or were involuntarily selected. Additionally, there is no comparison to non-SDA Marines or discussion of retention and promotion rates upon completion of the SDA by recruiters.

Other services have also identified problems with their special duty manning programs. In the case of the Navy, Christensen & Golding (2002) find involuntary assignments were associated with lower retention where Sailors refused orders upon receipt of involuntary orders or subsequently decided not to continue with their service post their duty obligation. In addition, a study conducted by Robbert et al., (2022) used a logistic regression to understand the relationship between enlisted group occupations in the Air Force and retention. Their research results found airmen that continually attained a greater rank and displayed outstanding job performance were more likely to stay in the service, while retention was not significantly related to individual intelligence classification scores.

C. ASSIGNMENT AND EVENT OUTCOME STUDIES

Morgan (2005) focused on determining if mid-career officers that served most of their time in their PMOS or in the FMF influenced promotion and attrition within their different PMOS groups. Using probit and survival models he found officers that spent most of their time in PMOS billets or FMF units were less likely to promote or be retained, while Marines that spent their service time outside their PMOS, in officer equivalent positions to



SDAs, were more likely to promote or be retained. Additionally, Marines that spend their service time outside their PMOS, in officer equivalent positions of SDAs, are likely to be retained in the service longer.

White (2021) researched the effects of duty station placement and preference on active-duty Marine retention and performance outcomes. Combining duty assignment preference data from fitness reports with various econometric models, she found Marines that received their preference location to a FMF unit outperformed their peers who desired to be sent to an FMF unit but were likely sent to a non-deployable duty location. Those operating force Marines received on average a 0.537 higher marking on their fitness reports. Her study was able to use random assignment, like a randomized control trial (RCT), as the fitness report duty preference section of fitness reports are ignored by the Marines at M&RA assigning locations to Marines, thus she assumed the assignment of a duty station is as good as random.

While not a specific duty assignment outcome study, Healy and Heissel (2022) utilized a two-way fixed effects event study to analyze the “motherhood penalty” using data for active-duty and reserve Marines from January 2010 to December 2019. They focused on performance and human capital outcomes of physical fitness scores, fitness report values, marksmanship assessment scores, formal education attainment, training advancements, and promotion accumulation within their study. Similar to their study, I create a “matched placebo” cohort along similar characteristics of actual “treated” SDA Marines, and compare treated and matched comparison individuals before, during, and post the SDA event. They found active-duty Marine mothers’ physical performance, job performance markings, and promotion rates decline during the two years post birth, demonstrating that other factors outside of work assignments can also influence Marines’ performance and promotion outcomes.

D. ENLISTED MARINE PROMOTION AND RETENTION

Numerous studies try to predict or identify individual factors correlated with retention and promotion. For example, Steinpfad (2017) identified the predictors of promotion for enlisted infantry Marines to the ranks of E-4 to E-7. His study was motivated



by the lack of enlisted Marine promotion studies. Using Classification and Regress Trees (CART) method and data on the enlisted infantry Marine population from 2001 to 2016, he found job performance scores, the number of deployments, physical fitness scores, and zero adverse fitness reports to be the most important predictors of promotion. His study does not discuss SDAs effect on promotion or retention within his CART results. Additionally, his study solely focuses on the infantry population limiting its ability to generalize its findings to other enlisted PMOS community populations.

A more recent example is the study conducted by Smart (2022), in which he examined education, performance, misconduct, and retention in enlisted Marine populations. He applied regression analysis methods to enlisted Marine data collected from 2005 to 2020 focusing on Fitness Report Values, PFT, misconduct, and retention. He concluded that if enlisted Marines have a higher level of education compared to their peers, then they have a greater likelihood of re-enlisting. This study does not discuss the relationship between education and duty assignment to include SDA, nor a comparison amongst occupational specialty groups.

E. SUMMARY

Previous studies have not quantitatively evaluated firm-specific capital changes related to enlisted Marines assigned to an SDA. I hypothesize a firm-specific human capital premium is awarded to SDA Marines by promotion board precepts. While previous studies have examined assignments related to Marine Corps recruiter quality, USMC Officers, SDA Marine health outcomes, and general duty preferences, my research will evaluate the effect of being assigned an SDA on performance outcomes. Additionally, as previous researchers do not incorporate SDA into their studies, I will test whether SDA completion has any significant effect on the retention and promotion outcomes of Marines. I will conduct a cohort comparison between SDA and non-SDA Marines in which both cohorts possess similar performance metrics and qualities prior to Marines being selected for an SDA.

This research will contribute to the growing collection of enlisted Marine retention, performance, and promotion studies, and will fill a void in USMC manpower quantitative



studies. The findings and recommendations generated from this study will provide informative analysis of special duty assignment and its effect on Marine Corps enlisted talent management.



IV. DATA AND METHODOLOGY

This chapter will discuss data and statistical methods utilized to understand how serving in an SDA effect the performance, promotion, and retention of enlisted Marines.

A. DATA DESCRIPTION

1. Data Sources

Data for this research came from two sources, TFDW and MMRP-30 for all active-duty enlisted Marines that served between October 2009 to October 2021. The TFDW source consisted of multiple data tables containing military administrative records on every active duty enlisted Marine during that time, with one observation per person per month in a panel data setting. The TFDW datasets included individual descriptive information (age, gender, race, marital status, dependents, education levels, armed forces qualification test (AFQT) scores, GCT scores, physical fitness test (PFT) scores, proficiency and conduct (PROCON) performance scores for Marines in the grade of E-4 or below, disciplinary records, Marine Corps Martial Arts Program (MCMAP) achievement levels, and job characteristics (AMOS, PMOS, rank, TIS, physical fitness scores, deployment experience, personal award achievements). Data provided from MMRP-30 included FITREP performance data for all enlisted Marines in grade of E-5 to E-9 from October 2009 to October 2021.

2. Data Cleaning and Merging

The data in this research was cleaned, merged, and analyzed using Stata statistical software version 17 package. Charts, graphs, and tables presented throughout this study were produced using Stata or Microsoft Excel.

The data cleaning process required the merging of the TFDW data tables with the MMRP-30 data by matching each individual Marine's unique study identification number and month. The completed merging resulted in the "Full Build" dataset containing 22,328,658 observations, between the years 2009 and 2021.



The first stage of variable cleaning and identification involved delineating pertinent demographic variable definitions. Demographic variable statistics provide a synopsis of the individual characteristics averages within the dataset.

To determine whether a Marine was ever assigned an SDA or T1 screen-able billet, I referenced the AMOS information on each Marine in the dataset. I create a binary variable that indicates whether a Marine had ever been assigned an SDA MOS of 0911 Drill Instructor, 0913 Combat Instructor, 8411 Recruiter or 8156 Marine Embassy Security Guard in their AMOS (coded as 1 if ever serving in an SDA or T1, and 0 otherwise). I also created indicator variables for each of the SDA or T1 billet AMOS to enable the observation of any differences between these groups.

Using the assignment date for SDA or T1 billets on each individual person-month observation I can assign a relative date variable “SDA Relative,” of “0” to each person-month observation for when SDA or T1 billet Marines received their assignment. The preceding person-month observation receives the “SDA Relative” value of -1, and the month preceding the SDA AMOS assignment the value of 1, and so forth. The “SDA Relative” variable is essential to the matching group process covered later in this chapter.

Additionally, the five MOS fields with the largest population of Marines in the dataset and largest proportion of Marines with an SDA or TI AMOS were coded as indicator variables as well for additional sub-group study exploration. These MOS communities are consistent with the largest population of Marines being selected for SDA or T1 billets (MMEA, 2022). These MOS fields consist of all the PMOS within the following communities: Communications, Ground Supply, Infantry, and Motor Transport. The MOS grouping of Aviation Avionics and Maintenance (60XX to 64XX enlisted MOS codes) are also included. Table 2 displays the summary descriptive statistics comparison between SDA Marines, and those that did serve in an SDA within the full dataset prior to the matching portion of this study.



Table 2. Full Dataset Descriptive Statistics for Non-SDA and SDA Marines

	(1) No SDA	(2) SDA	(3) Difference (1)-(2)
AFQT Score	62.16 (18.04)	58.63 (17.50)	3.53*** (314.00)
GCT Score	108.49 (12.01)	106.26 (12.32)	2.23*** (284.29)
Some College (0/1)	0.05 (0.21)	0.07 (0.25)	-0.02*** (-126.45)
College (0/1)	0.02 (0.14)	0.04 (0.20)	-0.02*** (-187.89)
Age	23.36 (4.98)	29.37 (6.67)	-6.01*** (-1540.98)
Married (0/1)	0.37 (0.48)	0.67 (0.47)	-0.29*** (-1029.86)
Female (0/1)	0.08 (0.27)	0.06 (0.24)	0.02*** (140.01)
Black (0/1)	0.09 (0.29)	0.13 (0.34)	-0.04*** (-196.68)
Hispanic (0/1)	0.18 (0.38)	0.20 (0.40)	-0.03*** (-113.08)
Admin MOS (0/1)	0.05 (0.21)	0.06 (0.24)	-0.02*** (-119.63)
Aviation Maint. MOS (0/1)	0.14 (0.35)	0.11 (0.32)	0.03*** (155.12)
Communications MOS (0/1)	0.09 (0.29)	0.10 (0.30)	-0.01*** (-65.44)
Ground Supply MOS (0/1)	0.04 (0.19)	0.06 (0.24)	-0.02*** (-152.70)
Infantry MOS (0/1)	0.22 (0.41)	0.17 (0.37)	0.05*** (220.25)
Motor Transport MOS (0/1)	0.09 (0.28)	0.10 (0.30)	-0.01*** (-52.72)
Observations	19,126,121	3,202,537	22,328,658

This table includes the demographic statistics for all person-month observations within the full dataset before creating the pre-match samples. Observations within the dataset are from October 2009 to October 2021. Column (1) displays the mean coefficient for the non-SDA assigned Marines, while Column (2) displays the mean coefficient for SDA Marines. Column (3) displays the difference in coefficients between the person-month non-SDA and SDA groups. Below the coefficients in Columns (1) and (2), standard deviations are listed in parentheses. Below the coefficients in Column(3), the associated T-statistics are provided in parentheses. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.



3. Job Performance, Human Capital, and Retention Outcomes Variables

This research examines three categories of outcome variables to answer the research questions associated with this study.

a. Job Performance

(1) Fitness Report Relative Values and Adverse Fitness Reports

To measure job performance, I use the Relative Value at Processing (RELVALPROC) of Marines fitness reports. This measure of performance is a relative value between 80 and 100. This measure of performance is derived from the reporting senior (RS) of the Marine being evaluated, scored on 14 leadership characteristics. The relative value assigned to the Marine is scored in comparison to the RELVALPROC of other Marines that hold the same rank that the same RS has previously evaluated. The RELVALPROC is a value that will remain within a Marine's record communicating their performance during the applicable observation period.

I also use the Cumulative Relative Value (RELVALCUM), which is the measure of performance relative value throughout a Marine's career. If the RS remains within the service and evaluates additional Marines of that same rank, the RELVALCUM will change for the Marine being reported on. If the RS submits future performance reports of Marines with a higher RELVALPROC than the previous Marine reported on, then that previous Marine will see its RELVALCUM decrease. If the RS completes future performance reports that are lower than the subject Marine, then their RELVALCUM will increase.

For a Marine to have a RELVALPROC and RELVALCUM, their RS must have written at least three reports on Marines within that specific grade rank. The relative value scale between 80 and 100 results in Marines being placed into three categories of the RS average for both RELVALPROC and RELVALCUM: high category being (93.34 to 100), middle (86.67 to 93.33), and low (80 to 86.66). This study will value the RELVALPROC results more than the RELVALCUM, as RELVALPROC will remain unchanged for the observed time-period, and it reflects the job performance at the specific point in time.



There is also the potential for Marine's to receive an adverse FITREP. An adverse FITREP can either substantiate from detrimental conduct-related performance, documenting unsatisfactory performance, lack of potential, or possessing unacceptable professional character. Marines that received an adverse fitness report is set as an indicator variable.

(2) Physical Fitness Test Score Averages

PFT performance is a qualifying metric for Marines to be selected for the assignment to an SDA and T1 billets. The PFT is an annual requirement that each Marine regardless of rank or billet must complete between the months of January and June. Marines PFT scores are also evaluated during promotion boards as well. Measuring how PFT score outcomes differ between SDA and non-SDA Marines. Combat Fitness Test (CFT) data was not readily available nor consistent enough within the dataset to be of value during the modeling and analysis portion of this study. Marines scoring between 235 and 300 have a first class PFT, scores ranging from 200 to 234 are second class, 150 to 199 is considered third class, and anything below 149 is a failure.

(3) Misconduct

Enlisted Marine opportunities for career advancement and retention are greatly impacted if an individual Marine is subject to disciplinary action. Misconduct in this study is in the form of the indicator variable disciplinary action. Disciplinary action within his study constitutes a person-month observation where a Marine was subject to any of the following: Non-Judicial Punishments (NJP), Summary Court Martial (SCM), Special Court Martial (SPCM), or General Court Martial (GCM).

b. Human Capital and Promotions

(1) Education

Before attending boot camp, any prospective Marine recruits must attain a high school diploma or complete an equivalent program. In this dataset, a high school diploma or a similar program corresponds to 12 years of education, and the education variable can



range up to 19, indicating a doctorate degree. In this study, an increase in the education variable indicates a Marine has acquired a higher level of education while on active-duty.

(2) Operational Experience

Enlisted Marines primarily gain experience outside of traditional training exercises and daily tasks by deploying to an overseas location either with their assigned unit or as individual augmentee to a forward unit. Deployment experiences may vary, but ultimately result in individual Marines either directly or indirectly supporting combat and crisis response operations employing their PMOS skill. Two separate variables within the data define operational experience within this study, crisis response tour participation and operation participation.

(3) Promotions

Promotion selection results and promotion board guidance were covered in depth earlier in Chapter II. Promotion outcomes are evaluated by studying changes in rank amongst Marines.

c. Retention

To study retention, I use years of service (YOS) and months of service as the retention outcome variables. Enlistment contract lengths and extensions do not provide consistent values for analysis. The methodology portion of this chapter explains how YOS is calculated to prevent potential skewing of the retention outcome from the dataset length limitations of only 12 years of observations.

Table 3 provides the full dataset statistics for the outcome variables of interest in this study prior to producing the matching datasets. Even though they are not outcome variables of interest, AFQT and GCT scores are included in this table to enhance the comparison between non-SDA Marines and the SDA Marine Groups. Marines without an SDA possessed a higher overall AFQT and GCT scores in comparison the SDA populations. MSG Marines have the highest AFQT, GCT, PFT, and education levels when compared to the other SDA groups.



Table 3. Full Dataset Pre-match Outcome Statistics by SDA Type

	(1) No SDA	(2) Recruiter	(3) MSG	(4) Drill Instructor	(5) Combat Instructor
AFQT Score	63.212 (0.010)	58.462 (0.017)	62.431 (0.036)	54.998 (0.026)	57.270 (0.035)
GCT Score	109.451 (0.006)	106.388 (0.012)	108.111 (0.024)	103.704 (0.018)	106.155 (0.023)
RELVALPROC	91.599 (0.003)	91.853 (0.006)	91.669 (0.011)	93.351 (0.009)	92.684 (0.011)
RELVALCUM	90.733 (0.003)	90.951 (0.005)	90.944 (0.011)	92.198 (0.009)	91.664 (0.011)
Adverse (0/1)	0.041 (0.000)	0.025 (0.000)	0.027 (0.000)	0.016 (0.000)	0.018 (0.000)
PFT Score	249.560 (0.017)	246.594 (0.029)	261.826 (0.051)	267.325 (0.036)	257.814 (0.053)
Misconduct (0/1)	0.099 (0.000)	0.083 (0.000)	0.082 (0.001)	0.112 (0.000)	0.072 (0.001)
Education Level	12.309 (0.001)	12.294 (0.001)	12.453 (0.002)	12.337 (0.002)	12.211 (0.002)
Ever Deployed	0.774 (0.000)	0.826 (0.000)	0.618 (0.001)	0.855 (0.001)	0.942 (0.000)
YOS	8.799 (0.002)	10.878 (0.004)	8.411 (0.010)	10.992 (0.008)	11.114 (0.009)
Observations	3,595,111	1,114,111	238,465	404,411	264,216

This table summarizes the dependent variable mean coefficients by person-month observations for non-SDA Marines and each AMOS SDA group in the full dataset from October 2009 to October 2021. The deployed coefficient indicates the mean number of Marines within the specific group that has ever deployed. Data from: USMC Total Force Data Warehouse & MMRP-30.



B. METHODOLOGY

The gold standard to identify the effect of an SDA would be a Randomized Control Trial (RCT). The RCT would entail the random assignment of enlisted Marines to a treatment group (SDA) vs. control group (non-SDA). This type of experiment is unfortunately not possible when exploring the difference in outcomes between SDA and non-SDA Marines. In the SDA selection process, there are numerous non-uniform personnel filtering mechanisms, screening steps, and waivers affecting the potential assignment to an SDA for enlisted Marines population applied by MMEA-25 and PMOS monitors. Because of this, a comparison of Marines relative to non-SDA Marines is unlikely to expose any accurate causal effect estimates of being assigned to an SDA.

1. Matching Process

To achieve a comparison that closely resembles a RCT gold standard experiment, my study will match SDA Marines and assign them to their non-SDA “placebo” group for study comparison to mitigate the inability for a true randomized assignment. I employ a LASSO model to produce SDA prediction probabilities between the two groups of Marines that share similarities from the two populations. The LASSO model with 10-fold validation enables the selection of the best predictors to match SDA Marines with groups of Marines that possess similar characteristics to Marines that were assigned an SDA. These predictors include YOS, age, race, AFQT, GT, marital status, years of education, occupational groups, deployment experience, and physical fitness scores. This propensity match controls for differences in variables between individuals in both the SDA and non-SDA population and seeks to match similar individuals by these variables for comparison. The matching process applied in this study is like the methodology implemented by Healy and Heissel (2022) in their study.

Following the LASSO propensity generation, a matching loop process is conducted to generate the match groups consisting of an SDA Marine and their non-SDA matches. Marines within these groups are matched by rank and sequence number. The sequence number corresponds to the specific month and year the individual is being observed within the dataset. These matched groups result in 1 SDA Marine, matched with their nearest



similar 5 non-SDA Marines within the sample. These non-SDA Marines carry a weight of .2 each within the group, thus 5 nearest-matched non-SDA Marines is compared to 1 SDA Marine. For example, a female SDA Marine at the rank of E-6 that has a 100 GT and 275 PFT would be grouped with five non-SDA female E-6 Marines that have similar scores and other variable similarities at the same initial matching observation period, thus enabling as true of a comparison between individuals from these separate groups as possible. Marines that attained an SDA in recent years and their matches are conditionally omitted from these samples as it is not possible to study the effect on their retention due to the limited amount of observation time.

I create two sets of matched groups. The first matched group sample is named the consistent sample. The consistent sample contains SDA and non-SDA Marine groups matches 12 months prior to the SDA AMOS assignment event date and requires all Marines within the sample to have served for 60 months after the event date. Thus, all Marines within this sample are observed 12 months prior to the assignment, over the duration of the 36-month SDA tour, and the subsequent 24 months of when the SDA Marine would return to their fleet PMOS duty.

The second matched group in this study is named the retention sample to study differences in retention. While retention sample contains both SDA and non-SDA Marine matches like the consistent sample, the primary difference is Marines in this sample are only required to have been in the sample 12 months prior to the SDA period. This selection allows for the observation of retention within the matched group populations.

2. Matching Results

The two sets of matched groups now share a striking similarity in the characters of the SDA and non-SDA Marines. Table 4 provides the matching results of the consistent sample group, using individual unique Marine observations vs. the person-month unit of observation used in the pre-match table comparisons. For example, the full dataset difference in age was over 6 years, while the consistent matched sample is a difference of .06, or less than a month.



Appendix A details the dependent outcome variable averages for both groups at the initial 12 months prior to the SDA match period. The matching for the consistent sample resulted in 6,321 matched groups, consisting of 6,321 individual SDA, or treated Marine observations, and their non-SDA matches totaling 31,605 Marines. Marines may appear multiple times within the data as they are also matched with more than just one SDA Marine due to the matching criteria and process.

To ensure continuous variables remained consistently reported throughout the dataset, the carryforward command was utilized in Stata for any intermittent time observations missing some values. This methodology was not necessary to be applied to binary variable outcomes nor the retention sample results.



Table 4. Descriptive Statistics for Consistent Sample Post Matching, 12 Months Prior to SDA Event

	(1) No SDA	(2) SDA	(3) Difference (1)-(2)
AFQT Score	60.47 (18.04)	58.76 (17.80)	1.71*** (6.97)
GCT Score	107.97 (12.06)	106.69 (11.63)	1.28*** (7.96)
Some College (0/1)	0.05 (0.22)	0.05 (0.21)	0.00 (1.33)
College (0/1)	0.02 (0.13)	0.01 (0.12)	0.00** (2.03)
Age	25.85 (3.56)	25.91 (3.47)	-0.06 (-1.31)
Married (0/1)	0.72 (0.45)	0.69 (0.46)	0.03*** (4.54)
Female (0/1)	0.07 (0.25)	0.06 (0.25)	0.00 (0.35)
Black (0/1)	0.10 (0.30)	0.11 (0.32)	-0.02*** (-3.53)
Hispanic (0/1)	0.17 (0.37)	0.18 (0.39)	-0.02*** (-2.86)
Admin MOS (0/1)	0.05 (0.22)	0.06 (0.23)	-0.01** (-2.02)
Aviation Maint MOS (0/1)	0.17 (0.38)	0.11 (0.31)	0.07*** (15.32)
Communications MOS (0/1)	0.11 (0.31)	0.11 (0.31)	-0.00 (-0.09)
Ground Supply MOS (0/1)	0.04 (0.20)	0.06 (0.24)	-0.02*** (-6.34)
Infantry MOS (0/1)	0.16 (0.37)	0.15 (0.35)	0.01*** (2.88)
Motor Transport MOS (0/1)	0.07 (0.25)	0.11 (0.31)	-0.04*** (-8.67)
Observations	31,605	6,321	37,926

This table summarizes demographic statistics, by individual Marine observation not person-month, between SDA and non-SDA Marines in the consistent match groups in the sample from October 2009 to October 2021. Column (1) displays the mean coefficient for the non-SDA assigned (Control) Marines, while Column (2) displays the mean coefficient for SDA Marines. Column (3) displays the difference in coefficients between non-SDA and SDA groups. Below the coefficients in Column (3), the associated T-statistics are provided in parentheses. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.



Table 5 provides descriptive statistics for the matching results for the retention sample. It shows the difference between the SDA and non-SDA match groups 12 months prior to the SDA. The matching process resulted in a balanced dataset when comparing the two groups by the demographic variables listed.

Appendix B provides details on the dependent outcome variable averages for both groups at the initial observation match period, 12 months prior to the SDA. The retention sample resulted in 19,571 matched groups, consisting of 19,571 individual SDA or treated Marines, and their non-SDA matches totaling 97,855 Marines.



Table 5. Descriptive Statistics for Retention Sample Post Matching, 12 Months Prior to SDA Event

	(1) No SDA	(2) SDA	(3) Difference (1)-(2)
AFQT Score	61.08 (18.00)	59.96 (17.62)	1.13*** (0.14)
GCT Score	107.79 (12.03)	106.92 (11.59)	0.88*** (0.09)
Some College (0/1)	0.06 (0.23)	0.05 (0.22)	0.00** (0.00)
College (0/1)	0.02 (0.13)	0.02 (0.13)	0.00* (0.00)
Age	24.86 (3.62)	24.94 (3.54)	-0.08*** (0.03)
Married (0/1)	0.60 (0.49)	0.56 (0.50)	0.03*** (0.00)
Female (0/1)	0.07 (0.26)	0.07 (0.26)	0.00 (0.00)
Black (0/1)	0.11 (0.32)	0.13 (0.33)	-0.01*** (0.00)
Hispanic (0/1)	0.19 (0.39)	0.20 (0.40)	-0.02*** (0.00)
Admin MOS (0/1)	0.05 (0.22)	0.06 (0.23)	-0.00** (0.00)
Aviation Maint MOS (0/1)	0.14 (0.35)	0.11 (0.31)	0.03*** (0.00)
Communications MOS (0/1)	0.11 (0.31)	0.11 (0.31)	-0.00 (0.00)
Ground Supply MOS (0/1)	0.04 (0.20)	0.06 (0.23)	-0.01*** (0.00)
Infantry MOS (0/1)	0.17 (0.38)	0.14 (0.35)	0.03*** (0.00)
Motor Transport MOS (0/1)	0.08 (0.28)	0.10 (0.30)	-0.01*** (0.00)
Observations	97,855	19,571	117,426

This table summarizes descriptive demographic statistics, by individual Marine observation not person-month, between SDA and non-SDA Marines in the retention match groups in the sample from October 2009 to October 2021. Column (1) displays the mean coefficient for the non-SDA assigned (Control) Marines, while Column (2) displays the mean coefficient for SDA Marines. Column (3) displays the difference in coefficients between non-SDA and SDA groups. Below the coefficients in Columns (1) and (2), the standard deviations are listed in parentheses. Below the coefficients in Column (3), the associated T-statistics are provided in parentheses. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.



C. MODELS

a. *Event study difference in difference outcomes*

I use an event study design to evaluate changes and patterns in the performance and promotion outcomes of both the SDA and non-SDA populations over time. This type of model is considered an event study design. An event study enables the researcher the ability to determine the impact of a specific event on the dependent variable outcomes of interest (Wooldridge, 2016). The consistent data sample provides the ability to compare and observe the SDA and non-SDA populations within the 73-month observation window and evaluate the impact of the SDA event on SDA Marines in comparison to those Marines that were not assigned an SDA.

b. *Linear Regression with Multiple Fixed Effects*

To identify statistical significance in differences between dependent variable outcomes in the consistent data sample, I use multiple linear regressions with both person and time-period fixed effects. This model approach allows me to quantify the effect of an SDA during the billet duty period, and two subsequent years following the completion of the SDA. A fixed effects model in this panel data study allows for the control of changes common amongst the sample population during the observation period and ensures control for time trends (Massenkoff, 2021). I use Equation 1 to determine the effects of an SDA on seven different outcome variables. The variables included in the model represent indicator variables for three different periods following the assignment of the SDA.

$$Y(\text{Outcome})_{it} = \beta_0 + \beta_1(\text{DuringSDA}, 0-36\text{months})_{it} + \beta_2(\text{1stYearAfterSDA}, 37-48\text{months})_{it} + \beta_3(\text{2ndYearAfterSDA}, 49-60\text{months})_{it} + \alpha_i + \tau_t + \varepsilon_{it} \quad (1)$$

c. *Linear Probability Model*

I employ Linear probability models (LPM) in this study to determine retention outcomes. This type of multiple linear regression has a binary dependent variable that enables the ability to determine the probability of the dependent variable occurring (Wooldridge, 2016). Using Equation 2 I analyze the impact of the SDA policy on service retention amongst enlisted Marines. The binary dependent variable outcome in these



models is equivalent to the probability a Marine observed within the model is retained for the outcome years provided. Independent variables included in the model represent the indicator variable if a Marine has served in an SDA. To prevent non-SDA Marines from overly influencing the model, I specify the use of match weight in each regression to adjust for the differences between the two groups.

$$Y_i = \beta_0 + \beta_1(SDA)_i + \varepsilon_i \quad (2)$$



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V. RESULTS

A. PERFORMANCE OUTCOMES

In this section, I present the results of the study on the effects of SDA on performance, based on the consistent match data sample.

1. Job Performance: Fitness Reports

Figure 7 shows the RELVALPROC outcome related to SDA. At the time of the SDA AMOS assignment, SDA Marines RELVALPROC average decreased by 2 points within the first year of being assigned an SDA. The drop in average performance remains steady throughout the duration of the SDA until around 40 months post-SDA. SDA Marines RELVALPROC improved and eventually surpassed the non-SDA at 55 months post-SDA tour.

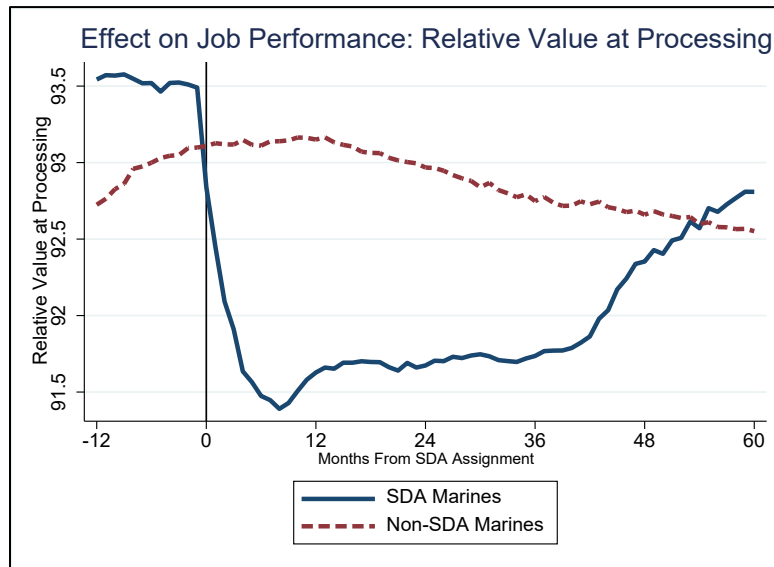


Figure 7. Consistent Sample Relative Value at Processing over Time. Data from TFDW & MMRP-30.

Figure 8 displays a similar drop in average relative value for SDA Marines' RELVALCUM, indicating a decline in job performance. However, both measures of job

performance begin to recover towards the end of the matched observation period, with SDA Marines surpassing the average performance of non-SDA Marines.

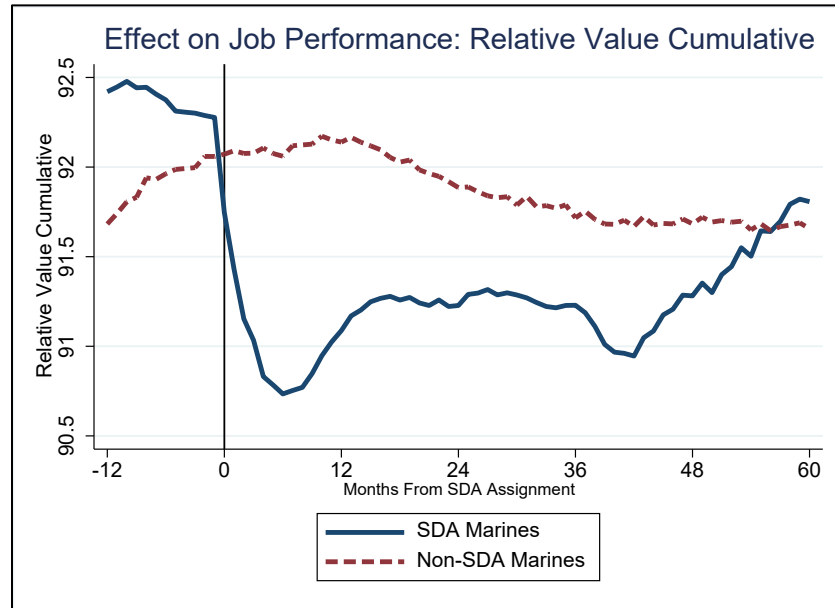


Figure 8. Consistent Sample Relative Value Cumulative over Time. Data from TFDW & MMRP-30.

Table 6 displays the fixed effects regression model, which reveals that SDA Marines experience a significant decrease in value of 1.3 in their average RELVALPROC scores compared to their non-SDA peers while serving in their SDA. In the first year following the SDA period this effect is slightly lower at .72 relative value. Although SDA Marines do not fully recover to pre-SDA RELVALPROC levels during the full observation period, they do outperform non-SDA Marines by the end of the second year post-SDA. However, the impact value is not statistically significant.

In column (2), SDA Marines' RELVALCUM scores exhibit a consistently lower but less dramatic effect throughout the observation period and remain negative at the end of two years post-SDA. Although it is a rare occurrence, SDA Marines were less likely than non-SDA Marines to receive an adverse fitness report.



Table 6. Effects on Job Performance: Fitness Reports for SDA Marines

	(1) RELVALPROC	(2) RELVALCUM	(3) ADVERSE
During SDA	-1.294*** (0.01239)	-0.801*** (0.01195)	-0.000 (0.00026)
Post-SDA Tour 36–48	-0.715*** (0.02105)	-0.585*** (0.02033)	-0.005*** (0.00045)
Post-SDA Tour 48–60	0.020 (0.02103)	-0.098*** (0.02031)	-0.005*** (0.00044)
Baseline Mean	92.86	91.81	0.00
Observations	2,552,700	2,566,759	2,334,604
R-squared	0.075	0.069	0.034

This table displays the coefficients from multiple fixed effect regressions. The dependent continuous variable outcome in Column (1) is the difference-in-differences of the RELVALPROC average for Marines during the observation period consisting of 73 months. The dependent continuous variable outcome in Column(2) is the difference-in-differences of the RELVALCUM average for Marines during this observation period for the sample. Column(3) is a binary dependent variable for Adverse fitness reports relative to the average probability of a Marine receiving an adverse fitness report. All coefficient values in the table are relative to the non-SDA control group Marines. Each of the explanatory variables displays the impact of being assigned an SDA on Marines in the SDA group during the SDA period 0–36 Months, the first year after SDA duty 37–48 months, and the second year after SDA duty 49–60 months. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.

2. Job Performance: Physical Fitness and Misconduct

Figure 9 demonstrates that SDA Marines achieve higher overall PFT scores than their matched non-SDA counterparts, while both groups experience a trend towards lower PFT scores over time.



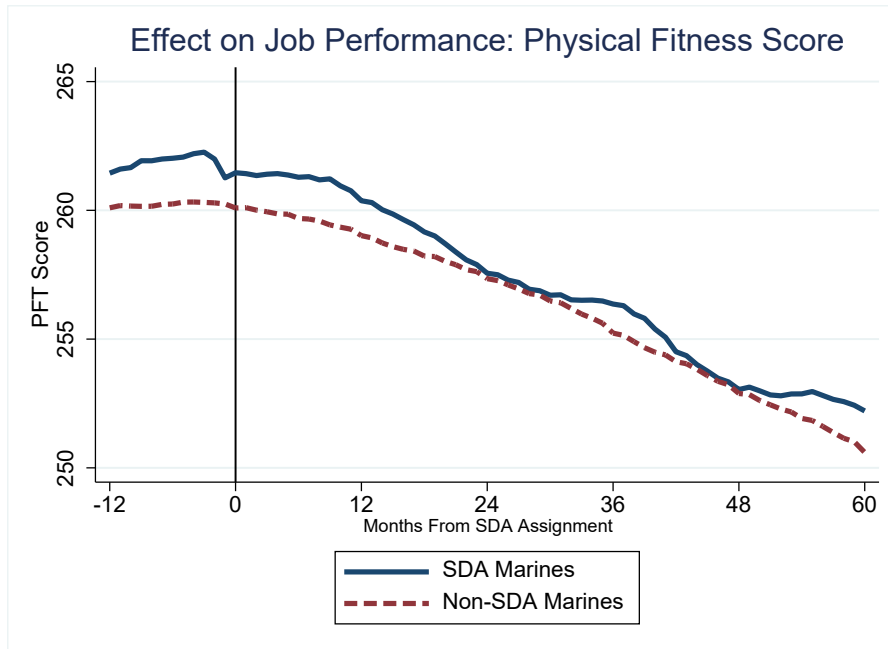


Figure 9. Consistent Sample Physical Fitness Score over Time. Data from TFDW.

Table 7 presents the results of the regression analysis that measures the performance effects related to PFT scores. Analysis indicates SDA Marines during their SDA scored nearly 1 point higher on PFT scores relative to their matched non-SDA peers. The analysis also reveals that Marines assigned to an SDA are not penalized in their physical fitness compared to non-SDA Marines.

During the observation period, Marines serving in an SDA are less likely to be charged with an NJP or court martial proceeding. Although this difference was statistically significant, the effect was not substantial, with only a 1 percentage point difference.

Table 7. Effects on Job Performance: PFT and Misconduct for SDA Marines

	(1) PFT SCORE	(2) MISCONDUCT
During SDA	0.924*** (0.05831)	-0.011*** (0.00043)
Post-SDA Tour 37–48	0.532*** (0.10099)	-0.010*** (0.00073)
Post-SDA Tour 49–60	0.940*** (0.10099)	-0.012*** (0.00071)
Baseline Mean	260.32	0.02
Observations	2,730,672	2,334,604
R-squared	0.187	0.152

This table displays the coefficients from multiple fixed effect regressions. The dependent continuous variable outcome in Column (1) is the difference-in-differences of the PFT score average for Marines during the observation period consisting of 73 months. The dependent binary variable outcome in Column(2) is a binary dependent variable for disciplinary misconduct relative to the average level of misconduct for Marines at the beginning of the observation period. All coefficient values in the table are relative to the non-SDA group. Each of the explanatory variables displays the impact of being assigned an SDA on Marines in the SDA group during the SDA period 0–36 Months, the first year after SDA duty 37–48 months, and the second year after SDA duty 49–60 months. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.

B. HUMAN CAPITAL OUTCOMES

Below I present results based on the consistent match data sample to measure the effects of SDA on human capital outcomes.

1. Education

The human capital outcome of education level attainment for SDA Marines is negatively impacted relative to non-SDA Marines. Figure 14 shows the average overall education attainment for SDA Marines remains largely unchanged through the first 24-month mark of their SDA, while education grows for non-SDA Marines. The difference in the education attainment remains the same at the 36-month mark and non-SDA Marines maintain this difference throughout and beyond the two years post-SDA tour. Table 8 regression results demonstrate a penalty associated with being assigned an SDA, as SDA



Marine education is at a level .027 behind non-SDA Marines during the duty assignment and grows to .08 behind after two years back in the FMF.

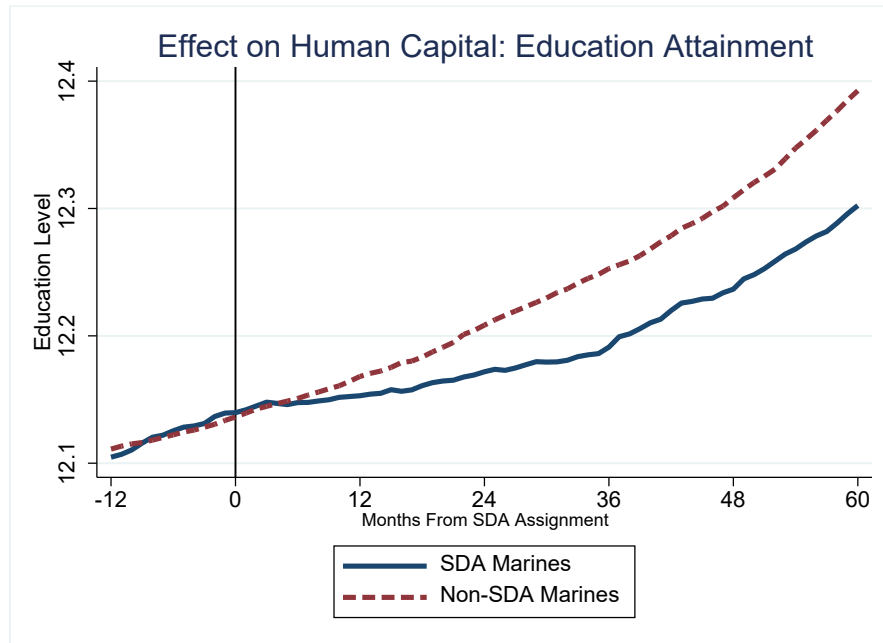


Figure 10. Consistent Sample Education Attainment over Time. Data from TFDW.

2. Deployment Experience

Of the SDA Marines in the consistent match dataset, nearly a quarter were in a deployment status 12 months prior to the start of their SDA. This margin was 10 percentage points higher than their non-SDA peers. As expected, deployment experience while being assigned an SDA was near zero, as Marines on SDA are not in a deployment status. In contrast the non-SDA group experienced a slow decline in overall deployment status during the SDA period. SDA Marines regain deployed operational experience following the completion of their SDA tour being 1.6 percent more likely to be deployed than their non-SDA peers.



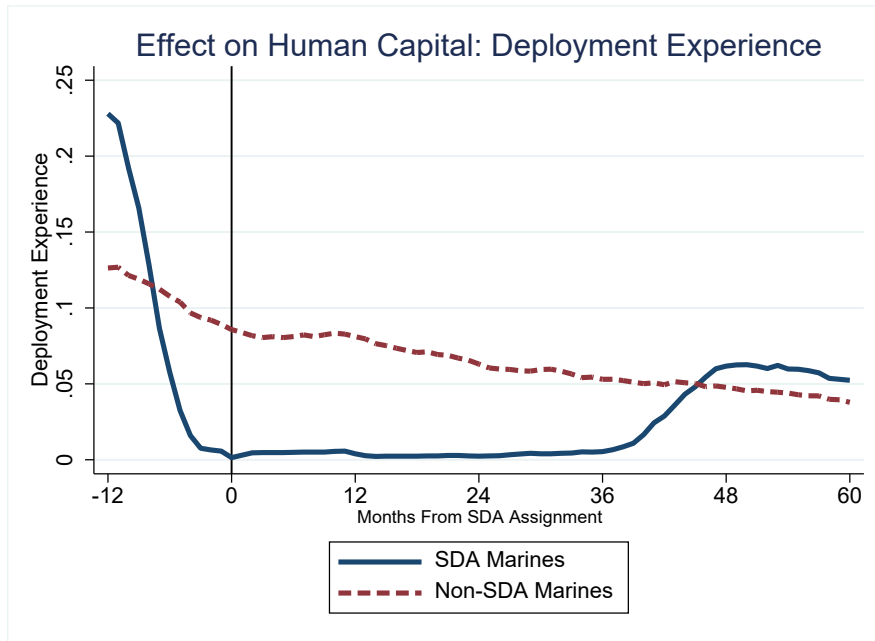


Figure 11. Consistent Sample Deployment Experience. Data from TFDW.

3. Promotions

I observed promotions using the average change in rank for the groups in the consistent sample. The matching process resulted in two groups with nearly the same rank averages 12 months prior to the SDA billet assignment. Figure 12 shows SDA Marines' rank advancement began to surpass their non-SDA peers starting 24-months into their assignment. The dip in trajectory of the SDA Marines' average rank can be correlated to missing observations during the transition period when SDA Marines administratively move back to FMF or other non-SDA units. The higher rank of SDA Marines is maintained throughout the 24-months post-SDA tour.

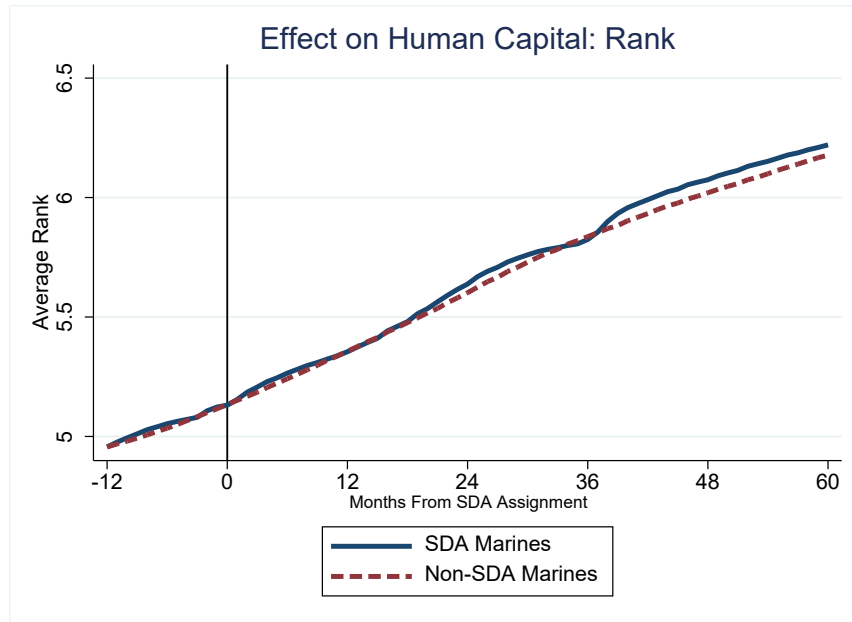


Figure 12. Consistent Sample Human Capital Rank Change. Data from TFDW.

Table 8. Effects on Human Capital Attainment for SDA Marines

	(1) Education	(2) Deployment	(3) Rank Change
During SDA	-0.027*** (0.00219)	-0.066*** (0.00055)	0.016*** (0.00091)
Post-SDA Tour 37–48	-0.062*** (0.00380)	-0.017*** (0.00095)	0.050*** (0.00158)
Post-SDA Tour 49–60	-0.080*** (0.00380)	0.016*** (0.00095)	0.051*** (0.00158)
Baseline Mean	92.86	91.81	0.00
Observations	2,730,672	2,730,672	2,730,672
R-squared	0.150	0.039	0.742

This table displays the coefficients from multiple fixed effect regressions. The dependent continuous variable outcome in Column (1) is the difference-in-differences of the Education level attainment average for Marines during the observation period consisting of 73 months. Column (2) is a binary dependent variable indicating if a Marine in the SDA group is in a deployed status. The dependent continuous variable outcome in Column (3) is the difference-in-differences in rank change for Marines during this observation period for the sample. All coefficient values in the table are relative to the non-SDA control group Marines. Each of the explanatory variables displays the impact of being assigned an SDA on Marines in the SDA group during the SDA period 0–36 Months, the first year after SDA duty 37–48 months, and the second year after SDA duty 49–60 months. Statistical significance is highlighted by * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Data from: USMC Total Force Data Warehouse & MMRP-30.

C. RETENTION OUTCOMES

I use the retention match dataset to study enlisted Marine retention outcomes. Marines were matched and included in this dataset if they served at least the 12 months preceding the SDA assignment. The regression analysis outlined in Table 9 presents the percentage point difference findings for Marines that had served in an SDA in comparison to the non-SDA Marines. Annual years of observation are included to ensure accuracy. For example, I excluded data from 2020 in the first model because it would not be possible for a Marine to be matched 12 months prior to the SDA AMOS assignment and be subsequently observed for the minimum of two years required.

The regression results show Marines who served in an SDA were 22.5 percentage points more likely to remain in service 4 years after their SDA AMOS assignment than their non-SDA peers in the same matched group.

Table 9. Effect on Retention for Marines Assigned an SDA

	2 Years (1)	3 Years (2)	4 years (3)	5 years (4)	6 years (5)
SDA Marine	0.321*** (0.00266)	0.302*** (0.00302)	0.225*** (0.00323)	0.218*** (0.00332)	0.195*** (0.00349)
Observations	109,284	98,340	89,082	79,842	67,830
R-squared	0.118	0.092	0.051	0.051	0.044
Years	2009-19	2009-18	2009-17	2009-16	2009-15

Each regression in this table has an outcome of years indicating a Marine has served the requisite number of years after the SDA assignment period. The coefficient listed is the percentage point probability an SDA Marine remained in service when compared to non-SDA Marines. Match weight for the non-SDA group Marines was applied to each regression to ensure there was a proper adjustment for the differences in covariate distribution between the groups, nullifying the need to use a robust method. The Years listed at the bottom of each column informs which years of data were included in the model, to mitigate inaccurate outcome possibilities due to minimum observation period requirements. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.

Figure 13 provides the comparison between the non-SDA and SDA Marines retention, which coincides with the regression results provided in Appendix C. The figure reveals 55 percent of the SDA Marines within the sample dataset remained in service four years after their SDA tour began, compared to only 32 percent of their non-SDA peers. A



significant proportion of SDA Marines are forfeiting firm-specific human capital they earned in the Marine Corps.

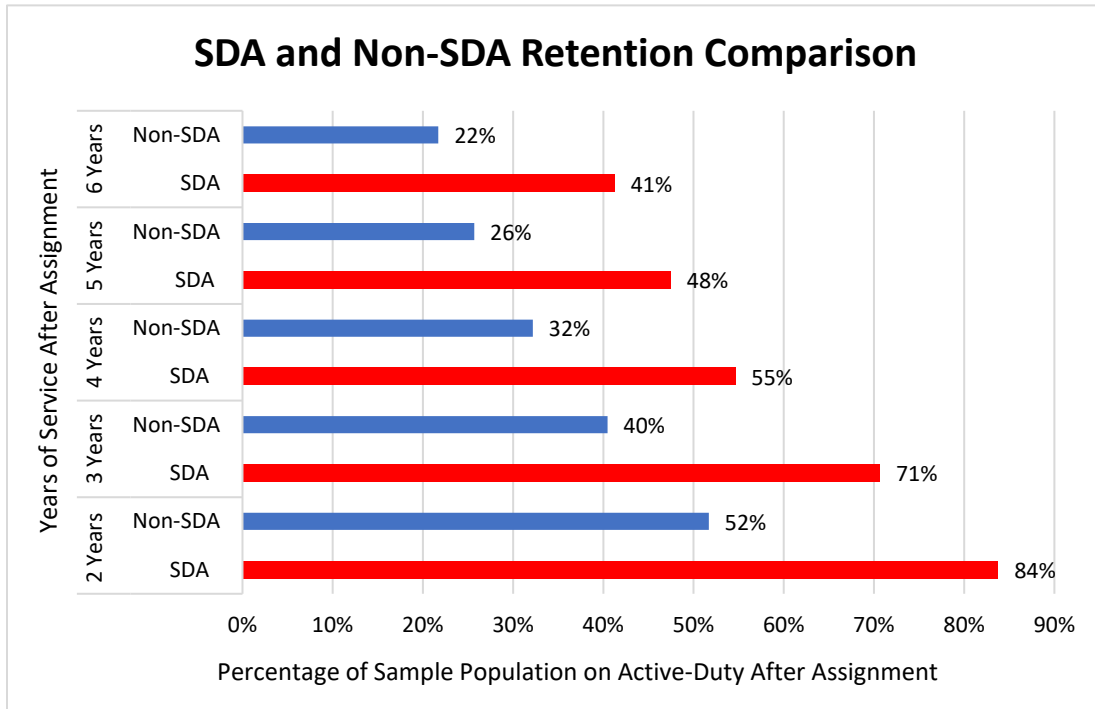


Figure 13. Retention Sample SDA and Non-SDA Comparison. Data from TFDW.

I use the same LPM methodology to examine the retention probability of individual SDA billet type groups compared to non-SDA Marines for two to six years of service after the assignment event. The results of the LPM are provided in Appendix E, and Figure 18 illustrates the regression results for reaching four years of service for those specific SDA and T1 billet types.

Out of all the SDA groups, only MSG Marines have a lower retention probability compared to their non-SDA peers. This is likely because MSG duty is accessible to lower ranks of Marines, resulting in less firm specific capital time invested in the Marine Corps. In the matched data sample MSG Marines averaged 7.8 years of service compared to other SDA groups and non-SDA who had over 9 years of service on average. Additionally, MSG



Marines in the dataset possessed higher levels of personal human capital and performed better in select areas compared to other SDA billet types.

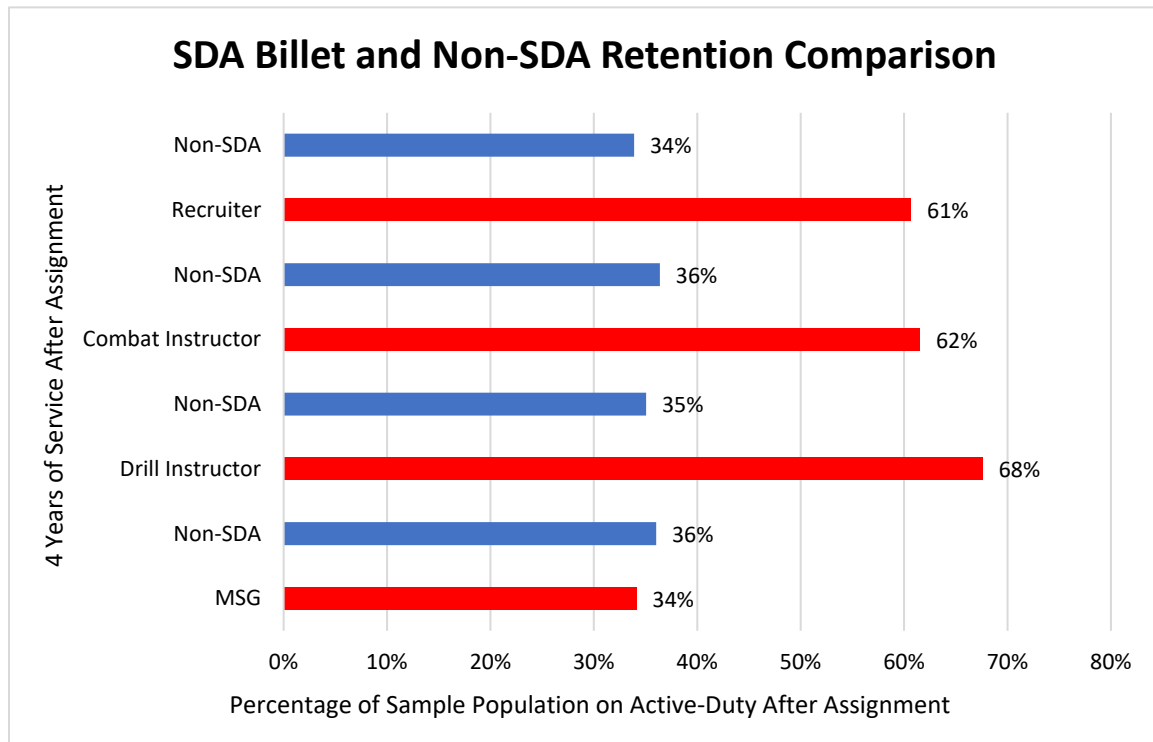


Figure 14. Retention Sample SDA Billet Type and Non-SDA Comparison. Data from TFDW.

D. MILITARY OCCUPATIONAL SPECIALTY SUB-GROUP ANALYSIS

I used regression analysis to examine the relationship between job performance, promotion, and retention amongst SDA and non-SDA Marines belonging to specific MOS fields. The analysis focused on Marines who were included in both the consistent and retention samples and examined outcome variables such as RELVALPROC, education level attainment, rank change, and retention probability.

Table 10 provides the regression analysis evaluating the effect on RELVALPROC for the selected MOS groups. SDA Marines from all six of the MOS groups receive lower RELVALPROC than their non-SDA peers during the SDA period. Among the selected MOS groups, the Infantry SDA Marines were the least penalized for being assigned an



SDA when evaluating RELVALPROC outcome results during the 36-month SDA period. Communications Marines were the only other MOS, aside from Infantry, to have a positive coefficient post-SDA tour in comparison to their peers. During the SDA period, Supply Marines had a relative value of 3 points lower in RELVALPROC compared to their non-SDA Supply peers, while Administration was over 2 points lower. Ground Supply and Aviation Maintenance had the largest negative coefficients compared to their non-SDA peers two years post-SDA in terms of RELVALPROC.

Table 10. Effect on Job Performance for SDA Marines by MOS Field

	Infantry	Admin	Aviation Maint.	Comm	Supply	Motor Transport
During SDA	-0.385*** (0.037)	-2.164*** (0.076)	-1.687*** (0.041)	-1.334*** (0.043)	-2.914*** (0.074)	-1.276*** (0.049)
Post-SDA 37-48	0.005 (0.053)	-1.248*** (0.100)	-1.262*** (0.061)	-0.822*** (0.062)	-2.190*** (0.096)	-0.911*** (0.067)
Post-SDA 49-60	0.119** (0.053)	-0.229** (0.100)	-0.919*** (0.061)	0.345*** (0.062)	-1.273*** (0.095)	-0.278*** (0.067)
Mean	93.05	93.44	92.67	92.46	93.16	92.97
N	388,630	128,562	418,235	287,439	110,287	194,340
R-squared	0.275	0.334	0.273	0.309	0.356	0.318

This table displays the coefficients from fixed effect regressions on the outcome RELVALPROC for MOS sub-groups. Each of the variables indicate the coefficient value for an SDA Marine within the observation period, during the SDA period 0–36 Months, first year after SDA duty 37–48 months, and the second year after SDA duty 49–60 months. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.

In Appendix C, the regression results indicate education levels of all MOS groups, except for Infantry Marines on SDA, are significantly lower compared to their non-SDA peers. This finding suggests that the current SDA policy has a negative impact on the education of enlisted Marines, particularly in the Aviation Maintenance MOS field, which has the largest negative coefficient during all three periods of observation.

The regression results in Appendix D indicate during all observation periods, SDA Marine MOS groups experienced greater average rank changes compared to their non-SDA



peers, except for the Infantry group. Infantry SDA Marines during their assignment period exhibited a lower average rank change compared to their non-SDA counterparts.

The regression results in Appendix F, displayed in Figure 15, show SDA Marines from each MOS group are more likely to reenlist in the USMC than their non-SDA peers in the same MOS fields, consistent with the overall dataset retention findings in Paragraph C.

Overall, the trends observed in the MOS sub-group analysis were consistent with the findings in the first three paragraphs of this chapter. However, the impact of SDA varied across different MOS groups. SDA Marines from Ground Supply and Motor Transportation had lower job performance values than their non-SDA MOS peers. Despite this, they were still promoted at a higher rate and reenlisted at a nearly 30 percent greater rate.

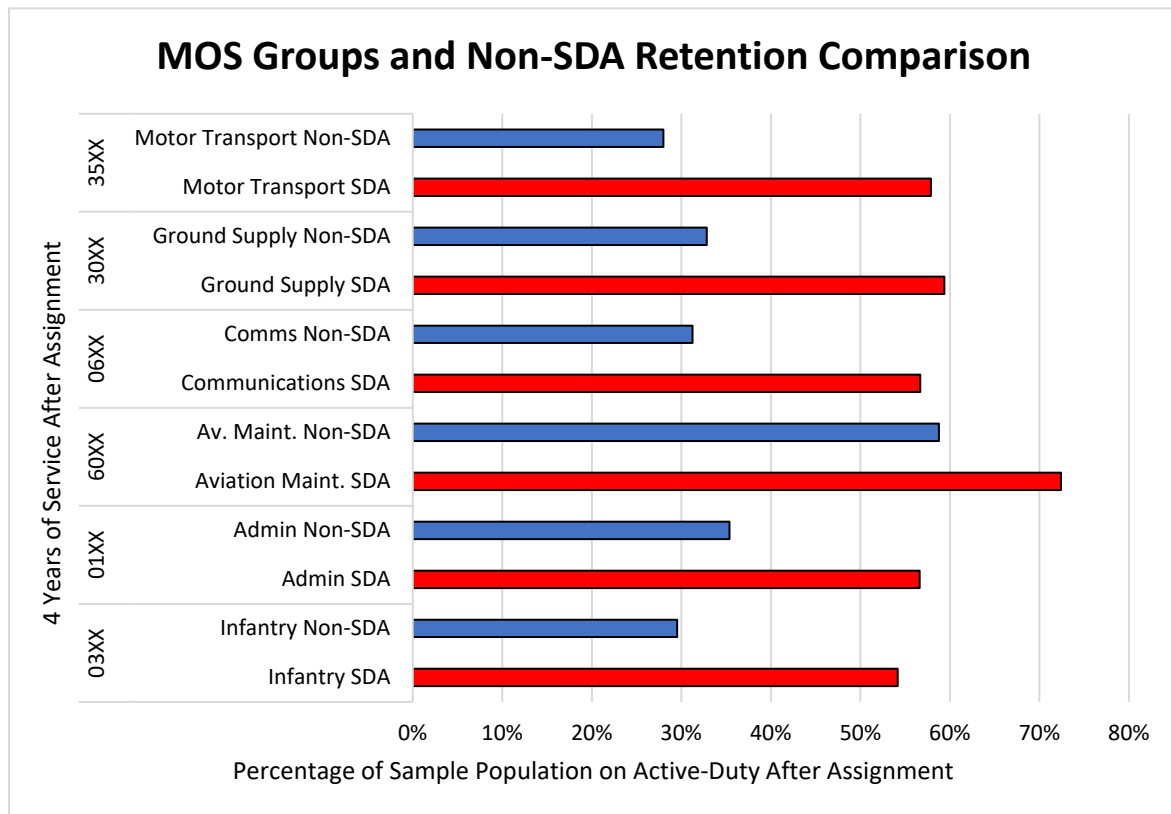


Figure 15. Retention Sample MOS Groups and Non-SDA Comparison. Data from TFDW.



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VI. CONCLUSION

Chapter V findings suggest that despite receiving lower performance markings while in their SDA billet, enlisted Marines assigned to an SDA have higher retention rates and are promoted more often than their non-SDA peers. Once they complete their SDA tour and return to FMF units in their PMOS field, it takes them approximately two years to reach a similar performance level to their non-SDA peers.

A. SUMMARY

Marines assigned to an SDA incur a human capital penalty in their educational advancement in comparison to non-SDA peers. Due to the demanding time commitments of their billet, SDA Marines may face challenges in pursuing further education. Findings do not show SDA Marines pursue educational advancement at increased rates to make up for any losses incurred while assigned to an SDA.

Analysis of different SDA groups showed drill instructors, combat instructors, and recruiters have similar performance, promotion, and retention outcomes. However, MSG Marines are an outlier compared to the other SDA groups. Full dataset and sample statistics show the MSG group is populated with younger Marines with higher aptitude and fitness scores. According to MMEA, the MSG SDA program has higher volunteer rates than the other SDA types. MSG Marines show intrinsic motivation to volunteer for their requested assignment but exit from active duty shortly after completing their SDA tour.

The analysis of MOS sub-group fields found the impact of promotion board precepts is evident for Marines who successfully complete an SDA, as seen in the Ground Supply and Motor Transport MOS fields. Despite exhibiting lower levels of performance and education compared to their FMF peers, these Marines achieved higher rates of promotion and retention. This study found the SDA policy had the least effect on Marines in the Infantry MOS field.



B. RECOMMENDATIONS

I recommend the Marine Corps evaluate and modify its promotion board precepts and policies. Instead of providing a promotion premium to SDA Marines that carries with them throughout each promotion board for the rest of their career, I suggest capping it at three years post-SDA. This approach could enable PMOS promotion boards to equally evaluate all Marines based on their level of skill and experience required for the next rank, while also recognizing the unique skills gained and sacrifices made by SDA Marines. The three-year premium period could provide SDA Marines time to regain the personal and human capital losses incurred during their SDA.

I also recommend the Marine Corps continue to evolve its current SDA and T1 billet recruitment and selection process. The recent increase in volunteerism suggests MMEA is successfully advertising to prospective Marines the benefits associated with an SDA. By continually raising awareness of the short-term monetary bonuses coupled with long-term post-SDA duty location preferences, the Marine Corps can likely increase the retention of SDA Marines. These efforts align with White's (2021) findings that providing Marines with options for their desired duty location results in better performance.

An additional way to further incentivize volunteerism among Marines is to offer designated post-SDA tour opportunities that enhance SDA Marines ability to advance their individual education levels. For instance, the Marine Corps could provide additional or streamlined selection processes for current enlisted college education programs. By incentivizing personal human capital advancement while on active duty, the Marine Corps can potentially increase retention rates for both SDA and non-SDA Marines.

Finally, I recommend exploring the development of an SDA opt out program for exceptionally qualified and uniquely skilled Marines with high levels of human capital in their MOS field. Modifying the current involuntary SDA screening process in this way may lead to the USMC retaining higher average levels of human capital within the FMF, improving retention efforts.



C. LIMITATIONS

I encountered several limitations in this study, including the inability to use the Total Force Retention System (TFRS) data system in this study. MMEA-25 and FMF career planners use this data system to update in the screening process and monitor reenlistment status of active-duty Marines. If TFRS data was available and retained in a person-month observation form, it would have improved the ability to differentiate between volunteer and non-volunteer SDA Marines for an evaluation of performance outcomes difference between those populations. Efforts to make the distinction between volunteer and non-volunteer groups via bonus payment type analysis was unsuccessful when cleaning this dataset.

Additionally, the available dataset and observation quality limited the measurement of performance. While the CFT and marksmanship scores would have been valuable measures, they were not included. I mitigate the impact of CFT score omissions by having PFT score data included in this study. The annual requirement for marksmanship is commonly waived for Marines serving in billets that do not have access to weapon ranges such as SDA Marines or are unavailable to Marines due to various operating requirements. Marksmanship scores are commonly factored into E-4 and below PROCON performance scores, which was one the criteria used in the LASSO prediction match. I do not believe that including data for these performance outcomes would have significantly changed the findings presented in the final analysis.

D. FURTHER RESEARCH

The following SDA related topics are recommended for future studies:

- Analyze and evaluate the factors related to their personal education and skillset growth of Marines.
- Analyze the qualities consistent in the MSG Marine population and explore retention efforts focused on this community.
- Study the differences between average job performance markings and trend between different PMOS.



- Investigate the performance, promotion, and retention differences between volunteer and non-volunteers fulfilling USMC SDA billets.
- Analyze the impact to promotion board results if SDA Marines are no longer afforded an indefinite promotion board precept.



APPENDIX A. DEPENDENT OUTCOME STATISTICS CONSISTENT DATASET, 12 MONTHS PRIOR TO SDA EVENT

	(1) No SDA	(2) SDA	(3) Difference (1)-(2)
Relative Value at Processing	92.72 (5.18)	93.54 (5.26)	-0.82*** (-9.87)
Relative Value Cumulative	91.68 (4.84)	92.42 (4.97)	-0.74*** (-9.57)
Adverse Fitness Reports	0.00 (0.06)	0.00 (0.05)	0.00 (0.70)
PFT Score	260.10 (26.82)	261.44 (25.07)	-1.35*** (-3.85)
Misconduct	0.02 (0.15)	0.01 (0.10)	0.01*** (8.70)
Education Level	12.11 (0.84)	12.10 (0.73)	0.01 (0.61)
Deployment Experience	0.88 (0.32)	0.86 (0.35)	0.02*** (4.20)
Years of Service	5.92 (2.96)	6.06 (2.89)	-0.13*** (-3.34)
Observations	31,605	6,321	37,926

This table summarizes dependent variable outcome statistics between SDA and Non-SDA Marines matches in the consistent sample from October 2009 to October 2021, 12 months prior to assignment. Column (1) displays the mean coefficient for the non-SDA assigned (Control) Marines, while Column (2) displays the mean coefficient for SDA Marines. Column (3) displays the difference in coefficients between non-SDA and SDA groups. Below the coefficients in Columns (1) and (2), the standard deviations are listed in parentheses. Below the coefficients in Column(3), the associated T-statistics are provided in parentheses. Statistical significance is highlighted by * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Data from: USMC Total Force Data Warehouse & MMRP-30.



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APPENDIX B. DEPENDENT OUTCOME STATISTICS RETENTION DATASET, 12 MONTHS PRIOR TO SDA EVENT

	(1) No SDA	(2) SDA	(3) Difference (1)-(2)
Relative Value at Processing	91.80 (5.59)	93.06 (5.48)	-1.26*** (-23.79)
Relative Value Cumulative	90.95 (5.20)	92.08 (5.15)	-1.13*** (-23.04)
Adverse Fitness Reports	0.02 (0.13)	0.00 (0.06)	0.01*** (23.29)
PFT Score	257.99 (27.52)	260.07 (25.05)	-2.08*** (-10.41)
Misconduct	0.04 (0.21)	0.03 (0.16)	0.02*** (14.00)
Education Level	12.09 (1.15)	12.09 (1.03)	-0.01 (-0.79)
Deployment Experience	0.10 (0.30)	0.17 (0.37)	-0.06*** (-22.48)
Years of Service	5.00 (2.98)	5.14 (2.90)	-0.14*** (-6.25)
Observations	97,855	19,571	117,426

This table summarizes dependent variable outcome statistics between SDA and Non-SDA Marines matches in the retention sample from October 2009 to October 2021, 12 months prior to assignment. Column (1) displays the mean coefficient for the non-SDA assigned (Control) Marines, while Column (2) displays the mean coefficient for SDA Marines. Column (3) displays the difference in coefficients between non-SDA and SDA groups. Below the coefficients in Columns (1) and (2), the standard deviations are listed in parentheses. Below the coefficients in Column(3), the associated T-statistics are provided in parentheses. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.



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**APPENDIX C. EFFECT ON EDUCATION LEVEL ATTAINMENT
BY MOS FIELD ASSIGNED SPECIAL DUTY ASSIGNMENTS**

	Infantry	Admin	Av. Maint	Comms	Supply	Motor T
During SDA	0.047*** (0.004)	-0.060*** (0.011)	-0.144*** (0.006)	0.014*** (0.005)	0.025*** (0.009)	-0.036*** (0.005)
Post Tour 37-48	0.069*** (0.006)	-0.117*** (0.015)	-0.170*** (0.009)	-0.030*** (0.007)	0.038*** (0.012)	-0.074*** (0.007)
Post Tour 49-60	0.103*** (0.006)	-0.103*** (0.015)	-0.179*** (0.009)	-0.045*** (0.007)	-0.044*** (0.012)	-0.104*** (0.007)
Mean	12.07	12.19	12.10	12.05	12.16	12.07
N	429,048	138,888	444,096	303,192	119,304	206,784
R-Squared	0.565	0.680	0.517	0.652	0.745	0.589

This table displays the coefficients from fixed effect regressions on the outcome education level attainment for MOS sub-groups. Each of the variables indicate the coefficient value for an SDA Marine within the observation period, during the SDA 0–36 Months, first year after SDA duty 37–48 months, and the second year after SDA duty 49–60 months. For example, an SDA Infantry Marine improved their education by .047 years of education compared to their non-SDA peers. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30



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APPENDIX D. EFFECT ON RANK CHANGE BY MOS FIELD FOR SDA MARINES

	Infantry	Admin	Av Maint	Comm	Supply	Motor T
During SDA	-0.016*** (0.002)	0.090*** (0.005)	0.010*** (0.002)	0.052*** (0.003)	0.060*** (0.005)	0.043*** (0.003)
Post Tour 37-48	0.025*** (0.004)	0.088*** (0.006)	0.038*** (0.004)	0.062*** (0.004)	0.077*** (0.006)	0.091*** (0.004)
Post Tour 49-60	0.033*** (0.004)	0.095*** (0.006)	0.049*** (0.004)	0.058*** (0.004)	0.077*** (0.006)	0.070*** (0.004)
Mean	4.85	4.92	5.00	4.95	4.88	4.92
N	429,048	138,888	444,096	303,192	119,304	206,784
R-squared	0.809	0.837	0.795	0.790	0.821	0.799

This table displays the coefficients from fixed effect regression on the outcome Rank Change for SDA Marines by MOS field sub-groups. Each of the variables indicate the coefficient value for an SDA Marine within the observation period, during the SDA 0–36 Months, first year after SDA duty 37–48 months, and the second year after SDA duty 49–60 months. For example, SDA Infantry Marines have an average rank of .016 points lower than their non-Infantry peers during the duty assignment period. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30



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APPENDIX E. EFFECT ON RETENTION BY SPECIAL DUTY ASSIGNMENT TYPE

	2 Years	3 Years	4 Years	5 Years	6 Years
MSG	0.326*** (0.00417)	0.224*** (0.00472)	0.017*** (0.00490)	-0.012** (0.00492)	-0.012** (0.00520)
Drill Instructor	0.320*** (0.00497)	0.351*** (0.00564)	0.352*** (0.00600)	0.357*** (0.00619)	0.331*** (0.00652)
Combat Instructor	0.309*** (0.00572)	0.306*** (0.00642)	0.286*** (0.00673)	0.294*** (0.00673)	0.243*** (0.00681)
Recruiter	0.313*** (0.00331)	0.322*** (0.00376)	0.284*** (0.00399)	0.290*** (0.00410)	0.264*** (0.00434)
Observations	109,284	98,340	89,082	79,842	67,830
R-squared	0.118	0.098	0.086	0.098	0.086
Years	2009-19	2009-18	2009-17	2009-16	2009-15

The coefficient listed is the percentage point probability likelihood the specific type of SDA Marine remained in service when compared to other Marines within the dataset. Match weight for the non-SDA group Marines was applied to each regression to ensure there was a proper adjustment for the differences in covariate distribution between the groups, nullifying the need to use a robust method. The Years listed at the bottom of each column informs which years of data were included in the model, to mitigate inaccurate outcome possibilities due to minimum observation period requirements. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.



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APPENDIX F. EFFECT ON RETENTION FOR MARINES ASSIGNED SPECIAL DUTY ASSIGNMENTS BY MOS FIELD

	4 Years	4 Years	4 Years	4 Years	4 Years	4 Years
Infantry	0.246*** (0.007)					
Admin		0.212*** (0.014)				
Comms			0.254*** (0.009)			
Supply				0.265*** (0.015)		
Motor T					0.299*** (0.010)	
Av Maint.						0.136** (0.053)
N	14898	4491	9709	3893	7487	405
Years	2009-17	2009-17	2009-17	2009-17	2009-2017	2009-17

The coefficient listed is the percentage point probability likelihood an SDA Marine from the listed MOS field remained in service 4 years following the special duty assignment date, when compared to non-SDA Marines from the same MOS within the dataset. Match weight for the non-SDA group Marines was applied to each regression to ensure there was a proper adjustment for the differences in covariate distribution between the groups, nullifying the need to use a robust method. The years listed at the bottom of each column inform which years of data were included in the model, to mitigate inaccurate outcome possibilities due to minimum observation period requirements. Statistical significance is highlighted by *p < 0.05, **p < 0.01, ***p < 0.001. Data from: USMC Total Force Data Warehouse & MMRP-30.



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