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Unintended Consequences: An Analysis of the Impact of Increased Time-In-Service Promotion Requirements on NCO Retention and Performance in the USMC

March 2024

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Department of Defense Management

Naval Postgraduate School

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

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ABSTRACT

In 2019, the Marine Corps announced that the minimum required time-in-service and time-in-grade for promotion to sergeant and staff sergeant would increase in 2020. Since that policy was enacted, a 2,700-sergeant deficit has been identified. This study confirms that deficit is linked to the promotion policy change by estimating the impact of the increased promotion requirements on the retention and job performance of corporals and sergeants. To estimate the policy impact, I mimic an experimental research design and employ a difference-in-differences framework, comparing Marines in jobs where the average time to promote increased the most against Marines in jobs where promotion timing stayed the same or changed minimally. The results show that corporals in the treatment group were significantly more likely to separate after the new policy was enacted, while sergeants in the treatment group were less likely to separate. Additionally, corporals in the treatment group were more likely to be meritoriously promoted to sergeant after the new policy was in effect, though the effect of the policy on the performance of treated corporals was negligible. Based on these results, I recommend that the Marine Corps focus retention incentives and lateral entry initiatives towards military occupational specialties that have been most affected by this policy, as well as further evaluate meritorious promotion management to enhance its effectiveness in selecting individuals for early advancement.



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TABLE OF CONTENTS

I.	INT	INTRODUCTION1			
	A.	PURPOSE	2		
	B.	SCOPE	2		
	C.	ORGANIZATION	3		
II.	INS	FITUTIONAL BACKGROUND	5		
	А.	PROMOTION TO SERGEANT	5		
		1. Proficiency and Conduct System	6		
		2. Junior Enlisted Performance Evaluation System	6		
	B.	PROMOTION TO STAFF SERGEANT	7		
	C.	MERITORIOUS PROMOTION	8		
		1. Meritorious Promotion to Sergeant	8		
		2. Meritorious Promotion to Staff Sergeant	9		
	D.	2019 TIS AND TIG POLICY UPDATE	1		
III.	LIT	ERATURE REVIEW	3		
	А.	EFFECT OF PRIOR ENLISTED SERVICE ON			
	1 10	PERFORMANCE	3		
	B.	PERFORMANCE OF OLDER RECRUITS10	6		
	C.	SUMMARY 1'	7		
IV.	DAT	A AND METHODOLOGY 19	9		
	A.	DATA	9		
		1. Descriptive Statistics	9		
		2. Trends in Voluntary Separations and Meritorious			
		Promotions	3		
	B.	METHODOLOGY24	5		
		1. Difference-in-difference Approach	5		
		2. Validity of approach	8		
		3. Models Estimating Voluntary Separations	8		
		4. Models Estimating Pro/Con Scores	9		
		5. Models Estimating Meritorious Promotions	9		
v.	RES	ULTS AND ANALYSIS	1		
	A.	EFFECT ON RETENTION	1		



	B.	EFFECT ON CORPORAL PRO/CON SCORES	33
	C.	EFFECT ON MERITORIOUS PROMOTION TO SERGEANT	36
VI.	CON	CLUSIONS	39
	A.	SUMMARY	39
	B.	LIMITATIONS	39
	C.	CONCLUSION AND RECOMMENDATIONS	40
APPE	NDIX	A. AVERAGE PROMOTION TIMES BY MOS	43
LIST	OF R	EFERENCES	49



LIST OF FIGURES

Figure 1.	Minimum TIG/TIS Requirements. Source: USMC (2012)	11
Figure 2.	Corporal Voluntary Separations, 2016–2021	23
Figure 3.	Sergeant Voluntary Separations, 2016–2021	24



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LIST OF TABLES

Table 1.	Summary Statistics: Corporals	21
Table 2.	Summary Statistics: Sergeants	22
Table 3.	2016-2021 Meritorious Promotions to Sergeant	25
Table 4.	Impact of TIS/TIG Policy Change on NCO Retention	32
Table 5.	Impact of TIS/TIG Policy Change on Corporal Pro/Con Scores	35
Table 6.	Impact of TIS/TIG Policy Change on Meritorious Promotions to Sergeant	37



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LIST OF ACRONYMS AND ABBREVIATIONS

CFT	Combat Fitness Test
CPG	Commandant's Planning Guidance
DOR	date of rank
EAS	end of active service
FITREP	fitness report
FY	fiscal year
JEPES	Junior Enlisted Performance Evaluation System
LPM	linear probability model
MARADMIN	Marine Administrative Message
MOS	military occupational specialty
NCO	non-commissioned officer
OLS	ordinary least squares
PES	Performance Evaluation System
PFT	Physical Fitness Test
PME	professional military education
Pro/Con	proficiency and conduct
SDA	Special Duty Assignment
SNCO	staff non-commissioned officer
SULI	Small Unit Leadership Initiative
TBS	The Basic School
TFDW	Total Force Data Warehouse
TIG	time in grade
TIS	time in service
USMC	United States Marine Corps
USNA	United States Naval Academy



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I. INTRODUCTION

In July 2019, the Commandant of the Marine Corps stated in his Commandant's Planning Guidance (CPG) that Force Design was his number one priority for his tenure (Berger, 2019). A key aspect of Force Design outlined in the CPG was Talent Management, specifically that the current manpower system of the United States Marine Corps (USMC) was falling short in its ability to attract and retain quality Marines. The guidance and goals for Talent Management were expanded in 2021 with the release of Talent Management 2030 (Berger, 2021). In this document, a key concept is laid out: mature the force. The longstanding manpower model of the USMC was one of "recruit and replace" where a high turnover rate of first-term enlistees was the norm. In response to the challenges posed by the future operating environment, Talent Management 2030 describes a need for more cognitively mature and experienced Marines.

Even before Talent Management 2030 was released, a policy was announced that intended to increase the baseline experience level required to be eligible for promotion to Sergeant and Staff Sergeant. On 30 October 2019, a Marine Administrative Message (MARADMIN) was released announcing that the minimum time-in-service (TIS) required for promotion to sergeant would increase from 24 to 48 months, effective 1 January 2020 (USMC, 2019). Additionally, the minimum TIS requirement for promotion to staff sergeant would increase from 48 to 60 months and the minimum time-in-grade (TIG) requirement would increase from 27 to 36 months, effective beginning with the Fiscal Year (FY) 2020 Staff Sergeant Selection board convening in July 2020 (USMC, 2019). The MARADMIN (2019) stated that this change "will better align the minimum TIS/TIG promotion requirements with the USMC established promotion plans, standardize the rate of promotion across the force, and allow commanders to manage talent by selecting high performers for early advancement through the meritorious promotion process" (p. 3). In an interview with the Marine Corps Times, Colonel Christopher Escamilla, the then-branch head for the Manpower Plans, Programs, and Budget section, further explained the intent behind the increased requirements was to ensure a higher level of expertise in sergeants, particularly since some military occupational specialties (MOSs) have historically



ACQUISITION RESEARCH PROGRAM Department of Defense Management Naval Postgraduate School promoted Marines to sergeant much faster than others ("Corps Increases," 2019). Additionally, Colonel Escamilla noted that this change would improve the retention of sergeants and staff sergeants by only promoting those who had already reenlisted or extended their current contract ("Corps Increases," 2019).

Since this policy was enacted, however, the Marine Corps has identified a deficit of over 2,700 sergeants (Glynn, 2023). No official publications have noted a deficit of staff sergeants. In response, the USMC has already introduced the Small Unit Leader Initiative to allow high-performing corporals to be eligible for reenlistment and promotion at 36 months TIS with the endorsement of their O5-level commander (Glynn, 2023).

A. PURPOSE

This thesis examines the effect of the promotion policy change on the retention decisions of corporals and sergeants in the Active Component. Additionally, it would be easy to write a narrative that the increased TIS and TIG requirements could also cause a decrease in motivation and subsequently, job performance. Therefore, this thesis also analyzes what, if any, effect the new policy had on the performance of corporals. Lastly, as the MARADMIN stated that commanders could still manage talent by utilizing meritorious promotions, this thesis investigates whether there was any change in the rate of meritorious promotions to sergeant. This is significant because while the goal of the policy change was to ensure a uniform amount of experience in sergeants and staff sergeants and to standardize rates of promotion across the force, it may have come at the cost of large-scale attrition which would decrease the warfighting capability of the Marine Corps.

B. SCOPE

The following primary research questions are addressed within this thesis:

- 1. What effect did the increased TIS and TIG requirements have on the retention of corporals and sergeants?
- 2. What effect did the increase in TIS requirements for promotion to sergeant have on the performance of corporals?



The following secondary research questions are addressed within this thesis:

1. What effect did the increased TIS and TIG requirements have on the number of Marines meritoriously promoted to sergeant?

C. ORGANIZATION

This paper consists of six chapters, the first being an introduction to this thesis. Chapter II provides an institutional background on the promotion process and policies of the USMC, specifically for promotions to sergeant and staff sergeant. Chapter III is a literature review of related research into the effects of prior-enlisted experience in officers and age at recruitment. Chapter IV provides an explanation of the data, descriptive statistics, and the methodology used to answer the research questions in this study. Chapter V provides the results and a discussion of the empirical analysis. Chapter VI provides a summary and limitations of the research, as well as recommendations for future studies into the effectiveness of USMC promotion policies.



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II. INSTITUTIONAL BACKGROUND

This chapter provides an overview of enlisted promotions in the USMC, specifically information regarding promotion to sergeant, promotion to staff sergeant, and meritorious promotions. This chapter will also explain the change to the minimum TIS and TIG requirements in further detail.

MCO P1400.32D, the Enlisted Promotions Manual, details enlisted promotion policy and procedures used by the Marine Corps (USMC, 2012). MCO P1400.32D (2012) states that the overall goal of the USMC promotion system is to promote "only the best and fully qualified Marines" (p. 18) in order to maintain manning levels at each grade and MOS so that the USMC's readiness for combat is maintained.

A. PROMOTION TO SERGEANT

Promotion to sergeant is controlled using a composite score, which is calculated from performance evaluations and performance measures (USMC, 2012). The number of promotions awarded each month is based on vacancies that must be filled in each MOS. This means that each MOS will have a different composite score cutoff, called a cutting score, and some MOSs may be completely closed to promotion in a particular month.

To be considered eligible for promotion, a corporal must meet the minimum TIS and TIG requirements. Prior to 1 Jan 2020, the minimum TIS required was 24 months. The current minimum TIS requirement is 48 months. The minimum TIG requirement is 12 months and has not been changed. Additionally, corporals must have completed a command-sponsored Corporals Course to fulfill their professional military education (PME) requirement. Once a corporal is eligible for promotion, a composite score is calculated and if their score is above the cutoff, they are selected for promotion to sergeant. The system used to calculate the composite score was changed in 2021, however since the data for this thesis covers 2017–2021, an explanation of both systems will be given.



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1. Proficiency and Conduct System

Prior to 1 February 2021, Marines in the grades of E1-E4 were evaluated using proficiency and conduct (Pro/Con) marks. On a semi-annual basis, or on specified occasions, junior enlisted Marines were assigned Duty Pro/Con markings, using a scale from 0.0 to 5.0 for each (USMC, 2000).

Under the Pro/Con system, a corporal would not have a composite score calculated until they were eligible for promotion (USMC, 2012). The Pro/Con system used promotion quarters to determine eligibility. Therefore, if a corporal met the minimum TIS by the end of the promotion quarter, they were considered eligible for the entire quarter and a composite score would be calculated during the month before the promotion quarter began (USMC, 2012). Once computed, this composite score is used for the whole promotion quarter and remains on the Marine's record unless he/she is selected for promotion (USMC, 2012). If an eligible Marine is not selected during the promotion quarter, a new composite score is computed again before the start of the next promotion quarter (USMC, 2012). The composite score is a combination of multiple items, including rifle marksmanship score, PFT and CFT scores, average Pro/Con scores, TIG, and TIS (USMC, 2012). Additional bonuses are applied to the score for special duty assignments (SDAs) and self-education (USMC, 2012).

2. Junior Enlisted Performance Evaluation System

In the 2019 CPG, the Commandant of the Marine Corps directed that the service must modernize the way the USMC identifies talent and future potential (Berger, 2019). MCO 1616.1 states that the Junior Enlisted Performance Evaluation System (JEPES) was designed to replace the Pro/Con system as a way to provide accurate and standardized assessments, prevent score inflation, and increase the accessibility and transparency of the evaluation system (USMC, 2020b). JEPES was implemented on 1 February 2021 and under this system, a Performance Evaluation System (PES) score is now computed from four equally weighted pillars, each worth 25 percent of the PES score. The four pillars are:



- 1. Warfighting: Consists of the MRO's current rifle score percentile against peers of the same rank and Marine Corps Martial Arts Program (MCMAP) Belt, each worth 12.5 percent of the PES Score.
- 2. Physical Toughness: Consists of the MRO's current Physical Fitness Test (PFT) and Combat Fitness Test (CFT) score percentiles against peers of the same rank, each worth 12.5 percent of the PES Score.
- 3. Mental Agility: Consists of an MRO's informal PME in grade (MarineNet) and in service/in grade civilian self-education (college/vocational courses and degrees), each worth 12.5 percent of the PES Score.
- 4. Command Input: Consists of the average marks in grade of three lines of subjective evaluation: Individual Character, Military Occupational Specialty (MOS) and/or Mission Accomplishment, and Leadership. This is the command's chance to highlight superior or inferior MOS proficiency, acts of personal integrity, and leadership. (USMC, 2020b)

The PES score replaces the composite score as the measure by which corporals are selected for promotion against the cutting score for each MOS. Under JEPES, an eligible Marine has a PES score calculated every month, as opposed to once a quarter under the Pro/Con system, and even Marines who do not meet the minimum TIS requirements will have a projected PES score for their awareness (USMC, 2020b).

B. PROMOTION TO STAFF SERGEANT

As opposed to an automated scoring system, promotion to staff sergeant is determined by an annual promotion selection board (USMC, 2012). These selection boards examine the entirety of a Marine's military career, considering factors including demonstrated performance, leadership, technical knowledge, physical fitness, character, maturity, and potential for growth (USMC, 2012). Eligibility for each promotion selection board is determined by TIG and TIS. Prior to the FY 2020 Staff Sergeant Promotion Selection Board, the minimum TIG was 27 months and the minimum TIS was 48 months (USMC, 2012). Beginning with the FY 2020 Staff Sergeant Promotion Selection Board, the minimum TIG is 36 months and the minimum TIS is 60 months (USMC, 2019). The TIG requirement may be reduced by six months by the Commandant of the Marine Corps if the needs of the Marine Corps require it (USMC, 2012). Additionally, to be fully qualified for selection to staff sergeant, sergeants must have completed either the resident or nonresident Sergeants School Professional Military Education (PME).



Each promotion selection board is provided with the number of allocations for each MOS. These allocations are based on vacancies that must be filled in each MOS. Therefore, some MOSs may be completely closed to promotion for a particular selection board. For each promotion selection board, there are typically three promotion zones for each MOS: Below Zone, In Zone, and Above Zone (USMC, 2012). Marines in the Below Zone have "at least the minimum TIG necessary to be eligible for promotion to the next higher grade but are not in the promotion zone" (USMC, 2019, p. 13). The In Zone population consists of Marines who meet the TIS/TIG requirements established for this zone and haven't already been passed for promotion (USMC, 2012). The Above Zone contains any Marine who is eligible for promotion and has already been passed for promotion on a previous selection board (USMC, 2012).

When selecting Marines to be promoted, there is no restriction on the number of Marines selected from the In Zone or Above Zone populations (USMC, 2012). Marines selected from the Below Zone may only make up five percent of the total allocations for each MOS (USMC, 2012). Ultimately, the selection board is not required to fill every allocation.

C. MERITORIOUS PROMOTION

Meritorious promotions are intended to promote "exceptionally well-qualified Marines ... whose performance is superior to that of their peers" (USMC, 2012, p. 117) outside of the normal promotion system. The minimum TIG requirements are waived when considering a Marine for meritorious promotion, however, the normal minimum TIS requirements still apply (USMC, 2012). Marines must have completed the required PME for their current grade to be considered for meritorious promotion. The procedures and authority to meritoriously promote Marines to sergeant and staff sergeant differ and are explained further in the following sections.

1. Meritorious Promotion to Sergeant

The authority to meritoriously promote Marines to sergeant is delegated to commanding generals and commanding officers of various supporting establishment units, such as Marine Helicopter Squadron One, the Marine Aviation Training Support Groups,



and the Marine Corps Mountain Warfare Training Center (USMC, 2012). Meritorious promotions are conducted on a quarterly basis and the number of quarterly allocations for meritorious promotion sergeant is based upon the number of corporals in the command on the first day of each fiscal quarter (USMC, 2012). Not more than one-quarter of one percent of the corporals on board on the first day of the fiscal quarter may be meritoriously promoted to sergeant (USMC, 2012). The meritorious promotions for sergeants are to be made effective on the second day of the following month. For example, a command with 1,000 corporals on 1 October will be allocated two meritorious promotions to sergeant on 2 November.

Fractions will not be carried over if the number of corporals allows at least one meritorious promotion in the quarter (USMC, 2012). If a command does not have enough corporals to rate at least one meritorious promotion, the fraction will carry over to the next quarter until the sum of the fractions allows at least one meritorious promotion (USMC, 2012). Unused allocations may not be transferred between commands and may not be carried over to the following quarter (USMC, 2012).

In addition to the allocations specified above, the commanding generals of the Marine Corps Recruit Depots and recruiting regions have the authority to grant meritorious promotions to 12.5 percent of corporals under their command who have served at least 6 months as Drill Instructors or recruiters, on a semi-annual basis (USMC, 2012). These allocations are calculated on 2 January and 2 July. Commanding Generals are also authorized to meritoriously promote winners of annual rifle squad competitions (USMC, 2012). These meritorious promotions will count against the allocations for the quarter in which the promotions are completed (USMC, 2012).

2. Meritorious Promotion to Staff Sergeant

The authority to meritoriously promote sergeants to staff sergeant is maintained by the Commandant of the Marine Corps (USMC, 2012). Meritorious staff sergeant allocations are published separately between SDA and non-SDA Marines.



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a. Special Duty Assignment Meritorious Promotions

SDAs include "Drill Instructors, recruiters, Marine Security Guards, and Marine Combat Instructors" (USMC, 2012, p. 118). SDA allocations are published twice a year via MARADMIN. Commands that have SDA allocations conduct local selection boards to nominate sergeants in SDA billets. Nominations are submitted to the Commandant of the Marine Corps in December and June for meritorious promotions to be effected on 2 January and 2 July, respectively. To be eligible for meritorious promotion, sergeants in SDA billets must meet all the normal requirements for meritorious promotion as well as have at least 12 months of observed performance in their SDA billet (USMC, 2012).

b. Non-Special Duty Assignment Meritorious Promotions

Allocations for meritorious promotion to Staff Sergeant are provided to eight major commands: "Marine Forces Pacific, Marine Forces Command, Marine Forces Reserve, Marine Corps Recruiting Command, Marine Corps Combat Development Command, Marine Corps Logistics Command, Marine Special Operations Command, and Marine Corps Installations Command" (USMC, 2012, p. 121). Total allocations for each major command are computed on an annual basis as one meritorious staff sergeant promotion for every 1,000 eligible sergeants, rounded up at 500, within the command as of 1 October (USMC, 2012). Commands with less than 1,000 eligible sergeants will not receive an allocation, but may still submit a nomination to compete on a SNCO Meritorious Promotion Board, held by the Commandant of the Marine Corps (USMC, 2012). Additionally, any command that does not fall within the eight major commands may submit a nominee to compete on the SNCO Meritorious Promotion Board (USMC, 2012).

Commanders may also submit a sergeant for meritorious promotion to staff sergeant based on meritorious acts (USMC, 2012). There are not separate quotas for this type of meritorious promotion, therefore any promotion of this type will count against the command's annual allocation for non-SDA meritorious promotions (USMC, 2012). Examples of meritorious acts that may qualify for promotion include winning a national or Olympic marksmanship match, invention of a new weapon or device that has Marine Corps-wide significance, or winning the annual rifle squad competition.



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D. 2019 TIS AND TIG POLICY UPDATE

Figure 1 lists the TIS and TIG requirements prior to 2020, as well as the updates made in 2020 for comparison.

USMC & USMCR PROMOTION TO	TIG	TIS	Updated TIG	Updated TIS
SgtMaj/MGySgt	3 years	10 years		
1stSgt/MSgt	4 years	8 years		
GySgt	3 years	6 years		
SSgt	27 months	48 months	36 months	60 months
Sgt	12 months	24 months		48 months
Cpl	8 months	12 months		
LCpl	8 months	9 months		
PFC	6 months	6 months		

Figure 1. Minimum TIG/TIS Requirements. Source: USMC (2012).

On 30 October 2019, changes to the promotion requirements were published via MARADMIN 612/49 (USMC, 2019). This MARADMIN directed that, effective 1 January 2020, the TIS requirement for promotion to sergeant would increase from 24 to 48 months. For promotion to staff sergeant, effective beginning with the FY 2020 Staff Sergeant Promotion Selection Board, the TIS requirement would increase from 48 to 60 months and the TIG requirement would increase from 27 to 36 months. The MARADMIN stated that the existing six-month TIG reduction policy would remain in effect for promotion to staff sergeant, but there is no waiver for the sergeant TIS requirements. Additionally, Marines selected for promotion to staff sergeant were directed that they "must have at least 24 months of obligated service remaining on their contract beginning on the date of their promotion" (USMC, 2019, p. 3). Any staff sergeant-select without the required obligated service obligation. Failure to acquire the required obligated service will prevent a staff sergeant-select from being promoted (USMC, 2019).



On 8 June 2020, MARADMIN 334/20 was released, which restated the changes outlined in MARADMIN 612/49 and serves as an update to MCO P1400.32D, Marine Corps Promotions Manual, Volume 2, Enlisted Promotions until it is revised (USMC, 2020a). As of the publication of this thesis, MCO P1400.32D has not been revised.

On 28 April 2023, MARADMIN 225/23 was released, which established the Small-Unit Leader Initiative (SULI) (USMC, 2023). The purpose of this initiative is to identify, retain, and promote high-performing corporals. Under this initiative, a corporal can become eligible for promotion to sergeant if they have at least 36 months TIS, have reenlisted, completed all required PME, and obtain an endorsement from the first O5 commanding in their chain of command (USMC, 2023). Marines who meet these criteria must still meet the PES cutting score for their MOS. To date, there is no automated process to determine if a Marine meets the cutting score, therefore commands must manually check the monthly PES cutting scores to determine if the Marine will be promoted (USMC, 2023). SULI promotions will not count against a command's meritorious promotion allocations (USMC, 2023).

The Marine Corps subsequently released the Talent Management Campaign Plan, which listed the SULI under the Line of Effort: Rebalance Recruiting and Retention (Glynn, 2023). The Talent Management Campaign Plan states that the SULI was established in response to a deficit of over 2,700 sergeants, which was caused at least partially by the increase in TIS and TIG promotion requirements.



III. LITERATURE REVIEW

In this chapter, I review the literature on the relationship between prior enlisted service and performance and retention, and on the general performance of older recruits. Similar to sergeants and staff sergeants with increased TIS and TIG requirements, officers with prior enlisted service have more experience, at least in terms of TIS, over officers commissioned directly from civilian life. Additionally, older recruits potentially have more maturity and life experience than recruits who join immediately after graduating high school.

A. EFFECT OF PRIOR ENLISTED SERVICE ON PERFORMANCE

Using data on prior enlisted and non-prior enlisted officers on O4 promotion boards from 1985 to 1995, Astrella (1998) found prior enlisted officers on average receive fewer FITREPs with a recommendation for accelerated promotion and are also less likely to have ever received a FITREP with a recommendation for accelerated promotion when compared to officers with no prior enlisted service. Moreover, prior enlisted officers are also less likely to be promoted to O4; however, the effect of prior enlisted service is statistically insignificant for individuals evaluated in the pre-drawdown period of 1985–1990. Astrella (1998) goes on to suggest that the decreased promotion probability could be due to prior enlisted officers reaching the retirement threshold and desiring retirement over advancement to O4, as prior enlisted officers are older than non-prior enlisted officers of the same rank. Since recommendations for accelerated promotion are normally reserved for the top 10 percent of a peer group, a lack of such a recommendation does not necessarily equate to poor performance in this study. There are many observable and unobservable differences between prior enlisted and non-prior enlisted officers. While Astrella (1998) controls for some, such as demographic characteristics, education level, and military occupation, it is hard to control for the many intangible factors such as drive and determination that may be correlated with prior enlisted status and performance. Additionally, this study lacks objective performance outcomes, such as performance trait



markings. This makes it difficult for an observational study like this to identify the causal effect of prior enlisted status on performance.

Ergun (2003) analyzed the impact of a Marine Corps officer's accession source on performance and retention using ordinary least squares (OLS) and probit regression models. The study evaluated performance based on scores from The Basic School (TBS), FITREP scores, and promotion to O4 and O5, with a 10-year commissioned service as a retention benchmark. The findings indicate that prior enlisted officers generally had higher TBS scores and a better chance of retention at 10 years, but their FITREP scores as O3 or O4 were not significantly different or were lower than non-prior enlisted officers (Ergun, 2003). Ergun also found that prior enlisted service had a statistically insignificant effect and a negative effect on promotion to O4 and O5, respectively, possibly due to retirement eligibility affecting these promotions. However, without controlling for factors like past performance, the causal effect of prior enlisted service on these promotions remains unclear (Ergun, 2003).

Rather than focus on individual performance metrics, Hoglin (2004) analyzed data on Marine Corps officers who were commissioned between 1980 and 1999 to identify factors that affect an individual's length of service. Unlike previous studies, this study uses Cox Proportional Hazard Models to analyze survival rates as a whole rather than simply estimate the probability of reaching a specific milestone. Hoglin's findings indicate that prior enlisted service has a small positive effect on survival rates but that other variables, such as military occupation, have a much more significant effect on officer longevity. For example, Hoglin (2003) estimates that Marine officers in combat arms have significantly lower survival rates than officers in combat support jobs, such as intelligence and aviation officers.

Wyrick (2005) researched the impact of prior enlisted service on midshipmen performance and attrition at the United States Naval Academy (USNA), focusing on academic grades, military rankings, and leadership role selection. Using OLS, the study revealed that prior enlisted midshipmen achieved higher academic and military grades after both their first and fourth years. He then finds via logistic regression that prior enlisted midshipmen have a higher likelihood of being selected for Midshipmen leadership



positions. Using cross-tabulation, Wyrick (2005) finds that prior enlisted and direct entry midshipmen have similar attrition rates but for varying reasons; for instance, prior enlisted midshipmen attrite from Plebe Summer at much lower rates but voluntarily resign for conduct reasons at higher rates when compared to direct entry midshipmen. While the cross-tabulation does show that prior enlisted and direct entry Midshipmen attrite for different reasons, it is impossible to discern whether there is any association, or lack thereof, between these variables without using econometric analysis.

Garza (2014) examined which characteristics were predictive of a USMC officer's selection for career designation, with a secondary research question focusing on whether prior enlisted service would increase an officer's probability of selection. Using probit models to analyze data from the 2010–2013 career designation boards, Garza (2014) found that prior enlisted officers had a higher probability of being selected for career designation across the combat arms, combat service support, and aviation-ground communities while the effect was not statistically significant for the aviation and law communities. When using the same models on only the 2012–2013 career designation boards, the effect of prior enlisted service was not statistically significant for all communities except aviation ground. These results indicate that while prior enlisted service does appear to increase the chances of being selected for career designation, there are differences in how this prior enlisted experience affects different occupational groups, which supports Hoglin's (2004) conclusion that military occupation has a greater effect on retention than prior enlisted service.

Conlan (2021) expanded on Ergun's 2003 findings concerning which accession sources have a higher probability of being promoted to O4 and O5. Similar to the results of Ergun's study, Conlan found that officers who were commissioned via enlisted-toofficer programs were less likely to be promoted to O4 and O5. However, Conlan included an additional model that controlled for officers who were retirement-eligible which resulted in prior enlisted service having a statistically insignificant effect on promotion. The study notes that the significance of the prior enlisted variables was expected based on the fact that prior enlisted officers can reach retirement eligibility at approximately the same time as they would be screening on O4 and O5 promotion boards.



ACQUISITION RESEARCH PROGRAM Department of Defense Management Naval Postgraduate School A 2021 study by McCarley further corroborates the findings of Ergun, Hoglin, Garza, and Conlan. Using the population of USMC officers commissioned between 2006 and 2016, McCarley used both survival analysis and logistic regression to compare survival rates and probability of selection for career designation board and promotion to O4 and O5 across officers from different accession sources. The findings of this study align with Hoglin's thesis, in that prior enlisted officers have higher median survival times than direct entry officers. Additionally, similar to the studies by Garza and Conlan, McCarley found that prior enlisted officers had a higher likelihood of selection for career designation, but they were less likely to be promoted to O4. Interestingly, the results indicated that accession source in general was not a statistically significant predictor for promotion to O5.

B. PERFORMANCE OF OLDER RECRUITS

Rostker et al. (2014) looked at the enlistment decisions of recruits over the age of 20 to understand the relationship between age at enlistment and military career outcomes. Several linear probability models were used to measure the effect of age on retention and promotion. While the study found that recruits in the age ranges of 20–21, 22–24, 25–27, and 28–42 are all more likely than those under 19 years old to attrite during the first 3 months of service, it found that they are also more likely to reenlist. The effect on promotion was found to be even greater, with recruits who enlisted at 22–27 being 4.3 percentage points more likely to be promoted to E5 by their 4th year when compared to recruits who joined under 19 years of age.

Pollard et al. (2022) built on the 2014 study by including more attrition points as enlistment outcomes to measure how age at enlistment affects retention at these points, specifically Basic Combat Training attrition, early-term attrition (six months), first-term attrition (did not complete contract), and reenlistment. Using logit regression models, the study split the population into age groups of 18 and under, 19–21, 22–24, and 25–35 to determine the effect of age on enlistment outcomes. The findings indicate that only the 25–35 age group had a statistically significant increase in the probability of attrition during Basic Combat Training and at 6 months. For first-term attrition, the effect was found to be



the opposite, with the two youngest age groups being more likely than older recruits to not complete their enlistment contract. Similar to the 2014 study, this study concluded that older recruits are more likely than younger recruits to reenlist at the end of their first enlistment.

Pollard et al. (2022) also conducted interviews with individuals from the U.S. Army Recruitment and Retention College and recruiting units at the brigade, battalion, company, and individual recruiter levels. The interviews revealed that all of the recruiters perceived older individuals to be better recruits because according to the interviewees older recruits are more mature, focused, and career-oriented. For these reasons, the respondents shared the perception that older recruits then make better soldiers as well (Pollard, 2022).

C. SUMMARY

This research suggests that prior enlisted officers typically show improved shortterm performance, such as better academic and military grades at the USNA, TBS grades, and FITREP scores as junior officers (O1-O2), along with higher career designation rates (Ergun, 2003; Garza, 2014; McCarley, 2021; Wyrick, 2005). Although Astrella (1998) found they were less likely to be recommended for accelerated promotion, this may not reflect lower performance than direct entry officers. Additionally, prior enlisted officers often have higher retention at 10 years of commissioned service (Ergun, 2003; Hoglin, 2004; McCarley, 2021). However, longer-term career indicators like promotion to senior officer ranks (O4 and O5) show either a negative correlation or an insignificant effect with prior enlisted service (Astrella, 1998; Ergun, 2003; Conlan, 2021; McCarley, 2021). Similarly, RAND studies suggest that older Army recruits tend to reenlist more and perform better (Pollard et al., 2022; Rostker et al., 2014). These findings suggest that sergeants and staff sergeants with more required TIS and TIG may perform better and attrite at lower rates than those promoted with lower minimum requirements.

What this research does not show is how the length of prior enlisted service impacts performance and retention. Although it is clear that prior enlisted officers naturally have TIS, only Garza (2014) accounted for overall TIS to address potential bias in comparing experience levels. This oversight could lead to a positively biased interpretation of the



impact of prior enlisted service on performance if both prior enlisted service and TIS are positively correlated with performance. The RAND studies, while estimating retention by age group and using focus groups for performance perceptions, did not conduct regressions to quantitatively assess whether older recruits have measurably better performance, such as in performance evaluation scores.

While my focus is not on prior enlisted officers, my thesis contributes to the literature by studying the effects of time in grade and time in service requirements on the performance and retention of NCOs in the Marine Corps. To date, there has not been a specific study that researches the effect of the 2019 policy change that increased the TIS and TIG requirements for promotion to sergeant and staff sergeant. Additionally, to my knowledge, there are not any studies that specifically research the lengthening, or delaying, of promotion timelines. Prior enlisted officers often have more time in service with mixed effects on subsequent performance and retention. By looking directly at time in service and time in grade requirements for promotion to sergeant and the time in service and time in grade requirements for promotion to sergeant and the time in service and time in grade requirements for promotion to sergeant.



IV. DATA AND METHODOLOGY

A. DATA

The dataset for this research includes the population of active-duty corporals, sergeants, and staff sergeants from January 2016 to November 2021. The data was sourced from the USMC Total Force Data Warehouse (TFDW) and contains individual administrative information from the personnel records of 206,514 corporals, sergeants, and staff sergeants who were on active duty from January 2016 to November 2021. The TFDW data tables consist of panel data in monthly snapshots, with one observation per individual per month, for a total of 4,752,509 observations.

The data in this research was cleaned, merged, and analyzed using R software version 4.2.3 and RStudio Build 524. Charts, graphs, and tables for this study were produced using R or Microsoft Excel.

1. Descriptive Statistics

To perform the necessary analysis for this thesis, the samples of corporals and sergeants were first divided into control and treatment groups. As the 2019 policy change increased minimum TIS requirements, a variable was created that recorded each Marine's TIS at the time of their promotion to their current rank. This variable was aggregated and averaged by MOS and split by whether a Marine was promoted before or after the policy change. The change in average time to promote to sergeant and staff sergeant was then calculated. I use this change in average TIS to promote for each MOS to classify Marines into treatment vs. control groups.

Appendix A provides a comprehensive list detailing the average TIS at promotion to sergeant and staff sergeant both before and after the policy change for each MOS represented in the data, along with the corresponding differences pre- vs. post-policy change. Corporals in any MOS that experienced an average increase of at least six months in the time to promote to sergeant form the corporal treatment group. Sergeants in any MOS that faced an average increase of at least 12 months in time to promote to staff sergeant form the sergeant treatment group. It must be stated that these groups are not true



control groups in a difference-in-difference framework because all enlisted Marines are affected by the 2019 policy. However, as illustrated in Appendix A, several MOSs saw either minimal or no change in the average time to promote. Therefore, these MOSs were relatively unaffected by the policy change within the timeframe covered by this dataset and serve as an adequate control group for this thesis.

Table 1 provides summary statistics for the whole sample of corporals in the dataset, as well as the division into the control and treatment groups. The sample of corporals contains 107,793 individuals, with 65,835 in the control group and 41,958 in the treatment group. 58% of corporals in this sample voluntarily separated from active service, meaning they were eligible to reenlist and chose not to. The average age of corporals in this sample is approximately 23 years old. Regarding the demographic composition of this sample, 9% of corporals are female, 83% are white, 10% are African American, 3% are Asian, 1% are Native American/Alaskan, and 1% are Pacific Islander. Approximately one percent of Marines in the sample declined to provide their race. For context, the full population of enlisted Marines in 2021 was 9.1% female, 79.9% white, 11.1% African American, 3.2% Asian, 1.1% Native American/Alaskan Native, and 1.1% Pacific Islander (Military OneSource, 2022).

Table 2 provides summary statistics for the whole sample of sergeants in the dataset, as well as the division into the control and treatment groups. The sample of sergeants contains 65,043 individuals, with 40,638 in the control group and 24,405 in the treatment group. 45% of sergeants in this sample voluntarily separated from active service. The average age of sergeants in this sample is approximately 25 years old. Regarding the demographic composition of this sample, 9% of sergeants are female, 82% are white, 11% are African American, 3% are Asian, 1% are Native American/Alaskan, and 1% are Pacific Islander. Approximately one percent of Marines in the sample declined to provide their race. As with the sample of corporals, this demographic distribution is relatively similar to the 2021 enlisted Marine demographics published by the Department of Defense.



	(1)	(2)	(3)	(4)
	Corporals	Corporals	Corporals	Treatment –
	Full Sample	Control	Treatment	Control
	1	Group	Group	
	Mean/(sd)	Mean/(sd)	Mean/(sd)	difference/(se)
Outcome Variables				
Voluntary EAS	0.58	0.59	0.56	-0.03***
,	(0.49)	(0.49)	(0.5)	(0.003)
Avg Proficiency Marks	43.67	43.67	43.65	-0.02**
<i>.</i>	(1.59)	(1.57)	(1.62)	(0.01)
Avg Conduct Marks	43.62	43.64	43.59	-0.05***
C	(1.71)	(1.68)	(1.76)	(0.011)
Demographics	<u> </u>	×		
Female	0.09	0.07	0.12	0.05***
	(0.28)	(0.25)	(0.33)	(0.002)
Age	22.99	23.11	22.8	-0.31***
-	(1.97)	(1.98)	(1.93)	(0.012)
Married	0.36	0.37	0.35	-0.02***
	(0.48)	(0.48)	(0.48)	(0.003)
Dual-Military Couple	0.07	0.06	0.08	0.02***
	(0.25)	(0.24)	(0.27)	(0.002)
# of Dependents	0.44	0.45	0.42	-0.03***
-	(0.74)	(0.75)	(0.72)	(0.005)
White	0.83	0.85	0.8	-0.05***
	(0.38)	(0.36)	(0.4)	(0.002)
African American	0.10	0.09	0.13	0.04***
	(0.3)	(0.28)	(0.33)	(0.002)
Asian	0.03	0.03	0.03	0.00
	(0.18)	(0.18)	(0.18)	(0.001)
Native American	0.01	0.01	0.01	0.00
	(0.11)	(0.11)	(0.11)	(0.001)
Pacific Islander	0.01	0.01	0.01	0.00
	(0.11)	(0.1)	(0.1)	(0.001)
Education				
AFQT Score	61.41	62.03	60.43	-1.6***
	(17.56)	(18.04)	(16.73)	(0.108)
Post HS Education	0.05	0.05	0.05	0
	(0.22)	(0.22)	(0.21)	(0.001)
Observations	107,793	65,835	41,958	· · · · ·
*p<0.1, **p<0.05, ***p<0.01				

 Table 1.
 Summary Statistics: Corporals



	(1)	(2)	(3)	(4)
	Sergeants	Sergeants	Sergeants	Treatment –
	Full	Control	Treatment	Control
	Sample	Group	Group	
	Mean/(sd)	Mean/(sd)	Mean/(sd)	difference/(se)
Outcome Variable		· · · ·	, <i>r</i>	
Voluntary EAS	0.45	0.45	0.46	0.01***
,	(0.5)	(0.5)	(0.5)	(0.004)
Meritoriously Promoted	0.04	0.04	0.03	-0.01***
-	(0.18)	(0.19)	(0.18)	(0.001)
Demographics	· · · · · ·	\$ č	· · · ·	· · · · ·
Female	0.09	0.09	0.09	0.00
	(0.29)	(0.29)	(0.29)	(0.002)
Age	25.12	25.29	24.83	-0.46***
-	(2.61)	(2.61)	(2.58)	(0.021)
Married	0.51	0.52	0.49	-0.03***
	(0.5)	(0.5)	(0.5)	(0.004)
Dual-Military Couple	0.09	0.08	0.09	0.01***
	(0.28)	(0.27)	(0.29)	(0.002)
# of Dependents	0.79	0.81	0.75	-0.06***
	(1.05)	(1.06)	(1.02)	(0.008)
White	0.82	0.84	0.79	-0.05***
	(0.38)	(0.37)	(0.41)	(0.003)
African American	0.11	0.09	0.13	0.04***
	(0.31)	(0.29)	(0.33)	(0.003)
Asian	0.03	0.03	0.03	0.00
	(0.17)	(0.17)	(0.17)	(0.001)
Native American	0.01	0.01	0.01	0.00
	(0.1)	(0.1)	(0.1)	(0.001)
Pacific Islander	0.01	0.01	0.01	0.00
	(0.11)	(0.11)	(0.12)	(0.001)
Education				
AFQT Score	64.91	66.4	62.43	-3.97***
	(17.69)	(17.95)	(16.96)	(0.14)
Post HS Education	0.1	0.11	0.1	-0.01***
	(0.3)	(0.31)	(0.3)	(0.002)
Observations	65,043	40,638	24,405	
*p<0.1, **p<0.05, ***p<	0.01			

 Table 2.
 Summary Statistics: Sergeants



2. Trends in Voluntary Separations and Meritorious Promotions

Figure 2 depicts the number of monthly voluntary separations of corporals. This does not include involuntary discharges, such as misconduct or medical discharges. Of note, while the number of separations for corporals in the treatment group (blue line) is less than that of the control group (red line), the number of treated corporals who voluntarily separated noticeably increased after the new TIS/TIG policy was announced in October 2019.



Locally estimated scatterplot smoothing (LOESS) was used to remove seasonality from the data and is represented for each group by the bold lines overlaid on the sum of monthly separations. The dashed line represents when the new TIS/TIG policy was announced in October 2019.



Figure 3 depicts the number of monthly voluntary separations of sergeants, also excluding any involuntary separations. Conversely, the number of treated sergeants who voluntarily separated noticeably decreased after the policy announcement. Possible explanations for this will be discussed further in Chapter V.





LOESS was used to remove seasonality from the data and is represented for each group by the bold lines overlaid on the sum of monthly separations. The dashed line represents when the new TIS/TIG policy was announced in October 2019.

Figure 3. Sergeant Voluntary Separations, 2016–2021

The 2019 policy change did not alter the meritorious promotion policy, maintaining it as a method for commanding officers to select deserving individuals for early advancement. Table 3 illustrates that the total number of meritorious promotions increased each year from 2016 to 2018, experienced a small decrease in 2019, and then saw the largest increase in this timeframe occurring in 2021. While the total number of meritorious promotions with the treatment group continued to gradually rise from 2016 to 2021, with the largest increase happening in 2021. The number of meritorious promotions in the control group mirrored the trend of total meritorious promotions with a steady increase from 2016 to 2018, a small decrease in 2019 and 2020, and the largest increase in 2021.



	Control Group	Treatment Group	Yearly Total
2016	165	75	240
2017	183	90	273
2018	242	108	350
2019	205	117	322
2020	202	133	335
2021	270	170	440

Table 3. 2016-2021 Meritorious Promotions to Sergeant

B. METHODOLOGY

1. Difference-in-difference Approach

The methodology I used for the statistical analysis of this thesis is a difference-indifferences framework. Since a randomized controlled trial is not possible or suitable for studying the effect of a promotion policy, the difference-in-difference approach allows me to take advantage of the natural difference in how this policy affected different groups of Marines. This difference allows me to create control and treatment groups without needing to randomize the treatment. In my framework, the effect of the increased TIS and TIG requirements is estimated by the interaction between an indicator variable for the treatment group and an indicator variable for observations after the policy was made effective. This allows me to compare the before-after change in the treatment group to the before-after change in the control group (Massenkoff, 2023).

The regression equation I estimate can generally be formulated as:

$$y_{it} = \beta_0 + \beta_1 W + \beta_2 T + \beta_3 T * W_i + \beta_4 X_{it} + \varepsilon_{it}$$

where *y* represents the following outcome variables for Marine i at time t:

 Voluntary Separation: A binary variable that equals one if the Marine left active service but was otherwise eligible for reenlistment, zero otherwise. This does not include any involuntary separations, such as medical and misconduct discharges.



- Average Proficiency score in grade: A continuous variable that has a value between 0 and 50 that reflects the average of all Proficiency scores a Marine has received in their current rank.
- Average Conduct score in grade: A continuous variable that has a value between 0 and 50 that reflects the average of all Proficiency scores a Marine has received in their current rank.
- Meritoriously promoted: A binary variable that equals one if the Marine was meritoriously promoted to sergeant, zero otherwise.

In addition:

- Treated (*W*): A binary variable that equals one if a corporal has a primary MOS that saw an increase of six or more months in the average time to promote to sergeant after the policy change or if a sergeant has a primary MOS that saw an average increase of 12 or more months in the average time to promote to staff sergeant after the policy change, zero otherwise.
- After Policy Change (*T*): A binary variable that equals one if the observation in the dataset was recorded after 1 January 2020.
- Treated x After Policy Change (*W***T*): An interaction variable of the Treated and After Policy Change binary variables. This variable will equal one only if the Marine is in the treated group and the observation was recorded after 1 January 2020.

Finally, the following are the rest of the control variables (vector *X*) for the models I further describe below:

- Year: A series of binary variables to indicate which year the observation is from.
- JJAS: A binary variable equal to one if a Marine separated during June, July, August, or September, zero otherwise.



- Age: A continuous variable equal to a Marine's age at the time of observation.
- College: A binary variable equal to one if a Marine has completed at least one year of college, zero otherwise.
- Married: A binary variable equal to one if the Marine is married, zero otherwise.
- Dual-military couple: A binary variable equal to one if a Marine is married to an active U.S. servicemember, zero otherwise.
- Number of dependents: A continuous variable equal to the number of dependents a Marine has on record.
- Military Occupational Specialty: A series of binary variables for each of the military occupation specialties represented in the dataset.
- Race: A series of binary variables that indicate whether a Marine is Black, White, Asian, Native American, Pacific Islander, or other.
- Female: A binary variable equal to one if a Marine is female, zero otherwise.
- Armed Forces Qualification Test (AFQT) score: A continuous variable equal to a Marine's AFQT score.
- Physical Fitness Test (PFT) Score: A continuous variable equal to a Marine's most recent PFT score.
- Denied reenlistment: A binary variable equal to one if a Marine separated with a reenlistment recommendation code that denied the Marine the option to reenlist, zero otherwise.



- Involuntary discharges: A series of binary variables that indicate whether a Marine was subject to a misconduct, performance, medical, administrative, or force reduction discharge.
- Retired: A binary variable equal to one if a Marine retired due to sufficient service or was medically retired, zero otherwise
- Death: A binary variable equal to one if a Marine died while on active duty, zero otherwise.

2. Validity of approach

For a difference-in-differences model to be valid, the control group should not be affected by the policy in question but otherwise subject to the same factors affecting the treatment group. Additionally, it must be reasonably assumed that any gap between the groups would have persisted in the absence of the policy change, known as the parallel trend assumption (Massenkoff, 2023). The corporal control group consists of corporals in any MOS in which the average time to promote to sergeant increased by less than six months. The sergeant control group consists of sergeants in any MOS in which the average time to promote to staff sergeant increased by less than 12 months. While Marines in both of these control groups were technically subject to the new TIS/TIG policy, the control group MOSs experienced either no change or very minimal change to the average time to promote due to pre-existing differences in promotion timing between MOSs. Concerning parallel trends, Figures 2 and 3 support the assumption that the trends of both groups were following similar trajectories until the new TIS/TIG policy was announced in October 2019.

3. Models Estimating Voluntary Separations

The first two models I use are linear probability models (LPMs) to estimate the effect of the new TIS and TIG policy on the retention of corporals and sergeants. The outcome variable for these models is the binary variable indicating if a Marine left active duty but was otherwise eligible for reenlistment. This represents the probability of a Marine voluntarily leaving active duty, given the values of the independent variables. The key



independent variable is an interaction variable between whether a Marine is in the treatment group and the observation occurred after the new policy was enacted. The controls listed in the previous paragraph are incorporated to ensure the most accurate estimation of the key independent variable coefficient by holding constant the factors that may affect both the outcome and key independent variables. Separate models were used for corporals and sergeants to estimate the effect of the new TIS and TIG policy on each rank.

To accurately estimate the effect of the 2019 policy on retention, the sample used in these models was limited to the last observation of each Marine in the dataset. By using the last observation of a Marine, the observation indicates whether and when a Marine left active duty or remained on active duty at the end of the timeframe covered by this dataset.

4. Models Estimating Pro/Con Scores

The third and fourth models I use are fixed effects models to estimate the effect of the new TIS and TIG policy on the Pro/Con scores of corporals. Monthly panel data is used for these models, limited to two years before and after the policy change. Individual and time fixed effects are included to control for all unobservable factors correlated with Pro/Con scores. All standard errors are clustered at the individual level. The outcome variables for these models are continuous variables that measure the average of all Pro/Con scores a corporal has received at the time of the observation. The key independent variable remains the interaction variable between whether a Marine is in the treatment group and the observation occurred after the new policy was enacted. The same controls are used, minus variables that do not change between monthly observations, such as race and sex, as these are controlled for by individual fixed effects.

5. Models Estimating Meritorious Promotions

The fifth model I use is an LPM to estimate the effect of the new TIS and TIG policy on meritorious promotions. The sample for this model is limited to sergeants, with one observation per Marine. The outcome variable for this model is the binary variable indicating if a Marine was meritoriously promoted to sergeant. This represents the probability of a Marine being meritoriously promoted to sergeant, given the values of the independent variables. The key independent variable is an interaction variable between



whether a Marine is in the treatment group and whether he or she was promoted after the new policy was enacted. The controls used are the same as those applied in models (1) and (2).



V. RESULTS AND ANALYSIS

A. EFFECT ON RETENTION

As expected, based on the visual trend identified in Figure 2, the policy that increased the minimum TIS and TIG promotion requirements had a statistically significant impact on the likelihood of voluntary separation among corporals in the treatment group. As detailed in Table 4, corporals in the treatment group were 3.6 percentage points, or 6.3%, more likely to voluntarily separate compared to corporals in the control group after the policy was enacted.

Interestingly, model (2) estimates that sergeants in the treatment group were 4.4 percentage points, or 9.8%, less likely to voluntarily separate than sergeants in the control group after the policy change. Although this may appear counterintuitive given the 2,700-sergeant deficit reported by the USMC, the explanation becomes clearer when considering the simultaneous decrease in the retention of corporals. The models suggest that a substantial number of corporals were not firmly committed to reenlisting and the policy that increased the minimum TIS and TIG requirements influenced them to voluntarily separate from the USMC. Moreover, the increased TIS requirement for promotion to sergeant diminishes the likelihood of being promoted to sergeant within a Marine's first enlistment. This dynamic has two effects on sergeant manpower and retention. Firstly, decreased retention of corporals leaves fewer Marines available to be promoted to sergeant, contributing to the reported deficit. Secondly, the corporals who do remain are likely to be more committed to a career in the USMC and may have already reenlisted before being promoted to sergeant. Left with this smaller set of career-oriented sergeants, the sergeant voluntary separation rate decreases compared to the past.



	D	ependent variable:
	Probabili	ty of Voluntary Separation
	Corporals	Sergeants
	(1)	(2)
Treatment group	-0.068***	0.022
	(0.017)	(0.021)
After policy	-0.589***	-0.500***
	(0.004)	(0.006)
Treatment group *After policy	0.036***	-0.044***
	(0.004)	(0.005)
AFQT score	-0.0001	0.002***
	(0.0001)	(0.0001)
College	-0.032***	0.191***
	(0.005)	(0.005)
PFT score	-0.0004	0.001***
	(0.00002)	(0.00002)
Separated in Jun, Jul, Aug, Sept	0.201***	0.064***
	(0.003)	(0.003)
Outcome Mean	0.57	0.45
Demographic controls	Yes	Yes
PMOS controls	Yes	Yes
Involuntary separation controls	Yes	Yes
Year controls	Yes	Yes
Observations	103,480	62,256
R ²	0.559	0.576
Note:		*p<0.1, **p<0.05, ***p<0.01
		Robust standard errors are in parentheses.

Table 4. Impact of TIS/TIG Policy Change on NCO Retention

With these findings in mind, analyzing the number of voluntary separations of corporals and sergeants can provide an approximation of how much this new policy contributed to the current deficit of sergeants. Comparing the sum of voluntary separations between 2016–2018 and 2019–2021 shows that 3,028 more corporals voluntarily separated in 2019–2021 compared to 2016–2018. During the same timeframe, there were 2,333 fewer voluntary separations of sergeants in 2019–2021 compared to 2016–2018. The decreased retention of corporals combined with the increased retention of sergeants between 2016–



2018 and 2019–2021 leaves a net loss of 695 Marines who could have potentially been sergeants. Based on these results, I estimate that the new TIS/TIG policy caused approximately 26% of the current 2,700-sergeant deficit.

If using these same calculations on the treatment and control group separately, the results become even more impactful. In the control group, there were actually 55 fewer voluntary separations of corporals in 2019-2021 when compared to 2016-2018. In contrast, there were 3,083 more voluntary separations of corporals from the treatment group in 2019–2021 than in 2016–2018. This means that the increase in voluntary separations of corporals came entirely from the treatment group in this timeframe, which further validates the use of this group as the treatment group. For sergeants, the trend is similar between the control and treatment groups. In the control group, 1,391 fewer sergeants voluntarily separated in 2019–2021 than in 2016–2018. In the treatment group, 942 fewer sergeants voluntarily separated in 2019–2021 than in 2016–2018. Based on the difference in the policy's effect on the control and treatment group, it could be assumed that the 2,700-sergeant deficit is not equally distributed among all MOSs and comes mostly from MOSs within the treatment group. With this is mind, the net loss of potential sergeants within the treatment group is 2,141. If the assumption is that the majority of the deficit comes from the treatment group, this would mean that the new TIS/TIG policy caused roughly 79% of the reported deficit. Further information and research into the manpower health of each MOS would be required to validate this.

B. EFFECT ON CORPORAL PRO/CON SCORES

As illustrated in Table 5, the effect of the 2019 policy change on Pro/Con scores was notably less substantial. Although the effect of the policy on Proficiency scores was positive and statistically significant at the 10% level for treated corporals, the practical effect on Proficiency scores was negligible. The policy's effect on Conduct scores was similarly not statistically significant.

The interpretation of these results suggests that the policy change did not have any noticeable effect on the performance of corporals in the MOSs that saw the largest increases in the average time to promote to sergeant. This is theoretically puzzling, as this policy



appears to have discouraged some corporals enough to leave the service entirely, you could reasonably expect performance to drop. This could potentially be explained by Pro/Con scores being inflated by supervisors or just not being a very effective system for evaluating the performance of corporals. This possibility is supported by the fact that the Pro/Con system was replaced by JEPES in 2021. Nevertheless, this outcome is favorable, indicating that affected corporals did not become demoralized to the point of exhibiting a decline in effort in response to the prospect of delayed promotion.



	Dependent variable:		
	Proficiency and Conduct Scores		
	Proficiency	Conduct	
	(3)	(4)	
Treatment group	-1.286***	-0.089	
	(0.423)	(0.161)	
After policy			
Treatment group * After policy	0.021*	0.009	
	(0.011)	(0.012)	
Age	-0.0002	0.001	
	(0.002)	(0.002)	
Married	0.059***	0.051***	
	(0.016)	(0.017)	
Dual military couple	-0.030	0.007	
	(0.022)	(0.023)	
Number of dependents	-0.056***	-0.033**	
-	(0.011)	(0.011)	
Time in service	0.013	0.034**	
	(0.010)	(0.014)	
College	0.276***	0.173***	
	(0.069)	(0.060)	
PFT score	0.002^{***}	0.002^{***}	
	(0.0001)	(0.0001)	
Outcome Mean	44.01	44.03	
Individual FE	Yes	Yes	
Year FE	Yes	Yes	
PMOS Controls Used	Yes	Yes	
Involuntary separation controls	Yes	Yes	
Observations	1,017,094	1,017,094	
R ²	0.896	0.895	
Note:		*p<0.1, **p<0.05, ***p<0.01	
Standard err	ors clustered at the indiv	vidual level are in parentheses	

 Table 5.
 Impact of TIS/TIG Policy Change on Corporal Pro/Con Scores



C. EFFECT ON MERITORIOUS PROMOTION TO SERGEANT

In this dataset, 4% of the sergeants were meritoriously promoted to sergeant. Table 6 reveals that the probability of a corporal in the treatment group being meritoriously promoted to sergeant after the policy change increased by 2.9 percentage points, or 72.5%, relative to the control group. The increase in meritorious promotions within the treatment group could be explained by the fact that corporals in the treatment group MOSs were promoted quickly enough before the policy change that they were likely being promoted to sergeant normally around the time when they would have been considered for meritorious promotions. While this increase is statistically significant, the total number of meritorious promotions to sergeant per year is relatively small compared to the total number of corporals. Consequently, the increased likelihood of meritorious promotion does not offset the increased likelihood of corporals in the treatment group to voluntarily separate since the implementation of the new TIS/TIG policy. However, as the new policy did not alter the meritorious promotion policy itself, these findings indicate that meritorious promotion to sergeant than in the past.



	Dependent variable:
	Probability of Meritorious Promotion to Sergeant
	(5)
Treatment group	-0.014
	(0.013)
Promoted after policy	0.001
	(0.003)
Treatment group * Promoted after policy	0.029***
	(0.005)
AFQT score	0.0005
	(0.0001)
College	0.035***
	(0.003)
PFT Score	0.0001
	(0.00001)
Outcome Mean	0.04
Demographic controls	Yes
PMOS controls	Yes
Involuntary separation controls	Yes
Year controls	Yes
Observations	62,256
R ²	0.036
Note:	*p<0.1, **p<0.05, ***p<0.01
	Robust standard errors are in parentheses

Table 6. Impact of TIS/TIG Policy Change on Meritorious Promotions to Sergeant



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VI. CONCLUSIONS

A. SUMMARY

Based on the results of empirical analysis, I conclude that the increased TIS and TIG promotion requirements negatively affected the retention of corporals in MOSs that saw an average increase of at least six months in the time to promote to sergeant. Specifically, corporals in the treatment group were 6.3% more likely to voluntarily separate from active duty than corporals in the control group after the new TIS and TIG policy became effective. Conversely, sergeants in the treatment group were 9.8% less likely to voluntarily separate than sergeants in the control group after the policy was enacted.

In addition to examining separations, I investigate whether the performance of corporals was impacted by the policy change. In assessing the effect on Pro/Con scores, I did not identify any significant changes attributable to the policy shift. To validate the robustness of this finding, further research that includes JEPES scores should be conducted. This updated performance evaluation system could offer additional insights into the potential influence of the policy change on the performance of corporals.

Finally, I find that corporals in the treatment group were 72.5% more likely than their counterparts in the control group to receive meritorious promotions after the policy change.

B. LIMITATIONS

This study has potential limitations that warrant consideration for future research. One significant limitation is the construction of the treatment group for the difference-indifferences framework, as the control group is not entirely free from the effects of the policy. The absence of a truly unaffected control group introduces potential confounding factors that may impact the accuracy of the estimated treatment effect. Additionally, the occurrence of the COVID-19 pandemic during the study's timeframe introduces an external factor that could influence the study outcomes. Another limitation pertains to the relatively short-term focus of the analysis, with data collected only up to two years after the policy change. This timeframe may not capture the full extent of the long-term effects



of the policy on retention and promotion outcomes. Furthermore, the study grapples with the challenge of selection bias, given that MOS assignments are not entirely random. Marines in slower-promoting MOSs may differ in certain aspects from those in fasterpromoting MOSs, introducing potential biases. Moreover, the non-random nature of separation from the Marine Corps poses challenges, as those inclined to separate were likely to do so irrespective of the policy change. Marines in MOSs with higher separation rates may also have better job opportunities outside the military, further influencing the study's outcomes. Future research should explore these limitations in greater detail to address potential biases and long-term effects, providing a more comprehensive understanding of the policy's impact on Marine Corps personnel.

C. CONCLUSION AND RECOMMENDATIONS

With regard to the 2,700-sergeant deficit, the decrease in corporal retention is slightly offset by the increase in sergeant retention. I interpret these findings to mean that this policy induced corporals who were uncertain about reenlisting to separate, while those retained among both corporals and sergeants exhibit a higher commitment to a Marine Corps career. I estimate that approximately 26% of this deficit can be attributed to the increased TIS and TIG promotion requirements. While this is a significant portion, nearly three-quarters of the deficit remains unaccounted for. There are several possible factors that could have caused more corporals to separate from the military, such as more favorable job opportunities in the civilian sector, the COVID-19 pandemic, and ongoing changes due to USMC Force Design. More research is required to determine what effect, if any, these or other factors had on the retention of NCOs in the Marine Corps.

The impact of the increased likelihood of meritorious promotion on the overall inventory of sergeants is limited, given the relatively small number of such promotions compared to the total number of corporals and sergeants. Simultaneously, the observed increase in the number of meritorious promotions from 2016 to 2021 suggests that these promotions were not fully utilized before the policy change. Commanding officers appear to be making more extensive use of meritorious promotions to identify and advance top performers since TIS and TIG requirements were increased.



As the USMC is shifting its focus to invest in and retain talent, it is vital to address the decreased retention in certain MOSs (Glynn, 2023). Merely increasing recruitment in these MOSs will not reverse the deficit if Marines in these roles continue to voluntarily separate at elevated rates. In addition to targeted retention incentives, lateral entry, allowing individuals to join at a rank corresponding to their skills, emerges as a potential strategy to rebalance both recruiting and retention efforts to fill critical manpower gaps (Glynn, 2023). Building on the insights gleaned from this thesis, I recommend that the Marine Corps strategically channel its lateral entry initiatives toward MOSs that have been most affected by the new TIS and TIG promotion requirements. Additionally, I recommend further research be conducted to assess the management of meritorious promotions across the USMC and investigate utilization patterns and outcomes associated with this aspect of the promotion system. This research can serve as a foundation for potential updates to the meritorious promotion policy, enhancing its effectiveness in identifying and selecting highperforming individuals for early advancement.



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APPENDIX A. AVERAGE PROMOTION TIMES BY MOS

SERGEANT								
Avg TIS at								
	Promotion	Avg TIS at						
	Before	Promotion						
PMOS	2020	After 2020	Difference					
0627	37	51	14					
3000	46	58	13					
0842	40	52	12					
5900	45	56	11					
0451	40	51	11					
3043	39	50	11					
6046	40	50	10					
2161	47	56	10					
0847	43	52	10					
6042	43	53	9					
0352	41	50	9					
0844	41	50	9					
0671	41	50	9					
2147	41	50	9					
3052	42	50	9					
1391	42	50	8					
3112	41	49	8					
0261	42	49	8					
2111	44	52	8					
5512	36	44	8					
1171	44	52	8					
0411	42	49	8					
6123	49	57	7					
0100	41	48	7					
0111	42	49	7					
4421	40	47	7					
0861	43	49	7					
6316	60	67	7					
3521	43	50	7					
7051	44	50	6					
0431	43	49	6					
3051	54	60	6					
6222	44	51	6					
7212	42	49	6					

STAFF SERGEANT								
Avg TIS at								
	Promotion	Avg TIS at						
	Before	Promotion						
PMOS	2020	After 2020	Difference					
3529	101	161	59					
0629	91	133	42					
5952	88	128	40					
6314	89	113	23					
0200	89	107	17					
0679	80	97	17					
3537	104	119	15					
2887	84	98	15					
2874	91	104	13					
6132	91	104	13					
6286	87	100	13					
6217	89	101	12					
5821	91	102	12					
6062	99	111	11					
6332	106	117	11					
2161	91	102	11					
5974	86	97	11					
6492	95	105	10					
6092	92	102	9					
6842	95	105	9					
5953	87	95	9					
3531	105	114	8					
1361	99	107	8					
6287	90	98	8					
5979	81	89	7					
1812	96	103	7					
6282	93	100	7					
5831	98	105	7					
5948	84	91	7					
6483	89	95	7					
6499	103	110	6					
2171	100	107	6					
2611	82	88	6					
6257	88	94	6					



3451	44	50	6		2847	94	100	6
0351	45	51	6		3051	106	112	6
0341	45	51	6		2831	93	100	6
6672	44	50	6		0372	97	103	6
1142	46	52	6		2131	101	106	6
2141	42	48	6		0521	103	109	5
6174	45	51	6		7257	93	99	5
6173	44	50	6		0369	105	111	5
2311	46	52	6		3044	86	91	5
6216	47	52	6		6048	94	99	5
6531	45	51	6		4821	101	105	5
6541	43	49	6		2841	91	96	5
0321	44	49	6		4591	86	91	4
0621	44	50	6		7236	87	91	4
0313	44	49	5		2311	89	93	4
6223	63	68	5		6113	90	94	4
6252	47	53	5		0365	95	99	4
5954	51	56	5		2336	99	102	4
6288	48	53	5		0671	82	85	3
8972	53	58	5		1161	103	107	3
6276	44	49	5		6258	106	110	3
1371	46	51	5		6153	94	98	3
5831	49	54	5		6212	94	98	3
0241	61	66	5		1371	102	105	3
3500	45	50	5		6323	101	104	3
0631	46	51	5		5954	90	94	3
4512	46	50	5		6046	88	91	3
2651	45	50	5		1700	95	98	3
1833	46	51	5		0631	91	93	3
7236	46	51	4		1711	89	92	3
0811	46	50	4		0811	101	104	3
5524	39	43	4		2141	95	97	2
5711	44	49	4		4133	90	92	2
0331	48	52	4		6337	98	100	2
7011	50	54	4		6227	98	100	2
2621	47	51	4		1721	98	100	2
7041	48	52	4		5811	94	96	2
3381	47	51	4	1	0211	87	89	1
5953	48	52	4		2111	98	99	1
0481	46	49	4		6154	100	101	1
1700	45	48	4		3521	100	102	1
6124	48	51	4	l	7242	91	92	1



6257	53	57	4	7051	94	95	1
6227	50	54	4	6116	99	100	1
6114	47	51	4	0241	105	106	1
6113	48	51	4	1141	105	105	1
6314	52	55	4	0861	85	86	1
6217	48	52	4	0627	87	87	0
6286	56	60	4	0231	85	86	0
1316	45	49	4	5524	90	90	0
6323	47	50	3	3043	84	84	0
0231	45	49	3	6672	95	95	0
5979	45	48	3	0481	87	87	0
2131	48	51	3	2629	88	88	0
6212	51	54	3	2621	88	87	0
0511	46	49	3	0842	80	80	0
6156	55	58	3	6531	93	93	0
6492	54	56	3	6432	97	96	0
5952	52	55	3	2641	98	98	0
3531	49	51	3	6216	90	90	0
2171	52	54	3	6252	92	92	-1
6483	48	51	3	2651	90	89	-1
0400	46	48	3	3381	94	93	-1
5800	47	50	3	6173	95	93	-1
7242	49	51	2	3432	91	90	-1
6132	50	53	2	1341	120	119	-1
5974	48	51	2	7212	95	94	-1
5948	50	52	2	2631	95	94	-1
6287	52	54	2	0111	89	88	-1
2847	51	53	2	6316	109	107	-2
1161	49	52	2	5711	92	91	-2
6153	47	50	2	6423	96	95	-2
3432	46	48	2	1345	109	107	-2
6324	48	51	2	2862	99	97	-2
2831	48	50	2	7011	100	98	-2
4571	49	51	2	1833	101	100	-2
6694	48	50	2	6073	115	113	-2
1812	52	54	2	2300	100	97	-3
6116	51	53	2	6326	102	99	-3
2841	49	51	2	0621	97	94	-3
0161	52	54	2	6176	109	106	-3
6048	51	53	1	2600	91	88	-3
6499	57	58	1	1391	95	92	-3
1300	53	54	1	7314	106	102	-3



6332	50	51	1	0321	97	94	-4
6073	52	53	1	1171	91	87	-4
6251	48	49	1	0311	109	105	-4
4100	48	49	1	0331	104	100	-4
6256	54	55	1	0844	86	82	-4
6062	63	64	1	6288	94	90	-4
6317	49	50	1	6317	108	103	-4
4541	54	55	1	1142	96	91	-5
5951	49	49	0	0261	90	85	-5
5811	50	51	0	1316	107	103	-5
2887	47	48	0	6123	101	95	-5
2300	49	49	0	0313	94	89	-5
6282	52	52	0	6336	108	102	-6
7257	53	53	0	3112	94	87	-6
6092	53	53	0	0411	91	85	-6
6432	49	49	0	4512	98	92	-6
0300	49	49	0	2147	97	90	-7
6154	52	52	0	0341	104	97	-7
5939	52	52	0	6042	96	89	-7
0211	57	57	0	4421	92	84	-8
1141	54	54	0	6338	104	96	-8
0600	49	49	0	6114	93	86	-8
0200	50	49	0	6541	109	101	-8
7314	52	52	0	0352	99	91	-8
6337	54	53	-1	5512	83	74	-9
6469	53	52	-1	6156	107	99	-9
1361	56	55	-1	4571	98	89	-9
6218	54	52	-1	0431	90	81	-9
6842	50	49	-1	7041	95	86	-9
6176	51	50	-1	6469	107	98	-9
0311	54	52	-2	3451	89	80	-9
2641	55	53	-2	5939	103	93	-10
1345	57	55	-2	6324	113	102	-10
2631	50	49	-2	6124	99	88	-12
6423	53	51	-2	6256	105	93	-12
6336	57	55	-2	0511	102	89	-13
6074	56	54	-3	6694	102	89	-13
2871	50	47	-3	0451	89	75	-13
6326	57	53	-3	6276	94	81	-13
2600	54	50	-4	0161	112	97	-15
6000	57	53	-4	5951	105	88	-17
1341	63	59	-4	6174	101	83	-18



6338	65	61	-4
6258	55	50	-4
0800	53	48	-5
7200	57	49	-9
0500	53	43	-11
6300	61	48	-13
2611	53	40	-14
2336	94	80	-14
4821	68	54	-14
0372	81	66	-15
3300	65	48	-17
4133	91	49	-42

6218	109	92	-18
6222	101	83	-18
6074	131	111	-20
4541	106	82	-24



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