2022-03

TUITION ASSISTANCE: EFFECT OF POLICY CHANGE ON USAGE IN THE MARINE CORPS

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THESIS

TUITION ASSISTANCE: EFFECT OF POLICY CHANGE ON USAGE IN THE MARINE CORPS

by

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March 2022

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** March 2022	**3. REPORT TYPE AND DATES COVERED** Master's thesis

4. TITLE AND SUBTITLE TUITION ASSISTANCE: EFFECT OF POLICY CHANGE ON USAGE IN THE MARINE CORPS	**5. FUNDING NUMBERS**
6. AUTHOR(S) Michael T. Hanlon	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000	**8. PERFORMING ORGANIZATION REPORT NUMBER**
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A	**10. SPONSORING / MONITORING AGENCY REPORT NUMBER**

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release. Distribution is unlimited.	**12b. DISTRIBUTION CODE** A

13. ABSTRACT (maximum 200 words)

Tuition assistance (TA) is one of many voluntary education programs available to Marines to facilitate continuing their education and increase knowledge within the force. This program could thus support the Commandant of the Marine Corps' call for preparing the force for the future by increasing knowledge management and retention. In March of 2019, the Marine Corps removed eligibility restrictions on TA to expand the opportunity of continued education to more Marines. This study determines what effect, if any, was achieved by the policy change with respect to utilization rate, type of individual TA user, and type of institutions chosen for high education. The analysis utilizes data from the Total Force Data Warehouse (TFDW), the Navy College Management Information System (NCMIS), and the Integrated Postsecondary Education Data System (IPEDS). As intended, the 2019 policy change increased TA usage. Specifically, the rank most impacted by the policy is E3, which showed a significant increase in TA usage; however, the policy also resulted in a decrease in overall course success and an increase in the use at for-profit institutions. This study recommends further investigation of this topic covering a longer time frame, with data capable of accounting for potential selection bias, and a comparison between different branches of service.

14. SUBJECT TERMS tuition assistance, TA, USMC, Commandant's Planning Guidance, CPG, Total Force Data Warehouse, TFDW, Navy College Management Information System, NCMIS, Integrated Postsecondary Education Data System, IPEDS	**15. NUMBER OF PAGES** 75
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	**18. SECURITY CLASSIFICATION OF THIS PAGE**	**19. SECURITY CLASSIFICATION OF ABSTRACT**	**20. LIMITATION OF ABSTRACT**
Unclassified	Unclassified	Unclassified	UU

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

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TUITION ASSISTANCE: EFFECT OF POLICY CHANGE ON USAGE IN THE MARINE CORPS

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MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
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LIST OF ACRONYMS AND ABBREVIATIONS

CPG	Commandant's Planning Guidance
CONUS	Continental United States
DMDC	Defense Manpower Data Center
DOD	Department of Defense
E3	Lance Corporal Rank, USMC
MARADMIN	Marine Administrative Message
MCDAPO	Marine Corps Directorate of Analytics and Performance Optimization
MCDP	Marine Corps Doctrinal Publication
MCO	Marine Corps Order
MOU	memorandum of understanding
M&RA	Manpower and Reserve Administration
NCMIS	Navy College Management Information System
NCO	non-commissioned officer
NPS	Naval Postgraduate School
OCONUS	outside the continental United States
SNCO	staff non-commissioned officer
TA	tuition assistance
TIS	time in service
TFDW	Total Force Data Warehouse
USMC	United States Marine Corps
USN	United States Navy
VOLED	voluntary education

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ACKNOWLEDGMENTS

I would like to acknowledge all of the professors within the Manpower Systems Analysis curriculum for providing an exceptional education experience. This educational experience exemplified the ideals of improvise, adapt, and overcome as they educated and imparted wisdom through both in-person, hybrid, and distance learning delivery methods throughout the ongoing pandemic. Special thanks to Professor Tom Ahn, Professor Latika Hartmann, and Professor Maxim Massenkoff, whose guidance was paramount in the successful completion of this research.

For my three sons, may you learn the value of education early and continue a lifelong pursuit of higher education and critical thinking. While you may not always be in school, you should always seek the attainment of knowledge in all of its forms.

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I. INTRODUCTION

In 2019, the Commandant of the Marine Corps released his Commandant's Planning Guidance (CPG), calling for sweeping changes to prepare for the future. Force Design 2030 is the plan to enact those changes in the Marine Corps so it can set the conditions to build the force it needs for the future fight (United States Marine Corps [USMC], 2020a). With technology increasing at an exponential rate, the need for experienced and capable junior enlisted Marines is paramount for success. Currently the Marine Corps discharges approximately 75% of first-term Marines to support a bottom-heavy grade structure (USMC, 2021). While this ensures a steady stream of young able-bodied Marines, it does not facilitate knowledge retention and places an additional burden on the recruiting quotas. In 2019, the Marine Corps updated the tuition assistance (TA) eligibility requirements with Marine Administrative Message (MARADMIN) 150/19, which has the potential to both increase the individual knowledge within the Marine Corps, but also increase the retention of those Marines obtaining additional education (USMC, 2019a).

TA is a voluntary education (VOLED) program specifically for active-duty service members, which provides funding for higher education in their off-duty time. The primary feature of MARADMIN 150/19 was the removal of the time in service (TIS) requirement for eligibility. Previously, TA was only available to Marines with 24 months of time in service, limiting its availability to junior Marines in that they would only be eligible for TA starting in their third year of a four-year contract. For example, a Marine who attended boot camp in 2017 would have been eligible for TA in 2019 under the previous eligibility criteria versus a Marine who completes boot camp in 2021 and is eligible as soon as they complete entry level training under the current criteria. If the policy change does attract more TA users, the Marine Corps will gain more knowledgeable Marines without the need for additional and lengthy resident schools, which pull Marines away from their primary duties. A study on Navy TA by Mehay and Pema (2009) concluded that Navy TA users retained in service at a higher rate than non-TA users, which means the Marine Corps policy change could potentially increase knowledge retention as well.

Removing the TIS requirement directly relates to the Commandant's vision of a more knowledgeable Marine Corps and a shift away from previously held notions of junior enlisted Marine education. In addition to the CPG, the Marine Corps published *MCDP-7: Learning* in 2020, a new doctrinal publication, calling for a dedication within the force to continuous learning and the application of knowledge to the benefit of the Marine Corps (USMC, 2020b). The mindset of education peaking at the conclusion of entry level training is not conducive with the new requirements the Marine Corps has laid out in the CPG. Marines must be committed to expending their knowledge and continuing education throughout their careers to better adapt to future requirements. This effort is in conjunction with the necessary force changes, outlined by General Berger in the CPG, to set the conditions for the Marine Corps to develop the future force it needs. Increasing access to TA has the potential to increase mission relevant educational opportunities while not removing Marines from their primary duties. This thesis seeks to estimate the effects of MARADMIN 150/19, if any, on take-up rate, success rate, and for-profit institution utilization with the following research questions:

1. What is the effect of increasing TA eligibility on the take-up of TA by E3s in the Marine Corps?

2. What is the effect of increasing TA eligibility on the course success of Marines who make use of TA?

3. What is the effect of increasing TA eligibility on the destination institutions for Marines who take advantage of TA?

TA has been a congressionally authorized program since 1954, but it has received very little academic research attention (Anderson, 1991). The most comprehensive study on Marine Corps TA was conducted by Buddin and Kapur (2002), which looked at the relationship between TA usage and retention for both the Marine Corps and the Navy. From their Marine Corps results Buddin and Kapur (2002) concluded that women and minorities were more likely to utilize TA and that it was a predictor for Marines who were planning on leaving the service rather than reenlist in their service. TA is a form of human capital that comes with risk for the employer. As Marines gain additional education paid

for with TA, there is the possibility they use the education to seek employment elsewhere. Flaherty (2007) conducted research on the effect of tuition reimbursement on personnel turnover in the civilian sector, which found employees who utilized tuition reimbursement do have increased retention. These findings are counter to the findings of Buddin and Kapur (2002), which begs the question is it the work setting that makes the difference or some other factor?

The destination institutions for TA users are of interest with respect to the types of institutions available. In Fiscal Year 2020, 33 percent of Marine Corps TA funding was paid to for-profit institutions (TA Decide, 2021). With the rise in online learning capabilities in the early 2000s, for-profit institutions began taking a larger share of the higher education market (Watkins & Seidelman, 2017). Research into for-profit institutions by Cellini and Turner (2019) found for-profit schools have higher costs of attendance and commensurately higher student debt while having very little impact on likelihood of employment or increased earnings. With the Marine Corps increasing the number of Marines eligible to use TA there is the potential for increased use of for-profit schools.

To answer the research questions of this quantitative thesis, I used the difference in difference method to estimate the TA policy effect on E3s before and after the policy change. While all TA use is of interest, the primary population of interest is Marines at the E3 paygrade. Due to average career timing, prior to the policy change senior E3s with the requisite TIS were eligible for TA. After the policy change, all E3s are eligible for TA. I collected data from the Total Force Data Warehouse (TFDW), the Navy College Management Information System (NCMIS), and the Integrated Postsecondary Education Data System (IPEDS) to create a unique panel dataset of Marine TA users from July 2017 to September 2021. I study four outcomes (total courses, total successful courses, success rate, and percent for-profit institutions) to evaluate the impact of increasing the number of Marines eligible for TA. I estimated difference in difference regression models to compare E3s and specific E3 subpopulations (gender, race, military occupation specialty) before and after the policy change against all other TA users. I also estimated regressions comparing E3s, E4s, and E5s against the E6 TA user population.

Based on the regression results, the key findings of this thesis suggest that, compared to all other TA users, E3 TA users increased significantly as a result of removing the TIS requirement from TA eligibility. Additionally, the success rate of E3 Marine TA users decreased and the percentage of institutions that are for-profit increased as a result of increasing Marine TA eligibility. Ultimately, the increased access to higher education for junior enlisted Marines is a good result, but further studies should be conducted to evaluate the policy's effect on long-term outcomes such as retention and promotion.

This thesis is organized into seven chapters. The first chapter is an introduction to the thesis. The second chapter provides background information on the Department of Defense (DOD) voluntary education programs as well as an overview of the Marine Corps Lifelong Learning Program. Chapter III is a literature review of prior research on the effects of TA and for-profit universities. Chapter IV presents the data sources and descriptive statistics for this study. Chapter V presents the methodology used in the quantitative analysis and the results and limitations are presented in Chapter VI. Finally, Chapter VII provides a summary of the research and a conclusion along with proposed recommendations for future study of TA utilization in the Marine Corps.

II. BACKGROUND ON TUITION ASSISTANCE

TA falls within the larger context of voluntary education, which includes several programs aimed at providing educational assistance to service members. Programs within voluntary education include: the College Level Exam Program (CLEP), Defense Activity for Non-Traditional Education Support (DANTES), Joint Service Transcript (JST), GI Bill, TA, and service specific Credentialing Opportunities On-line (COOL) (Marine Corps Community Services, 2016). The most common program that comes to mind when asked to think about military education is the GI Bill, but TA has long been a program within the military. The Servicemen's Readjustment Act of 1944, more commonly known as the GI Bill, is important in the history of service member education, but it is specifically aimed at veterans and not active-duty service members. The GI Bill was updated in 1984, becoming the "Montgomery GI Bill," which provided important updates for the all-volunteer force rather than a drafted force. It was updated again in 2008, and is now commonly known as the Post 9/11 GI Bill, with updated benefits and payment options (U.S. Department of Veterans Affairs, 2013). Both the Montgomery GI Bill and Post 9/11 GI Bill currently exist, but service members must elect to opt into the Montgomery GI Bill and pay into the program starting in basic training. The Post 9/11 GI Bill is available to all service members who served on active duty since September 11, 2001. The GI Bill and TA are separate programs, but with the introduction of the Post 9/11 GI Bill, there is some usage overlap which will be covered in the next section. This chapter will provide historical background to the Marine Corps' voluntary education program (VOLED), and TA utilization.

A. HISTORY OF VOLUNTARY EDUCATION AND TUITION ASSISTANCE

There is a long history of providing education to service members that goes back much further in history than the GI Bill of the post-WWII era. General George Washington, in 1778, first brought about the idea of providing education, specifically to teach reading of the Bible, as a means of spiritual support to wounded service members to get them back in the fight (Anderson, 1991). What follows is a brief history of the policy milestones that led to the TA program as it currently exists.

The Army was the first to formally authorize the academic education of soldiers in addition to military training in 1916 with an addition to Title 10, Section 1176. In 1947, War Memorandum No. 85–40-1, 7 May 1947, with Change 1, dated 2 February 1948, became the first policy to specifically authorize payment for tuition during service member off-duty time (Anderson, 1991). The initial authorization was for 100% of the tuition, with Change 1 reducing the authorization to 75% a few months later. As noted, these policies were specific to the U.S. Army. It was not until 1954 that Congress authorized a comprehensive program that provided statutory authority to the then three service departments. This program ultimately provided oversight and uniformity to TA funding throughout the DOD (Anderson, 1991). DOD Directive 1322.8 was first issued on July 23, 1987, and formally recognized TA as a cornerstone of the VOLED program; it now exists in the updated form of DOD Directive 1322.08E. It is possible to make the case that Congress and the uniformed services sought to standardize and formalize the VOLED program in the 1980s as a means of incentivizing the all-volunteer force.

The Marine Corps TA policy conforms to the guidance established by DOD policy. Currently, three DOD policies govern voluntary education: DOD Directive 1322.08E, DOD Instruction 1322.19, and DOD Instruction 1322.25 (Department of Defense, 2007, 2020a, 2020b). The first provides the most up to date DOD policy on VOLED. This directive specifies the following:

1. Programs will be established by the DOD to provide educational opportunities for service members in off-duty time.
2. Voluntary education programs will be comparable to civilian programs and available to all active duty personnel.
3. TA will be available and uniform in amount across the different services.
4. Counseling will be available to service members interested in VOLED.
5. Service members will be offered training in basic educational and academic skills. (DOD, 2007)

For the Marine Corps, educational counseling takes the form of individual sessions and unit briefs covering topics such as choosing a degree, choosing a school, and financial aid (MCCS Quantico, 2016). The second concerns the opportunities for service members serving overseas and requires that they receive comparable VOLED opportunities in an OCONUS environment (DOD, 2020b). The third outlines the minimum requirements for institutions to receive DOD TA payments as part of the TA memorandum of understanding (MOU). These requirements include: providing information to students about higher education costs, using fair recruiting practices (as defined by the Dodd-Frank Wall Street Reform and Consumer Protection Act), and providing academic and student support services to students (DOD, 2020a).

B. MARINE CORPS VOLUNTARY EDUCATION PROGRAM

Although TA has been available to Marines in some capacity since at least 1954, there is very little historical documentation on the Marine Corps' TA program. This is potentially due to the fact that Marine Corps TA is a subset of the overall U.S. Navy TA program. For example, Buddin and Kapur (2002) conducted a comparative assessment of TA utilization for both the USMC and USN and did not identify any service-specific requirements for access to TA funds. The Marine Corps published MCO 1560.25 on September 1, 2010, which organized and consolidated existing Marine Corps educational policy and provided the basis for the Marine Corps Lifelong Learning Program, including TA. MCO 1560.25 states, "TA is intended to encourage personnel to voluntarily attend courses delivered by accredited civilian education institutions on campus, at resident centers, on military installations or through distance learning during their off-duty time" (USMC, 2010, p. 6-1). Buddin and Kapur's 2002 study was the last academic evaluation of the Marine Corps' TA users, and it is limited from the standpoint that it was conducted very early on in the War on Terror. While Buddin and Kapur (2002) note that more than 60 percent of recruits identify educational opportunities as a primary reason for enlisting, yet, according to their data, only 13 percent of first-term Marines used TA. In the nearly 20 years since their study, the operational requirements, composition, and size of the Marine Corps has been under constant fluctuation, with TA policy remaining relatively

constant. The CPG of 2019, represents a shift towards prioritizing education within the Marine Corps (Berger, 2019).

In 2019, General Berger listed education and training as one of his five priority focus areas. He stated, "The lack of incentives for self-improvement through education, and personnel development discourages those inclined to think, learn, and innovate – as these tend to disrupt the current model, and may in fact make the individual less competitive for promotion" (Berger, 2019, p. 7). He went on to say, "We should use money like a focused weapon, and aim it at the exact individual we need." While not radically new ideas, they do highlight a problem within the Marine Corps. TA is currently an incentive for off-duty education, but it may not be incentivizing the desired individuals. TA is authorized at the lowest levels of command within the Marine Corps which empowers commanders to make decisions based on their evaluation of the individual. This practice, however, does not provide commanders a greater context with which to evaluate TA requests holistically. Ostensibly, anyone interested in using TA could be the type of Marine the Marine Corps is looking to retain, as they are already showing an interest in self-improvement and higher education. But if those who use TA are not retaining, the messaging surrounding TA may need to be adjusted to attract different individuals.

MCDP 7: Learning, published in 2020, is an extension of General Berger's commitment to improving education in training. The short document, totaling only 81 pages, puts forth a service wide philosophy on learning and covers topics such as: the nature of learning, the culture of learning, the learning environment, and the learning leader (USMC, 2020b). *MCDP 7* states, "The Marine Corps' learning philosophy seeks to create a culture of continuous learning and professional competence that yields adaptive leaders capable of successfully conducting maneuver warfare in complex, uncertain, and chaotic environments," and goes on to say, "Learning is a professional responsibility for all Marines at all levels,"(USMC, 2020b, p. 1-3). In order to create, develop, and further the ideas of this philosophy, MCDP 7 highlights certain roles and responsibilities. Primarily, it states that it is the role of leadership to develop and support an organizational culture of learning through setting the example, supporting continuous learning in the Marines, and identifying and rewarding Marines for continuous learning. It also places a responsibility

on all Marines to seek additional education. This philosophy seems directly in line with why current TA users enroll in classes, as these Marines have already taken the steps to further their education. It also challenges commanders to go a step beyond approving TA requests to find additional ways to support Marines using TA as well as seek out TA users and promote the program as a means of continuous learning.

C. MARINE CORPS TA ELIGIBILITY

Eligibility for using TA in the Marine Corps is typically published annually in the form of a MARADMIN. With historical MARADMINs only maintained back to 2000, the earliest TA eligibility is MARADMIN 461/03 (USMC, 2003). The current MARADMIN governing TA eligibility is 218/19 (USMC, 2019a). Comparing the 2003 and 2019 guidance, the funding levels have remained consistent, with the differences being the mechanics of application, required pre-application training, and the complete removal of the TIS requirement in the current policy. The following is the eligibility and utilization policy for TA defined in MARADMIN 218/19:

- Marines shall be eligible for promotion per references (b) and (c).
- Prior to TA approval, first-time applicants shall complete the Marine Corps Institute Personal Financial Management Course (Course IDMCIZ3420GZ).
- TA shall be authorized for first-time TA applicants for only one course, unless documentation is provided that the Marine has at least an associate's degree or at least sixty (60) academic credits and a minimum grade point average (GPA) of 2.5.
- Marines may not be actively participating in more than two TA-funded classes simultaneously.
- TA funds for approved involuntary withdrawal waivers and failed courses will count toward individual fiscal year ceilings.
- TA shall be authorized for only one course in the next academic term in the event that (1) overall undergraduate or graduate GPA falls between 2.0 and 2.5, (2) a grade of "D" or "F" is received in any course during the previous term, or (3) a voluntary withdrawal occurred from any course during the previous term.
- Marines using TA must maintain a cumulative GPA of 2.0 or higher after completing 15 semester hours, or equivalent, in undergraduate studies, or a GPA of 3.0 or higher after completing six semester hours, or equivalent, in graduate studies, on a 4.0 grading scale. If the GPA for

TA-funded courses falls below these minimum GPA limits, TA will not be authorized.

- TA is authorized only for tuition charges per reference (d). Marines are responsible for non-tuition fees including but not limited to costs associated with room, board, distance learning, equipment, supplies, books/materials, exams, insurance, parking, transportation, admissions, registration, or fines.
- Career and technical education certificate programs must be accredited by an accrediting body recognized by the Department of Education, be approved by the Department of Veterans Affairs, and have a signed Department of Defense (DOD) Memorandum of Understanding in order to receive tuition assistance. Per reference (a), all Marines are eligible to obtain one TA funded certificate during their career.
- Marines who fail to successfully complete a course will be required to reimburse received TA funds. For the purpose of reimbursement, successful course completion is defined as a grade of "C" or higher for undergraduate courses, a "B" or higher for graduate courses, and a "pass" for "pass/fail" grades for courses using that criteria. TA funds will be recouped from Marines for "D" and "F" grades, unresolved incomplete "I," or courses from which the Marine voluntarily withdrew, resulting in a "W" grade per reference (k). Recoupment for withdrawals related to duty, medical, or emergency circumstances may be waived. Waiver requirements and processes are contained in reference (a). Recoupment for undergraduate grades of "D" or below and graduate grades of "C" and below will not be waived.
- Open issues in Marines' TA accounts, including incomplete courses, reimbursement issues, and waivers, must be resolved and posted to the student record prior to approval of future TA requests.
- TA is not authorized for fees related to certifications, license exams, or credentials.
- In addition to the requirements for officers in reference (a), Reserve Component officers on active duty orders/mobilization must have an End of Active Service (EAS) date of two years beyond the completion date of the requested class in order to be approved for TA.
- Enlisted Marines must have an EAS of 60 days beyond the completion date of the course in order to be approved for TA.
- TA is not authorized for non-credit courses, training programs, or programs under continuing education or workforce development.
- Marines assigned to Military Occupational Specialty (MOS) school or residential Professional Military Education (PME) (i.e., Command and Staff college, Corporals Course, Sergeants Course, Career Course, etc.) are not authorized recipients of TA until they return to their regular or permanent duty.

- Marines attending vocational/technical certification programs with more than one class or module will only be approved TA for a maximum of two classes or modules at a time.
- TA is not authorized for graduate studies beyond the master's degree level. (USMC, 2019b)

With the average undergraduate course consisting of three semester credit hours, a Marine receiving $250 per semester credit hour reaches the $4,500 fiscal year cap for TA by taking six courses. At a maximum of two courses per semester (six semester credit hours), this is well below the average course load of fifteen credit hours per semester required to graduate in four years from a traditional four-year institution.

The takeaway from these guidelines is that the Marine Corps TA program is in line with the literature's best practices for civilian TA programs. Flaherty (2007) found that TA programs typically consist of 1) a maximum reimbursement amount, 2) eligibility requirements, and 3) academic performance requirements. The Marine Corps' policy has all three. Specifically, Flaherty (2007) found that most civilian TA programs start eligibility at six months of employment and rarely exceed a year of employment for eligibility. This means that the MARADMIN 150/19 policy change removing the time in service requirement brings the Marine Corps TA program more in line with civilian programs as Marines are eligible immediately at the start of their service and more practically at the end of their initial training.

D. CURRENT TA UTILIZATION

Currently each service has different but similar requirements for utilization. For example, the U.S. Army has an additional cap at 16 semester hours per year and the U.S. Coast Guard has a cap at $3,750 per fiscal year, but all services offer $250 per semester hour or $166 per quarter hour (Absher, 2021). The U.S. Air Force does not have a TIS requirement, but the U.S. Army requires one-year TIS after initial entry training and the U.S. Navy requires three years of TIS. Prior to MARADMIN 150/19, the Marine Corps fell in the middle range requiring 24 months' TIS.

Figure 1 provides the percentage of TA usage by each service and the DOD overall for Fiscal Years (FY) 2014 to 2020, determined by the total number of unique TA

participants reported by TA Decide and the individual service end-strength. TA utilization in the DOD during this period has a general downward trend most notably influenced by U.S. Navy utilization in 2020. During this same period, the USMC utilization generally increases with 15,192 unique TA participants in 2014 and 20,557 unique participants in 2020 (TA Decide, 2021).

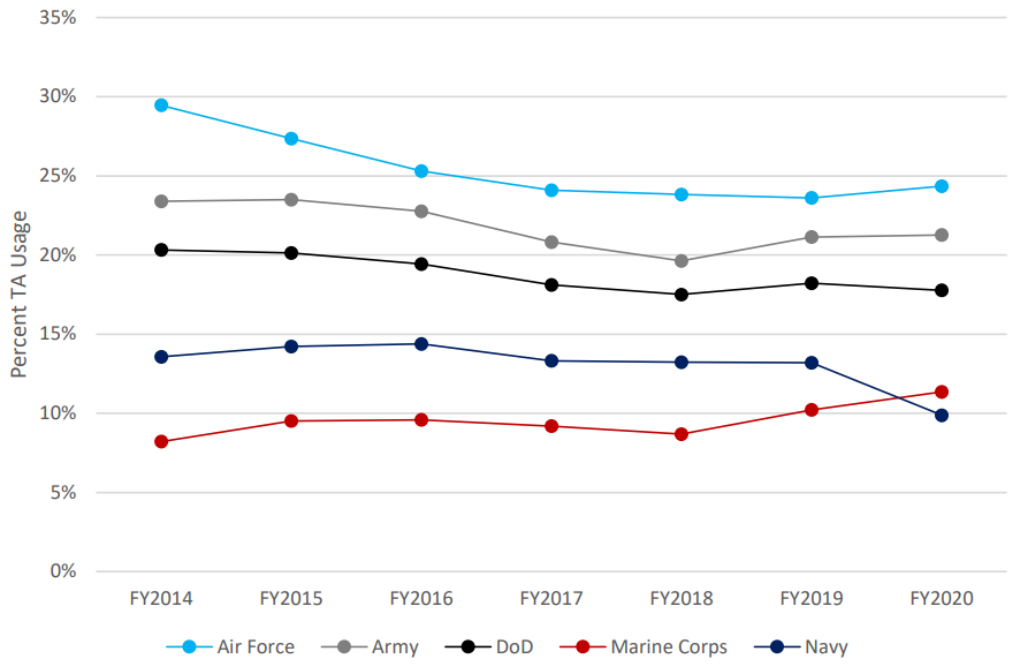

Figure 1. Percent TA Usage by Service. Adapted from TA Decide (2021).

TA has been a formal program in the DOD since the 1940s, but educational funding within the military traces its roots back to General George Washington. TA is unique in programs funding education for military service members in that it is specifically designed to be used by service members while on active duty. TA use differs between the different services, with each service having similar but unique requirements for eligibility. This chapter provided historical background to the voluntary education program, the Marine Corps' VOLED program, and TA utilization.

III. LITERATURE REVIEW

The literature surrounding TA is limited both in the military and civilian sectors. For the military TA is part of the larger context of VOLED, which includes the GI Bill. The GI Bill has more users and provides a more data-rich environment to study (U.S. Department of Veterans Affairs, 2021). TA is different from the GI Bill because it is specifically designed for active-duty service members while the GI Bill is primarily used by veterans. TA, often referred to as tuition reimbursement in the civilian sector, has been steadily growing as an offered benefit of civilian companies, but again the number of people who use these programs is often small with each company having different programs, making comparison between companies difficult. While previous studies have looked at military TA in the context of predicting promotion and retention (Bacolod et al., 2018; Barnard & Zardeskas, 2007; Buddin & Kapur, 2002; Mehay & Pema, 2009), no study has looked at the effect of availability on utilization in the military. The Marine Corps' policy change in 2019 marks a distinct shift in the Marine Corps' TA program and thus warrants further investigation. This chapter will provide a review of previous studies concerning TA in three major areas: TA in the military, TA in the civilian sector, and for-profit institutions and their relationship to military education funding.

A. MILITARY TUITION ASSISTANCE

TA users comprise a very small percentage of the military. In the Marine Corps, there were only 21,456 TA users in FY2020 which accounted for only 11% of active duty Marines (TA Decide, 2021). One prominent study on Navy and Marine Corps TA users was conducted by Buddin and Kapur (2002), who looked at the relationship between TA usage and retention. Specifically, their study asked two questions: "Who uses TA?" and "Does TA affect retention?" (Buddin & Kapur, 2002). These questions were answered by comparing TA users with non-TA users separately for each service and then comparing reenlistment outcomes for the same groups.

Using data from the Defense Manpower Data Center (DMDC) on first-term retention in FY1997 and FY1998, they constructed two models, to predict the TA effect on

promotion and retention. Additionally, TA data was obtained from the Navy Campus Management Information System, now known as the Navy College Management Information System (NCMIS). From these models, Buddin and Kapur (2002) arrived at the following findings. Using data from both services, TA users earned a median of six semester credit hours (equivalent to two undergraduate courses) over 24 months observed, which is very little progress towards the 60 semester hours required for an associate's degree or the 120 semester hours required for a bachelor's degree (Buddin & Kapur, 2002). With regard to TA's effect on reenlistment, the authors found similar results for both the Navy and Marine Corps with regard to reenlistment. For both services, Buddin and Kapur (2002) found TA users were less likely to reenlist after their first contract. From their Marine Corps results, Buddin and Kapur (2002) concluded that women and minorities were more likely to utilize TA and that it was a predictor for Marines who were planning on leaving the service rather than reenlist in their service. Their study suggests amount of time deployed did not have an effect on TA usage, but the presence of a deployment in a Marine's history did reduce the rate of TA usage. Marines with no deployments had a predicted usage rate of 14.9 percent, while Marines with one deployment had a predicted usage rate of 11.3 percent (Buddin & Kapur, 2002). In answer to the question "Does TA affect retention?" TA usage did not have a statistically significant effect on the probability of a first-term Marine reenlisting.

The study focused specifically on first-term service members and not the entire TA user population. An advantage of using first-term service members was that their age range closely mirrored traditional college students. These service members chose to join the military rather than attend college, potentially due to the cost of attending college full time. First-term service members also have the highest attrition rates and thus the greatest potential for increased retention. The disadvantage of using first-term service members is that they may not represent the average TA user. In the Marine Corps, all other rank categories have a higher rate of TA utilization, with the exception of officers, compared to first-term Marines.

Anecdotally, these results fall in line with Marine Corps thoughts on TA. Marines in combat arms occupations and service support Marines assigned to combat arms units

deploy more frequently and spend more time in a field environment (Buddin & Kapur, 2002). Field exercises disrupt their ability to attend regularly scheduled classes. Given the previous limited availability for first-term Marines, it seems logical that TA usage does not predict retention because Marines use it to prepare for their transition to the civilian sector. Rather than use TA for degree completion, it is used to complete general electives and other admission requirements for Marines looking to attend college full-time after their service (Buddin & Kapur, 2002).

This study's biggest limitation is timing. The data for this study exclusively looked at Marines making the decision to retain in 1997 and 1998, which places these Marines prior to the wars in Iraq and Afghanistan. The quality and composition of Marines who joined post 9/11 is different from those who joined in a time of peace. As Buddin and Kapur (2002) note, access to college prior to enlistment was a factor in determining if a Marine would use TA. The attacks of 9/11 caused an increase in enlistments across all portions of the population, and this could also affect Marines' access to higher education. This study also was conducted prior to the Post 9/11 GI Bill. The greater availability of educational benefits for service members could also potentially attract more service members with a desire for higher education, potentially increasing TA usage and retention based on TA usage.

Barnard and Zardeskas conducted their NPS thesis on Navy TA in 2007, which potentially addresses the timing limitation of Buddin and Kapur's 2002 study. Barnard and Zardeskas (2007) used three models to evaluate the value of TA as a reenlistment and promotion predictor. All models were evaluated using a probit regression approach with increasing controls. While Barnard and Zardeskas were ultimately unable to replicate the means of addressing selection bias used by Buddin and Kapur, they were able to adequately address a fundamental difference in conclusions. Barnard and Zardeskas (2007) concluded that for the Navy, those who successfully completed courses using TA did reenlist at higher rates and confirmed a positive relationship between reenlistment and TA usage. An assumption of Buddin and Kapur's study was a theory that to include service members who attrite before the end of their first contract would bias the effect of TA usage on reenlistment positively (Barnard & Zardeskas, 2007). Barnard and Zardeskas confirmed

that theory, but still ultimately found a positive relationship between TA usage and first-term reenlistment. Unlike Buddin and Kapur (2002), Barnard and Zardeskas used data from FY94 to FY06, which includes three years after the Post 9/11 GI Bill was introduced and five years after the attacks of 9/11. One component not addressed by Barnard and Zardeskas is the time in service requirement. At the time of their study, Navy sailors were required to have two years of time in service. Currently sailors are required to have three years of time in service, and this difference greatly impacts the ability of first-term sailors to use TA (United States Navy, 2021). While directed at sailors, this study does show a difference between TA users before and after 9/11 when compared to Buddin and Kapur's study, further highlighting a need to reinvestigate Marine Corps TA users.

In response to the conflicting results of the two previous studies, Mehay and Pema (2009) conducted another analysis of Navy TA usage, attempting to conclusively characterize TA utilization's impact on promotion and retention. One advantage of Mehay and Pema's study was the use of a larger data set, which consisted of cohorts who entered the Navy between 1994 and 2001. Additionally, Mehay and Pema's study included a natural control group, allowing for the derivation of a causal effect of TA. Mehay and Pema (2009) estimated three models to determine who participates in TA, the probability of promotion, and the probability of retention.

Like Barnard and Zardeskas (2007), Mehay and Pema (2009) were unable to replicate the control variable for selection bias used by Buddin and Kapur (2002). Using their natural control group, Mehay and Pema characterized their results differently to conclusively say that, compared to first-term sailors who used TA but did not complete their courses, first-term sailors who successfully used TA had both a higher probability of retention and promotion. They also found that women and minorities were more likely to use TA, results that were similar to Buddin and Kapur (2002). While Mehay and Pema believed they had conclusively determined the effect of TA, their analysis does not mention eligibility timing for first-term sailors to use TA. Under the current policy, first-term sailors are not eligible for TA until the final year of a four-year contract. For someone who is closer to degree completion, the ability to continue using TA may have more of an impact on their decision compared to someone who has only taken general requirement courses.

There are cultural differences between the Marine Corps and the Navy and these differences appear in the results of Buddin and Kapur (2002). While there are two follow-up studies to Buddin and Kapur for the Navy, no follow-up study exists for the Marine Corps. Collectively, these three studies produce the following key points about TA usage. Post 9/11 TA users had a higher probability of retention and promotion. Women and minorities were more likely to use TA. One area not mentioned in these studies is the amount of time during a first term that a service member was eligible to use TA, which is the apparent problem addressed by MARADMIN 150/19. While not directly addressed by this thesis, the amount of time eligible may be a significant factor on a service member's decision to use TA. The issues of work force retention are not unique to the military and the civilian sector also offers educational benefits as shown in the next section.

B. CIVILIAN TUITION ASSISTANCE

While civilian companies attract different workers, particularly when looking at first-term service members, the principles of using TA as an incentive for workers remains the same. There is a debate within the civilian literature as to the effectiveness of TA as a retention tool (Flaherty, 2007). TA is a form of human capital that may or may not be directly tied to the specific job. An individual may choose to seek higher education in a field that directly benefits their current occupation, or they may seek a degree that is completely unrelated. Offering TA to workers is a risk in that it might promote the idea of employees leaving the company rather than staying (Flaherty, 2007). The next two studies address TA as a means of both retention and recruitment in the civilian sector.

For example, Flaherty (2007) looked at TA as a retention tool in a single company, in the non-profit education sector, offering tuition reimbursement as a means of reducing turnover. While TA and tuition reimbursement are different in the manner of payment, the core concept of offering employees monetary assistance directly for tuition is the same. Flaherty's (2007) research question centers around Gary Becker's (1964) seminal work on human capital wherein he hypothesized that human capital investments only benefit retention when it is "firm-specific" rather than general human capital. Firm-specific human capital investments are defined as those that are directly related to the job, making the value

only useful to the individual if the recipients stay in that job (Flaherty, 2007). In contrast, tuition reimbursement is considered a general human capital investment because it is not necessarily tied to the organization. Students are free to study any area they choose. Companies who offer tuition reimbursement do so with the hypothesis that general human capital investments do reduce turnover and Flaherty set out to empirically prove or disprove this theory (Flaherty, 2007).

Flaherty (2007) found that companies in 2003 spent an estimated $10 billion in tuition reimbursement payments. This marks a significant investment from civilian companies. Flaherty's (2007) data focused on two groups (those who used tuition reimbursement and those who did not) hired between 1999 and 2001, with an outcome of retention at the three-, four-, and five-year marks. In the percentage of those who left before four years, Flaherty found there was an almost 20-point difference between the two groups hired in 2001 as well as an increase in turnover rate in new hires from 1999 to 2001. These findings are interesting within the military context, as the first-term contract is four years. Additionally, the timing of this study places it later than the data used by Buddin and Kapur (2002), further supporting the idea that the work force valued higher education differently after 9/11 than it did before.

A limitation of this study is the data available. It was constructed from administrative records from a single non-profit institution in the education sector. Flaherty (2007) does well to characterize this limitation and the potential applicability of the finding across other companies, but the issue of additional factors still exists. Do workers largely share the same attitudes towards furthering their education regardless of job type? I would argue not: there is a difference between someone working in the military, someone working in higher education, and someone working for a Fortune 500 company. But Flaherty's work does highlight the issue of data availability for the purpose of academically evaluating the effect of TA. There are many factors that would lead an individual to seek higher education and those factors will not always align with the reasons workers retain or seek employment. A larger data set of civilian organizations would be necessary to fully evaluate the effect of TA, and even then, the conclusions may only be applicable to the particular companies that are the source of the data. Flaherty does well in describing the motivation of employers

who offer these TA programs. The motivation is twofold: first as a form of non-wage compensation and second as a means of increasing worker productivity (Flaherty, 2007). These motivations are also applicable to the military's use of TA. With the CPG, it appears the Marine Corps is looking for ways to enhance worker productivity, again indicating TA as a source of interest.

While Flaherty (2007) focused primarily on retention, Haeussler-Warnick (2013) conducted a qualitative analysis on the use of TA by civilian employers as a recruitment tool. The goal of the study was to determine how universities were using TA benefits to specifically target desired future employees and whether those universities were supporting their employees who were utilizing those benefits. She also used a case study approach but focused on the individual rather than the firm, interviewing twelve employees across six different universities. Her work is unique in that all of the employers were universities and colleges who would be thought to have the most access to higher education opportunities. Haeussler-Warnick identifies adult students as 24 years of age and older, and as the fastest-growing demographic segment within higher education. She argued that TA is particularly attractive to adult learners because they are often attending school part time, incurring a larger cost while balancing greater financial obligations than traditional students.

Haeussler-Warnick (2013) concluded that colleges and universities were recruiting employees who study and would be interested in using TA programs, but the methods of recruitment were not above and beyond normal recruiting practices. Nonprofit colleges and universities use the same practices to recruit employees as they do to attract potential students: word of mouth, collaboration with advisory committees of local businesses, and reliance on external factors such as having the only program or best program in the geographic region. Haeussler-Warnick (2013) also concluded that adult students are difficult to recruit because they have a more diverse set of opportunity costs stemming from their age, occupation, goals, and multiple personal roles such as student, employee, and parent. These opportunity costs are seen in the military as Buddin and Kapur (2002) found that married service members were less likely to use TA as were service members in more time consuming occupations such as combat arms. Haeussler-Warnick's study is limited in that it is a qualitative study and centered within her personal acquaintances. While her

results are not transferable across all higher education institutions, they do provide a thought-provoking look at civilian TA, in that even the education sector does not have a systematic method for using higher education as a recruiting tool. Haeussler-Warnick (2013) also points out the growing population of adult learners and the need for traditional higher education to actively recruit these students and offer support in the form of flexible classes and prior learning assessment such as credits for military service. These recommendations are fully in line with the approach taken by for-profit institutions which brings us to the next area of the literature.

C. FOR-PROFIT EDUCATIONAL INSTITUTIONS

Research question three of this thesis looks at the type of institutions that receive TA funding in support of Marines's off-duty education. The metric used for this comparison between education institutions is based on their status as either for-profit or nonprofit. While people have a general idea of the differences between for-profit and nonprofit universities, it is important to define these terms and provide an understanding of the available options for higher education within the United States.

Deming et al. (2012) define for-profit as "A group of institutions that give post-high school degrees or credentials and for which some of the legal 'nondistribution requirements' that potentially constrain private nonprofit schools do not bind" (p. 3). An example of this type of requirement would be in the amount that can be paid to top-level executives. In practice, there are a variety of for-profit institutions that offer both in-person and online instruction, grant degrees from the associate level to doctorate level, and offer nondegree/ certificate training programs. Deming et al. (2012) found that for-profit institutions are more common in the fields of business, management and marking, where they grant 33% of all AAs and 12% of all BAs.

While for-profit institutions have been around for many years, they were initially focused in nondegree, technical training and certificate programs. With the rise in online learning capabilities in the early 2000s, for-profit institutions began taking a larger share of the higher education market (Watkins & Seidelman, 2017). This larger market share was achieved by serving demographics that were traditionally underserved by nonprofit

universities, including minorities, the unemployed, single mothers, and people of low income (Watkins & Seidelman, 2017). Traditional universities have long gained prominence by selectivity, as schools are not judged by the public by how many are admitted but by how many are turned away. By not having admissions quotas and offering flexible parttime class schedules, for-profit institutions were able to cater to a portion of the population for whom traditional, full-time higher education was not a match.

Many studies have looked at the labor market returns of for-profit institutions. For example, Cellini and Turner (2019) conducted a study which assessed the employment and earning results of for-profit college students using administrative data. This study sought to determine if students at for-profit institutions would have been better off in terms of employment and earnings if 1) they comparatively attended a nonprofit institution or 2) they did not attend any college. The data for this study focused on students in FY06-FY07, who participated in education programs regulated by the Obama Administration's Gainful Employment regulations, which held for-profit schools accountable for student outcomes (Cellini & Turner, 2019).

Cellini and Turner's results suggest that, as they state, "relative to no college, for-profit certificate programs modestly increase the likelihood of employment, but appear to do little to raise earnings"(Cellini & Turner, 2019, p. 364). They also found that for-profit schools have higher costs of attendance and commensurately higher student debt. Cellini and Turner (2019) ultimately concluded that for-profit students would be better off in nonprofit institutions but found mixed reviews when comparing for-profit education to no higher education. While for-profit graduates did have a higher level of employment, that must be offset with the higher amount of debt to achieve that education. For-profit institutions defend their practices by stating they service a segment of the population that is underserved by traditional higher education. Studies like those of Cellini and Turner suggest that for-profit institutions may actually be harming those people rather than benefiting them.

Veterans also fall within the target demographic populations of for-profit institutions and come bearing the important added benefit of DOD funded education benefits. With the rise of for-profit institutions, Congress sought to ensure these institutions

were not deriving profits solely from federal funding. The 90/10 rule allows for-profit institutions to derive no more than 90% of their profits from federal sources under Title IV of the Higher Education Act. This rule only applies to for-profit institutions with the thought process that because they are for-profit they should be able to attract customers with personal sources of funding and not depend on the U.S. Government for funding support (Hegji, 2021). This need to attract "customers" rather than students drives for-profit institutions to spend almost 23% of their revenue on marketing (Watkins & Seidelman, 2017). The 90/10 rule went into effect in 1998 and was amended in 2008 to require stricter reporting. Important to the veteran community is the fact that veteran education benefits do not count against the 90% maximum of federal funding that for-profit institutions can have, making veterans desirable customers. A study conducted by Baird et al. (2019) found that for-profit institutions were more sensitive to changes in Post 9/11 GI Bill funding than were nonprofit institutions, meaning they were more likely to increase tuition prices in response to increases in Post 9/11 GI Bill funding to capture that additional guaranteed profit.

TA and the Post 9/11 GI Bill have set funding levels meaning there is a maximum amount that will be paid to the education institution per credit hour. Baird et al. (2019) conducted a study that looked at the tuition rates of for-profit institutions with respect to fluctuations in Post 9/11 GI Bill funding. When the Post 9/11 GI Bill was first enacted in 2009, funding levels were individually set for each state. In 2011, the U.S. Congress applied a nation-wide maximum tuition rate for private institutions, which increased the maximum funding level in some states and lowered it in others. Baird et al. (2019) sought to determine if for-profit institutions changed tuition rates to capture increased Post 9/11 GI Bill funding. Veterans are a large portion of the for-profit student body. In the first year of the Post 9/11 GI Bill 36.5 percent of the funding went to for-profit institutions (Baird et al., 2019).

Baird et al. (2019) concluded that overall there was no response to the funding rates from nonprofit institutions, but for-profit institutions did change their tuition rate based on the funding levels. They found that a clear spike in enrollment during 2009 in four out of five school types was correlated with the start of the Post 9/11 GI Bill. Baird et al. (2019)

found the overall pass-through rate for for-profit institutions was one percent, but there was a subgroup of for-profit institutions who had a pass-through rate of eight percent. This subgroup was comprised of schools whose tuition was above the state maximum in 2010 but below the national maximum imposed in 2011. This adjustment to tuition rates shows that these schools most likely did capitalize on the increase in funding. Again, the 90/10 rule does not apply to the Post 9/11 GI Bill, which means it is advantageous for for-profit institutions to recruit veterans and service members as customers.

Veterans and service members also fit the other hallmarks of for-profit attendees meaning they are adult learners who are enticed by programs offering high schedule flexibility and experiential credit. The Marine Corps must be aware that for-profit institutions are actively targeting service members to access the educational funds offered by the Marine Corps. This targeted approach to service members combined with lower outcomes found by Cellini and Turner (2019) suggests that the Marine Corps should critically evaluate whether they want service members attending these institutions, and if yes, under what conditions. The Marine Corps' 2019 policy increased the access to TA, but it had no impact on where Marines could use TA funds. If the Marine Corps is looking to increase human capital by means of TA, the service should be aware of what it is paying for. The Marine Corps should be promoting the use of TA towards higher quality institutions as measured by labor market returns.

While the academic literature surrounding TA is limited, it does provide insights that are applicable to Marine Corps TA. TA is used more prevalently by women and Marines in non-combat MOSs (Buddin & Kapur, 2002). TA is prevalent in the civilian business sector where it is used both as a tool for recruiting and retention (Flaherty, 2007). For-profit institutions specifically target veterans and service members for military-provided education funding (2019). With this collective understanding of TA, I turn to the data and descriptive statistics used to further address the topic of TA usage in the Marine Corps.

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IV. DATA AND DESCRIPTIVE STATISTICS

To conduct the statistical analysis, I collected data from three sources namely the Total Force Data Warehouse (TFDW), the Navy College Management Information System (NCMIS), and the Integrated Postsecondary Education Data System (IPEDS). The analysis focuses on a panel of Marines that have used TA at least once between 2017 and 2021. The primary population of interest is Marines at the rank of E3, because that is the rank most effected by the MARADMIN 150/19 change in eligibility criteria for TA. This chapter describes the variables used in the analysis and summarizes the descriptive statistics.

A. DATA SETS

1. TFDW

TFDW data provides information on the individual Marine TA users. This data is in the form of quarterly snapshots from July 2017 to September 2021. The data only includes Marines who used TA during the time period. These quarterly snapshots cover the entire time period for each Marine in the dataset, whether they used TA or not during a quarter. The variables I collected from TFDW include: gender, age, marital status, race, AFQT score, highest education obtained, rank, MOS, average proficiency marks, and average conduct marks.

2. NCMIS

NCMIS data provides information on TA use. These data are individual TA course enrollments from January 2017 to September 2021. These data came from the Voluntary Education Program Manager, Personal & Professional Readiness Branch, Marine and Family Programs Division, Headquarters, U.S. Marine Corps. The variables I collected from NCMIS include course level, course completion, authorized amount, type of course, course name, institution name, and education goal.

3. IPEDS

IPEDS data is an open source provided by the National Center for Education Statistics (NCES). These data offer information on postsecondary education institutions such as sector, which categorizes institutions based on two-year vs. four-year and for-profit vs nonprofit, and geographic region.

I combined these datasets to create a panel dataset at the individual*quarter year level from July 2017 to September 2021. This resulted in a dataset with 44,134 unique individuals and 750,278 observations at the individual Marine quarter level, which contains all active-duty Marines who used TA at least once during the time period under study. Again, while all TA use is of interest, the primary population of interest is Marines at the rank of E3. Due to average career timing, prior to the policy change some E3s were eligible for TA. After the policy change, all E3s were eligible for TA.

B. VARIABLE DESCRIPTIONS

1. Dependent Variables

I measure the effect of the 2019 policy change on four outcomes: total number of courses, total number of successful courses, course success rate, and percentage of for-profit institutions. Table 1 provides a list of these outcome variables with their descriptions. Total courses captures the total number of TA funded courses taken by an individual in a quarter. Total successful courses captures the total number of successfully completed TA-funded courses taken by an individual in a quarter. Success rate is calculated as the total successful courses divided by the total number of courses. Percentage of for-profit institutions is calculated as the total number of courses taken at a for-profit institution divided by the total number of courses by an individual in a quarter.

Table 1. Dependent Variables

Dependent Variables	Description
Total Courses	Discrete variable equal to the total number of courses taken by an individual in a quarter
Total Successful Courses	Discrete variable equal to the total number of successfully completed courses by an individual in a quarter
Success Rate	Tuition Assistance Success Rate
% For-profit	Percentage of institutions used for TA that are categorized as For-profit

2. Independent Variables

Independent variables used in this analysis contained information on individual demographics, career timing, occupation, and TA usage both on the courses and institutions. The independent variables used in this analysis are listed in Table 4 along with their descriptions. After 2019 Policy is an indicator variable to identify observations that occur after the policy change. E3, E4, E5, and E5 are indicators for the respected ranks. Average TIS captures the average time in service of an individual in a quarter. Average TIG captures the average time in grade of an individual in a quarter. Married, male, white, and combat arms are all indicator variables equal to one if an individual is the specified trait. Number of Deployments captures the highest number of cumulative deployments for the individual during a specified quarter. For example, if a Marine deployed for the first time in January 2018 and again in January 2019, the value for number of deployments would be one after the first deployment and two after the second deployment. All of the variables included in Table 2 vary at the individual quarter level with the exception of male, white, and combat arms. Those three variables were used in subsequent models to indicate the effect on different groups within TA users. Other variables were considered for inclusion in this analysis but did not vary at the individual quarter level; this made them incompatible with analysis conducted with individual and quarter fixed effects.

Table 2. Independent Variables

Independent Variables	Description
After 2019 Policy	Binary variable equal to 1 if the observation is after the 2019 Policy
E3	Binary variable equal to 1 if the rank is equal to E3, 0 otherwise
E4	Binary variable equal to 1 if the rank is equal to E4, 0 otherwise
E5	Binary variable equal to 1 if the rank is equal to E5, 0 otherwise
E6	Binary variable equal to 1 if the rank is equal to E6, 0 otherwise
Average TIS	Average Time in Service
Average TIG	Average Time in Grade
Married	Binary variable equal to 1 if the Marine is Married, 0 otherwise
Male	Binary variable equal to 1 if the Marine is Male, 0 otherwise
White	Binary variable equal to 1 if the Marine is White, 0 otherwise
Combat Arms	Binary variable equal to 1 if the PMOS is Combat Arms, 0 otherwise
# of Deployments	Highest cumulative total of deployments for the individual during a particular quarter.

C. DESCRIPTIVE STATISTICS

The majority of TA users come from the enlisted ranks. As shown in Table 3, in FY 21, enlisted Marines made up 92 percent of TA users. This is expected as 88.5 percent of the Marine Corps is made up of enlisted service members (Military OneSource, 2021). The data used for this analysis covered July 2017 to September 2021, which leaves both 2017 and 2021 as incomplete years. The totals reported for 2017 come from TA Decide, while the data from 2021 is as reported in the dataset (TA Decide, 2021). Even with partial information from 2021, Table 3 still shows an increase in both unique users and total amount authorized for 2021 compared to 2020. The total amount authorized for the five years is over $195 million, showing a sizable dedication of funds towards service members' education from the Marine Corps. This also shows a distinct interest in these service members to further their educational attainments.

Table 3. Descriptive Statistics Total Users

	FY17	FY18	FY19	FY20	FY21
Unique TA Users	16916	17695	19852	21456	22309
Total TA Users Enlisted	14903	15932	18055	19841	20608
Total TA Users WO	957	923	1014	779	914
Total TA Users Officer	1056	840	783	836	787
% of Users Enlisted	88%	90%	91%	92%	92%
% of Users WO	6%	5%	5%	4%	4%
% of Users Officer	6%	5%	4%	4%	4%
Total Amount Authorized	$ 34,505,857.00*	$ 34,910,607.89	$ 37,498,477.52	$ 43,495,048.22	$ 44,853,655.93*

Note: FY17 is incomplete within the dataset. Total amount authorized is reported from TA Decide (TA Decide, 2021).
FY21 is incomplete within the dataset. Total amount authorized reported comes from the dataset.

Table 4 shows the summary statistics for the dataset as both the total observations and before and after the 2019 policy change. The sample contains 44,134 unique individuals and 750,278 total observations of Marine Corps TA users. Eighty-four percent of Marine TA users are male, with 55.8 percent being married and an average age of 28 years. In the data, 55.4 percent of TA users are white, 13.9 percent are African American, and 21.2 percent are Hispanic, with the remaining eight percent comprised of service members of Asian, American Indian / Alaskan native, and Hawaiian / Pacific Islander ethnicities. Approximately two percent of the sample declined to provide their ethnicity. Comparatively, the full population of the Marine Corps, as reported in 2020, is 91.1% male, 63.6% white, 10.3% African American, and 17.8% Hispanic (Military OneSource, 2021).

Summary statistics for service showed an increase for both average TIS and TIG before and after the policy change and the average number of deployments for TA users was one deployment. Proficiency and conduct marks maintain an average of 4.3/4.3, thus placing TA users on the high end of average according to the individual records administration manual (USMC, 2000). The percentage of TA users with a combat arms PMOS also increased after the policy change to 10.3 percent from 9.6 percent.

Table 4. Summary Statistics: TA Users Before and After 2019 Policy

	(1) Full Sample mean/(sd)	(2) After 2019 mean/(sd)	(3) Before 2019 mean/(sd)	(4) Difference (3)-(2) b/(se)
Demographics				
Male	0.842	0.838	0.849	0.011***
	(0.365)	(0.369)	(0.358)	(0.001)
Age	28.084	28.571	27.315	-1.257***
	(6.849)	(6.901)	(6.694)	(0.017)
Married	0.558	0.569	0.541	-0.028***
	(0.497)	(0.495)	(0.498)	(0.001)
White	0.554	0.550	0.560	0.010***
	(0.497)	(0.497)	(0.496)	(0.001)
African American	0.139	0.138	0.139	0.001
	(0.346)	(0.345)	(0.346)	(0.001)
Hispanic	0.212	0.215	0.208	-0.008***
	(0.409)	(0.411)	(0.406)	(0.001)
AFQT Score	64.787	64.780	64.800	0.020
	(19.882)	(19.816)	(19.992)	(0.061)
CAT I	0.039	0.041	0.037	-0.004***
	(0.194)	(0.198)	(0.188)	(0.000)
CAT II	0.316	0.321	0.307	-0.014***
	(0.465)	(0.467)	(0.461)	(0.001)
CAT IIIA	0.177	0.182	0.169	-0.013***
	(0.382)	(0.386)	(0.375)	(0.001)
CAT IIIB	0.117	0.122	0.109	-0.013***
	(0.321)	(0.327)	(0.312)	(0.001)
Highest Education				
High School	0.762	0.769	0.750	-0.019***
	(0.426)	(0.421)	(0.433)	(0.001)
Some College	0.006	0.005	0.006	0.000*
	(0.075)	(0.074)	(0.077)	(0.000)
Associate's Degree	0.083	0.081	0.087	0.007***
	(0.276)	(0.272)	(0.282)	(0.001)
Bachelor's Degree	0.105	0.102	0.110	0.008***
	(0.307)	(0.303)	(0.313)	(0.001)
Master's Degree	0.026	0.025	0.028	0.003***
	(0.160)	(0.157)	(0.164)	(0.000)
Service				
Avg TIS	8.292	8.820	7.458	-1.363***
	(6.489)	(6.549)	(6.303)	(0.016)
Avg TIG	1.954	2.168	1.617	-0.551***
	(1.722)	(1.802)	(1.527)	(0.004)
# of Deployments	1.000	0.962	1.061	0.099***
	(1.432)	(1.416)	(1.455)	(0.003)
Combat Arms PMOS	0.100	0.103	0.096	-0.007***
	(0.300)	(0.304)	(0.294)	(0.001)
Avg Conduct Marks	43.168	43.135	43.224	0.088***
	(7.976)	(7.857)	(8.172)	(0.025)
Avg Proficiency Marks	43.218	43.189	43.266	0.076**
	(7.977)	(7.858)	(8.173)	(0.025)

Tuition Assistance				
Avg # of TA Courses	0.310	0.329	0.283	-0.046***
	(0.709)	(0.721)	(0.690)	(0.002)
Avg Authorized Funding	1,119.00	1,112.52	1,130.03	17.51***
	(638.498)	(628.095)	(655.699)	(3.422)
Avg Successful Courses	0.289	0.306	0.263	-0.043***
	(0.686)	(0.699)	(0.667)	(0.002)
Avg Success if in a Course	1.450	1.437	1.472	0.036***
	(0.826)	(0.816)	(0.842)	(0.004)
Success Rate	0.923	0.923	0.923	0.000
	(0.252)	(0.253)	(0.251)	(0.001)
Online Course	0.173	0.181	0.161	-0.020***
	(0.378)	(0.385)	(0.367)	(0.001)
For-Profit	0.362	0.361	0.363	0.002
	(0.480)	(0.480)	(0.481)	(0.003)
Observations	750,278	441,340	308,938	750,278

*p < 0.05, ** p < 0.01, *** p < 0.001

Summary statistics for TA usage show an increase in both the average number of courses taken and average number of successful courses per quarter. The dataset includes an entry for each Marine TA user for each quarter whether they were actively using TA or not. This brings the average total courses and successful courses below a single course. The average successful courses conditional on a user actively taking a course decreased from 1.472 courses per quarter before the policy change to 1.437 courses per quarter after the policy change. The success rate for TA remained at 92 percent and the percentage of institutions that are for-profit also remained constant at 36 percent before and after the policy change.

I turn to the formal econometric analysis and results next to assess whether these difference in means hold up to controlling for other factors that changed before and after 2019 and may have affected TA usage apart from the policy change.

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V. METHODOLOGY AND RESULTS

I conducted the statistical analysis for this thesis by creating five models to determine the effect of the 2019 policy change. The first four models were estimated ten times both with and without individual and quarter*year fixed effects with the strictest specification, and then on different subgroups within TA users. Model 5 looks at the four outcome variables comparing E3, E4, and E5 TA users compared to E6s.

A. METHODOLOGY

The methodology used for the analysis is difference in difference, where the effect of the 2019 policy change is estimated as the interaction between an indicator variable for *E3* (treatment group) and a binary variable for *After 2019 Policy* (post policy period). As stated previously, the primary population of interest for this analysis is Marines at the rank of E3. Prior to the policy change some senior E3s would have been eligible for TA, but after the policy change all E3s are eligible for TA. Marines at or above the rank of E4 would have all been eligible for TA before the policy change, so they are the control group because they were always treated. MARADMIN 255/18, FY18 Tuition Assistance Guidelines Update, did authorize commanders at the O-5 rank to reduce the minimum time in service from 24 months to 18 months for Marines who "demonstrate significant extraordinary effort," but only twenty Marines at the E2 rank utilized TA in FY18 (USMC, 2018). Figure 2 displays the total number of TA courses for E1-E3 from July 2017 to September 2021. Visual inspection of the graph shows that even after the policy change, E1s and E2s did not use TA at a significant rate.

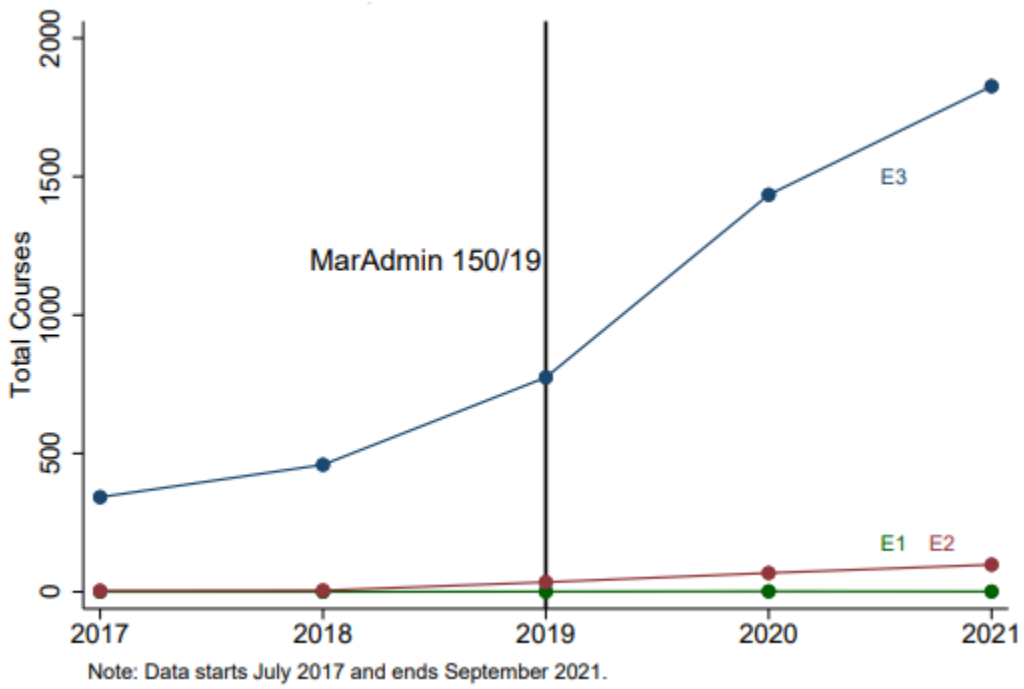

Figure 2. Total TA Courses E1–E3

Two of the outcome variables (total courses and course success) used in this analysis are discrete and two (success rate and % for-profit) are binary. I include individual fixed effects (*i*) in the regressions. This ensures that I control for all unobservable individual time invariant factors correlated with TA usage. My estimate of the policy effects is identified off individual changes in TA usage among E3s before and after 2019, compared to the others. I also include quarter*year fixed effects (*t*), which allows me to control for observable and unobservable difference between the quarters such as the different volume of TA courses taken between different quarter and different years. All standard errors are clustered at the individual level.

1. Models of Tuition Assistance Usage

The first two models are used to determine the effect of the 2019 policy change on both the total number of courses taken using TA and the total number of successfully completed courses. These models were estimated with and without individual and quarter*year fixed effects. Additionally, these models were estimated on the following

subgroups of TA users: males, females, white, non-white, combat arms, and non-combat arms.

$$total\ courses_{it} = \beta_0 + \beta_1\ After\ 2019\ Policy_{it} + \beta_2 E3_{it} + \beta_3 Average\ TIS_{it} + \beta_4\ Average\ TIG_{it} + \beta_5\ Married_{it} + \alpha_i + \delta_t + \varepsilon_{it}$$

$$total\ successful\ courses_{it} = \beta_0 + \beta_1\ After\ 2019\ Policy_{it} + \beta_2 E3_{it} + \beta_3 Average\ TIS_{it} + \beta_4\ Average\ TIG_{it} + \beta_5\ Married_{it} + \alpha_i + \delta_t + \varepsilon_{it}$$

2. Model of Tuition Assistance Success Rate

The third model is used to determine the effect of the 2019 policy change on the success rate. This model was estimated with and without individual and quarter*year fixed effects. Again, this model was also estimated on the following sub groups of TA users: males, females, white, non-white, combat arms, and non-combat arms.

$$success\ rate_{it} = \beta_0 + \beta_1\ After\ 2019\ Policy_{it} + \beta_2 E3_{it} + \beta_3 Average\ TIS_{it} + \beta_4\ Average\ TIG_{it} + \beta_5\ Married_{it} + \alpha_i + \delta_t + \varepsilon_{it}$$

3. Model of For-Profit Institution Usage

The fourth model is used to determine the effect of the 2019 policy change on the type of institutions used for TA, specifically, the percentage of institutions used for TA that are for-profit institutions. Percentage of for-profit institutions is calculated as the total number of courses taken at a for-profit institution divided by the total number of courses by an individual in a quarter.

$$perc\ for\ profit_{it} = \beta_0 + \beta_1\ After\ 2019\ Policy_{it} + \beta_2 E3_{it} + \beta_3 Average\ TIS_{it} + \beta_4\ Average\ TIG_{it} + \beta_5\ Married_{it} + \alpha_i + \delta_t + \varepsilon_{it}$$

4. Model Comparing E3–E6

A fifth model was created to look at the TA use comparison by rank for each of the outcome variables. This model included Marine TA users of the ranks E3 to E6 with E6 being the omitted category. This model was also estimated for total successful courses, TA success rate, and percentage of for-profit institutions.

$$
\begin{aligned}
total\ courses_{it} &= \beta_0 + \beta_1\ After\ 2019\ Policy_{it} + \beta_2 E3_{it} \\
&+ \beta_3\ After\ 2019\ Policy * E3_{it} \\
&+ \beta_4 E4_{it} + \beta_4\ After\ 2019\ Policy * E4_{it} + \beta_5 E5_{it} \\
&+ \beta_6\ After\ 2019\ Policy * E5_{it} + \alpha_i + \delta_t + \varepsilon_{it}
\end{aligned}
$$

B. RESULTS

1. Tuition Assistance Take-Up Rate

Figure 3 displays the total number of TA courses taken by each rank category from Quarter 3 2017 to Quarter 3 2021. Officer, SNCO, and NCO remain fairly constant before and after the 2019 policy change, with E3 showing a significant increase after the policy went into effect. Both NCO and SNCO display a seasonality effect on TA usage with Quarter 3 coinciding with the start of the academic year and the height of TA usage. This seasonality effect may also be explained by Marine Corps training tempo that sees a lull in training activity during the fall and holiday period and increases after the start of the new calendar year. Figure 4 displays the same rank categories with the total number of successful TA courses and the same visual evidence and trends from Figure 3 exists.

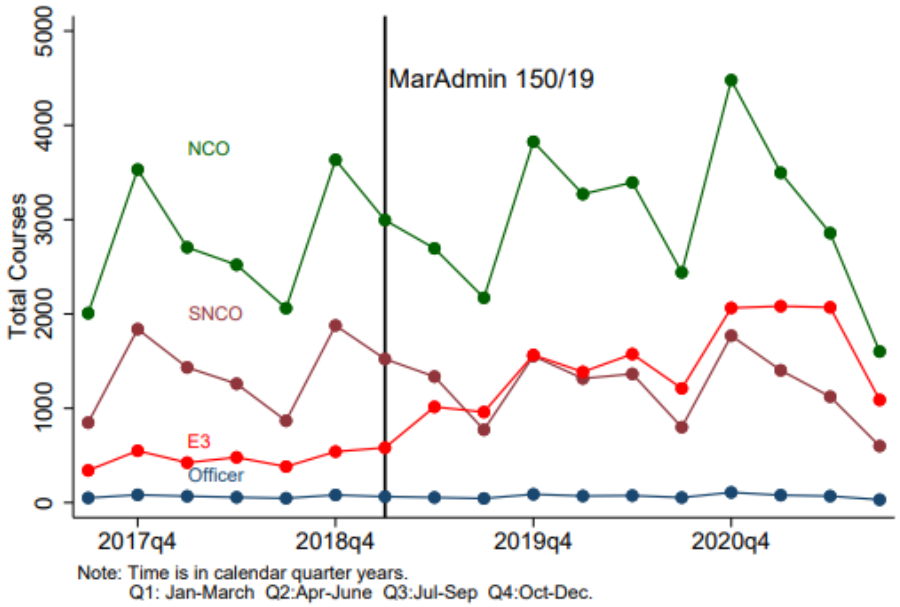

Figure 3. Total TA Courses by Rank

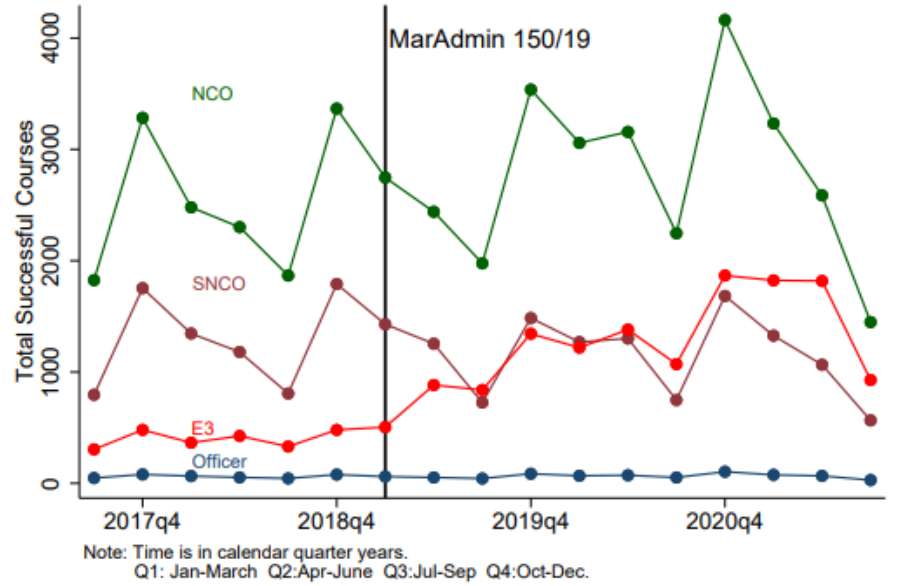

Figure 4. Total Successful TA Courses by Rank

Table 5 displays the results of the estimation of Model 1. The difference in difference estimates suggests the total courses taken each quarter by a treated E3 Marine increased by 0.287 courses, against a mean of 0.310. Including variables for average TIS, average TIG, and marital status, changes the coefficient to 0.257 courses, against a mean of 0.327. The female sub-group of E3 TA users had the largest coefficient of 0.358 courses, against a mean of 0.343. In answer to research question 1 of this thesis, these results indicate the 2019 policy change did have an effect on the TA take up rate, specifically for the rank of E3s.

Table 6 displays the results of the estimation of Model 2. The difference in difference estimates suggests the total successful courses taken each quarter by a treated E3 Marine increased by 0.258 courses, against a mean of 0.289. Including variables for average TIS, average TIG, and marital status, changes the coefficient to 0.232 courses, against a mean of 0.304. The female sub-group of E3 TA users had the largest coefficient of 0.321 courses, against a mean of 0.311. For these outcome variables, these results are big effects given they are often more than 50 percent of the mean outcome in many cases.

Table 5. Regression Results Model 1: Total Courses

	Base		Base FE		Male	Female	White	Non-White	Combat Arms	Non-Combat Arms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
After Policy	-0.062***	-0.064***								
	(0.004)	(0.004)								
E3	-0.324***	-0.241***								
	(0.003)	(0.004)								
After Policy x E3	0.287***	0.256***	0.287***	0.257***	0.235***	0.358***	0.253***	0.260***	0.160***	0.270***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.013)	(0.007)	(0.007)	(0.013)	(0.005)
Average TIS		0.007***		-0.208***	-0.200***	-0.263***	-0.213***	-0.200***	-0.008	-0.204***
		(0.000)		(0.012)	(0.012)	(0.044)	(0.016)	(0.016)	(0.020)	(0.011)
Average TIG		-0.016***		-0.004**	-0.003	-0.013**	-0.004*	-0.004*	0.016***	-0.005***
		(0.001)		(0.001)	(0.001)	(0.004)	(0.002)	(0.002)	(0.004)	(0.001)
Married		0.047***		0.064***	0.068***	0.044***	0.073***	0.050***	0.041*	0.064***
		(0.003)		(0.005)	(0.006)	(0.011)	(0.007)	(0.008)	(0.016)	(0.006)
Individual FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter*Year FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (Dep. Var)	0.310	0.327	0.310	0.327	0.324	0.343	0.327	0.327	0.316	0.328
Observations	750,278	711,424	750,278	711,424	598,986	112,433	394,167	317,158	71,309	640,115
Unique Indiv	44,134	44,134	44,134	44,134	36,934	7,207	24,736	20,157	4,535	39,599
R^2	0.022	0.017	0.175	0.179	0.180	0.174	0.179	0.183	0.194	0.179

NOTE: Standard errors clustered at the individual level are in parentheses.
*p < 0.05, ** p < 0.01, *** p < 0.001

Table 6. Regression Results Model 2: Total Successful Courses

	Base		Base FE		Male	Female	White	Non-White	Combat Arms	Non-Combat Arms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
After Policy	-0.054***	-0.057***								
	(0.003)	(0.004)								
E3	-0.307***	-0.223***								
	(0.003)	(0.004)								
After Policy x E3	0.258***	0.230***	0.258***	0.232***	0.213***	0.321***	0.235***	0.229***	0.145***	0.245***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.013)	(0.007)	(0.007)	(0.013)	(0.005)
Average TIS		0.007***		-0.192***	-0.185***	-0.237***	-0.200***	-0.180***	-0.004	-0.188***
		(0.000)		(0.011)	(0.011)	(0.040)	(0.016)	(0.015)	(0.020)	(0.011)
Average TIG		-0.016***		-0.004**	-0.003	-0.012**	-0.003	-0.004	0.015***	-0.005***
		(0.001)		(0.001)	(0.001)	(0.004)	(0.002)	(0.002)	(0.004)	(0.001)
Married		0.050***		0.062***	0.066***	0.043***	0.069***	0.051***	0.042**	0.062***
		(0.003)		(0.005)	(0.006)	(0.011)	(0.007)	(0.008)	(0.016)	(0.006)
Individual FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter*Year FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (Dep. Var)	0.289	0.304	0.289	0.304	0.303	0.311	0.309	0.298	0.299	0.305
Observations	750,278	711,424	750,278	711,424	598,986	112,433	394,167	317,158	71,309	640,115
Unique Indiv	44,134	44,134	44,134	44,134	36,934	7,207	24,736	20,157	4,535	39,599
R^2	0.021	0.018	0.182	0.186	0.187	0.180	0.185	0.191	0.199	0.186

NOTE: Standard errors clustered at the individual level are in parentheses.
*p < 0.05, ** p < 0.01, *** p < 0.001

2. Tuition Assistance Success Rate

Figure 5 displays the success rate by each rank category from Quarter 3 2017 to Quarter 3 2021. Again, success rate is calculated as the total successful courses divided by the total number of courses. Unlike total courses and total successful courses, success rate does not a significant visual result, with the exception that E3s both before and after the policy change consistently have the lowest success rate compared to the other rank categories. One possible explanation for this is that officers and SNCOs are the most career minded and have a different perception of the benefits of education as well as the consequences of failure and are thus more intrinsically motivated to succeed in TA courses.

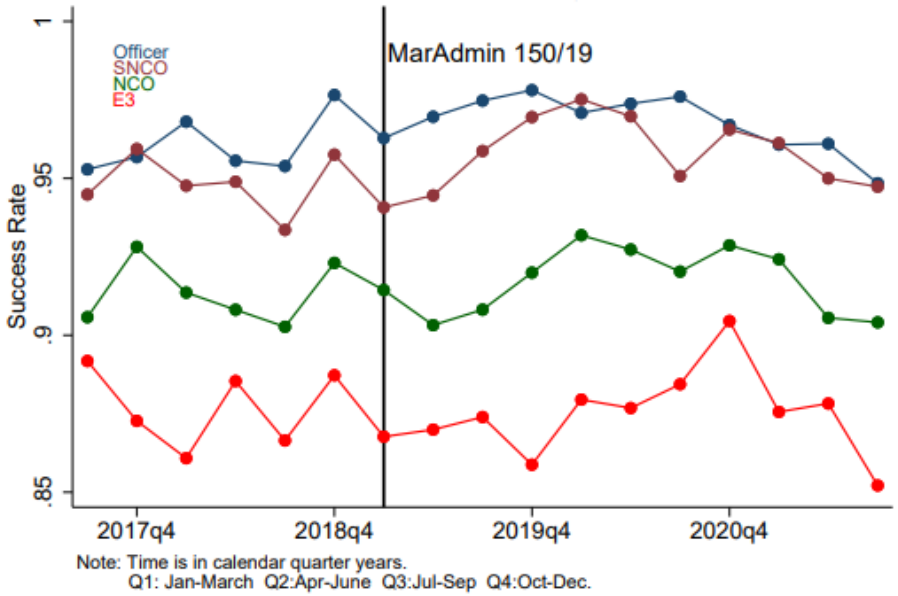

Figure 5. TA Success Rate by Rank

Table 7 displays the results of the estimation of Models 3. The difference in difference estimates suggests the success rate each quarter by a treated E3 Marine decreased by 3.89 percentage points, against a mean of 93.5 percent. The female sub-group of E3 TA users had the largest coefficient of 5 percentage points, against a mean of 90.8 percent. In answer to research question 2 of this thesis, these results indicate the 2019 policy change did have an effect on course success rate, specifically for the rank of E3s in that they are slightly less successful.

3. Tuition Assistance For-Profit Institution Utilization

Figure 6 displays the percentage of for-profit institution utilized for TA by each rank category from Quarter 3 2017 to Quarter 3 2021. In the two quarters immediately following the policy change, for-profit usage decreased for E3s and E3s overall have the lowest percentage of for-profit institution utilization. One explanation for this would be the type of degrees that are being obtained by each rank group. E3s primarily seek Associates degrees, which are earned at community colleges. In contrast, officers and SNCOs are seeking bachelor's and master's degrees and both rank categories show an increase in the percentage use of for-profit institutions.

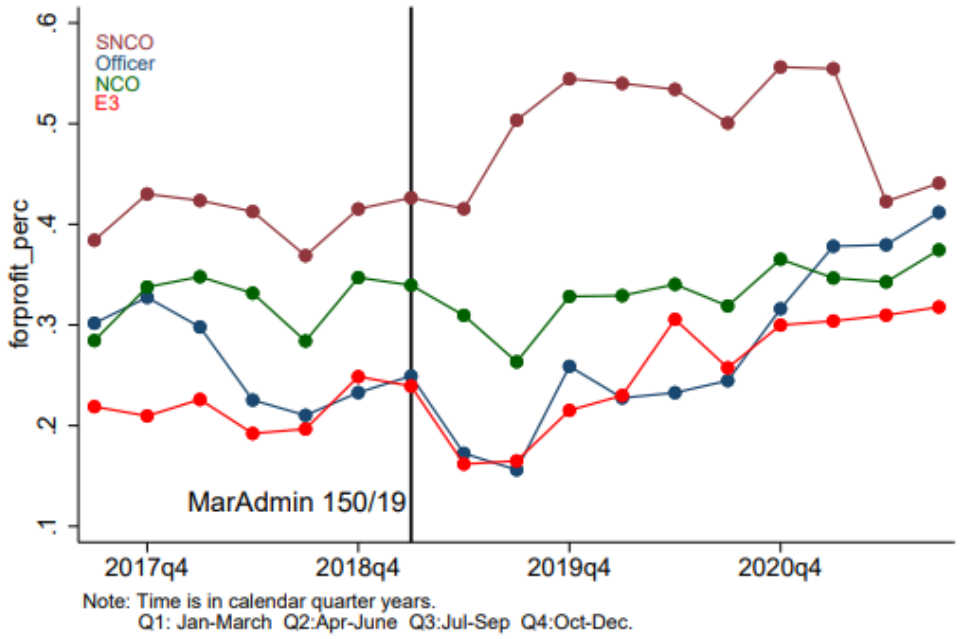

Figure 6. % For-Profit by Rank

Table 8 displays the results of the estimation of Models 4. The difference in difference estimates suggests the percentage of for-profit institutions each quarter by a treated E3 Marine increased by 2.1 percentage points, against a mean of 36.7 percent. In answer to research question 3 of this thesis, these results indicate the 2019 policy change did have an effect on destination institutions for TA users, specifically for the rank of E3s, in that they are slightly increased for-profit institution utilization.

Table 7. Regression Results Model 3: Success Rate

	Base		Base FE		Male	Female	White	Non-White	Combat Arms	Non-Combat Arms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
After Policy	0.011***	0.008***								
	(0.001)	(0.002)								
E3	-0.046***	-0.027***								
	(0.004)	(0.004)								
After Policy x E3	-0.000	0.004	-0.039***	-0.040***	-0.037***	-0.050***	-0.041***	-0.037**	0.015	-0.042***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.008)	(0.014)	(0.008)	(0.011)	(0.043)	(0.007)
Average TIS		0.002***		0.010	0.007	0.045	0.018	-0.022	-0.001	0.014
		(0.000)		(0.024)	(0.026)	(0.066)	(0.027)	(0.049)	(0.009)	(0.031)
Average TIG		-0.003***		-0.000	-0.001	0.004	-0.001	0.000	0.001	-0.000
		(0.001)		(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.002)	(0.001)
Married		0.025***		0.010*	0.010	0.011	0.005	0.016*	0.003	0.011*
		(0.002)		(0.005)	(0.005)	(0.009)	(0.006)	(0.008)	(0.018)	(0.005)
Individual FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter*Year FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (Dep. Var)	0.923	0.923	0.935	0.935	0.940	0.908	0.950	0.917	0.952	0.933
Observations	149,333	149,333	136,059	136,059	113,461	22,595	75,173	60,729	13,471	122,588
Unique Indiv	44,134	44,134	30,860	30,860	25,534	5,326	17,064	13,892	3,075	27,785
R^2	0.006	0.010	0.389	0.390	0.389	0.386	0.385	0.389	0.366	0.391

NOTE: Standard errors clustered at the individual level are in parentheses.
*p < 0.05, ** p < 0.01, *** p < 0.001

Table 8. Regression Results Model 4: % For-Profit Institutions

	Base		Base FE		Male	Female	White	Non-White	Combat Arms	Non-Combat Arms
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
After Policy	0.023***	0.018***								
	(0.004)	(0.005)								
E3	-0.117***	-0.094***								
	(0.010)	(0.011)								
After Policy x E3	0.011	0.016	0.021***	0.021***	0.019**	0.020	0.024**	0.018*	0.075	0.020***
	(0.010)	(0.010)	(0.006)	(0.006)	(0.006)	(0.014)	(0.007)	(0.009)	(0.041)	(0.006)
Average TIS		0.003***		0.002	0.009	-0.068	-0.004	0.016	0.002	0.002
		(0.001)		(0.006)	(0.006)	(0.051)	(0.007)	(0.018)	(0.006)	(0.008)
Average TIG		-0.003		0.002**	0.003**	0.001	0.003**	0.002	0.002	0.003**
		(0.002)		(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.003)	(0.001)
Married		0.013*		0.004	0.005	0.002	0.006	0.002	0.007	0.004
		(0.006)		(0.005)	(0.006)	(0.009)	(0.006)	(0.007)	(0.022)	(0.005)
Individual FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter*Year FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (Dep. Var)	0.362	0.362	0.367	0.367	0.375	0.327	0.368	0.365	0.438	0.359
Observations	149,333	149,333	136,059	136,059	113,461	22,595	75,173	60,729	13,471	122,588
Unique Indiv	44,134	44,134	30,860	30,860	25,534	5,326	17,064	13,892	3,075	27,785
R^2	0.009	0.010	0.938	0.938	0.941	0.926	0.944	0.933	0.946	0.937

NOTE: Standard errors clustered at the individual level are in parentheses.
*p < 0.05, ** p < 0.01, *** p < 0.001

4. Comparing E3–E6

Table 9 displays the results of the estimation of Models 5, which compares E3s, E4s, and E5s to E6s. The difference in difference estimates suggests the total courses taken each quarter by a treated E3 Marine increased by 0.225 courses, against a mean of 0.324. This translates into an effect size of 0.31. The difference in difference estimates suggests the total successful courses taken each quarter by a treated E3 Marine increased by 0.205 courses, against a mean of 0.298. This translates into an effect size of 0.29. The difference in difference estimates suggests the success rate each quarter by a treated E3 Marine decreased by 3.1 percentage points, against a mean of 92.5 percent. This translates into an effect size of 0.13. The difference in difference estimates suggests the percentage of for-profit institutions each quarter by a treated E3 Marine increased by 0.4 percentage points, against a mean of 35.7 percent, this translates into an effect size of 0.008. The difference in difference estimates for percentage of for-profit institutions was not statistically significant.

The policy effect on NCOs (E4 and E5) success rate is small-and-negative to even positive compared to E6s. This can be interpreted in two ways. First going to school is getting easier for everyone. With the rise in for-profit institutions, the goal of higher education is shifting from a primary mission of educating students to a primary mission of making customers happy. A for-profit institution will be able to generate more profit if more students are passing and taking more courses. If this is in fact true, the zero to small negative impact on E3s should be evaluated relative to the other ranks, where grades in general seem to be going up. The second interpretation is that, as the junior E3s took courses and failed early they do not take additional classes. This would indicate that only the successful E3s continue to take courses.

Table 9. Regression Results Model 5: E3–E6 Comparison

	Total Courses		Total Successful Courses		Success Rate		% For-Profit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After Policy	-0.079***		-0.076***		-0.008*		-0.015	
	(0.007)		(0.007)		(0.004)		(0.010)	
E3	-0.167***		-0.156***		-0.021***		-0.063***	
	(0.006)		(0.006)		(0.005)		(0.012)	
After Policy x E3	0.232***	0.225***	0.208***	0.205***	-0.007	-0.032***	-0.017	-0.004
	(0.008)	(0.008)	(0.008)	(0.008)	(0.006)	(0.009)	(0.013)	(0.009)
E4	-0.081***		-0.081***		-0.019***		-0.084***	
	(0.006)		(0.006)		(0.004)		(0.010)	
After Policy x E4	0.016*	-0.004	0.022**	-0.003	0.029***	-0.003	0.048***	0.024**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.005)	(0.007)	(0.011)	(0.008)
E5	0.011*		0.013*		0.011***		-0.019	
	(0.005)		(0.005)		(0.003)		(0.010)	
After Policy x E5	0.007	0.019**	0.010	0.017*	0.010*	0.011	0.043***	0.005
	(0.007)	(0.007)	(0.007)	(0.007)	(0.004)	(0.006)	(0.011)	(0.007)
Individual FE	No	Yes	No	Yes	No	Yes	No	Yes
Quarter*Year FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean (Dep. Var)	0.324	0.324	0.298	0.298	0.911	0.925	0.352	0.357
Observations	498,394	498,108	498,394	498,108	103,786	92,067	103,786	92,067
Unique Indiv	35,954	35,668	35,954	35,668	34,593	22,874	34,593	22,874
R^2	0.009	0.179	0.009	0.188	0.005	0.400	0.015	0.938

NOTE: Standard errors clustered at the individual level are in parentheses.
*p < 0.05, ** p < 0.01, *** p < 0.001

C. LIMITATIONS

There are two potential limitations in this study that could be addressed with future research. First, the period of study is impacted by both the length of time since the policy change and the COVID-19 pandemic. This study is being conducted in the fall of 2021, providing ten quarter years' worth of data since the policy change, but only one full academic year. While this is appropriate for this study, there are potential long-term effects of the policy that will only become apparent looking at the academic year as a whole, and this requires more time to elapse after the policy. Additionally, MARADMIN 150/19 was published in March 2019 and nearly a year to the day later the World Health Organization declared COVID-19 a pandemic (World Health Organization, 2020). The response to COVID-19 involved a significant shift to telework and distance learning education along with impacts to available childcare. Also, COVID-19 presents unique stressors for individuals that have the potential to impact course success and the ability to take courses. The impact of COVID-19 on education is beyond the scope of this thesis and suffers similar limitations related to a short observation period. The results of this study do suggest that COVID-19 has limited impact on TA users, as the rate of TA usage did not significantly change for officers, SNCOs, and NCOs, but stay at home orders could have positively impacted the increased TA utilization of E3s. It is recommended that future research reevaluate these finding using a longer observation period and the ability to account for the impacts of COVID-19, as research in that field becomes available.

The second potential limitation is selection bias within the dataset. Marines present in the dataset all used TA at least once during the time period. This limits the interpretation of the results to a treatment effect on the treated meaning the results can only be compared relative to other TA users. Future studies should use data with a control group of non-TA users to develop observations on the attitudes towards TA from Marines as a whole rather than those already motivated enough to use TA. There is significant effort involved in applying for and successfully using TA and attitudes of TA users may not be applicable to the Marine Corps as a whole. As officer judgement does play a significant role in the TA

approval process, it may be possible for future studies to conduct a randomized control trial on TA usage, which would mitigate selection bias to the maximum extent.

VI. SUMMARY AND CONCLUSIONS

A. SUMMARY AND ANALYSIS

In the five years covered by this thesis, the Marine Corps spent nearly $200 million on TA. As General Berger stated in the CPG, "We should use money like a focused weapon, and aim it at the exact individual we need" (Berger, 2019, p. 7). This thesis sought to answer the questions, what effect did the MARADMIN 150/19 policy change have on TA usage take up rate, the type of individual TA users, and the type of institution used for TA? The primary population of interest for this analysis is Marines at the rank of E3 who were the most effected by the policy change with some senior E3s eligible for TA prior to the policy change, but all E3s are eligible for TA after the policy change. Analysis of the TFDW, NCMIS, and IPEDS data indicate that the 2019 policy change did have an effect on all three. Specifically, E3s saw an increase of 0.257 more total classes per quarter after the 2019 policy change compared to other TA users. This accounted for an approximate increase of 13,125 additional TA courses. Based on these results, the policy did have a positive effect on TA usage. By changing the eligibility requirements for TA, the Marine Corps saw an increase in TA usage meaning those individuals who were previously ineligible for TA did want to use TA. Additionally, E3 TA users have a four-percentage point lower rate of success per quarter and a 2.1 percentage point higher rate of for-profit usage after the 2019 policy change. The results also indicate a confirmation of the traditional TA user as described by Buddin and Kapur (2002) with an increase in both female and service support PMOS usage for E3s after the policy change. This information can be used by the Marine Corps to develop relationships with higher education institutions that support academic programs directly related to service support Marines to maximize the benefits of higher education in relation to Marines' primary military duties. The Marine Corps can also explore ways to attract and incentivize combat arms PMOS Marines to use TA which will broaden the benefits of higher education to the Marine Corps at large.

B. CONCLUSIONS

Increased access to higher education is indeed a positive outcome. TA is a unique program that offers Marines the ability to complete higher education while on active duty. Many Marines have benefited from the TA program including the author of this thesis. The overall characterization of the 2019 policy effect is positive from the standpoint that more Marines were eligible and took advantage of TA. The results indicating a decrease in success rate and an increase in for-profit institution usage do present areas for potential improvement to increase the effectiveness of the TA program. To truly use money as a targeted weapon to improve Marines' education, future efforts should be directed at both Marine preparedness for higher education and academic counseling on types of higher education institutions. As the literature review presents, for-profit institutions not only target military students to capitalize on government funding but the education received from these institutions is inferior and can have long term negative effects on participants in the form of lower education outcomes and increased debt (Baird et al., 2019; Cellini & Turner, 2019; Deming et al., 2012).

C. RECOMMENDATIONS FOR FOLLOW-ON RESEARCH

Due to time and data constraints, this analysis was not able to account for all limitations. It is recommended that future research in this topic area look at the following aspects of TA. First, follow on research should be conducted on a longer time period. This thesis was limited by the elapsed time since the policy implementation. A longer period of study would be able to look at the impact of the policy on retention and promotion as cohorts who join the Marine Corps after the policy change reach those career milestones. It is also recommended that researchers reevaluate the results of this thesis with a longer time period to determine if the policy effects observed are long-term effects or merely impacted by the COVID-19 pandemic. Second, follow on research should look at the potential survivor effect of TA users, as in junior Marines who utilize TA and fail and then never use TA again. This potentially increases TA success at higher ranks as, only those successful early continue to use TA throughout their career. An additional recommendation for future study would be to compare TA utilization with the other services. The U.S. Navy

increased the time in service requirement from two to three years with NAVADMIN 214/21 (USN, 2021). The Navy policy change with respect to increasing time in service, did not include a grandfather clause meaning NAVY TA users that started at the two-year mark have to wait until they reach three years of time in service. It would be informative to see how many individuals decided to pick up where they left off as well as to compare the effects of the opposing policies within the Navy and Marine Corps with respect to success and for-profit utilization.

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LIST OF REFERENCES

Absher, J. (2021, September 30). *Military tuition assistance*. Military.Com. https://www.military.com/education/money-for-school/tuition-assistance-ta-program-overview.html

Anderson, C. L. (1991). *The tuition assistance program in the military*. Report to U.S. Army Forces Command.

Bacolod, M., Mehay, S., & Pema, E. (2018). Who succeeds in distance learning? Evidence from quantile panel data estimation. *Southern Economic Journal*, *84*(4), 1129–1145. https://doi.org/10.1002/soej.12264

Baird, M., Kofoed, M., Miller, T., & Wenger, J. (2019). *Veteran educators or for-profiteers? Tuition responses to changes in the Post 9/11 GI Bill* (SSRN Scholarly Paper ID 3174763). Social Science Research Network. https://doi.org/10.2139/ssrn.3174763

Barnard, D. L., & Zardeskas, E. F. (2007). *Voluntary education of enlisted service members an analysis of program effects on retention and other outcome measures*. Monterey, California Naval Postgraduate School. http://hdl.handle.net/10945/3336

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis with special reference to education, first edition*. NBER. https://www.nber.org/books-and-chapters/human-capital-theoretical-and-empirical-analysis-special-reference-education-first-edition

Berger, D. H. (2019). *Commandant's planning guidance*. United States Marine Corps. https://www.hqmc.marines.mil/Portals/142/Docs/%2038th%20Commandant%27s%20Planning%20Guidance_2019.pdf?ver=2019-07-16-200152-700

Buddin, R., & Kapur, K. (2002). *Tuition assistance usage and first-term military retention*. https://www.rand.org/pubs/monograph_reports/MR1295.html

Cellini, S. R., & Turner, N. (2019). Gainfully employed? Assessing the employment and earnings of for-profit college students using administrative data. *The Journal of Human Resources*, *54*(2), 342–370. https://doi.org/10.3368/jhr.54.2.1016.8302R1

Deming, D. J., Goldin, C. D., & Katz, L. F. (2012). The for-profit postsecondary school sector: Nimble critters or agile predators? *The Journal of Economic Perspectives*, *26*(1), 139–163. https://doi.org/10.1257/jep.26.1.139

Department of Defense [DOD]. (2007). *Voluntary Education Programs for Military Personnel* (DOD Directive 1322.08E). https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/132208p.pdf

Department of Defense [DOD]. (2020a). *Voluntary Education Programs* (DODI 1322.25). https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/132225p.pdf

Department of Defense [DOD]. (2020b). *Voluntary Education Programs in Overseas Areas* (DODI 1322.19). https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/132219p.pdf

Flaherty, C. N. (2007). *The effect of tuition reimbursement on turnover: A case study analysis*. National Bureau of Economic Research.

Haeussler-Warnick, E. M. (2013). *College and university recruiting of "employees who study" with access to employer tuition assistance benefits programs: A qualitative inquiry*. http://hdl.handle.net/2346/58437

Hegji, A. (2021). The 90/10 Rule under HEA Title IV: Background and Issues. CRS Report R46773, Version 1. In *Congressional Research Service*. Congressional Research Service. https://eric.ed.gov/?id=ED614219

Marine Corps Community Services. (2016). *Voluntary Education*. Marine Corps Community. https://usmc-mccs.org/services/education/voluntary-education/

MCCS Quantico. (2016). *Educational Counseling*. https://www.quantico.usmc-mccs.org/index.cfm/marine-family/personal-professional-development/voluntary-education-center-vec/educational-counseling/?mobileFormat=false

Mehay, S., & Pema, E. (2009). *The impact of the Navy's Tuition Assistance Program on the retention and promotion of first-term sailors*. Monterey, California Naval Postgraduate School.

Military OneSource. (2021). *2020 Demographics Profile*. Military OneSource. https://www.militaryonesource.mil/data-research-and-statistics/military-community-demographics/2020-demographics-profile/

TA Decide. (2021). *FY18-20 Source Data_TA DECIDE 14Apr2021* [DOD TA user summary statistics for FY18-20]. Tuition Assistance (TA) DECIDE. https://www.dodmou.com/TADECIDE/

United States Marine Corps [USMC]. (2000). *Marine Corps Individual Records Administration Manual* (Marine Corps Order MCO P1070.12K w/Ch 1). https://www.marines.mil/Portals/1/Publications/MCO%20P1070.12K%20W%20CH%201.pdf

United States Marine Corps [USMC]. (2003). *Marine Corps Tuition Assistance Funding Policy* (MARADMIN No. 461/03). https://www.marines.mil/News/Messages/Messages-Display/Article/890936/marine-corps-tuition-assistance-funding-policy/

United States Marine Corps [USMC]. (2010). *Marine Corps Lifelong Learning Program* (MCO 1560.25). https://www.marines.mil/portals/1/Publications/MCO%201560.25.pdf?ver=2012-10-11-163807-427

United States Marine Corps [USMC]. (2018). *FY18 Tuition Assistance Guidelines Update* (MARADMIN No. 255/18). https://www.marines.mil/News/Messages/Messages-Display/Article/1514091/fy18-tuition-assistance-guidelines-update/

United States Marine Corps [USMC]. (2019a). *Tuition Assistance Guidance Update* (MARADMIN No. 150/19). https://www.marines.mil/News/Messages/Messages-Display/Article/1781291/tuition-assistance-guidelines-update/

United States Marine Corps [USMC]. (2019b). *Tuition Assistance Guidelines Update* (MARADMIN No. 218/19). https://www.marines.mil/News/Messages/MARADMINS/Article/1805873/tuition-assistance-guidelines-update/

United States Marine Corps [USMC]. (2020a). *Force design 2030*. Department of the Navy, United States Marine Corps.

United States Marine Corps [USMC]. (2020b). *MCDP 7 Learning*. U.S. Marine Corps. https://www.marines.mil/News/Publications/MCPEL/Electronic-Library-Display/Article/2129863/mcdp-7/

United States Marine Corps [USMC]. (2021). *Talent Management 2030*. Department of the Navy, United States Marine Corps. https://www.hqmc.marines.mil/Portals/142/Users/183/35/4535/Talent%20Management%202030_November%202021.pdf?ver=E88HXGUdUQoiB-edNPKOaA%3d%3d

United States Navy. (2021). *Tuition Assistance Policy Update* (NAVADMIN No. 214/21). https://www.mynavyhr.navy.mil/Portals/55/Messages/NAVADMIN/NAV2021/NAV21214.txt

U.S. Department of Veterans Affairs. (2013, November 21). *History and Timeline—Education and Training*. https://www.benefits.va.gov/gibill/history.asp

U.S. Department of Veterans Affairs. (2021). *VBA Annual Benefits Report Fiscal Year 2020*. https://www.benefits.va.gov/REPORTS/abr/

Watkins, J. P., & Seidelman, J. E. (2017). A Veblenian analysis of for-profit universities. *Journal of Economic Issues (Taylor & Francis Ltd)*, *51*(2), 366–374. https://doi.org/10.1080/00213624.2017.1320910

World Health Organization. (2020, June 29). *Listings of WHO's response to COVID-19*. https://www.who.int/news/item/29-06-2020-covidtimeline

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