Voluntary Military Education Programs: Literature, Data Analysis, Outcomes, and Service-Level Differences

Compiled by Lauren Malone

Abstract

Over the past five years, CNA has conducted studies in support of Department of Defense Voluntary Education, with a specific focus on evaluating Servicemembers' use of the Tuition Assistance (TA) program, their associated educational outcomes, and potential changes to TA policies and practices. This report is a compilation of four CNA studies; it includes Service- and education-sector–level comparisons in student enrollment, cost, TA use, and positive TA outcomes (e.g., attaining a degree or having a high course completion rate). One of our primary findings is that TA users can expect a more successful transition to civilian life, though some of these benefits (e.g., improved employment prospects) can be reaped only with a degree. We also find that, despite the relatively poor outcomes at private for-profit institutions, TA users increasingly enroll in them. Our analysis also reveals which Servicemembers—based on military and demographic characteristics—are most likely to be successful TA users. We identify those subpopulations who are among the Services' more active TA users but also the least likely to experience positive TA outcomes, thus highlighting groups that might benefit from targeted counseling efforts. Finally, we make recommendations to help equalize access to the TA program across the Services and increase all TA users' likelihood of completing courses and ultimately attaining degrees.

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Preface

Background

Over the past five years, CNA has conducted multiple studies in support of Department of Defense (DOD) Voluntary Education, with a specific focus on evaluating Servicemembers' use of the Tuition Assistance (TA) program, their associated educational outcomes, and potential changes to TA policies and practices. This report is a compilation of the four previously released CNA documents:

1. A literature review
2. A discussion of average TA-related statistics, including how they vary by Service and education sector
3. An empirical analysis of the military and demographic characteristics that are associated with TA use and positive educational outcomes
4. An exploration of why there are Service-level differences in TA use and TA outcomes

Here, we explain the underlying motivation for these studies, summarize their top-level findings, and discuss how each of them led to the next, thus providing a comprehensive review of DOD's TA program.

The DOD provides education benefits to Servicemembers and their spouses. Two such benefits are the TA program, which is designed to decrease the financial burden of higher education for military members, and the My Career Advancement Account (MyCAA) scholarship program, which is a workforce development program designed to assist eligible military spouses in pursuing training, licenses, credentials, certifications, and associate degrees in support of developing portable employment and careers. To address the dearth of information on the educational and financial outcomes of TA and MyCAA users, Congress mandated in the 2014 DOD Appropriations Bill a study to document the aggregate graduation rates, financial indebtedness, and loan default rates of these military families.[1]

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[1] Inquiries regarding student debt and income levels were ultimately left unanswered because of an inability to acquire data from the Department of Education or the Social Security Administration.

Literature review findings

In addressing this congressional requirement, CNA first conducted a literature review. Because research on the TA and MyCAA programs was sparse, we also explored the civilian higher education literature on tuition reimbursement, graduation rates, student debt, and loan default rates. Not surprisingly, the literature revealed that attaining a college degree has numerous benefits—primarily the acquired skills, acquired networks, and signals of intellectual ability that a college degree provides. Among the most commonly cited benefits are an improved quality of life, higher earnings, and lower unemployment rates. For most, college is financially worthwhile because it results in increased earnings potential. Importantly, however, attending college is not always worth the cost. This is the case for students who do not complete a degree (nonattainment), who fail to find a job commensurate with their ability (underemployment), and who take on more debt than their post-college income warrants (excessive debt). Since the 1960s, the variance in college graduates' earnings has increased, as has the variance in college debt. As a result, college has become more financially worthwhile for some (who can achieve relatively higher earnings) but no longer financially worthwhile for others (who will incur relatively higher debt). In other words, although the earnings potential of college graduates has increased, so has the probability that a college degree will not be worth the (now higher) cost.

A college education also may fail to be worthwhile if pursued at a private for-profit institution. Students in the private for-profit sector fare worse than students in other education sectors. For example, these students are nearly five times less likely to graduate, usually have substantially more debt, and are more likely to default on that debt than students attending school in other sectors (i.e., the public or private not-for-profit sectors). Importantly, private for-profit institutions are more popular among TA users than civilian college students, and TA users spend more at private for-profits than at public or private not-for-profit institutions. Private for-profits represent slightly less than half of TA users (48 percent), but more than half of TA funds (53 percent). The popularity of private for-profits among TA users is a concern because of their substantially higher nonattainment rates and higher proportions of students and alumni with excessive debt.

Servicemembers are at increased risk that their college investment—and subsequent TA use—will not pay off. This is both because they are nontraditional students and because they are more likely than their civilian counterparts to attend private for-profit schools. Most of the literature focuses on traditional students who attend college full-time and in-person, live on campus, and generally enroll for the first time before age 20. TA users, however, enroll part-time, are frequently distance learners, and serve full-time on active duty while going to college—making them a type of nontraditional student. On average, nontraditional students are less likely to graduate with a bachelor's degree. In addition, TA users are more likely to be

older when they first attend college, and older students are less likely to graduate. Military students find two aspects of private for-profits especially appealing: distance learning and flexible scheduling. Private for-profit institutions offer the greatest opportunities for distance learning, and the structure of their degree programs makes it easier to work full-time and be a full-time student. For example, unique course schedules allow students to attend classes only once a week and maintain full-time enrollment.

TA and MyCAA summary statistics

Due to its focus on traditional students, the literature review alone was not sufficient to determine whether (and to what extent) Servicemembers and military spouses are benefiting from TA and MyCAA, owing to a lack of prior research related specifically to TA and MyCAA and to recent changes to both programs. In addition, the question of whether Servicemembers and military spouses are benefiting from TA and MyCAA is largely an empirical one. Thus, in our second report, we presented statistics on TA and MyCAA users' outcomes. Specifically, we used individual-level data provided by each of the Services and Force Education and Training to calculate the TA and MyCAA educational outcome statistics of Servicemembers and their spouses, including how they vary by Service and by institutional sector (public, private not-for-profit, or private for-profit). These statistics reveal that:

- The Army had the highest number of TA participants, followed by the Air Force, Navy, and Marine Corps, coinciding with, but not proportional to, the size of each Service.

- TA costs were fairly similar across the four Services, although generally higher at both types of private institutions (profit and not-for-profit) than at public institutions.

- In recent years, participants have taken fewer courses at public institutions than at both types of private institutions, and first-year TA and MyCAA users took fewer courses than the average users.

- Similar findings emerge in our analysis of the number of credits earned per participant, the number of courses completed, course completion rates, the number of degrees completed, and the graduation rate. That is—all are higher at both types of private institutions than at public institutions and are lower among first-year users than their later-year counterparts.

- Course completion rates are slightly higher in the Air Force and Marine Corps than in the Army or Navy; in fact, course completion rates were the highest in the Air Force in each educational sector.

Empirical determinants of TA use and TA outcomes

These findings, however, were based only on summary statistics and did not control for differences in TA users' characteristics or the quality of institutions attended. In our third report, we filled that gap. We conducted empirical analysis to determine the military and demographic characteristics that are associated with TA use and identify the positive educational outcomes from TA use (e.g., attaining any degree, attaining a bachelor's degree or higher, attaining a high course completion rate). This allowed us to analyze the potential reasons behind the trends and differences observed. As previously noted, off-duty education is not without risks. Prior research has demonstrated that engagement in the education system can have adverse effects on those who do not ultimately attain a degree, are underemployed, or accrue substantial debt. With these risks in mind, we focused on identifying subpopulations that could benefit from targeted counseling to ensure that they are using TA efficiently to achieve their desired educational goals—namely, those who are using TA at higher rates than their counterparts but are among those who are less likely to experience positive TA outcomes.

Educational sector is an important determinant of positive TA outcomes. Enlisted Service-members who take most of their TA-funded courses in the private for-profit and private not-for-profit sectors generally outperform (both in degree attainment and course completion) those who take most of their courses in the public sector. This deviates from the trends found in the civilian literature, which show that students in the private for-profit sector are less likely to graduate and have lower course completion rates.

Servicemembers who are more likely to *use* TA but less likely to experience positive TA outcomes include the following groups:

- Those in the E1–E3 paygrades
- Enlisted female Servicemembers with three or more dependents
- Black Servicemembers (both officers and enlisted)
- Hispanic officers
- Servicemembers taking most of their courses in the public sector

We found that TA use among these Servicemembers is high, suggesting that they desire additional education but could use guidance in navigating the educational system and balancing their educational and other goals.

Finally, this paper revealed sizable and significant Service-level differences. We found, for example, that enlisted Airmen and Sailors are among the most likely to use TA and to earn bachelor's degrees or higher. In addition, our results suggested that Navy and Marine Corps officers are the most likely to use TA, while Air Force and Marine Corps officers are the most likely to consecutively use TA. Course completion rates are slightly higher in the Air Force and Marine Corps than in the Army or Navy. These differences are likely influenced by Service culture and perhaps variation in the types of people who access into each of the four Services. If they differ, on average, in terms of their long-term goals and motivations, this could influence their proclivity for TA use. Determining the reasons for these Service-level differences was beyond the scope of this research effort but ultimately led to a follow-on study—the results of which are summarized in the fourth and final report in this document.

Understanding Service-level differences

In this report, to better understand the driving factors behind Service-level differences in TA use and outcomes, CNA evaluated Service-level differences in continuing education incentives and motivations, TA access, and TA awareness. This qualitative study combined a policy review, discussions with subject matter experts (SMEs), and focus groups. The ultimate objective was to equalize access and awareness across the Services while minimizing the risks of course and degree noncompletion. Our findings revealed that the primary driver of these differences is likely the variation across the Services in TA policy, TA understanding, and occupational responsibilities and operational tempo, as well as the variation in support from senior leaders and immediate supervisors. The most important policy differences are those that limit Servicemembers' TA use, including when they can first use TA. Prominent among these are time-in-service restrictions; for example, from September 2013 through April 2019, the Marine Corps required Marines to have served two years before using TA, and the Navy implemented the same restriction in October 2019.

We also found substantial variation in whether Servicemembers were aware of the TA benefit at enlistment and in when and how they reported learning about the TA program. With the exception of Airmen, who primarily learn about TA in a training session, most Servicemembers learn about the program from mentors or by word of mouth. Differences in TA use across the Services may be significantly influenced by leaders' understanding of the TA program and (perhaps more importantly) by their TA buy-in. Notably, in the Army and Marine Corps, Servicemembers found leaders to be less supportive of TA use. Army and Marine Corps SMEs noted that some commanders do not consider the pursuit of civilian education to be mission relevant and therefore do not encourage TA use. Relatedly, when asked about command approval, roughly a third of Army and Marine Corps focus group respondents indicated that

obtaining command approval was a challenge, whereas no Navy or Air Force midgrade user participants said that it was an issue.

Among the primary recommendations emerging from this analysis were that DOD should:

- Standardize the content and delivery of TA messaging across the Services to eliminate misinformation and ensure that all Servicemembers learn about TA early in their careers.
- Mandate that all commands include TA training as part of in-processing, ideally by having education counselors brief the units.
- Provide junior Servicemembers and first-time TA users with guidance on how to effectively juggle TA use with other responsibilities and how to use TA while deployed.
- Work to ensure leadership buy-in across commands, perhaps by implementing standardized leadership training on the benefits—to the individual Servicemember as well as to the command—of increased educational attainment.

Implementing these recommendations should help equalize Servicemembers' access to the TA program across the Services and increase all TA users' likelihood of successfully completing courses and ultimately attaining degrees.

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Part 1: Tracking Outcomes of Voluntary Military Education Programs: A Literature Review

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Executive Summary

The Department of Defense (DOD) provides education benefits to Servicemembers and their spouses to decrease the financial burden of higher education for military Servicemembers and to support the development of portable employment and careers for military spouses. The Tuition Assistance (TA) program provides up to $250 per semester credit hour (or equivalent) with an annual maximum of $4,500 in tuition to active component and some reserve component Servicemembers. TA can be used for certificates, as well as for associate, bachelor's, and graduate degrees. The My Career Advancement Account (MyCAA) scholarship program is a workforce development program that provides a 3-year maximum of $4,000 of financial assistance to eligible military spouses who are pursuing a license, certification, or associate degree in a portable career field or occupation.

Although there is evidence that, in general, the TA program can be useful in recruiting higher quality personnel, the evidence on TA's retention benefits is mixed. And, although it is possible that the MyCAA scholarship program for military spouses affects Servicemember recruitment and retention, scant evidence on these effects exists. In addition, there is little current research on the educational and financial outcomes of TA and MyCAA users. This dearth of information prompted Congress to mandate, in the 2014 DOD Appropriations Bill, a study to track the aggregate graduation rates, financial indebtedness, and loan default rates of TA and MyCAA users.[2] The Principal Director of Military Community and Family Policy asked CNA to conduct this congressionally mandated study.

In this preliminary report, we summarize the TA and MyCAA literature—including research on these programs' use and outcomes. Because few studies have focused on these programs, we also explore the civilian higher education literature to better understand potential educational outcomes for TA and MyCAA users. In doing so, this report provides the relevant background information needed for the quantitative portion of this study, in which we will collect and analyze data on educational outcomes of TA and MyCAA users.

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[2] Data needed to determine financial indebtedness and loan default rates are not available.

In general, college graduates experience numerous benefits—namely, increased earnings potential, higher employment rates, and an increased quality of life. Therefore, college usually is worth its cost, except possibly for those who:

- Fail to receive their degree (nonattainers)

- Fail to find a job commensurate with their ability (underemployment)

- Take on more debt than their future income warrants (excessive debt)

We expect that the aforementioned reasons why college may fail to be worth its cost for civilian students also will apply to TA and MyCAA users.

There is important and substantive variation across educational sectors in students' outcomes; students in the private for-profit sector generally have the poorest outcomes (e.g., lowest graduation rates), although these schools also tend to have open enrollment policies that may contribute to students who are less academically prepared at time of enrollment. Private for-profit institutions are more popular among TA users than civilian college students, and TA users spend more at private for-profits than at public or private not-for-profit institutions. Private for-profits represent slightly less than half of TA users (48 percent), but more than half of TA funds (53 percent). The popularity of private for-profits among TA users is a concern because they have substantially higher nonattainment rates and higher proportions of students and alumni with excessive debt. Specifically:

- Nonattainment rates at private for-profits are 85.2 percent. (For comparison, nonattainment rates at public and private not-for-profit institutions are 38.5 percent and 29.3 percent, respectively.)

- Mean debt of bachelor's degree recipients at private for-profits is $45,042. (For comparison, mean debt of bachelor's degree recipients at public and private not-for-profit institutions is $12,922 and $18,700, respectively.)

It remains to be seen whether these differential outcomes hold for TA and MyCAA users, who may differ from other students at these institutions in meaningful ways. And private for-profits may offer TA and MyCAA users something that is not offered at many public or private not-for-profit institutions: distance-learning options and the ability to pursue courses on a flexible schedule (even while working full-time). The private for-profits have tailored their education services around being able to provide this flexibility for their students, which may make them particularly attractive to TA and MyCAA users.

For several reasons, it is possible that TA users will be less likely to graduate from college (while using TA) than typical civilian college students and, therefore, also less likely to

experience its associated benefits. First, TA is disproportionately used at private for-profits. The students of private for-profit institutions are substantially less likely to graduate with bachelor's degrees compared with those in other education sectors, although this could related to student characteristics. Second, TA and MyCAA users are nontraditional students: they enroll part-time, are older at enrollment than traditional students, and require distance-learning options. A nontraditional student is less likely (than the average student) to graduate with a bachelor's degree. Third, in general, compared with society at large, Servicemembers are more likely to be racial/ethnic minorities. Racial/ethnic minorities are less likely (on average) to graduate with bachelor's degrees. Although these findings suggest that TA users may be less likely to graduate with bachelor's degrees than other, more traditional college students, no previous studies have determined whether this is actually the case. The empirical phase of this study will attempt to answer this question.

Introduction

The Tuition Assistance (TA) program was established in the post-World War II era, enabling Servicemembers to pursue college at a subsidized rate while still in the military [1-3]. In the early 1990s, there was not a consistent TA benefit for Servicemembers throughout the Department of Defense (DOD) [4]. So, during the 1990s, there was a concerted effort to have each of the Services offer the same level of TA benefits [5]. In the late 1990s, TA was capped at $187.50 per semester hour with an annual ceiling of $3,500 [2, 5]. In 2003, TA benefits increased to their current level: up to $250 per semester hour[3] with a maximum of $4,500 in tuition per year.[4]

The TA program has persisted since its inception because of its value both to the Services and to the Servicemembers who use it. For the Services, TA can aid in recruiting efforts (e.g., see [6]). Its usefulness as a retention tool is still debated. Similarly, many aspects of how Servicemembers benefit from TA are still being explored. TA has been found, however, to facilitate the transition to civilian life and to reduce the need for student loans. Specifically, TA offers access to the benefits of higher education without Servicemembers having to acquire the typical levels of student debt to accomplish their educational goals.

The My Career Advancement Account (MyCAA) scholarship program enables its users to earn licenses, certifications, or associate degrees in portable career fields and occupations without needing to afford their costs. The current version of MyCAA dates to October 2010. This program allows the spouses of junior (paygrades E1-E5, W1-W2, and O1-O2) Servicemembers serving on active-duty Title 10 orders to pursue job training and skills that they can take with them as they move with their spouses from one duty station to another. The program provides a three-year maximum of $4,000, capped at $2,000 within a fiscal year (although this cap may be waived) [7].

Although both TA and MyCAA enable their users—who might otherwise not have pursued postsecondary education—to do so, there is little prior research documenting precisely how individual Servicemembers and their spouses benefit from TA and MyCAA. Similarly, there is no known literature that examines the educational and

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[3] Unless otherwise noted, "per semester hour" encompasses the credit-hour equivalency for quarter hours or other credit-hour types.

[4] In many cases, educational institutions forgo all costs that exceed the cap of $250 per semester credit hour.

financial outcomes of TA and MyCAA users.[5] This makes it virtually impossible to calculate TA's and MyCAA's long-term benefits for Servicemembers and their families. Because of the lack of formal research, Congress has recently requested information on the outcomes (e.g., graduation rates and debt incurred) of TA and MyCAA users [9]. In particular, the 2014 Appropriations Bill mandated a study calculating graduation rates, student debt, and student loan default rates for TA and MyCAA users. Congress requested these measures by education sector (public, private not-for-profit, and private for-profit) because the measures could differ substantively depending on where Servicemembers and/or their spouses use TA and MyCAA.

DoD's Military Community and Family Policy Office, which managed both TA and MyCAA at the time, asked CNA to conduct a study that fulfills the 2014 Appropriations Bill requirements.[6] This literature review is an initial report in this larger effort and provides background for the quantitative analysis requested by Congress. Due to the lack of research on the TA and MyCAA programs, we must hypothesize about the outcomes of these programs for Servicemembers and spouses based on what has been found in the civilian higher education literature regarding outcomes for college attendees and graduates. We therefore rely on the existing literature, which mostly focuses on the outcomes of traditional students. TA and MyCAA users, however, are nontraditional students (who may enroll part-time, have full-time jobs, rely solely on distance learning, or be military-connected). Where possible, we use the experiences of nontraditional students to better inform our understanding of how TA and MyCAA users experience and benefit from their college educations.

The remainder of this report is organized as follows. We begin by providing background information on both the TA and MyCAA programs. We then review how these programs may have benefited the Services, the current level of TA expenditures by Service, and the recent policy changes affecting TA and MyCAA users. We go on to discuss the benefits and potential costs of a college education. Whether a college education is (financially) worthwhile will depend largely on whether a degree is ultimately obtained. Thus, we also review the existing literature on students' experiences and outcomes, to include graduation rates and the financial implications of college attendance (tuition, student loans, and, for some, defaulting on those loans). We separately address the

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[5] Indeed, a 2012 Government Accountability Office (GAO) study noted that DoD was not able to measure the effectiveness of MyCAA and other spouse employment programs and had only a few performance measures for these programs [8].

[6] In January 2016, management of the TA program (as well as other Voluntary Education (VolEd) programs) migrated to Force Education and Training. The Military Community and Family Policy Office still oversees MyCAA.

experiences and outcomes of students in the for-profit education sector since this sector has risen in popularity among TA users and has been the subject of much public scrutiny. In the final section, we use the lessons learned regarding traditional students to draw conclusions for TA and MyCAA users.

TA and MyCAA

The TA and MyCAA programs provide funds for active component and some reserve component Servicemembers and their spouses to take college courses. The TA program offers access to the benefits of higher education without Servicemembers having to acquire the typical levels of student debt to complete their education goals. The MyCAA scholarship program is a workforce development program that provides financial assistance to eligible military spouses who are pursuing a license, certification, or associate degree in a portable career field and occupation. This section documents the eligibility requirements of both programs. We also review the programs' recruiting and retention effects, the Services' expenditures on each program, and the recent rise in students using TA to attend for-profit institutions.[7] We conclude the section by reviewing some recent policy changes that have the potential to affect the experiences of TA and MyCAA users.

TA benefits and eligibility

All Services provide the same TA benefits: up to $250 per semester credit hour up to a maximum of $4,500 in tuition per fiscal year (FY). Historically, TA users have pursued associate or bachelor's degrees, but TA also can be used for coursework to obtain a high school diploma, certificate,[8] or master's degree [11-14].

Services can set their own TA eligibility requirements, but generally all active component Servicemembers qualify for TA [15]. In the Navy and Marine Corps, reservists are eligible for TA only if they are activated under Title 10, whereas the Army and Air Force have separate reserve component programs through which their National Guardsmen and reservists can qualify for TA if they meet eligibility requirements [12, 15].[9]

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[7] We have been unable to find research specifically examining MyCAA use by institution type.

[8] A certificate is awarded by educational institutions and indicates "completion of a course or series or courses with a specific focus" [10]. Certificates also "provide the basis and gateway for achieving a degree" [10].

[9] Guardsmen may additionally qualify for federal- and state-funded tuition reimbursement programs.

MyCAA benefits and eligibility

There are more limiting eligibility requirements for MyCAA than for TA. Military spouses are eligible for MyCAA if their spouses are in junior paygrades (E1-E5, W1-W2, and O1-O2) and are serving on active-duty Title 10 orders. Like TA benefits, MyCAA benefit amounts do not vary by Service [16]. MyCAA provides a 3-year maximum education benefit of $4,000, with an annual FY cap of $2,000 (although this can be waived). Eligible military spouses are able to pursue higher education up to and including an associate degree, including licenses, certificates,[10] and credentials, in specialized fields that are "necessary for gainful employment in high-demand, high-growth" occupations and in fields consistent with the relocation requirements of a military spouse [16].

A recent study examined the education and employment preferences and experiences of military spouses eligible for MyCAA to identify barriers to MyCAA use and to achieving educational and employment goals more broadly [19]. The survey showed that 18 percent of eligible spouses used MyCAA in the previous year. Of those who did not use MyCAA, over half reported that they were unaware of the program.

Demographic factors differed considerably among those who had used MyCAA in the previous year and those who had not, with recent users being younger, more likely to be female, less likely to be white, more likely to have some college or a vocational/technical certificate, and less likely to have a bachelor's degree.

Key reasons for not using the MyCAA program among those who were aware of it included concerns about eligibility, the availability of time for education, and cost. Other barriers included family responsibilities and the cost of child care.

Effect of tuition reimbursement on recruiting and retention

A few studies have highlighted the benefits of tuition reimbursement to the organizations that offer it—in terms of both recruiting and retention—but none of these studies have focused on TA and MyCAA use in the Services. Flaherty, for example, explains that firms often offer tuition reimbursement as a form of non-wage benefit when they are unable to offer higher wages [20].

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[10] Certifications are awarded by a third party or standard-setting organization [17]. A certification indicates "mastery/competency as measured against a defensible set of standards, usually by application or exam" [18]. A certification has no relationship with attaining a higher education degree [18].

As such, tuition reimbursement programs can be effective in attracting higher quality employees whose recruitment requires more lucrative compensation packages (including both wage and non-wage compensation) [20]. In an evaluation of data from the 1997 National Employer Survey, Cappelli finds suggestive evidence that higher quality employees *are* in fact responsive to the availability of tuition reimbursement programs [6]. Specifically, he finds that the average educational attainment of new hires is higher at firms offering some form of education benefit than at those not offering any [6]. Using educational attainment as a proxy for quality, he interprets this as evidence that higher quality people are motivated by the prospect of furthering their educations (or at least working in an environment where that benefit is provided) [6]. By similar logic, offering TA should allow the Services to attract higher quality recruits than they might otherwise be able to. This was further confirmed in a 2011 report: survey respondents cited opportunities for professional development as the most important job attribute [21]. Thus, the limited evidence that exists suggests that Services' TA programs *should*, in fact, have positive recruiting effects.

Just as there are only a few studies discussing the recruiting benefits of TA, the corresponding literature for TA's effects on retention is also small, but developing. The predicted effect of TA on retention is unclear. Servicemembers might be influenced to stay in the Service to take advantage of benefits, but they may use TA to obtain degrees that they can use later in the civilian sector. At present, half of the existing studies find that TA increases retention, and half find that TA decreases retention. Most of the studies focus exclusively on Navy sailors, though one study examines the retention effects of TA on soldiers and airmen. Each study solves a different methodological problem without fully addressing the methodological issues of the previous studies. So, the results to date as to whether TA has a significant effect on retention are inconclusive. We now discuss the existing studies.

Garcia et al. conducted one of the first studies examining how TA affects sailors' retention. This early study employed a cost-benefit analysis but lacked the methodological rigor of some of the later studies [22]. Garcia et al. later updated this work with some methodological improvements [23]. Specifically, the newer study attempts to control for systematic differences in those who use TA versus those who never use TA (by also determining who was more likely to use TA) [23].[11] Both studies find that TA use increases retention [22-23]. That is, sailors who use TA are more likely to remain in the Navy.

Contrary to the Garcia et al. studies, Buddin and Kapur found that Navy (and Marine Corps) TA users are less likely to reenlist [2]. Buddin and Kapur noted that the Garcia et al. methodology

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[11] This was done by determining whether sailors had taken course counseling.

may not have fully accounted for the differential probabilities of TA use and proposed a different way to account for them [2].[12] The probability of TA use is correlated with reenlistment decisions: most sailors who are not going to reenlist have less available time to use TA because they are going to leave the Navy [2]. Buddin and Kapur concluded that TA is used to facilitate a better transition to civilian life [2].

Contrary to Buddin and Kapur's study, yet consistent with the Garcia et al. studies, Mehay and Pema found that TA users are more likely to remain in the Navy. Mehay and Pema pointed out that the aforementioned studies used only a single cohort [24]. Mehay and Pema argued that this alone could influence the results; they included multiple cohorts to correct for this issue [24]. Their study also controlled for the selection issue raised by Buddin and Kapur—namely, that sailors who remain in the Navy longer are more able to use TA [24]. Mehay and Pema's solution was to focus only on TA users [24]. Their argument for doing so rests on the following: (1) incomplete (or failed) courses being determined solely by deployments, (2) that sailors' own deployments are unknown in advance, and (3) that sailors cannot influence their deployability [24]. Though a deployment *can* cause severe disruptions to a sailor's studies, we would argue that deployment schedules should be known by the sailors in advance. Thus, the study's findings may be suspect since they are based on this potentially erroneous assumption. In addition, their conclusion has an alternative interpretation that the authors posit: successful TA users are more likely to remain in the Navy (as compared with unsuccessful TA users).

Just as there have been contradictory findings for the retention of Navy TA users, there have been mixed findings for the retention of Army and Air Force TA users. On one hand, Simon et al. find that soldiers and airmen using TA were *more* likely to separate after six years than their non-TA-using counterparts [25]. On the other hand, Stitcha et al. report overall positive effects of TA use on retention. Specifically, after controlling for possible selection bias—i.e., the fact that TA users may differ systematically from their non–TA-using counterparts—they find that soldiers who have used TA are 7 percentage points more likely to reenlist at the end of their first terms and are 5 percentage points more likely to complete both the first and second years of service [26]. Similarly, in an evaluation of eArmyU, the Army's e-learning, continuing education program, Orvis et al. found that program participation is associated with increased retention [27]. The fact that existing studies have contradictory findings warrants further empirical investigation and suggests that no clear conclusions can yet be drawn.

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[12] Their primary method for doing so employed distance to the nearest four-year institution at the time of enlistment, presumably using the sailor's home of record.

Similarly, although there has been scant work on the recruitment and retention effects of the MyCAA scholarship program, helping military spouses in this way could affect Servicemember recruitment and retention, particularly by improving military family outcomes [28-29].

TA and MyCAA expenditures across the Services

Evaluating TA and MyCAA expenditures helps to determine how TA and MyCAA use varies. Expenditures are a function of both the number of users and the amount of spending per user. Thus, higher expenditures imply some combination of more users, more semester credit hours per user, and/or more expensive semester credit hours per user (i.e., more expensive institutions).

The Army and the Air Force have historically been the biggest TA spenders. Before 2002, the Air Force led all Services in TA spending; beginning in 2002, the Army has taken the lead [30].[13] These Services' high TA spending is likely driven by different factors. The Army has the largest enlisted force and, therefore, the largest number of Servicemembers eligible for TA [31]. The Air Force, however, historically has spent more per TA user [4]. For example, the Air Force has had the greatest number of TA users enrolled in graduate studies [4]. As of FY 2012, the Army and Air Force were each spending approximately $200 million on TA, while the Navy spent less than $100 million, and the Marine Corps spent about $50 million [30].

There was a sharp increase in TA expenditures across all Services from 2002 to 2003, though most notably in the Army and Air Force [30]. Chronologically, this corresponded with an increase in the amount reimbursed per credit hour and extension of TA eligibility to members of the Army Reserve, Army National Guard, and Air Force Reserve in 2002 [32-34]. In addition, according to a 2012 GAO report, DOD spent $54.8 million on MyCAA in 2011, and about 125,000 spouses received MyCAA scholarship program funds between October 2008 and May 2012 [8].[14]

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[13] Except for 2006 through 2008.

[14] Expenditures were significantly higher ($186.8 million) in 2010, which led to several program changes.

The emergence of the private for-profit sector among TA users

In the past two decades, one of the major changes to the higher education landscape has been the rise of the private for-profit higher education sector. The rapid growth of the private for-profit sector has allowed Servicemembers to use their TA funds to enroll at these newer institutions. Table 1 shows how the top 10 institutions—in terms of TA enrollments—changed between FY 1992 and FY 2015. In FY 1992, there were no private for-profit institutions among the top 10 institutions receiving VolEd funds [23]; 20 years later, 4 of the top 10 institutions receiving TA were private for-profit institutions [32-33]. We offer two explanations.

The emergence of private for-profits in the top 10 institutions receiving VolEd funds may have been due in part to the for-profits' extensive suite of online course offerings. In addition, it may be related to the change in the percentage of tuition covered by TA. Servicemembers used to pay 25 percent of their tuition, and the remaining 75 percent was covered by the TA program. This changed, however, so that Servicemembers now pay none of their tuition costs; 100 percent is covered by the TA program (up to the maxima of $250 per semester hour and a total of $4,500). This change may have enticed some Servicemembers to enroll in courses using their TA who otherwise would not have done so. If these additional enrollees were less dedicated or less motivated students, who perhaps were only qualified for admission into public two-year or private for-profit, four-year institutions, then this could cause enrollments by TA users at for-profit schools to rise. Although more TA users are using their TA funds at for-profits, the implications of this, in terms of expenditures and TA user/student outcomes, remain unknown. This will be investigated in greater length in the next phase of our study.

Table 1.   Top 10 most frequently VolEd- or TA-attended institutions, FY 1992 and FY 2015

| Rank | FY 1992 (Navy only) | | FY 2015 | |
	Top 10 VolEd institutions	Sector	Top 10 TA institutions	Sector
1	University of Maryland - University College	Public	American Military University and American Public University	Private for-profit
2	Saint Leo College (now Saint Leo University)	Private not-for-profit	University of Maryland - University College	Public
3	Southern Illinois University at Carbondale	Public	Ashford University	Private for-profit
4	Tidewater Community College	Public	Central Texas College	Public
5	Florida Community College	Public	Embry-Riddle Aeronautical University	Private not-for-profit
6	Central Texas College	Public	Columbia Southern University	Private for-profit
7	Embry-Riddle Aeronautical University	Private not-for-profit	University of Phoenix	Private for-profit
8	Chaminade University	Private not-for-profit	Liberty University	Private not-for-profit
9	Hawaii Pacific University	Private not-for-profit	Excelsior College	Private not-for-profit
10	San Diego City College	Public	Park University	Private not-for-profit

Source: FY 1992, from [23], is based on all VolEd enrollments, not just TA, from the Navy (not all Services). FY 2015 is from [34] and includes all TA enrollments across all Services.
Note: Sectors are public, private not-for-profit, or private for-profit.

We now compare the expenditures (or TA funds) with shares of students and courses across education sectors. Doing so provides a sense of that sector's efficiency or value. Sectors where the share of students and/or courses is equal to their share of TA funds represent a baseline. On one hand, sectors with a larger share of students and/or courses than their TA funds are more efficient: on average, per student or per course, they are cheaper. On the other hand, sectors with a smaller share of students and/or courses than TA funds are less efficient: on average, per student or per course, they are more expensive. Table 2 presents the share of students, courses, and TA funds by education sector for the 50 most frequently attended institutions by TA users in FY 2015. In FY 2015, private for-profit institutions accounted for most of the 50 institutions most commonly enrolled in by TA users, representing 48 percent of students (and 50 percent of the course load), and more than half (53 percent) of TA funds (CNA tabulations of [32-34]). Public institutions appear to be the best value: they account for 28

percent of the students and 25 percent of the course load, yet only 21 percent of the TA money spent (CNA tabulations of [34]). Conversely, private not-for-profit institutions represent 24 percent of students, 25 percent of course load, and 26 percent of TA funds spent (CNA tabulations of [34]). Both private not-for-profits and for-profits have a larger share of TA funds than either students or courses.

Table 2.   Share of students, courses, and TA funds in the 50 most frequently attended institutions by TA users, by sector, FY 2015

Share of …	Public	Private not-for-profit	Private for-profit
Students	28%	24%	48%
Courses	25%	25%	50%
TA funds	21%	26%	53%

Source: CNA tabulations of [34].
Note: The 50 most frequently attended institutions by TA users represent 228,064 Service-members taking just under 600,000 courses and using $422 million of TA funds (CNA tabulations of [34]).

Table 2 does not tell a complete story. It does not include the funds that TA users contribute out of their own pockets or how much of TA users' future GI Bill benefits are being used now. This is possible through a provision in the GI Bill known as "Top-Up" [11, 35], which allows Servicemembers to use TA and GI Bill benefits simultaneously [11, 35]. It allows Servicemembers to use their GI Bill benefits early to pay for tuition and fees that exceed TA maximums—while still serving in the military—so that they do not have to take out loans for the remainder of the tuition [11, 35]. Doing so can reduce tuition-driven debt. Thus, there is a decline in debt probability associated with the rise in Servicemembers' use of Top-Up. However, Top-Up is not free. It imposes a cost of reduced, or no, GI Bill education benefits on completion of service since Servicemembers can use their GI Bill benefits while on active duty and can use TA to reduce the need for debt. This may enable them to take courses that they would have been otherwise unable to take while on active duty, but it will decrease the GI Bill benefit available to them after leaving the Service.

Given that private for-profits have garnered an increasing amount of TA funds, it is important to evaluate how student outcomes compare at private for-profit and more traditional institutions. Marotell and Bergman find that the rise of private for-profits corresponded with an increase in veterans using the GI Bill at private for-profit institutions [36]. They concluded that GI Bill users' increased attendance at private for-profits resulted in worse outcomes for them (e.g., higher debt and lower probability of obtaining a degree) [36]. Whether and how

private for-profit institutions affect TA and MyCAA users is an open question. It will be informed later in this literature review, and the future empirical complement to this paper will aim to specifically examine TA and MyCAA user outcomes by education sector.

Recent policy changes affecting users of TA and MyCAA

Perhaps in response to concerns that veterans' outcomes have worsened because of increased enrollment at private for-profit institutions [36], there has been recent legislation and DOD instructions targeted at improving the outcomes of TA users.

The first policy change was a result of the rise in the private for-profit sector and congressional concerns over it.[15] On April 27, 2012, President Obama signed Executive Order 13607, Establishing Principles of Excellence for Educational Institutions Serving Servicemembers, Veterans, Spouses, and Other Family Members. It requires educational institutions receiving funding from federal military and veterans educational benefits programs (including TA and MyCAA) to adhere to certain principles, including providing information to students on the full cost of programs and ending fraudulent and unduly aggressive recruiting techniques.

The second policy change was likely designed to improve grades and thereby increase the probability of Servicemembers obtaining degrees. As of September 5, 2014, a Servicemember using TA and receiving a grade below C in an undergraduate course or below B in graduate-level course must pay back the TA funds (the previously required grades were D and C, respectively). The structure of this policy is similar to many merit-based scholarships (as documented by Duffourc), which have similar requirements of earning at least a C [37]. The policy is functionally similar to an increase in tuition or a decrease in benefits for those earning less than the minimum grades [38]. This essentially penalizes students for poor performance. This is consistent with employer-provided tuition reimbursement, which is typically conditional on (good) performance [39]. There has been insufficient time to assess the effects of this policy change.[16]

To summarize, aside from eligibility requirements and what TA and MyCAA provide to their users, relatively little is known about how the Services and individual Servicemembers benefit from these programs. For example, the TA program's impacts on retention are largely

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[15] We discuss the rise of the private for-profit sector and the corresponding congressional concerns in a later section, "Private For-Profit Institutions and Their Students."

[16] The MyCAA scholarship program does not recoup costs associated with failed courses.

unknown, as are the effects of the rise of private for-profits on TA users. What *is* known is that expenditures on TA across all Services have increased in the past two decades. The goal of TA, from the Servicemember's perspective, is to get a college education. There are potential costs and benefits associated with getting a college degree. Whether more costs or benefits are realized depends partly on whether a degree was obtained and partly on how much debt was incurred in pursuit of that education. We explore these issues in the next section.

Benefits and Potential Costs of College Attendance

In this section, we review the potential benefits and costs of college attendance. We document past research on both the quantitative and the qualitative benefits associated with earning a bachelor's degree. Some of these benefits only are realized once the degree is earned. Thus, those who fail to obtain a degree may be left with greater costs than benefits. Although numerous benefits are associated with higher education, a college degree involves considerable cost. *All* college attendees (regardless of whether they graduate) incur the monetary costs of tuition, books and supplies, and potentially room and board; in addition, there is an opportunity cost associated with college attendance due to the wages and labor market experience that are forfeited while attending college (unless students are able to work full-time). In this section, we explore additional, potential costs of college attendance and consider the possible disadvantages from incurring these costs to pursue higher education.

Some TA users will be able to obtain a degree via their TA benefits. Others, however, will not. In addition, users of MyCAA can earn a variety of credentials but are unable to obtain above an associate degree via MyCAA. As a result, it is important to understand the differential benefits of attending college—whether or not one ultimately obtains a degree.

Benefits

Higher education confers a broad range of benefits for graduates. Servicemembers who use TA (and spouses who use MyCAA) experience those benefits associated with higher education both during and after their military service. TA and MyCAA users experience some of those benefits by simply attending college, while they only experience other benefits after they *graduate* from college. As Avery and Turner state, "The college experience provides graduates with skills and social networks, and a college degree may serve as a signal of ability to employers" [40, p. 167]. These three components—acquired skills, acquired networks, and signals of ability—are among the primary benefits that a college education offers.

The benefits to TA and MyCAA users who attend college but do not ultimately obtain a degree can be divided into two categories. First, there are those that affect knowledge, skills, behavior, and attitudes, as identified by Buryk et al. [30]. These benefits are realized more immediately and include such things as credit toward an associate or bachelor's degree, an occupational license or a certificate, engagement in meaningful off-duty activity, and development of critical

thinking skills [30]. Second, there are benefits that are realized in the longer term and can affect such things as changes in earnings or occupation [30]. TA users, for example, likely will experience faster promotions in their military careers and a more successful transition to civilian life after their military careers [30]. Both forms of these benefit types—the more immediate and the longer term—can be realized by TA users even in the absence of a degree.

College graduates receive all of these benefits, as well as the additional benefits that are unique to receiving a diploma. For college graduates, the benefits most frequently cited are increased quality of life, earnings, and employment opportunities [40-43].[17] We discuss findings regarding each of these in turn.

Better quality of life

Recent research shows that higher education offers an improved quality of life. Baum et al. document numerous quality-of-life benefits for college graduates, including improved psychological well-being; healthier lifestyles, for example, through more exercise and decreased smoking; increased social and civic engagement; and, for mothers, more time involved with their children [44]. In addition, a Gallup and Purdue University national poll reported that 39 percent of college graduates said that they were "engaged at work," compared with 29 percent of the population at large [43].

There do not appear to be differences in quality of life based on the tier of the institution that students attend. That is, those who attended top US universities and colleges are no more likely to be "engaged at work" or "thriving" in all aspects of their lives (sense of purpose, financial security, physical health, close relationships, or community pride) than those who attended other traditional institutions [43].

Higher earnings and income

Because of the increased earnings potential that a college degree confers, it is largely agreed that a degree is a good investment. The Bureau of Labor Statistics (BLS) has documented that salaries associated with bachelor's degrees and beyond exceed those associated with lower, or no, degrees; those with a bachelor's degree earn more than those with an associate degree, those with some college but no degree, those with a high school diploma, and those with no high school diploma [45]. The BLS, however, failed to account for self-selection: that is, people who would earn higher salaries, absent a college degree, are the same people who are more likely to pursue and obtain a college degree in the first place. In such cases, it is not necessarily

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[17] Gains to quality of life and employment might arguably also apply to college attendees (who attend some college but do not complete a degree). Gains in earnings, however, are unique to graduates.

the college degree that results in higher salaries. In addition, Baum et al. find that college graduates earn more than those who never went to college (without specifically addressing self-selection) [44, 46]. Avery and Turner, however, studying college graduates from the first part of the 2000s, accounted for this self-selection issue and still found that the monetary benefits from a college degree exceeded its costs [40]. Moreover, data from the later 2000s and early 2010s (e.g., see [47]) further support the finding that the monetary benefits from a college degree exceed its costs (although it does not specifically account for self-selection).

Although most agree that a college degree is a good investment, there is not consensus on how much of a benefit, in terms of salary, college graduates receive. Avery and Turner provide the most rigorous and robust approach to answering this question (see Table 3) [40]. Table 3 presents their estimated earnings benefits of having a college degree over only a high school diploma. This difference is referred to as the college graduate "premium;" in 2010, it was $700,000 for men and $500,000 for women. Men who graduated from college had average lifetime earnings (net of tuition) of $1.5 million, whereas men who had only high school diplomas had average lifetime earnings of about $800,000. The corresponding numbers for women are $1.1 million and $600,000, respectively. College graduates, on average, have lifetime earnings that are nearly double those with only high school educations [40, 44, 46-47].

Table 3.   Lifetime earnings (net of tuition) as of FY 2010, by gender and education

Gender	High school diploma only	College degree	Premium
Men	$800,000	$1,500,000	$700,000
Women	$600,000	$1,100,000	$500,000

Source: [40].

The college graduate premium has the potential to rise above these levels. This is primarily because millennials (those born between 1980 and 2000) value education and higher levels of education more so than previous generations [42, 48]. Millennials represent not only the current cohort of new recruits and Servicemembers in the junior ranks (i.e., millennials are the current TA users) but also the past decade of college graduates. Millennials' greater demand for higher levels of education than previous generations has two implications: (1) more millennials are likely to have college diplomas, and (2) millennials are more likely to have graduate or professional degrees, which confer even larger earnings premiums [44, 46-47, 49]. As we discuss later, millennials' greater investments in higher education are not necessarily paying off, since recent college graduates have higher underemployment (they are in jobs that do not require college degrees). Although earnings differences between those with and without college degrees are already large, it is possible that this difference could increase over time as

millennials' salaries continue to grow as they age into higher paying positions that more fully require and rely on the advanced higher education that they sought and acquired.

Higher employment

In addition to improved quality of life and greater earnings potential, college graduates also are more likely than nongraduates of college to be employed [44, 46-47]. On average, those with college degrees are four times more likely to be employed than their non-college-educated counterparts [45, 48]. According to the BLS, the unemployment rate of all college graduates in 2015 was 2.8 percent, compared with a national average of 4.3 percent [45].[18] The impact of a college diploma on employment likely operates through a number of channels. Minimally, college exposes students to more people, other students and/or alumni, providing them with a larger network that can assist in the job search process [40]. In addition, college graduates will likely hold jobs providing networks of more value than the student's previous network. As a result, college not only improves the *quantity* of a student's network, but also its *quality*. Finally, a college degree signals a higher level of aptitude and a host of other skills (e.g., self-discipline; the ability to set, work toward, and achieve long-term goals; the ability to function independently) [50-51]. This signaling ability is valued by employers, and can make college graduates valuable, even in jobs that do not specifically require the skills of a college graduate [52-55]. It is, therefore, not surprising that those with college diplomas have higher employment than those without.

Potential costs of college attendance

Despite the benefits of a college degree, there are still instances when going to college is not worth the cost. For example, Kamenetz finds that, when students pick the "wrong" degree or the "wrong" college, the degree may fail to be worth its cost [41]. Whether a college degree will be monetarily worthwhile depends on the subsequent gains through better employment and higher earnings as well as the level of debt acquired to finance that college degree. Although the average earnings premium from a college degree is over half a million dollars, not all careers offer the same premium (or even require a degree). Furthermore, failing to obtain a diploma after taking on student debt is a principal reason why an attempted, but uncompleted, college degree may fail to be financially worthwhile.

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[18] The unemployment rate for those with a bachelor's degree as their highest degree was 2.8 percent. It was 2.4 percent, 1.5 percent, and 1.7 percent for those with master's, professional, and doctoral degrees, respectively.

An attempted college degree can fail to be financially worthwhile if it fails to generate sufficient income to justify the debt used to finance it. Thus, the reasons why pursuing a college degree may not be worthwhile can be split into those factors that affect income and those that affect debt. Income is primarily influenced by underemployment and nonattainments; those who complete their degrees but are underemployed will suffer an income reduction, as will those who fail to complete their college degrees. In terms of debt, what is most important is whether the debt was excessive—that is, debt that makes a college education no longer financially worthwhile. We now discuss the potential costs from going to college in more detail, focusing specifically on underemployment, nonattainments, and excessive debt.

Underemployment

Underemployment pertains to those who are employed and have higher levels of education than their jobs require. Underemployed college graduates do not receive the full earnings benefit of their college degrees. Underemployment occurs when someone with, for example, a bachelor's degree is filling a job that only requires a high school diploma [52-55]. Their earnings will more closely resemble those of high school graduates. Compounding this, the underemployed, on average, likely will still have all of the debt associated with their degrees.

Although college graduates have lower unemployment rates, the *under*employment rate for *recent* college graduates was nearly 45 percent, as of December 2015, implying that these people are in jobs that do not specifically require college degrees [55]. Moreover, this 45-percent underemployment rate implies that 45 percent of college graduates (in December 2015) were not receiving the earnings premium associated with their degrees. These college graduates have acquired the debt associated with their degrees but no additional earnings to pay off that debt. When compared with those who did not attempt college (and took on no debt), on average, underemployed college graduates are likely in worse financial straits. The risk of underemployment, therefore, potentially creates scenarios in which the costs from acquiring a college degree outweigh the benefits. Although little evidence exists for TA and MyCAA users, a recent study found that almost one-third (29 percent) of military spouses were working part-time because they could not find full-time work [19].

Nonattainments

Attending college without completing a degree also can have negative consequences because nonattainers pay for the attended courses but do not receive the signaling benefits of a college degree. Of those who were college freshmen in FY 2006, only 59 percent had earned a four-year college degree by FY 2012 [41]. Only 61 percent of full-time students seeking a bachelor's degree obtain one within eight years [56]. In addition, only 24 percent of part-time students

seeking a bachelor's degree obtain one within eight years [56]. TA users are more likely to be part-time students; as a result, the 76-percent nonattainment rate (100 minus 24) is more applicable for TA users (as opposed to the 39-percent nonattainment rate for full-time students). In the civilian sector, these college nonattainers often have college debt levels similar to those who graduate [40].[19] To compound the issue, nonattainers begin repaying their student loans earlier than college graduates because loan repayment is typically required once enrollment is terminated. This could be problematic, especially since nonattainers are less likely to be employed and tend to earn less than those with associate degrees [40-41, 45]. In fact, those with two years of college and an associate degree earn more, on average, than those with three and a half years of college but no degree [40-41, 45]. For many nonattainers, therefore, the benefits of going to college will not outweigh the costs [40-41, 57-58].

Excessive debt

Although obtaining a college degree, on average, is worth its cost, some people take on more debt than their future incomes will warrant. Student debt, unlike other forms of debt, is permanent: it is exempt from bankruptcy proceedings [40]. The average college graduate, given that loans were taken out, has $33,000 in student loans [53].[20] This debt is intended to be paid off through higher earnings normally associated with a college degree; however, not all graduates are able to earn enough to financially justify the debt acquired to obtain their degrees. In a February 2014 letter to the US Secretary of Education, the Association of Private Sector Colleges and Universities pointed out that 26 percent of public graduates and 39 percent of private (not-for-profit) graduates were not "gainfully employed" or in a position to pay off their debt [41, 52]. As we later discuss, student debt from for-profit institutions has received increased attention, but this statistic suggests that debt is a significant problem across all education sectors.

The decisions made as a result of having permanent, bankruptcy-exempt debt can be worse than the debt alone—they affect a multitude of other dimensions of well-being. Higher student debt makes people more likely to choose lower paying careers, perhaps out of a need to repay their student loans, allowing less time to search for better paying careers [40]. In 2009, at the height of the Great Recession, 85 percent of college seniors planned to move back home after graduation because of difficulty in finding employment that paid enough for them to afford student loan and rent payments simultaneously [40]. In addition to affecting career choices and

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[19] College graduates at public and private universities have, on average, $15,811 in debt, while students at public and private universities have, on average, $14,156 in debt [40]. We provide more information on debt levels in the next section and again in Table 4.

[20] Specifically, this mean excludes those college students who never take out a loan to finance their college degrees.

earnings, student debt also affects marital decisions; an increase in student debt of $10,000 decreases the long-term probability of marriage by 7 percentage points [40]. Not surprisingly, college debt has a large negative relationship with qualitative outcomes as well: only 2 percent in the modal borrowing range ($20,000 to $30,000) report "thriving in all aspects of life" as compared with 11 percent across all college graduates [59]. Some students may develop mitigation strategies, such as part-time work during college attendance, to reduce the need to borrow. However, these mitigation strategies may fail to help solve the problem of debt. There is evidence that those who engage in part-time work (perhaps due to already large debt) suffer in terms of academic performance and, subsequently, graduation rates [40].

Since the 1960s, the variance in college graduates' earnings has increased, as has the variance in college debt. Since the variance of both earnings and debt has increased, college has become more financially worthwhile for some (due to relatively higher earnings) while no longer financially worthwhile for others (due to relatively higher debt). That is, although the earnings potential of college graduates has increased, so has the probability that a college degree will not be worth the (now higher) cost. For those who become underemployed, do not complete their degrees, or take on too much debt relative to their future incomes, college can prove to be a poor investment.

In Figure 1, we highlight why the increased variance in both college graduates' earnings and college debt levels has made college *more* financially worthwhile for some but no longer financially worthwhile for others. We assume that a student derives increased utility (or well-being) if, when attending college, she increases her lifetime earnings by more than the debt she incurs to attend college (meaning that she is on the part of Figure 1 to the left of the 45-degree line). The figure presents two alternate situations: one high-variance (red dots) and one low-variance (green dots). Note that the green dots are closer to the point A than are the red dots—meaning that the green dots represent a scenario of lower variance.

Figure 1.   Illustrated implications of increased variance in college graduates' earnings and debt levels
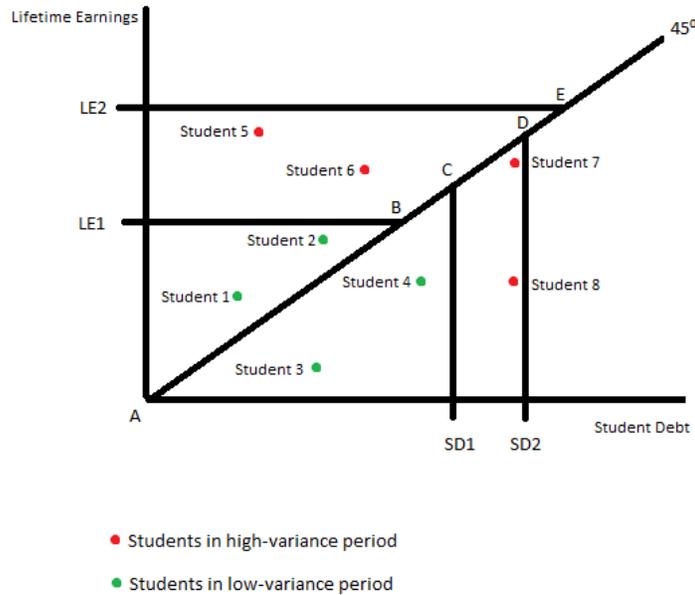
Source: CNA

Now, assume that a student in time period 1 receives an increase in lifetime earnings between A (or zero) and LE1 if he chooses to go to college, and his level of student debt increases from A (or zero) to SD1. Students 1 and 2 are better off for attending college because the amount of increased lifetime earnings exceeds the amount of debt they incur (that is, they are above the 45-degree line). Students 3 and 4, however, are worse off because the amount of debt they incur when attending college exceeds their increased lifetime earnings. This is the low-variance situation.

Now, we assume increased variance in both earnings and debt levels. That is, we assume that students attending college in time period 2 receive an increased lifetime earnings between A and LE2 and incur student debt between A and SD2. In other words, the levels of variability in increased lifetime earnings and student debt are higher in time period 2 than they were in time period 1. In this scenario, students 5 and 6 are better off for attending college because the amount of increased lifetime earnings exceeds the amount of debt they incur. In fact, student 5 and 6 are better off than both students 1 and 2, as demonstrated by comparing the vertical

distance between these points on the graph and the 45-degree line. Therefore, having a higher degree of variability in both lifetime earnings and student debt could potentially work to the advantage of some students. Student 5, for example, not only receives an earnings increase greater than what was possible in the first time period, she also ends up with an earnings-to-debt ratio noticeably larger than was previously possible.

In contrast, students 7 and 8 are worse off for attending college because the amount of debt they incur exceeds their increased lifetime earnings. Furthermore, even though it appears that students 4 and 8 receive the same amount of increased lifetime earnings for attending college, student 8 is worse off than student 4 because student 8 incurs more student debt than was even possible in time period 1. Therefore, having a higher degree of variability in increased lifetime earnings and student debt could potentially make students worse off if they fall on the high end of the debt distribution and on the low end of the increased income distribution.

Students' Experiences and Outcomes

A college education can confer substantial benefits, but, in the absence of a degree (i.e., graduating), those benefits may fail to outweigh the costs. In this section, we explore how graduation probabilities vary by education sector, along with students' other experiences and outcomes. We do this in an effort to understand the likely educational and financial outcomes for TA and MyCAA users. Unfortunately, there is no known literature examining these outcomes for Servicemembers and their spouses specifically. Thus, as a second best, we rely on recent literature regarding the experiences of *non*-military students to inform what we might expect regarding outcomes of TA and MyCAA users.

The existing literature is largely focused on outcomes for traditional students, defined as those who attend college full-time, in-person, while living on campus, and tend to enroll for the first time before age 20. TA users, however, are a type of nontraditional student. They are enrolled part-time, are frequently distance learners, and are serving full-time on active duty while going to college. To make the literature's findings relevant to this population, we discuss, where possible, the outcomes of nontraditional students and how they compare with traditional students. We focus on graduation rates, tuition, student debt levels, and default rates—giving particular attention to how each varies by education sector.

Graduation rates

Most people go to college with one main intention: to graduate. Actual graduation rates, however, vary by education sector, as shown in Figure 2. Private (four-year) institutions have the highest graduation rates, at 70.7 percent, followed by public (four-year) institutions, at 61.5 percent. In stark contrast to the graduation rates (i.e., the probability of obtaining a bachelor's degree) at traditional institutions are those at for-profit institutions. These graduation rates are much lower—14.8 percent—which is only 1.8 percentage points higher than graduation rates for those who transfer from public, two-year institutions [40]. Note that these graduation rates are simply that—average rates—and do not account for any differences in the characteristics of students attending these different institutions. If, for example, the students who attend private for-profit, four-year or public two-year institutions are from different socioeconomic backgrounds, are more likely to be enrolled part-time, are more likely to take courses online, or are less academically prepared for college, this could partially explain the graduation rate differences highlighted in Figure 2.

Figure 2.   Bachelor's degree graduation rates, by education sector, FY 2009
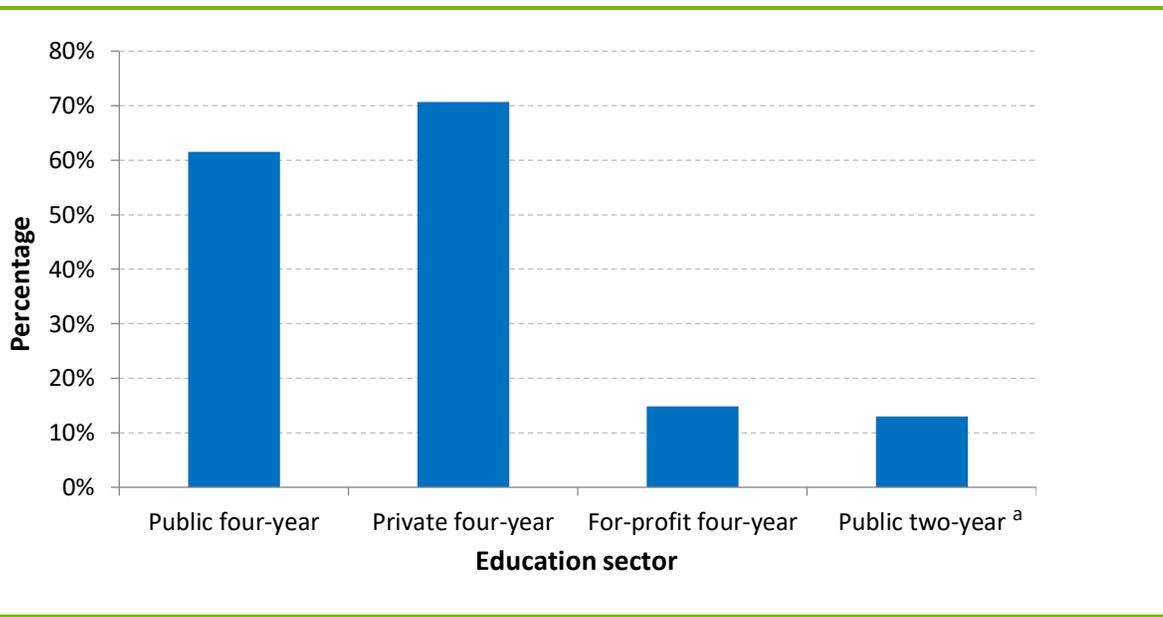
Source: [40]. The rates do not account for demographic differences in students.
Note: FY 2009 is the most recent year for which graduation rates have been calculated by existing work. The underlying source of these data, the Integrated Postsecondary Education Data System (IPEDS), currently has data through FY 2012 (although no academic studies have yet been published with the newer data).These values refer to the mean graduation rate of those who begin at two-year institutions and then transfer to four-year institutions.
[a.] These values refer to the mean graduation rate of those who begin at two-year institutions and then transfer to four-year institutions.

Students in the for-profit sector are nearly five times less likely to graduate than their not-for-profit-sector counterparts. For example, one notable private for-profit institution has a six-year graduation rate of 9 percent [57].[21] Rates of withdrawal (failure to complete within a term and subsequently dropping out) in the private for-profit sector exceed 54 percent [57]. These higher withdrawal rates can contribute to private for-profits' lower graduation rates (because students would need to reenroll).

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[21] Not all of these students have the intention to graduate with a bachelor's degree. These students (while pursuing their academic goals) lower the observed graduation rate, but not the true graduation rate (i.e., of those who intended to obtain a bachelor's degree).

Although private for-profits and two-year institutions have much lower graduation rates than public and private not-for-profit institutions, the implications for TA and MyCAA users remain unclear. We can, however, infer information on TA and MyCAA users' graduation rates given the experiences of other, similar students. First, TA users are more likely to enroll part-time. Part-time students are 2.5 times less likely than full-time students to receive their bachelor's degrees after eight years [56].[22] Second, military Servicemembers are much more likely than the general population to be racial/ethnic minorities [60]. Steele et al. find that minority students, regardless of whether full- or part-time, are 1.4 times less likely to receive their bachelor's degrees after eight years than the population of all students [56].[23] Third, due to their time in service and TA requirements, TA users are more likely to be older when they first attend college. In addition, older students (those over age 25 at first enrollment) are 2.3 percent less likely to graduate than are all students [56].[24] Finally, students at open enrollment (e.g., for-profit and public two-year) institutions are less likely to graduate (compared with students at selective institutions) [61]. Thus, given the lower graduation rates observed for part-time students, minorities, older students, and those at open enrollment institutions, we expect that TA and MyCAA users (who are more likely to attend open enrollment institutions) will have lower graduation rates than those presented in Figure 2. In the empirical phase of our study, we will specifically examine this hypothesis.

Tuition and the cost of college

Graduating with a bachelor's (or other) degree requires paying several years of tuition. Tuition in all education sectors has been increasing faster than inflation since the 1960s [62]. Not surprisingly, rising tuition often decreases potential students' likelihood of enrollment. For example, in the 1990s and early 2000s, there were both tuition increases and declines in enrollment at public institutions [38, 63]. In addition, when public tuition increases, students may become more likely to enroll in private or for-profit institutions. That is, four-year

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[22] The percentages of students who receive their bachelor's degrees within eight years are 60.6 percent of full-time students, compared with only 24.3 percent of part-time students [56].

[23] The percentages of minority students who receive their bachelor's degrees within eight years follow: 39.9 percent of full-time black students, 14.5 percent of part-time black students, 46.5 percent of full-time Hispanic students, and 16.7 percent of part-time Hispanic students [56]. This is compared with 60.6 percent of all full-time students who received their bachelor's degree within eight years [56].

[24] Compared with 27.0 percent of full-time older students and 10.6 percent of part-time older students who receive their bachelor's degrees within eight years [56], 60.6 percent of all full-time students receive their bachelor's degree within eight years [56].

institutions in different education sectors can be substitutes: as tuition rises in one sector, students may become more likely to enroll at an institution in a different sector [38, 63].[25] Thus, although some potential students decide not to attend college in response to tuition increases, others decide to attend institutions in different education sectors. Given the previously discussed variation in graduation rates across sectors, such substitution of one education sector for another will affect students' graduation probabilities.

With tuition rising, it is important to determine *which* potential civilian-sector students are no longer enrolling in college. Students who demographically resemble TA users are less likely to enroll in college when cost rises. Community college students, for example, are more sensitive to tuition changes than are students at four-year institutions [63]. In terms of race/ethnicity, whites are the least responsive to price changes, followed by blacks, Hispanics, and Asians [63]. There has been less responsiveness to price hikes recently because the benefits of college attendance also have been increasing [63]. TA users likely have little responsiveness to price changes since many institutions waive tuition charges in excess of the $250 per credit hour reimbursement.

Given that different populations of potential students respond to tuition changes differently, it is important to understand how tuition varies across education sectors. Table 4 presents the mean annual tuition across education sectors for FY 2009. Among four-year institutions, public institutions are the least expensive ($6,312 per year, on average), followed by private for-profit institutions ($14,423), and the most expensive advertised tuition is at private not-for-profit institutions ($24,636). The cheapest overall path to a bachelor's degree is likely through public two-year institutions, which require an average tuition of only $2,136 for the first two years.

There is a caveat, however, to the tuitions presented in Table 4: often, what students pay will differ from an institution's advertised tuition. For example, 89 percent of first-time, full-year college freshmen at private, four-year institutions received some kind of financial aid or tuition discount in FY 2014 [64]. Of these students, the average discount they received is estimated to have covered half of their total attendance cost [64]. Thus, a student facing an advertised tuition of $50,000 per year may have, in fact, only paid $25,000. Similarly, many institutions waive military TA costs that exceed the $250 per semester hour threshold. Tuition discounting highlights the opaqueness of the cost of attending college: the true (out-of-pocket) cost of tuition is often unknown. This further implies that the tuition for some types of institutions in Table 4 (particularly private not-for-profit ones) is likely overstated.

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[25] We later discuss why even though, on average, public institutions are less expensive than private institutions, students may qualify for subsidized tuition at private institutions.

Table 4.   Enrollments, debt, tuition, and graduation rates, by education sector, FY 2009

	Education sector			
	Public four-year	**Private not-for-profit four-year**	**Private for-profit four-year**	**Public two-year**
Median enrollments	7,415	1,149	172	3,713
Mean graduate debt	$12,922	$18,700	$45,042	$15,960[a]
Mean annual tuition	$6,312	$24,636	$14,423	$2,136

Source: Mean graduate debt is obtained from [40]. Median enrollments are obtained from [58]. Mean annual tuition is obtained from [65].

Note: FY 2009 is the most recent year for which graduation rates and graduate debt have been calculated by existing work. The underlying source of these data, IPEDS, currently has data through FY 2012 (although no academic studies have yet been published with the newer data).

[a.] This is the mean debt of those who begin at two-year institutions and then transfer to and graduate from four-year institutions.

Student debt

College tuition is increasingly financed through student debt [40, 63, 66]. It is no surprise that, as college costs have risen, debt among college graduates also has grown [65]. Total national student debt is now $1.2 trillion, and average individual student debt is $33,000 [53]. Student loans have become a new reality of higher education.

Although borrowing has become increasingly common in higher education, not all education sectors are equivalent in terms of debt accrual. Table 4 presents average debt levels by education sector. Average debt levels for graduates range from $12,922 for public, four-year institutions to $45,042 for students at private for-profit, four-year institutions. However, average debt levels can be misleading. A more complete picture of debt levels can be obtained by exploring the *distribution* of debt levels, as shown in Figure 3. Those who graduate from public, four-year institutions do so with the least debt; 50 percent graduate with $7,500 or less in debt, and the average graduate has $18,700 in debt. The higher debt at private institutions is likely attributable to the higher tuition at these institutions [40].[26]

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[26] The fact that half of students at public and private not-for-profit four-year institutions exit with considerably less debt than the average student at private for-profit institutions indicates that there are some students who exit with considerably more debt than most. This is especially prevalent at public four-year institutions.

Figure 3. Debt distribution for bachelor's recipients (selected percentiles and mean), by education sector
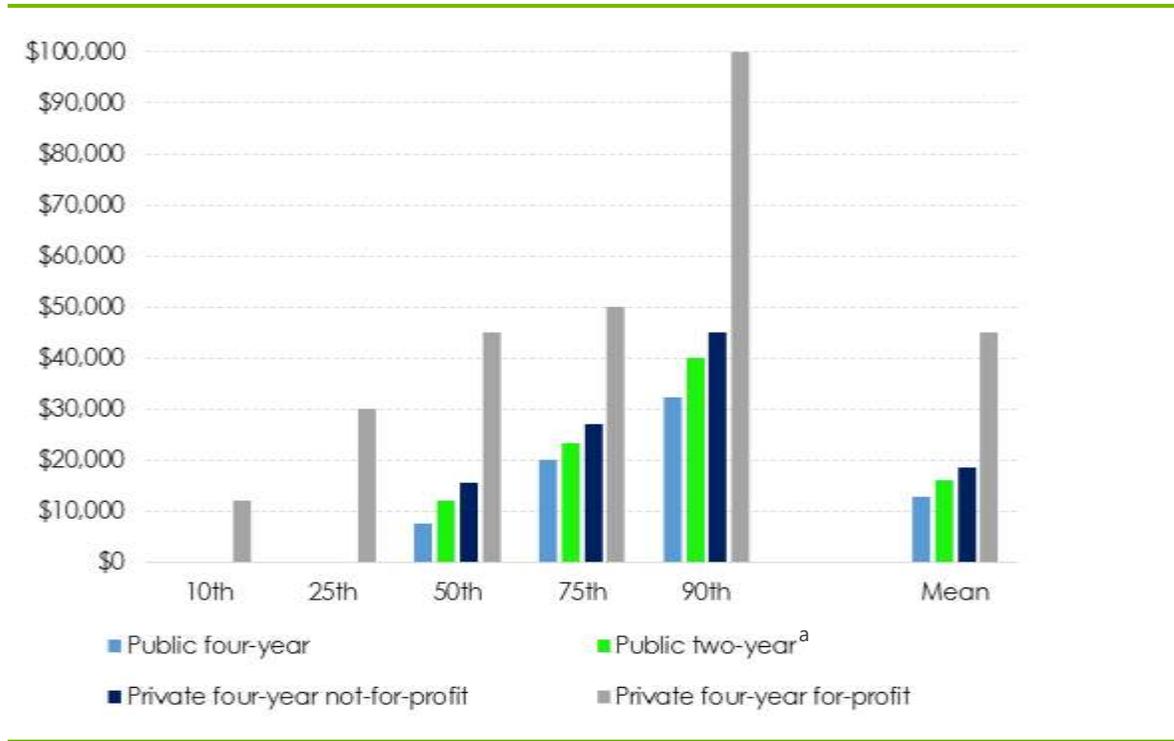
Source: [40].
Note: These data are for students who first entered college in the 2003-2004 academic year; these are their debt measures six years after entering college. The 10th and 25th percentiles of the debt distribution are $0 for all institution types except private for-profits.
a. These values represent the debt levels for those students who began at two-year institutions and then transferred to and graduated from four-year institutions.

The most striking feature of Figure 3 is the noticeably higher debt levels of private for-profit graduates. Students at private for-profit institutions have more financial debt on average (and across the distribution) than those who graduate from traditional institutions (holding their employment and earnings prospects constant) [40].[27] This is in large part because "students at for-profit institutions are the most likely to borrow," with 88 percent of the students of private for-profits taking out a loan to cover their tuition [40, p. 171]. As Figure 3 shows, students who attend private for-profit institutions have a disproportionate amount of student debt: on

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[27] In some cases, private for-profit students are worse off in terms of debt and default risk than those who never pursued a college degree.

average and across the distribution, students at private for-profits have at least twice the debt of other students. In addition to receiving over 50 percent of TA funds (as shown previously in Figure 3), private for-profit institutions, in total, have received 36.5 percent of Post-9/11 GI Bill funds, despite only enrolling 8 to 12 percent of the entire market [58]. Although, on average, college students from every sector graduate with debt, there are some who manage to graduate without any debt, and even fewer manage to do so at private for-profit institutions [40]. Those graduating from private for-profits in the 10th percentile (i.e., the 10 percent with the least amount of debt) graduate with an average of $12,000 in debt; the 25th percentile is $30,000 in debt. For all other paths to a bachelor's degree (four-year public, four-year private not-for-profit, or two-year public), these percentiles (10th and 25th) have zero debt. That is, at least 25 percent of college graduates who do not begin at a private for-profit institution graduate with no debt [40]. One study concludes that students in the private for-profit sector are "systemically borrowing too much" [40, p. 187].

Although student debt has been increasing, Avery and Turner suggest that "the claim that student borrowing is 'too high' across the board can—with the possible exception of private for-profit colleges—clearly be rejected" [40, p. 189]. This is largely due to the increased value of being a college graduate through the increased probability of employment *and* increased earnings, allowing graduates to pay off their debts more quickly.

Loan defaults

It has become increasingly common for college students to take on debt to finance their educations. When students finish (or drop out of) college, they must repay that debt because it is exempt from bankruptcy protections. Some, however, will be unable to pay off their student loan debt and will, correspondingly, default. Default rates vary considerably by education sector and are shown in Table 5. Two default rate measures are shown: any defaults within two years and any defaults within three years. We present both because, before FY 2012, Title IV eligibility (an institution's ability to accept federal student loan monies) was determined using a two-year default period [58]. In FY 2012, the time period considered for defaults was increased to three years. The threshold for Title IV eligibility is a default rate below 25 percent. That is, institutions that have a default rate of 25 percent or higher (as of FY 2012) for three consecutive years lose their Title IV eligibility and can no longer accept federal student loan monies. As Table 5 reveals, private not-for-profit institutions have the lowest default rates, at 4.0 percent within two years (and 7.6 percent within three years). Public institutions have slightly higher default rates, at 6.0 percent within two years (and 10.8 percent within three years).

Table 5.   Two-year and three-year student loan default rates, by education sector (FY 2008).

Any defaults within ...	Public	Private not-for-profit	Private for-profit
Two years	6.0%	4.0%	11.6%
Three years[a]	10.8%	7.6%	24.9%

Source: [58].
Note: For Title IV eligibility (i.e., the ability to receive federal student loans), an institution may not have a default rate that is 25 percent or more for three consecutive years or 40 percent in a single year.
[a.] Before FY 2012, default rates were tracked within a two-year window for each graduating cohort. Beginning in FY 2012, a three-year default window became the standard for Title IV eligibility.

Default rates at private for-profit institutions are considerably higher. Given these students' debt burdens, it is not surprising that private for-profit students also are more likely to default. As Table 5 shows, students in the private for-profit sector are nearly twice as likely to default within two years as those in the public sector, and nearly three times as likely to default within two years as those in the private not-for-profit sector. In addition, the three-year default rate at private for-profits is more than double the two-year default rate.

For the entire private for-profit sector, the average default rate across all institutions is only one-tenth of a percentage point below the cutoff for Title IV eligibility. This is more than double the three-year default risk of public-sector students and more than triple the three-year default risk of private not-for-profit students. Student loan defaults at private for-profit institutions represent nearly half of all defaults, despite representing only 11 percent of enrollments [58]. In addition, students in the private for-profit sector have been found to have additional debt, lower employment rates, and less income—all factors that likely contribute to their higher default rates [67]. Students in the private for-profit sector are left in a precarious financial situation: they have substantial debt and default rates that are just below the federally mandated cutoff.

Although this section has focused on traditional students due to limitations in the available literature, it still informs the likely outcomes and experiences of TA and MyCAA users. We anticipate that graduation rates for TA users at public and private not-for-profit four-year institutions will be higher than those of TA users at private for-profit four-year or public two-year institutions. We expect that student debt will be lowest for TA users at public institutions because of those institutions' lower tuition costs. Accordingly, we expect student debt to be highest for TA users at private for-profit institutions, which have higher tuitions, although the degree to which institutions choose to reduce costs that exceed TA limits also could be a factor.

Where debt levels are higher, so too are default rates, particularly at private for-profits. Private for-profit institutions now represent the majority of TA use.[28]

Private for-profit students who are *not* TA or MyCAA users have worse experiences and outcomes than students in other education sectors. Although it is unclear whether these worse experiences and outcomes also will be experienced by TA users, this may be the case. In the next section, we take a closer look at private for-profit institutions and the potential implications of their increased popularity among TA and MyCAA users.

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[28] Because of data availability issues, we will be unable to examine TA or MyCAA users' levels of indebtedness or default rates as part of this study.

Private For-Profit Institutions and Their Students

Nontraditional students (i.e., those not attending full-time at residential campuses) represent a growing share of college students, especially at private for-profit institutions. It has been estimated that 75 percent of all college students are now nontraditional [56]. Nontraditional students can be part-time students, have full-time jobs, commute, be parents, be veterans, or be active-duty Servicemembers (such as most TA users). Each of these scenarios adds a dimension of difficulty in pursuing a college education. Many private for-profit institutions have tailored themselves to accommodate this growing college population and its diverse needs [68-69]. In particular, private for-profit students have reported the following advantages: caring instructors, small classes, and efficient programs [70-71]. In addition, in a survey by Public Agenda, nearly all surveyed undergraduates received guidance and support, and 83 percent received help with financial aid applications [70-71]. For these reasons, among others, nontraditional students, such as veterans and TA users, have sought out private for-profits for their college educations.

Military students find two aspects of private for-profits especially appealing: distance learning and flexible scheduling. First, private for-profit institutions offer the greatest opportunities for distance learning. In 2009, private for-profits accounted for 35.2 percent of distance-learning degree programs [72] but only 17 percent of the higher education market at large [33]. As of 2012, 2.6 million students, across all education sectors, were enrolled in fully online degree programs. Of those students, 900,000 were enrolled at private for-profit institutions [73].[29] Second, the structure of private for-profit degree programs makes it easier to work full-time and be a full-time student. For example, unique course schedules allow students to attend classes only once a week and maintain full-time enrollment. Students at private for-profits also give their institutions "high marks" for scheduling flexibility [67, 70]. Of particular relevance to TA and MyCAA users is the fact that private for-profits enable students to attend the same institution in multiple states through distance learning and to take the courses they need when they need them through flexible scheduling [68-69].

Despite some veterans' and nontraditional students' preference for private for-profit institutions, negative perceptions about them persist. However, it is unclear whether these

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[29] Public two-year institutions had the second highest enrollments in fully online degree programs, with 675,000 students enrolled [73].

perceptions are due to the private for-profit institutions' poor quality or to the types of students that attend them. The remainder of this section discusses these two points in further detail in an effort to provide a balanced picture of private for-profit institutions.

Negative perceptions

Private for-profit higher education institutions represent approximately one-sixth of all enrollments but nearly half of all TA enrollments [32-33]. Moreover, private for-profit institutions have grown rapidly in the military education market and are now among the most popular institutions (see, for example, Table 1 or [36]). This has raised questions about the quality of Servicemembers' educations. Private for-profit institutions have had a bad reputation across a broad spectrum of entities, including the following:

- The (traditional) academic higher education community[30]

- The US Senate, which criticized private for-profit institutions as largely negative and as the unintended beneficiaries of newly generous GI Bill benefits [9]

- Prospective employers, who still hesitate to hire private for-profit graduates and prefer to hire people from "reputable" schools [70]

- The popular media, which often classifies private for-profits as "diploma mills" that are not concerned with their students' outcomes [57-58, 76-78]

- The alumni of private for-profit institutions who question whether their degrees (and debt) were worthwhile [67, 70]

These pervasive negative perceptions have no doubt led to the considerable recent attention devoted to private for-profit institutions.

Private for-profits are coming under increased scrutiny, regulation, and legal action because of the concerns over their students' outcomes. State attorneys general, the Federal Trade Commission, and the US Senate all have recently launched campaigns against the private for-profit higher education industry [9, 79-80]. These efforts emerged from reports that the recruiting practices of private for-profits are "aggressive and predatory," including recruiting techniques self-dubbed the "pain funnel," in which potential students are disparaged until they

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[30] For example, the top three hits from a search of the term "for-profit" at *The Chronicle for Higher Education* are (1) "Who Goes to For-Profit Colleges?" (2) "Undercover Probe Finds Lax Academic Standards at Some For-Profit Colleges," and (3) "For-Profit Colleges' Dubious Statistics" [74]. And while the title for (1) sounds innocuous enough, it describes how low-income and low-quality students are specifically targeted by private for-profit institutions [75].

decide to enroll [77, 79-80]. Additional reports have indicated that recruiters intentionally hide the true cost of attendance [77]. For example, Public Agenda (a nonpartisan, non-profit research company) recently found that 61 percent of private for-profit students are unaware of the average level of debt with which students graduate [71, 79].

This increased legal attention has led to one major private for-profit institution closing almost all of its schools nationwide amid allegations of fraudulent recruiting practices, targeting (vulnerable) Servicemembers, and altering grades [81-82]. There has been special concern for veterans and Servicemembers attending private for-profit institutions because "veterans are being aggressively recruited by enrollment counselors, a.k.a. recruiters, employed by for-profit colleges who want a slice of the GI Bill pie, but are not all upfront about [their school's failure to meet] accreditation requirements, degree programs [not recognized by employers], career placement, and costs" [77]. Therefore, students at private for-profit institutions, including veterans and TA users, have an information disadvantage [70, 77, 79]. Private for-profit institutions know much more about themselves (e.g., average debt and graduation rates) than do prospective students. Some private for-profit institutions have used this informational disadvantage to the detriment of their Servicemember and civilian students—sometimes leading students to enroll without complete knowledge of the school's average debt or graduation rates [70, 77, 79]. The legal attention surrounding private for-profit institutions and the allegations about targeting Servicemembers have warranted examination of their student outcomes.

Avery and Turner characterize the empirical literature's findings regarding these student outcomes as follows:

> Those who begin their studies at…for-profit colleges have particularly low college completion rates and are unlikely to realize substantial earnings gains associated with degree completion. For students at for-profit institutions, the consequences of weak outcomes are compounded by high levels of borrowing; not surprisingly, these students are unusually likely to default on loans. [40, p. 188]

Students at private for-profits fare worse than students at other institutions. Given these findings, it is not surprising that private for-profit students also have poorer qualitative outcomes and are more likely to doubt the merits of their education. For example, students at private for-profits are less likely to believe that their degrees were worth the cost and have lower opinions of the educations they received while in school [41, 58]. Public Agenda found similar results in its nationwide survey of prospective students, current students, alumni, and employers (1,950 people in total) regarding their perceptions of private for-profit and other higher education institutions [71]. The survey found that students at private for-profits are less likely than students at traditional institutions to think the monetary investment (borrowing) was worth it—nearly two-thirds reported that the cost either "really wasn't worth it" or

"remains to be seen" [71]. Deming and coauthors had similar findings based on the 2004/2009 Beginning Postsecondary Students Longitudinal Study, which has been commonly used to compare the outcomes of private for-profit students with those at traditional institutions [58]. Although a majority of students at private for-profit institutions report that they are "satisfied," the proportion indicating satisfaction is significantly smaller than among students graduating from traditional institutions [71]. Of particular note is that community college students (who are considered similar to students at private for-profit institutions) were equally satisfied, but less concerned about cost [70]. All of these aforementioned reports suggest that students at private for-profit institutions have worse quantitative and qualitative outcomes than students at other institutions.

Despite recent legal action and being perceived negatively by numerous entities, the research is still unclear about whether private for-profit institutions are the *cause* of their students' inferior outcomes or if these students would have had similarly poor outcomes at traditional institutions.

Causal attribution to private for-profits?

In the previous subsection, we established that nontraditional students (including TA users and other military students) have poorer outcomes than traditional students. For example, part-time students (a type of nontraditional student) are nearly one-third less likely than their traditional counterparts to graduate with a bachelor's degree after eight years [56]. In addition, nontraditional students make up a greater percentage of the student population of private for-profit than private not-for-profit institutions. These facts make it difficult to distinguish whether poorer outcomes experienced by students at private for-profits are the result of institutional quality or student quality.

Since students who attend private for-profits are inherently different from those in other education sectors, the outcomes associated with private for-profits cannot be causally attributed to the schools themselves. That is, we cannot conclude from the existing research that private for-profit institutions are responsible for the negative outcomes associated with their students and graduates. Students who enroll at private for-profit institutions are, at the time of enrollment, typically less academically prepared for college and have fewer financial resources than their counterparts at other institutions [67, 71, 79, 83]. This is, in part, because private for-profits generally have open enrollment. Students at nonselective institutions are less likely to graduate than are students at institutions with varying degrees of selectivity [61]. Hence, poorer outcomes and greater debt could be attributable to these students' characteristics and *not* to the private for-profit institutions themselves. These students could have had the same outcomes if they had enrolled in traditional institutions. The lack of

comparable students across four-year institutions in the educational sectors (let alone sufficient, appropriate, and accessible data) makes it difficult to causally attribute the negative outcomes of private for-profits' students to the institutions themselves. Despite this, TA and MyCAA users offer a unique opportunity to do so, which the empirical complement to this literature review hopes to exploit.

Although the students at private for-profit institutions are typically not comparable to the students at public and private not-for-profit four-year institutions, these students are comparable to students at community colleges. Despite the similarities between private for-profit and community college students, students at private for-profits are 18 percentage points less likely than their community college counterparts to take remedial coursework [58]. This suggests two possibilities: (1) private for-profit students do not need remedial coursework or (2) private for-profit institutions are not providing remedial coursework that is needed. These possibilities imply a contradiction regarding whether private for-profit students are truly less academically prepared at the time of enrollment. On one hand, if students do not need remedial coursework, they must not be less academically prepared than other students, as some private for-profits claim. On the other hand, if private for-profit institutions are failing to provide their admittedly less academically prepared students with necessary remedial coursework, they are, in part, responsible for their students' poorer outcomes. In both cases, private for-profits can be considered at least partially responsible for the poorer outcomes of their students as compared with the students at public and private not-for-profit four-year institutions.

It may be the case, however, that private for-profit institutions are serving two distinct populations—those who are less academically prepared for college (and are, thus, attracted to these institutions' open enrollment policies) and those who find the online and flexible coursework that these institutions offer to be attractive. As such, it is possible that outcomes for military-connected students at private for-profit institutions will differ from those found in the existing literature.

Conclusion

In this report, we have reviewed literature that can help inform how individual Service-members (and their spouses) benefit from TA (and MyCAA). Unfortunately, there is no prior work addressing this specific question. As such, we consult the most relevant literature that *does* exist—literature examining how college students, in general, benefit from their college educations and degrees. We suspect that these general benefits will apply to TA and MyCAA users in some, but not all, situations. This is because TA and MyCAA users are nontraditional students: they are likely to attend part-time and be distance learners. Therefore, to the extent available, we also consult the existing literature on the outcomes of nontraditional students. Admittedly, this literature is limited since most studies focus on outcomes for traditional students. Our incorporation of literature (and lessons learned) from nontraditional students, when possible, helps to provide a better sense of how TA and MyCAA users are likely to benefit from participation in these programs.

In our attempt to determine how Servicemembers (and their spouses) will benefit from the TA (and MyCAA) programs, we have used the existing literature to inform the following questions:

- Is college *worth* it? Are there situations in which college fails to be *worth* it?

- What benefits can TA users expect to get out of a college education or degree?

- Half of TA funds are spent at private for-profits. What are the implications of this for TA users?

- Do the poorer outcomes associated with private for-profit students apply to TA users?

For many traditional college students, attending college *is* worth it. That is, the (monetary) benefits of college exceed its costs. College offers a broad range of benefits. Some of these benefits are conferred through attendance. TA users, for example, can expect a more successful transition to civilian life. Other benefits (e.g., increased earnings and improved employment prospects) can only be reaped with a degree. Despite these benefits, there are still instances when going to college will fail to be worth it; this is determined primarily by future income and the amount of debt accrued to finance that education. Underemployment (i.e., college graduates taking jobs that do not fully use their degrees) and nonattainments (i.e., students failing to obtain degrees) are the primary reasons why future income may be insufficient to make college worthwhile. Conversely, student debt, which is permanent and exempt from bankruptcy, makes college not worthwhile when the amount of student debt accrued is sufficiently large

(relative to future income). As a result, it cannot be universally concluded from the existing literature that attending college is worthwhile. Specifically, for those who take on too much debt, fail to receive a degree, or take a job below their ability levels, college will fail to be financially worthwhile. For most, college is financially worthwhile because of increased earnings potential.

The typical quantitative benefits of a college degree will not directly apply to TA users while they are still serving. That is, Servicemembers already have jobs, and will correspondingly not benefit from a decreased likelihood of unemployment. In addition, military pay is predetermined, so Servicemembers will not experience the earnings growth from college degrees at the same rate as their civilian counterparts. The one exception is that, to the extent that a college degree increases competitiveness for promotion, a college degree could lead to greater military pay [22]. Once separated from the military, however, Servicemembers who have used TA to obtain a college degree are more likely to benefit from the increased earnings and lower unemployment likelihood associated with their degrees.

A college education also may fail to be worthwhile if that education is pursued at a private for-profit institution. Students at private for-profits fare worse than students in other education sectors. For example, students in the private for-profit sector are nearly five times less likely than other students to graduate, and they have substantially more debt than others. Correspondingly, private for-profit institutions' students are substantially more likely to default on that debt. In addition, other military students (i.e., veterans) have had worse outcomes at private for-profits (e.g., lower graduation rates). It is unclear if this applies to TA and MyCAA users, although it seems likely we can expect them to have similarly dismal outcomes.

Despite the poor outcomes of students at private for-profits, TA users are increasingly enrolling in them. For example, private for-profits receive more than half of TA funds, and they represent just less than half of all TA users and all courses taken by TA users. The popularity of private for-profits among TA users may have been driven by recent policy changes (e.g., requiring credit for military training at academic institutions) and the fact that private for-profits have catered to military and other nontraditional students. For example, private for-profits offer more distance-learning options than traditional institutions, greater flexibility in course availability, and the ability to pursue a full-time course load (even when working full-time)—all critically important for military students. Students at private for-profits, however, are much less likely to receive remedial coursework than otherwise similar students. This lack of remedial education implies that the private for-profit institutions are at least partially responsible for the poorer outcomes of their students.

This literature review alone is not sufficient to determine whether (and to what extent) Servicemembers and military spouses are benefiting from TA and MyCAA, owing to a lack of prior research related specifically to TA and MyCAA and to recent changes to both programs. In addition, the question of whether Servicemembers and military spouses are benefiting from TA and MyCAA is largely an empirical one. Thus, the next component of this study will answer this question by determining TA and MyCAA users' outcomes. In addition, we will address how these outcomes vary by the education sector in which TA and MyCAA users enroll (public, private not-for-profit, or private for-profit).

Part 2: Military Education Programs: A Data Analysis

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Executive Summary

The Department of Defense (DOD) provides educational benefits to Servicemembers and their spouses that are aimed at easing the financial burden of continuing education. The two primary programs are Tuition Assistance (TA) and My Career Advancement Account (MyCAA). All Services provide the same TA benefits: up to $250 per semester credit hour up to a maximum of $4,500 in tuition per fiscal year (FY). The complementary program to TA for military spouses is MyCAA, which is available for spouses of Servicemembers in paygrades E1–E5, O1–O2, or W1–W2, provided the Servicemember is serving on active-duty Title 10 orders. MyCAA is primarily viewed as a workforce development program that helps military spouses obtain the licenses and education necessary for employment in portable career fields and occupations.

The 2014 DOD Appropriations Bill mandated a study tracking the outcomes of those who receive either Tuition Assistance (TA) or My Career Advancement Account (MyCAA). The metrics requested by Congress included the graduation rate, the number of program participants, the number of courses taken per participant, the course completion rate, and the average cost per course (both to the TA program and to the Servicemembers/spouses). In this report, we present tables containing the statistics necessary to satisfy the congressional requirement and discuss some revealing differences across Services and over time.

There are a few important caveats regarding the comparability of numbers across the Services. First, management controls, which vary by Service, often limit the number of courses that a Servicemember can take, especially in his or her first year. As a result, the average number of courses taken per Servicemember might not be directly comparable across the Services if the limits on first-year or later courses vary by Service. Second, Army and Air Force data contained specific fields for certificates and for degree types, whereas the Navy and Marine Corps data had free entry fields for the type and/or level of degree earned. As a result, these two Services include degrees at a wider range of levels. Third, the Army has noted that there are discrepancies between the Army data we report and similar data generated by the Army Continuing Education System (ACES). The ACES data include all grades officially submitted, whereas if the same course is taken on multiple dates, we keep the dates associated with the course for which the Servicemember received the highest grade.[31] If, however, a grade was later changed—thus resulting in multiple grades for the same course—and the more recent entry was the correct entry, then our data would not accurately reflect that change. Finally, our TA

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[31] If the Servicemember took the same course on multiple dates, and received the same grade, we keep the dates associated with the first time the course was taken.

data do not include students who take courses solely through the Community College of the Air Force (CCAF), or other Service-provided institutions, for that matter. Airmen are able to take CCAF courses free of charge and, as such, do not use TA to fund their enrollment in these courses. As a result, CCAF course completions, degree completions, and other metrics are not part of the TA and MyCAA data provided throughout this report.[32]

With these caveats in mind, the following general findings emerge from our analysis of Servicemembers' and their spouses' use of TA and MyCAA benefits:

- The Army had the highest number of TA participants, followed by the Air Force, Navy, and Marine Corps. This coincides with the size of each of the Services, including active, reserve, and guard components.

- TA costs were fairly similar across the four Services, although generally higher at both types of private institutions (profit and not-for-profit) than at public institutions.

- In recent years, participants have taken fewer courses at public institutions than at both types of private institutions, and first-year TA and MyCAA users took fewer courses than the average users.

- Similar findings emerge in our analysis of the number of credits earned per participant, the number of courses completed, course completion rates, the number of degrees completed, and the graduation rate. That is, all are higher at both types of private institutions than at public institutions and lower among first-year users than their later-year counterparts.

- Course completion rates are slightly higher in the Air Force and Marine Corps than in the Army or Navy; in fact, course completion rates were highest in the Air Force in each educational sector.

Note, however, that these are only summary statistics and have not controlled for differences in participants' characteristics or in the quality of institutions attended. In our future work, in which we will characterize both Servicemembers who use TA and those who ultimately graduate, we will attempt to parse out such differences.

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[32] CCAF students would, however, be included in the data if they started their education at another institution, using TA or MyCAA benefits, and then transferred those credits to CCAF (or conversely, started at CCAF and then transferred to another institution and used TA or MyCAA benefits).

Introduction

The Department of Defense (DOD) provides educational benefits to Servicemembers and their spouses, aimed at easing the financial burden of continuing education. The two primary programs are Tuition Assistance (TA) and My Career Advancement Account (MyCAA). All Services provide the same TA benefits: up to $250 per semester credit hour up to a maximum of $4,500 in tuition per fiscal year (FY). Although TA users primarily pursue associate or bachelor's degrees, TA funds can also be used for coursework to obtain a high school diploma, certificate, or master's degree [11-14]. TA is available to active component Servicemembers and activated reservists who meet the Services' eligibility requirements. In addition, Servicemembers are able to use "Top-Up" funds to cover any tuition costs and fees that exceed the $250 per-semester-hour maximum. Top-Up is a provision in the GI Bill that allows Servicemembers to use TA and GI Bill benefits simultaneously so that they do not have to take out loans for any tuition or fees that exceeds the TA maximums [11, 35]. This may enable them to take courses that they would have been otherwise unable to take while on active duty, but it will decrease the GI Bill benefit available to them after leaving the Service.

The complementary program to TA for military spouses is MyCAA, which is available for spouses of Servicemembers in paygrades E1–E5, O1–O2, or W1–W2, provided the Servicemember is serving on active-duty Title 10 orders. MyCAA is primarily viewed as a workforce development program, aimed at helping military spouses obtain the licenses and education necessary for employment in portable career fields and occupations. As such, MyCAA scholarships cover costs for courses and examinations leading to an associate degree, license, or certification, up to a 3-year maximum of $4,000 [84].

The 2014 DOD Appropriations Bill mandated a study tracking the outcomes of those who receive either TA or MyCAA. Specifically, the Bill stated:

> The Committee is concerned about the lack of information available on the outcomes of students receiving Tuition Assistance and My Career Advancement Account [MyCAA] benefits. Therefore, the Committee directs the Department to submit a report tracking such outcomes of each of these programs. [85, p. 34]

A number of metrics were requested, both aggregated and at the educational sector level, where educational sectors are public, private for-profit, or private not-for-profit. The metrics requested included the graduation rate, the number of program participants, the number of courses taken per participant, the course completion rate, and the average cost per course (both to the TA program and to the Servicemembers/spouses). In addition, the Appropriations Bill requested a report on the percentage of Servicemembers using Top-Up and the average

dollar amounts of Top-Up use by FY. In this report, we present tables containing the statistics necessary to satisfy the congressional requirement and discuss some revealing differences across Services and over time.

The remainder of this report is organized as follows. In the next section, we review our data sources and analytical methodology. Then, we present the tables and discuss findings, one metric at a time. Within the section for each metric, we include findings for TA users in the Army, Navy, Air Force, and Marine Corps, both individually and combined across the four Services, as well as for spouses using MyCAA. We conclude by discussing the overarching patterns that we observe.

Data and Methodology

Two types of data are used to generate the statistics provided in this report. The first is TA data, which each of the four Services provided to us. The second is MyCAA data, provided by the Force Education and Training section. The Services' TA data contained information on all courses taken by Servicemembers (both officers and enlisted) receiving TA from FY 1999 through FY 2015, whereas the Force Education and Training's Voluntary Education (VolEd) data contained information on all courses taken by military spouses receiving MyCAA benefits during the same time period. Each of the TA and MyCAA datasets provided information on degrees earned during the time period, although the MyCAA data covered only certifications, licenses, and associate degrees since MyCAA does not fund higher level degrees. The data required substantial cleaning to be in a uniform, usable format; Appendix A provides details on data cleaning.

In the remainder of this section, we explain our processes for assigning Servicemembers (and their corresponding data) to institutional sectors and creating cohorts.[33]

We began by assigning each Servicemember's course and degree data to one of three educational sectors: public, private not-for-profit, and private for-profit.[34] Navy, Air Force, and Marine Corps data listed institutions in each of the public, private not-for-profit, and private for-profit sectors, but the Army did not differentiate between the private not-for-profit and private for-profit sectors in its data. Therefore, we standardized sectors in the Army data using data from the other Services and from the Integrated Postsecondary Education Data System (IPEDS). In cases in which two or more other Services listed a private institution's corresponding sector and there was no disagreement between Services, the Army data were updated to reflect the sector in the other Services. If an institution was listed in only one other Service's data or if any Service disagreed on the sector to which an institution belonged, the sector was verified using historical IPEDS data and/or the IPEDS College Navigator [86].[35] Over 4,400 institution names did not have a sector listed in any of the four Services' files; these were

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[33] Understanding these two processes is essential to understanding how we generated the statistics required by the 2014 DOD Appropriations Bill.

[34] Other/unknown institutions are not reported separately, but are included in the all reported sectors numbers.

[35] Correspondence with IPEDS staff revealed that all Everest colleges and institutes changed from private for-profit to private not-for-profit during the 2014/2015 academic year. We are unaware of any other institutions making this switch or the reverse.

left as "other or unknown sector."[36] If an institution had both missing and non-missing sector values, the missing values were changed to match the non-missing ones. In addition, none of the Services' degree files contained sector data. As a result, directly matching degree data to a particular sector was impossible.[37] Instead, degrees were assigned to the sector of the institution at which a Servicemember started his or her final course prior to receiving that degree.[38] If a Servicemember had multiple courses in multiple sectors start on that date, the degree was assigned to the sector in which that Servicemember had taken the most courses prior to degree receipt.

We assigned Servicemembers to cohorts based on the year in which they first used TA, from 1999 through 2015. Since different institutions begin their academic calendars at different points, years were defined to begin on September 1 and end on August 31. We assigned cohorts for four reasons: (1) to determine for how long Servicemembers used their TA benefits, (2) to track whether Servicemembers take more courses or use more TA benefits the longer that they remain in the TA program, (3) to measure how Servicemembers have progressed toward degrees over time, and (4) to assess whether changes in TA policy over time affect how different cohorts of Servicemembers use TA. Cohorts are determined based on when a Servicemember first appears in any sector; thus, a Servicemember who switched sectors might not appear in the second sector's data until long after his or her cohort year.

Once sector and cohort assignments were established, we calculated sector-, cohort-, and Service-specific means and standard deviations for each outcome of interest (as defined by the Appropriations Bill) in the 2014 and 2015 academic years. Namely, these were:

- The total number of TA program participants

- The total TA cost per participant

- The combined TA and out-of-pocket cost per participant

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[36] Since some names on this list are alternative spellings, abbreviations, or misspellings of other ones, the 4,400 names correspond to many fewer actual institutions.

[37] Matching on university names would have been highly inaccurate, particularly for the Army data, and looking up sectors for each institution in the degree data would have been prohibitively time-consuming.

[38] In some cases, degrees may be incorrectly assigned as a result. For example, any Servicemember who started a degree program at one institution and transferred to another within the Servicemember Opportunity Colleges—a consortium of schools that agree to accept credits towards degrees from each other—will appear in the data as a degree completion only at the later institution. The institution where TA was first used will not get credit for that degree completion.

- The total number of Servicemembers using Top-Up

- The average Top-Up payment per participant

- The total number of courses taken per participant

- The total number of credits taken per participant

- The total number of courses completed per participant

- The course completion rate[39]

- The number of degrees attained per participant[40]

- The graduation rate

All rules and calculations above were applied analogously to MyCAA data, with a few exceptions. First, since the MyCAA program did not begin until much later than the TA program, spouses were assigned cohorts from 2009 through 2015. Second, degree data were provided only for certificates, licenses, and associate degrees because higher level degrees are not funded through the program. Finally, MyCAA data did not contain information on the number of credits that spouses enrolled in, and MyCAA participants are not eligible for the Top-Up benefit.

Caveats

There are a few important caveats regarding the comparability of numbers across the Services. First, management controls, which vary by Service, often limit the number of courses a Servicemember can take, especially in his or her first year. As a result, the average number of courses taken per Servicemember might not be directly comparable across the Services if the limits on first-year or later courses vary by Service.

Second, Army and Air Force data contained specific fields for certificates and for associate, bachelor's, and master's degrees. The Navy and Marine Corps data, however, had free entry

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[39] Some courses could not be counted as either complete or incomplete based on grade data (particularly in the Army data); these courses are omitted from the completion rate calculation, so the completion rate will be slightly higher than the number of courses completed divided by the number of courses taken. For course completion rate calculations, individual Servicemember rates were weighted by the number of courses taken.

[40] Degrees per participant and graduation rate include degrees earned at any level, from certificates to doctoral degrees. In the Navy and Marine Corps (and perhaps in other Services as well), degree completion is self-reported by the Servicemembers. It is therefore possible that some completed degrees were not reported.

fields for the type and/or level of degree earned. As a result, these two Services include degrees at a wider range of levels (i.e., the high school, continuing education, PhD or professional, and undetermined levels). Numbers for each of the Services may therefore not be entirely comparable. Depending on the types of degrees one considers relevant, either the Army and Air Force slightly undercount the true number of relevant degrees or the Navy and Marine Corps slightly overcount them. As we consider a degree at any level to be an outcome of interest, we prefer the former interpretation.

Third, the Army has noted that there are discrepancies between the Army data we report and similar data generated by the Army Continuing Education System (ACES). The ACES data include all grades officially submitted, whereas if the same course is taken on multiple dates, we keep the dates associated with the course for which the Servicemember received the highest grade.[41] If, however, a grade was later changed—thus resulting in multiple grades for the same course—and the more recent entry was the correct entry, then our data would not accurately reflect that change. In such a case, completion data could be affected as well, if the grade change was such that it changed a course grade from a "D," to a "C," for example. It is important to note that such issues only arise in cases where grades are changed *after* the fact. In addition, the ACES data report statistics by fiscal year, whereas the statistics in this report are based on academic years. Depending on the month of a particular course observation, there will likely be cases where the Army would count it, for example, as part of fiscal year 2014, but we would count it as academic year 2015 (e.g., August 2014).

Fourth, our TA data do not attempt to connect students who "dual-enroll" with a TA institution and ultimately graduate from the Community College of the Air Force (CCAF). As a result, CCAF enrollments, course completions, degree completions, and other metrics are not part of the TA and MyCAA data provided throughout this report. It should be noted that CCAF is a regionally accredited community college and is a significant source of degrees for enlisted airmen, as can be seen in the statistics shown in Table 6. In 2015, over 160,000 students were enrolled in the CCAF, regardless of whether they were seeking their first or a subsequent degree. In addition, there were over 83,000 active-duty Airmen with a CCAF degree—over 34 percent of the entire active force. Most important, the CCAF students will not be included in our calculation of TA graduation rates unless they graduated from an institution other than CCAF, while using TA. When evaluating the TA statistics presented in this report, it is important to recall that this information is specific to TA users and is thus not meant to be a complete representation of the educational opportunities used by Servicemembers.

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[41] If the Servicemember took the same course on multiple dates, and received the same grade, we keep the dates associated with the first time the course was taken.

Table 6.   CCAF participation (2015) and degrees granted (2011-2015)

Students Enrolled, Seeking First Degree	Graduates Enrolled, Seeking Subsequent Degree	Total Students Enrolled	CCAF Graduates Still Serving	Percent of Total Force with CCAF Degree
158,725	1,704	160,429	83,047	34.4%

Total Degrees Granted	
2011	18,494
2012	20,148
2013	20,661
2014	23,157
2015	23,206

Source: CCAF 2015 Annual Report, provided by the Air Force.

Finally, a number of observations had to be dropped from our data, for a variety of reasons. Our data-cleaning process is explained in greater length in Appendix A. In Appendix B, we present information on the "dropped" observations, by Service. Although we attempted to make our results as comparable as possible across Services, by applying the same rules to each Service's data, these rules affect each Service differently—resulting in a different number of observations being dropped per Service. As we show in Appendix B, when comparing the summary statistics of those who were dropped and not dropped in each Service, we are left with no reason to expect that the dropped observations are considerably skewing our results.

Results

In this section, we present summary statistics for the outcome measures by Service, sector, and cohort, as well as by academic year (2014 and 2015).

Results are grouped into five subcategories:

- Participation—how many Servicemembers used TA and how many spouses used MyCAA in a given year?

- Cost—how much did DOD pay in TA and MyCAA benefits, and what were the total costs (counting these benefits) to Servicemembers and their spouses?

- Enrollment—in how many courses and for how many credits did TA and MyCAA users enroll while using TA or MyCAA?

- Course completion—how many courses did TA and MyCAA users complete, and what were their course completion rates while using TA or MyCAA?

- Degree completion—how many degrees did TA and MyCAA users complete, and what were their course completion rates while using TA or MyCAA?

- Graduation rates—what were TA and MyCAA users' graduation rates while using TA or MyCAA?

Our discussion will focus chiefly on three sets of results:

- The overall level of each outcome in 2015 across all cohorts.

- The overall level of each outcome in Servicemembers' first year of TA use (or spouses' first year of MyCAA use); this uses only 2014 data for the 2014 cohort and only 2015 data for the 2015 cohort.

- How Servicemembers who use a second year of TA (and spouses who use a second year of MyCAA) differ from Servicemembers in their first year of TA (and spouses in their first year of MyCAA); this compares the 2014 cohort in 2015 against the 2014 cohort in 2014.

The first of these outcomes reflects how TA and MyCAA are currently being used. The second addresses how new TA and MyCAA users, who represent a large part of the demand for the two programs and may act systematically differently from longstanding TA and MyCAA users, interact with these programs and pursue their educations. The third shows how a particular cohort changed over time—partly because some members of that cohort altered their individual course-taking patterns and partly because other members of that cohort stopped

taking courses entirely. We will both discuss these results within each Service (and for MyCAA) and compare results across Services (and MyCAA users). We also present results for all four Services as a whole (though we omit MyCAA from this calculation). Additional results will be discussed on a case-by-case basis when particularly relevant (e.g., extreme outlying values). Throughout our discussions and presentations of results, the officer and enlisted populations are combined (within a cohort, sector, and Service) since no officer/enlisted breakouts were requested by the Appropriations Bill. In future work, we will analyze how TA use differs for these two populations.

TA and MyCAA participation

In many respects, the most important outcome is the number of Servicemembers and spouses enrolled in the TA and MyCAA programs. Extremely low enrollment would suggest that the programs are not providing their intended benefits, while extremely high enrollment might suggest that the programs are being overtaxed. Program participation also provides necessary context for the other outcomes; if enrollment is extremely high, for example, even low per-student costs could translate into high program-wide costs.

Tables 7 through 10 contain statistics on the number of Servicemembers using TA, in each of the four Services. Table 7 contains the number of Servicemembers using TA in the Army, and the corresponding numbers for the Navy, Air Force, and Marine Corps are presented in Tables 8, 9, and 10, respectively. The number of TA users combined across all four Services is shown in Table 11. The number of MyCAA users is presented in Table 12. Each row in these tables shows the number of participants from a cohort of Servicemembers or military spouses (where a cohort is defined as all students enrolling between September 1 of one year and August 31 of the following year); the bottom row provides the total for all participants. The columns show the number of participants in a given year and are grouped by sector: private for-profit, private not-for-profit, public, and all reported sectors.[42]

Overall TA use is highest in the Army, second highest in the Air Force, third highest in the Navy, and lowest in the Marine Corps. Across all reported sectors, over 115,000 Soldiers used TA in 2015, compared with approximately 84,000 Airmen, 44,000 Sailors, and 17,000 Marines. Altogether, over 260,000 Servicemembers across the four Services used TA benefits in 2015.

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[42] Data for the "other/unknown sector" category are available on request; Servicemembers in that sector are included in the "all reported sectors" category. Since some Servicemembers appear in multiple sectors during a single year, the number of participants in all reported sectors will generally be lower than the sum of the number of participants in each sector.

The likelihood of appearing in a particular sector varies by Service (or MyCAA). Table 7 reveals that combined Army TA participation across all cohorts was highest in the private for-profit sector in 2015, with 49,673 Servicemembers enrolling in for-profit institutions. Army enrollment was next highest in public institutions (45,669), and lowest in private not-for-profit institutions (22,004). Table 8 shows that Navy TA participation in 2015 was highest in public institutions (17,804), followed by private not-for-profit (14,983) and private for-profit institutions (12,323). According to Table 9, Air Force TA participation was highest by a wide margin in the for-profit sector (41,402), followed by the public (25,020) and private not-for-profit sectors (20,532). As Table 10 shows, Marine Corps TA participation was highest in 2015 in the private for-profit sector (7,344), followed by the public (6,102) and private not-for-profit sectors (4,114). Enrollment across the four Services was most proportional in the Navy and most skewed toward a single sector—the for-profit sector—in the Air Force. Table 11 shows that overall participation in 2015 across the four Services was highest in the private for-profit sector (117,279), followed by the public sector (94,595) and then the private not-for-profit sector (61,633). The MyCAA data in Table 12 show that overall 2015 participation was much larger in the private for-profit sector (12,311) than in the public sector (7,925), which was, in turn, much larger than that in the private not-for-profit sector (1,662). MyCAA participation was thus highly skewed toward the for-profit sector.

Having a large presence in a particular sector does not necessarily mean that new TA or MyCAA enrollments are concentrated in that sector. This, of course, is because total participation is the sum of new enrollments and continuing students. New Army, Navy, and Air Force enrollments in both 2014 and 2015 were highest in the public sector, whereas 2015 total participation (above) was only highest in the public sector in the Navy. In the Marine Corps, new enrollment was highest in the private for-profit sector in 2014 and in the public sector in 2015. Overall, new enrollment in both 2014 and 2015 was highest in the public sector, followed by the private for-profit sector, and then by the private not-for-profit sector. New MyCAA enrollments were highest in the private for-profit sector in both years. New enrollments were lowest in the private not-for-profit sector in both years for the Army, Air Force, Marine Corps, and for MyCAA users; new Navy enrollments were lowest in the private for-profit sector.

The disparity between new and overall enrollments in a sector is at least partially explained by different TA and MyCAA continuation rates in each Service and sector. For all Services and sectors, the 2014 cohort's enrollment dropped substantially in 2015; 2015 enrollment among the Army's 2014 cohort, for example, fell by nearly 50 percent in private not-for-profit institutions and by nearly two-thirds in public institutions.[43] Declining continuation rates

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[43] For example, based on the numbers in Table 2, private not-for-profit enrollments fell by (4,325-2,290)/4,325, or 47 percent.

within a sector does not necessarily mean that students are no longer using TA. Some sectors' declines may be the result of students switching to other sectors or students previously enrolled in multiple sectors consolidating their enrollment into a single sector. However, overall continuation for this Army cohort was still very low, at close to 40 percent—the lowest of the four Services.

Navy continuation was less pronounced than in the Army, ranging from approximately 53 percent in private not-for-profit institutions to approximately 44 percent in public institutions, with an overall continuation rate of approximately 48 percent. Continuation in the Air Force was higher still: enrollment fell by less than 40 percent in for-profit institutions and by approximately 55 percent in public institutions, for an overall total of approximately 48 percent. Continuation rates in the Marine Corps were lowest in public institutions, at close to 40 percent, and highest at private not-for-profit institutions, at nearly 55 percent. Across all Services, continuation rates were roughly 40 percent in the public sector, approximately 51 percent in the private for-profit sector, and approximately 53 percent in the private not-for-profit sector.

MyCAA continuation rates were extremely low across all reported sectors. The 2014 cohort's enrollment in public institutions fell by nearly 70 percent in 2015, and enrollment at both types of private institutions fell by over 90 percent. This may be a function of the intended purpose of MyCAA; it is meant to be used for certificates, licenses, and two-year degrees only.

Table 7.   TA participants: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	1,120	880	757	618	697	567	2,529	2,037
2000	1,153	986	675	647	775	640	2,540	2,222
2001	1,330	1,136	757	730	979	775	2,984	2,584
2002	1,577	1,386	912	793	1,032	890	3,450	3,015
2003	2,338	2,073	1,204	1,070	1,455	1,232	4,909	4,288
2004	2,299	1,962	1,143	1,076	1,515	1,167	4,847	4,123
2005	2,342	2,050	1,066	982	1,554	1,227	4,878	4,180
2006	2,159	1,828	1,020	880	1,350	1,100	4,428	3,727
2007	2,340	2,002	941	857	1,605	1,251	4,787	4,020
2008	2,883	2,393	1,165	976	2,044	1,575	5,969	4,859
2009	3,532	2,877	1,301	1,059	2,851	1,889	7,508	5,710
2010	4,102	3,259	1,412	1,125	3,607	2,386	8,974	6,645
2011	4,461	3,545	1,666	1,235	4,654	2,948	10,563	7,582
2012	5,197	4,017	2,254	1,551	6,673	4,058	13,900	9,450
2013	6,159	4,360	3,090	1,914	9,110	5,070	18,059	11,139
2014	11,028	5,084	4,325	2,290	14,610	5,285	29,692	12,470
2015	--	9,835	--	4,201	--	13,609	--	27,421
All	54,020	49,673	23,688	22,004	54,511	45,669	130,017	115,472

Source: CNA calculations using data provided by the Army.
Note: Because Soldiers can take classes in multiple sectors, and because we do not display a column for institutions that had a missing or unknown sector, the sum of the sector columns does not total the all sector values.

Table 8.   TA participants: Navy

Cohort	Private for-profit 2014	Private for-profit 2015	Private not-for-profit 2014	Private not-for-profit 2015	Public 2014	Public 2015	All reported sectors 2014	All reported sectors 2015
1999	316	216	338	267	272	192	908	659
2000	315	221	351	285	278	231	928	724
2001	315	257	389	313	277	212	961	769
2002	319	239	337	308	310	271	953	806
2003	466	355	491	423	395	301	1,324	1,061
2004	600	426	588	504	480	403	1,641	1,311
2005	643	497	645	578	599	506	1,851	1,548
2006	687	533	703	596	631	523	1,974	1,622
2007	710	588	738	706	745	627	2,147	1,882
2008	606	498	579	552	706	572	1,840	1,588
2009	835	682	733	712	830	689	2,333	2,013
2010	787	622	636	540	752	586	2,124	1,721
2011	900	667	673	581	948	670	2,454	1,853
2012	1,152	782	1,026	743	1,520	958	3,604	2,423
2013	1,575	1,025	1,833	1,249	2,859	1,595	6,125	3,795
2014	2,566	1,269	3,414	1,820	5,514	2,429	11,325	5,394
2015	--	3,446	--	4,806	--	7,039	--	15,040
All	12,792	12,323	13,474	14,983	17,116	17,804	42,492	44,209

Source: CNA calculations using data provided by the Navy.
Note: Because Sailors can take classes in multiple sectors, and because we do not display a column for institutions that had a missing or unknown sector, the sum of the sector columns does not total the all sector values.

Table 9. TA participants: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	205	149	133	103	102	77	430	323
2000	884	724	584	438	384	256	1,819	1,394
2001	1,650	1,349	1,173	890	783	540	3,525	2,724
2002	1,233	1,089	817	604	538	413	2,537	2,064
2003	1,934	1,731	1,184	919	806	655	3,842	3,229
2004	2,083	1,828	1,182	1,010	928	698	4,090	3,447
2005	2,025	1,846	1,228	934	944	681	4,084	3,385
2006	1,938	1,679	1,036	819	879	648	3,737	3,068
2007	2,354	2,015	1,158	874	1,026	764	4,397	3,541
2008	2,762	2,389	1,363	1,057	1,301	888	5,243	4,210
2009	2,840	2,397	1,324	984	1,379	979	5,352	4,218
2010	3,143	2,777	1,443	1,064	1,624	1,081	5,986	4,745
2011	3,794	3,093	1,672	1,248	2,134	1,431	7,313	5,538
2012	4,388	3,607	2,229	1,599	3,124	2,084	9,388	7,015
2013	4,750	3,948	2,843	1,996	4,215	2,958	11,316	8,585
2014	6,837	4,225	4,332	2,308	8,129	3,653	18,766	9,776
2015	--	6,556	--	3,685	--	7,214	--	16,993
All	42,820	41,402	23,701	20,532	28,296	25,020	91,825	84,255

Source: CNA calculations using data provided by the Air Force.
Note: Because Airmen can take classes in multiple sectors, and because we do not display a column for institutions that had a missing or unknown sector, the sum of the sector columns does not total the all sector values.

Table 10. TA participants: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	246	197	166	147	147	135	554	469
2000	186	145	165	140	131	114	477	391
2001	170	167	121	110	117	100	398	368
2002	170	152	123	129	84	87	373	361
2003	237	227	156	187	157	161	541	561
2004	247	201	160	149	125	134	527	477
2005	304	247	169	153	135	144	598	533
2006	295	266	152	157	139	150	572	564
2007	381	340	160	155	150	136	682	616
2008	412	337	163	178	193	178	761	679
2009	521	444	170	163	184	167	859	763
2010	493	403	175	172	206	202	863	764
2011	650	483	214	226	306	252	1,151	946
2012	791	630	317	265	536	393	1,616	1,262
2013	953	751	496	391	1,087	747	2,497	1,844
2014	1,591	711	661	371	1,444	603	3,663	1,657
2015	--	1,643	--	1,021	--	2,399	--	5,011
All	7,647	7,344	3,568	4,114	5,141	6,102	16,132	17,266

Source: CNA calculations using data provided by the Marine Corps.
Note: Because Marines can take classes in multiple sectors, and because we do not display a column for institutions that had a missing or unknown sector, the sum of the sector columns does not total the all sector values.

Table 11. TA participants: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	1,887	1,442	1,394	1,135	1,218	971	4,421	3,488
2000	2,538	2,076	1,775	1,510	1,568	1,241	5,764	4,731
2001	3,465	2,909	2,440	2,043	2,156	1,627	7,868	6,445
2002	3,299	2,866	2,189	1,834	1,964	1,661	7,313	6,246
2003	4,975	4,386	3,035	2,599	2,813	2,349	10,616	9,139
2004	5,229	4,417	3,073	2,739	3,048	2,402	11,105	9,358
2005	5,314	4,640	3,108	2,647	3,232	2,558	11,411	9,646
2006	5,079	4,306	2,911	2,452	2,999	2,421	10,711	8,981
2007	5,785	4,945	2,997	2,592	3,526	2,778	12,013	10,059
2008	6,663	5,617	3,270	2,763	4,244	3,213	13,813	11,336
2009	7,728	6,400	3,528	2,918	5,244	3,724	16,052	12,704
2010	8,525	7,061	3,666	2,901	6,189	4,255	17,947	13,875
2011	9,805	7,788	4,225	3,290	8,042	5,301	21,481	15,919
2012	11,528	9,036	5,826	4,158	11,853	7,493	28,508	20,150
2013	13,437	10,084	8,262	5,550	17,271	10,370	37,997	25,363
2014	22,022	11,289	12,732	6,789	29,697	11,970	63,446	29,297
2015	--	21,480	--	13,713	--	30,261	--	64,465
All	117,279	110,742	64,431	61,633	105,064	94,595	280,466	261,202

Source: CNA calculations using data provided by the Army, Navy, Air Force, and Marine Corps.
Note: Because Servicemembers can take classes in multiple sectors, and because we do not display a column for institutions that had a missing or unknown sector, the sum of the sector columns does not total the all sector values.

Table 12. MyCAA participants

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
2009	14	9	6	1	16	4	36	14
2010	54	38	10	10	45	30	109	78
2011	222	62	34	10	215	52	470	124
2012	754	258	140	42	940	248	1,824	548
2013	1,284	461	245	114	1,749	591	3,262	1,162
2014	11,113	946	2,256	240	5,287	1,651	18,611	2,818
2015	--	10,537	--	1,245	--	5,349	--	17,089
All	13,441	12,311	2,691	1,662	8,252	7,925	24,312	21,833

Source: CNA calculations using data provided by VolEd.
Note: Because spouses can take classes in multiple sectors, and because we do not display a column for institutions that had a missing or unknown sector, the sum of the sector columns does not total the all sector values.

TA and MyCAA costs

This subsection presents the costs associated with the TA and MyCAA programs—both to DOD and to Servicemembers and their spouses. Costs per TA or MyCAA participant will vary for two main reasons: the courses they take could have different costs, or they could take different numbers of courses. Differences in costs between sectors may be particularly relevant for policy-makers and for students because they could reveal ways for both students and DOD to identify potential cost savings. In Tables 13 through 18, we show the average TA (or MyCAA) cost per participant, measuring the amount paid by DOD. These, and subsequent, tables are presented in the same order as Tables 7 through 12. Here, we provide both mean and standard deviation values for each cohort.

Overall TA costs (averaging all cohorts) varied by sector but were fairly similar for all four Services. Overall, Servicemembers using TA in 2015 paid an average of $1,490 in the public sector, $2,062 in the private not-for-profit sector, and $2,127 in the private for-profit sector (see Table 11). The cost per student at public institutions was generally between one-half and two-thirds that at private institutions (either not-for-profit or for-profit). Costs per student in the Services ranged from $2,077 (Air Force) to $2,293 (Marine Corps) in the private for-profit sector, from $1,970 (Air Force) to $2,193 (Marine Corps) in the private not-for-profit sector, and from $1,351 (Marine Corps) to $1,538 (Army) in the public sector. Total TA costs across all reported sectors are nearly identical across the Services—from $1,915 in the Navy to $1,975 in the Marine Corps. Although the Air Force has lower costs per student *within* each sector, a smaller share of its students are in the (cheaper) public sector than any of the other three

Services. Thus, even though the Air Force had average TA costs per student that were at least $60 lower than the Navy in each sector, the average Airman was more likely to attend a private institution and, therefore, had TA costs $4 *higher* than the average Sailor. We found little difference in MyCAA costs across sectors (see Table 18).

New TA users required less DOD funding than those in older cohorts, likely because new cohorts tended to take fewer courses or credits than established cohorts (which could be due to the Services' force management controls, as we discuss later). Servicemembers in their first year of TA use incurred between $200 and $400 less than the average TA cost across all cohorts (resulting in an overall difference in 2015 of $257 less in the public sector, $282 less in the private not-for-profit sector, and $358 less in the private for-profit sector). Spouses in their first year of MyCAA use incurred between $200 and $400 *more* than MyCAA users overall. This could occur if MyCAA participants are more likely than Servicemembers to enroll in programs that are both expensive and short in duration; for example, certain certificate programs might have high costs but require little coursework.

Members of the 2014 cohort using a second year of TA have higher average costs than those in their first year, across all reported sectors and Services. These costs are likely increasing because of a combination of composition changes in the cohort; those who remain after one year are more expensive (likely because they require TA for more courses, as will be seen in the next section). MyCAA costs per participant actually *decreased* among members of the 2014 cohort using a second year of MyCAA (in 2015). Although the most likely explanation is that MyCAA participants are disproportionately inclined to enroll in programs that are both expensive and short in duration, it is unclear precisely why programs would be structured this way.

Table 13.   TA cost per Servicemember: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**	**2014**	**2015**
1999	$2,174	$2,320	$2,102	$2,112	$1,651	$1,714	$2,047	$2,120
	(1,249)	(1,248)	(1,164)	(1,163)	(1,150)	(1,170)	(1,223)	(1,225)
2000	$2,200	$2,267	$2,052	$2,138	$1,556	$1,592	$2,019	$2,087
	(1,243)	(1,215)	(1,162)	(1,198)	(1,095)	(1,145)	(1,214)	(1,224)
2001	$2,279	$2,249	$2,073	$2,087	$1,453	$1,579	$2,019	$2,052
	(1,287)	(1,238)	(1,184)	(1,195)	(1,095)	(1,193)	(1,258)	(1,245)
2002	$2,232	$2,250	$2,139	$2,124	$1,494	$1,557	$2,033	$2,053
	(1,253)	(1,250)	(1,190)	(1,184)	(1,072)	(1,156)	(1,234)	(1,247)
2003	$2,224	$2,238	$2,106	$2,139	$1,534	$1,589	$2,032	$2,072
	(1,265)	(1,244)	(1,153)	(1,206)	(1,107)	(1,159)	(1,238)	(1,244)
2004	$2,216	$2,254	$2,120	$2,132	$1,559	$1,643	$2,040	$2,096
	(1,247)	(1,252)	(1,169)	(1,193)	(1,092)	(1,187)	(1,224)	(1,251)
2005	$2,200	$2,207	$2,111	$2,108	$1,508	$1,608	$1,999	$2,050
	(1,238)	(1,250)	(1,189)	(1,170)	(1,105)	(1,163)	(1,232)	(1,241)
2006	$2,204	$2,195	$2,180	$2,142	$1,619	$1,605	$2,071	$2,057
	(1,242)	(1,251)	(1,229)	(1,194)	(1,131)	(1,161)	(1,241)	(1,240)
2007	$2,226	$2,227	$2,134	$2,168	$1,566	$1,592	$2,033	$2,067
	(1,247)	(1,267)	(1,170)	(1,193)	(1,111)	(1,176)	(1,228)	(1,261)
2008	$2,167	$2,252	$2,151	$2,161	$1,586	$1,516	$2,009	$2,034
	(1,244)	(1,258)	(1,158)	(1,231)	(1,138)	(1,113)	(1,228)	(1,262)
2009	$2,185	$2,166	$2,085	$2,092	$1,613	$1,537	$2,002	$1,988
	(1,247)	(1,260)	(1,155)	(1,182)	(1,145)	(1,160)	(1,229)	(1,250)
2010	$2,167	$2,189	$2,231	$2,135	$1,711	$1,581	$2,030	$2,004
	(1,239)	(1,246)	(1,192)	(1,196)	(1,162)	(1,153)	(1,229)	(1,247)
2011	$2,212	$2,235	$2,178	$2,173	$1,787	$1,659	$2,065	$2,044
	(1,257)	(1,255)	(1,168)	(1,179)	(1,180)	(1,179)	(1,234)	(1,252)
2012	$2,207	$2,190	$2,278	$2,176	$1,823	$1,675	$2,070	$2,007
	(1,237)	(1,246)	(1,160)	(1,186)	(1,198)	(1,184)	(1,227)	(1,242)
2013	$2,253	$2,215	$2,423	$2,274	$1,792	$1,696	$2,088	$2,030
	(1,280)	(1,249)	(1,220)	(1,195)	(1,174)	(1,179)	(1,249)	(1,241)
2014	$1,789	$2,309	$1,943	$2,353	$1,400	$1,678	$1,637	$2,085
	(1,097)	(1,291)	(1,161)	(1,207)	(1,065)	(1,191)	(1,120)	(1,277)
2015	--	$1,775	--	$1,872	--	$1,309	--	$1,573
	--	(1,109)	--	(1,153)	--	(1,021)	--	(1,108)
All	$2,124	$2,141	$2,151	$2,121	$1,618	$1,538	$1,953	$1,934
	(1,234)	(1,242)	(1,186)	(1,194)	(1,144)	(1,140)	(1,221)	(1,235)

Source: CNA calculations using data provided by the Army.
Note: Standard deviations are in parentheses.

Table 14. TA cost per Servicemember: Navy

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,266	$2,146	$2,093	$2,136	$1,842	$1,796	$2,119	$2,092
	(1,406)	(1,217)	(1,156)	(1,172)	(1,213)	(1,072)	(1,283)	(1,174)
2000	$2,236	$2,271	$2,104	$2,174	$1,796	$1,665	$2,093	$2,080
	(1,222)	(1,266)	(1,200)	(1,247)	(1,203)	(1,072)	(1,219)	(1,229)
2001	$2,338	$2,255	$2,103	$2,072	$1,612	$1,706	$2,082	$2,067
	(1,309)	(1,245)	(1,233)	(1,192)	(1,086)	(1,090)	(1,255)	(1,205)
2002	$2,272	$2,102	$2,075	$2,080	$1,741	$1,726	$2,060	$1,999
	(1,226)	(1,197)	(1,294)	(1,216)	(1,180)	(1,137)	(1,255)	(1,199)
2003	$2,255	$2,127	$2,107	$2,041	$1,668	$1,706	$2,073	$2,009
	(1,289)	(1,206)	(1,223)	(1,261)	(1,043)	(1,131)	(1,227)	(1,232)
2004	$2,234	$2,138	$2,136	$2,032	$1,628	$1,574	$2,058	$1,960
	(1,315)	(1,253)	(1,211)	(1,160)	(1,072)	(1,044)	(1,246)	(1,187)
2005	$2,328	$2,143	$2,036	$1,984	$1,585	$1,625	$2,031	$1,960
	(1,302)	(1,256)	(1,179)	(1,202)	(1,093)	(1,063)	(1,239)	(1,202)
2006	$2,235	$2,218	$2,185	$2,140	$1,598	$1,687	$2,067	$2,060
	(1,261)	(1,236)	(1,273)	(1,216)	(1,074)	(1,116)	(1,247)	(1,221)
2007	$2,267	$2,152	$2,192	$2,116	$1,636	$1,612	$2,071	$2,003
	(1,288)	(1,252)	(1,271)	(1,234)	(1,143)	(1,148)	(1,269)	(1,242)
2008	$2,244	$2,086	$2,129	$2,056	$1,512	$1,564	$1,989	$1,932
	(1,283)	(1,223)	(1,223)	(1,217)	(1,054)	(1,084)	(1,249)	(1,208)
2009	$2,243	$2,101	$2,207	$2,162	$1,636	$1,620	$2,078	$2,031
	(1,255)	(1,300)	(1,303)	(1,200)	(1,105)	(1,134)	(1,261)	(1,253)
2010	$2,278	$2,218	$2,156	$2,143	$1,581	$1,571	$2,049	$2,009
	(1,340)	(1,257)	(1,197)	(1,209)	(1,091)	(1,151)	(1,265)	(1,244)
2011	$2,222	$2,204	$2,145	$2,210	$1,611	$1,678	$2,025	$2,093
	(1,283)	(1,230)	(1,242)	(1,261)	(1,080)	(1,156)	(1,239)	(1,253)
2012	$2,347	$2,189	$2,195	$2,133	$1,649	$1,599	$2,071	$1,993
	(1,312)	(1,268)	(1,214)	(1,195)	(1,063)	(1,097)	(1,234)	(1,222)
2013	$2,355	$2,269	$2,330	$2,235	$1,741	$1,644	$2,116	$2,039
	(1,325)	(1,247)	(1,299)	(1,210)	(1,130)	(1,059)	(1,276)	(1,208)
2014	$1,934	$2,317	$1,819	$2,327	$1,302	$1,748	$1,620	$2,117
	(1,161)	(1,307)	(1,130)	(1,240)	(893)	(1,115)	(1,076)	(1,246)
2015	--	$1,988	--	$1,862	--	$1,340	--	$1,678
	--	(1,149)	--	(1,105)	--	(928)	--	(1,085)
All	$2,213	$2,140	$2,087	$2,066	$1,543	$1,534	$1,950	$1,915
	(1,280)	(1,232)	(1,229)	(1,194)	(1,055)	(1,051)	(1,225)	(1,193)

Source: CNA calculations using data provided by the Navy.
Note: Standard deviations are in parentheses.

Table 15.   TA cost per Servicemember: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,208	$2,260	$2,053	$1,905	$1,833	$1,821	$2,122	$2,084
	(1,372)	(1,323)	(1,364)	(1,158)	(1,197)	(1,291)	(1,335)	(1,286)
2000	$2,232	$2,310	$2,028	$2,011	$1,792	$1,945	$2,114	$2,189
	(1,390)	(1,390)	(1,303)	(1,257)	(1,321)	(1,382)	(1,360)	(1,374)
2001	$2,155	$2,247	$2,101	$2,021	$1,742	$1,825	$2,095	$2,135
	(1,312)	(1,345)	(1,292)	(1,243)	(1,278)	(1,265)	(1,314)	(1,316)
2002	$2,183	$2,217	$2,089	$2,000	$1,677	$1,837	$2,089	$2,122
	(1,363)	(1,354)	(1,324)	(1,300)	(1,257)	(1,288)	(1,346)	(1,343)
2003	$2,200	$2,213	$2,064	$2,051	$1,618	$1,718	$2,083	$2,119
	(1,348)	(1,365)	(1,334)	(1,320)	(1,280)	(1,258)	(1,350)	(1,351)
2004	$2,194	$2,188	$2,058	$2,088	$1,584	$1,630	$2,071	$2,102
	(1,368)	(1,337)	(1,295)	(1,302)	(1,238)	(1,194)	(1,344)	(1,330)
2005	$2,132	$2,185	$2,028	$1,900	$1,543	$1,623	$2,024	$2,043
	(1,338)	(1,334)	(1,325)	(1,255)	(1,220)	(1,203)	(1,337)	(1,314)
2006	$2,155	$2,160	$1,974	$1,945	$1,493	$1,565	$2,016	$2,032
	(1,365)	(1,365)	(1,291)	(1,268)	(1,178)	(1,252)	(1,342)	(1,348)
2007	$2,149	$2,235	$2,167	$2,040	$1,484	$1,560	$2,067	$2,112
	(1,375)	(1,418)	(1,386)	(1,331)	(1,212)	(1,236)	(1,381)	(1,404)
2008	$2,152	$2,165	$2,080	$2,068	$1,456	$1,585	$2,035	$2,082
	(1,380)	(1,383)	(1,375)	(1,364)	(1,188)	(1,261)	(1,376)	(1,385)
2009	$2,141	$2,168	$2,017	$2,027	$1,413	$1,499	$1,999	$2,053
	(1,366)	(1,413)	(1,379)	(1,367)	(1,170)	(1,200)	(1,368)	(1,394)
2010	$2,134	$2,195	$2,043	$2,059	$1,368	$1,506	$1,984	$2,089
	(1,392)	(1,407)	(1,382)	(1,358)	(1,153)	(1,210)	(1,386)	(1,401)
2011	$2,045	$2,160	$2,021	$2,042	$1,322	$1,449	$1,909	$2,041
	(1,347)	(1,385)	(1,379)	(1,371)	(1,090)	(1,205)	(1,347)	(1,392)
2012	$2,060	$2,104	$2,004	$2,017	$1,446	$1,425	$1,920	$1,965
	(1,316)	(1,400)	(1,319)	(1,368)	(1,175)	(1,151)	(1,319)	(1,377)
2013	$2,069	$2,084	$2,169	$2,128	$1,486	$1,508	$1,967	$1,973
	(1,344)	(1,350)	(1,379)	(1,388)	(1,225)	(1,165)	(1,365)	(1,346)
2014	$1,600	$2,127	$1,539	$2,136	$1,039	$1,557	$1,388	$2,005
	(1,050)	(1,382)	(1,095)	(1,397)	(859)	(1,227)	(1,040)	(1,383)
2015	--	$1,618	--	$1,600	--	$1,046	--	$1,415
	--	(1,081)	--	(1,142)	--	(852)	--	(1,065)
All	$2,040	$2,077	$1,970	$1,970	$1,354	$1,407	$1,877	$1,919
	(1,326)	(1,351)	(1,321)	(1,320)	(1,132)	(1,146)	(1,320)	(1,337)

Source: CNA calculations using data provided by the Air Force.
Note: Standard deviations are in parentheses.

Table 16.   TA cost per Servicemember: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,403	$2,574	$2,293	$2,364	$1,837	$2,062	$2,242	$2,416
	(1,403)	(1,527)	(1,438)	(1,501)	(1,265)	(1,416)	(1,396)	(1,496)
2000	$2,114	$2,423	$2,127	$2,462	$1,688	$1,823	$2,024	$2,312
	(1,345)	(1,519)	(1,270)	(1,455)	(1,220)	(1,371)	(1,298)	(1,483)
2001	$2,017	$2,342	$1,901	$2,457	$1,519	$1,908	$1,886	$2,316
	(1,357)	(1,403)	(1,092)	(1,300)	(1,164)	(1,424)	(1,249)	(1,415)
2002	$2,189	$2,367	$2,327	$2,219	$1,664	$1,910	$2,140	$2,250
	(1,304)	(1,375)	(1,307)	(1,371)	(1,142)	(1,207)	(1,299)	(1,362)
2003	$1,995	$2,299	$2,114	$2,339	$1,745	$1,813	$1,990	$2,230
	(1,258)	(1,389)	(1,221)	(1,358)	(1,279)	(1,341)	(1,276)	(1,393)
2004	$2,143	$2,492	$1,901	$2,367	$1,472	$1,770	$1,931	$2,287
	(1,342)	(1,497)	(1,147)	(1,410)	(1,053)	(1,189)	(1,253)	(1,427)
2005	$2,048	$2,341	$2,214	$2,433	$1,503	$1,659	$2,006	$2,232
	(1,345)	(1,434)	(1,283)	(1,386)	(1,266)	(1,318)	(1,334)	(1,430)
2006	$2,124	$2,507	$2,012	$2,279	$1,492	$1,772	$1,993	$2,288
	(1,320)	(1,472)	(1,379)	(1,380)	(1,129)	(1,180)	(1,335)	(1,420)
2007	$2,174	$2,368	$2,150	$2,249	$1,483	$1,670	$2,045	$2,242
	(1,332)	(1,459)	(1,385)	(1,351)	(1,120)	(1,271)	(1,333)	(1,421)
2008	$2,017	$2,404	$2,307	$2,290	$1,590	$1,690	$1,989	$2,236
	(1,312)	(1,466)	(1,432)	(1,311)	(1,229)	(1,334)	(1,343)	(1,433)
2009	$2,046	$2,320	$2,156	$2,344	$1,446	$1,794	$1,977	$2,244
	(1,329)	(1,438)	(1,329)	(1,445)	(1,153)	(1,298)	(1,330)	(1,432)
2010	$2,126	$2,415	$1,876	$2,152	$1,339	$1,489	$1,915	$2,152
	(1,319)	(1,425)	(1,236)	(1,363)	(1,069)	(1,146)	(1,296)	(1,406)
2011	$1,945	$2,455	$2,242	$2,500	$1,320	$1,580	$1,866	$2,272
	(1,294)	(1,475)	(1,397)	(1,392)	(1,046)	(1,209)	(1,316)	(1,446)
2012	$2,067	$2,464	$2,044	$2,260	$1,236	$1,518	$1,823	$2,177
	(1,263)	(1,414)	(1,323)	(1,374)	(1,019)	(1,147)	(1,269)	(1,395)
2013	$2,010	$2,306	$2,183	$2,352	$1,215	$1,432	$1,730	$2,018
	(1,315)	(1,446)	(1,355)	(1,415)	(967)	(1,155)	(1,271)	(1,416)
2014	$1,777	$2,501	$1,449	$2,562	$831	$1,584	$1,361	$2,223
	(1,338)	(1,491)	(1,127)	(1,487)	(745)	(1,216)	(1,193)	(1,471)
2015	--	$1,883	--	$1,674	--	$926	--	$1,402
	--	(1,318)	--	(1,213)	--	(861)	--	(1,195)
All	$2,009	$2,293	$2,003	$2,193	$1,232	$1,351	$1,788	$1,975
	(1,326)	(1,441)	(1,316)	(1,391)	(1,043)	(1,158)	(1,303)	(1,416)

Source: CNA calculations using data provided by the Marine Corps.
Note: Standard deviations are in parentheses.

Table 17. TA cost per Servicemember: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,223	$2,322	$2,118	$2,132	$1,731	$1,787	$2,093	$2,151
	(1,312)	(1,297)	(1,218)	(1,217)	(1,185)	(1,203)	(1,271)	(1,265)
2000	$2,209	$2,294	$2,061	$2,138	$1,668	$1,699	$2,061	$2,135
	(1,300)	(1,306)	(1,227)	(1,255)	(1,188)	(1,214)	(1,270)	(1,295)
2001	$2,212	$2,254	$2,082	$2,076	$1,582	$1,697	$2,054	$2,104
	(1,307)	(1,299)	(1,241)	(1,224)	(1,174)	(1,225)	(1,283)	(1,282)
2002	$2,215	$2,231	$2,121	$2,083	$1,590	$1,673	$2,061	$2,080
	(1,295)	(1,294)	(1,265)	(1,243)	(1,149)	(1,196)	(1,280)	(1,281)
2003	$2,207	$2,222	$2,090	$2,106	$1,589	$1,655	$2,053	$2,091
	(1,300)	(1,298)	(1,241)	(1,269)	(1,162)	(1,198)	(1,280)	(1,292)
2004	$2,206	$2,227	$2,088	$2,110	$1,574	$1,635	$2,049	$2,089
	(1,309)	(1,301)	(1,226)	(1,242)	(1,134)	(1,166)	(1,274)	(1,283)
2005	$2,181	$2,199	$2,068	$2,026	$1,532	$1,618	$2,013	$2,043
	(1,292)	(1,295)	(1,248)	(1,227)	(1,145)	(1,164)	(1,277)	(1,273)
2006	$2,185	$2,203	$2,099	$2,085	$1,572	$1,623	$2,047	$2,063
	(1,297)	(1,311)	(1,273)	(1,240)	(1,134)	(1,178)	(1,283)	(1,288)
2007	$2,196	$2,231	$2,162	$2,115	$1,553	$1,591	$2,053	$2,082
	(1,312)	(1,343)	(1,293)	(1,262)	(1,149)	(1,191)	(1,299)	(1,320)
2008	$2,158	$2,209	$2,125	$2,113	$1,534	$1,553	$2,015	$2,050
	(1,310)	(1,324)	(1,278)	(1,287)	(1,146)	(1,164)	(1,295)	(1,314)
2009	$2,166	$2,171	$2,088	$2,101	$1,558	$1,554	$2,011	$2,032
	(1,299)	(1,337)	(1,284)	(1,269)	(1,149)	(1,174)	(1,287)	(1,312)
2010	$2,163	$2,207	$2,127	$2,110	$1,593	$1,556	$2,011	$2,042
	(1,312)	(1,323)	(1,277)	(1,270)	(1,158)	(1,167)	(1,291)	(1,311)
2011	$2,131	$2,216	$2,114	$2,152	$1,625	$1,601	$1,997	$2,062
	(1,301)	(1,322)	(1,281)	(1,289)	(1,159)	(1,188)	(1,281)	(1,315)
2012	$2,155	$2,174	$2,146	$2,112	$1,675	$1,587	$2,007	$2,001
	(1,280)	(1,326)	(1,247)	(1,275)	(1,183)	(1,167)	(1,264)	(1,299)
2013	$2,183	$2,176	$2,301	$2,218	$1,672	$1,616	$2,033	$2,011
	(1,315)	(1,307)	(1,307)	(1,288)	(1,180)	(1,159)	(1,294)	(1,286)
2014	$1,746	$2,254	$1,747	$2,284	$1,255	$1,650	$1,544	$2,072
	(1,115)	(1,345)	(1,144)	(1,304)	(984)	(1,190)	(1,100)	(1,320)
2015	--	$1,769	--	$1,780	--	$1,223	--	$1,543
	--	(1,132)	--	(1,144)	--	(960)	--	(1,103)
All	$2,095	$2,127	$2,063	$2,062	$1,516	$1,490	$1,918	$1,928
	(1,281)	(1,297)	(1,256)	(1,253)	(1,129)	(1,129)	(1,261)	(1,275)

Source: CNA calculations using data provided by the Army, Navy, Air Force, and Marine Corps.
Note: Standard deviations are in parentheses.

Table 18.   MyCAA cost per participant

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
2009	$1,879	$1,195	$956	$1,389	$1,170	$1,227	$1,410	$1,218
	(775)	(838)	(642)	--	(815)	(549)	(847)	(710)
2010	$1,785	$1,496	$1,468	$1,296	$1,263	$1,245	$1,540	$1,374
	(929)	(775)	(1,014)	(1,352)	(860)	(571)	(934)	(800)
2011	$1,401	$1,562	$1,185	$1,301	$946	$1,324	$1,180	$1,441
	(805)	(972)	(742)	(710)	(669)	(737)	(771)	(863)
2012	$1,427	$1,473	$1,274	$1,176	$1,004	$1,063	$1,205	$1,269
	(767)	(809)	(725)	(713)	(611)	(742)	(718)	(797)
2013	$1,573	$1,488	$1,486	$1,335	$1,272	$1,042	$1,414	$1,251
	(719)	(847)	(641)	(691)	(615)	(600)	(676)	(746)
2014	$2,646	$1,584	$3,094	$1,419	$2,057	$1,356	$2,541	$1,448
	(1,146)	(742)	(1,291)	(678)	(1,216)	(669)	(1,228)	(705)
2015	--	$2,851	--	$2,634	--	$2,257	--	$2,661
	--	(1,157)	--	(1,399)	--	(1,278)	--	(1,240)
All	$2,450	$2,662	$2,818	$2,315	$1,736	$1,931	$2,257	$2,382
	(1,169)	(1,203)	(1,368)	(1,376)	(1,130)	(1,213)	(1,240)	(1,266)

Source: CNA calculations using data provided by VolEd.
Note: Standard deviations are in parentheses.

Tables 19 through 24 show the total costs per participant, combining TA funding and out-of-pocket costs. Owing to possible data entry error in the raw data, we are more confident in our computation of TA costs than total costs. For example, less than 11 percent of courses in the Army data have different values listed for TA and total costs. Of these, 77 list values that differ by over $10,000, with four values over $100,000, suggesting extremely (and likely inaccurately) high out-of-pocket costs.[44] The cohort-by-year structure of our results may exacerbate the effects of any outliers within a particular cohort-year combination because these effects are distributed over a relatively small number of students. We therefore do not recommend that these data be used to infer out-of-pocket costs and do not provide separate tables for these costs. If measurement error is only in the total cost data (and not in the TA cost data) and is only of the type outlined above, the out-of-pocket costs computed by subtracting TA costs from total costs will be somewhat higher than in reality.

Like TA cost per Servicemember, total cost per Servicemember in 2015 is higher at both types of private institutions than at public institutions, lower for first-year TA users than TA users

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[44] It is impossible to determine whether these costs represent keystroke error, implied or omitted decimal points, or the inclusion of costs other than tuition.

overall, and higher for members of the 2014 cohort in their second year than for those in their first. Across all Services, on average, TA users paid a total of $1,723 in the public sector, $2,491 in the private not-for-profit sector, and $2,265 in the private for-profit sector (see Table 23). These costs also varied by Service but, within each Service, they were substantially higher in both private sectors than in the public sector. Total costs per student in 2015 ranged between $2,192 in the Air Force and $2,401 in the Marine Corps in the private for-profit sector, between $2,333 in the Air Force and $2,732 in the Army in the private not-for-profit sector, and between $1,524 in the Marine Corps and $1,801 in the Army in the public sector.[45] Across all reported sectors, total cost per Servicemember ranges from $2,118 in the Navy to $2,222 in the Army, with the average Servicemember paying $2,172.

Average MyCAA costs in 2015 were $2,382 per participant across all reported sectors, with the highest costs in the private for-profit sector ($2,662) and the lowest cost in the public sector ($1,931) (see Table 24). The per-participant cost differentials across sectors were even starker for MyCAA in 2014, when the average cost per participant, across all cohorts was $2,907 in the private for-profit sector, $3,046 in the private not-for-profit sector, and $1,779 in the public sector. In that year the average across all cohorts *and* all reported sectors was $2,550.

First-time TA users had lower total costs than TA users overall, though the difference between the two groups varied substantially by Service, sector, and year. Total costs for first-time Army TA users in private not-for-profit institutions were only $17 lower in 2014 than total costs for all Army TA users at those institutions; by contrast, the corresponding difference for Air Force TA users in that sector and year was over $500.[46] These cost differences do not appear to correlate with sector or year; the smallest difference appears in the private for-profit sector in the Navy and Marine Corps but in the public sector for the Air Force. When aggregating the four Services, these differences are more uniform; on average, first-time TA users in 2014 paid $304 less in the public sector, $299 less in the private not-for-profit sector, and $375 less in the private for-profit sector than TA users overall. However, the fact that attrition was highest in the relatively less expensive public sector and lower in the more expensive private sector meant that the average cost across all reported sectors was $403 lower for first-time TA users than for TA users overall.[47] Costs for first-time

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[45] Total costs in the private not-for-profit sector in the Army may be inflated by data entry error because the associated variance is much higher than for any of the other sectors or Services. Marine Corps data in this sector may also be inflated, though the discrepancy is not as large.

[46] It seems likely that the $17 difference is driven by some form of measurement error, though this cannot be proved conclusively.

[47] Overall values may also be higher than the average value across sectors (weighted by the number of Servicemembers in each sector) because many Servicemembers are enrolled in multiple sectors during the same

MyCAA users were *higher* than overall costs at all institution types; this is most likely because certification, licenses, and other short-term degree courses represent a large share of MyCAA courses and have high costs over a very short interval.

As with TA cost per participant, total cost per TA user is substantially lower for members of the 2014 cohort in their first year than in their second. This is partly to be expected—it would be curious if a change in TA costs was not accompanied by any change in total costs—though the difference is larger for total cost.[48] The most likely reason for the changes in both TA cost and total cost is that Servicemembers in their second year of TA use took more credits on average than those in their first. The change in total costs is smallest among Army TA users at private not-for-profit institutions (a $409 difference) and largest among Marine Corps TA users at private not-for-profit institutions (a $1,255 difference). Across the four Services, TA costs for students in their first year were $552 lower in the public sector, $646 lower in the private not-for-profit sector, and $551 lower in the private for-profit sector than for students in their second year; across all reported sectors and Services, there is a $643 difference between first-year TA users and other TA users.

Among MyCAA participants, we also observe a decrease in cost per participant from the first to the second year of participation—from a $656 decrease at public institutions to a $1,780 decrease at private not-for-profit institutions. Thus, MyCAA students who choose to enroll for a second year of study are likely to be those in less expensive programs.

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year. For example, a student who spent $500 each in the public and private for-profit sectors during a given year would have spent $1,000 overall.

[48] If we assume that total costs are accurate, or at least that data entry error is uncorrelated with the year in which a course was taken, this would imply that both TA costs and out-of-pocket costs are higher for students who take a second year of TA benefits than for those who take only one. However, we cannot say for certain if data entry error varies over time, except in the most egregious cases.

Table 19.   Total costs per Servicemember: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,372	$2,563	$2,545	$2,546	$1,927	$2,033	$2,343	$2,446
	(1506)	(1538)	(1866)	(1639)	(1604)	(1773)	(1671)	(1653)
2000	$2,363	$2,493	$2,384	$2,557	$1,749	$1,851	$2,240	$2,384
	(1427)	(1555)	(1644)	(1776)	(1417)	(1507)	(1514)	(1645)
2001	$2,386	$2,401	$2,492	$2,492	$1,635	$1,826	$2,233	$2,307
	(1382)	(1444)	(2114)	(1826)	(1415)	(1723)	(1652)	(1667)
2002	$2,401	$2,435	$2,515	$2,571	$1,678	$1,780	$2,265	$2,321
	(1491)	(1483)	(1799)	(2423)	(1417)	(1702)	(1602)	(1871)
2003	$2,414	$2,468	$2,611	$2,641	$1,771	$1,877	$2,319	$2,392
	(1505)	(1605)	(2497)	(1968)	(1620)	(1658)	(1873)	(1747)
2004	$2,388	$2,445	$2,623	$2,657	$1,811	$2,011	$2,322	$2,430
	(1461)	(1505)	(2188)	(2012)	(1560)	(2290)	(1737)	(1921)
2005	$2,369	$2,372	$2,689	$2,612	$1,772	$1,911	$2,291	$2,338
	(1472)	(1491)	(2754)	(2193)	(1690)	(1955)	(1925)	(1843)
2006	$2,364	$2,401	$2,810	$2,725	$1,861	$1,905	$2,369	$2,385
	(1465)	(1587)	(2677)	(2537)	(1769)	(2005)	(1933)	(2001)
2007	$2,386	$2,361	$2,690	$2,641	$1,804	$1,820	$2,301	$2,305
	(1457)	(1426)	(2442)	(2138)	(1589)	(1620)	(1767)	(1692)
2008	$2,317	$2,383	$2,641	$2,639	$1,791	$1,694	$2,248	$2,253
	(1464)	(1416)	(2067)	(2465)	(1561)	(1425)	(1665)	(1732)
2009	$2,354	$2,314	$2,688	$2,495	$1,818	$1,707	$2,264	$2,193
	(1513)	(1492)	(2400)	(2097)	(1488)	(1462)	(1731)	(1646)
2010	$2,327	$2,326	$2,917	$2,551	$1,920	$1,784	$2,295	$2,215
	(1501)	(1448)	(2808)	(2107)	(1526)	(1565)	(1817)	(1655)
2011	$2,340	$2,346	$3,083	$2,748	$2,077	$1,914	$2,390	$2,288
	(1430)	(1372)	(3266)	(2764)	(1725)	(1636)	(1987)	(1800)
2012	$2,373	$2,325	$3,185	$2,790	$2,111	$1,951	$2,418	$2,285
	(1485)	(1444)	(3060)	(2532)	(1811)	(1718)	(2009)	(1808)
2013	$2,452	$2,368	$3,523	$3,108	$2,105	$2,002	$2,503	$2,372
	(1574)	(1460)	(3389)	(3033)	(1852)	(1811)	(2186)	(2005)
2014	$1,932	$2,518	$2,872	$3,281	$1,617	$2,056	$1,934	$2,503
	(1350)	(1670)	(3262)	(3009)	(1601)	(2247)	(1921)	(2263)
2015	--	$1,907	--	$2,582	--	$1,529	--	$1,839
	--	(1351)	--	(2839)	--	(1603)	--	(1819)
All	$2,285	$2,299	$2,889	$2,732	$1,868	$1,801	$2,260	$2,222
	(1472)	(1484)	(2840)	(2540)	(1680)	(1770)	(1918)	(1878)

Source: CNA calculations using data provided by the Army.
Note: Standard deviations are in parentheses.

Table 20. Total costs per Servicemember: Navy

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,626	$2,476	$2,609	$2,584	$2,337	$2,211	$2,585	$2,503
	(1941)	(1648)	(1990)	(2065)	(1940)	(1667)	(1974)	(1853)
2000	$2,583	$2,538	$2,443	$2,590	$2,148	$1,957	$2,444	$2,419
	(1786)	(1512)	(1884)	(2010)	(1854)	(1497)	(1855)	(1742)
2001	$2,640	$2,447	$2,513	$2,382	$2,000	$2,126	$2,459	$2,373
	(1751)	(1419)	(2056)	(1573)	(1893)	(1955)	(1941)	(1649)
2002	$2,593	$2,377	$2,644	$2,614	$2,080	$2,058	$2,479	$2,396
	(1699)	(1583)	(2775)	(2627)	(1923)	(1717)	(2216)	(2094)
2003	$2,597	$2,415	$2,439	$2,414	$1,914	$1,968	$2,390	$2,329
	(1874)	(1629)	(1810)	(2356)	(1479)	(1547)	(1774)	(1957)
2004	$2,473	$2,319	$2,366	$2,275	$1,835	$1,875	$2,288	$2,205
	(1745)	(1440)	(1594)	(1450)	(1402)	(1918)	(1628)	(1624)
2005	$2,556	$2,325	$2,300	$2,307	$1,780	$1,883	$2,265	$2,224
	(1654)	(1561)	(1654)	(1985)	(1429)	(1571)	(1633)	(1752)
2006	$2,406	$2,428	$2,431	$2,490	$1,759	$1,848	$2,266	$2,309
	(1460)	(1540)	(1862)	(2312)	(1412)	(1361)	(1633)	(1846)
2007	$2,424	$2,293	$2,394	$2,365	$1,812	$1,794	$2,253	$2,201
	(1457)	(1411)	(1637)	(1865)	(1553)	(1492)	(1583)	(1646)
2008	$2,381	$2,220	$2,381	$2,330	$1,658	$1,680	$2,170	$2,111
	(1492)	(1374)	(1932)	(1784)	(1461)	(1319)	(1687)	(1552)
2009	$2,395	$2,244	$2,380	$2,437	$1,775	$1,805	$2,236	$2,240
	(1468)	(1488)	(1774)	(2194)	(1357)	(1564)	(1574)	(1826)
2010	$2,455	$2,323	$2,368	$2,463	$1,721	$1,678	$2,228	$2,183
	(1637)	(1337)	(1530)	(2154)	(1521)	(1342)	(1623)	(1676)
2011	$2,330	$2,338	$2,325	$2,408	$1,753	$1,817	$2,169	$2,254
	(1398)	(1478)	(1490)	(1523)	(1307)	(1409)	(1433)	(1508)
2012	$2,505	$2,287	$2,452	$2,301	$1,795	$1,736	$2,256	$2,130
	(1584)	(1371)	(1861)	(1621)	(1331)	(1347)	(1620)	(1479)
2013	$2,581	$2,412	$2,717	$2,465	$1,933	$1,794	$2,379	$2,217
	(1721)	(1388)	(2568)	(1695)	(1594)	(1309)	(2010)	(1509)
2014	$2,067	$2,500	$2,075	$2,682	$1,428	$1,959	$1,789	$2,375
	(1391)	(1576)	(1871)	(2147)	(1270)	(1652)	(1543)	(1862)
2015	--	$2,106	--	$2,082	--	$1,470	--	$1,836
	--	(1301)	--	(1648)	--	(1284)	--	(1454)
All	$2,403	$2,294	$2,370	$2,340	$1,713	$1,703	$2,165	$2,118
	(1587)	(1434)	(1959)	(1883)	(1456)	(1441)	(1711)	(1641)

Source: CNA calculations using data provided by the Navy.
Note: Standard deviations are in parentheses.

Table 21. Total costs per Servicemember: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,423	$2,412	$2,659	$2,444	$2,347	$2,336	$2,534	$2,449
	(1,843)	(1,410)	(2,109)	(1,702)	(1,650)	(2,090)	(1,889)	(1,695)
2000	$2,493	$2,633	$2,481	$2,474	$2,171	$2,412	$2,467	$2,588
	(1,698)	(1,861)	(1,650)	(1,879)	(1,812)	(2,017)	(1,722)	(1,920)
2001	$2,352	$2,478	$2,600	$2,496	$2,083	$2,274	$2,429	$2,494
	(1,549)	(1,674)	(1,799)	(1,769)	(1,801)	(2,229)	(1,708)	(1,842)
2002	$2,360	$2,418	$2,509	$2,413	$2,026	$2,273	$2,384	$2,437
	(1,614)	(1,700)	(1,867)	(1,718)	(1,816)	(1,936)	(1,753)	(1,767)
2003	$2,373	$2,412	$2,445	$2,485	$1,872	$1,918	$2,341	$2,390
	(1,624)	(1,753)	(1,766)	(1,903)	(1,868)	(1,561)	(1,738)	(1,785)
2004	$2,346	$2,326	$2,437	$2,501	$1,887	$1,989	$2,327	$2,369
	(1,639)	(1,542)	(2,212)	(1,912)	(1,807)	(1,747)	(1,875)	(1,721)
2005	$2,274	$2,337	$2,364	$2,242	$1,740	$1,837	$2,241	$2,262
	(1,587)	(1,599)	(1,758)	(1,709)	(1,584)	(1,543)	(1,666)	(1,638)
2006	$2,254	$2,282	$2,252	$2,260	$1,705	$1,812	$2,194	$2,235
	(1,499)	(1,562)	(1,630)	(1,808)	(1,536)	(1,734)	(1,579)	(1,689)
2007	$2,277	$2,355	$2,492	$2,336	$1,668	$1,822	$2,265	$2,310
	(1,643)	(1,627)	(1,977)	(1,718)	(1,614)	(1,797)	(1,772)	(1,720)
2008	$2,264	$2,275	$2,350	$2,340	$1,614	$1,770	$2,204	$2,252
	(1,580)	(1,598)	(1,871)	(1,717)	(1,512)	(1,626)	(1,683)	(1,661)
2009	$2,242	$2,264	$2,295	$2,334	$1,556	$1,657	$2,158	$2,216
	(1,527)	(1,556)	(1,743)	(1,898)	(1,393)	(1,497)	(1,595)	(1,665)
2010	$2,231	$2,270	$2,336	$2,320	$1,534	$1,666	$2,151	$2,228
	(1,525)	(1,532)	(1,771)	(1,737)	(1,478)	(1,522)	(1,625)	(1,619)
2011	$2,152	$2,246	$2,288	$2,273	$1,502	$1,601	$2,078	$2,180
	(1,447)	(1,510)	(1,686)	(1,777)	(1,457)	(1,520)	(1,557)	(1,623)
2012	$2,207	$2,186	$2,466	$2,380	$1,757	$1,634	$2,202	$2,152
	(1,522)	(1,486)	(2,160)	(2,011)	(1,821)	(1,549)	(1,821)	(1,679)
2013	$2,240	$2,181	$2,745	$2,567	$1,847	$1,810	$2,318	$2,224
	(1,632)	(1,463)	(2,482)	(2,114)	(2,201)	(1,915)	(2,127)	(1,820)
2014	$1,700	$2,251	$1,819	$2,642	$1,217	$1,945	$1,567	$2,323
	(1,231)	(1,596)	(1,676)	(2,614)	(1,437)	(2,258)	(1,476)	(2,153)
2015	--	$1,687	--	$1,896	--	$1,183	--	$1,565
	--	(1,203)	--	(2,008)	--	(1,297)	--	(1,500)
All	$2,173	$2,192	$2,338	$2,333	$1,591	$1,643	$2,107	$2,133
	(1,534)	(1,538)	(1,942)	(2,002)	(1,705)	(1,731)	(1,741)	(1,757)

Source: CNA calculations using data provided by the Air Force.
Note: Standard deviations are in parentheses.

Table 22.   Total costs per Servicemember: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,568	$2,746	$2,837	$3,074	$2,023	$2,458	$2,527	$2,824
	(1521)	(1620)	(2201)	(2615)	(1434)	(1990)	(1756)	(2083)
2000	$2,347	$2,605	$2,506	$2,744	$1,913	$2,169	$2,308	$2,581
	(1754)	(1697)	(1758)	(1766)	(1586)	(2013)	(1725)	(1830)
2001	$2,181	$2,638	$2,241	$2,987	$1,723	$2,365	$2,119	$2,733
	(1584)	(1934)	(1701)	(2462)	(1373)	(2495)	(1583)	(2280)
2002	$2,338	$2,519	$2,852	$2,677	$1,948	$2,178	$2,445	$2,542
	(1444)	(1520)	(2265)	(2694)	(1716)	(1362)	(1842)	(2009)
2003	$2,139	$2,431	$2,538	$2,636	$2,111	$2,138	$2,282	$2,476
	(1408)	(1548)	(1899)	(1900)	(1902)	(1890)	(1727)	(1786)
2004	$2,255	$2,642	$2,386	$2,884	$1,672	$2,032	$2,178	$2,585
	(1490)	(1704)	(2127)	(2445)	(1446)	(1608)	(1724)	(1971)
2005	$2,237	$2,480	$2,564	$2,869	$1,749	$1,889	$2,256	$2,483
	(1706)	(1529)	(1939)	(2071)	(1868)	(1762)	(1832)	(1800)
2006	$2,226	$2,608	$2,290	$2,799	$1,722	$2,051	$2,175	$2,555
	(1480)	(1514)	(1601)	(3374)	(1433)	(1692)	(1551)	(2253)
2007	$2,316	$2,462	$2,277	$2,485	$1,607	$1,967	$2,181	$2,419
	(1511)	(1537)	(1488)	(1677)	(1269)	(1714)	(1485)	(1627)
2008	$2,136	$2,502	$2,384	$2,460	$1,693	$1,838	$2,096	$2,369
	(1511)	(1526)	(1459)	(1456)	(1330)	(1524)	(1477)	(1545)
2009	$2,105	$2,417	$2,409	$2,740	$1,676	$2,029	$2,113	$2,436
	(1366)	(1522)	(1841)	(2161)	(1878)	(1776)	(1611)	(1750)
2010	$2,185	$2,538	$1,999	$2,358	$1,432	$1,638	$1,995	$2,302
	(1403)	(1603)	(1329)	(1693)	(1226)	(1373)	(1397)	(1631)
2011	$2,017	$2,539	$2,369	$2,767	$1,450	$1,741	$1,965	$2,421
	(1369)	(1565)	(1446)	(2075)	(1296)	(1638)	(1421)	(1765)
2012	$2,131	$2,540	$2,242	$2,407	$1,315	$1,628	$1,919	$2,281
	(1334)	(1455)	(1577)	(1565)	(1113)	(1331)	(1386)	(1499)
2013	$2,106	$2,375	$2,531	$2,601	$1,319	$1,550	$1,881	$2,146
	(1448)	(1484)	(2315)	(1867)	(1218)	(1341)	(1664)	(1602)
2014	$1,865	$2,600	$1,857	$3,112	$939	$1,835	$1,515	$2,480
	(1447)	(1625)	(2526)	(2846)	(1196)	(1891)	(1685)	(2107)
2015	--	$1,988	--	$1,976	--	$1,037	--	$1,551
	--	(1499)	--	(2339)	--	(1216)	--	(1670)
All	$2,111	$2,401	$2,320	$2,537	$1,369	$1,524	$1,950	$2,164
	(1462)	(1565)	(2019)	(2271)	(1370)	(1559)	(1633)	(1823)

Source: CNA calculations using data provided by the Marine Corps.
Note: Standard deviations are in parentheses.

Table 23. Total costs per Servicemember: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	$2,446	$2,560	$2,606	$2,614	$2,065	$2,152	$2,434	$2,508
	(1,629)	(1,554)	(1,962)	(1,907)	(1,679)	(1,815)	(1,772)	(1,763)
2000	$2,435	$2,554	$2,439	$2,556	$1,937	$2,016	$2,350	$2,466
	(1,598)	(1,673)	(1,706)	(1,851)	(1,628)	(1,685)	(1,660)	(1,762)
2001	$2,383	$2,454	$2,535	$2,503	$1,849	$2,047	$2,343	$2,418
	(1,511)	(1,583)	(1,940)	(1,808)	(1,640)	(1,996)	(1,715)	(1,783)
2002	$2,401	$2,428	$2,552	$2,534	$1,848	$1,969	$2,343	$2,382
	(1,557)	(1,578)	(2,031)	(2,275)	(1,642)	(1,761)	(1,759)	(1,877)
2003	$2,402	$2,440	$2,515	$2,549	$1,839	$1,918	$2,334	$2,389
	(1,587)	(1,663)	(2,100)	(2,011)	(1,694)	(1,635)	(1,806)	(1,788)
2004	$2,375	$2,392	$2,490	$2,542	$1,832	$1,983	$2,312	$2,384
	(1,570)	(1,525)	(2,096)	(1,916)	(1,612)	(2,048)	(1,773)	(1,814)
2005	$2,348	$2,359	$2,473	$2,430	$1,763	$1,885	$2,267	$2,301
	(1,555)	(1,544)	(2,149)	(1,989)	(1,621)	(1,769)	(1,785)	(1,757)
2006	$2,320	$2,371	$2,493	$2,518	$1,787	$1,877	$2,279	$2,331
	(1,479)	(1,569)	(2,117)	(2,337)	(1,618)	(1,792)	(1,743)	(1,891)
2007	$2,342	$2,357	$2,519	$2,454	$1,757	$1,822	$2,272	$2,294
	(1,539)	(1,517)	(2,043)	(1,907)	(1,577)	(1,648)	(1,722)	(1,690)
2008	$2,290	$2,330	$2,461	$2,451	$1,710	$1,721	$2,212	$2,240
	(1,519)	(1,501)	(1,940)	(2,015)	(1,522)	(1,471)	(1,665)	(1,671)
2009	$2,301	$2,295	$2,463	$2,440	$1,737	$1,727	$2,217	$2,223
	(1,506)	(1,518)	(2,027)	(2,062)	(1,463)	(1,507)	(1,658)	(1,689)
2010	$2,295	$2,316	$2,549	$2,438	$1,778	$1,732	$2,225	$2,220
	(1,519)	(1,482)	(2,202)	(1,967)	(1,514)	(1,517)	(1,716)	(1,644)
2011	$2,245	$2,318	$2,611	$2,509	$1,862	$1,809	$2,236	$2,255
	(1,434)	(1,451)	(2,436)	(2,194)	(1,618)	(1,583)	(1,770)	(1,707)
2012	$2,306	$2,281	$2,730	$2,521	$1,941	$1,818	$2,298	$2,220
	(1,503)	(1,459)	(2,507)	(2,148)	(1,746)	(1,616)	(1,876)	(1,710)
2013	$2,367	$2,300	$3,017	$2,733	$1,964	$1,882	$2,387	$2,282
	(1,610)	(1,459)	(2,890)	(2,397)	(1,883)	(1,749)	(2,116)	(1,850)
2014	$1,871	$2,421	$2,247	$2,894	$1,439	$1,991	$1,775	$2,418
	(1,332)	(1,634)	(2,460)	(2,672)	(1,496)	(2,126)	(1,729)	(2,150)
2015	--	$1,878	--	$2,177	--	$1,394	--	$1,743
	--	(1,319)	--	(2,234)	--	(1,445)	--	(1,652)
All	$2,246	$2,265	$2,546	$2,491	$1,744	$1,723	$2,178	$2,172
	(1,509)	(1,506)	(2,334)	(2,209)	(1,645)	(1,691)	(1,817)	(1,798)

Source: CNA calculations using data provided by all four Services.
Note: Standard deviations are in parentheses.

Table 24. Total costs per participant: MyCAA

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
2009	$1,992 (905)	$1,783 (1623)	$997 (614)	$1,500 --	$1,356 (1138)	$1,248 (582)	$1,544 (1030)	$1,610 (1327)
2010	$1,920 (1083)	$1,627 (891)	$1,541 (1141)	$1,816 (2581)	$1,407 (1013)	$1,285 (598)	$1,673 (1079)	$1,520 (1155)
2011	$1,797 (2085)	$1,892 (1378)	$1,408 (992)	$1,383 (786)	$1,007 (723)	$1,410 (828)	$1,411 (1580)	$1,649 (1154)
2012	$1,752 (1828)	$1,958 (2247)	$1,370 (811)	$1,250 (696)	$1,081 (757)	$1,181 (1016)	$1,386 (1351)	$1,557 (1738)
2013	$1,869 (1474)	$1,825 (1708)	$1,669 (875)	$1,403 (757)	$1,328 (728)	$1,122 (723)	$1,573 (1125)	$1,432 (1258)
2014	$3,133 (4630)	$1,866 (1328)	$3,337 (8495)	$1,557 (838)	$2,088 (1243)	$1,432 (844)	$2,871 (4714)	$1,599 (1053)
2015	-- --	$3,184 (2423)	-- --	$2,756 (1784)	-- --	$2,335 (1464)	-- --	$2,900 (2159)
All	$2,907 (4295)	$2,994 (2367)	$3,046 (7814)	$2,437 (1697)	$1,779 (1169)	$2,009 (1378)	$2,550 (4208)	$2,607 (2067)

Source: CNA calculations using data provided by VolEd.
Note: Standard deviations are in parentheses.

Top-Up beneficiaries and average payment amounts

As Tables 13-17 and Tables 19-23 show, the average total tuition costs per participant always exceed the average amount of TA used per participant across sectors. This indicates that, in some cases, the total cost of enrolling in certain courses exceeds the amount of TA that a Servicemember is using. Therefore, some Servicemembers opt to use the Top-Up program, which allows them to use their Post-9/11 GI Bill and Montgomery GI Bill-Active Duty (MGIB-AD) benefits early to pay for tuition and fees that exceed TA maximums for up to 36 months. The number of unique beneficiaries using Top-Up and the average Top-Up payments were only available for those using the MGIB-AD and not the Post-9/11 GI Bill, as of February 3, 2016, when the most recent aggregate Top-Up statistics were reported by the Department of Veterans Affairs (VA) [87]. In FY 2014, there were 3,249 unique MGIB-AD Top-Up beneficiaries (1.2 percent of all TA users) averaging $1,975 in Top-Up payments each.[49] In FY 2015, there

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[49] FY for Top-Up data begins October 1.

were 2,526 unique MGIB-AD Top-Up beneficiaries (1 percent of all TA users) averaging $2,028 in Top-Up payments each. There are several potential explanations for why the Top-Up participation rate is so low. First, it could be that, for most TA users, the $250 per-semester-hour maximum is enough to cover their required course tuition. In some cases, educational institutions may forgo all costs that exceed the cap of $250 per semester credit hour. Another reason for the low Top-Up utilization rates may be that, each time Servicemembers use Top-Up, they are depleting their future GI Bill benefits by the amount of Top-Up that they choose to use, so most Servicemembers prefer not to tap into this future benefit if they are planning to use their GI Bill benefits or transfer them to a dependent (in the case of the Post-9/11 GI Bill).[50] Finally, it could be that many Servicemembers are not aware of the Top-Up benefit, so they do not know that they can enroll in the program.

Course and credit enrollment

There are two main reasons why course and credit enrollment are outcomes of interest. First, they provide additional context for the variation in costs across Services, sectors, and years; higher costs are justified if they support additional learning. Second, they provide some indication of how Servicemembers are progressing toward a degree.

Tables 25 through 29 show the average number of courses per participant. These are equal to the average number of observations for each student in each Service's course data file. As such, this variable is not vulnerable to data entry error in the same way that other variables are. Any measurement error would instead come from having multiple listings per course.[51]

In 2015, Servicemembers in all four Services took fewer courses in public institutions than in either type of private institution; it is not immediately clear why this would be the case, unless Servicemembers at public institutions are attempting different programs of study than those at private institutions. It also could be due to the July 2014 policy change in which fees were no longer covered by TA—if public institutions have higher fees than private institutions, this could explain the relative decrease in courses taken at public institutions. Averaging across

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[50] Although it is reasonable to expect Servicemembers who are planning to use or transfer their GI Bill benefits to forgo using Top-Up, we do not have data against which to test this hypothesis. We are therefore unable to report on the *extent* to which such decisions affect the use of Top-Up or other TA-related outcomes.

[51] Although the data-cleaning process corrects for multiple course grades and end dates (assuming all other variables are identical), it does not correct for such factors as multiple listed costs or courses appearing in multiple departments. It is likely that some of these cases are duplicates and do not truly reflect multiple courses, but it is also likely that many are indeed distinct courses. Without a way of determining which the case is, we have opted to leave such courses in the data. As a result, the number of courses taken is likely to be biased slightly upwards.

Services, TA users took 2.64 courses in public institutions, 2.84 in private not-for-profit institutions, and 2.83 in private for-profit institutions; across all reported sectors, the average TA user took 2.82 courses overall (see Table 29). Soldiers took an average of 2.89 courses in private for-profit institutions, 2.96 courses in private not-for-profit institutions, and 2.81 courses in public institutions (see Table 25). Sailors took an average of 2.83 courses in private for-profit institutions, 2.85 courses in private not-for-profit institutions, and 2.64 courses in public institutions (see Table 26). Airmen took the fewest courses in private institutions: 2.72 in private for-profit institutions and 2.66 in not-for-profit institutions (see Table 27). They also took 2.41 courses in public institutions, the second fewest of all the Services. Marines took the most courses in private institutions: 2.98 in for-profit institutions and 3.01 in not-for-profit institutions (see Table 28). However, they took the fewest in public institutions, at only 2.36. MyCAA participants, in contrast, took substantially more courses in public institutions than in private ones: 1.60 in for-profit institutions, 1.54 in not-for-profit institutions, and 2.77 in public institutions (see Table 30).

Table 25. Courses per Servicemember: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	2.88	3.11	2.89	2.93	2.67	2.71	2.88	2.99
	(1.62)	(1.67)	(1.56)	(1.61)	(1.63)	(1.60)	(1.62)	(1.65)
2000	2.95	3.05	2.87	2.98	2.64	2.64	2.91	2.98
	(1.63)	(1.66)	(1.57)	(1.67)	(1.55)	(1.63)	(1.61)	(1.67)
2001	3.04	3.01	2.88	2.91	2.54	2.61	2.92	2.93
	(1.68)	(1.66)	(1.58)	(1.65)	(1.62)	(1.64)	(1.67)	(1.67)
2002	2.98	3.01	2.94	2.93	2.61	2.64	2.92	2.93
	(1.63)	(1.68)	(1.60)	(1.66)	(1.56)	(1.68)	(1.62)	(1.69)
2003	2.97	3.03	2.92	2.96	2.65	2.66	2.92	2.97
	(1.66)	(1.68)	(1.57)	(1.65)	(1.59)	(1.65)	(1.64)	(1.68)
2004	2.96	3.01	2.94	2.93	2.70	2.76	2.94	2.98
	(1.62)	(1.65)	(1.58)	(1.65)	(1.61)	(1.67)	(1.63)	(1.68)
2005	2.95	2.98	2.97	2.90	2.66	2.73	2.91	2.94
	(1.62)	(1.67)	(1.67)	(1.60)	(1.63)	(1.66)	(1.66)	(1.67)
2006	2.96	2.95	3.02	2.96	2.82	2.73	3.00	2.95
	(1.63)	(1.69)	(1.64)	(1.66)	(1.67)	(1.67)	(1.66)	(1.69)
2007	3.01	3.02	3.01	3.01	2.83	2.79	3.01	3.02
	(1.67)	(1.71)	(1.63)	(1.66)	(1.68)	(1.67)	(1.67)	(1.71)
2008	2.93	3.03	3.05	3.02	2.88	2.70	3.00	2.98
	(1.72)	(1.68)	(1.64)	(1.69)	(1.72)	(1.64)	(1.72)	(1.69)
2009	2.94	2.95	2.95	2.92	2.97	2.79	3.02	2.95
	(1.63)	(1.69)	(1.61)	(1.66)	(1.76)	(1.71)	(1.69)	(1.70)
2010	2.93	2.96	3.16	3.02	3.18	2.88	3.12	3.00
	(1.67)	(1.66)	(1.67)	(1.71)	(1.77)	(1.71)	(1.72)	(1.70)
2011	2.98	3.01	3.13	3.02	3.30	2.99	3.21	3.06
	(1.66)	(1.67)	(1.68)	(1.64)	(1.84)	(1.79)	(1.76)	(1.72)
2012	2.98	2.96	3.28	3.05	3.47	3.05	3.31	3.07
	(1.64)	(1.65)	(1.70)	(1.68)	(1.84)	(1.78)	(1.77)	(1.73)
2013	3.05	2.99	3.45	3.18	3.46	3.11	3.38	3.13
	(1.71)	(1.66)	(1.75)	(1.67)	(1.84)	(1.78)	(1.80)	(1.73)
2014	2.46	3.11	2.78	3.29	2.78	3.13	2.69	3.20
	(1.53)	(1.74)	(1.66)	(1.72)	(1.73)	(1.79)	(1.67)	(1.76)
2015	--	2.43	--	2.63	--	2.53	--	2.53
	--	(1.50)	--	(1.61)	--	(1.62)	--	(1.59)
All	2.87	2.89	3.04	2.96	3.05	2.81	3.02	2.92
	(1.65)	(1.66)	(1.67)	(1.67)	(1.78)	(1.72)	(1.72)	(1.70)

Source: CNA calculations using data provided by the Army.
Note: Standard deviations are in parentheses.

Table 26.   Courses per Servicemember: Navy

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**	**2014**	**2015**
1999	2.96	2.83	2.82	2.79	2.74	2.66	2.90	2.83
	(1.79)	(1.61)	(1.57)	(1.65)	(1.70)	(1.51)	(1.70)	(1.61)
2000	2.91	2.97	2.89	2.99	2.73	2.58	2.90	2.90
	(1.58)	(1.70)	(1.72)	(1.76)	(1.72)	(1.55)	(1.67)	(1.70)
2001	3.10	2.95	2.95	2.80	2.58	2.61	2.95	2.85
	(1.77)	(1.63)	(1.75)	(1.63)	(1.52)	(1.54)	(1.71)	(1.62)
2002	2.97	2.80	2.87	2.83	2.69	2.67	2.89	2.81
	(1.63)	(1.62)	(1.77)	(1.69)	(1.64)	(1.67)	(1.69)	(1.67)
2003	2.95	2.82	2.90	2.77	2.68	2.67	2.91	2.80
	(1.70)	(1.62)	(1.71)	(1.72)	(1.54)	(1.68)	(1.67)	(1.70)
2004	2.99	2.83	2.96	2.78	2.65	2.52	2.93	2.76
	(1.77)	(1.64)	(1.71)	(1.61)	(1.61)	(1.56)	(1.72)	(1.62)
2005	3.06	2.88	2.82	2.73	2.61	2.59	2.89	2.79
	(1.71)	(1.69)	(1.67)	(1.70)	(1.64)	(1.63)	(1.70)	(1.69)
2006	2.96	2.92	3.02	2.92	2.61	2.66	2.94	2.89
	(1.68)	(1.65)	(1.79)	(1.73)	(1.55)	(1.62)	(1.70)	(1.68)
2007	3.00	2.84	3.03	2.87	2.69	2.60	2.97	2.83
	(1.70)	(1.68)	(1.79)	(1.73)	(1.66)	(1.63)	(1.73)	(1.70)
2008	2.97	2.78	2.97	2.84	2.62	2.65	2.92	2.81
	(1.69)	(1.65)	(1.75)	(1.70)	(1.58)	(1.64)	(1.71)	(1.68)
2009	2.98	2.77	3.06	2.98	2.78	2.66	3.02	2.90
	(1.68)	(1.70)	(1.84)	(1.69)	(1.64)	(1.68)	(1.74)	(1.72)
2010	3.05	2.94	3.01	2.97	2.68	2.62	2.98	2.89
	(1.79)	(1.67)	(1.68)	(1.72)	(1.65)	(1.68)	(1.75)	(1.71)
2011	2.98	2.93	3.01	3.05	2.77	2.74	2.99	3.00
	(1.75)	(1.65)	(1.75)	(1.76)	(1.67)	(1.68)	(1.75)	(1.73)
2012	3.12	2.89	3.03	2.94	2.88	2.74	3.07	2.92
	(1.76)	(1.67)	(1.70)	(1.69)	(1.65)	(1.66)	(1.71)	(1.69)
2013	3.14	3.00	3.28	3.08	3.07	2.81	3.22	3.00
	(1.77)	(1.67)	(1.88)	(1.70)	(1.76)	(1.60)	(1.81)	(1.67)
2014	2.58	3.07	2.60	3.26	2.39	3.05	2.53	3.19
	(1.54)	(1.75)	(1.57)	(1.78)	(1.46)	(1.70)	(1.53)	(1.76)
2015	--	2.63	--	2.60	--	2.45	--	2.58
	--	(1.51)	--	(1.54)	--	(1.47)	--	(1.51)
All	2.94	2.83	2.92	2.85	2.67	2.64	2.89	2.82
	(1.70)	(1.64)	(1.73)	(1.68)	(1.62)	(1.59)	(1.70)	(1.65)

Source: CNA calculations using data provided by the Navy.
Note: Standard deviations are in parentheses.

Table 27. Courses per Servicemember: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**	**2014**	**2015**
1999	2.81	2.97	2.73	2.51	2.63	2.64	2.81	2.80
	(1.75)	(1.78)	(1.81)	(1.51)	(1.55)	(2.28)	(1.73)	(1.85)
2000	2.88	3.02	2.77	2.72	2.85	3.11	2.89	2.99
	(1.79)	(1.84)	(1.78)	(1.68)	(2.37)	(2.76)	(1.93)	(2.04)
2001	2.80	2.93	2.85	2.70	2.74	2.78	2.87	2.88
	(1.71)	(1.74)	(1.77)	(1.66)	(2.24)	(2.32)	(1.87)	(1.86)
2002	2.85	2.89	2.81	2.68	2.67	2.81	2.85	2.87
	(1.78)	(1.78)	(1.77)	(1.73)	(2.20)	(2.27)	(1.88)	(1.89)
2003	2.90	2.91	2.79	2.74	2.63	2.68	2.87	2.88
	(1.79)	(1.80)	(1.80)	(1.74)	(2.17)	(2.09)	(1.89)	(1.87)
2004	2.89	2.87	2.79	2.80	2.49	2.54	2.84	2.86
	(1.81)	(1.76)	(1.76)	(1.75)	(1.90)	(1.98)	(1.83)	(1.83)
2005	2.80	2.86	2.74	2.57	2.54	2.54	2.80	2.78
	(1.76)	(1.76)	(1.79)	(1.70)	(2.01)	(1.94)	(1.85)	(1.80)
2006	2.82	2.82	2.66	2.61	2.45	2.53	2.78	2.78
	(1.80)	(1.81)	(1.74)	(1.69)	(1.91)	(2.19)	(1.84)	(1.90)
2007	2.82	2.93	2.91	2.75	2.51	2.53	2.86	2.89
	(1.83)	(1.88)	(1.86)	(1.79)	(2.04)	(2.02)	(1.92)	(1.94)
2008	2.81	2.83	2.80	2.78	2.47	2.64	2.82	2.86
	(1.81)	(1.81)	(1.86)	(1.83)	(1.93)	(2.18)	(1.88)	(1.93)
2009	2.81	2.83	2.71	2.72	2.40	2.43	2.78	2.81
	(1.84)	(1.86)	(1.83)	(1.80)	(1.81)	(1.93)	(1.86)	(1.89)
2010	2.78	2.87	2.78	2.78	2.41	2.55	2.78	2.89
	(1.84)	(1.86)	(1.87)	(1.85)	(1.89)	(2.10)	(1.89)	(1.95)
2011	2.66	2.82	2.75	2.75	2.30	2.45	2.68	2.83
	(1.77)	(1.83)	(1.91)	(1.85)	(1.72)	(2.03)	(1.84)	(1.93)
2012	2.68	2.74	2.73	2.73	2.50	2.44	2.73	2.76
	(1.73)	(1.84)	(1.80)	(1.87)	(1.79)	(1.84)	(1.80)	(1.89)
2013	2.69	2.72	2.96	2.87	2.66	2.60	2.86	2.81
	(1.76)	(1.77)	(1.88)	(1.87)	(1.89)	(1.94)	(1.88)	(1.89)
2014	2.09	2.78	2.11	2.89	1.93	2.74	2.09	2.91
	(1.37)	(1.82)	(1.49)	(1.91)	(1.43)	(2.03)	(1.46)	(1.96)
2015	--	2.13	--	2.18	--	1.94	--	2.12
	--	(1.42)	--	(1.55)	--	(1.51)	--	(1.52)
All	2.66	2.72	2.67	2.66	2.35	2.41	2.66	2.70
	(1.75)	(1.78)	(1.79)	(1.78)	(1.81)	(1.92)	(1.81)	(1.86)

Source: CNA calculations using data provided by the Air Force.
Note: Standard deviations are in parentheses.

Table 28.   Courses per Servicemember: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	3.20 (1.87)	3.41 (2.05)	3.14 (1.99)	3.26 (2.27)	2.88 (1.96)	3.03 (1.89)	3.13 (1.93)	3.33 (2.08)
2000	2.77 (1.71)	3.18 (1.95)	2.87 (1.69)	3.33 (1.97)	2.61 (1.68)	2.77 (1.90)	2.79 (1.70)	3.18 (1.96)
2001	2.58 (1.74)	3.17 (1.87)	2.60 (1.47)	3.37 (1.83)	2.52 (1.61)	3.07 (2.09)	2.63 (1.64)	3.28 (1.95)
2002	2.87 (1.74)	3.19 (1.83)	3.16 (1.70)	3.05 (1.89)	2.69 (1.71)	2.84 (1.69)	2.96 (1.74)	3.12 (1.83)
2003	2.66 (1.65)	3.04 (1.93)	2.89 (1.67)	3.16 (1.83)	2.76 (1.86)	2.84 (1.92)	2.80 (1.75)	3.10 (1.91)
2004	2.79 (1.75)	3.31 (1.99)	2.61 (1.57)	3.21 (1.88)	2.42 (1.53)	2.81 (1.65)	2.67 (1.65)	3.19 (1.89)
2005	2.70 (1.74)	3.12 (1.90)	3.05 (1.83)	3.33 (1.90)	2.51 (1.81)	2.65 (1.78)	2.80 (1.79)	3.11 (1.89)
2006	2.78 (1.71)	3.34 (1.95)	2.74 (1.84)	3.07 (1.89)	2.60 (1.70)	2.86 (1.66)	2.79 (1.78)	3.19 (1.88)
2007	2.82 (1.71)	3.09 (1.92)	2.98 (1.90)	3.09 (1.84)	2.49 (1.69)	2.67 (1.75)	2.82 (1.76)	3.07 (1.88)
2008	2.67 (1.72)	3.21 (1.96)	3.21 (1.98)	3.14 (1.80)	2.68 (1.83)	2.76 (1.97)	2.81 (1.82)	3.14 (1.94)
2009	2.69 (1.73)	3.05 (1.87)	2.95 (1.80)	3.12 (1.93)	2.64 (1.78)	2.98 (1.90)	2.78 (1.76)	3.09 (1.90)
2010	2.79 (1.74)	3.21 (1.88)	2.58 (1.67)	2.98 (1.88)	2.44 (1.68)	2.61 (1.70)	2.70 (1.73)	3.05 (1.86)
2011	2.54 (1.68)	3.25 (2.00)	3.09 (1.92)	3.42 (1.88)	2.27 (1.48)	2.71 (1.80)	2.61 (1.72)	3.20 (1.95)
2012	2.72 (1.66)	3.26 (1.88)	2.85 (1.87)	3.12 (1.90)	2.34 (1.63)	2.55 (1.70)	2.66 (1.72)	3.08 (1.87)
2013	2.63 (1.71)	3.02 (1.89)	3.03 (1.90)	3.22 (1.94)	2.37 (1.58)	2.52 (1.69)	2.64 (1.72)	2.93 (1.86)
2014	1.91 (1.45)	3.30 (1.95)	2.03 (1.56)	3.51 (2.03)	1.68 (1.18)	2.93 (1.78)	1.86 (1.40)	3.26 (1.92)
2015	-- --	2.27 (1.63)	-- --	2.34 (1.67)	-- --	1.78 (1.33)	-- --	2.08 (1.54)
All	2.55 (1.70)	2.98 (1.90)	2.76 (1.81)	3.01 (1.90)	2.25 (1.59)	2.36 (1.69)	2.54 (1.71)	2.82 (1.87)

Source: CNA calculations using data provided by the Marine Corps.
Note: Standard deviations are in parentheses.

Table 29. Courses per Servicemember: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	2.93	3.10	2.89	2.90	2.71	2.74	2.91	2.99
	(1.70)	(1.74)	(1.64)	(1.72)	(1.68)	(1.69)	(1.69)	(1.73)
2000	2.91	3.04	2.84	2.94	2.70	2.74	2.89	2.99
	(1.69)	(1.75)	(1.68)	(1.73)	(1.82)	(1.93)	(1.73)	(1.82)
2001	2.91	2.98	2.86	2.83	2.62	2.69	2.89	2.92
	(1.71)	(1.71)	(1.70)	(1.67)	(1.86)	(1.91)	(1.77)	(1.77)
2002	2.92	2.96	2.89	2.84	2.64	2.70	2.89	2.91
	(1.69)	(1.72)	(1.70)	(1.71)	(1.78)	(1.84)	(1.73)	(1.77)
2003	2.93	2.97	2.86	2.86	2.65	2.68	2.90	2.93
	(1.71)	(1.74)	(1.69)	(1.71)	(1.78)	(1.80)	(1.74)	(1.77)
2004	2.93	2.95	2.87	2.87	2.62	2.66	2.89	2.92
	(1.72)	(1.72)	(1.68)	(1.70)	(1.70)	(1.75)	(1.72)	(1.74)
2005	2.89	2.93	2.85	2.77	2.61	2.65	2.86	2.87
	(1.70)	(1.72)	(1.73)	(1.69)	(1.76)	(1.74)	(1.74)	(1.74)
2006	2.90	2.92	2.88	2.84	2.66	2.67	2.90	2.90
	(1.71)	(1.75)	(1.73)	(1.71)	(1.73)	(1.82)	(1.74)	(1.78)
2007	2.92	2.97	2.97	2.89	2.69	2.67	2.94	2.94
	(1.74)	(1.79)	(1.78)	(1.74)	(1.79)	(1.77)	(1.78)	(1.80)
2008	2.87	2.94	2.94	2.90	2.70	2.68	2.91	2.92
	(1.76)	(1.76)	(1.77)	(1.76)	(1.78)	(1.82)	(1.79)	(1.80)
2009	2.88	2.89	2.88	2.88	2.78	2.68	2.93	2.90
	(1.72)	(1.77)	(1.76)	(1.74)	(1.77)	(1.78)	(1.76)	(1.78)
2010	2.88	2.94	2.96	2.92	2.90	2.75	2.97	2.95
	(1.75)	(1.76)	(1.76)	(1.78)	(1.82)	(1.82)	(1.79)	(1.80)
2011	2.83	2.94	2.96	2.95	2.93	2.80	2.97	2.98
	(1.72)	(1.76)	(1.80)	(1.77)	(1.83)	(1.86)	(1.80)	(1.82)
2012	2.86	2.89	3.00	2.91	3.08	2.81	3.05	2.94
	(1.70)	(1.75)	(1.77)	(1.78)	(1.85)	(1.80)	(1.79)	(1.80)
2013	2.90	2.89	3.22	3.05	3.13	2.88	3.15	2.99
	(1.75)	(1.73)	(1.85)	(1.78)	(1.87)	(1.81)	(1.84)	(1.79)
2014	2.32	2.99	2.47	3.16	2.42	2.98	2.43	3.11
	(1.49)	(1.79)	(1.60)	(1.83)	(1.63)	(1.86)	(1.60)	(1.84)
2015	--	2.36	--	2.47	--	2.31	--	2.40
	--	(1.50)	--	(1.58)	--	(1.57)	--	(1.56)
All	2.78	2.83	2.87	2.84	2.76	2.64	2.85	2.82
	(1.70)	(1.72)	(1.74)	(1.73)	(1.79)	(1.76)	(1.76)	(1.76)

Source: CNA calculations using data provided by the Army, Navy, Air Force, and Marine Corps.
Note: Standard deviations are in parentheses.

Table 30. Courses per MyCAA participant

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**	**2014**	**2015**
2009	2.00	1.11	1.17	2.00	1.94	5.00	1.83	2.29
	(1.36)	(0.33)	(0.41)	--	(1.29)	(3.16)	(1.23)	(2.37)
2010	1.33	1.76	1.90	1.50	2.02	2.97	1.67	2.19
	(0.97)	(1.67)	(1.29)	(0.71)	(1.66)	(1.63)	(1.35)	(1.67)
2011	1.77	1.63	1.35	1.30	2.44	2.83	2.05	2.10
	(1.44)	(1.28)	(0.60)	(0.67)	(1.77)	(2.11)	(1.60)	(1.76)
2012	1.97	1.63	1.48	1.29	2.81	2.64	2.37	2.07
	(1.62)	(1.28)	(0.89)	(0.64)	(1.84)	(2.09)	(1.76)	(1.75)
2013	2.26	1.98	1.84	1.50	3.70	2.87	3.01	2.40
	(1.69)	(1.81)	(1.03)	(0.90)	(2.30)	(1.99)	(2.15)	(1.91)
2014	1.54	2.20	1.30	2.08	2.60	3.80	1.82	3.15
	(1.28)	(1.63)	(0.85)	(0.99)	(2.09)	(2.39)	(1.61)	(2.22)
2015	--	1.53	--	1.46	--	2.44	--	1.82
	--	(1.36)	--	(0.98)	--	(2.09)	--	(1.67)
All	1.64	1.60	1.36	1.54	2.85	2.77	2.02	2.03
	(1.37)	(1.41)	(0.88)	(0.99)	(2.15)	(2.22)	(1.75)	(1.82)

Source: CNA calculations using data provided by VolEd.
Note: Standard deviations are in parentheses.

In 2014 and 2015, new TA users in all Services and sectors took fewer courses than the average TA user in their Service and sector.[52] Across all reported sectors and Services, new TA users took 0.42 fewer courses than TA users overall.[53] This finding most likely reflects the limitations on the number of first-year courses that Servicemembers can take, imposed by force management controls. However, it also could reflect either (a) Servicemembers attempting to avoid overburdening themselves in their first year of TA use or (b) new cohorts being less academically oriented on average than the remaining members of older cohorts. The magnitude of this difference varies widely: first-year Navy TA users in public institutions in 2015 took only 0.19 fewer courses than Navy TA users in public institutions overall, while first-year Marine TA users in private not-for-profit institutions in 2014 took 0.73 fewer courses than Marines in private not-for-profit institutions overall. Among MyCAA users, there is also

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[52] This is determined, for example, by comparing the course numbers for the 2014 cohort *in the year 2014* with the average course numbers for all cohorts *in the year 2014*.

[53] DOD TA data are available only by fiscal year, not by academic year. As a result, the number of courses a Servicemember is able to take in his or her first year of TA use may be limited. Specifically, those who begin using TA at the start of a standard academic year will be limited in the number of courses they can feasibly take by the end of the fiscal year.

evidence that first-time users take fewer courses than their more experienced counterparts. In 2015, first-time users in the private for-profit sector took 1.53 courses (compared with 1.60 for all MyCAA users in 2015). In the private not-for-profit and public sectors, new MyCAA users took an average of 1.46 and 2.44 courses, respectively (compared with 1.54 and 2.77 for all users), in 2015. These small differences may reflect that first-year users are a large share of all users in any given year and that these programs require few courses.

Servicemembers who use a second year of TA take more courses than first-time users.[54] Combining all reported sectors, Soldiers see the smallest increase (an increase of approximately 0.5 course), while the change in Marines' course load is nearly three times larger, nearly doubling the number of courses taken by first-time Marine TA users. Across all reported sectors and Services, TA users in their second year took 0.67 more courses than those in their first year.

Combining across all reported sectors, second-year MyCAA participants took 1.33 courses more than first-year MyCAA participants. The increase in MyCAA overall course-taking is larger than the increase in any single sector, in large part because the composition of the 2014 MyCAA cohort shifts from being overwhelmingly concentrated in the private for-profit sector (where students were taking a low number of courses) to being similarly skewed toward the public sector (where students not only took more courses in both 2014 and 2015 than in the other sectors, but also increased the number of courses taken between 2014 and 2015 by the largest amount).

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[54] This is determined by comparing the course numbers for the 2014 cohort *in the year 2014* with the 2014 cohort course numbers *in the year 2015*.

Table 31 present the number of credits taken per participant. This information is complementary to the number of courses taken per sector. Some students may enroll in many courses but have relatively few credits (e.g., if they sign up for a large number of lab-based courses worth few credits each). This measure has two main weaknesses: (1) the MyCAA data contain no information on credits attempted or earned and (2) there may be differences in how credits are listed for each course. Some values may reflect credits earned rather than credits attempted, and some courses or institutions may use different scales or units for credit reporting. In particular, course credits are *typically* listed in semester hours but occasionally are listed in clock hours. Although this is relatively uncommon, the difference in scale necessitated correction for the Navy and Marine Corps data, where these types of courses are most common.[55]

In all four Services, Servicemembers in both types of private institutions took more credits, on average, than those in public institutions. This gap was relatively small for the Army, at less than 0.5 credit (8.90 in private for-profits and 8.84 in private not-for-profits, versus 8.41 in public institutions), but was more than 2 credits in the Marine Corps (9.46 in private for-profits and 9.65 in private not-for-profits, versus 7.07 in public institutions); pooling across all Services, the difference was slightly under 1 credit (8.81 in private for-profits, 8.64 in private not-for-profits, and 7.89 in public institutions).

In all Services and sectors, first-time TA participants took fewer credits than did participants overall. Members of the 2014 TA cohort in their second year of TA use also took substantially more credits than those in their first year of TA use—this gap was smallest among Soldiers at public institutions (a 1.23-credit difference) and largest among Marines at private not-for-profit institutions (a 4.90-credit difference); across all reported sectors and Services, the difference was 2.14 credits. These differences likely result, at least in part, from the fact that Servicemembers become TA-eligible at sometime *within* their first year, whereas those in the second year are eligible for the full 12 months. Also, some services restrict TA use among first-year users.

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[55] Conversion guidelines state that one semester hour is at least 37.5 clock hours. As such, observations specifying that credits were listed in clock hours or that had a credit value of 30 or higher were divided by 37.5. Army and Air Force data did not specify units of measurement, so no conversion was done for credits in those Services. As a result, Army and Air Force data may slightly overestimate the number of (semester hour) credits that students take.

Table 31. Credits per Servicemember: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	8.99	9.62	8.60	8.67	7.91	8.13	8.74	9.05
	(4.99)	(5.06)	(4.71)	(4.80)	(4.71)	(4.70)	(4.89)	(4.94)
2000	9.15	9.41	8.46	8.82	7.90	7.89	8.81	9.02
	(5.00)	(5.00)	(4.67)	(5.01)	(4.64)	(4.76)	(4.86)	(4.99)
2001	9.46	9.35	8.48	8.62	7.47	7.83	8.82	8.89
	(5.18)	(5.07)	(4.76)	(4.98)	(4.60)	(4.89)	(5.00)	(5.04)
2002	9.23	9.32	8.75	8.73	7.76	7.89	8.85	8.91
	(5.00)	(5.08)	(4.81)	(4.97)	(4.58)	(4.97)	(4.91)	(5.07)
2003	9.20	9.35	8.66	8.79	7.92	7.93	8.86	8.99
	(5.07)	(5.13)	(4.74)	(4.99)	(4.63)	(4.86)	(4.95)	(5.08)
2004	9.17	9.34	8.71	8.78	8.04	8.21	8.92	9.07
	(4.98)	(5.09)	(4.71)	(4.98)	(4.61)	(4.90)	(4.87)	(5.07)
2005	9.10	9.17	8.76	8.73	7.89	8.10	8.80	8.92
	(4.98)	(5.10)	(4.87)	(4.93)	(4.75)	(4.78)	(4.95)	(5.03)
2006	9.12	9.10	9.09	8.84	8.49	8.14	9.14	8.96
	(4.99)	(5.12)	(4.99)	(4.98)	(4.85)	(4.90)	(4.99)	(5.05)
2007	9.22	9.29	8.93	9.00	8.48	8.38	9.11	9.15
	(5.05)	(5.19)	(4.80)	(5.02)	(4.82)	(4.96)	(4.95)	(5.12)
2008	9.00	9.37	9.05	9.03	8.64	8.14	9.07	9.07
	(5.05)	(5.15)	(4.86)	(5.19)	(5.01)	(4.82)	(5.04)	(5.13)
2009	9.05	9.07	8.82	8.74	8.87	8.38	9.15	8.96
	(5.01)	(5.18)	(4.81)	(4.97)	(5.04)	(4.99)	(5.02)	(5.12)
2010	8.99	9.11	9.48	9.00	9.53	8.65	9.43	9.10
	(5.02)	(5.06)	(4.97)	(5.15)	(5.07)	(5.06)	(5.07)	(5.12)
2011	9.15	9.27	9.36	9.11	9.86	8.95	9.68	9.30
	(5.05)	(5.11)	(4.92)	(4.98)	(5.20)	(5.15)	(5.14)	(5.15)
2012	9.14	9.08	9.85	9.19	10.34	9.21	9.98	9.33
	(4.97)	(5.06)	(5.02)	(5.07)	(5.22)	(5.21)	(5.14)	(5.16)
2013	9.34	9.21	10.33	9.61	10.24	9.38	10.12	9.53
	(5.14)	(5.09)	(5.11)	(5.03)	(5.21)	(5.23)	(5.20)	(5.15)
2014	7.44	9.59	8.19	9.88	8.17	9.40	7.98	9.71
	(4.50)	(5.28)	(4.81)	(5.13)	(4.96)	(5.27)	(4.82)	(5.27)
2015	--	7.36	--	7.79	--	7.52	--	7.57
	--	(4.51)	--	(4.84)	--	(4.80)	--	(4.74)
All	8.80	8.90	9.06	8.84	9.04	8.41	9.10	8.84
	(4.98)	(5.07)	(4.93)	(5.03)	(5.11)	(5.05)	(5.06)	(5.09)

Source: CNA calculations using data provided by the Navy.
Note: Standard deviations are in parentheses.

Table 32. Credits per Servicemember: Navy

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	9.65	9.31	8.73	8.82	8.29	8.16	9.09	9.00
	(6.06)	(5.67)	(4.97)	(5.37)	(5.02)	(4.63)	(5.45)	(5.33)
2000	9.69	9.93	9.07	9.45	8.25	7.84	9.19	9.25
	(5.43)	(5.80)	(5.68)	(5.90)	(5.12)	(4.66)	(5.46)	(5.62)
2001	10.05	9.64	9.00	8.81	7.84	8.07	9.19	9.03
	(5.79)	(5.43)	(5.62)	(5.51)	(4.67)	(4.95)	(5.50)	(5.39)
2002	9.95	9.02	9.14	9.09	8.12	8.04	9.20	8.85
	(5.73)	(5.40)	(6.20)	(5.90)	(4.95)	(4.96)	(5.72)	(5.50)
2003	9.64	9.19	8.99	8.63	8.08	7.98	9.14	8.78
	(5.48)	(5.37)	(5.51)	(5.81)	(4.59)	(4.88)	(5.30)	(5.49)
2004	9.73	9.14	9.21	8.63	7.89	7.54	9.16	8.61
	(6.00)	(5.37)	(5.73)	(5.22)	(4.71)	(4.64)	(5.65)	(5.18)
2005	9.97	9.29	8.80	8.62	7.77	7.75	9.05	8.73
	(5.65)	(5.61)	(5.58)	(5.79)	(4.82)	(4.72)	(5.49)	(5.48)
2006	9.70	9.61	9.32	9.13	7.85	8.11	9.20	9.13
	(5.69)	(5.47)	(5.80)	(5.65)	(4.66)	(5.10)	(5.51)	(5.49)
2007	9.80	9.29	9.33	8.92	8.16	7.87	9.28	8.87
	(5.78)	(5.62)	(5.69)	(5.58)	(5.04)	(4.99)	(5.58)	(5.46)
2008	9.69	9.01	9.30	8.99	7.80	7.86	9.11	8.78
	(5.69)	(5.44)	(5.76)	(5.82)	(4.71)	(4.81)	(5.53)	(5.44)
2009	9.74	9.11	9.70	9.41	8.36	8.05	9.51	9.17
	(5.63)	(5.77)	(6.27)	(5.75)	(4.93)	(5.02)	(5.72)	(5.65)
2010	9.97	9.62	9.37	9.31	8.07	7.94	9.36	9.10
	(6.03)	(5.74)	(5.44)	(5.45)	(4.85)	(5.06)	(5.60)	(5.51)
2011	9.61	9.46	9.38	9.53	8.42	8.28	9.35	9.39
	(5.73)	(5.40)	(5.67)	(5.81)	(5.17)	(5.15)	(5.58)	(5.54)
2012	10.11	9.39	9.60	9.30	8.69	8.26	9.63	9.15
	(5.83)	(5.60)	(5.62)	(5.70)	(4.93)	(4.95)	(5.49)	(5.46)
2013	10.32	9.94	10.18	9.73	9.32	8.57	10.05	9.49
	(6.13)	(5.78)	(5.99)	(5.59)	(5.38)	(4.90)	(5.82)	(5.46)
2014	8.61	10.23	7.91	10.23	7.16	9.16	7.82	9.99
	(5.35)	(6.01)	(4.98)	(5.91)	(4.40)	(5.05)	(4.88)	(5.65)
2015	--	8.74	--	7.98	--	7.30	--	7.97
	--	(5.37)	--	(4.93)	--	(4.38)	--	(4.87)
All	9.64	9.32	9.05	8.92	8.05	7.94	9.01	8.82
	(5.75)	(5.59)	(5.62)	(5.52)	(4.88)	(4.78)	(5.47)	(5.34)

Source: CNA calculations using data provided by the Navy.
Note: Standard deviations are in parentheses.

Table 33. Credits per Servicemember: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	9.08	9.26	8.27	7.72	8.13	7.84	8.81	8.60
	(5.56)	(5.53)	(5.48)	(4.78)	(4.64)	(5.57)	(5.34)	(5.38)
2000	9.15	9.45	8.30	8.16	8.02	8.54	8.81	9.04
	(5.65)	(5.68)	(5.37)	(5.18)	(5.44)	(5.74)	(5.55)	(5.64)
2001	8.83	9.17	8.55	8.16	7.89	7.96	8.73	8.78
	(5.36)	(5.44)	(5.37)	(5.02)	(5.30)	(5.26)	(5.41)	(5.35)
2002	8.96	9.03	8.50	8.15	7.67	8.04	8.72	8.76
	(5.63)	(5.50)	(5.38)	(5.35)	(5.19)	(5.40)	(5.51)	(5.50)
2003	9.04	9.01	8.40	8.33	7.51	7.68	8.72	8.76
	(5.51)	(5.53)	(5.46)	(5.43)	(5.50)	(5.21)	(5.55)	(5.49)
2004	9.02	8.92	8.37	8.45	7.38	7.42	8.69	8.71
	(5.61)	(5.43)	(5.27)	(5.32)	(5.19)	(5.03)	(5.48)	(5.40)
2005	8.75	8.89	8.28	7.70	7.48	7.47	8.56	8.48
	(5.52)	(5.43)	(5.48)	(5.12)	(5.82)	(5.18)	(5.68)	(5.38)
2006	8.81	8.79	8.05	7.89	7.17	7.24	8.49	8.44
	(5.60)	(5.57)	(5.30)	(5.20)	(5.03)	(5.31)	(5.51)	(5.51)
2007	8.79	9.11	8.82	8.30	7.29	7.33	8.73	8.81
	(5.65)	(5.80)	(5.68)	(5.50)	(5.27)	(5.26)	(5.67)	(5.75)
2008	8.77	8.79	8.48	8.41	7.39	7.61	8.66	8.71
	(5.61)	(5.63)	(5.64)	(5.61)	(5.36)	(5.49)	(5.66)	(5.69)
2009	8.74	8.81	8.22	8.26	7.09	7.08	8.50	8.58
	(5.63)	(5.76)	(5.65)	(5.64)	(5.17)	(4.97)	(5.65)	(5.67)
2010	8.71	8.90	8.34	8.40	7.15	7.39	8.52	8.78
	(5.75)	(5.71)	(5.63)	(5.63)	(5.22)	(5.40)	(5.72)	(5.75)
2011	8.34	8.75	8.31	8.33	6.87	7.16	8.23	8.62
	(5.56)	(5.62)	(5.76)	(5.68)	(4.87)	(5.33)	(5.58)	(5.71)
2012	8.40	8.51	8.23	8.22	7.55	7.22	8.39	8.39
	(5.42)	(5.68)	(5.46)	(5.63)	(5.40)	(5.23)	(5.55)	(5.67)
2013	8.46	8.44	8.91	8.69	8.02	7.76	8.78	8.58
	(5.69)	(5.50)	(5.66)	(5.73)	(5.65)	(5.46)	(5.80)	(5.63)
2014	6.51	8.62	6.34	8.73	5.81	8.24	6.35	8.87
	(4.35)	(5.64)	(4.49)	(5.75)	(4.11)	(5.85)	(4.40)	(5.86)
2015	--	6.52	--	6.55	--	5.77	--	6.39
	--	(4.37)	--	(4.72)	--	(4.05)	--	(4.43)
All	8.34	8.43	8.06	8.02	7.00	7.10	8.13	8.21
	(5.47)	(5.49)	(5.43)	(5.43)	(5.09)	(5.15)	(5.47)	(5.50)

Source: CNA calculations using data provided by the Air Force.
Note: Standard deviations are in parentheses.

Table 34. Credits per Servicemember: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	9.95	10.67	10.33	10.47	8.50	9.16	9.77	10.40
	(5.79)	(6.58)	(7.24)	(7.52)	(5.43)	(5.54)	(6.20)	(6.65)
2000	8.86	10.14	9.43	10.70	7.64	8.33	8.81	10.02
	(5.52)	(6.49)	(6.05)	(6.71)	(4.97)	(5.65)	(5.61)	(6.42)
2001	8.33	9.83	8.16	10.66	7.36	9.12	8.20	10.13
	(5.51)	(6.00)	(4.93)	(6.51)	(4.73)	(6.09)	(5.19)	(6.27)
2002	9.20	10.05	9.92	9.64	8.14	8.54	9.30	9.74
	(5.46)	(5.83)	(5.83)	(6.41)	(5.22)	(5.00)	(5.62)	(5.91)
2003	8.46	9.65	9.37	10.17	8.21	8.45	8.79	9.72
	(5.27)	(6.18)	(6.03)	(6.64)	(5.44)	(5.64)	(5.65)	(6.28)
2004	8.90	10.51	8.46	10.55	7.11	8.29	8.43	10.05
	(5.54)	(6.40)	(5.70)	(6.96)	(4.36)	(4.72)	(5.40)	(6.27)
2005	8.77	9.86	9.96	10.62	7.42	7.79	8.95	9.72
	(5.90)	(6.08)	(6.32)	(6.37)	(5.27)	(5.28)	(5.95)	(6.06)
2006	8.84	10.45	8.92	10.11	7.64	8.58	8.79	10.02
	(5.40)	(6.21)	(6.58)	(6.94)	(4.92)	(4.96)	(5.74)	(6.23)
2007	8.93	9.71	9.49	9.81	7.44	7.96	8.85	9.58
	(5.43)	(6.06)	(6.28)	(6.24)	(5.14)	(5.44)	(5.64)	(6.04)
2008	8.44	10.01	10.43	9.98	8.10	8.20	8.85	9.74
	(5.37)	(6.20)	(7.25)	(5.98)	(5.46)	(5.84)	(5.91)	(6.15)
2009	8.61	9.75	9.72	10.12	7.96	8.90	8.85	9.78
	(5.54)	(6.14)	(6.41)	(6.53)	(5.43)	(5.61)	(5.77)	(6.17)
2010	9.11	10.22	8.39	9.74	7.23	7.83	8.63	9.65
	(5.75)	(6.02)	(5.88)	(6.84)	(5.01)	(4.98)	(5.70)	(6.11)
2011	8.26	10.20	9.87	10.96	6.85	8.00	8.32	9.96
	(5.41)	(6.32)	(6.42)	(6.35)	(4.46)	(5.28)	(5.56)	(6.19)
2012	8.71	10.31	9.21	10.01	6.97	7.65	8.38	9.63
	(5.35)	(6.09)	(6.43)	(6.46)	(4.83)	(5.07)	(5.53)	(6.02)
2013	8.48	9.59	9.89	10.50	6.97	7.65	8.24	9.23
	(5.46)	(6.09)	(6.71)	(6.66)	(4.69)	(5.13)	(5.58)	(6.03)
2014	7.00	10.60	6.41	11.31	5.08	8.76	6.20	10.27
	(5.06)	(6.43)	(5.21)	(7.22)	(3.60)	(5.30)	(4.73)	(6.34)
2015	--	7.25	--	7.37	--	5.34	--	6.43
	--	(5.07)	--	(5.55)	--	(4.00)	--	(4.85)
All	8.35	9.46	8.93	9.65	6.69	7.07	8.07	8.82
	(5.46)	(6.08)	(6.30)	(6.55)	(4.71)	(5.03)	(5.56)	(6.03)

Source: CNA calculations using data provided by the Marine Corps.
Note: Standard deviations are in parentheses.

Table 35. Credits per Servicemember: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	9.24	9.68	8.81	8.85	8.08	8.26	8.95	9.18
	(5.36)	(5.44)	(5.23)	(5.40)	(4.87)	(4.89)	(5.24)	(5.34)
2000	9.20	9.53	8.62	8.92	7.97	8.06	8.87	9.14
	(5.32)	(5.44)	(5.26)	(5.45)	(4.96)	(5.05)	(5.25)	(5.42)
2001	9.16	9.32	8.58	8.56	7.66	7.98	8.79	8.93
	(5.35)	(5.33)	(5.21)	(5.20)	(4.88)	(5.11)	(5.26)	(5.30)
2002	9.20	9.22	8.78	8.66	7.81	7.99	8.87	8.90
	(5.34)	(5.31)	(5.32)	(5.39)	(4.84)	(5.07)	(5.27)	(5.33)
2003	9.14	9.22	8.65	8.70	7.84	7.90	8.84	8.93
	(5.30)	(5.37)	(5.23)	(5.43)	(4.94)	(5.02)	(5.26)	(5.36)
2004	9.16	9.20	8.66	8.73	7.78	7.87	8.85	8.92
	(5.39)	(5.33)	(5.20)	(5.29)	(4.81)	(4.89)	(5.25)	(5.29)
2005	9.05	9.11	8.64	8.45	7.73	7.84	8.76	8.78
	(5.34)	(5.35)	(5.36)	(5.33)	(5.12)	(4.91)	(5.37)	(5.30)
2006	9.07	9.12	8.77	8.68	7.93	7.92	8.90	8.88
	(5.36)	(5.43)	(5.42)	(5.40)	(4.90)	(5.07)	(5.32)	(5.39)
2007	9.10	9.24	9.01	8.79	8.02	7.96	8.99	9.01
	(5.42)	(5.56)	(5.46)	(5.43)	(5.04)	(5.09)	(5.38)	(5.48)
2008	8.93	9.13	8.93	8.84	8.09	7.95	8.91	8.93
	(5.38)	(5.46)	(5.51)	(5.55)	(5.12)	(5.07)	(5.40)	(5.46)
2009	8.98	9.02	8.82	8.82	8.29	8.00	8.97	8.92
	(5.36)	(5.54)	(5.57)	(5.51)	(5.13)	(5.05)	(5.39)	(5.47)
2010	8.98	9.14	8.96	8.88	8.65	8.19	9.08	9.02
	(5.45)	(5.45)	(5.39)	(5.51)	(5.19)	(5.17)	(5.41)	(5.45)
2011	8.82	9.14	8.98	9.02	8.78	8.34	9.08	9.11
	(5.36)	(5.44)	(5.49)	(5.55)	(5.26)	(5.26)	(5.41)	(5.48)
2012	8.93	8.97	9.15	8.89	9.24	8.46	9.32	9.00
	(5.28)	(5.46)	(5.43)	(5.52)	(5.38)	(5.25)	(5.40)	(5.45)
2013	9.08	9.01	9.78	9.37	9.34	8.67	9.59	9.18
	(5.52)	(5.42)	(5.64)	(5.56)	(5.43)	(5.29)	(5.55)	(5.45)
2014	7.26	9.36	7.39	9.66	7.18	8.96	7.37	9.51
	(4.65)	(5.62)	(4.85)	(5.73)	(4.71)	(5.44)	(4.77)	(5.63)
2015	--	7.32	--	7.49	--	6.88	--	7.26
	--	(4.71)	--	(4.93)	--	(4.55)	--	(4.74)
All	8.69	8.81	8.68	8.64	8.22	7.89	8.71	8.63
	(5.30)	(5.37)	(5.37)	(5.42)	(5.14)	(5.06)	(5.31)	(5.34)

Source: CNA calculations using data provided by the Army, Navy, Air Force, and Marine Corps.
Note: Standard deviations are in parentheses.

Course completion

Course-taking is only beneficial to the extent that students complete their courses.[56] Incomplete courses cannot count toward a degree, and failing to complete a course would constitute a poor use of DOD funds. Tables 36 through 41 show the total number of courses completed per Servicemember or spouse.

In 2015, Soldiers and Sailors completed about 2.5 courses, on average, in both private sectors, and about 2.2 courses in public institutions (see Tables 36 and 37). Airmen also completed roughly 2.5 courses in both private sectors, but just over 2 courses in the public sector (see Table 38). Marines completed the most courses in both private sectors, about 2.75, but the fewest in public institutions, just over 2 courses (see Table 39). Servicemembers completed 2.44 courses across all reported sectors and Services (see Table 40). Finally, MyCAA participants completed slightly over 1 course in private for-profits, 1.23 courses in private not-for-profits, and 2.34 courses in public institutions (see Table 41).

We find that first-year TA users in all reported sectors and Services complete fewer courses than TA users overall; this is to be expected because they initially take fewer courses. This difference is as small as 0.13 course completed (Sailors in public institutions in 2015) and as large as 0.75 (Marines in private not-for-profit institutions in 2014). Across all reported sectors and Services in 2015, first-year TA users completed 0.37 fewer courses than TA users overall: Army, 0.43 fewer courses; Navy, 0.20 fewer courses; Air Force, 0.54 fewer courses; and Marine Corps, 0.71 fewer courses.

First-year MyCAA users also completed fewer courses in a given year than MyCAA users overall though, owing to the high attrition among MyCAA users, these differences are fairly small: in 2015, first-year MyCAA participants completed 0.06 fewer courses in the private for-profit sector, 0.09 fewer courses in the private not-for-profit sector, and 0.35 fewer courses in the public sector than MyCAA participants overall in each respective sector.

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[56] We refer to course completion rather than passing courses because a wide range of course grades in Army data, such as "CREDIT," align more closely with the former.

Members of the 2014 cohort in their second year of TA use completed more courses than those in their first year of TA use. Soldiers, for example, completed approximately 0.7 more courses in each sector. Sailors completed the fewest additional courses in the private for-profit sector (an increase of 0.56) but more in the private not-for-profit and public sectors (increases of 0.75 and 0.86, respectively). Airmen increased their course completions by roughly 0.9 in the public sector, by 0.77 in the private not-for-profit sector, and roughly 0.69 in the private for-profit sector. Marines had the greatest increase across all three sectors—1.37 additional courses in the private for-profit sector, 1.48 in the private not-for-profit sector, and 1.46 in the public sector. The overall increase across all Services was approximately 0.7-0.8 in each sector.

Members of the 2014 cohort of MyCAA participants also completed more courses in their second year than in their first—0.69 more in the private for-profit sector, 0.78 more in the private not-for-profit sector, and 1.23 more in the public sector. As with courses and credits taken, some of these increases may be due to additional diligence on the part of Servicemembers and their spouses, but much is likely due to second-year students taking more, and therefore completing more, courses.

Table 36.   Course completions per Servicemember: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**	**2014**	**2015**
1999	2.50	2.70	2.54	2.64	2.15	2.18	2.46	2.58
	(1.75)	(1.79)	(1.69)	(1.68)	(1.63)	(1.66)	(1.72)	(1.74)
2000	2.58	2.70	2.52	2.71	2.14	2.10	2.50	2.59
	(1.77)	(1.77)	(1.64)	(1.73)	(1.63)	(1.66)	(1.71)	(1.77)
2001	2.63	2.65	2.56	2.60	1.99	2.11	2.47	2.53
	(1.83)	(1.81)	(1.67)	(1.65)	(1.70)	(1.68)	(1.79)	(1.75)
2002	2.62	2.64	2.59	2.63	2.03	2.11	2.49	2.53
	(1.77)	(1.76)	(1.66)	(1.68)	(1.63)	(1.69)	(1.74)	(1.75)
2003	2.57	2.63	2.49	2.65	2.06	2.13	2.45	2.55
	(1.79)	(1.79)	(1.68)	(1.69)	(1.68)	(1.69)	(1.76)	(1.76)
2004	2.59	2.61	2.53	2.60	2.05	2.19	2.47	2.54
	(1.75)	(1.78)	(1.70)	(1.71)	(1.67)	(1.72)	(1.74)	(1.77)
2005	2.56	2.58	2.58	2.59	2.07	2.22	2.45	2.52
	(1.76)	(1.76)	(1.69)	(1.67)	(1.69)	(1.70)	(1.75)	(1.75)
2006	2.56	2.55	2.62	2.61	2.10	2.14	2.49	2.50
	(1.75)	(1.76)	(1.75)	(1.75)	(1.74)	(1.69)	(1.77)	(1.76)
2007	2.62	2.63	2.54	2.67	2.12	2.23	2.49	2.57
	(1.79)	(1.80)	(1.72)	(1.72)	(1.74)	(1.75)	(1.79)	(1.80)
2008	2.49	2.60	2.58	2.60	2.13	2.13	2.44	2.49
	(1.86)	(1.80)	(1.73)	(1.74)	(1.80)	(1.73)	(1.83)	(1.79)
2009	2.51	2.49	2.49	2.51	2.15	2.14	2.43	2.43
	(1.77)	(1.77)	(1.68)	(1.74)	(1.85)	(1.75)	(1.81)	(1.77)
2010	2.51	2.55	2.67	2.61	2.33	2.23	2.51	2.49
	(1.80)	(1.76)	(1.77)	(1.78)	(1.87)	(1.78)	(1.84)	(1.79)
2011	2.55	2.58	2.58	2.61	2.41	2.35	2.55	2.55
	(1.80)	(1.79)	(1.79)	(1.68)	(1.93)	(1.84)	(1.87)	(1.81)
2012	2.55	2.53	2.75	2.64	2.53	2.41	2.61	2.55
	(1.79)	(1.78)	(1.81)	(1.76)	(1.95)	(1.83)	(1.88)	(1.81)
2013	2.57	2.54	2.91	2.80	2.49	2.48	2.63	2.60
	(1.86)	(1.80)	(1.91)	(1.76)	(1.95)	(1.85)	(1.93)	(1.83)
2014	1.93	2.63	2.19	2.90	1.79	2.48	1.92	2.66
	(1.65)	(1.88)	(1.76)	(1.81)	(1.79)	(1.88)	(1.75)	(1.88)
2015	--	1.93	--	2.20	--	1.93	--	1.99
	--	(1.61)	--	(1.63)	--	(1.65)	--	(1.64)
All	2.43	2.46	2.56	2.58	2.18	2.20	2.39	2.42
	(1.79)	(1.78)	(1.77)	(1.73)	(1.86)	(1.76)	(1.83)	(1.78)

Source: CNA calculations using data provided by the Army.
Note: Standard deviations are in parentheses.

Table 37. Course completions per Servicemember: Navy

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	2.57	2.47	2.46	2.43	2.17	2.18	2.46	2.43
	(1.97)	(1.75)	(1.62)	(1.72)	(1.65)	(1.68)	(1.77)	(1.74)
2000	2.51	2.57	2.49	2.76	2.13	2.13	2.43	2.55
	(1.76)	(1.82)	(1.84)	(1.78)	(1.81)	(1.67)	(1.81)	(1.80)
2001	2.73	2.56	2.53	2.56	2.02	2.20	2.50	2.50
	(1.88)	(1.81)	(1.83)	(1.71)	(1.67)	(1.68)	(1.83)	(1.75)
2002	2.60	2.47	2.50	2.52	2.09	2.17	2.43	2.43
	(1.70)	(1.66)	(1.81)	(1.77)	(1.71)	(1.71)	(1.76)	(1.73)
2003	2.55	2.44	2.52	2.52	2.08	2.20	2.45	2.45
	(1.81)	(1.71)	(1.80)	(1.81)	(1.61)	(1.65)	(1.78)	(1.75)
2004	2.61	2.52	2.62	2.50	2.08	2.06	2.50	2.41
	(1.87)	(1.71)	(1.80)	(1.68)	(1.65)	(1.65)	(1.81)	(1.71)
2005	2.72	2.54	2.47	2.46	2.02	2.14	2.46	2.43
	(1.85)	(1.78)	(1.76)	(1.77)	(1.70)	(1.67)	(1.81)	(1.76)
2006	2.63	2.60	2.69	2.67	2.04	2.23	2.53	2.55
	(1.79)	(1.75)	(1.85)	(1.76)	(1.65)	(1.69)	(1.81)	(1.76)
2007	2.62	2.53	2.73	2.58	2.15	2.13	2.55	2.47
	(1.83)	(1.75)	(1.88)	(1.76)	(1.69)	(1.62)	(1.83)	(1.74)
2008	2.64	2.46	2.62	2.55	2.04	2.17	2.48	2.44
	(1.82)	(1.74)	(1.80)	(1.81)	(1.64)	(1.66)	(1.81)	(1.77)
2009	2.60	2.43	2.67	2.67	2.16	2.19	2.54	2.52
	(1.81)	(1.78)	(1.93)	(1.74)	(1.68)	(1.65)	(1.84)	(1.76)
2010	2.71	2.62	2.68	2.70	2.08	2.15	2.54	2.53
	(1.89)	(1.78)	(1.79)	(1.78)	(1.70)	(1.69)	(1.84)	(1.77)
2011	2.58	2.62	2.66	2.80	2.18	2.35	2.52	2.67
	(1.85)	(1.74)	(1.81)	(1.80)	(1.71)	(1.72)	(1.82)	(1.79)
2012	2.76	2.54	2.69	2.63	2.30	2.30	2.62	2.53
	(1.88)	(1.82)	(1.79)	(1.75)	(1.75)	(1.72)	(1.83)	(1.79)
2013	2.75	2.67	2.94	2.82	2.50	2.34	2.76	2.63
	(1.90)	(1.79)	(1.92)	(1.79)	(1.82)	(1.72)	(1.90)	(1.79)
2014	2.17	2.73	2.24	2.98	1.73	2.59	2.01	2.81
	(1.67)	(1.87)	(1.65)	(1.86)	(1.55)	(1.80)	(1.64)	(1.86)
2015	--	2.32	--	2.38	--	2.09	--	2.27
	--	(1.61)	--	(1.60)	--	(1.55)	--	(1.59)
All	2.56	2.51	2.56	2.60	2.07	2.22	2.42	2.47
	(1.83)	(1.74)	(1.80)	(1.74)	(1.69)	(1.66)	(1.80)	(1.73)

Source: CNA calculations using data provided by the Navy.
Note: Standard deviations are in parentheses.

Table 38.   Course completions per Servicemember: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	2.61	2.72	2.41	2.31	2.07	2.04	2.48	1.48
	(1.85)	(1.82)	(1.78)	(1.54)	(1.58)	(1.77)	(1.79)	(1.75)
2000	2.63	2.76	2.56	2.49	2.23	2.41	2.57	2.66
	(1.87)	(1.90)	(1.81)	(1.72)	(2.11)	(2.07)	(1.91)	(1.90)
2001	2.53	2.66	2.62	2.47	2.22	2.13	2.55	2.55
	(1.77)	(1.80)	(1.82)	(1.67)	(1.99)	(1.72)	(1.85)	(1.77)
2002	2.60	2.64	2.57	2.42	2.09	2.33	2.53	2.57
	(1.86)	(1.86)	(1.78)	(1.76)	(1.99)	(1.81)	(1.88)	(1.85)
2003	2.66	2.68	2.59	2.51	2.13	2.27	2.58	2.62
	(1.85)	(1.87)	(1.81)	(1.75)	(1.92)	(1.77)	(1.88)	(1.84)
2004	2.65	2.64	2.61	2.64	2.02	2.13	2.56	2.60
	(1.87)	(1.82)	(1.81)	(1.78)	(1.76)	(1.73)	(1.86)	(1.82)
2005	2.55	2.62	2.52	2.34	2.09	2.16	2.51	2.51
	(1.82)	(1.80)	(1.82)	(1.71)	(1.88)	(1.67)	(1.86)	(1.78)
2006	2.59	2.61	2.42	2.40	1.97	2.14	2.48	2.52
	(1.85)	(1.84)	(1.74)	(1.71)	(1.67)	(1.87)	(1.82)	(1.83)
2007	2.60	2.71	2.68	2.55	2.05	2.16	2.57	2.64
	(1.87)	(1.89)	(1.86)	(1.75)	(1.87)	(1.79)	(2.91)	(1.88)
2008	2.55	2.61	2.59	2.59	2.01	2.22	2.52	2.60
	(1.85)	(1.84)	(1.86)	(1.86)	(1.80)	(1.85)	(1.87)	(1.87)
2009	2.56	2.61	2.52	2.52	1.95	2.03	2.49	2.54
	(1.89)	(1.88)	(1.86)	(1.84)	(1.72)	(1.69)	(1.89)	(1.87)
2010	2.53	2.66	2.54	2.59	1.91	2.15	2.46	2.63
	(1.87)	(1.90)	(1.87)	(1.85)	(1.67)	(1.79)	(1.87)	(1.90)
2011	2.43	2.59	2.51	2.58	1.84	2.07	2.37	2.56
	(1.81)	(1.86)	(1.88)	(1.84)	(1.54)	(1.78)	(1.81)	(1.89)
2012	2.44	2.54	2.53	2.55	1.99	2.08	2.40	2.50
	(1.78)	(1.87)	(1.80)	(1.88)	(1.66)	(1.72)	(1.80)	(1.88)
2013	2.43	2.49	2.71	2.66	2.10	2.25	2.48	2.54
	(1.84)	(1.81)	(1.89)	(1.88)	(1.74)	(1.81)	(1.87)	(1.86)
2014	1.85	2.54	1.92	2.69	1.44	2.39	1.74	2.63
	(1.44)	(1.87)	(1.49)	(1.90)	(1.32)	(1.94)	(1.45)	(1.95)
2015	--	1.93	--	2.01	--	1.69	--	1.90
	--	(1.47)	--	(1.55)	--	(1.34)	--	(1.47)
All	2.42	2.49	2.46	2.46	1.85	2.06	2.33	2.44
	(1.80)	(1.82)	(1.80)	(1.79)	(1.66)	(1.71)	(1.81)	(1.82)

Source: CNA calculations using data provided by the Air Force.
Note: Standard deviations are in parentheses.

Table 39.   Course completions per Servicemember: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	2.97	3.13	2.80	2.95	2.45	2.71	2.81	3.02
	(1.97)	(2.16)	(2.03)	(2.34)	(2.00)	(1.97)	(2.01)	(2.17)
2000	2.52	2.92	2.59	3.13	2.18	2.54	2.48	2.94
	(1.81)	(2.07)	(1.70)	(1.98)	(1.72)	(1.93)	(1.74)	(2.02)
2001	2.42	2.99	2.21	3.14	1.99	2.70	2.29	3.03
	(1.82)	(1.98)	(1.59)	(1.88)	(1.64)	(2.05)	(1.72)	(1.99)
2002	2.62	2.95	2.86	2.81	2.11	2.38	2.61	2.82
	(1.89)	(1.94)	(1.83)	(1.98)	(1.67)	(1.88)	(1.85)	(1.96)
2003	2.41	2.70	2.70	2.90	2.12	2.55	2.45	2.79
	(1.75)	(2.03)	(1.74)	(1.85)	(1.74)	(1.98)	(1.78)	(1.99)
2004	2.57	3.06	2.31	2.91	1.88	2.58	2.35	2.92
	(1.78)	(2.07)	(1.59)	(1.96)	(1.54)	(1.67)	(1.70)	(1.95)
2005	2.43	2.81	2.80	3.12	2.11	2.33	2.50	2.83
	(1.84)	(2.00)	(1.95)	(2.02)	(1.86)	(1.82)	(1.90)	(1.99)
2006	2.52	3.10	2.48	2.84	2.02	2.59	2.45	2.94
	(1.77)	(2.05)	(1.89)	(2.00)	(1.77)	(1.73)	(1.82)	(1.98)
2007	2.55	2.84	2.76	2.88	1.87	2.33	2.48	2.80
	(1.80)	(1.99)	(1.98)	(1.87)	(1.65)	(1.89)	(1.84)	(1.96)
2008	2.38	2.91	2.96	2.90	2.12	2.39	2.46	2.83
	(1.82)	(1.96)	(2.09)	(1.87)	(1.87)	(2.01)	(1.92)	(1.98)
2009	2.43	2.81	2.72	2.84	2.03	2.66	2.44	2.82
	(1.83)	(1.94)	(1.86)	(1.99)	(1.75)	(2.00)	(1.84)	(1.98)
2010	2.47	2.88	2.32	2.70	1.87	2.20	2.33	2.71
	(1.89)	(1.99)	(1.72)	(1.94)	(1.64)	(1.82)	(1.83)	(1.96)
2011	2.21	2.94	2.83	3.14	1.77	2.35	2.25	2.88
	(1.78)	(2.05)	(1.94)	(1.97)	(1.54)	(1.95)	(1.80)	(2.04)
2012	2.42	2.99	2.61	2.89	1.88	2.19	2.32	2.78
	(1.75)	(2.00)	(1.93)	(1.98)	(1.65)	(1.80)	(1.79)	(1.98)
2013	2.32	2.76	2.76	2.95	1.81	2.16	2.22	2.63
	(1.82)	(2.00)	(1.97)	(2.01)	(1.59)	(1.75)	(1.80)	(1.95)
2014	1.60	2.97	1.74	3.22	1.13	2.60	1.46	2.94
	(1.52)	(2.09)	(1.55)	(2.15)	(1.20)	(1.81)	(1.45)	(2.03)
2015	--	2.07	--	2.13	--	1.51	--	1.83
	--	(1.70)	--	(1.70)	--	(1.40)	--	(1.61)
All	2.26	2.72	2.49	2.76	1.71	2.05	2.17	2.54
	(1.79)	(1.98)	(1.86)	(1.96)	(1.60)	(1.75)	(1.79)	(1.94)

Source: CNA calculations using data provided by the Marine Corps.
Note: Standard deviations are in parentheses.

Table 40. Course completions per Servicemember: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	2.58 (1.83)	2.73 (1.85)	2.54 (1.73)	2.60 (1.78)	2.18 (1.68)	2.24 (1.73)	2.50 (1.78)	2.60 (1.82)
2000	2.59 (1.81)	2.72 (1.84)	2.53 (1.74)	2.69 (1.77)	2.16 (1.79)	2.21 (1.78)	2.51 (1.80)	2.64 (1.84)
2001	2.58 (1.90)	2.66 (1.82)	2.57 (1.76)	2.57 (1.69)	2.08 (1.80)	2.17 (1.73)	2.50 (1.82)	2.56 (1.78)
2002	2.61 (1.81)	2.64 (1.80)	2.58 (1.74)	2.55 (1.74)	2.06 (1.75)	2.19 (1.73)	2.50 (1.80)	2.54 (1.79)
2003	2.59 (1.82)	2.64 (1.83)	2.54 (1.75)	2.60 (1.74)	2.09 (1.75)	2.21 (1.73)	2.50 (1.81)	2.57 (1.80)
2004	2.62 (1.81)	2.63 (1.80)	2.57 (1.76)	2.61 (1.75)	2.04 (1.69)	2.17 (1.71)	2.50 (1.80)	2.56 (1.79)
2005	2.57 (1.80)	2.60 (1.79)	2.54 (1.77)	2.50 (1.74)	2.07 (1.76)	2.19 (1.69)	2.47 (1.81)	2.52 (1.77)
2006	2.58 (1.80)	2.61 (1.82)	2.56 (1.78)	2.57 (1.76)	2.04 (1.70)	2.19 (1.74)	2.49 (1.80)	2.54 (1.80)
2007	2.61 (1.83)	2.66 (1.85)	2.65 (1.83)	2.62 (1.75)	2.10 (1.77)	2.19 (1.74)	2.53 (1.84)	2.59 (1.83)
2008	2.53 (1.85)	2.61 (1.82)	2.61 (1.82)	2.60 (1.81)	2.08 (1.78)	2.17 (1.77)	2.47 (1.85)	2.55 (1.83)
2009	2.53 (1.82)	2.55 (1.83)	2.55 (1.81)	2.57 (1.79)	2.09 (1.79)	2.14 (1.73)	2.46 (1.84)	2.50 (1.82)
2010	2.54 (1.84)	2.62 (1.83)	2.61 (1.81)	2.63 (1.82)	2.17 (1.80)	2.20 (1.77)	2.49 (1.85)	2.56 (1.84)
2011	2.48 (1.81)	2.61 (1.83)	2.58 (1.84)	2.67 (1.79)	2.21 (1.81)	2.28 (1.82)	2.47 (1.84)	2.59 (1.85)
2012	2.52 (1.80)	2.57 (1.84)	2.65 (1.81)	2.62 (1.82)	2.33 (1.86)	2.29 (1.79)	2.53 (1.85)	2.54 (1.84)
2013	2.52 (1.86)	2.55 (1.82)	2.84 (1.91)	2.76 (1.83)	2.36 (1.87)	2.37 (1.82)	2.58 (1.90)	2.59 (1.84)
2014	1.91 (1.58)	2.63 (1.89)	2.09 (1.64)	2.87 (1.88)	1.65 (1.61)	2.48 (1.88)	1.85 (1.63)	2.69 (1.91)
2015	-- --	2.00 (1.58)	-- --	2.20 (1.61)	-- --	1.88 (1.55)	-- --	2.02 (1.59)
All	2.43 (1.80)	2.49 (1.80)	2.52 (1.79)	2.56 (1.77)	2.05 (1.78)	2.16 (1.73)	2.36 (1.82)	2.44 (1.80)

Source: CNA calculations using data provided by the Army, Navy, Air Force, and Marine Corps.
Note: Standard deviations are in parentheses.

Table 41.   Course completions per MyCAA participant

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
2009	0.86	0.78	0.50	2.00	1.75	5.00	1.19	2.07
	(0.86)	(0.44)	(0.84)	--	(1.24)	(3.16)	(1.14)	(2.50)
2010	0.76	1.37	1.50	1.30	1.76	2.63	1.24	1.85
	(0.93)	(1.55)	(0.85)	(0.82)	(1.58)	(1.85)	(1.32)	(1.71)
2011	1.12	1.27	0.97	0.90	2.09	2.48	1.56	1.75
	(1.33)	(1.37)	(0.76)	(0.99)	(1.73)	(2.24)	(1.58)	(1.87)
2012	1.22	1.07	1.13	1.02	2.42	2.32	1.84	1.64
	(1.42)	(1.11)	(0.95)	(0.78)	(1.90)	(2.13)	(1.77)	(1.76)
2013	1.67	1.34	1.53	1.13	3.24	2.58	2.51	1.95
	(1.60)	(1.61)	(1.13)	(1.03)	(2.36)	(2.01)	(2.17)	(1.90)
2014	0.99	1.68	1.01	1.79	2.14	3.38	1.32	2.70
	(1.20)	(1.50)	(0.89)	(1.21)	(2.15)	(2.48)	(1.60)	(2.27)
2015	--	1.06	--	1.14	--	1.99	--	1.36
	--	(1.27)	--	(1.11)	--	(2.16)	--	(1.65)
All	1.07	1.12	1.06	1.23	2.40	2.34	1.53	1.58
	(1.28)	(1.31)	(0.92)	(1.13)	(2.20)	(2.29)	(1.75)	(1.82)

Source: CNA calculations using data provided by VolEd.
Note: Standard deviations are in parentheses.

The number of courses completed is only slightly lower than the number of courses attempted in each Service and sector. Tables 42 through 47 show course completion rates for Servicemembers and their spouses. Readers should note that the course completion rate excludes certain course grades that could not easily be assigned to categories of "complete" or "incomplete." For instance, "AMSTY" (for "amnesty") could be interpreted as a course completion (since amnesty was granted) or as failure to complete the course (since amnesty was required). Appendix C provides a full list of grades by completion status (or lack thereof). Because some courses are omitted from completion calculations, the completion rate will be slightly higher than course completions divided by total courses.

Course completion rates provide more information than the number of courses completed, by controlling for differences in the number of courses attempted. Across all Services, completion rates in 2015 were lowest in the public sector and highest in the private not-for-profit sector: 88.7 percent in public institutions, 93.1 percent in private not-for-profit institutions, 91.0 percent in private for-profit institutions, and 90.7 percent overall (see Table 46). We find that completion rates were slightly higher in the Marine Corps and the Air Force than in the Army and Navy. Course completion rates in 2015 were near 90 percent in all reported sectors in both the Army and the Navy. Soldiers had an 89.0-percent completion rate in the private for-profit sector, a 92.2-percent completion rate in the private not-for-profit sector, and an 87.1-percent

completion rate in the public sector (see Table 42). Sailors had slightly higher completion rates in each sector—91.1 percent in the private for-profit sector, 92.8 percent in the private not-for-profit sector, and 89.8 percent in the public sector (see Table 43). The Marine Corps had slightly higher completion rates—92.8 percent in private for-profit institutions, 93.7 percent in private not-for-profit institutions, and 89.9 percent in public institutions (see Table 45). The Air Force had the highest completion rates in each sector—93.0 percent in private for-profit institutions, 94.1 percent in private not-for-profit institutions, and 90.8 percent in public institutions (see Table 44).

Although we found that Service completion rates in 2015 were highest in the private not-for-profit sector and lowest in the public sector, among MyCAA participants, we observe a lower completion rate in the private for-profit sector than in the other two sectors. In 2015, the completion rate across all cohorts was 69.8 percent in the private for-profit sector, compared with 84.4 percent in the public sector and 79.7 percent in the private not-for-profit sector (see Table 47). It is not immediately clear whether any Service-level differences reflect differences in the types of students choosing each sector, the types of schools that students attend, or some other set of factors.

If there is a learning curve or weeding-out process associated with balancing active component military service with college course-taking, we should expect course completion rates in new cohorts to be lower than those in older cohorts. Indeed, course completion rates were lower for first-year TA users than for TA users overall in all reported sectors in the Army, Navy, and Marine Corps in both 2014 and 2015. The Air Force's course completion rates were *not* lower for first-year TA users in three cases: the public sector in 2014, the private not-for-profit sector in 2014, and the public sector in 2015. When all reported sectors are combined, however, the Air Force reveals the same overall trend as the other Services: lower completion rates for first-time TA users. Across all Services, new TA users had lower course completion rates than TA users overall in all reported sectors in both 2014 and 2015. Course completion rates among first-year MyCAA users also were lower than those among MyCAA users overall in all reported sectors. There are possible explanations for why pass rates would be systematically lower among first-year TA or MyCAA users (for example, if they are less academically engaged or learning how to juggle school and military responsibilities) or higher among first-year TA or MyCAA users (for example, if single-year programs or introductory courses are less demanding).

The corollary to either the learning curve or weeding-out hypothesis above is that, as a cohort of TA users learns to manage its time properly and as less academically engaged members drop out, we would expect the cohort's completion rate to rise. In fact, we observe that members of the 2014 cohort in all four Services had higher course completion rates in 2015 than 2014. This likely reflects that the weakest students are the most likely to quit their studies; the weakest

members of the 2014 cohorts likely would not continue taking classes in 2015, thus increasing the overall completion rate. Across all Services, course completion rates improved by over 5 percentage points in the private for-profit sector and by 2.9 percentage points in the private not-for-profit sector; the average improvement was 4.7 percentage points. Across all Services and sectors, every cohort experienced higher completion rates in 2015 than in 2014. A possible explanation for this is the corresponding change in grade requirements that took place in September 2014: any Servicemembers receiving a grade below C in an undergraduate course or below B in a graduate course then was required to pay back the TA funds (the previously required grades were D and C, respectively). This policy change may have led only the more serious students to enroll in TA courses, thus increasing completion rates.

Table 42. Course completion rate: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	89.3%	91.6%	92.9%	94.5%	91.3%	90.2%	90.8%	92.1%
2000	90.2%	92.4%	93.4%	93.9%	90.1%	89.6%	91.0%	92.1%
2001	89.1%	92.3%	93.1%	94.0%	88.6%	90.4%	90.0%	92.3%
2002	90.5%	91.7%	92.4%	94.5%	89.4%	89.9%	90.7%	92.0%
2003	89.0%	92.1%	91.1%	93.6%	89.0%	89.7%	89.5%	91.8%
2004	90.4%	91.3%	92.2%	93.3%	87.9%	89.1%	90.1%	91.3%
2005	89.3%	91.2%	92.3%	94.3%	90.1%	90.4%	90.2%	91.6%
2006	89.0%	90.6%	92.2%	93.2%	87.8%	87.9%	89.4%	90.4%
2007	89.7%	91.3%	91.8%	93.4%	88.5%	88.8%	89.8%	91.0%
2008	87.6%	90.1%	90.9%	91.5%	87.8%	88.3%	88.4%	89.9%
2009	88.1%	89.6%	90.1%	91.2%	85.9%	86.7%	87.7%	89.0%
2010	88.2%	90.1%	91.6%	91.6%	87.3%	87.4%	88.4%	89.4%
2011	88.0%	89.5%	89.7%	92.0%	87.8%	87.8%	88.1%	89.2%
2012	87.9%	89.2%	91.6%	91.4%	87.7%	87.3%	88.4%	88.8%
2013	86.7%	88.7%	91.9%	92.8%	86.8%	87.7%	87.6%	89.0%
2014	82.1%	89.1%	89.0%	93.2%	83.2%	88.2%	83.7%	89.5%
2015	--	83.4%	--	89.2%	--	84.4%	--	84.8%
All	87.3%	89.0%	91.2%	92.2%	86.6%	87.1%	87.8%	88.9%

Source: CNA calculations using data provided by the Army.
Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 43.   Course completion rate: Navy

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	87.4%	91.4%	90.6%	89.7%	90.4%	89.5%	89.4%	90.2%
2000	87.3%	90.4%	90.2%	94.0%	87.1%	89.6%	88.3%	91.6%
2001	88.5%	90.0%	89.1%	93.0%	88.2%	91.9%	88.7%	91.7%
2002	88.9%	92.5%	90.6%	92.0%	87.7%	88.4%	89.1%	91.0%
2003	87.9%	90.5%	90.7%	92.7%	85.7%	89.8%	88.3%	91.2%
2004	89.0%	92.5%	91.4%	92.5%	87.6%	88.4%	89.5%	91.3%
2005	90.0%	91.2%	90.8%	92.2%	86.4%	89.7%	89.3%	91.1%
2006	90.3%	91.5%	92.4%	92.9%	87.9%	89.5%	90.4%	91.4%
2007	88.6%	92.5%	93.5%	92.0%	89.4%	89.2%	90.6%	91.3%
2008	90.3%	91.8%	91.9%	91.9%	88.0%	87.6%	90.1%	90.4%
2009	88.8%	90.7%	91.4%	91.6%	86.9%	89.0%	89.0%	90.5%
2010	89.5%	91.3%	91.8%	93.4%	89.2%	88.2%	90.1%	91.1%
2011	88.2%	91.9%	92.8%	94.2%	89.3%	91.6%	89.9%	92.5%
2012	89.7%	90.4%	91.7%	91.4%	89.7%	89.3%	90.3%	90.3%
2013	88.8%	91.2%	92.5%	93.4%	90.3%	89.8%	90.6%	91.4%
2014	86.9%	92.1%	91.2%	94.1%	88.3%	91.6%	88.9%	92.6%
2015	--	90.2%	--	92.7%	--	89.4%	--	90.7%
All	88.7%	91.1%	91.7%	92.8%	88.7%	89.8%	89.6%	91.2%

Source: CNA calculations using data provided by the Navy.
Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 44.   Course completion rate: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**	**2014**	**2015**
1999	93.2%	93.7%	89.7%	92.3%	87.8%	91.6%	91.0%	92.8%
2000	92.1%	93.0%	93.5%	93.4%	88.5%	90.5%	91.8%	92.6%
2001	90.8%	92.4%	92.8%	93.1%	90.4%	88.9%	91.4%	92.0%
2002	91.3%	92.5%	92.3%	91.4%	90.6%	92.7%	91.5%	92.3%
2003	91.9%	93.5%	93.4%	93.7%	90.7%	91.7%	92.1%	93.2%
2004	91.9%	93.3%	94.2%	95.7%	89.4%	90.9%	92.1%	93.5%
2005	91.3%	92.9%	92.5%	92.9%	90.8%	91.2%	91.5%	92.6%
2006	92.2%	93.6%	92.2%	93.6%	90.0%	91.4%	91.8%	93.2%
2007	92.1%	93.5%	93.6%	94.8%	91.4%	91.7%	92.4%	93.5%
2008	91.3%	93.3%	93.3%	94.6%	90.9%	91.2%	91.8%	93.2%
2009	91.7%	93.2%	93.7%	94.6%	89.2%	89.6%	91.6%	92.8%
2010	91.4%	93.5%	92.7%	94.3%	89.0%	90.2%	91.2%	93.0%
2011	91.7%	92.8%	92.3%	95.4%	90.2%	90.4%	91.5%	92.9%
2012	91.7%	93.9%	93.9%	95.0%	89.8%	90.3%	91.6%	93.2%
2013	91.0%	93.1%	93.2%	94.0%	90.6%	90.6%	91.4%	92.5%
2014	89.4%	92.8%	93.2%	94.5%	90.3%	91.0%	90.6%	92.6%
2015	--	91.7%	--	93.2%	--	90.8%	--	91.7%
All	91.3%	93.0%	93.1%	94.1%	90.2%	90.8%	91.5%	92.7%

Source: CNA calculations using data provided by the Air Force.
Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 45. Course completion rate: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**	**2014**	**2015**
1999	93.8%	93.5%	92.6%	93.8%	92.6%	93.3%	93.1%	93.5%
2000	92.0%	93.9%	92.3%	94.4%	92.1%	93.0%	92.1%	93.9%
2001	95.6%	95.9%	91.2%	93.8%	89.7%	92.1%	92.7%	94.3%
2002	92.6%	94.8%	93.5%	93.6%	92.9%	88.3%	93.0%	93.0%
2003	92.6%	91.1%	95.3%	93.4%	89.9%	93.4%	92.7%	92.5%
2004	93.2%	93.7%	90.5%	93.8%	88.9%	93.6%	91.5%	93.6%
2005	91.7%	91.9%	94.1%	95.3%	92.6%	91.0%	92.7%	92.7%
2006	93.0%	94.4%	92.5%	94.9%	88.9%	93.2%	92.0%	94.3%
2007	91.2%	93.6%	94.2%	93.3%	87.3%	91.8%	91.3%	93.2%
2008	90.9%	92.1%	94.0%	94.1%	91.5%	89.1%	91.8%	91.9%
2009	91.5%	94.1%	93.5%	93.6%	88.4%	91.5%	91.3%	93.4%
2010	91.3%	91.1%	91.9%	91.6%	90.3%	87.1%	91.2%	90.3%
2011	89.2%	92.2%	93.0%	93.8%	89.5%	89.1%	90.1%	91.9%
2012	91.4%	93.1%	93.1%	93.7%	90.1%	89.9%	91.4%	92.4%
2013	90.7%	93.2%	93.8%	93.6%	88.1%	89.1%	90.4%	91.9%
2014	89.9%	92.1%	91.6%	94.3%	88.8%	92.0%	89.9%	92.6%
2015	--	92.1%	--	93.1%	--	87.8%	--	90.6%
All	91.3%	92.8%	93.0%	93.7%	89.5%	89.9%	91.2%	92.2%

Source: CNA calculations using data provided by the Marine Corps.
Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 46. Course completion rate: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	90.0%	92.1%	92.0%	93.1%	90.9%	90.7%	90.9%	92.1%
2000	90.6%	92.5%	92.7%	93.8%	89.3%	90.1%	90.9%	92.4%
2001	90.1%	92.4%	92.2%	93.4%	89.3%	90.2%	90.6%	92.2%
2002	90.7%	92.3%	92.2%	93.1%	89.6%	90.3%	90.9%	92.0%
2003	90.2%	92.5%	92.2%	93.5%	89.1%	90.5%	90.5%	92.3%
2004	91.0%	92.3%	92.7%	94.1%	88.3%	89.8%	90.8%	92.2%
2005	90.3%	91.9%	92.2%	93.4%	89.7%	90.5%	90.7%	91.9%
2006	90.6%	92.1%	92.3%	93.4%	88.5%	89.5%	90.5%	91.8%
2007	90.6%	92.5%	93.0%	93.5%	89.4%	89.8%	90.9%	92.1%
2008	89.6%	91.7%	92.2%	92.9%	88.9%	89.0%	90.0%	91.3%
2009	89.7%	91.4%	91.8%	92.5%	86.9%	88.1%	89.3%	90.8%
2010	89.7%	91.6%	92.1%	92.9%	88.0%	88.2%	89.6%	90.9%
2011	89.5%	91.2%	91.4%	93.7%	88.5%	89.0%	89.5%	91.0%
2012	89.7%	91.4%	92.5%	92.9%	88.5%	88.4%	89.8%	90.7%
2013	88.6%	90.9%	92.6%	93.4%	88.3%	88.9%	89.3%	90.7%
2014	85.2%	90.9%	91.0%	93.9%	86.0%	89.9%	86.8%	91.3%
2015	--	87.6%	--	91.7%	--	87.1%	--	88.3%
All	89.1%	91.0%	92.1%	93.1%	87.9%	88.7%	89.4%	90.7%

Source: CNA calculations using data provided by the Army, Navy, Air Force, and Marine Corps.
Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 47. Course completion rate: MyCAA

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
2009	42.9%	70.0%	42.9%	100.0%	90.3%	100.0%	65.2%	90.6%
2010	56.9%	77.6%	78.9%	86.7%	86.8%	88.8%	74.2%	84.2%
2011	63.4%	78.2%	71.7%	69.2%	85.9%	87.8%	76.0%	83.1%
2012	61.8%	65.3%	76.3%	79.6%	86.3%	87.9%	77.4%	79.2%
2013	74.0%	67.6%	83.1%	75.4%	87.6%	89.6%	83.3%	81.5%
2014	64.3%	76.5%	77.4%	86.3%	82.4%	88.7%	72.8%	85.7%
2015	--	69.1%	--	78.3%	--	81.4%	--	74.9%
All	65.4%	69.8%	77.9%	79.7%	84.3%	84.4%	75.4%	77.7%

Source: CNA calculations using data provided by VolEd.
Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Degree completion

The ultimate goal of college attendance, from the perspective of any organization providing financial aid, is to earn a degree. We therefore measure both the number of degrees completed and the percentage of Servicemembers or their spouses who completed a degree.

Earning a degree requires a large time commitment. Since most TA and MyCAA users are enrolled less than full-time, their time commitment will be even greater than for most college students. To illustrate this process, Figure 4 shows the degrees that a student in a given cohort and year could reasonably be expected to be working toward. While we have focused our attention on 2014 and 2015 (outlined in red on the figure), the figure has been expanded to include three additional years for clarity and ease of interpretation. Colors in the top graph reflect the number of years that a cohort has been observed in the data; colors in the bottom graph show which degrees a student could reasonably be working toward, under the assumption that part-time students are taking half of a full-time course load in each semester or year. Extended study in the bottom graph refers to 150 percent of the anticipated time to degree—thus, a part-time two-year degree might reasonably take four years, so an extended part-time two-year degree would take six.

Turning our attention back to the top graph, students in the bottom-left corner had not yet begun their studies during the years listed (by definition, the 2012 cohort did not begin until 2012). Students in the darkest green echelon are in their first two years and, therefore, could be working toward a two-year or a four-year degree under any credit load or any timeline. Students in the next highest echelon (members of the 2008 and 2009 cohorts in 2011, members of the 2009 and 2010 cohorts in 2012, and so on) should have finished a two-year degree under full-time study, but they could still be progressing toward a two-year degree under part-time study or toward a four-year degree. At the next highest echelon, students still could be attempting a two-year degree only under part-time study *and* an extended timeline; in fact, these students should have finished a four-year degree under a full-time course load and a standard timeline. At the lightest green echelon, it is reasonable to expect that students should have finished a two-year degree regardless of credit load and that they should have finished a four-year degree under a full-time credit load, regardless of timeline. This pattern continues up to the top-right corner of the figure, in which the darkest brown shade signified that students should have finished an associate or bachelor's degree under any credit load or timeline.

Figure 4.   How cohorts should progress toward degrees
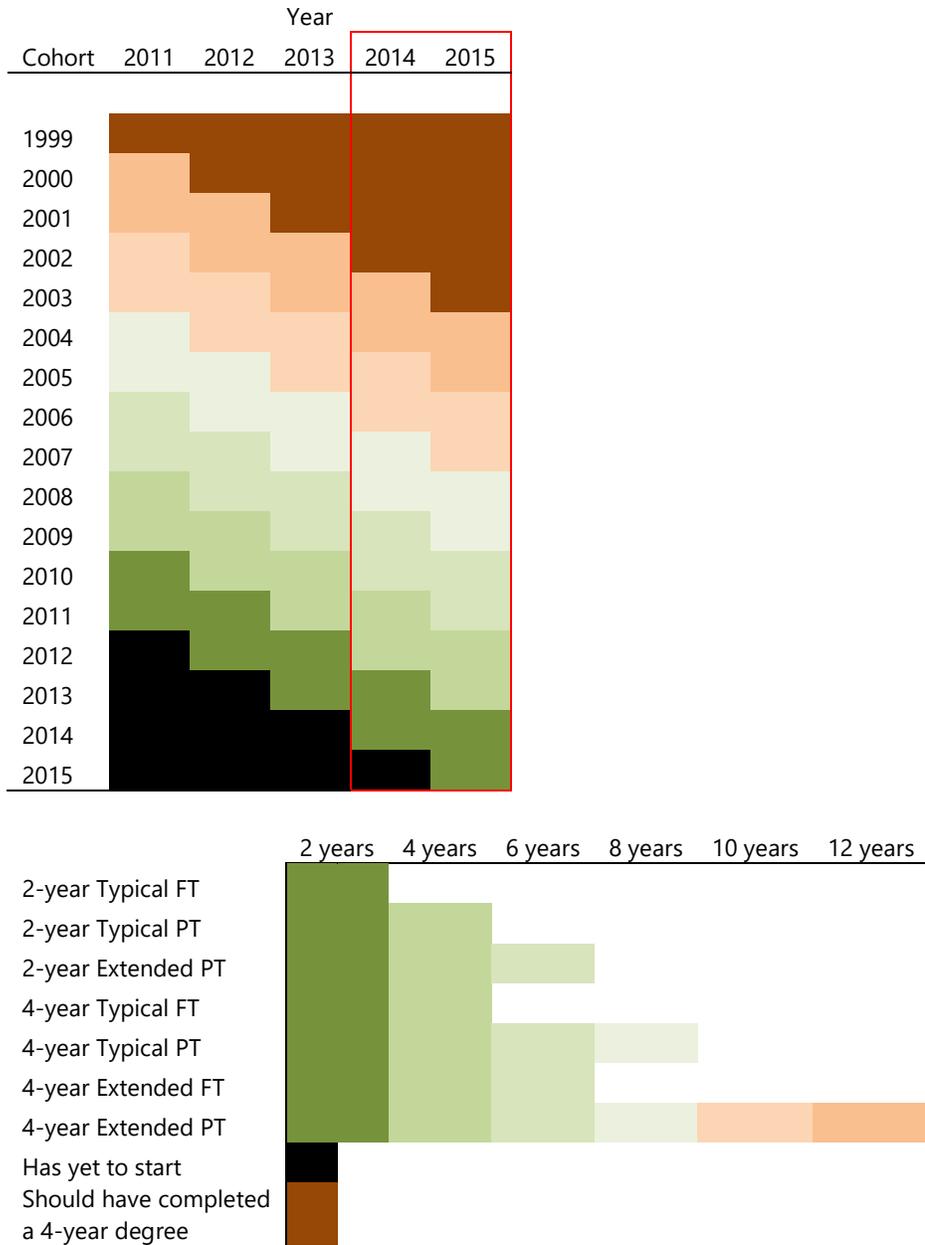
Source: CNA.

Tables 48 through 53 show the average number of degrees attained per Servicemember or spouse. Specifically, they show the average number attained *by* 2014 or 2015, for those Servicemembers who first used TA in the years 1999 through 2015 (this is how they are

assigned to cohorts).[57] These include certificates, licenses, and degrees listed at any level. There are some striking differences between sectors in the number of degrees earned per Servicemember or spouse. Overall, Servicemembers received 0.1 degree in the private for-profit sector, 0.13 in the private not-for-profit sector, and 0.06 in the public sector, on average (see Table 52). In 2015, the average Soldier completed 0.10 degree in the private for-profit sector, 0.09 in the private not-for-profit sector, and 0.04 in the public sector. Sailors completed notably more degrees on average: 0.15 degree in the private for-profit sector, 0.21 in the private not-for-profit sector, and 0.13 in the public sector (see Table 48).

Airmen earned fewer degrees than Soldiers or Sailors in the private for-profit sector, but were roughly on par with Soldiers in other sectors: 0.09 per Airman in the private for-profit sector, 0.13 in the private not-for-profit sector, and 0.04 in the public sector. Marines earned fewer degrees than all other Servicemembers: 0.02 in the private for-profit sector, 0.02 in the private not-for-profit sector, and 0.01 in the public sector (see Table 48).

MyCAA participants, however, earned 0.14 and 0.06 degree in the private for-profit and public sectors, respectively (see Table 53). They also earned 0.10 degree per participant in the private not-for-profit sector. However, we should expect MyCAA degrees per participant to be relatively high, due to the program's goals. MyCAA is meant to help users earn a certificate, license, or an associate degree. It is reasonable to complete some of these in the first year of MyCAA use.

It is not surprising that Servicemembers in their second year of TA use earn more degrees than those in their first year. Most Servicemembers, however, are only part-time students, meaning that two academic years of TA could, at most, translate to a single year of full-time college attendance. Practically speaking, it is more likely to take three years of TA use to equate to a single year of full-time attendance.[58] Nonetheless, students who earn degrees in their second year of TA use likely either are completing certificates or associate degrees or had earned many college credits before their first TA use. While cohorts may be qualitatively different, the third-most recent cohort in each Service, sector, and year generally earns more degrees per Servicemember than the second-most recent cohort, which universally earns more degrees per Servicemember than the most recent cohort. Once again, selection likely plays a significant role when comparing completion rates across cohorts or years, because students who are less likely to earn a degree may also be more likely to stop using TA.

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[57] For the MyCAA data, cohorts are defined based on when a spouse first took a course using MyCAA.

[58] As noted earlier, the average TA user takes only nine semester hours per FY across all Services and cohorts, implying that it would take three academic years of TA use to translate into a year of full-time college attendance.

Table 48. Number of degrees per student: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	0.188	0.207	0.087	0.093	0.042	0.044	0.097	0.104
	(0.422)	(0.442)	(0.299)	(0.309)	(0.213)	(0.217)	(0.332)	(0.344)
2000	0.177	0.200	0.094	0.100	0.046	0.049	0.100	0.108
	(0.408)	(0.434)	(0.310)	(0.322)	(0.221)	(0.228)	(0.333)	(0.348)
2001	0.160	0.182	0.099	0.107	0.051	0.053	0.101	0.110
	(0.388)	(0.412)	(0.320)	(0.332)	(0.233)	(0.239)	(0.337)	(0.352)
2002	0.155	0.178	0.093	0.102	0.057	0.060	0.105	0.114
	(0.390)	(0.419)	(0.307)	(0.323)	(0.246)	(0.252)	(0.343)	(0.361)
2003	0.130	0.153	0.076	0.083	0.043	0.045	0.083	0.092
	(0.361)	(0.391)	(0.275)	(0.288)	(0.213)	(0.219)	(0.302)	(0.320)
2004	0.122	0.142	0.081	0.088	0.040	0.042	0.080	0.089
	(0.349)	(0.375)	(0.285)	(0.298)	(0.202)	(0.210)	(0.292)	(0.310)
2005	0.122	0.138	0.086	0.093	0.039	0.042	0.083	0.091
	(0.349)	(0.371)	(0.289)	(0.302)	(0.199)	(0.207)	(0.296)	(0.312)
2006	0.125	0.140	0.105	0.113	0.041	0.044	0.090	0.099
	(0.350)	(0.371)	(0.318)	(0.329)	(0.204)	(0.212)	(0.306)	(0.321)
2007	0.115	0.131	0.117	0.126	0.040	0.044	0.090	0.099
	(0.339)	(0.362)	(0.331)	(0.344)	(0.200)	(0.209)	(0.301)	(0.318)
2008	0.101	0.114	0.101	0.110	0.037	0.040	0.080	0.088
	(0.319)	(0.340)	(0.308)	(0.321)	(0.192)	(0.200)	(0.285)	(0.300)
2009	0.095	0.109	0.090	0.099	0.034	0.038	0.073	0.082
	(0.307)	(0.329)	(0.292)	(0.307)	(0.185)	(0.194)	(0.270)	(0.287)
2010	0.093	0.108	0.092	0.101	0.033	0.037	0.071	0.081
	(0.301)	(0.325)	(0.293)	(0.307)	(0.181)	(0.190)	(0.265)	(0.283)
2011	0.078	0.097	0.098	0.109	0.034	0.040	0.065	0.077
	(0.273)	(0.305)	(0.302)	(0.320)	(0.183)	(0.197)	(0.251)	(0.274)
2012	0.054	0.076	0.091	0.107	0.027	0.034	0.049	0.064
	(0.228)	(0.270)	(0.291)	(0.312)	(0.164)	(0.183)	(0.219)	(0.248)
2013	0.024	0.046	0.064	0.090	0.014	0.024	0.026	0.044
	(0.154)	(0.211)	(0.247)	(0.288)	(0.120)	(0.155)	(0.161)	(0.206)
2014	0.008	0.029	0.005	0.050	0.004	0.017	0.006	0.028
	(0.091)	(0.169)	(0.069)	(0.218)	(0.060)	(0.131)	(0.076)	(0.165)
2015	--	0.004	--	0.006	--	0.003	--	0.004
	--	(0.067)	--	(0.075)	--	(0.057)	--	(0.064)
All	0.101	0.114	0.089	0.096	0.039	0.041	0.077	0.084
	(0.317)	(0.338)	(0.295)	(0.308)	(0.200)	(0.207)	(0.285)	(0.299)

Source: CNA calculations using data provided by the Army.
Note: Standard deviations are in parentheses.

Table 49. Number of degrees per student: Navy

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	0.234	0.241	0.312	0.316	0.172	0.173	0.306	0.311
	(0.508)	(0.518)	(0.586)	(0.590)	(0.448)	(0.450)	(0.625)	(0.632)
2000	0.213	0.221	0.277	0.287	0.155	0.158	0.278	0.286
	(0.508)	(0.517)	(0.573)	(0.583)	(0.441)	(0.446)	(0.614)	(0.624)
2001	0.210	0.223	0.278	0.290	0.144	0.148	0.271	0.281
	(0.503)	(0.519)	(0.569)	(0.582)	(0.409)	(0.417)	(0.590)	(0.606)
2002	0.200	0.211	0.262	0.272	0.142	0.147	0.256	0.266
	(0.501)	(0.514)	(0.563)	(0.574)	(0.411)	(0.419)	(0.582)	(0.597)
2003	0.192	0.203	0.240	0.252	0.132	0.137	0.237	0.249
	(0.490)	(0.504)	(0.547)	(0.559)	(0.393)	(0.405)	(0.561)	(0.577)
2004	0.159	0.170	0.212	0.227	0.126	0.132	0.209	0.221
	(0.449)	(0.465)	(0.510)	(0.529)	(0.387)	(0.397)	(0.525)	(0.543)
2005	0.161	0.173	0.196	0.215	0.129	0.137	0.203	0.218
	(0.452)	(0.468)	(0.490)	(0.514)	(0.387)	(0.400)	(0.513)	(0.536)
2006	0.158	0.174	0.201	0.221	0.139	0.148	0.206	0.224
	(0.442)	(0.464)	(0.495)	(0.518)	(0.395)	(0.412)	(0.507)	(0.533)
2007	0.128	0.144	0.166	0.191	0.134	0.144	0.178	0.197
	(0.391)	(0.418)	(0.453)	(0.488)	(0.384)	(0.400)	(0.462)	(0.492)
2008	0.134	0.153	0.165	0.190	0.126	0.143	0.172	0.196
	(0.397)	(0.425)	(0.439)	(0.472)	(0.372)	(0.398)	(0.452)	(0.486)
2009	0.120	0.143	0.141	0.169	0.117	0.132	0.151	0.176
	(0.365)	(0.399)	(0.401)	(0.437)	(0.358)	(0.322)	(0.415)	(0.451)
2010	0.100	0.127	0.140	0.166	0.095	0.114	0.128	0.156
	(0.335)	(0.379)	(0.395)	(0.431)	(0.327)	(0.363)	(0.380)	(0.424)
2011	0.074	0.103	0.127	0.165	0.105	0.131	0.117	0.152
	(0.280)	(0.326)	(0.359)	(0.412)	(0.335)	(0.378)	(0.351)	(0.402)
2012	0.047	0.086	0.104	0.151	0.073	0.101	0.084	0.124
	(0.225)	(0.298)	(0.325)	(0.389)	(0.284)	(0.336)	(0.299)	(0.363)
2013	0.024	0.062	0.056	0.123	0.036	0.076	0.043	0.095
	(0.174)	(0.257)	(0.236)	(0.342)	(0.199)	(0.288)	(0.216)	(0.313)
2014	0.004	0.036	0.012	0.074	0.005	0.050	0.007	0.057
	(0.067)	(0.193)	(0.109)	(0.264)	(0.074)	(0.238)	(0.087)	(0.244)
2015	--	0.007	--	0.008	--	0.010	--	0.009
	--	(0.085)	--	(0.091)	--	(0.103)	--	(0.096)
All	0.146	0.157	0.207	0.218	0.128	0.134	0.197	0.206
	(0.423)	(0.438)	(0.498)	(0.510)	(0.387)	(0.397)	(0.506)	(0.518)

Source: CNA calculations using data provided by the Navy.
Note: Standard deviations are in parentheses.

Table 50.   Number of degrees per student: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	0.129	0.135	0.203	0.205	0.076	0.077	0.175	0.179
	(0.398)	(0.403)	(0.502)	(0.504)	(0.339)	(0.342)	(0.452)	(0.458)
2000	0.147	0.158	0.212	0.215	0.076	0.077	0.186	0.190
	(0.427)	(0.441)	(0.531)	(0.534)	(0.341)	(0.343)	(0.471)	(0.478)
2001	0.155	0.168	0.233	0.237	0.083	0.085	0.205	0.211
	(0.443)	(0.458)	(0.557)	(0.562)	(0.364)	(0.367)	(0.492)	(0.500)
2002	0.152	0.167	0.176	0.180	0.054	0.056	0.156	0.163
	(0.437)	(0.453)	(0.491)	(0.495)	(0.295)	(0.298)	(0.429)	(0.439)
2003	0.135	0.151	0.143	0.148	0.041	0.043	0.126	0.134
	(0.422)	(0.444)	(0.459)	(0.465)	(0.261)	(0.266)	(0.390)	(0.403)
2004	0.134	0.151	0.111	0.116	0.036	0.038	0.107	0.115
	(0.420)	(0.441)	(0.406)	(0.416)	(0.242)	(0.248)	(0.355)	(0.370)
2005	0.116	0.132	0.096	0.100	0.035	0.037	0.092	0.101
	(0.404)	(0.428)	(0.383)	(0.392)	(0.247)	(0.253)	(0.332)	(0.349)
2006	0.095	0.110	0.091	0.095	0.035	0.037	0.083	0.092
	(0.354)	(0.375)	(0.373)	(0.381)	(0.245)	(0.254)	(0.309)	(0.326)
2007	0.085	0.100	0.081	0.086	0.041	0.043	0.077	0.086
	(0.346)	(0.371)	(0.364)	(0.373)	(0.270)	(0.280)	(0.299)	(0.318)
2008	0.082	0.098	0.068	0.075	0.032	0.035	0.065	0.076
	(0.342)	(0.370)	(0.338)	(0.354)	(0.246)	(0.255)	(0.271)	(0.296)
2009	0.058	0.071	0.052	0.059	0.027	0.029	0.049	0.058
	(0.280)	(0.307)	(0.291)	(0.304)	(0.220)	(0.227)	(0.230)	(0.251)
2010	0.043	0.056	0.043	0.051	0.024	0.026	0.038	0.047
	(0.241)	(0.270)	(0.265)	(0.285)	(0.210)	(0.220)	(0.201)	(0.226)
2011	0.034	0.047	0.029	0.039	0.017	0.020	0.027	0.037
	(0.222)	(0.256)	(0.209)	(0.237)	(0.171)	(0.189)	(0.168)	(0.199)
2012	0.018	0.030	0.021	0.029	0.009	0.013	0.014	0.023
	(0.158)	(0.204)	(0.175)	(0.204)	(0.125)	(0.151)	(0.121)	(0.157)
2013	0.008	0.018	0.016	0.023	0.005	0.008	0.007	0.013
	(0.123)	(0.160)	(0.168)	(0.194)	(0.092)	(0.113)	(0.082)	(0.116)
2014	0.001	0.007	0.002	0.009	0.002	0.005	0.001	0.005
	(0.051)	(0.109)	(0.064)	(0.112)	(0.067)	(0.090)	(0.035)	(0.072)
2015	--	0.003	--	0.004	--	0.003	--	0.002
	--	(0.075)	--	(0.084)	--	(0.069)	--	(0.043)
All	0.084	0.093	0.123	0.126	0.043	0.044	0.097	0.101
	(0.338)	(0.354)	(0.424)	(0.428)	(0.267)	(0.270)	(0.343)	(0.351)

Source: CNA calculations using data provided by the Air Force.
Note: Standard deviations are in parentheses.

Table 51.   Number of degrees per student: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**	**2014**	**2015**
1999	0.024	0.028	0.045	0.046	0.011	0.013	0.031	0.033
	(0.191)	(0.199)	(0.220)	(0.225)	(0.117)	(0.125)	(0.195)	(0.204)
2000	0.025	0.028	0.026	0.026	0.010	0.010	0.021	0.023
	(0.178)	(0.186)	(0.172)	(0.173)	(0.106)	(0.110)	(0.165)	(0.170)
2001	0.017	0.018	0.025	0.027	0.010	0.011	0.020	0.021
	(0.147)	(0.151)	(0.187)	(0.190)	(0.104)	(0.107)	(0.160)	(0.164)
2002	0.022	0.027	0.027	0.029	0.008	0.009	0.020	20.03
	(0.163)	(0.187)	(0.174)	(0.183)	(0.101)	(0.109)	(0.164)	(0.179)
2003	0.024	0.026	0.026	0.028	0.008	0.010	0.021	0.023
	(0.182)	(0.190)	(0.184)	(0.193)	(0.097)	(0.105)	(0.170)	(0.179)
2004	0.017	0.019	0.020	0.023	0.006	0.008	0.016	0.019
	(0.149)	(0.159)	(0.168)	(0.179)	(0.080)	(0.094)	(0.149)	(0.161)
2005	0.013	0.016	0.015	0.019	0.006	0.009	0.013	0.017
	(0.115)	(0.127)	(0.142)	(0.156)	(0.083)	(0.101)	(0.125)	(0.142)
2006	0.015	0.017	0.011	0.012	0.006	0.008	0.013	0.015
	(0.128)	(0.139)	(0.114)	(0.124)	(0.082)	(0.092)	(0.124)	(0.135)
2007	0.016	0.019	0.011	0.013	0.007	0.010	0.013	0.017
	(0.138)	(0.151)	(0.107)	(0.118)	(0.092)	(0.108)	(0.130)	(0.146)
2008	0.017	0.021	0.009	0.013	0.007	0.009	0.013	0.017
	(0.137)	(0.154)	(0.113)	(0.129)	(0.087)	(0.103)	(0.124)	(0.142)
2009	0.012	0.017	0.008	0.013	0.004	0.005	0.009	0.013
	(0.109)	(0.131)	(0.094)	(0.123)	(0.060)	(0.080)	(0.099)	(0.122)
2010	0.012	0.017	0.012	0.014	0.005	0.008	0.010	0.014
	(0.112)	(0.133)	(0.116)	(0.131)	(0.073)	(0.089)	(0.106)	(0.125)
2011	0.012	0.016	0.004	0.009	0.006	0.009	0.009	0.013
	(0.113)	(0.131)	(0.061)	(0.095)	(0.080)	(0.103)	(0.098)	(0.122)
2012	0.008	0.013	0.004	0.010	0.005	0.011	0.007	0.013
	(0.089)	(0.119)	(0.060)	(0.113)	(0.073)	(0.110)	(0.081)	(0.119)
2013	0.005	0.011	0.006	0.013	0.001	0.008	0.003	0.010
	(0.070)	(0.103)	(0.077)	(0.123)	(0.030)	(0.090)	(0.058)	(0.104)
2014	0.001	0.006	0.000	0.006	0.000	0.005	0.000	0.006
	(0.025)	(0.074)	(0.000)	(0.075)	(0.000)	(0.082)	(0.017)	(0.079)
2015	--	0.001	--	0.000	--	0.000	--	0.001
	--	(0.035)	--	(0.000)	--	(0.020)	--	(0.024)
All	0.015	0.018	0.021	0.023	0.007	0.009	0.015	0.018
	(0.132)	(0.146)	(0.157)	(0.166)	(0.091)	(0.103)	(0.138)	(0.150)

Source: CNA calculations using data provided by the Marine Corps.
Note: Standard deviations are in parentheses.

Table 52.   Number of degrees per student: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	0.168	0.180	0.164	0.169	0.075	0.077	0.154	0.159
	(0.427)	(0.441)	(0.440)	(0.445)	(0.303)	(0.306)	(0.445)	(0.453)
2000	0.157	0.171	0.171	0.176	0.071	0.073	0.152	0.158
	(0.424)	(0.440)	(0.466)	(0.473)	(0.305)	(0.309)	(0.440)	(0.450)
2001	0.153	0.167	0.191	0.197	0.073	0.075	0.161	0.168
	(0.422)	(0.439)	(0.495)	(0.503)	(0.312)	(0.317)	(0.445)	(0.456)
2002	0.149	0.165	0.152	0.158	0.066	0.069	0.138	0.147
	(0.417)	(0.437)	(0.440)	(0.448)	(0.287)	(0.293)	(0.414)	(0.428)
2003	0.133	0.149	0.125	0.132	0.053	0.055	0.114	0.122
	(0.397)	(0.419)	(0.407)	(0.416)	(0.255)	(0.263)	(0.376)	(0.391)
2004	0.123	0.138	0.114	0.121	0.051	0.054	0.107	0.116
	(0.383)	(0.403)	(0.384)	(0.397)	(0.251)	(0.259)	(0.361)	(0.377)
2005	0.116	0.130	0.106	0.114	0.051	0.054	0.102	0.111
	(0.373)	(0.393)	(0.369)	(0.383)	(0.250)	(0.259)	(0.351)	(0.369)
2006	0.109	0.122	0.112	0.120	0.054	0.058	0.103	0.113
	(0.354)	(0.374)	(0.374)	(0.387)	(0.256)	(0.266)	(0.348)	(0.366)
2007	0.099	0.113	0.105	0.115	0.055	0.059	0.097	0.108
	(0.338)	(0.361)	(0.364)	(0.382)	(0.257)	(0.268)	(0.332)	(0.353)
2008	0.091	0.105	0.092	0.103	0.046	0.051	0.083	0.094
	(0.324)	(0.347)	(0.338)	(0.357)	(0.234)	(0.247)	(0.305)	(0.326)
2009	0.080	0.094	0.081	0.092	0.042	0.047	0.074	0.085
	(0.295)	(0.320)	(0.308)	(0.328)	(0.222)	(0.234)	(0.281)	(0.303)
2010	0.072	0.087	0.079	0.090	0.036	0.041	0.066	0.077
	(0.277)	(0.305)	(0.298)	(0.319)	(0.205)	(0.220)	(0.262)	(0.286)
2011	0.057	0.074	0.072	0.087	0.035	0.042	0.056	0.070
	(0.247)	(0.280)	(0.276)	(0.304)	(0.198)	(0.218)	(0.239)	(0.268)
2012	0.038	0.057	0.062	0.080	0.027	0.035	0.041	0.056
	(0.199)	(0.244)	(0.254)	(0.290)	(0.171)	(0.199)	(0.204)	(0.240)
2013	0.017	0.035	0.042	0.068	0.014	0.026	0.021	0.040
	(0.141)	(0.194)	(0.212)	(0.267)	(0.124)	(0.169)	(0.148)	(0.201)
2014	0.005	0.021	0.006	0.040	0.003	0.019	0.004	0.025
	(0.074)	(0.151)	(0.079)	(0.200)	(0.063)	(0.147)	(0.066)	(0.160)
2015	--	0.004	--	0.006	--	0.005	--	0.004
	--	(0.071)	--	(0.081)	--	(0.071)	--	(0.067)
All	0.094	(0.105)	0.119	0.125	0.052	0.055	0.096	0.103
	(0.330)	(0.348)	(0.387)	(0.396)	(0.252)	(0.260)	(0.342)	(0.354)

Source: CNA calculations using data provided by the Army, Navy, Air Force, and Marine Corps.
Note: Standard deviations are in parentheses.

Table 53. Number of degrees per student: MyCAA

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
2009	0.065	0.065	0.024	0.024	0.034	0.034	0.078	0.078
	(0.246)	(0.246)	(0.152)	(0.152)	(0.181)	(0.181)	(0.339)	(0.339)
2010	0.065	0.066	0.065	0.067	0.053	0.054	0.097	0.099
	(0.249)	(0.251)	(0.246)	(0.251)	(0.228)	(0.229)	(0.373)	(0.375)
2011	0.111	0.112	0.077	0.077	0.052	0.052	0.107	0.108
	(0.315)	(0.316)	(0.266)	(0.266)	(0.228)	(0.228)	(0.355)	(0.356)
2012	0.119	0.121	0.139	0.142	0.049	0.052	0.114	0.116
	(0.324)	(0.327)	(0.347)	(0.352)	(0.220)	(0.226)	(0.351)	(0.356)
2013	0.143	0.148	0.155	0.166	0.053	0.061	0.130	0.138
	(0.351)	(0.356)	(0.362)	(0.372)	(0.228)	(0.245)	(0.362)	(0.376)
2014	0.180	0.190	0.035	0.045	0.098	0.113	0.146	0.162
	(0.384)	(0.393)	(0.183)	(0.207)	(0.298)	(0.317)	(0.354)	(0.390)
2015	--	0.152	--	0.033	--	0.070	--	0.120
	--	(0.359)	--	(0.179)	--	(0.255)	--	(0.325)
All	0.133	0.139	0.101	0.098	0.059	0.065	0.121	0.126
	(0.340)	(0.346)	(0.302)	(0.298)	(0.239)	(0.249)	(0.356)	(0.362)

Source: CNA calculations using data provided by VolEd.
Note: Standard deviations are in parentheses.

Tables 54 through 59 show the cumulative graduation rate for Servicemembers and their spouses, where this graduation rate is defined as the percentage of TA or MyCAA users who receive any degree at any level. As a result, this number does not take multiple degrees into account (for example, a Servicemember who earns two certificates in a single year will count twice toward the number of degrees completed but only once toward the graduation rate). As before, Servicemembers are assigned to cohorts based on the year in which they first took a course using TA. Thus, each row of the tables reveals the following: of all Servicemembers who first took a course using TA in that year, what percentage of them have obtained a degree (or certificate) by 2014 or 2015? These graduation rates are presented separately for each sector and for all reported sectors combined. Some Servicemembers will enter into the graduation rate calculation for more than one sector (if they took courses using TA in more than one sector). Earning a degree does not prevent a Servicemember (or spouse) from continuing to appear in the TA (or MyCAA) data. Some will continue their studies at a higher level, while others may take additional courses at the same level as the initial degree, license, or certification. A Servicemember who earns one certification in 2014 and another in 2015 will count toward both years' graduation rates.

Because very few Servicemembers or spouses earned multiple degrees in the same year, the graduation rate is very similar to the number of degrees earned. Nearly all overall rates in 2015 are within rounding error of the number of degrees earned. Looking specifically at the 2014 and 2015 cohorts, only the Air Force has any substantial difference between its graduation rate and the number of degrees earned; this suggests that while few Servicemembers in 2014 and 2015 Air Force TA cohorts earned *any* form of degree, those that did so were especially likely to earn multiple degrees.

Table 54. Graduation rate: Army

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	17.6%	19.2%	8.2%	8.8%	4.0%	4.2%	8.6%	9.2%
2000	16.7%	18.5%	8.8%	9.4%	4.4%	4.6%	9.0%	9.6%
2001	15.2%	17.1%	9.3%	10.0%	4.8%	5.0%	9.1%	9.7%
2002	14.5%	16.4%	8.8%	9.6%	5.3%	5.6%	9.3%	10.0%
2003	12.2%	14.1%	7.4%	8.0%	4.1%	4.3%	7.6%	8.3%
2004	11.6%	13.3%	7.7%	8.4%	3.8%	4.1%	7.4%	8.1%
2005	11.5%	13.0%	8.3%	8.9%	3.8%	4.0%	7.7%	8.4%
2006	11.8%	13.2%	10.2%	10.9%	4.0%	4.2%	8.4%	9.2%
2007	10.9%	12.2%	11.4%	12.2%	4.0%	4.3%	8.5%	9.3%
2008	9.5%	10.7%	9.8%	10.7%	3.6%	3.9%	7.6%	8.4%
2009	9.1%	10.4%	8.9%	9.6%	3.4%	3.8%	7.1%	7.9%
2010	8.9%	10.4%	9.1%	9.9%	3.3%	3.6%	6.9%	7.8%
2011	7.6%	9.4%	9.6%	10.7%	3.4%	3.9%	6.4%	7.5%
2012	5.3%	7.4%	9.1%	10.6%	2.7%	3.4%	4.9%	6.3%
2013	2.4%	4.6%	6.3%	8.9%	1.4%	2.4%	2.6%	4.3%
2014	0.8%	2.9%	0.5%	5.0%	0.4%	1.7%	0.6%	2.8%
2015	--	0.4%	--	0.6%	--	0.3%	--	0.4%
All	9.6%	10.8%	8.6%	9.3%	3.7%	4.0%	7.1%	7.8%

Source: CNA calculations using data provided by the Army.

Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 55. Graduation rate: Navy

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	19.9%	20.4%	25.7%	26.0%	14.7%	14.8%	23.5%	23.7%
2000	17.5%	18.1%	22.2%	23.0%	13.1%	13.2%	20.8%	21.3%
2001	17.3%	18.2%	22.6%	23.4%	12.5%	12.7%	20.8%	21.3%
2002	16.0%	16.9%	20.9%	21.6%	12.1%	12.4%	19.4%	19.9%
2003	15.6%	16.5%	18.9%	19.7%	11.4%	11.7%	18.1%	18.8%
2004	13.0%	13.8%	17.1%	18.0%	10.9%	11.4%	16.1%	16.9%
2005	13.0%	13.9%	16.0%	17.2%	11.3%	11.8%	15.9%	16.8%
2006	13.0%	14.1%	16.4%	17.9%	12.2%	12.9%	16.5%	17.6%
2007	10.9%	12.1%	13.7%	15.4%	12.0%	12.7%	14.8%	16.0%
2008	11.5%	12.9%	14.0%	15.9%	11.3%	12.7%	14.4%	16.1%
2009	10.7%	12.6%	12.3%	14.6%	10.5%	11.7%	13.1%	15.0%
2010	9.2%	11.4%	12.4%	14.6%	8.5%	10.0%	11.3%	13.4%
2011	7.0%	9.6%	11.9%	15.0%	9.6%	11.7%	10.8%	13.7%
2012	4.5%	8.1%	9.8%	14.0%	6.6%	9.0%	7.8%	11.3%
2013	2.2%	5.9%	5.5%	11.8%	3.3%	7.0%	4.0%	8.9%
2014	0.4%	3.5%	1.2%	7.3%	0.5%	4.5%	0.7%	5.4%
2015	--	0.7%	--	0.8%	--	1.0%	--	0.9%
All	12.2%	13.2%	17.0%	17.9%	11.1%	11.6%	15.6%	16.3%

Source: CNA calculations using data provided by the Navy.

Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 56. Graduation rate: Air Force

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	11.2%	11.7%	16.8%	16.9%	5.8%	5.9%	14.7%	14.9%
2000	12.5%	13.4%	17.0%	17.1%	5.8%	5.9%	15.3%	15.6%
2001	13.0%	14.1%	18.4%	18.8%	6.1%	6.3%	16.9%	17.3%
2002	12.7%	14.1%	14.0%	14.3%	4.0%	4.1%	13.2%	13.7%
2003	11.0%	12.5%	11.0%	11.4%	2.9%	3.0%	10.6%	11.2%
2004	11.0%	12.4%	8.6%	9.0%	2.5%	2.7%	9.2%	9.9%
2005	9.3%	10.7%	7.3%	7.6%	2.3%	2.5%	8.0%	8.7%
2006	7.9%	9.2%	6.9%	7.3%	2.3%	2.5%	7.4%	8.1%
2007	7.0%	8.1%	5.8%	6.2%	2.5%	2.7%	6.9%	7.7%
2008	6.5%	7.8%	4.8%	5.4%	1.9%	2.2%	5.9%	6.8%
2009	4.8%	5.9%	3.8%	4.4%	1.6%	1.8%	4.6%	5.4%
2010	3.5%	4.7%	3.1%	3.7%	1.5%	1.7%	3.6%	4.4%
2011	2.7%	3.8%	2.3%	3.0%	1.1%	1.3%	2.6%	3.4%
2012	1.4%	2.5%	1.7%	2.4%	0.6%	0.9%	1.4%	2.3%
2013	0.5%	1.4%	1.0%	1.6%	0.3%	0.6%	0.6%	1.3%
2014	0.1%	0.5%	0.1%	0.7%	0.1%	0.3%	0.1%	0.5%
2015	--	0.2%	--	0.2%	--	0.2%	--	0.2%
All	6.9%	7.7%	9.6%	9.8%	3.1%	3.1%	8.3%	8.6%

Source: CNA calculations using data provided by the Air Force.

Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 57. Graduation rate: Marine Corps

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	2.0%	2.3%	4.2%	4.3%	1.0%	1.2%	2.7%	2.9%
2000	2.2%	2.5%	2.4%	2.4%	0.9%	0.9%	1.9%	2.0%
2001	1.5%	1.6%	2.2%	2.3%	0.9%	1.0%	1.8%	1.9%
2002	1.9%	2.2%	2.5%	2.6%	0.7%	0.8%	1.7%	1.9%
2003	2.0%	2.2%	2.2%	2.4%	0.8%	0.9%	1.8%	1.9%
2004	1.4%	1.6%	1.6%	1.8%	0.6%	0.8%	1.4%	1.6%
2005	1.3%	1.6%	1.3%	1.6%	0.6%	0.9%	1.2%	1.5%
2006	1.4%	1.6%	1.0%	1.1%	0.6%	0.8%	1.2%	1.4%
2007	1.4%	1.8%	1.0%	1.3%	0.6%	0.9%	1.2%	1.5%
2008	1.6%	1.9%	0.7%	1.1%	0.7%	0.9%	1.2%	1.6%
2009	1.2%	1.7%	0.8%	1.1%	0.4%	0.5%	0.9%	1.2%
2010	1.2%	1.6%	1.0%	1.3%	0.5%	0.7%	1.0%	1.3%
2011	1.2%	1.6%	0.4%	0.9%	0.6%	0.9%	0.9%	1.3%
2012	0.8%	1.3%	0.4%	0.9%	0.5%	1.0%	0.7%	1.3%
2013	0.5%	1.1%	0.6%	1.1%	0.1%	0.7%	0.3%	1.0%
2014	0.1%	0.6%	0.0%	0.6%	0.0%	0.5%	0.0%	0.5%
2015	--	0.1%	--	0.0%	--	0.0%	--	0.1%
All	1.3%	1.7%	1.9%	2.1%	0.7%	0.9%	1.4%	1.6%

Source: CNA calculations using data provided by the Marine Corps.

Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 58. Graduation rate: All Services

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
1999	15.0%	15.9%	14.1%	14.4%	6.6%	6.7%	12.5%	12.8%
2000	13.8%	14.9%	14.1%	14.5%	6.1%	6.2%	12.4%	12.8%
2001	13.3%	14.5%	15.6%	16.0%	6.1%	6.2%	13.3%	13.8%
2002	12.9%	14.3%	12.6%	13.1%	5.7%	5.9%	11.5%	12.1%
2003	11.5%	12.9%	10.3%	10.8%	4.6%	4.8%	9.6%	10.2%
2004	10.7%	11.9%	9.5%	10.0%	4.5%	4.7%	9.1%	9.8%
2005	10.1%	11.3%	8.9%	9.6%	4.5%	4.8%	8.8%	9.5%
2006	9.7%	10.8%	9.5%	10.2%	4.8%	5.1%	9.0%	9.8%
2007	8.8%	9.9%	8.9%	9.7%	4.8%	5.2%	8.7%	9.5%
2008	8.1%	9.2%	7.9%	8.8%	4.1%	4.5%	7.6%	8.5%
2009	7.4%	8.6%	7.2%	8.2%	3.9%	4.3%	6.9%	7.8%
2010	6.7%	8.1%	7.1%	8.1%	3.3%	3.7%	6.2%	7.2%
2011	5.4%	6.9%	6.8%	8.0%	3.3%	3.9%	5.4%	6.6%
2012	3.6%	5.4%	5.9%	7.6%	2.5%	3.3%	4.0%	5.4%
2013	1.6%	3.3%	3.9%	6.5%	1.3%	2.5%	2.1%	3.9%
2014	0.5%	2.0%	0.5%	3.9%	0.3%	1.8%	0.4%	2.4%
2015	--	0.4%	--	0.5%	--	0.4%	--	0.4%
All	8.3%	9.3%	10.0%	10.6%	4.5%	4.8%	8.3%	8.9%

Source: CNA calculations using data provided by the Army, Navy, Air Force, and Marine Corps.

Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Table 59. Graduation rate: MyCAA

Cohort	Private for-profit		Private not-for-profit		Public		All reported sectors	
	2014	2015	2014	2015	2014	2015	2014	2015
2009	6.5%	6.5%	2.4%	2.4%	3.4%	3.4%	5.7%	5.7%
2010	6.5%	6.6%	6.5%	6.7%	5.3%	5.3%	7.3%	7.4%
2011	11.1%	11.1%	7.7%	7.7%	5.1%	5.1%	9.3%	9.3%
2012	11.8%	12.1%	13.8%	14.1%	4.9%	5.1%	10.3%	10.5%
2013	14.3%	14.8%	15.5%	16.6%	5.2%	5.9%	12.1%	12.7%
2014	18.0%	19.0%	3.5%	4.5%	9.8%	11.3%	14.6%	15.4%
2015	--	15.2%	--	3.3%	--	7.0%	--	12.0%
All	13.2%	13.9%	10.1%	9.7%	5.8%	6.4%	11.2%	11.6%

Source: CNA calculations using data provided by VolEd.

Note: Standard deviations have been excluded from this table since the interpretation of a standard deviation on binary variable (one that takes values of zero or one) is not intuitive.

Conclusion

In this report, we used individual-level data provided by each of the Services and Force Education and Training to calculate the TA and MyCAA educational outcome statistics requested in the 2014 DOD Appropriations Bill. These tabulations compare not only TA Servicemembers' outcomes by Service but also TA and MyCAA users' outcomes by institutional sector. By making these Service- and sector-level comparisons, we highlight differences in TA and MyCAA enrollment, cost, number of courses taken, credits received, courses completed, and degrees received. These summarized outcome measures provide policy-makers with a better understanding of the differences that exist across Services and education sectors, allowing them to evaluate whether certain Services are using these VolEd benefits more (or less) effectively. The summarized data also identify whether students' outcomes vary by type of educational sector.

We find, overall, that TA use is highest in the Army, followed by the Air Force, Navy, and Marine Corps. Overall TA costs were fairly similar across the four Services, although generally higher at both types of private institutions than at public institutions. In terms of the number of courses taken per participant, in recent years fewer courses were taken at public than private institutions and *new* TA and MyCAA users took fewer courses than the average TA or MyCAA users. These trends are mimicked in other metrics, namely the number of credits earned per participant, the number of courses completed, and course completion rates. We find that course completion rates are slightly higher in the Air Force and Marine Corps than in the Army or Navy; in fact, course completion rates were highest in the Air Force in each educational sector. Overall, course completion rates were highest at private not-for-profit institutions and lowest at public institutions. In addition, they were generally lower for first-time TA or MyCAA users. Similarly, across all Services, the number of degrees earned was highest in the private, not-for-profit sector, followed by the private, for-profit sector, and lowest in the public sector. Graduation rates follow this pattern as well.

Note, however, that these are only summary statistics and have not controlled for differences in the participants' characteristics or in the quality of institutions attended. Future research using this same data set should characterize both Servicemembers who use TA and those who ultimately graduate, and attempt to parse out such differences.

Appendix A: Data Cleaning

The course-level data required substantial cleaning. Much of this process was similar for the four Services. First, a large number of extraneous observations were dropped. These observations tended to fit several patterns: a large number of courses or institutions were listed as "FEE," "FEES," or something similar; some students had variables with values such as "DUPLICATE – DO NOT USE" or "ERROR"; and some institution names were not actual institutions (e.g., "A SCHOOL CODE FOR TESTING," "CAMPUS BOOKSTORE," or "EDUCATION"; see Appendix C for a full list). These observations did not appear to refer to actual courses or institutions and therefore were not relevant to our analysis. Second, some rows of data appeared to be duplicates and were therefore dropped. Leaving these rows would have meant double-counting particular students or courses. When multiple rows differed only in the grade assigned, the highest grade was kept; when they differed only in course end dates, the earliest end date was kept.

Two variables in the Army data required a particularly significant amount of cleaning. First, there was a wider range of possible grades listed than in any of the other three Services. To avoid dropping large amounts of data, it was necessary to standardize grades to a pass/fail outcome when possible. Second, many institutions did not have a numeric identifier, and all institutions' names were truncated to 25 characters. In the other three Services, the vast majority of institutions had a unique ID number assigned by the Office of Postsecondary Education (OPE). In the Army data, however, OPE IDs were unavailable for many institutions in early years; the number of unique OPE ID values in the raw data increases by a factor of approximately 25 in 2006 and redoubles in 2010, as can be seen in Table 60.

Table 60.   Number of unique OPE ID values by year (Army's raw data)

Year	Number of unique OPE ID values[a]	Number of unique institution names
1999	0	1,603
2000	0	1,379
2001	18	1,748
2002	19	2,407
2003	25	5,427
2004	29	6,128
2005	30	6,880
2006	791	7,431
2007	924	6,354
2008	906	5,248
2009	894	5,361
2010	1,786	4,135
2011	1,967	3,678
2012	2,530	2,348
2013	2,463	2,308
2014	2,191	2,053
2015	1,842	1,718

Source: CNA tabulations of TA data provided by the Army.
[a.] This computation does not include missing values.

The first of the Army-specific data issues was solved by assigning each listed grade to one of three categories: completing the class in question, not completing the class in question, or omitting the class from completion rate calculations. A table containing the different grades in each category is provided in Appendix C.

We were able to only partially solve the second and third issues with Army data. First, institution names that did not have OPE ID values but were listed by many students were sometimes alternate spellings, abbreviations, or misspellings of names that *did* in fact have OPE ID values. In many cases, therefore, institution names with missing OPE ID values were matched to corresponding institution names with OPE ID values; this was restricted primarily to groups of institution names totaling 100 or more students, though similarity of institution names frequently made it practical to standardize some smaller groups of institution names as well. These exceptions generally fit one of two patterns:

- Determining how to standardize names and OPE ID values for popular schools sometimes provided information on less popular schools. For instance, standardizing the various listed names for Campbell University (9,015 missing values) also showed how to

standardize Campbellsville College (8 missing values). Writing the extra code for Campbellsville College took a negligible amount of additional time compared with the rest of the standardization process.

- Institutions with names fitting the format of "University of X – Y Campus" had all campuses standardized. This is partly because there were many ways in which these names could be listed in the data and partly because the process for each university system was similar. Thus, the University of Texas—Austin (14,807 missing values) was standardized along with the University of Texas—Tyler (3 missing values). The exception to this rule was if only one OPE ID value was listed in the data across all listed campuses; in this case, students were assigned to the main campus.

After institution names were standardized, names then were assigned their modal OPE ID, and vice versa.

Finally, some institution names were dropped from the Army data (after initial cleaning) either because they were indecipherable or because they did not refer to any specific institution. The full list of these names is provided in Table 61.

Table 61.   Omitted institutions

Omitted institution names			
1	ADMISSIONS OFFICE	DEPT GRANTS & ADM CONTRAC	STATE OF NEW YORK
1ST CLASS AIR	BURSAR OFFICE	EDUCATION	THEOLOGICAL SEMINARY
A	BURSAR'S OFFICE	GED TESTING CENTER	U
A SCHOOL CODE FOR TESTING	CASHIER'S OFFICE	RESEARCH OFFICE	X
ACCOUNTING DEPARTMENT	CONTROLLERS OFFICE	SPONSORED PROGRAMS	Z

Source: CNA tabulations of TA data provided by the Army.

Appendix B: Dropped Observations

As was discussed in the Data and Methodology section, the data required substantial cleaning to be in a uniform, usable format. Most of this process involved dropping observations, for a number of reasons (e.g., duplicate entries for the same course, institution names such as "Campus Bookstore"). In this Appendix, we review, for each Service, the number of observations that were dropped, the reasons for which they were dropped, and any differences in the distribution of grades or completions that resulted from dropping these observations.

Army

In Table 62, we reveal the sample size reductions that occurred with each step of data cleaning and the resultant dropping of observations. The table shows, for example, that we initially started with 847,290 unique IDs, in 7,375,964 rows of data. The subsequent row highlights that, when we dropped all observations where the course number was "fee," the number of unique IDs decreased to 846,568 and the number of data rows decreased to 7,370,431. This pattern continues throughout the rest of the table, until ultimately arriving at the bottom row—our final sample for the Army contained 845,903 unique IDs and 7,169,227 rows of data. The primary question of interest is whether these sample reductions perhaps skewed the overall distribution of grades (and, thus, completion and graduation rates). That is, did this data-cleaning process result in our dropping observations that had notably higher (or lower) grades than that observed in our final sample, resulting in higher (or lower) course completion and graduation rates? The grade distributions for the dropped observations and final sample are shown in Table 63. Although there are differences in the grade distributions, they are not drastic. Most importantly, the resulting course completion rates for the two samples are strikingly similar: 78.5 percent for the dropped observations and 79.8 percent for the final sample (calculations not shown).

Table 62. Army sample size remaining (in IDs and rows of data) after each cleaning procedure

Cleaning Procedures	Unique IDs Remaining	Rows of data Remaining
Initial sample	847,290	7,375,964
Drop if course number = "fee"	846,568	7,370,431
Drop if course title contains "fee" and title isn't in approved list	846,291	7,363,644
Drop if missing course start or end date	846,143	7,361,167
Drop if institution name is in list of non-institutions	846,118	7,360,565
Drop duplicate entries (all values equal)	846,118	7,360,298
Drop if course level missing and duplicate in all other values	846,118	7,357,284
Drop if course grade is "Fee", "Del," "Error," or if it contains "Dup," "DVP", or "DUPL"	846,112	7,357,153
Drop if institution name missing and OPE ID is missing	845,948	7,353,413
Keep highest grade if duplicate courses	845,948	7,351,635
Keep first course date if same course appears more than once	845,948	7,351,525
Drop if institution name in list of non-institutions	845,903	7,350,638
Keep first course end date if same institution listed with slightly different names in same year	845,903	7,347,931
Keep only one occurrence of institution name for any remaining duplicates in same year	845,903	7,347,908
Keep one course number if same course number listed in same year and all else equal	845,903	7,343,008
Standardize sectors across Services (drop duplicate values)	845,903	7,169,227

Source: CNA tabulations of Army TA data.

Table 63. Distribution of Army grades: Dropped observations versus final sample

	Dropped Observations						Final Sample					
Credit		No Credit		Unable to Determine		Credit		No Credit		Unable to Determine		
Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	
missing	3.08%	missing	10.77%	missing	3.49%	missing	1.90%	missing	7.63%	missing	5.34%	
A+	0.22%	C+ (grad)	0.02%			A+	0.31%	C (grad)	0.04%			
A	33.14%	C (grad)	0.18%			A	33.53%	D+	0.19%			
A-	2.55%	C- (grad)	0.00%			A-	4.46%	D	0.02%			
B+	1.89%	D+	0.12%			B+	3.14%	F	0.30%			
B	24.70%	D	2.46%			B	20.59%					
B-	0.86%	D-	0.05%			B-	1.92%					
C+ (non-grad)	0.58%	F	4.07%			C+ (non-grad)	1.20%					
C (non-grad)	11.55%					C (non-grad)	9.76%					
C- (non-grad)	0.25%					C- (non-grad)	0.65%					
Total	148,142	**Total**	33,231	**Total**	6,557	**Total**	5,551,846	**Total**	1,234,564	**Total**	382,817	

Source: CNA tabulations of Army TA data.

Navy

The corresponding information for the Navy is presented in Table 64 and Table 65. In this case, we initially started with 310,238 unique IDs in 2,293,814 rows of data. At the end of our data-cleaning processes, the sample contained 309,852 unique IDs in 2,289,133 rows of data. Table 65 shows the grade distributions in the dropped observations and the final sample. Once again, there is notable similarity in the percentage of observations accounted for by each grade. Two exceptions include the fact that our final sample contains a higher percentage of A's and a somewhat lower percentage of B's. If anything, this suggests that our final sample is slightly skewed *toward* course completion. This is also noted in the differences between the overall completion rates (calculations not shown): 87.9 percent in the final sample versus 87.9 percent among the dropped observations.

Table 64.   Navy sample size remaining (in IDs and rows of data) after each cleaning procedure

Cleaning procedures	Unique IDs Remaining	Total Rows Remaining
Initial sample	310,238	2,293,814
Drop if any variable contains "DO NOT USE," "DUPLICATE," or "MRC"	310,173	2,293,286
Drop if course title contains "FEE" (unless in a list of approved courses)	309,852	2,289,330
If the same course has multiple letter grades and completion statuses, keep highest letter grade/completion status	309,852	2,289,151
If the same course has multiple end dates, keep the earliest one	309,852	2,289,133

Source: CNA tabulations of Navy TA data.

Table 65.   Distribution of Navy grades: Dropped observations versus final sample

| | **Dropped Observations** | | | | | **Final Sample** | | | | | |
| Credit | | No Credit | | Impossible To Determine | | Credit | | No Credit | | Impossible To Determine | |
Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency
missing	2.54%	missing	3.55%	missing	8.63%	missing	2.31%	missing	3.58%	missing	4.36%
A	38.58%	C (grad)	0.51%			A	45.84%	C (grad)	0.24%		
B	30.46%	D	2.03%			B	27.82%	D	2.30%		
C (non-grad)	11.17%	F	2.54%			C (non-grad)	10.37%	F	3.16%		
Total	163	**Total**	17	**Total**	17	**Total**	1,976,681	**Total**	212,680	**Total**	99,772

Source: CNA tabulations of Navy TA data.

Air Force

Information regarding the Air Force's dropped observations is presented in Table 66 and Table 67. We initially started with 440,511 unique IDs in 4,401,827 rows of data. At the end of our data-cleaning processes, the sample contained 440,392 unique IDs in 4,053,637 rows of data. Table 67 shows the comparison of grade distributions between the dropped observations and the final sample. Our final sample contains a higher percentage of A's and B's than the dropped sample, resulting in a significant difference in overall course completion rates—among the dropped sample, only 59 percent of courses were completed whereas 86.9 percent of those in our final sample were completed (graduate courses with grades of A or B; undergraduate courses with grades of A, B, or C).

Table 66.   Air Force sample size remaining (in IDs and rows of data) after each cleaning procedure

Cleaning Procedures	Unique IDs Remaining	Total Rows Remaining
Initial Sample	440,511	4,401,827
Drop if any variable is equal to "FEE" or contains "DO NOT USE," "DUPLICATE," or "MRC"	440,399	4,057,648
Drop if completion date is later than 6/1/2016 (includes missing values)	440,395	4,057,565
Drop if course contains "FEE" and is not part of an approved list	440,392	4,054,584
If multiple grades for the same course, keep highest grade/credit combination	440,392	4,053,698
If multiple end dates for the same course, keep the earliest one	440,392	4,053,639
If multiple institutions for the same course , keep at most one with institution name "Unknown"	440,392	4,053,637

Source: CNA tabulations of Air Force TA data

Table 67.   Distribution of Air Force grades: Dropped observations versus final sample

Dropped Observations						Final Sample					
Credit		No Credit		Impossible to Determine		Credit		No Credit		Impossible to Determine	
Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency
missing	9.71%	missing	16.70%	missing	11.55%	missing	1.92%	missing	5.17%	missing	0.59%
A	34.76%	C (grad)	0.10%			A+	0.01%	C+ (grad)	0.00%		
B	19.22%	D	1.17%			A	52.92%	C (grad)	0.32%		
C (non-grad)	5.05%	F	1.75%			A-	0.46%	C- (grad)	0.00%		
Total	708	Total	203	Total	119	B+	0.26%	D+	0.01%		
						B	25.02%	D	1.72%		
						B-	0.15%	D-	0.01%		
						C+ (non-grad)	0.07%	E	0.00%		
						C (non-grad)	7.98%	F	3.35%		
						C- (non-grad)	0.03%				
						Total	3,600,653	**Total**	429,030	**Total**	23,956

Source: CNA tabulations of Air Force TA data.

Marine Corps

Finally, Table 68 and Table 69 illustrate the observations dropped in the Marine Corps data and the resulting differences in grade distributions between the dropped observations and our final Marine Corps sample. In this case, the initial sample contained 172,152 unique IDs and 1,070,929 rows of data. After iterating through our cleaning process and the various drops illustrated in Table 68, our final Marine Corps TA sample contained 172,048 unique IDs and 1,066,903 rows of data. As with the other Services, there are some differences in the grade distributions. Namely, our final sample has more A's, slightly fewer B's and D's, and slightly more F's. Overall, however, the course completion rates are relatively consistent: 83.7 percent among the dropped observations and 86.8 percent in our final sample.

Table 68.   Marine Corps sample size remaining (in IDs and rows of data) after each cleaning procedure

Cleaning Procedures	Unique IDs Remaining	Total Rows Remaining
Initial Sample	172,152	1,070,929
Drop if any variable is equal to "DO NOT USE," "DUPLICATE," or "MRC"	172,138	1,070,746
Drop if course title contains "FEE" (except for approved courses)	172,048	1,066,960
Drop if OPE ID and Institution Name both missing	172,048	1,066,960
If multiple grades for same course, keep highest grade/credit combination	172,048	1,066,910
If multiple end dates for same course, keep earliest end date	172,048	1,066,903

Source: CNA tabulations of Marine Corps TA data.

Thus, although there was some concern that our data-cleaning processes might be dropping observations with higher course completion rates than those in our final sample, our findings in all four Services have shown that the completion rates were often very similar and, when they differed, the dropped observations had *lower* course completion rates. Thus, there is no concern that our completion rates have been skewed downward by our data-cleaning process.

Table 69.   Distribution of Marine Corps grades: Dropped observations versus final sample

Dropped Observations						Final Sample					
Credit		No Credit		Impossible To Determine		Credit		No Credit		Impossible To Determine	
Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency
missing	3.51%	missing	3.51%	missing	14.04%	missing	1.75%	missing	5.02%	missing	3.89%
A	31.58%	D	5.26%			A	46.15%	C (grad)	0.16%		
B	29.82%	F	1.75%			B	26.81%	D	2.29%		
C (non-grad)	10.53%					C (non-grad)	10.45%	F	3.48%		
Total	43	**Total**	6	**Total**	8	**Total**	908,531	**Total**	116,858	**Total**	41,514

Source: CNA tabulations of Marine Corps TA data.

Appendix C: Grades in Army Data

A large number of grades were listed in the Army data. We grouped these to reflect course completion, no course completion, or an inapplicable value. Table 70 shows the list of grades corresponding to course completion, Table 71 shows the list of grades corresponding to no course completions, and Table 72 shows the list of grades not used in determining the course completion rate.

Table 70.   Grades in Army data: Credit

Complete						
&A	80.3	86.7	90.8	95.4	AC	C+`	NB+
+A	80.7	86.8	90.80	95.5	AD	C-	NC
+B	81	86.8	90.9	95.6	ADT	C.	NC1
-A	81.1	86.9	91	95.8	ADW	C1	P
.A	81.2	87	91-A	96	AE	C2	P+
100	81.25	87.00	91.0	96	AF	C3	P-
100	81.4	87.1	91.00	96.25	AI	CA	P.
102	81.5	87.2	91.1	96.4	ANA	CA-	P1
110	81.6	87.25	91.2	96.5	AP	CB	P2
111	82	87.3	91.4	96.6	APD	CD	P4
2C	82.1	87.4	91.5	96.76	AR	CDR	PA
3P	82.2	87.5	91.6	96.8	AT	CE	PAS
70	82.4	87.55	91.9	96.83	AVP	CERT	PASS
71	82.5	87.6	91.98	97	AW	CERT.	PASSE
72	82.6	87.7	92	97-A	A^	CERTI	PC
73	82.8	87.9	92.	97	A_	CF	PE
73.5	82.9	88	92.00	97.02	B	CI	PF
74	83	88.	92.1	97.2	B+	CL	PG
74.2	83.1	88.1	92.2	97.3	B+-	CN	PI
74.5	83.2	88.2	92.4	97.4	B+A	CNA	PN
75	83.4	88.3	92.5	97.6	B+C	CO	PP
75.00	83.7	88.4	92.50	97.8	B+R	CP	PR
75.6	83.9	88.5	92.6	98	B-	CR	PS
76	84	88.6	92.8	98	B.	CRD	QB
76	84.1	88.7	92.89	98.11	B0	CREDI	QB+

76.2	84.2	88.75	92.9	98.3	B00	CRLAB	QC+
76.3	84.3	88.8	93	98.5	B2	CS	RA
76.4	84.4	89	93.00	98.85	B3	CT	RB
76.5	84.5	89.	93.17	98.9	B4	CW	RC
77	84.6	89.00	93.2	98.92	B9	C`	S
77.00	84.7	89.1	93.22	99	B=	G	S+
77.1	84.9	89.2	93.3	99.5	BA	GD	S-
77.25	85	89.3	93.4	99.6	BAI	GED	S-LAB
77.4	85.2	89.4	93.5	99.7	BB	GRAD	SA
77.6	85.21	89.5	93.54	99.75	BC	H	SA-
78	85.25	89.50	93.6	99.8	BC+F	HONOR	SAT
78.2	85.3	89.6	93.7	A	BDFI	HP	SB
78.3	85.4	89.7	93.8	A+	BE	HS	SB+
78.4	85.6	89.71	93.9	A-	BF	I-C	SC
78.5	85.7	89.8	94	A-0	BI	IA	UA
78.6	85.8	89.9	94.00	A-B-	BI+	IA-	WC
78.8	85.92	90	94.1	A-R	BNA	IB	XA
79	86	90.	94.4	A.	BR	IB+	XA-
79.1	86	90.1	94.6	A1	BT	IB-	XB
79.2	86.1	90.2	94.8	A2	B_	IC	XB+
79.3	86.2	90.30	94.83	A3	B`	LB	XB-
79.6	86.25	90.32	95	A=	C	MC	XC
80	86.3	90.4	95.	AA	C+	MK-UP	XC+
80	86.4	90.5	95.00	AB	C+-	NA-	XC-
80	86.5	90.6	95.2	ABS	C+.	NB	YA
80.1	86.6	90.7					

Source: CNA tabulations of TA data provided by the Army.
Note: Values highlighted in yellow appear in both the "credit" and "no credit" tables depending on whether the course in question was at the graduate or undergraduate level.

Table 71.   Grades in Army data: No credit

+W	3	63.00	DA	FIW	RC
.07	3.	63.3	DB	FM	RD
.7	3.0	64	DC	FN	RE
.9	3.00	65	DD	FP	RF
0	3.1	65.7	DF	FPAID	SD
0.0	3.11	67	DFA	FQ	SE

Incomplete

0.00	3.15	68	DFAS	FR	SF
0.2	3.2	69	DFFAS	FS	TERMI
0.4	3.24	7	DFR	FW	UD
0.5	3.25	7.0	DFS	FX	UE
0.7	3.3	70	DG	I	UF
0.8	3.4	70.00	DL	I-D	W
0.9	3.5	71	DM	I-F	W-F
1	3.50	72	DMS	IC	W0
1.0	3.6	72.00	DN	IC+	W1
1.1	3.60	73	DNP	ID	W3
1.2	3.67	74	DP	IE	W4
1.3	3.69	75	DR	IF	W6
1.4	3.7	76	DRO	IM	W7
1.5	3.8	77	DROP	IN	W8
1.6	3.9	77.00	DROPP	INC	WC
1.7	3.91	78	DRP	INP	WD
1.8	3.92	78.00	DSA	IP	WE
1.9	3.94	79	DT	IR	WF
12.00	3.98	8	DW	IS	WI
13	30	9	E	ITSHP	WIP
13.32	31	9.0	EC	IU	WITHD
14.68	33	9.9	EL	IW	WL
1W	37	AU	EM	IX	WM
2	39	AUD	EN	NA	WN
2.0	4	AUDIT	EP	NAC	WNA
2.00	4.	C	EQ	NAMNS	WNC
2.1	4.0	C+	EU	NC	WP
2.2	4.00	C-	EX	NCR	WPAID
2.3	4.000	CANCL	F	NE	WPD
2.4	4.2	CB	F&C	NF	WQ
2.5	40	CE	F&W	NG	WR
2.51	42.5	CH	F-RPD	NOGR	WS
2.55	43.5	CHEAT	F.	NONE	WT
2.6	44.	CI	F0	NOPAY	WU
2.7	44.0	CO	F1	NOTP	WV
2.75	5	CON	F2	NOTPD	WW
2.8	5.0	CT	FA	NP	WX
2.88	5.00	D	FAIL	NPD	WZ

Incomplete					
2.9	58.00	D&A	FAN	NPP	XD
2.94	58.03	D+	FC	NR	XE
2.97	6	D-	FCR	NS	XF
20	6.0	D1	FE	NW	XW
25	60	D2	FI	NX	ZF
28	63	D=	FIN	NY	ZW

Source: CNA tabulations of TA data provided by the Army.
Note: Values highlighted in yellow appear in both the "credit" and "no credit" tables depending on whether the course in question was at the graduate or undergraduate level.

Table 72.   Grades in Army data: Inapplicable

Inapplicable					
+	AMSTY	MH	R	SR	V
-	ANMST	MHD	R0	SS	VTP
1207	DEPLO	MOB	RCR	SU	WA
150	DFSD	MOBED	RECOU	SVP	WAI
1P	DIS	MP	RETAK	T	WAIV
1X	DISCH	MW	RI	TA	WAIV.
235	EXAM	MX	RJ	TBD	WAIVE
2490	EXCEL	N	RM	TC	WAV
3+	HW	NDB	RNC	TF	WAVER
886	J	O	RP	TM	WAVIE
???	K	OR	RPD	TP	X
AM	L	PAI	RS	TR	X.
AMIST	LAB	PAID	RU	U	X1
AMN	LP	PD	RW	UN	XN
AMNES	LR	PDNA	SCHRE	UNA	XUW
AMNS	LW	PIAD	SFW	UNK	Y
AMNST	M	Q	SH	UW	YL
AMS	M+	QI	SM	UW2	YR
AMSNT	MF	QL	SP	UX	Z

Source: CNA tabulations of TA data provided by the Army.

Part 3: Tracking Outcomes of Voluntary Education Programs: Characterizing Tuition Assistance Users and Their Outcomes

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Executive Summary

Tuition Assistance (TA) is the primary education benefit that the Department of Defense (DOD) provides to Servicemembers to ease the financial burdens and academic readiness hurdles of continuing education while in service. The 2014 DOD Appropriations Bill mandated a study tracking outcomes for those who receive TA. A number of metrics were requested, both aggregated and at the educational-sector level (public, private for-profit, or private not-for-profit). In a previous report, we presented tables containing all of the requested statistics necessary to satisfy the congressional requirement, and we discussed some revealing differences across Services and over time.

That report did not, however, analyze the potential reasons behind the trends and differences we observed. This report fills that gap; we conduct empirical analysis to determine the military and demographic characteristics that are associated with TA use and positive education outcomes from TA use (e.g., attaining any degree, attaining a bachelor's degree or higher, attaining a high course completion rate). We then use these findings to highlight subpopulations that could benefit from targeted counseling—namely, those who are using TA at higher rates than their counterparts but are among those who are less likely to experience positive TA outcomes. We recognize that other outcomes are important in evaluating the overall success of the TA program, such as longer term employment outcomes and how Servicemembers use the education attained through TA to enhance their post-service lives. Such questions, however, were beyond the scope of this effort.

Servicemembers who are more likely to *use* TA but less likely to experience positive TA outcomes include the following groups:

- Those in the E1-E3 paygrades

- Enlisted female Servicemembers with three or more dependents

- Black Servicemembers (both officers and enlisted)

- Hispanic officers

- Servicemembers taking most of their courses in the public sector

We find that TA use among these Servicemembers is high, suggesting that they do not lack the *desire* for additional education but could use guidance in how to navigate the educational system and balance their educational and other goals.

Introduction

The Department of Defense (DOD) provides educational benefits to Servicemembers. DOD's primary program for easing the financial burdens and academic readiness hurdles of continuing education while in service is Tuition Assistance (TA). Per DOD policy, all Services can provide the same TA benefits: up to $250 per semester credit hour up to a maximum of $4,500 in tuition per fiscal year (FY).[59] Although TA users primarily pursue associate or bachelor's degrees, TA funds also can be used for coursework to obtain a high school diploma, certificate, or master's degree [13-14]. TA is available to active-component Servicemembers and reservists who meet the Services' eligibility requirements.

The 2014 DOD Appropriations Bill mandated a study tracking the outcomes of those who receive TA. Specifically, the bill stated:

> The Committee is concerned about the lack of information available on the outcomes of students receiving Tuition Assistance…benefits. Therefore, the Committee directs the Department to submit a report tracking such outcomes of each of these programs. [88, p. 34]

A number of metrics were requested, both aggregated and at the educational-sector levels of public, private for-profit, and private not-for-profit. The metrics requested included the graduation rate, the number of program participants, the number of courses taken per participant, the course completion rate (defined as the percentage of courses successfully completed), and the average cost per course (both to the TA program and to Servicemembers/spouses). In addition, the 2014 DOD Appropriations Bill requested a report on the percentage of Servicemembers using Top-Up[60] and the average dollar amounts of Top-Up use by FY. In a previous report, we presented tables containing all of the requested statistics necessary to satisfy the congressional requirement and discussed some revealing differences across Services and over time [90].

In this report, we go one step further and discuss how individual Servicemember characteristics (gender, race/ethnicity, occupation, paygrade, marital status, etc.) are related to TA use and "positive" TA outcomes (e.g., attaining any degree). Using these results, we then

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[59] Beginning in FY14, the Army limits were more restrictive: a maximum of $4,000 per year.

[60] Top-Up is a provision in the GI Bill that allows Servicemembers to use TA and GI Bill benefits simultaneously so that they do not have to take out loans for any tuition or fees that exceed the TA maximums [35, 89].

provide information on groups that could potentially benefit from further counseling to ensure that they are using TA efficiently to achieve their desired educational goals.

The remainder of this report is organized as follows. In the next section, we summarize the relevant literature related to TA user characteristics and TA outcomes. Next, we review our data sources and analytical methodology. Then, we present the relationships between Servicemember characteristics and the outcomes of interest, one metric at a time. Within the section for each metric, we include findings for Servicemembers in the Army, Navy, Air Force, and Marine Corps, both individually and combined across the four Services. We conclude by providing recommendations for policy-makers based on the results from our analysis.

A Synthesis of the Relevant Literature

DOD provides education benefits to Servicemembers and their spouses to ease the financial burdens and academic readiness hurdles of continuing their higher education while in service. Tuition Assistance provides an annual maximum of 16 semester credit hours and $4,500 in tuition and fees to active-component Servicemembers and some reservists.[61] TA can be used for certificates, as well as for associate, bachelor's, and master's degrees [13-14].

Aside from the obvious benefits to the Servicemember, there is evidence that, in general, TA programs can be useful to DOD as well. Specifically, TA programs have been beneficial in recruiting higher quality personnel, although the evidence on TA's retention benefits is mixed. In addition, there is little current research on the educational and financial outcomes of TA users. A previous CNA report summarized the current TA literature—including research on these programs' use and outcomes [91]. Because few studies have focused on these programs, the previous report also explored the civilian higher education literature to better understand potential educational outcomes for TA users. In doing so, the previous report provided the relevant background information needed for the quantitative portion of this study, in which we collect and analyze data on educational outcomes of TA users.

In general, college graduates experience numerous benefits—namely, increased earnings potential, higher employment rates, and an increased quality of life [40, 92-93]. Therefore, college usually is worth its cost, except in cases where students:

- Fail to receive their degrees (noncompletions) [40, 57-58, 92]

- Fail to find jobs commensurate with their abilities (underemployment) [55, 94-95]

- Take on more debt than their future incomes warrant (excessive debt) [40]

We expect that the aforementioned reasons why college may fail to be worth its cost for civilian students also will apply to TA users.

Variation across educational sectors in students' outcomes is important and substantive; in general, civilian students in the for-profit sector have the poorest outcomes (e.g., lowest

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[61] Beginning in FY14, the Army reduced its annual funding limit from $4,500 to $4,000.

graduation rates) [40].[62] In addition, for-profit institutions are more popular among TA users than civilian college students [32-33], and TA users spend more at for-profits than at public or private institutions [34]. For-profits account for slightly less than half of TA users (45 percent) and courses (48 percent) but more than half of TA funds (52 percent) [34]. The popularity of for-profits among TA users is a potential concern because for-profits historically have substantially higher noncompletion rates and higher proportions of students and alumni with excessive debt [40].[63] Specifically:

- Noncompletion rates at for-profits are 85.2 percent. (For comparison, noncompletion rates at public and private institutions are 38.5 percent and 29.3 percent, respectively [40].)

- Mean debt of bachelor's degree recipients at for-profits is $45,042. (For comparison, mean debt of bachelor's degree recipients at public and private institutions is $12,922 and $18,700, respectively [40].)

These higher debt levels are especially noteworthy and of possibly great consequence because of the increased variance in college graduates' earnings *and* debt levels we have experienced since the 1960s, as discussed in our literature review [91]. The variance of both earnings and debt has increased over the past six decades, making college more financially worthwhile for some (because they ultimately have relatively higher earnings) but no longer financially worthwhile for others (because they have relatively higher debt). For those who experience bouts of underemployment, do not complete their degrees, or have more debt than their future incomes can support, college can, in fact, be a poor investment.

Despite their potentially poorer outcomes, for-profits may offer TA users options that they are not offered at public or private not-for-profit institutions—specifically, distance-learning options and the ability to pursue a full-time course load (even while working full-time). The for-profits have tailored their educational services around being able to provide these options to their students, including TA users [69, 96-98]. Therefore, for-profit sector outcomes for TA users might not be consistent with those of civilian users because for-profit

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[62] The civilian literature's findings of poorer outcomes at for-profits are contradictory to what we find for Servicemembers later in this report. We find that those taking TA courses in the private for-profit sector at times have better outcomes (to include degree attainment and course completion) than their counterparts in other sectors. It is unclear whether other outcomes, such as earnings and debt levels, are better for those attending for-profit institutions; we were unable to obtain the necessary data to evaluate differences in debt levels, and an earnings analysis was outside the scope of this effort.

[63] Noncompletion in this context represents the failure to obtain a degree. That is, it is the converse of graduation. Later in this report, when we present the findings from our analysis, we discuss and refer to completion in the positive—in terms of course completion.

institutions provide flexibility for TA users that many traditional postsecondary education programs do not.

For several reasons, though, we might expect that TA users will be less likely than typical civilian college students to graduate from college (while using TA) and, therefore, will be less likely to experience the associated benefits of a college degree. First, TA users are nontraditional students: they enroll part-time, are older at enrollment than traditional students, and require distance-learning options. A nontraditional student is less likely (than the average student) to graduate with a bachelor's degree [56]. Second, TA is disproportionately used at for-profits [32-33]. The students of for-profit institutions are substantially less likely to graduate with bachelor's degrees compared with those in other education sectors [40]. Third, compared with society at large, Servicemembers are more likely to be racial/ethnic minorities. Racial/ethnic minorities are less likely (on average) to graduate with bachelor's degrees [99]. Although these findings suggest that TA users will be less likely to graduate with bachelor's degrees than other, more traditional college students, no previous studies have determined whether this is actually the case. The empirical phase of this study attempts to answer this question.

In the first empirical phase of this study, we provided summary statistics on the number of TA participants, TA costs, the number of TA courses taken, the number of TA credits earned, TA course completion rates, and TA graduation rates [90]. We reported these summary statistics by sector for each Service and for DOD overall; they ultimately became part of a congressional report. We summarize our findings from that effort in the remainder of this section.

There are a few important caveats regarding the comparability of numbers across the Services. First, management controls, which vary by Service, often limit the number of courses that a Servicemember can take, especially in his or her first year. As a result, the average number of courses taken per Servicemember might not be directly comparable across the Services since the limits on first-year or later courses vary by Service. Second, Army and Air Force data contained specific fields for certificates and for degree types, whereas the Navy and Marine Corps data had free entry fields for the type and/or level of degree earned. The Navy and Marine Corps, therefore, include degrees at a wider range of levels. Third, the Army has noted that there are discrepancies between the Army data that we report and similar data generated by the Army Continuing Education System (ACES). The ACES data include all grades officially submitted, whereas, if the same course is taken on multiple dates, we keep the dates associated with the course for which the Servicemember

received the highest grade.[64] If, however, a grade was later lowered—resulting in multiple grades for the same course—and the more recent entry was the correct entry, our data would not accurately reflect that change. Finally, our TA data do not include students who take courses solely through the Community College of the Air Force (CCAF), the Army War College, the Naval Postgraduate School, or other Service-provided institutions. Airmen are able to take CCAF courses free of charge and, as such, do not use TA to fund their course enrollments. CCAF course completions, degree completions, and other metrics are thus not part of the TA data provided throughout this report [90].[65]

With these caveats in mind, the following general findings emerged from our analysis of Servicemembers' TA use, as presented in our previous report [90]:

- The Army had the highest number of TA participants, followed by the Air Force, Navy, and Marine Corps [90].

- TA costs were fairly similar across the four Services, although generally higher at both types of private institutions (profit and not-for-profit) than at public institutions [90].

- In recent years, participants have taken fewer courses at public institutions than at both types of private institutions, and first-year TA users took fewer courses than their later-year counterparts [90].

- Similar findings emerge in our analysis of the number of credits earned per participant, the number of courses completed, course completion rates, the number of degrees completed, and the graduation rate.[66] That is, all are higher at both types of private institutions than at public institutions and lower among first-year TA users than their later-year counterparts [90].

- Course completion rates are slightly higher in the Air Force and Marine Corps than in the Army or Navy; in fact, course completion rates were highest in the Air Force in each

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[64] If the Servicemember took the same course on multiple dates, and received the same grade, we keep the dates associated with the first time the course was taken.

[65] CCAF students would, however, be included in the data if they started their education at another institution, using TA benefits, and then transferred those credits to CCAF (or conversely, started at CCAF and then transferred to another institution and used TA benefits).

[66] Although we have focused solely on education outcomes, there are other important outcomes in evaluating the overall success of the TA program, such as employment and how Servicemembers use the education attained through TA to enhance their post-service lives. Such questions, however, were beyond the scope of this effort.

educational sector [90]. Exploring *why* these differences exist by Service was beyond the scope of this effort.

Note that these are only summary statistics and do not control for differences in participants' characteristics or in the quality of institutions attended. In this report, in which we characterize both Servicemembers who use TA and those who ultimately graduate, we parse out such differences. This is important for determining the appropriate policy response, if any. For example, if differences in TA use or TA outcomes (such as course completion and graduation) are primarily determined by differences in participants' demographic characteristics (such as race, ethnicity, and gender), there is a less clear policy response than if TA outcomes are primarily determined by the educational sector in which the Servicemember took courses.

Data and Methodology

Our primary analytic objectives are to (1) characterize TA users and how they differ from their non-TA-using counterparts, (2) estimate the likelihood of positive outcomes for TA users (such as attaining any degree, attaining a bachelor's degree or higher, and attaining a high course completion rate[67]), and (3) identify any at-risk subpopulations of TA users who might benefit from counseling services. These analyses are limited to active-duty Servicemembers and rely on two types of data: Service-provided TA data and the Defense Manpower Data Center's (DMDC's) Active Duty Master File (ADMF). In this section, we discuss each of these data sources and how they were combined to inform our overall methodology.

TA data and caveats

The Services' TA data contained information on all courses taken and degrees earned by Servicemembers (both officers and enlisted) receiving TA from FY99 through FY15. These data required substantial cleaning to be in a uniform, usable format; Appendix A contains the full details of this data cleaning. Using the Services' TA data, we assigned each Servicemember's course and degree data to one of four educational sectors: public, private not-for-profit, private for-profit, and other. Navy, Air Force, and Marine Corps data listed institutions in each of the public, private not-for-profit, and private for-profit sectors, but the Army did not differentiate between the private not-for-profit and private for-profit sectors in its data. Therefore, we standardized sectors in the Army data using data from the other Services and from the Integrated Postsecondary Education Data System (IPEDS). If two or more other Services listed a private institution's corresponding sector and there was no disagreement between Services, the Army data were updated to reflect the sector in the other Services. If an institution was listed in only one other Service's data or if any Service disagreed on the sector to which an institution belonged, the sector was verified using historical IPEDS data and/or the IPEDS College Navigator [100].[68] Over 4,400 institution names did not have

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[67] The course completion rate is defined as the percentage of courses successfully completed.

[68] Correspondence with IPEDS staff revealed that all Everest colleges and institutes changed from private for-profit to private not-for-profit during the 2014/2015 academic year. We are unaware of any other institutions making this switch or the reverse.

a sector listed in any of the four Services' files; these were left as "other or unknown sector."[69] Using these data, we created the variables needed to define the TA-using population and to estimate the probability that any TA-using Servicemember achieves positive educational outcomes. Namely, for all Servicemembers, we identified:

- Whether they used TA in a given year

- Whether they were a "super user" in a given year, defined as taking at least the median level of credits or the median level of courses in their Service for a given year

- Whether they were a "consecutive user" in a given year, defined as taking at least one course for at least two consecutive years

- Whether they earned any degree by FY15, given that they had previously used TA

- Whether they earned a bachelor's degree or higher by FY15, given that they had previously used TA

- Their overall course completion rate

These ultimately became our six dependent variables, and their summary statistics are shown in Table 73. Our analysis focuses on identifying which demographic and military characteristics are most important in determining whether a Servicemember uses TA, and—for TA users—whether they were super users, consecutive users, earned any degree by FY15, or earned a bachelor's degree or higher by FY15.[70] The same estimation strategy (discussed at greater length later in this section) is used to identify the determinants of TA users' overall course completion rates. Note that our data capture only degree completions that happen while in service. Servicemembers who take some courses using TA and then finish their degrees using the GI Bill after transitioning from service (or using other financing means) are marked as "noncompletions" in our data. We have no way of observing degrees earned outside the TA program.

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[69] Since some names on this list are alternative spellings, abbreviations, or misspellings of other ones, the 4,400 names correspond to many fewer actual institutions.

[70] We separately estimate the determinants of being a user, a consecutive user, and a super user because we observe that consecutive users and super users are sometimes more likely to have positive outcomes (presented in a later section). Thus, we find it worthwhile to identify the characteristics that make it most likely for a TA user to be a super user or a consecutive user (and thus be more likely to have positive outcomes).

Table 73. Summary statistics of TA use indicators and outcomes, FY99-FY15

Variable	Status	Statistic	Army	Navy	Marine Corps	Air Force	DOD
TA use	Enlisted	Mean	46%	47%	46%	55%	49%
		Std. dev.	50%	50%	50%	50%	50%
		Sample size	2,750,157	1,409,530	734,454	2,130,980	7,025,121
	Officers	Mean	20%	23%	25%	30%	25%
		Std. dev.	40%	42%	43%	46%	43%
		Sample size	245,305	145,355	53,542	302,652	746,854
TA super use	Enlisted	Mean	88%	79%	95%	99%	91%
		Std. dev.	33%	40%	23%	10%	29%
		Sample size	1,274,716	658,206	338,446	1,179,775	3,451,143
	Officers	Mean	84%	80%	95%	99%	91%
		Std. dev.	36%	40%	22%	10%	28%
		Sample size	48,195	33,786	13,457	91,965	187,403
TA consec-utive use	Enlisted	Mean	45%	46%	40%	53%	48%
		Std. dev.	50%	50%	49%	50%	50%
		Sample size	1,274,716	658,206	338,446	1,179,775	3,451,143
	Officers	Mean	48%	52%	50%	60%	55%
		Std. dev.	50%	50%	50%	49%	50%
		Sample size	48,195	33,786	13,457	91,965	187,403
Any degree	Enlisted	Mean	8%	16%	12%	10%	9%
		Std. dev.	27%	37%	1%	30%	29%
		Sample size	438,891	222,904	137,771	331,454	1,131,020
	Officers	Mean	25%	23%	4%	5%	15%
		Std. dev.	43%	42%	18%	23%	35%
		Sample size	32,318	20,157	7,541	46,975	106,991
BA/BS or higher	Enlisted	Mean	4%	7%	1%	9%	6%
		Std. dev.	20%	26%	8%	28%	23%
		Sample size	438,891	222,904	137,771	331,454	1,131,020
	Officers	Mean	24%	18%	3%	5%	13%
		Std. dev.	43%	38%	16%	22%	34%
		Sample size	32,318	20,157	7,541	46,975	106,991
Course com-pletion rate	Enlisted	Mean	69%	78%	76%	83%	76%
		Std. dev.	36%	32%	35%	27%	34%
		Sample size	477,832	243,446	154,151	359,198	1,234,627
	Officers	Mean	85%	90%	89%	92%	89%
		Std. dev.	27%	23%	24%	20%	23%
		Sample size	33,611	20,558	7,803	48,170	110,142

Source: CNA tabulations of TA data.

In terms of caveats regarding the comparability of TA numbers across the Services, the same caveats discussed in the summary of our Congressional Report findings apply to the analysis conducted in this report: management controls, Service-level differences in the types of degrees included in the data, discrepancies between the Army data we report and similar data generated by the Army Continuing Education System (likely due to the fact that we keep only the highest grade per course), and the fact that our data do not capture Air Force graduations from the Community College of the Air Force. In addition, a number of observations had to be dropped from our data, for a variety of reasons. In Appendix B, we present information on the dropped observations, by Service. Although we attempted to make our results as comparable as possible across Services, by applying the same rules to each Service's data, each Service is affected differently—resulting in a different number of observations being dropped per Service. As we show in Appendix B, when comparing the summary statistics of those who were dropped and not dropped in each Service, we are left with no reason to expect that the dropped observations are considerably skewing our results.[71]

All of these caveats affect only the count variables. That is, they could affect our counts of the number of degrees or courses that Servicemembers took and, ultimately, reduce the comparability of these counts across Services. As a result, these caveats will not introduce bias in our estimations. That would be a concern if the affected variables were on the *right*-hand side of our estimations; however, since they are the *outcome* variables of interest, no bias is introduced. In addition, we account for these Service-level differences by running our estimations at both the Service and DOD levels, and we control for Service in our DOD estimations.

Merging TA data to DMDC data

To conduct our analysis, we also need information on Servicemembers' demographic and military characteristics, such as race, ethnicity, gender, marital status, number of dependents, paygrade, years of service, education level, and DOD occupation. We obtain this information from DMDC's Active Duty Master File for all regular (i.e., not reservist) Servicemembers who were in the Services from FY99 through FY15. Annual observations regarding military and demographic characteristics are extracted from the September ADMF, and each September

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[71] Appendix C shows different grades that can appear within the data.

file becomes the starting observation for the next FY. Thus, the information contained in the September 2009 ADMF provides the FY10 characteristics for those Servicemembers.[72]

Our ultimate DMDC file consists of Servicemembers who used TA at some point in their careers as well as those who did not. To these data, we merge the Services' TA data, thus allowing us to estimate TA outcomes as a function of military and demographic characteristics. This file contains information at the person-year level—that is, each observation is a year for a particular Servicemember—and there are multiple years (and hence observations) per Servicemember; this is what we call a panel dataset. When possible, we estimate our outcomes of interest in this form of the data, preserving variation not only across Servicemembers but also across time. This is especially important for characteristics that vary across time for each Servicemember (e.g., paygrade, marital status, number of dependents, and years of service). If Servicemembers' likelihood of using TA, being a super user, or being a consecutive TA user varies with any of these time-variant characteristics, it is important that we capture that. For this reason, the user, super-user, and consecutive-user estimations are conducted using this panel form of the data.

For our other outcomes of interest, however, panel estimations are not appropriate. These outcomes are whether a TA user earned any degree by FY15, whether a TA user earned a bachelor's degree or higher by FY15, and each TA user's overall course completion rate. Unlike the outcomes focused on TA use, which vary from year to year, these outcomes are *cumulative* in nature and are measured at the end of our sample, meaning that they take only one value for each Servicemember. As a result, for these estimations, it is appropriate to reduce our panel dataset to a cross-section dataset—one in which we have only one observation per person.

To construct this cross-section dataset, we took the last observed value for all characteristics that are time-variant, with one exception: education. We suspect that a Servicemember's proclivity to use TA and therefore the probability that he or she will pursue a degree (specifically, a bachelor's degree or higher) will be determined by his or her education level when first starting to use TA. Someone who has a college degree when first using TA, for example, might be more likely to take graduate-level classes that will further immediate career goals without ultimately earning another degree. It is for this reason that we use Servicemembers' education level at accession in our cross-section estimations, although we use the *last* observed value for all other variables. We use the last observed values for all other characteristics because we are estimating *cumulative* outcomes, as of FY15, for degree

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[72] The only exception involves cases where information (such as race or ethnicity) was missing from the September file but available on a previous quarter. In such cases, this information is extracted from the previous quarter.

and course completions. Thus, the most relevant characteristics are those from FY15 (or the last year in which we saw the Servicemember in the data).

Estimations

To recap, our analysis involves identifying the determinants of TA use and the likelihood of positive educational outcomes resulting from that TA use. In our panel estimations, where we have multiple years of observations for each Servicemember, we estimate the determinants of whether a given Servicemember in a given year uses TA, is a TA super user, or is a consecutive TA user. These estimations include all active-component Service-members.[73] In our cross-section regressions, where the dataset has been reduced to one observation per Servicemember, we estimate the determinants that he or she obtained any degree by FY15, or obtained a bachelor's degree or higher by FY15, and we estimate the determinants of each Servicemember's course completion rate. These estimations include only those Servicemembers who used TA (took at least one course) at some point in their military careers. In all cases, the characteristics we control for include the following:

- Gender

- Race/ethnicity

- Marital status and number of dependents[74]

- Paygrade

- Years of service

- DOD occupation

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[73] For our purposes, we define TA eligibility based on Service component. All those in the active component are eligible for TA. Reservists are sometimes eligible for TA, but only under certain conditions. By restricting our analysis to the active component, we are restricting our sample to Servicemembers who we know are eligible for TA.

[74] We also include an interaction of gender and marital status, as well as an interaction of gender and dependents, to allow for the fact that marital status and dependents might affect men's and women's TA outcomes differently.

- Cohort year[75]

- US state[76]

In the cross-section estimations, which are limited to TA users, we also control for:

- The sector (private for-profit, private not-for-profit, and public) in which the Service-member took the most courses

- The total number of credits the Servicemember took in the previous academic year

- The frequency with which the Servicemember was a super user (averaged over all years)

- The frequency with which the Servicemember was a consecutive user (averaged over all years)[77]

Each estimation is run separately for officers and enlisted because the effect of military and demographic characteristics on TA use or positive TA outcomes will likely differ for these populations. Note that we include warrant officers among our enlisted population estimations. The warrant officer population is too small to be completely separated; we include it with the enlisted vice the officer population since neither enlisted Servicemembers nor warrant officers are required to have a college degree upon entry.

We also run estimations separately by Service (to allow for different effects of Service-specific policies or cultures) and for all of DOD combined (so that we can observe whether our outcomes vary by Service, after controlling for the aforementioned characteristics). Finally, where appropriate, we run our estimations for all years in the sample and then separately for FY14/FY15 only. This is because significant DOD-level TA policy changes[78] occurred in FY14, and there was considerable interest in identifying whether these changes had any apparent effect on how Servicemembers use TA or whether their TA use leads to positive outcomes.

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[75] Cohort year is the year in which the Servicemember first took a TA course. It should capture variation in Service- or DOD-level TA policies over time as well as other factors that vary by year and might affect a Servicemember's ability to use TA or the likelihood of obtaining positive TA outcomes.

[76] This information allows us to capture variation in educational opportunities by state.

[77] Controlling for the previous year's credits, super user status, and consecutive user status allows us to determine if there is a "momentum" effect. That is, are Servicemembers who use TA more consistently more likely to earn a degree or to have a higher course completion rate?

[78] Specifically, the program became more standardized, and a DOD Instruction changed the voluntary education "agreement" to be with the Secretary of Defense; it had previously been with installation commanding officers.

We remind the reader that, due to the nature of the congressional requirement, all estimations were run for active-duty Servicemembers only. Our findings, therefore, cannot be generalized as representative of DOD as a whole since they do not include members of the reserve or guard components, whose experiences and opportunities may differ.

Determinants of TA Use

In this section, we answer three questions: (1) Which military and demographic characteristics determine if a Servicemember uses TA in a given year? (2) Among Service-members using TA in a given year, which characteristics determine if a Servicemember is a super user in that year? (3) Among Servicemembers using TA in a given year, which characteristics determine if that is a consecutive year of TA use (meaning at least one other year of TA use preceded it)?

For each question, 10 equations were estimated, providing separate results for officers and enlisted in the four Services and all of DOD. Because of the sheer volume of estimation output, we consolidate results in this section's tables. We present variables whose marginal effect on the outcome in question was frequently 3 percentage points or greater.[79] We include only those findings that have potential policy implications (e.g., excluding state and cohort effects). Appendix D contains complete results. The marginal effects presented in these tables represent the average correlation between each characteristic and each outcome, holding all other factors constant at their average values (examples follow).

Servicemembers who use TA

We analyze which Servicemember characteristics are associated with higher or lower probability of TA use. We first discuss the enlisted population and then officers.

Enlisted

In Table 74, we present a summary of the determinants of TA use for enlisted Service-members. The numbers presented in this table are the percentage-point change in TA use that is associated with each characteristic, relative to a comparison group. For example, Craftsworkers in the Army are 5 percentage points less likely to use TA than their Functional Support and Administration counterparts, all else equal.

A number of preeminent findings emerge from Table 2. First, all occupational groups are *less* likely to use TA than the Functional Support and Administration group. This is not entirely surprising; those with administrative jobs have significantly more "desk time" than their

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[79] A factor's marginal effect measures the change in the outcome variable that results from a one-unit change in the factor, when all other factors (or variables) are held constant.

counterparts, giving them greater access to resources needed to research their TA options and possibly allowing for some coursework during downtime. They likely deploy less frequently (providing a stable geographic location from which courses can more easily be taken), and they likely have a more predictable schedule with little evening work (allowing them to devote certain hours to class attendance). We find that those enlisted Service-members who accessed with no high school degree, a homeschool certificate, or other nontraditional high school credential (most commonly a General Educational Development (GED) test) are less likely than those with traditional high school diplomas to use TA. This suggests that a high school diploma may be the minimum education necessary for taking classes with TA to seem worthwhile to enlisted Servicemembers.

We also find that more junior enlisted Servicemembers are most likely to use TA. Specifically, those in the Army, Navy, Air Force, and Marine Corps with E4-E6 paygrades are, respectively, 22.4, 13.4, 21.5, and 17.2 percentage points less likely to use TA than their E1-E3 counterparts.[80] The marginal effects of being in the E7-E9 paygrades are smaller, but still sizable and highly significant. This may suggest (a) that senior enlisted have responsibilities that make returning to school infeasible, (b) that they met their TA goals as more junior enlisted and have no incentive to continue taking courses as senior enlisted, or (c) that they were discouraged by their experiences taking courses as junior enlisted and have no desire to keep using TA. We do, however, observe an overall positive relationship between being in the W1-W2 or W3-W5 paygrades and TA use.[81] TA use also is more common among black Servicemembers (relative to their white counterparts). Finally, in our DOD-level estimation, we find that enlisted Airmen are the most likely to use TA, followed by Sailors, Soldiers, and Marines.

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[80] These findings may seem to conflict with statistics previously published by the DOD Voluntary Education Office stating that the average enlisted TA user is an E5. There are two possible explanations for such differences. First, the DOD statistics are simple averages, whereas our estimation effects control for all the other military and demographic characteristics in our model (such as paygrade, years of service, DOD occupation, gender, and race/ethnicity). Second, our model also controls for a Servicemember's cohort year—the year in which he or she first took a course using TA. That is, our model compares Servicemembers who took their first TA course in the same year. This is a fundamentally different approach from looking at the annual paygrade distribution of all TA users in a given year and could lead to more nuanced findings regarding the average user. Further disentangling the precise reasons for the differences in findings was beyond the scope of this effort.

[81] The Navy is the one exception: warrant officers in the W1-W2 paygrades are 2.7 percentage points *less* likely to use TA than their E1-E3 counterparts.

Table 74. Probability of TA use: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

	Characteristics	Army	Navy	Air Force	Marine Corps	DOD
DOD occupation	Infantry, Gun Crews, and Seamanship Specialists	-3.7%***	-2.3%***	-0.6%***	-4.2%***	-3.3%***
	Electrical/Mechanical Equipment Repairers	-4.5%***	-2.8%***	-3.7%***	-2.0%***	-3.7%***
	Craftsworkers	-5.0%***	-3.1%***	-3.0%***	-5.1%***	-3.8%***
	Service and Supply Handlers	-3.0%***	-3.9%***	-4.8%***	-2.8%***	-3.9%***
	Functional Support/Admin (comparison group)					
Initial education	No high school degree	-8.1%***	-1.7%***	-0.2%	-2.1%	-5.9%***
	Other nontraditional high school credential	-5.8%***	-1.3%***	-10.4%***	-1.2%***	-4.8%***
	Homeschool	-3.0%***	-5.6%***		-4.2%***	-3.5%***
	Traditional high school diploma (comparison group)					
Paygrade	E4-E6	-22.4%***	-13.4%***	-21.5%***	-17.2%***	-19.8%***
	E7-E9	-10.5%***	-6.6%***	-13.5%***	-1.0%***	-9.8%***
	W1-W2	16.1%***	-2.7%***		8.1%***	13.1%***
	W3-W5	7.3%***	3.1%***		4.5%***	6.6%***
	E1-E3 (comparison group)					
Race	Black	3.9%***	2.6%***	3.8%***	3.7%***	3.6%***
	White (comparison group)					
Service	Navy					3.0%***
	Air Force					9.5%***
	Marine Corps					-1.9%***
	Army (comparison group)					
Sample size		2,750,157	1,409,530	2,130,980	734,454	7,025,121
Total R^2		0.068	0.061	0.067	0.073	0.069

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-percent level is denoted by ***.

The marginal effects of gender, marital status, and number of dependents on the probability that enlisted Servicemembers use TA are shown in Table 75. The different characteristics of Servicemembers result in 12 different demographic "groups" to consider. All effects are shown relative to the comparison group of unmarried men without children. Women without dependents are most likely to use TA, regardless of their marital status. Married men without dependents also are more likely to use TA than the comparison group, but they are still less likely than women without dependents. The group that is consistently less likely than the comparison group to use TA, for all Services, is unmarried men with dependents. This could be because it is the group most frequently deployed, as found for the Navy and Marine Corps by Quester and Shuford (2016) [101]. Of interest, Sailors with 3 or more dependents are less likely than the comparison group to use TA, regardless of gender or marital status. In other Services, these same groups are more likely to use TA. It might be worth exploring why this apparent disadvantage for Sailors with many dependents exists in the Navy but not in the other Services.

Table 75.   Probability of TA use: Marginal effects of gender, marital status, and dependents, enlisted only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	4.6%	-3.1%	4.9%	1.7%	2.9%
Female, married, 1-2 dependents	7.4%	-0.3%	6.7%	3.9%	5.1%
Female, married, 0 dependents	9.6%	4.4%	10.0%	7.0%	8.4%
Female, unmarried, 3+ dependents	3.7%	-2.4%	3.2%	1.9%	2.1%
Female, unmarried, 1-2 dependents	6.5%	0.4%	5.0%	4.1%	4.3%
Female, unmarried, 0 dependents	8.7%	5.1%	8.3%	7.2%	7.6%
Male, married, 3+ dependents	3.2%	-1.2%	4.1%	2.3%	2.3%
Male, married, 1-2 dependents	3.4%	0.1%	3.8%	0.2%	2.2%
Male, married, 0 dependents	4.4%	3.8%	6.3%	3.3%	4.6%
Male, unmarried, 3+ dependents	-1.2%	-5.0%	-2.2%	-1.0%	-2.3%
Male, unmarried, 1-2 dependents	-1.0%	-3.7%	-2.5%	-3.1%	-2.4%
Male, unmarried, 0 dependents	Comparison group				

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing marginal effects for female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 1-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix D.

Officers

Table 76 contains our results on the characteristics associated with TA use for officers. Officers in a number of occupations are statistically significantly more or less likely than those in Tactical Operations (the comparison group) to use TA. Intelligence Officers, Scientists and Professionals, and Health Care Officers are all *less* likely to use TA than their counterparts; Administrators also are less likely to use TA in most Services but are in fact *more* likely to use TA in the Navy. There are similarly inconsistent results across Services for Engineering and Maintenance Officers. These Service-level differences in the role of occupation in determining TA use are not entirely surprising because the cultures within these occupational groups likely vary greatly from Service to Service.

In terms of initial education, we find that officers who had high school diplomas or less (suggesting that they were initially enlisted accessions) are among the least likely to use TA, while those with associate or professional degrees are more likely than their bachelor-degree-holding counterparts to use TA.[82] Thus, for the officer population, as we found for the enlisted, there seems to be a baseline minimum education level for future TA use: those officers who begin service with high school diplomas or less are not as likely to use TA, while those who begin service with associate or professional degrees are more likely to use TA (with the exception of the Army).

As we found for the enlisted, more junior officers are the most likely to use TA. These effects are sizable: officers in the O4 and O5 paygrades are 5 to 12 percentage points less likely to use TA than their O1-O3 counterparts, and officers in the O6-O10 paygrades are 4 to 18 percentage points less likely. In both cases, the largest negative effects are found in the Navy. In terms of race, we find that black officers are more likely than their white counterparts to use TA, as was the case for enlisted—suggesting that DOD's TA program may be providing educational opportunities to a population with a general education disadvantage in the population at large. Finally, we find that TA use is most common among Navy officers, followed by those in the Marine Corps, Air Force, and Army, respectively.

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[82] This is true in all Services except the Army, where those with an associate or professional degree are actually less likely to use TA.

Table 76. Probability of TA use: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

	Characteristics	Army	Navy	Air Force	Marine Corps	DOD
DOD occupation	Intelligence Officers	-0.4%	-4.0%***	-6.1%***	-4.0%***	-2.6%***
	Engineering and Maintenance Officers	-1.7%***	10.8%***	-5.1%***	4.6%***	0.1%
	Scientists and Professionals	-6.3%***	0.4%	-10.9%***	-13.3%***	-5.9%***
	Health Care Officers	-4.7%***	-7.0%***	-6.6%***	--	-7.2%***
	Administrators	-1.8%***	6.8%***	-4.9%***	-3.9%***	-1.0%***
	Tactical Operations Officers (comparison group)					
Initial education	High school	-6.0%***	-12.0%***	-1.6%***	-11.8%***	-8.2%***
	Homeschool	-16.9%**	-13.4%*	--	-28.3%**	-19.3%***
	Adult education	-1.6%*	10.5%***	3.8%***	-12.7%***	8.0%***
	Associate degree	-3.1%***	3.0%***	8.6%***	4.9%***	1.6%***
	Professional degree	-1.9%***	8.6%***	11.0%***	14.2%***	6.3%***
	Other nontraditional high school credential	-1.6%	-11.0%***	13.3%	-9.3%*	-5.5%***
	Bachelor's degree (comparison group)					
Paygrade	O4-O5	-5.4%***	-12.6%***	-10.9%***	-8.6%***	-10.1%***
	O6-O10	-11.9%***	-18.2%***	-4.4%***	-15.6%***	-12.1%***
	O1-O3 (comparison group)					
Race	Black	5.5%***	4.7%***	1.0%***	4.7%***	4.7%***
	White (comparison group)					
Service	Navy					13.5%***
	Air Force					7.1%***
	Marine Corps					10.0%***
	Army (comparison group)					
Sample size		245,305	145,355	302,652	53,542	746,854
Total R^2		0.123	0.089	0.251	0.105	0.153

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels is denoted by ***, **, and *, respectively.

The marginal effects of gender, marital status, and dependents on the probability that officers use TA are shown in Table 77. The most striking finding is that women with dependents are less likely than their unmarried male-with-no-dependents counterparts to use TA *regardless* of marital status. Women with 3 or more dependents are less likely to use TA in all Services, whether they are married or not; the resulting percentage-point decrease in the likelihood of TA use for this demographic group is as large as 13.8 and 11.7 for married women in the Air Force and Marine Corps and 12.10 and 11.7 for unmarried women in these Services. Women with 1-2 dependents also are less likely to use TA, except in the Army. In that Service, married women with 1-2 dependents are 3.1 percentage points *more* likely to use TA than their counterparts, and unmarried women with 1-2 dependents are 1 percentage point more likely. It may be worth exploring why the presence of dependents is an apparent disadvantage for female officers in all other Services but an apparent *advantage* for female Army officers.

Table 77.   Probability of TA use: Marginal effects of gender, marital status, and dependents, officers only, FY99-FY15

Demographic group (number of dependents)	Army	Navy	Air Force	Marine Corps	DOD
Female, married (3+)	-0.4%	-5.1%	-13.8%	-11.7%	-9.3%
Female, married (1-2)	3.1%	-2.3%	-10.5%	-5.6%	-5.6%
Female, married (0)	8.1%	0.0%	-5.3%	0.0%	-0.6%
Female, unmarried (3+)	-2.5%	-5.1%	-12.1%	-11.7%	-9.3%
Female, unmarried (1-2)	1.0%	-2.3%	-8.8%	-5.6%	-5.6%
Female, unmarried (0)	6.0%	0.0%	-3.6%	0.0%	-0.6%
Male, married (3+)	2.8%	0.0%	-9.4%	-0.2%	-4.5%
Male, married 1-2	4.9%	1.1%	-2.3%	1.4%	-0.1%
Male, married 0	4.9%	0.0%	1.4%	1.4%	2.1%
Male, unmarried 3+	-2.1%	0.0%	-10.8%	-1.6%	-6.6%
Male, unmarried 1-2	0.0%	1.1%	-3.7%	0.0%	-2.2%
Male, unmarried (0) (comparison group)					

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 10-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix D.

Overall, for both officers and enlisted, we find that:

- There are significant relationships between occupation and the probability of TA use.
- More junior Servicemembers are *more* likely to use TA than their more senior counterparts.
- A minimum, baseline level of education is necessary for Servicemembers to use TA.
- TA use is more common among black Servicemembers than among their white counterparts.

TA super users

In this subsection, we present our findings on the Servicemember characteristics associated with TA super use, defined as taking at least the median level of credits or the median level of courses in a given year. The estimations that generated these results are all *conditional* on a Servicemember using TA in a given year. That is, they address the question, "*Given* that a Servicemember used TA—i.e., took at least one course in a particular FY—what are the determinants of whether that Servicemember was a super user in that FY?" We are primarily interested in super use because we expect that it may be correlated with positive TA outcomes. Those who are more active TA users (taking a greater number of credits or courses) may use this benefit with longer term educational objectives in mind. As we did in the previous subsection, we first present our enlisted results; officer results follow.

Enlisted

Table 78 presents our results on the most important determinants of TA super use for enlisted Servicemembers. As was the case for the TA use results, the numbers in this table represent the percentage-point change in the likelihood of TA super use (conditional on being a TA user) that is associated with each characteristic, relative to the comparison group. Although there were some significant occupational effects, they were relatively small and therefore are not repeated.[83] In terms of initial education, we find that homeschooled enlisted are less likely to be TA super users than their traditional-high-school-diploma-holding counterparts, but marginal effects vary for those with associate or professional degrees. Associate degrees are correlated with a higher likelihood of TA super use in the Army and Navy, perhaps indicating that the Servicemembers with these degrees are motivated to obtain the necessary additional education to acquire a bachelor's or more advanced degree.

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[83] Complete regression results can be found in Appendix D.

It is unclear, however, why we would only see evidence of this effect in two of the four Services. The results for professional degrees are similarly mixed.

Table 78. Probability of TA super use: Marginal effect of military and demographic characteristics, enlisted only, FY99-FY15

Characteristic		Army	Navy	Air Force	Marine Corps	DOD
Initial education	Homeschool	-2.6%***	-3.6%**		-0.4%	-4.1%***
	Associate degree	4.2%***	2.3%***	-0.2%***	-0.7%**	0.3%***
	Professional degree	3.1%***	-0.5%	-4.8%***	1.5%	2.9%***
	Traditional high school diploma (comparison group)					
Paygrade	E4-E6	0.6%***	5.2%***	0.3%***	1.3%***	1.3%***
	E7-E9	0.8%***	7.4%***	0.5%***	1.0%***	1.8%***
	E1-E3 (comparison group)					
Service	Navy					-8.4%***
	Air Force					12.7%***
	Marine Corps					7.2%***
	Army (comparison group)					
Sample size		1,274,716	658,206	1,179,775	338,446	3,451,143
Total R^2		0.067	0.023	0.012	0.067	0.081

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels is denoted by ***, **, and *, respectively.

Among the population of enlisted Servicemembers who use any TA, those in more senior paygrades are more likely to be super users. The only sizable effects, however, are in the Navy. In that Service, being in the E4-E6 paygrades is associated with a 5-percentage-point increase in the likelihood of being a TA super user; being in the E7-E9 paygrades is associated with a 7-percentage-point increase. These marginal effects are noticeably smaller in all other Services, at less than 2 percentage points. It is not entirely clear why these Service-level differences would exist. Higher paygrade Sailors' greater proclivity for TA super use may be related to Service culture or internal policies.[84] Nonetheless, this could be an important difference if super use is found to be a significant predictor of TA "success," as it sometimes is.[85] Finally, we find that TA super use is most common among enlisted TA users in the Air

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[84] Further analysis would be needed to either confirm or refute these potential reasons for the Navy's higher TA use among more senior Sailors.

[85] This will be shown in the subsequent section.

Force, followed by the Marine Corps, Army, and Navy (in descending order). The fact that Navy TA users are the least likely to be TA super users—and, as we show shortly, to be consecutive TA users—may reflect the unique nature of sea duty and the Navy's resulting deployment cycles. These differences also are likely influenced by Service culture and perhaps variation in the types of people who access into each of the four Services. If they differ, on average, in terms of their long-term goals and motivations, this could influence their proclivity for TA super use.

The marginal effects of gender, marital status, and dependents on the probability that enlisted Servicemembers are TA super users are shown in Table 79. Demographics play a much smaller role in determining which Servicemembers are likely to *super use* TA than in determining the Servicemembers most likely to *use* TA.

Table 79.   Probability of TA super use: Marginal effects of gender, marital status, and dependents, enlisted only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	0.2%	2.5%	0.5%	2.9%	0.7%
Female, married, 1-2 dependents	2.1%	2.9%	0.5%	2.6%	1.5%
Female, married, 0 dependents	2.7%	2.8%	0.6%	2.1%	1.7%
Female, unmarried, 3+ dependents	-0.6%	2.5%	0.4%	2.3%	0.5%
Female, unmarried, 1-2 dependents	1.3%	2.9%	0.4%	2.0%	1.3%
Female, unmarried, 0 dependents	1.9%	2.8%	0.5%	1.5%	1.5%
Male, married 3+ dependents	1.2%	2.1%	0.2%	1.4%	1.0%
Male, married, 1-2 dependents	1.6%	2.4%	0.2%	1.1%	1.3%
Male, married, 0 dependents	1.2%	1.1%	0.1%	0.6%	0.6%
Male, unmarried, 3+ dependents	-2.5%	-1.3%	-0.2%	0.0%	-1.4%
Male, unmarried, 1-2 dependents	-1.0%	-1.2%	-0.2%	0.0%	-0.9%
Male, unmarried, 0 dependents (comparison group)					

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 5-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix D.

As Table 79 reveals, all effects are relatively small: no demographic group is more than 2.9 percentage points more likely or more than 2.5 percentage points less likely to super use than

the comparison group (unmarried men without dependents). In general, women (regardless of marital or dependent status) are more likely to be super users, as are married men (regardless of their dependent status). The only demographic group that is less likely to be TA super users is unmarried men with dependents, although the effects are small (and there is no effect in the Marine Corps). Thus, overall, it does not appear that demographics plays a significant role in determining whether particular TA users are more or less likely to be super users.

Officers

Table 80 contains our results for the characteristics that are the strongest determinants of whether officers who use TA also are super users. Once again, occupation effects were small, and are therefore not presented (but can be found in the full results in Appendix D). The one occupational group with a relatively sizable correlation with TA super use was intelligence officers, but only in the Army and Navy (not shown here). In those two Services, Intelligence officers are significantly less likely to be TA super users than their Tactical Operations Officer counterparts (the comparison group). In terms of initial education, we find that those with less than traditional high school degrees, those with high school degrees, or those homeschooled are generally less likely to be TA super users, and these effects are predominantly found for the Army and Navy. This suggests that, in these Services, TA-using officers who entered the Service with less than bachelor's degrees (thus advancing from enlisted to officer at some point in their military careers) are less likely to be super users than those who entered with bachelor's degrees. This suggests that the officers most likely to be TA super users are those working toward more advanced degrees; perhaps those with concrete TA goals in mind are those more likely to use TA in a more concentrated manner (taking more courses and/or credits in a given year).

Paygrade effects are small. The largest effect is that O4-O5 Navy officers are 2.6 percentage points less likely to super use TA than their O1-O3 counterparts. Similarly, there was only one significant race/ethnicity effect: black Navy officers are 3.3 percentage points more likely to be TA super users than their white counterparts.

The only other sizable determinant of officer TA super use is Service affiliation. Among all officers who use TA in a given year, we find that those most likely to be TA super users are in the Air Force, followed by the Marine Corps, Army, and Navy, in descending order. Notably, this is the same order of super use likelihood that we found for enlisted. This may suggest that Service culture and policy (which would affect both enlisted and officers) influence the *ability* of Servicemembers to be TA super users. That is, this may be more a story of how many courses or credits Servicemembers are *able* to take in a given FY as opposed to how many

they *desire* to take in a given FY. Further investigation into differences in Service cultures and policies (and their corresponding effect on how Servicemembers use the TA program) would be necessary to completely tease out these effects.

Table 80.   Probability of TA super use: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristic		Army	Navy	Air Force	Marine Corps	DOD
Initial education	No high school degree	-13.7%***	-13.6%**	-0.1%	3.5%	-3.3%***
	High school	-8.7%***	-4.9%***	0.6%***	1.5%**	-3.8%***
	Homeschool	-83.2%**	-14.9%			-26.3%**
	Associate degree	-7.6%***	-0.2%	1.0%**	1.8%	-2.3%***
	Professional degree	-0.8%	0.9%	-6.8%***	-0.6%	-1.6%***
	Bachelor's degree (comparison group)					
Service	Navy					-4.0%***
	Air Force					15.1%***
	Marine Corps					10.2%***
	Army (comparison group)					
Sample size		48,195	33,786	91,965	13,457	187,403
Total R^2		0.051	0.021	0.018	0.038	0.099

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels is denoted by ***, **, and *, respectively.

Table 81 shows the marginal effects of gender, marital status, and dependents on the probability that officers are TA super users. As was the case with enlisted, demographics play a much smaller role in determining which Servicemembers are likely to *super use* TA than in determining the Servicemembers most likely to *use* TA. The only demographic groups that have a sizable correlation with the probability of TA super use are the female groups in the Marine Corps; female Marines, regardless of marital or dependents status, are 5.4 percentage points less likely to be TA super users than the comparison group (unmarried men without dependents). Although the effects are small, we find that Servicemembers with 3 or more dependents are less likely to be TA super users in the Army and Navy, regardless of gender or marital status. This suggests that officers with many dependents may find it difficult to juggle the responsibilities of parenthood, their jobs, and also being students. In the Air Force, these effects are only present for women; in the Marine Corps, they are only present for married women. Thus, once again, Service-level differences are important and it is unclear

whether the main drivers of these differences are culture, policy, the type of people drawn to each Service, or something else entirely.

Table 81. Probability of TA super use: Marginal effects of gender, marital status, and dependents, officers only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	-1.10%	-1.60%	-0.10%	-5.40%	-0.40%
Female, married, 1-2 dependents	1.10%	0.00%	-0.10%	-5.40%	0.20%
Female, married, 0 dependents	1.10%	0.00%	-0.10%	-5.40%	0.70%
Female, unmarried, 3+ dependents	-2.20%	-1.60%	-0.30%	0.00%	-1.10%
Female, unmarried, 1-2 dependents	0.00%	0.00%	-0.30%	0.00%	-0.50%
Female, unmarried, 0 dependents	0.00%	0.00%	-0.30%	0.00%	0.00%
Male, married 3+ dependents	-1.10%	-1.60%	0.20%	0.00%	-0.40%
Male, married, 1-2 dependents	1.10%	0.00%	0.20%	0.00%	0.20%
Male, married, 0 dependents	1.10%	0.00%	0.20%	0.00%	0.70%
Male, unmarried, 3+ dependents	-2.20%	-1.60%	0.00%	0.00%	-1.10%
Male, unmarried, 1-2 dependents	0.00%	0.00%	0.00%	0.00%	-0.50%
Male, unmarried, 0 dependents (comparison group)					

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 10-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix D.

Overall, for both officers and enlisted, we find that:

- Demographics play a much smaller role in determining who super uses TA than in determining who uses TA.

- There are relatively small effects of occupation on the probability of TA super use.

- The role of initial education in determining the likelihood of TA super use varies by Service.

- TA super use is most likely for officers in the Air Force, followed by the Marine Corps, Army, and Navy.

TA consecutive users

In this subsection, we present our findings on the Servicemember characteristics associated with consecutive TA use, which is defined as taking at least one course in consecutive years. The estimations that generated these results are all *conditional* on a Servicemember using TA in a given year. That is, they address the question, *"Given* that a Servicemember used TA (i.e., took at least one course in a particular FY), what are the determinants of whether that Servicemember also used TA in the previous FY, thus making this a year of *consecutive* TA use?" Once again, we are primarily interested in this metric because we expect it may be correlated with positive TA outcomes. That is, those who are more consistent TA users may be more likely to experience positive TA outcomes, such as attaining any degrees, attaining bachelor's degrees or higher, or attaining high course completion rates. We first discuss our findings for enlisted Servicemembers and then turn to a discussion of our findings for officers.

Enlisted

Table 82 presents results on Servicemembers' characteristics associated with consecutive TA use. There are a number of sizable and significant occupation effects and all are negative, indicating that the enlisted Servicemembers in these occupations are statistically significantly *less* likely to consecutively use TA than those in Functional Support/Admin (the comparison group). The largest negative effects, across the Services, were found for the Infantry, Gun Crews, and Seamanship Specialists occupation, followed by Electrical/Mechanical Equipment Repairers and Craftsworkers. Given that an enlisted Servicemember is a TA user in a given FY, he or she is notably less likely to be a *consecutive* TA user if in one of these three occupations.

In terms of initial education, the two results consistent across all Services are that enlisted Servicemembers who assess with bachelor's degrees or professional degrees are less likely to be consecutive TA users than their traditional-high-school-diploma-holding counterparts. With the exception of the Air Force, those with a nontraditional high school credential also are less likely to consecutively use TA. These findings suggest that the comparison group—those with traditional high school diplomas—are the enlisted Servicemembers most likely to be consecutive TA users, and any initial education levels greater or less than this makes consistent TA use (perhaps toward the attainment of a degree) less likely.

As we found in our estimations of TA super use, we also find that, among all enlisted Servicemembers using TA, those in more senior paygrades are more likely to use TA in consecutive years. Both E4-E6 and E7-E9 Servicemembers are more likely to consecutively use TA, with substantial effects ranging from 15 percentage points for E4-E6s and E7-E9s in

the Marine Corps to nearly 35 percentage points for E7-E9s in the Air Force. Effects for Warrant Officers vary by Service: there is a positive association between being in the W1-W2 paygrades and consecutive TA use in the Army but a negative association in the Navy. To the extent that consecutive TA use is important for positive TA outcomes (and we will see in the subsequent section that it sometimes is), these findings could suggest that the more senior enlisted, on average, will be more likely to experience such outcomes.

Finally, Service affiliation is a significant determinant of consecutive TA use, as it has been for our other measures of participation in the TA program. The only sizable effect, however, is for Airmen, who are 6.5 percentage points more likely than their enlisted counterparts in the Army to consecutively use TA. This could be because the nature of assignments and occupations in the Air Force is more compatible with regular, consistent TA use than in the Army, but further research would be necessary to fully disentangle these differences.

Table 83 shows the marginal effects of gender, marital status, and dependents on the probability that enlisted Servicemembers are consecutive TA users. The most notable pattern in Table 11 is that women are significantly (and sizably) more likely to consecutively use TA, *regardless* of their marital or dependent statuses. In addition, the population of unmarried men without dependents is the least likely to consecutively use TA. Once again, it will be important to tie these findings to ultimate outcomes, evaluating whether the notably higher likelihood of women to consecutively use TA translates into a higher likelihood of completing courses or earning degrees.

Table 82. Probability of consecutive TA use (in years): Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

	Characteristics	Army	Navy	Air Force	Marine Corps	DOD
DOD occupation	Infantry, Gun Crews, and Seamanship Specialists	-7.9%***	-4.6%***	-7.7%***	-15.1%***	-8.0%***
	Service and Supply Handlers	-3.7%***	-1.4%***	-1.1%***	-6.9%***	-2.8%***
	Electronic Equipment Repairers	-1.8%***	-4.0%***	-1.7%***	-1.7%***	-2.4%***
	Electrical/Mechanical Equipment Repairers	-6.0%***	-5.1%***	-4.3%***	-7.3%***	-5.4%***
	Craftsworkers	-4.8%***	-4.8%***	-2.9%***	-7.2%***	-4.3%***
	Functional Support/Admin (comparison group)					
Initial education	No high school degree	8.4%***	-5.3%***	6.2%**	-5.3%	3.1%***
	Bachelor's degree	-7.3%***	-1.7%***	-10.1%***	-6.7%***	-7.5%***
	Professional degree	-4.9%***	-3.0%*	-27.0%***	-7.1%*	-5.4%***
	Other nontraditional high school credential	-3.1%***	-3.8%***	4.5%**	-4.1%***	-3.9%***
	Traditional high school diploma (comparison group)					
Paygrade	E4-E6	24.3%***	19.9%***	26.2%***	15.9%***	23.2%***
	E7-E9	27.9%***	20.9%***	34.9%***	15.2%***	28.0%***
	W1-W2	11.9%***	-12.4%***		-1.5%	4.0%***
	E1-E3 (comparison group)					
Service	Navy					-1.4%***
	Air Force					6.5%***
	Marine Corps					0.8%***
	Army (comparison group)					
Sample size		1,274,716	658,206	1,179,775	338,446	3,451,143
Total R^2		0.115	0.080	0.102	0.137	0.105

Source: CNA analysis of DMDC and TA data.

[a.] Statistical significance at the 1-, 5-, and 10-percent levels is denoted by ***, **, and *, respectively.

Table 83. Probability of consecutive TA use (in years): Marginal effects of gender, marital status, and dependents, enlisted only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	11.5%	10.2%	6.6%	8.1%	9.2%
Female, married, 1-2 dependents	11.9%	9.1%	7.6%	11.0%	10.2%
Female, married, 0 dependents	10.2%	8.3%	6.3%	8.7%	8.5%
Female, unmarried, 3+ dependents	10.8%	10.2%	8.2%	7.4%	9.4%
Female, unmarried, 1-2 dependents	11.2%	9.1%	9.2%	10.3%	10.4%
Female, unmarried, 0 dependents	9.5%	8.3%	7.9%	8.0%	8.7%
Male, married 3+ dependents	4.3%	3.3%	1.6%	2.3%	3.2%
Male, married, 1-2 dependents	3.4%	3.2%	2.3%	3.0%	3.1%
Male, married, 0 dependents	3.0%	0.0%	-0.3%	0.7%	1.4%
Male, unmarried, 3+ dependents	1.3%	3.3%	1.9%	1.6%	1.8%
Male, unmarried, 1-2 dependents	0.4%	3.2%	2.6%	2.3%	1.7%
Male, unmarried, 0 dependents (comparison group)					

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 5-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix D.

Officers

Table 84 presents our results on the determinants of Servicemembers' consecutive TA use. The relationship between occupation and the likelihood of consecutive TA use varies by Service: Intelligence Officers are less likely to be consecutive TA users in the Air Force but more likely in the Navy; Health Care Officers are less likely in the Air Force but more likely in the Army. Similarly, Scientists and Professionals are less likely to be consecutive TA users in the Air Force but more likely in both the Army and the Navy. These differences may suggest that, for a given occupation, Servicemembers' responsibilities vary by Service, making consecutive TA use more feasible in some Services than others. It also could suggest that the type of Servicemember drawn to the occupation varies by Service; in this case, the long-term educational goals of Servicemembers may vary, aligning more closely with consistent (and therefore consecutive) TA use in some Services than others.

Table 84. Probability of consecutive TA use (in years): Marginal effects of military and demographic characteristics, officers only, FY99-FY15

	Characteristics	Army	Navy	Air Force	Marine Corps	DOD
DOD occupation	Intelligence Officers	-0.3%	3.1%**	-6.0%***	1.5%	-2.6%***
	Scientists and Professionals	4.1%***	8.1%***	-2.0%**	2.4%	2.3%***
	Health Care Officers	3.2%***	0.6%	-8.2%***		-2.5%***
	Administrators	1.9%***	3.5%***	-2.1%***	6.0%***	0.6%
	Tactical Operations Officers (comparison group)					
Initial education	High school	6.0%***	6.7%***	1.7%**	4.5%***	3.7%***
	Professional degree	-15.9%***	-1.8%*	-28.7%***	-10.0%***	-12.1%***
	Other nontraditional high school credential	14.6%***	18.9%***	29.9%**	13.0%	14.7%***
	Bachelor's degree (comparison group)					
Paygrade	O4-O5	2.9%***	-1.2%	-12.5%***	1.2%	-4.5%***
Services	Navy					2.2%***
	Air Force					15.4%***
	Marine Corps					3.1%***
	Army (comparison group)					
Sample size		48,195	33,786	91,965	13,457	187,403
Total R^2		0.097	0.061	0.088	0.064	0.076

Source: CNA analysis of DMDC and TA data.

[a.] Statistical significance at the 1-, 5-, and 10-percent levels is denoted by ***, **, and *, respectively.

Our findings on incoming education levels suggest that consecutive TA use is most common for officers who advanced via the enlisted-to-officer (E-O) commissioning route. Specifically, officers whose incoming education levels were no high school degree (not shown), traditional high school degree, or "other" nontraditional high school credential are significantly *more* likely than their bachelor-degree-holding counterparts to use TA consecutively. Those Servicemembers whose incoming education levels were high school degree or less *must* have accessed as enlisted Servicemembers, and likely then used TA benefits to meet their longer term educational goals *while* in Service. That is, they used their TA to acquire a bachelor's degree or more, making them eligible for the E-O commissioning process. The other consistent education finding is that those officers who access with a professional degree are *less* likely to use TA in consecutive years. This population, on average, may not be as likely to be working toward additional degrees.

The other military characteristics associated with officers' likelihood of consecutively using TA are paygrade and Service affiliation. Those in the O4-O5 paygrades are more likely to consecutively use TA than their O1-O3 counterparts in the Army, and notably less likely to consecutively use TA in the Air Force (12.5 percentage points less likely). In terms of Service affiliation, we find that Air Force officers are the most likely to consecutively use TA, followed by those in the Marine Corps, Navy, and Army (in descending order). These differences could relate to differences in internal Service policies or to differences in the average *incoming* education levels for each Service's officers (resulting in differences in average educational goals).

Table 85 shows the marginal effects of gender, marital status, and dependents on the probability that officers are consecutive TA users. With the exception of two demographic groups in the Marine Corps (female, married, 3+ dependents and female, married, 0 dependents), all of the nonzero marginal effects in this table are positive, suggesting that, among all TA users, unmarried men without dependents are the least likely to be consecutive TA users. The largest effects are found for married women with dependents, followed by unmarried women with dependents and married men with dependents. This might suggest that the pursuit of further education with concrete goals in mind (such as degree attainment) is more likely for these populations; their responsibilities to others may serve as an impetus for improving their economic prospects via additional education. Overall, there does appear to be a role for gender, marital status, and dependent status in determining whether a particular TA-using officer will be a consecutive TA user.

Table 85. Probability of consecutive TA use (in years): Marginal effects of gender, marital status, and dependents, officers only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	7.5%	5.9%	8.2%	-5.9%	6.7%
Female, married, 1-2 dependents	9.9%	3.1%	9.2%	6.9%	6.9%
Female, married, 0 dependents	4.0%	3.1%	6.5%	-5.9%	4.8%
Female, unmarried, 3+ dependents	7.5%	2.8%	5.0%	0.0%	4.6%
Female, unmarried, 1-2 dependents	9.9%	0.0%	6.0%	12.8%	4.8%
Female, unmarried, 0 dependents	4.0%	0.0%	3.3%	0.0%	2.7%
Male, married 3+ dependents	7.0%	5.9%	4.9%	5.0%	5.4%
Male, married, 1-2 dependents	6.9%	3.1%	5.9%	5.0%	5.6%
Male, married, 0 dependents	3.5%	3.1%	3.2%	5.0%	3.5%
Male, unmarried, 3+ dependents	0.0%	0.0%	0.0%	0.0%	0.0%
Male, unmarried, 1-2 dependents	2.5%	0.0%	0.0%	12.8%	0.0%
Male, unmarried, 0 dependents (comparison group)					

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 10-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix D.

Overall, for both officers and enlisted, we find the following:

- The role of occupation in determining the likelihood of consecutive TA use varies by Service.

- Those who enter the Service with high school degrees are among the most likely to consecutively use TA, regardless of whether they remain enlisted or ultimately become commissioned officers.

- Midgrade Servicemembers are much more likely than their junior counterparts to consecutively use TA.

- Consecutive TA use is most common in the Air Force.

- Unmarried men without dependents are among the least likely to consecutively use TA; women with dependents are among the most likely.

FY14/FY15 estimations

In addition to the estimations presented in this section, we also ran estimations that were restricted to FY14 and FY15 but were otherwise the same. The sample was segmented in this way because a number of fundamental changes were made to the TA program in FY14. Namely, the program became more standardized, and a DOD Instruction changed the voluntary education "agreement" to be with the Secretary of Defense, rather than with installation commanding officers, as had previously been the case. These segmented estimations were run to analyze if the TA user results differed after the policy changes were implemented. To conserve space, we summarize only the main differences between the segmented sample and the full sample here.[86] Overall, we find that:

- In FY14 and FY15, senior enlisted (E7-E9) were *more* likely to use TA than their E1-E3 counterparts, while they were *less* likely in the whole-sample estimations. This may suggest that the FY14 policy changes led to a greater appreciation of using TA to acquire additional education among the senior enlisted.

- In FY14 and FY15, TA use was more common among officers whose initial education levels were either high school or other nontraditional high school credential. This suggests that there has been an increase in TA participation among E-O Servicemembers.

- In FY14 and FY15, Navy enlisted were *less* likely to use TA than their Army counterparts, but Navy TA users were *more* likely to be TA super users and consecutive users than were Army TA users. That is, in recent years, Navy enlisted use TA less frequently but, when they do use it, they are more likely to do so with greater frequency—perhaps because they are more likely to be degree seekers.

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[86] Complete regression results can be found in Appendix E.

Likelihood of Positive Outcomes for TA Users

The relationship between Servicemember characteristics and positive outcomes for TA users is a main focus of this report. Understanding the factors that predict successful TA outcomes will help policy-makers better understand the populations that are most benefiting from TA. In addition, this information can help policy-makers identify groups that might need more counseling to achieve their educational goals and get the most out of their TA benefits. Keep in mind, however, that the positive/negative outcomes that we observe could be related to the value of receiving course credits and degrees for certain groups compared to others. In other words, if one group would derive a greater benefit from completing a bachelor's degree and, therefore, might be more incentivized to do so, we might see higher bachelor's degree graduation rates for that particular group compared to others.

In this section, we present findings on the determinants of receiving any degree, receiving a bachelor's degree or higher, and the course completion rate. Specifically, we answer three questions. Among Servicemembers who use TA:

- What are the military and demographic characteristics that determine whether they complete degrees while using TA?

- What are the military and demographic characteristics that determine whether they complete bachelor's degrees or higher while using TA?

- What are the military and demographic characteristics that determine their course completion rates while using TA?

As mentioned previously, we estimate these relationships for enlisted and officer Servicemembers separately. We also estimate these relationships for each Service individually and then for DOD overall. Because of the volume of results, we present a consolidated version of our estimation output in the tables in this section. Specifically, in each table, we present those factors whose marginal effect on the outcome in question was frequently 3 percentage points or greater. We include only those findings that have potential policy implications.[87] The marginal effects presented in these tables represent the average

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[87] See Appendix F for complete results, including the estimated effects for all characteristics.

relationship between each factor and the particular outcome, holding all other variables constant at their average values (examples are provided in the subsequent discussion).

Determinants of receiving any degree

In this subsection, we summarize our results on the relationship between Servicemember characteristics and the likelihood of receiving any degree while using TA. We first discuss findings for the enlisted population; officer results follow.

Enlisted

Table 86 summarizes the main factors related to receiving any degree for enlisted TA users. The numbers presented in this table are the percentage-point changes in the likelihood of receiving a degree while using TA that are associated with each characteristic, relative to the comparison group. Several interesting findings emerge from this table. First, consecutive TA users are *more* likely to receive degrees in the Navy, Air Force, and DOD overall but *less* likely to receive degrees in the Army and Marine Corps models. Meanwhile, the opposite is true for super users; super users are *less* likely to receive degrees in the Navy, Air Force, and DOD overall, while they are *more* likely to receive degrees in the Army and Marine Corps. However, the magnitude of these effects is stronger in the Navy and Air Force compared to the Army and Marine Corps. Therefore, it could be that being a super user or consecutive user does not have a strong effect on the likelihood that a Soldier or Marine receives a degree, but it is an important characteristic for the other Services. The intuition behind this result for the Navy and the Air Force is not completely clear, but one hypothesis could be that consecutive use could signal persistence toward a degree, while super use could signal overexertion and burnout before one receives a degree.

We also find that the educational sector of the school in which TA courses are taken is an important determinant of degree completion. For DOD overall, students taking courses exclusively at private for-profit (PFP) institutions are 0.9 percentage point more likely to receive degrees than those who take most of their courses in the public (PUB) sector. This relationship is even stronger for Army and Air Force students (2 and 2.5 percentage points, respectively). These findings differ from what is generally found in the civilian literature— that students at PFP institutions are *less* likely to receive degrees than those in other educational sectors [40]. This finding could be because PFP institutions provide Servicemembers with greater flexibility than traditional institutions [69, 96-98]. However, PFP students in the Navy and Marine Corps are less likely to receive degrees than their public institution peers (-1.4 percentage point and -0.2 percentage point, respectively); this finding

is more consistent with the civilian literature [40]. These outcome differences between the Services could exist if, for example, the flexibility of the degree programs is more important in the Army and Air Force than in the Navy and Marine Corps, but more research would be necessary to confirm this hypothesis.

Table 86. Probability of receiving any degree by FY15: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristics		Army	Navy	Air Force	Marine Corps	DOD
TA user type	Consecutive user	-1.1%***	8.1%***	8.9%***	-1.3%***	4.0%***
	Super user	0.3%*	-11.1%***	-11.9%***	0.5%***	-4.9%***
Educa-tional sector	Most courses private for-profit (PFP)	2.0%***	-1.4%***	2.5%***	-0.2%**	0.9%***
	Most courses private not-for-profit (PNFP)	-0.2%*	3.2%***	5.3%***	0.0%	2.5%***
	Most courses PUB (comparison group)					
Initial edu-cation	Associate degree	-1.6%***	1.3%***	8.1%***	0.7%**	4.9%***
	Bachelor's degree	2.3%***	-0.9%*	8.3%***	0.7%**	3.8%***
	Professional degree	-4.2%***	-4.0%**	-4.0%***	-0.4%	-5.4%***
	Traditional high school diploma (comparison group)					
Pay-grade	E4-E6	-1.3%***	0.3%	-2.4%***	-0.1%	-1.6%***
	E7-E9	4.0%***	7.8%***	6.8%***	0.7%***	5.1%***
	W1-W2	0.4%	14.3%***		-1.6%***	3.5%***
	W3-W5	-1.3%***	5.8%***		-1.1%*	0.2%
	E1-E3 (comparison group)					
Race	Black	-0.5%***	-0.7%***	-0.6%***	0.0%	-0.7%***
	Hispanic	-0.3%***	0.1%	-0.5%***	-0.2%**	-0.3%***
	White (comparison group)					
Service	Navy					7.8%***
	Air Force					-1.6%***
	Marine Corps					-4.5%***
	Army (comparison group)					
Sample size		438,891	222,904	331,454	137,771	1,131,020
Adjusted R^2		0.2526	0.2653	0.2805	0.0572	0.2428

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively.

We explore whether the educational attainment of Servicemembers at accession is related to degree completion. In general, enlisted Servicemembers who have associate or bachelor's degrees when they begin using TA are more likely to graduate than their counterparts with high school degrees. On one hand, a prior postsecondary degree could indicate the Servicemember's ability to persist until degree completion. On the other hand, enlisted Servicemembers who have professional degrees at accession are less likely to graduate while using TA. Because these Servicemembers already have achieved high educational attainment before using TA, the marginal benefit of an additional degree might not provide sufficient incentive.

Furthermore, we find that senior enlisted Servicemembers are more likely to attain degrees than their more junior enlisted peers. Specifically, those in the E7-E9 and W1-W2 paygrades have the highest likelihood of degree completion. This differs from the results for TA use. Younger enlisted Servicemembers were more likely to use TA, but they are in fact *less* likely to receive degrees. Of course, this may be because many Servicemembers leave service before accruing sufficient credits to earn a degree, especially since so many transition after serving only one term and are limited in their ability to use TA in their first few years of service. We see a similar pattern in the results for racial/ethnic characteristics. Black and Hispanic Servicemembers are more likely to use TA than their white counterparts, but, as we show in Table 86, they are *less* likely to receive degrees.

Finally, we examine the marginal effects of each Service compared with the Army. Navy enlisted Sailors are more likely to receive degrees than Army Soldiers, but enlisted Airmen and Marines are less likely than enlisted Soldiers to receive degrees. These Service-level differences could be related to a number of things, including Service culture, differences in Servicemembers' educational objectives across Services, or Servicemembers' ability to take sufficient courses and credits for graduation in each Service. Further research would be required to determine *why* degree attainment is more likely among enlisted Servicemembers in the Navy but less likely in the Air Force and Marine Corps.

We also analyze the relationship between gender, marital status, and number of dependents and the likelihood that a Servicemember receives a degree (see Table 87). DOD-wide, unmarried women without dependents are the least likely to receive degrees, followed by unmarried women with 1-2 dependents. Different patterns emerge in the individual Services. For example, women with 3 or more dependents (both married and unmarried) in the Army are almost 3 percentage points less likely to receive degrees compared with their male unmarried peers without dependents. Meanwhile, in the Navy, women with 3 or more dependents outperform the comparison group by almost 5 percentage points. This is the largest difference we observe for this set of demographic characteristics. Although women with several dependents are more likely to use TA than their male, unmarried peers without

dependents, these results imply that they are less likely to receive a degree in the Army, but more likely in the Navy. This might suggest that juggling motherhood, service affiliation, and school commitments is especially demanding for women in the Army compared with women in the Navy. Meanwhile, the effects for men are closer to zero, which implies that dependents, regardless of the Servicemember's marital status, do not seem to jeopardize a man's likelihood of getting a degree.

Table 87. Probability of receiving any degree by FY15: Marginal effects of gender, marital status and dependents, enlisted only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	-2.50%	4.80%	-1.00%	-0.30%	0.10%
Female, married, 1-2 dependents	-2.40%	1.00%	-1.20%	-0.40%	-1.30%
Female, married, 0 dependents	-1.40%	-0.40%	-0.50%	-0.10%	-1.50%
Female, unmarried, 3+ dependents	-2.70%	4.60%	-1.70%	-0.70%	-0.20%
Female, unmarried, 1-2 dependents	-2.60%	0.80%	-1.90%	-0.80%	-1.60%
Female, unmarried, 0 dependents	-1.60%	-0.60%	-1.20%	-0.50%	-1.80%
Male, married, 3+ dependents	-0.90%	2.80%	0.20%	0.20%	0.10%
Male, married, 1-2 dependents	-0.80%	1.60%	0.00%	0.10%	0.10%
Male, married, 0 dependents	0.20%	1.60%	0.70%	0.40%	0.60%
Male, unmarried, 3+ dependents	-1.10%	1.20%	-0.50%	-0.20%	-0.50%
Male, unmarried, 1-2 dependents	-1.00%	0.00%	-0.70%	-0.30%	-0.50%
Male, unmarried, 0 dependents	Comparison group				

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 1-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix F.

Officers

Table 88 reports the marginal effects of military and demographic characteristics on the likelihood that officers receive degrees. Several interesting results emerge for this population. First, DOD-wide, officers who are consecutive or super users are more likely to receive degrees than those who are not. These results, however, are not consistent across the Services. The marginal effects for consecutive and super users are large and positive when significant with one exception—super users in the Navy. That group has a large, negative, and

statistically significant effect, suggesting that Navy super users are notably less likely to receive degrees than their non-super-using counterparts.

Furthermore, officers who take most of their courses at PFP institutions are more likely to receive degrees than those who take most of their courses at public institutions. Officers exclusively attending PNFP institutions are even *more* likely to receive degrees than PFP students when compared with public institution students. These results could be related to a number of factors, including greater flexibility of PFPs, differences in quality of coursework/instruction, or the selection of Servicemembers who have the ultimate goal of degree attainment into PNFP, PFP, and PUB institutions.

Table 88. Probability of receiving any degree by FY15: Marginal effects of military and demographic characteristics, officer only, FY99-FY15

	Characteristics	Army	Navy	Air Force	Marine Corps	DOD
TA user type	Consecutive user	4.4%***	4.2%***	-0.6%	-0.4%	3.1%***
	Super user	17.0%***	-11.3%***	1.8%**	0.6%	1.3%*
Educational sector	Most courses PFP	1.7%**	0.0%	2.0%***	-0.3%	1.7%***
	Most courses PNFP	11.6%***	4.9%***	3.0%***	0.2%	6.8%***
	Most courses PUB (comparison group)					
DOD officer occupation	Engineering and Maintenance	4.4%***	2.4%***	-0.9%***	0.1%	0.0%***
	Health Care	-5.5%***	-6.2%***	0.3%		0.0%***
	Administrators	6.1%***	1.6%	-0.9%**	-0.8%	0.0%***
	Tactical Operations (comparison group)					
Initial education	High school	1.6%**	10.1%***	8.9%***	0.9%	6.2%***
	Adult education	-3.6%**	0.9%	6.2%***	5.3%**	0.0%
	Associate degree	2.7%*	6.0%***	7.6%***	1.3%	4.5%***
	Professional degree	-7.5%***	-3.2%***	0.4%	-2.7%*	-4.5%***
	Other credential	5.7%*	13.0%***	29.2%***	0.3%	8.5%***
	Bachelor's degree (comparison group)					
Pay-grade	O4-O5	8.4%***	-4.5%***	-3.2%***	1.1%	0.5%*
	O6-O10	0.8%	-6.9%***	-4.2%***	-0.7%	-6.2%***
	O1-O3 (comparison group)					
Race	Black	1.3%**	0.5%	-0.7%*	0.4%	0.7%**
	Hispanic	1.1%	2.3%**	0.0%	-1.2%*	1.0%**
	White (comparison group)					

Service	Navy					-2.2%***
	Air Force					-21.5%***
	Marine Corps					-22.9%***
	Army (comparison group)					
Sample size		32,318	20,157	46,975	7,541	106,991
Adjusted R^2		0.2211	0.1944	0.1210	0.0326	0.1918

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively.

Officer occupation is another important factor in degree attainment. We find that occupation results differ for each Service, but Engineering and Maintenance Officers, Health Care Officers, and Administrators have the strongest relationships with the probability of degree attainment when compared with Tactical Operations Officers.

The education level with which a Servicemember begins his or her military career is another important predictor of whether an officer receives a degree while using TA. An officer with a high school diploma, an associate degree, or a nontraditional high school credential at accession is more likely to receive a degree while using TA than an officer with a bachelor's degree at accession. Because a Servicemember must have a bachelor's degree to be commissioned as an officer, those who begin their military careers with less education but are ultimately officers are enlisted-to-officer transitions. It is not surprising that E-O officers are more likely to get degrees than other officers since acquiring a bachelor's degree is a prerequisite for being an E-O officer. This also implies that TA is successful in helping enlisted Servicemembers to receive officer commissions.

Table 89 shows the number Servicemembers who were enlisted when they started using TA but have an officer paygrade the last time we observe them. These represent the E-to-O transitions that occur while Servicemembers are using TA.

Table 89.   Distribution of last observed paygrade for enlisted accessions who transition to officers while using TA, FY99-FY15

Final paygrade	Number	Percentage
O-1	8,954	0.18
O-2	13,471	0.27
O-3	31,795	0.64
O-4	12,668	0.26
O-5	1,339	0.03
O-6	2	0.00
Total	68,229	1.38

Source: CNA analysis of DMDC and TA data.

We also find, as shown in Table 88, that midgrade officers (O4-O5) are slightly more likely to receive degrees than more junior officers, but senior officers are much less likely to receive degrees than junior officers. This result could imply that midgrade officers stand to benefit the most from additional postsecondary degrees, and/or that midgrade officers have an easier time completing the necessary coursework required to obtain degrees. Conversely, the lower degree attainment among junior officers could simply be because many junior officers do not stay to make it to the midgrade or senior officer ranks—that is, they leave before being able to finish a degree on TA. More research would be needed to confirm either of these hypotheses.

In addition, the race/ethnicity results for the "any degree" outcome differ for officers and enlisted. Black and Hispanic officers are more likely to receive degrees than white and non-Hispanic officers, while these groups were less likely to receive degrees among the enlisted population. Because these minority officers already have earned degrees, it shows that they are a select group of blacks and Hispanics; therefore, we might not expect the results from this group to mirror findings in the civilian literature, as was the case for the enlisted population results. Finally, officers in the Army are more likely to graduate with degrees than officers from any of the others Services. Again, this result could imply that Army officers stand to benefit the most from additional postsecondary degrees and/or that Army officers have an easier time completing the necessary coursework required to obtain degrees. More research would be needed to confirm either of these hypotheses.

Table 90 reports the marginal effects of gender, marital status, and number of dependents on an officer's likelihood of receiving a degree. We see a slightly different pattern for these factors when comparing officers and enlisted. For example, male officers who are unmarried and have 3 or more dependents are the least likely to receive degrees DOD-wide, whereas, for the enlisted population, female Servicemembers with 3 or more dependents are the least likely group to receive degrees. In addition, the marginal effects of being a married woman are larger in absolute value in all dependent categories compared with the marginal effects of being an unmarried woman. This suggests that female officers with spouses have a more difficult time balancing their commitments at home, work, and school. Conversely, it could be that there are greater incentives for single women to complete degrees because they are the primary breadwinners; the marginal benefit to the household for married women may not be sufficient to encourage degree attainment. Finally, it appears that Navy officers with any number of dependents, both men and women, complete degrees at lower rates than their peers without dependents. This suggests that officer parents in the Navy might need more counseling support to finish degree programs.

Table 90. Probability of receiving any degree by FY15: Marginal effects of gender, marital status and dependents, officer only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	2.30%	-5.10%	-1.70%	0.00%	-1.20%
Female, married, 1-2 dependents	-1.70%	-2.90%	-1.10%	0.00%	-1.10%
Female, married, 0 dependents	-5.30%	0.20%	-0.40%	0.00%	-1.30%
Female, unmarried, 3+ dependents	2.30%	-5.30%	-1.30%	0.00%	-1.00%
Female, unmarried, 1-2 dependents	-1.70%	-3.10%	-0.70%	0.00%	-0.90%
Female, unmarried, 0 dependents	-5.30%	0.00%	0.00%	0.00%	-1.10%
Male, married, 3+ dependents	2.40%	-1.40%	-1.30%	0.00%	-0.40%
Male, married, 1-2 dependents	0.00%	0.80%	0.50%	0.00%	0.00%
Male, married, 0 dependents	0.00%	3.90%	1.20%	0.00%	1.40%
Male, unmarried, 3+ dependents	2.40%	-5.30%	-2.50%	0.00%	-1.80%
Male, unmarried, 1-2 dependents	0.00%	-3.10%	-0.70%	0.00%	-1.40%
Male, unmarried, 0 dependents	Comparison group				

Source: CNA analysis of DMDC and TA data.

Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 1-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix F.

Determinants of receiving a bachelor's degree (or higher)

In this subsection, we estimate the relationship between Servicemember characteristics and the likelihood of receiving a bachelor's degree or higher while using TA.

Enlisted

Our findings regarding the relationships between demographic and military characteristics and the likelihood of receiving any degree were somewhat different from the relationships for the likelihood of receiving a bachelor's degree or higher. Table 91 reports the marginal effects of these characteristics for the enlisted population. Consecutive users are less likely to receive bachelor's degrees or higher in the Army, Navy, and Marine Corps, but more likely to receive these degrees in the Air Force. These results are somewhat counterintuitive for the

Army, Navy, and Marine Corps; we would expect consecutive use to be associated with a higher likelihood of receiving any degree. In addition, super use is associated with a lower likelihood of receiving bachelor's degrees or higher in *all* of the Services. These results might stem from the large number of enlisted users who do not intend to pursue bachelor's degrees when using TA. These results suggest that those who are using TA in a concentrated (super users) and persistent (consecutive users) manner might be more likely to be pursuing associate degrees or some type of certificate.

Similar to the any-degree results, we see that students attending most of their courses at PFP and PNFP institutions are, in general, more likely to receive bachelor's degrees or higher than are their majority PUB-institution-attending peers. Again, this might be a result of the greater flexibility that private institutions provide military students.

Table 91. Probability of receiving a bachelor's degree or higher using TA by FY15: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristics		Army	Navy	Air Force	Marine Corps	DOD
TA user type	Consecutive user	-4.1%***	-1.1%***	8.1%***	-1.1%***	-0.1%
	Super user	-2.4%***	-8.9%***	-12.5%***	-0.3%**	-5.9%***
Educational sector	Most courses PFP	3.4%***	2.2%***	2.7%***	-0.1%***	2.4%***
	Most courses PNFP	2.9%***	3.9%***	5.6%***	0.3%***	3.8%***
	Most courses PUB (comparison group)					
Initial education	Associate degree	3.2%***	10.1%***	8.6%***	1.6%***	8.5%***
	Bachelor's degree	4.8%***	5.8%***	7.0%***	1.4%***	6.2%***
	Professional degree	-0.6%*	2.5%**	-5.3%***	0.5%	-1.8%***
	Traditional high school diploma (comparison group)					
Pay-grade	E4-E6	-1.6%***	-1.5%***	-2.5%***	-0.2%***	-1.9%***
	E7-E9	1.8%***	3.8%***	6.5%***	0.5%***	3.4%***
	W1-W2	-5.1%***	0.6%		-2.7%***	-3.0%***
	W3-W5	-3.0%***	1.3%		-1.8%***	-2.0%***
	E1-E3 (comparison group)					

Race	Black	-0.3%***	-0.8%***	-0.5%***	0.0%	-0.7%***
	Hispanic	-0.4%***	-0.6%***	-0.5%***	-0.2%***	-0.5%***
	White (comparison group)					
Service	Navy					2.8%***
	Air Force					1.9%***
	Marine Corps					-2.2%***
	Army (comparison group)					
Sample size		438,891	222,904	331,454	137,771	1,131,020
Adjusted R^2		0.2309	0.2352	0.2836	0.0527	0.2356

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively.

Furthermore, in each Service, those who already have associate or bachelor's degrees at accession are more likely to graduate with bachelor's degrees or higher compared with those who have only high school diplomas when they join the military. This is not surprising since these Servicemembers already have shown that they can complete postsecondary degrees. In contrast, those who had professional degrees at accession are less likely to receive bachelor's degrees in the Army or the Air Force compared with those who have high school diplomas, but they are more likely to receive bachelor's degrees or higher in the Navy compared with those who have high school diplomas. Those with professional degrees in the Army and Air Force might have less of an incentive to finish degrees than those with high school diplomas because a second advanced postsecondary degree may not have as large a marginal benefit as the first postsecondary degree. It is unclear why the effect is only large in the Air Force, so more research would be needed to fully understand this result.

We also find a significant relationship between paygrade and the likelihood of attaining a bachelor's degree or higher. Specifically, E4-E6 Servicemembers and Warrant Officers are *less* likely to receive bachelor's degrees or higher using TA than their E1-E3 counterparts.[88] Meanwhile, E7-E9 Servicemembers are *more* likely than the E1-E3 population to receive bachelor's degrees or higher using TA. These findings are somewhat counterintuitive: if E7-E9 Servicemembers are more likely to receive bachelor's degrees or higher using TA, we would expect the same to be true of E4-E6 Servicemembers (or at least for there to be no statistically significant difference).There also are significant differences across racial/ethnic groups and by Service affiliation. Black and Hispanic enlisted Servicemembers are less likely

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[88] Enlisted personnel who attained degrees and transitioned to officer status are excluded from these numbers since they now count as officers. Those are Servicemembers who, had they stayed enlisted, might have increased degree attainment for the E4-E6 population.

to receive bachelor's degrees or higher using TA compared with white and non-Hispanic Servicemembers. This is consistent with our findings for any degree, as well as with the civilian literature, where we see that racial and ethnic minorities are less likely to receive degrees than their white peers [102]. Finally, enlisted Navy and Air Force Servicemembers are more likely to receive bachelor's degrees or higher than their enlisted Army counterparts; however, enlisted Marines are less likely than enlisted Soldiers to receive bachelor's degrees or higher using TA. Thus, TA use is most likely to result in a four-year degree or higher in the Navy and Air Force, less likely in the Army, and least likely in the Marine Corps. We suspect this may be related to differences in the types of occupations and assignments in each Service, in addition to the fact that a large portion of Marines serve only one term, but further research would be necessary to determine why these Service-level differences exist.

In Table 92, we report the relationship between gender, marital status, and the number of dependents and the likelihood that enlisted Servicemembers receive bachelor's degrees or higher using TA. Compared with unmarried male TA users without dependents, female TA users with dependents, both married and unmarried, are the least likely to receive bachelor's degrees or higher, followed by female TA users with no dependents, both married and unmarried, and then male TA users with dependents, both married and unmarried. Thus, it appears that women are most disadvantaged, regardless of their marital or dependent status. However, married men without dependents are more likely to receive bachelor's degrees or higher than unmarried men without dependents. These results suggest that it is more difficult for both mothers and fathers to persist to graduation for bachelor's degrees or higher than it is for male Servicemembers without children, perhaps because parents do not have sufficient time to dedicate to their education while working full-time in the military. Similarly, the statistically significant marginal effects for women without children suggest that time constraints may be a factor in completion.

Table 92.   Probability of receiving a bachelor's degree or higher using TA by FY15: Marginal effects of gender, marital status, and dependents, enlisted only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	-2.40%	-0.90%	-1.30%	-0.40%	-1.70%
Female, married, 1-2 dependents	-1.80%	-1.60%	-1.40%	-0.50%	-1.90%
Female, married, 0 dependents	-1.10%	-0.90%	-0.70%	-0.20%	-1.30%
Female, unmarried, 3+ dependents	-2.50%	-1.00%	-1.90%	-0.60%	-1.90%
Female, unmarried, 1-2 dependents	-1.90%	-1.70%	-2.00%	-0.70%	-2.10%
Female, unmarried, 0 dependents	-1.20%	-1.00%	-1.30%	-0.40%	-1.50%
Male, married, 3+ dependents	-1.60%	0.80%	0.00%	0.00%	-0.80%
Male, married, 1-2 dependents	-1.00%	0.10%	-0.10%	-0.10%	-0.40%
Male, married, 0 dependents	-0.30%	0.80%	0.60%	0.20%	0.20%
Male, unmarried, 3+ dependents	-1.30%	0.00%	-0.60%	-0.20%	-1.00%
Male, unmarried, 1-2 dependents	-0.70%	-0.70%	-0.70%	-0.30%	-0.60%
Male, unmarried, 0 dependents	Comparison group				

Source: CNA analysis of DMDC and TA data.

Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 10-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix F.

Officers

In Table 93, we highlight interesting marginal effects of military and demographic characteristics on the likelihood that officers using TA receive bachelor's degrees or higher. These results are very similar to officers' results for any degree; this is not surprising since officers using TA are most likely pursuing at least bachelor's degrees. TA officers who are consecutive users are more likely to receive bachelor's degrees or higher in the Army, the Navy, and DOD-wide; however, we find no statistically significant effects of consecutive TA use in the Air Force or Marine Corps. This result is similar to what we found in the any-degree and the TA-user estimations, and it could be that consecutive users are more persistent in the

Army and Navy and therefore more likely to continue taking courses until they earn their degrees. Super users are more likely to receive bachelor's degrees or higher in the Army and the Air Force, while they are less likely to complete bachelor's degrees or higher in the Navy, and the marginal effect is not significant in the Marine Corps. It is not clear why these differences exist across the Services, so further research is needed to disentangle these differences.

Educational sector also is an important determinant of bachelor's or higher degree attainment using TA. Similar to the previous results that we have discussed, we find that TA-using officers taking most of their courses at PFP and PFNP institutions are more likely to graduate with bachelor's degrees or higher than those predominantly taking courses at PUB institutions. Again, this might be because private institutions offer curricula that can better accommodate a Servicemember's schedule.

In addition, officer occupation is related to bachelor's or higher degree attainment using TA. We see that Engineering Maintenance Officers and Administrators are more likely and Health Care Officers are less likely than Tactical Operations Officers to receive bachelor's degrees or higher while using TA. On one hand, this suggests that the marginal benefit of receiving an additional degree in the Engineering Maintenance and the Administrative occupations could be higher than in the Tactical Operations occupation, and lower in the Health Care Officer occupation. On the other hand, people may self-select into certain occupations based on their educational ambitions, which could contribute to these occupational differences.

Next, we see that the education level with which a Servicemember begins his or her military career is an important predictor of whether an officer receives a bachelor's degree or higher while using TA. Those who begin their careers with high school diplomas, associate degrees, or other nontraditional high school credentials (meaning they were initially enlisted and transitioned to the officer ranks) are more likely to receive bachelor's degrees or higher while using TA than officers who begin their military careers with bachelor's degrees. Because they are making E-O transitions, they potentially started using TA with this educational goal in mind, making them more likely to attain at least bachelor's degrees.

Table 93. Probability of receiving a bachelor's degree or higher using TA by FY15: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristics		Army	Navy	Air Force	Marine Corps	DOD
TA user type	Consecutive user	4.0%***	3.2%***	-0.7%	-0.2%	2.3%***
	Super user	16.6%***	-12.9%***	1.8%**	0.6%	1.1%
Educa-tional sector	Most courses PFP	2.6%***	1.3%*	2.1%***	-0.3%	2.1%***
	Most courses PNFP	12.7%***	6.1%***	3.1%***	0.4%	7.2%***
	Most courses PUB (comparison group)					
DOD occu-pation	Engineering and Maintenance Officers	4.6%***	-1.1%	-0.8%***	0.2%	2.6%***
	Health Care Officers	-5.3%***	-5.2%***	-0.2%		-3.0%***
	Administrators	6.5%***	-0.3%	-1.0%***	-0.7%	4.0%***
	Tactical Operations Officers (comparison group)					
Initial edu-cation	High school	-0.8%	3.5%***	8.0%***	0.3%	3.1%***
	Adult education	-4.1%**	-1.6%	5.9%***	6.2%***	-0.9%
	Associate degree	3.0%*	7.6%***	7.6%***	0.9%	5.4%***
	Professional degree	-7.9%***	-3.2%***	0.3%	-2.6%**	-4.1%***
	Other credential	3.7%	3.0%	29.8%***	1.2%	3.7%**
	Bachelor's degree (comparison group)					
Pay-grade	O4-O5	9.2%***	-1.2%*	-2.9%***	1.4%**	2.0%***
	O6-O10	1.6%	-3.3%**	-3.9%***	-0.5%	-3.8%***
	O1-O3 (comparison group)					
Race	Black	1.4%**	0.4%	-0.6%*	0.3%	0.7%**
	Hispanic	1.1%	1.9%*	0.0%	-1.3%**	0.9%**
	White (comparison group)					
Service	Navy					-5.1%***
	Air Force					-21.2%***
	Marine Corps					-22.2%***
	Army (comparison group)					
Sample size		32,318	20,157	46,975	7,541	106,991
Adjusted R^2		0.2173	0.1387	0.1148	0.0255	0.1707

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively.

Officer rank also is related to a bachelor's or higher degree attainment using TA. Midgrade officers (O4-O5) are most likely to receive bachelor's degrees or higher using TA compared with senior officers (O6-O10) and the O1-O3 comparison group. As was the case with enlisted Servicemembers, the lower attainment rate for the O1-O3 officers may be because they transitioned out of service before being able to complete their degrees. These were the same results we saw for the any-degree outcome, and the same intuition applies here as well. That is, either midgrade officers have a greater potential benefit of receiving additional bachelor's degrees or higher, or it is easier for them to complete the coursework required, as compared with senior and junior officers. We also observe parallel results for the racial, ethnic, and Service controls between the bachelor's degree or higher and the any-degree estimations, with parallel interpretations as in the previous model.

In Table 94, we report the relationship between gender, marital status, and number of dependents and the likelihood that officers receive bachelor's degrees or higher using TA. These results are less intuitive than and differ from what we found for the enlisted population. DOD-wide, married and unmarried women without dependents complete bachelor's degrees or higher at the lowest rates, compared with unmarried men without dependents. Yet, DOD-wide, there is no statistical difference in the likelihood that an unmarried woman with 3 or more dependents will complete a bachelor's degree or higher using TA compared with an unmarried man without dependents. For the enlisted population, we found that these unmarried women with dependents were the *least* likely to complete degrees.

The results differ by Service as well. In fact, when comparing the Army and Navy, results have the opposite signs in almost every category. For example, compared with unmarried men without dependents, unmarried women with 3 or more dependents are 3.5 percentage points *more* likely to complete bachelor's degrees or higher using TA in the Army, and 3.1 percentage points *less* likely to complete bachelor's degrees or higher in the Navy. Meanwhile, none of the marginal effects are statistically significant for Marine Corps officers. These results suggest that Service-specific policies and incentives for officers to receive bachelor's degrees or higher are potentially driving these results. The marginal benefit of this kind of degree could be higher for these women than others. However, these data are insufficient to confirm any of these theories; a more detailed analysis, by Service, would be needed to fully explain these results.

Table 94. Probability of receiving a Bachelor's degree or higher using TA by FY15: Marginal effects of gender, marital status and dependents, officer only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	3.50%	-0.50%	-1.30%	0.00%	-0.40%
Female, married, 1-2 dependents	-1.80%	1.00%	-1.10%	0.00%	-1.10%
Female, married, 0 dependents	-5.30%	2.60%	-0.40%	0.00%	-1.70%
Female, unmarried, 3+ dependents	3.50%	-3.10%	-0.90%	0.00%	0.00%
Female, unmarried, 1-2 dependents	-1.80%	-1.60%	-0.70%	0.00%	-0.70%
Female, unmarried, 0 dependents	-5.30%	0.00%	0.00%	0.00%	-1.30%
Male, married, 3+ dependents	3.30%	-0.50%	-1.20%	0.00%	0.30%
Male, married, 1-2 dependents	0.00%	1.00%	0.40%	0.00%	0.10%
Male, married, 0 dependents	0.00%	2.60%	1.10%	0.00%	1.00%
Male, unmarried, 3+ dependents	3.30%	-3.10%	-2.30%	0.00%	-0.70%
Male, unmarried, 1-2 dependents	0.00%	-1.60%	-0.70%	0.00%	-0.90%
Male, unmarried, 0 dependents	Comparison group				

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 10-percent level or better. Thus, any demographic group's marginal effect that is non-zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service—full results can be found in Appendix F.

Determinants of course completion rate

Finally, we estimate the relationship between Servicemember characteristics and course completion rates while using TA. Course completion rates are an important outcome to consider because they are the most basic measure of TA success—indicating whether a Servicemember passed a course, regardless of whether those credits are later used to attain a degree. Failing courses is costly to Servicemembers for a number of reasons. First, according to policy, they must pay back the tuition for any courses they fail. Second, there is a loss of time spent on coursework that did not culminate in a productive outcome. Finally, there are implications for morale and quality of life when Servicemembers experience failure: a demoralized force may, in fact, be a less ready force. Thus, it is important to understand the determinants of Servicemembers' course completion rates.

Enlisted

Table 95 reports the marginal effects of Servicemembers' characteristics on their cumulative completion rates while using TA for the enlisted population. Consecutive and super users have higher overall completion rates in each Service. These categories of users might represent more dedicated students who are therefore more likely to complete TA-funded courses. We also see that enlisted Servicemembers taking most of their courses at PFP and PNFP institutions are more likely to complete courses than students taking most of their courses at public institutions. Again, increased flexibility at private institutions most likely explains this result.

Table 95. TA cumulative course completion rate by FY15: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristics		Army	Navy	Air Force	Marine Corps	DOD
TA user type	Consecutive user	10.3%***	19.8%***	7.1%***	12.0%***	11.7%***
	Super user	12.2%***	1.9%***	7.3%***	11.1%***	8.7%***
Educa-tional sector	Most courses PFP	3.6%***	0.6%***	1.3%***	1.2%***	2.0%***
	Most courses PNFP	4.4%***	4.7%***	4.1%***	7.4%***	4.9%***
	Most courses PUB (comparison group)					
Initial edu-cation	Associate degree	4.0%***	2.4%***	1.4%***	1.6%**	2.0%***
	Bachelor's degree	6.1%***	3.2%***	4.7%***	1.6%	5.0%***
	Professional degree	2.1%***	4.3%***	4.5%***	-8.1%*	4.3%***
	Traditional high school diploma (comparison group)					
Pay-grade	E4-E6	9.5%***	8.2%***	6.7%***	8.8%***	8.2%***
	E7-E9	14.0%***	11.5%***	10.3%***	13.0%***	12.3%***
	W1-W2	-0.8%	-0.7%		-2.2%	-1.3%**
	W3-W5	-0.2%	0.1%		0.6%	-0.1%
	E1-E3 (comparison group)					
Race	Black	-7.5%***	-6.9%***	-6.7%***	-7.3%***	-7.0%***
	Hispanic	-2.0%***	-1.6%***	-1.7%***	-3.0%***	-2.1%***
	White (comparison group)					

Service	Navy					8.1%***
	Air Force					10.1%***
	Marine Corps					6.7%***
	Army (comparison group)					
Sample size		477,832	243,446	359,198	154,151	1,234,627
Adjusted R^2		0.1210	0.1212	0.0954	0.0990	0.1330

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively.

Those who begin their military careers with associate, bachelor's, or professional degrees have higher overall TA-funded course completion rates than those who begin their careers with only high school diplomas. This is to be expected since those with any type of postsecondary degree have previously completed college courses, proving that they have the ability to do so.

Paygrade also has a relationship with enlisted Servicemember TA-funded course completion rates. Midgrade (E4-E6) and senior (E7-E9) enlisted Servicemembers are more likely, and Warrant Officers are less likely, than E1-E3 Servicemembers to complete TA-funded courses. Black enlisted Servicemembers have a 7-percentage-point lower course completion rate than white Servicemembers, while Hispanic enlisted Servicemembers have a 2-percentage-point lower course completion rate than non-Hispanic Servicemembers. This result is consistent with literature finding that racial and ethnic minorities have worse educational outcomes than their peers [102]. Finally, Air Force enlisted Servicemembers complete TA-funded courses at the highest rates, followed by Navy, Marine Corps, and Army enlisted Servicemembers.

Table 96 reports results on how gender, marital status, and the number of dependents are related to cumulative course completion rates for enlisted Servicemembers. Women, both married and unmarried, with 3 or more dependents have the lowest course completion rates, followed by unmarried women with 1-2 dependents, unmarried men with 3 or more dependents, unmarried men with 1-2 dependents, and then married women with 1-2 dependents. All married men and married women with no dependents are more likely to complete courses compared with unmarried men with no dependents (the comparison group). These results suggest that it is more difficult for both male and female parents to complete courses than those who are not parents, and among parents it is more difficult for the unmarried than the married.

Table 96. Cumulative TA-funded course completion rates: Marginal effects of gender, marital status and dependents, enlisted only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	-4.10%	-1.80%	-0.50%	-1.90%	-2.30%
Female, married, 1-2 dependents	-0.90%	-1.30%	1.30%	-2.10%	-0.20%
Female, married, 0 dependents	1.40%	1.00%	2.10%	-1.20%	1.30%
Female, unmarried, 3+ dependents	-5.50%	-2.80%	-2.60%	-2.90%	-3.80%
Female, unmarried, 1-2 dependents	-2.30%	-2.30%	-0.80%	-3.10%	-1.70%
Female, unmarried, 0 dependents	0.00%	0.00%	0.00%	-2.20%	-0.20%
Male, married, 3+ dependents	-0.80%	1.60%	2.10%	0.30%	0.40%
Male, married, 1-2 dependents	0.60%	1.60%	2.10%	0.10%	1.00%
Male, married, 0 dependents	1.40%	1.60%	2.10%	1.00%	1.50%
Male, unmarried, 3+ dependents	-2.20%	0.00%	0.0%	-0.70%	-1.10%
Male, unmarried, 1-2 dependents	-0.80%	0.00%	0.00%	-0.90%	-0.50%
Male, unmarried, 0 dependents	Comparison group				

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are summed are statistically significant at the 10-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix F.

Officers

Table 97 reports the marginal effects of officers' military and demographic characteristics on their cumulative TA-funded course completion rates. The signs on the officer marginal effects are generally the same across Services for each factor; we therefore only summarize the TA-funded results here. We find significant relationships between cumulative DOD-wide course completion and a number of characteristics, including the frequency/consistency of TA use, educational sector, initial education level (when starting to use TA), paygrade, racial/ethnic group, and Service affiliation.

First, both consecutive and super TA users have higher course completion rates than those who are not such TA users. These characteristics might signal officers who are perhaps more dedicated to their coursework while they are taking courses and, therefore, more likely to complete those courses.

In terms of educational sector, we find that those who take most of their courses in the PFP sector have lower course completion rates than those who take most of their courses in the public sector. This result differs from what was seen in previous results (enlisted course completion, enlisted and officer bachelor's or higher degree completion, enlisted and officer any-degree completion) where the PFP sector was positively related to these outcomes. This result is more consistent with what is seen in the literature when it comes to the outcomes of PFP students [40]. Conversely, officers who take most of their courses in the PNFP sector have higher course completion rates, on average, compared to their majority-PUB-sector peers. This result is more consistent with the previous results and previous literature on PNFP students, which show that PNFP students have the highest graduation rates of any sector [40].

Table 97.   TA cumulative course completion rate by FY15: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristics		Army	Navy	Air Force	Marine Corps	DOD
TA user type	Consecutive user	17.0%***	14.5%***	16.7%***	17.6%***	16.1%***
	Super user	0.1%	-2.0%**	-7.8%***	-5.2%***	-5.1%***
Educa-tional sector	Most courses PFP	-3.3%***	-0.2%	-0.9%***	-3.1%***	-1.7%***
	Most courses PNFP	3.2%***	3.1%***	2.6%***	4.3%***	3.0%***
	Most courses PUB (comparison group)					
Initial edu-cation	High school	-2.2%***	-0.8%	-1.7%***	2.1%**	-1.1%***
	Adult education	-3.5%***	-3.3%***	-2.3%***	-1.6%	-2.5%***
	Associate degree	0.7%	0.0%	1.3%**	2.0%	0.9%**
	Professional degree	-3.3%***	-2.0%***	2.3%***	-0.9%	-0.9%**
	Other credential	-5.7%***	-2.7%	-6.1%	1.7%	-4.0%***
	Bachelor's degree (comparison group)					
Pay-grade	O4-O5	2.5%***	1.5%***	0.3%	1.9%**	1.7%***
	O6-O10	6.4%***	3.0%***	3.0%***	11.1%*	4.1%***
	O1-O3 (comparison group)					
Race	Black	-5.7%***	-3.2%***	-4.5%***	-7.5%***	-5.1%***
	Hispanic	-2.1%***	-0.9%	-1.7%***	-0.9%	-1.5%***
	White (comparison group)					

Service						4.9%***
	Navy					4.9%***
	Air Force					4.8%***
	Marine Corps					3.8%***
	Army (comparison group)					
Sample size		33,611	20,558	48,170	7,803	110,142
Adjusted R^2		0.1129	0.0674	0.0814	0.0919	0.0950

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively.

Education level at accession also has a significant relationship to officers' cumulative course completion rates while using TA. Those with associate degrees at accession have higher TA-funded course completion rates (likely while they are enlisted Servicemembers) compared with their counterparts who have bachelor's degrees at accession. This is not surprising since these associate degree students are only two credit years away from receiving bachelor's degrees and have a strong incentive to earn their bachelor's degrees to receive officer commissions. However, officers with high school diplomas, other nontraditional high school credentials, or some adult education have *lower* course completion rates, on average, than their bachelor's-degree-holding counterparts. These students are farther away from receiving bachelor's degrees and, therefore, have not yet experienced as much success in postsecondary education as those who have associate degrees. Those who begin their military careers with professional degrees also have lower TA-funded course completion rates, on average, than those who begin their military careers with bachelor's degrees. Since these officers already have professional degrees, they might have less incentive than their peers to perform well in TA courses.

In addition, both midgrade (O4-O5) and senior (O6-O10) officers have higher TA-funded course completion rates than their junior (O1-O3) officer counterparts. This suggests that these more senior officers are either more dedicated to completing their coursework, compared to more junior officers, or it is somehow easier for more senior officers to complete courses. We also find that black officers and Hispanic officers have lower TA-funded course completion rates than their white and non-Hispanic peers. This result differs from the degree completion results, where black and Hispanic officers are more likely than white and non-Hispanic officers to complete degrees. Therefore, if black and Hispanic officers are completing courses at lower rates than white and non-Hispanic officers, they must be spending more of their TA benefits on courses but graduating at higher rates. Finally, Army officers have lower TA-funded course completion rates compared with officers in other Services. Because Army officers are receiving degrees at higher rates than their peers in other Services, they also must be spending more TA dollars on coursework than TA-using officers in other Services, if they are completing courses at lower rates.

Table 98 reports the relationship between gender, marital status, and number of dependents and officers' TA-funded course completion rates. We find that, regardless of the number of dependents, married female and male officers have higher course completion rates than the comparison group (unmarried male officers without dependents). This could imply that having the support of a spouse makes course completion (while working) more feasible, or perhaps that those officers who have spouses and are choosing to sacrifice free time to attend school and work full-time are dedicated to completing their coursework. The only groups less likely than the comparison group to complete courses are unmarried men and women with 3 or more dependents. These results suggest that it might be difficult for single parents with lots of dependents to balance work and school.

Table 98.   Cumulative TA-funded course completion rates: Marginal effects of gender, marital status and dependents, officer only, FY99-FY15

Demographic group	Army	Navy	Air Force	Marine Corps	DOD
Female, married, 3+ dependents	1.60%	2.20%	2.30%	7.30%	2.00%
Female, married, 1-2 dependents	1.60%	2.20%	2.50%	7.30%	2.60%
Female, married, 0 dependents	1.60%	2.20%	3.10%	7.30%	2.60%
Female, unmarried, 3+ dependents	0.00%	0.00%	-0.80%	3.90%	-0.60%
Female, unmarried, 1-2 dependents	0.00%	0.00%	-0.60%	3.90%	0.00%
Female, unmarried, 0 dependents	0.00%	0.00%	0.00%	3.90%	0.00%
Male, married, 3+ dependents	1.60%	2.20%	2.30%	3.40%	2.00%
Male, married, 1-2 dependents	1.60%	2.20%	2.50%	3.40%	2.60%
Male, married, 0 dependents	1.60%	2.20%	3.10%	3.40%	2.60%
Male, unmarried, 3+ dependents	0.00%	0.00%	-0.80%	0.00%	-0.60%
Male, unmarried, 1-2 dependents	0.00%	0.00%	-0.60%	0.00%	0.00%
Male, unmarried, 0 dependents	Comparison group				

Source: CNA analysis of DMDC and TA data.
Note: The marginal effects shown in this table are computed by summing the marginal effects for the female, dependents, and married characteristics, as well as their interaction terms, as appropriate. All summed effects shown are statistically significant at the 10-percent level or better. Thus, any demographic group's marginal effect that is not zero can be thought of as statistically significantly different from the effect for unmarried men without dependents (the comparison group). Significance for individual characteristics varies by estimation and Service; full results can be found in Appendix F.

Summary

Several overarching themes emerge from our analysis of the relationship between military and demographic characteristics and positive TA outcomes (any degree, bachelor's or higher, course completion rates). First, we find that those Servicemembers who are most likely to use TA sometimes have the lowest completion rates. For example, among enlisted Servicemembers, racial and ethnic minorities attain degrees and complete courses at lower rates, even though they are more likely to use TA than their white and non-Hispanic counterparts. Next, we find that gender, marital status, and the number of dependents are important determinants of positive TA outcomes. In general, the lowest rates of positive TA outcomes are among unmarried women with dependents. This implies that single mothers may struggle to find sufficient time to juggle their full-time jobs in uniform, their familial responsibilities, and their educational goals.

Educational sector also is an important determinant of positive TA outcomes. Enlisted Servicemembers taking most of their TA-funded courses in the PFP and PNFP sectors generally outperform (both in degree attainment and course completion) those who take most of their courses in the public sector. This deviates from the trends found in the civilian literature, where students in the PFP sector are less likely to graduate and have lower course completion rates. In addition, compared with officers who take most of their courses in the public sector, officers who take most of their TA-funded courses in the PFP or PNFP sectors are more likely to attain degrees, but they have lower course completion rates if they take most of their courses in the PFP sector. This implies that while officers *graduate* from the PFP sector at higher rates, they *complete courses* in this sector at lower rates. Since course completion is the most basic measure of success and represents the immediate return on TA spending, this suggests that officers taking most of their courses in the PFP sector might be using TA dollars less efficiently than those who take most of their courses in the public sector.

Education status at accession also is an important determinant of positive TA outcomes. In general, those who have previously attained some type of postsecondary degree before beginning TA use have more positive outcomes while using TA. This is to be expected because these Servicemembers already have proved that they can be successful in college-level courses and can persist to degree attainment. Finally, we do not see any consistent pattern in positive TA outcomes by Service.

Concluding Remarks and Counseling Recommendations

Off-duty education is not without risks. Prior research has demonstrated that engagement in the education system can have adverse effects for those who do not ultimately attain a degree—such Servicemembers might acquire debt in pursuit of their education but never receive the full benefit from taking on that debt. In addition, evidence exists that the variance has increased in *both* college graduates' earning and debt levels over the past several decades—making college more worthwhile for some (those with ultimately higher earnings) but no longer financially worthwhile for others (those with higher debt). For those who experience bouts of underemployment, do not complete their degrees, or have more debt than their future incomes can support, college can in fact be a poor investment. With these risks in mind, we have focused this report on identifying the Servicemember characteristics related to TA use and positive education outcomes and highlighting those groups that could potentially benefit from further counseling to ensure that they are using TA efficiently to achieve their desired educational goals.

Throughout this report, we have identified the Servicemember characteristics—both demographic and military—that are associated with the likelihood that a given Service-member uses TA, is a TA super user, is a TA consecutive user, and has positive TA outcomes (attains any degree, a bachelor's degree or higher, or a high course completion rate) *conditional* on TA use. These estimations have allowed us to identify the subpopulations that we consider in greatest need of TA counseling: those who are least likely to use TA as well as those who are more likely to use TA but less likely to experience positive TA outcomes.

First, there are a number of Servicemember subpopulations that are less likely to experience positive TA outcomes simply because they are less likely to *use* TA at all. Among the enlisted, TA use is significantly less likely for those in the following occupations: Infantry, Gun Crews, and Seamanship Specialties; Electrical/Mechanical Equipment Repairers; Craftsworkers; and Service and Supply Handlers. The officers least likely to use TA are Intelligence Officers, Scientists and Professionals, and Health Care Officers. We also find that more senior Servicemembers are less likely to use TA, among both officers and enlisted: those in the E4-E6, E7-E9, O4-O5, and O6-O10 paygrades are less likely to use TA than their E1-E3 and O1-O3 counterparts. In the case of both occupational and paygrade differences, further research is required to disentangle the *reasons* for lower TA use among certain groups. It could be, for example, that Servicemembers in these occupations, on average, have less *interest* in using

TA and furthering their education; conversely, it could be that there are occupational barriers to TA use, such as job responsibilities and deployment frequency. Similarly, more senior Servicemembers may be less likely to use TA because they already have fulfilled their educational goals, or they may find that their leadership and other responsibilities make it too difficult to juggle school, family, and a successful military career. That said, the most important role that DOD and the Services can play in encouraging TA use and educational attainment is to remove potential barriers and provide sufficient guidance. More senior Servicemembers, for example, could be counseled on the benefits of getting additional education, perhaps in the form of an advanced degree (if this is desirable). Servicemembers in the noted occupations could be counseled on ways to successfully manage job and school responsibilities.

Other populations are among the least likely to *consecutively* use TA. Consecutive TA use often is found to be positively related to positive TA outcomes (such as cumulative graduation and course completion rates). Therefore, encouraging consecutive TA use could be a way for DOD and the Services to improve overall TA outcomes. Although they are more likely to *use* TA, enlisted Servicemembers in the E1-E3 paygrades are *less* likely to consecutively use TA. At these lower paygrades, these Servicemembers' responsibilities are less than they will be at later career points, making consecutive TA use more possible for this population; in addition, having not yet been promoted to mid-level enlisted ranks, they may be incentivized to consistently use TA to acquire additional education, perhaps as a way to distinguish themselves from their peers. Since using TA consecutively pays dividends for course completion rates—the most fundamental measure of TA success—we recommend counseling these Servicemembers to not only use TA (which they do at higher rates) but to do so with longer term goals in mind, which will encourage them to take courses over several years. Among both officers and the enlisted, we also find a significant negative relationship between being an unmarried man without dependents and consecutive TA use. Once again, this is a demographic group with relatively few familial responsibilities, on average, suggesting that they might have the time to devote to consistent TA use; counseling them to do so could result in long-term benefits for these Servicemembers.

The other main opportunity for providing counseling to Servicemembers lies in those populations that are more likely to *use* TA but less likely to experience positive TA outcomes. Among enlisted, black Servicemembers, those in the E1-E3 paygrades, and women with 3 or more dependents, are all more likely than their counterparts to *use* TA, but they are less likely to attain a degree (and black Servicemembers are among those less likely to earn a bachelor's degree or higher). These groups also have lower course completion rates, all else equal. This suggests that these populations are not lacking in the *desire* for additional education but perhaps could use guidance on how to navigate the educational system and successfully

balance their educational and other goals. Among officers, we find that black and Hispanic officers have lower TA-funded course completion rates than their white and non-Hispanic counterparts, although they are *more* likely to attain degrees. We also find significant differences in TA outcomes by educational sector. Among all TA users—both enlisted and officers—those who took most of their TA-funded courses at PFP or PNFP institutions were more likely to attain degrees, earn bachelor's degrees or higher, and have higher course completion rates. This may be because of the greater flexibility offered by these schools. Ultimately, this suggests that those taking most courses at public institutions are the least likely to experience positive TA outcomes. Such Servicemembers might benefit from early discussions about how achieving success at a public institution while in the military can be challenging and from strategies regarding how to succeed in that environment. There is, of course, no guarantee that this will be sufficient to improve TA outcomes. It may be that public institutions have fewer resources available for counseling Servicemembers and ensuring that they achieve their educational goals.

Table 99 highlights the subpopulations' differences in TA use and course completion rate. We chose course completion rate (and not degree attainment) because it is the most fundamental measure of TA success and does not suffer from the underestimation bias inherent in the degree measures (since many Servicemembers complete degrees after leaving service). In addition, it is the measure with potential immediate effects on overall quality of life and morale (since course noncompletions may cause Servicemembers to feel like failures). This table highlights those subgroups in the highest risk quadrant, where TA use is high but the course completion rate is low, as well as those in other quadrants. Subpopulations in the bottom right quadrant are those that we would suggest are most in need of counseling services.

We note that, although we did find sizable associations between Service affiliation and TA outcomes/use, we do not find these differences to be suggestive of a greater need for counseling in some Services. We find, for example, that enlisted Airmen and Sailors are among the most likely to use TA and to earn bachelor's degrees or higher. In addition, our results suggest that Navy and Marine Corps officers are the most likely to use TA, while Air Force and Marine Corps officers are the most likely to consecutively use TA. Yet because we cannot determine whether such differences are due to Service cultures and policies or the fact that educational goals vary by Service, we do not recommend increasing Service-specific counseling based on these results.

Overall, there is evidence of positive outcomes from TA use among Servicemembers. The program is clearly used to advance Servicemembers' education, in some cases at such levels to allow enlisted Servicemembers to become commissioned officers. And the program is used not only to get traditional four-year degrees but also to get associate degrees and advanced

degrees. Servicemembers are thus using TA to meet their specific goals and needs. That said, we have identified some subpopulations whose outcomes would likely improve from focused counseling efforts.

Table 99.   Course completion rate and TA use "risk quadrants"

		Probability of TA use	
		Low use	**High use**
Cumulative course completion rate	High completion	**Low risk** • E4-E6, E7-E9 • Enlisted with initial education of associate, bachelor's, or professional degree (E-O transitions) • O4-O5, O6-O10	**Low risk** • Officers with initial education of associate, bachelor's, or professional degree
	Low completion	**Medium risk** • Officers with initial education of nontraditional high school degree, some adult education (E-O transitions)	**Highest risk** • E1-E3 • W1-W2, W3-W5 • Blacks (enlisted and officers) • Hispanics (enlisted and officers), though small effects • Women with 3 or more dependents

Source: CNA tabulations of TA and DMDC data.

Appendix A: Data-Cleaning Process

The course-level TA data required substantial cleaning. Much of this process was similar for the four Services. First, we dropped a large number of extraneous observations. These observations tended to fit several patterns:

- Many courses or institutions were listed as "FEE," "FEES," or something similar.

- Some students had variables with such values as "DUPLICATE – DO NOT USE" or "ERROR."

- Some institution names were not actual institutions (e.g., "A SCHOOL CODE FOR TESTING," "CAMPUS BOOKSTORE," or "EDUCATION").

These observations did not appear to refer to actual courses or institutions and therefore were not relevant to our analysis. Second, some rows of data appeared to be duplicates and were dropped. Leaving these rows would have meant double-counting particular students or courses. When multiple rows differed only in the grade assigned, the highest grade was kept; when they differed only in course end dates, the earliest end date was kept.

Two variables in the Army data required a significant amount of cleaning. First, there was a wider range of possible grades listed than in any of the other Services. To avoid dropping large amounts of data, it was necessary to standardize grades to a pass/fail outcome when possible. Second, many institutions did not have a numeric identifier, and all institutions' names were truncated to 25 characters. In the other three Services, the vast majority of institutions had a unique ID number assigned by the Office of Postsecondary Education (OPE). In the Army data, however, OPE IDs were unavailable for many institutions in early years; the number of unique OPE ID values in the raw data increased by a factor of approximately 25 in 2006 and redoubled in 2010, as can be seen in Table 100.

The first of the Army-specific data issues was solved by assigning each listed grade to one of three categories: completing the class in question, not completing the class in question, or omitting the class from completion rate calculations.[89]

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[89] A table containing the different grades in each category is provided in Appendix C.

Table 100. Number of unique OPE ID values by year (Army's raw TA data)

Year	Number of unique OPE ID values[a]	Number of unique institution names
1999	0	1,603
2000	0	1,379
2001	18	1,748
2002	19	2,407
2003	25	5,427
2004	29	6,128
2005	30	6,880
2006	791	7,431
2007	924	6,354
2008	906	5,248
2009	894	5,361
2010	1,786	4,135
2011	1,967	3,678
2012	2,530	2,348
2013	2,463	2,308
2014	2,191	2,053
2015	1,842	1,718

Source: CNA tabulations of TA data provided by the Army.
[a.] This computation does not include missing values.

We were able to only partially solve the second and third issues with the Army data. First, institution names that did not have OPE ID values but were listed by many students were sometimes alternate spellings, abbreviations, or misspellings of names that *did* have OPE ID values. In many cases, therefore, institution names with missing OPE ID values were matched to corresponding institution names with OPE ID values; this was restricted primarily to groups of institution names totaling 100 or more students, though similarity of institution names frequently made it practical to standardize some smaller groups of institution names as well. These exceptions generally fit one of two patterns:

- Determining how to standardize names and OPE ID values for popular schools sometimes provided information on less popular schools. For instance, standardizing the various listed names for Campbell University (9,015 missing values) also revealed how we should standardize the various listed names for Campbellsville College (8 missing values).

- Institutions with names fitting the format of "University of X – Y Campus" had all campuses standardized. This is partly because there were many ways in which these names could be listed in the data and partly because the process for each university system was similar. Thus, the University of Texas-Austin (14,807 missing values) was

standardized along with the University of Texas-Tyler (3 missing values). The exception to this rule was if only one OPE ID value was listed in the data across all listed campuses; in this case, students were assigned to the main campus.

After institution names were standardized, names then were assigned their modal OPE ID, and vice versa.

Finally, some institution names were dropped from the Army data (after initial cleaning) either because they were indecipherable or because they did not refer to any specific institution. The full list of these names is provided in Table 61.

Table 101. Omitted institutions

Omitted institution names			
1	ADMISSIONS OFFICE	DEPT GRANTS & ADM CONTRAC	STATE OF NEW YORK
1ST CLASS AIR	BURSAR OFFICE	EDUCATION	THEOLOGICAL SEMINARY
A	BURSAR'S OFFICE	GED TESTING CENTER	U
A SCHOOL CODE FOR TESTING	CASHIER'S OFFICE	RESEARCH OFFICE	X
ACCOUNTING DEPARTMENT	CONTROLLERS OFFICE	SPONSORED PROGRAMS	Z

Source: CNA tabulations of TA data provided by the Army.

Appendix B: Dropped Observations

As was discussed in the Data and Methodology section, the data required substantial cleaning to be in a uniform, usable format. Most of this process involved dropping observations, for a number of reasons (e.g., duplicate entries for the same course, institution names such as "Campus Bookstore"). In this appendix, we review, for each Service, the number of observations that were dropped, the reasons they were dropped, and any differences in the distribution of grades or completions that resulted from dropping these observations.

Army

In Table 102, we reveal the sample size reductions that occurred with each step of data cleaning and the resultant dropping of observations. The table shows, for example, that we started with 847,290 unique IDs, in 7,375,964 rows of data. The subsequent row highlights that, when we dropped all observations where the course number was "fee," the number of unique IDs decreased to 846,568 and the number of data rows decreased to 7,370,431. This pattern continues throughout the table, until arriving at the bottom row: our final sample for the Army contained 845,903 unique IDs and 7,169,227 rows of data. The primary question of interest is whether these sample reductions skewed the overall distribution of grades (and, thus, completion and graduation rates). That is, did this data-cleaning process result in dropping observations that had notably higher (or lower) grades than that observed in our final sample, resulting in higher (or lower) course completion and graduation rates? The grade distributions for the dropped observations and final sample are shown in Table 103. Although there are differences, they are not drastic. Most important, the resulting course completion rates for the two samples are strikingly similar: 78.5 percent for the dropped observations and 79.8 percent for the final sample (calculations not shown).

Table 102. Army TA sample size remaining (in IDs and rows of data) after each cleaning procedure

Cleaning procedures	Unique IDs remaining	Rows of data remaining
Initial sample	847,290	7,375,964
Drop if course number = "fee"	846,568	7,370,431
Drop if course title contains "fee" and title is not in approved list	846,291	7,363,644
Drop if missing course start or end date	846,143	7,361,167
Drop if institution name is in list of non-institutions	846,118	7,360,565
Drop duplicate entries (all values equal)	846,118	7,360,298
Drop if course level missing and duplicate in all other values	846,118	7,357,284
Drop if course grade is "Fee", "Del," "Error," or if it contains "Dup," "DVP", or "DUPL"	846,112	7,357,153
Drop if institution name missing and OPE ID is missing	845,948	7,353,413
Keep highest grade if duplicate courses	845,948	7,351,635
Keep first course date if same course appears more than once	845,948	7,351,525
Drop if institution name in list of non-institutions	845,903	7,350,638
Keep first course end date if same institution listed with slightly different names in same year	845,903	7,347,931
Keep only one occurrence of institution name for any remaining duplicates in same year	845,903	7,347,908
Keep one course number if same course number listed in same year and all else equal	845,903	7,343,008
Standardize sectors across Services (drop duplicate values)	845,903	7,169,227

Source: CNA tabulations of Army TA data.

Table 103. Distribution of Army TA-funded course grades: Dropped observations versus final sample

Dropped observations						Final sample					
Credit		No credit		Unable to determine		Credit		No credit		Unable to determine	
Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency
missing	3.08%	missing	10.77%	missing	3.49%	missing	1.90%	missing	7.63%	missing	5.34%
A+	0.22%	C+ (grad)	0.02%			A+	0.31%	C (grad)	0.04%		
A	33.14%	C (grad)	0.18%			A	33.53%	D+	0.19%		
A-	2.55%	C- (grad)	0.00%			A-	4.46%	D	0.02%		
B+	1.89%	D+	0.12%			B+	3.14%	F	0.30%		
B	24.70%	D	2.46%			B	20.59%				
B-	0.86%	D-	0.05%			B-	1.92%				
C+ (non-grad)	0.58%	F	4.07%			C+ (non-grad)	1.20%				
C (non-grad)	11.55%					C (non-grad)	9.76%				
C- (non-grad)	0.25%					C- (non-grad)	0.65%				
Total	148,142	Total	33,231	Total	6,557	Total	5,551,846	Total	1,234,564	Total	382,817

Source: CNA tabulations of Army TA data.

Navy

The corresponding information for the Navy is presented in Table 104 and Table 105. In this case, we started with 310,238 unique IDs in 2,293,814 rows of data. At the end of our data-cleaning processes, the sample contained 309,852 unique IDs in 2,289,133 rows of data. Table 105 shows the grade distributions in the dropped observations and the final sample. Once again, there is notable similarity in the percentage of observations accounted for by each grade. Two exceptions include the fact that our final sample contains a higher percentage of As and a somewhat lower percentage of Bs. If anything, this suggests that our final sample is slightly skewed *toward* course completion.

Table 104. Navy TA sample size remaining (in IDs and rows of data) after each cleaning procedure

Cleaning procedures	Unique IDs remaining	Total rows remaining
Initial sample	310,238	2,293,814
Drop if any variable contains "DO NOT USE," "DUPLICATE," or "MRC"	310,173	2,293,286
Drop if course title contains "FEE" (unless in a list of approved courses)	309,852	2,289,330
If the same course has multiple letter grades and completion statuses, keep highest letter grade/completion status	309,852	2,289,151
If the same course has multiple end dates, keep the earliest one	309,852	2,289,133

Source: CNA tabulations of Navy TA data.

Table 105. Distribution of Navy TA-funded course grades: Dropped observations versus final sample

	Dropped observations						Final sample					
Credit		No credit		Impossible to determine		Credit		No credit		Impossible to determine	
Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency
missing	2.54%	missing	3.55%	missing	8.63%	missing	2.31%	missing	3.58%	missing	4.36%
A	38.58%	C (grad)	0.51%			A	45.84%	C (grad)	0.24%		
B	30.46%	D	2.03%			B	27.82%	D	2.30%		
C (non-grad)	11.17%	F	2.54%			C (non-grad)	10.37%	F	3.16%		
Total	163	**Total**	17	**Total**	17	**Total**	1,976,681	**Total**	212,680	**Total**	99,772

Source: CNA tabulations of Navy TA data.

Air Force

Table 106 and Table 107 present information regarding the Air Force's dropped observations. We started with 440,511 unique IDs in 4,401,827 rows of data. At the end of our data-cleaning processes, the sample contained 440,392 unique IDs in 4,053,637 rows of data. Table 107 compares the grade distributions of the dropped observations and the final sample. Our final sample contains a higher percentage of As and Bs than the dropped sample, resulting in a significant difference in overall course completion rates. Among the dropped sample, only 59 percent of courses were completed, whereas 86.9 percent of those in our final sample were completed (graduate courses with grades of A or B; undergraduate courses with grades of A, B, or C).

Table 106. Air Force TA sample size remaining (in IDs and rows of data) after each TA cleaning procedure

Cleaning procedures	Unique IDs remaining	Total rows remaining
Initial sample	440,511	4,401,827
Drop if any variable is equal to "FEE" or contains "DO NOT USE," "DUPLICATE," or "MRC"	440,399	4,057,648
Drop if completion date is later than 6/1/2016 (includes missing values)	440,395	4,057,565
Drop if course contains "FEE" and is not part of an approved list	440,392	4,054,584
If multiple grades for the same course, keep highest grade/credit combination	440,392	4,053,698
If multiple end dates for the same course, keep the earliest one	440,392	4,053,639
If multiple institutions for the same course , keep at most one with institution name "Unknown"	440,392	4,053,637

Source: CNA tabulations of Air Force TA data.

Table 107. Distribution of Air Force TA-funded course grades: Dropped observations versus final sample

	Dropped observations						Final sample					
Credit		**No credit**		**Impossible to determine**			**Credit**		**No credit**		**Impossible to determine**	
Grade	**Fre-quency**	**Grade**	**Fre-quency**	**Grade**	**Fre-quency**	**Grade**	**Fre-quency**	**Grade**	**Fre-quency**	**Grade**	**Fre-quency**
missing	9.71%	missing	16.70%	missing	11.55%	missing	1.92%	missing	5.17%	missing	0.59%
A	34.76%	C (grad)	0.10%			A+	0.01%	C+ (grad)	0.00%		
B	19.22%	D	1.17%			A	52.92%	C (grad)	0.32%		
C (non-grad)	5.05%	F	1.75%			A-	0.46%	C- (grad)	0.00%		
Total	708	Total	203	Total	119	B+	0.26%	D+	0.01%		
						B	25.02%	D	1.72%		
						B-	0.15%	D-	0.01%		
						C+ (non-grad)	0.07%	E	0.00%		
						C (non-grad)	7.98%	F	3.35%		
						C- (non-grad)	0.03%				
						Total	3,600,653	**Total**	429,030	**Total**	23,956

Source: CNA tabulations of Air Force TA data.

Marine Corps

Finally, Table 108 and Table 109 illustrate the observations dropped in the Marine Corps data and the resulting differences in grade distributions between the dropped observations and our final Marine Corps sample. In this case, the initial sample contained 172,152 unique IDs and 1,070,929 rows of data. After iterating through our cleaning process and the various drops illustrated in Table 108 our final Marine Corps TA sample contained 172,048 unique IDs and 1,066,903 rows of data. As with the other Services, there are some differences in the grade distributions. Namely, our final sample has more As, slightly fewer Bs and Ds, and slightly more Fs. Overall, however, the course completion rates are relatively consistent: 83.7 percent among the dropped observations and 86.8 percent in our final sample.

Table 108. Marine Corps TA sample size remaining (in IDs and rows of data) after each cleaning procedure

Cleaning procedures	Unique IDs remaining	Total rows remaining
Initial sample	172,152	1,070,929
Drop if any variable is equal to "DO NOT USE," "DUPLICATE," or "MRC"	172,138	1,070,746
Drop if course title contains "FEE" (except for approved courses)	172,048	1,066,960
Drop if OPE ID and Institution Name both missing	172,048	1,066,960
If multiple grades for same course, keep highest grade/credit combination	172,048	1,066,910
If multiple end dates for same course, keep earliest end date	172,048	1,066,903

Source: CNA tabulations of Marine Corps TA data.

Thus, although there was some concern that our data-cleaning processes might be dropping observations with higher course completion rates than those in our final sample, our findings in all four Services have shown that the completion rates were often very similar and, when they differed, the dropped observations had *lower* course completion rates. Thus, there is no concern that our completion rates have been skewed downward by our data-cleaning process.

Table 109. Distribution of Marine Corps TA-funded course grades: Dropped observations versus final sample

Dropped observations						Final sample					
Credit		No credit		Impossible to determine		Credit		No credit		Impossible to determine	
Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency	Grade	Fre-quency
missing	3.51%	missing	3.51%	missing	14.04%	missing	1.75%	missing	5.02%	missing	3.89%
A	31.58%	D	5.26%			A	46.15%	C (grad)	0.16%		
B	29.82%	F	1.75%			B	26.81%	D	2.29%		
C (non-grad)	10.53%					C (non-grad)	10.45%	F	3.48%		
Total	43	**Total**	6	**Total**	8	**Total**	908,531	**Total**	116,858	**Total**	41,514

Source: CNA tabulations of Marine Corps TA data.

Appendix C: Grades in Army Data

A large number of grades were listed in the Army data. We grouped these to reflect course completion, no course completion, or an inapplicable value. Table 110 shows the list of grades corresponding to course completion, Table 111 shows the list of grades corresponding to incomplete courses, and Table 112 shows the list of grades not used to determine the course completion rate.

Table 110. Grades in Army data: Credit

Complete						
&A	80.3	86.7	90.8	95.4	AC	C+`	NB+
+A	80.7	86.8	90.80	95.5	AD	C-	NC
+B	81	86.8	90.9	95.6	ADT	C.	NC1
-A	81.1	86.9	91	95.8	ADW	C1	P
.A	81.2	87	91-A	96	AE	C2	P+
100	81.25	87.00	91.0	96	AF	C3	P-
100	81.4	87.1	91.00	96.25	AI	CA	P.
102	81.5	87.2	91.1	96.4	ANA	CA-	P1
110	81.6	87.25	91.2	96.5	AP	CB	P2
111	82	87.3	91.4	96.6	APD	CD	P4
2C	82.1	87.4	91.5	96.76	AR	CDR	PA
3P	82.2	87.5	91.6	96.8	AT	CE	PAS
70	82.4	87.55	91.9	96.83	AVP	CERT	PASS
71	82.5	87.6	91.98	97	AW	CERT.	PASSE
72	82.6	87.7	92	97-A	A^	CERTI	PC
73	82.8	87.9	92.	97	A_	CF	PE
73.5	82.9	88	92.00	97.02	B	CI	PF
74	83	88.	92.1	97.2	B+	CL	PG
74.2	83.1	88.1	92.2	97.3	B+-	CN	PI
74.5	83.2	88.2	92.4	97.4	B+A	CNA	PN
75	83.4	88.3	92.5	97.6	B+C	CO	PP
75.00	83.7	88.4	92.50	97.8	B+R	CP	PR
75.6	83.9	88.5	92.6	98	B-	CR	PS
76	84	88.6	92.8	98	B.	CRD	QB
76	84.1	88.7	92.89	98.11	B0	CREDI	QB+

Complete

76.2	84.2	88.75	92.9	98.3	B00	CRLAB	QC+
76.3	84.3	88.8	93	98.5	B2	CS	RA
76.4	84.4	89	93.00	98.85	B3	CT	RB
76.5	84.5	89.	93.17	98.9	B4	CW	RC
77	84.6	89.00	93.2	98.92	B9	C`	S
77.00	84.7	89.1	93.22	99	B=	G	S+
77.1	84.9	89.2	93.3	99.5	BA	GD	S-
77.25	85	89.3	93.4	99.6	BAI	GED	S-LAB
77.4	85.2	89.4	93.5	99.7	BB	GRAD	SA
77.6	85.21	89.5	93.54	99.75	BC	H	SA-
78	85.25	89.50	93.6	99.8	BC+F	HONOR	SAT
78.2	85.3	89.6	93.7	A	BDFI	HP	SB
78.3	85.4	89.7	93.8	A+	BE	HS	SB+
78.4	85.6	89.71	93.9	A-	BF	I-C	SC
78.5	85.7	89.8	94	A-0	BI	IA	UA
78.6	85.8	89.9	94.00	A-B-	BI+	IA-	WC
78.8	85.92	90	94.1	A-R	BNA	IB	XA
79	86	90.	94.4	A.	BR	IB+	XA-
79.1	86	90.1	94.6	A1	BT	IB-	XB
79.2	86.1	90.2	94.8	A2	B_	IC	XB+
79.3	86.2	90.30	94.83	A3	B`	LB	XB-
79.6	86.25	90.32	95	A=	C	MC	XC
80	86.3	90.4	95.	AA	C+	MK-UP	XC+
80	86.4	90.5	95.00	AB	C+-	NA-	XC-
80	86.5	90.6	95.2	ABS	C+.	NB	YA
80.1	86.6	90.7					

Source: CNA tabulations of TA data provided by the Army.
Note: Values highlighted in yellow appear in both the "credit" and "no credit" tables depending on whether the course in question was at the graduate or undergraduate level.

Table 111.   Grades in Army data: No credit

<table>
<tr><td colspan="6" align="center">**Incomplete**</td></tr>
<tr><td>+W</td><td>3</td><td>63.00</td><td>DA</td><td>FIW</td><td>RC</td></tr>
<tr><td>.07</td><td>3.</td><td>63.3</td><td>DB</td><td>FM</td><td>RD</td></tr>
<tr><td>.7</td><td>3.0</td><td>64</td><td>DC</td><td>FN</td><td>RE</td></tr>
<tr><td>.9</td><td>3.00</td><td>65</td><td>DD</td><td>FP</td><td>RF</td></tr>
<tr><td>0</td><td>3.1</td><td>65.7</td><td>DF</td><td>FPAID</td><td>SD</td></tr>
<tr><td>0.0</td><td>3.11</td><td>67</td><td>DFA</td><td>FQ</td><td>SE</td></tr>
<tr><td>0.00</td><td>3.15</td><td>68</td><td>DFAS</td><td>FR</td><td>SF</td></tr>
<tr><td>0.2</td><td>3.2</td><td>69</td><td>DFFAS</td><td>FS</td><td>TERMI</td></tr>
<tr><td>0.4</td><td>3.24</td><td>7</td><td>DFR</td><td>FW</td><td>UD</td></tr>
<tr><td>0.5</td><td>3.25</td><td>7.0</td><td>DFS</td><td>FX</td><td>UE</td></tr>
<tr><td>0.7</td><td>3.3</td><td>70</td><td>DG</td><td>I</td><td>UF</td></tr>
<tr><td>0.8</td><td>3.4</td><td>70.00</td><td>DL</td><td>I-D</td><td>W</td></tr>
<tr><td>0.9</td><td>3.5</td><td>71</td><td>DM</td><td>I-F</td><td>W-F</td></tr>
<tr><td>1</td><td>3.50</td><td>72</td><td>DMS</td><td>IC</td><td>W0</td></tr>
<tr><td>1.0</td><td>3.6</td><td>72.00</td><td>DN</td><td>IC+</td><td>W1</td></tr>
<tr><td>1.1</td><td>3.60</td><td>73</td><td>DNP</td><td>ID</td><td>W3</td></tr>
<tr><td>1.2</td><td>3.67</td><td>74</td><td>DP</td><td>IE</td><td>W4</td></tr>
<tr><td>1.3</td><td>3.69</td><td>75</td><td>DR</td><td>IF</td><td>W6</td></tr>
<tr><td>1.4</td><td>3.7</td><td>76</td><td>DRO</td><td>IM</td><td>W7</td></tr>
<tr><td>1.5</td><td>3.8</td><td>77</td><td>DROP</td><td>IN</td><td>W8</td></tr>
<tr><td>1.6</td><td>3.9</td><td>77.00</td><td>DROPP</td><td>INC</td><td>WC</td></tr>
<tr><td>1.7</td><td>3.91</td><td>78</td><td>DRP</td><td>INP</td><td>WD</td></tr>
<tr><td>1.8</td><td>3.92</td><td>78.00</td><td>DSA</td><td>IP</td><td>WE</td></tr>
<tr><td>1.9</td><td>3.94</td><td>79</td><td>DT</td><td>IR</td><td>WF</td></tr>
<tr><td>12.00</td><td>3.98</td><td>8</td><td>DW</td><td>IS</td><td>WI</td></tr>
<tr><td>13</td><td>30</td><td>9</td><td>E</td><td>ITSHP</td><td>WIP</td></tr>
<tr><td>13.32</td><td>31</td><td>9.0</td><td>EC</td><td>IU</td><td>WITHD</td></tr>
<tr><td>14.68</td><td>33</td><td>9.9</td><td>EL</td><td>IW</td><td>WL</td></tr>
<tr><td>1W</td><td>37</td><td>AU</td><td>EM</td><td>IX</td><td>WM</td></tr>
<tr><td>2</td><td>39</td><td>AUD</td><td>EN</td><td>NA</td><td>WN</td></tr>
<tr><td>2.0</td><td>4</td><td>AUDIT</td><td>EP</td><td>NAC</td><td>WNA</td></tr>
<tr><td>2.00</td><td>4.</td><td>C</td><td>EQ</td><td>NAMNS</td><td>WNC</td></tr>
<tr><td>2.1</td><td>4.0</td><td>C+</td><td>EU</td><td>NC</td><td>WP</td></tr>
<tr><td>2.2</td><td>4.00</td><td>C-</td><td>EX</td><td>NCR</td><td>WPAID</td></tr>
<tr><td>2.3</td><td>4.000</td><td>CANCL</td><td>F</td><td>NE</td><td>WPD</td></tr>
<tr><td>2.4</td><td>4.2</td><td>CB</td><td>F&C</td><td>NF</td><td>WQ</td></tr>
<tr><td>2.5</td><td>40</td><td>CE</td><td>F&W</td><td>NG</td><td>WR</td></tr>
<tr><td>2.51</td><td>42.5</td><td>CH</td><td>F-RPD</td><td>NOGR</td><td>WS</td></tr>
<tr><td>2.55</td><td>43.5</td><td>CHEAT</td><td>F.</td><td>NONE</td><td>WT</td></tr>
<tr><td>2.6</td><td>44.</td><td>CI</td><td>F0</td><td>NOPAY</td><td>WU</td></tr>
<tr><td>2.7</td><td>44.0</td><td>CO</td><td>F1</td><td>NOTP</td><td>WV</td></tr>
</table>

2.75	5	CON	F2	NOTPD	WW
2.8	5.0	==CT==	FA	NP	WX
2.88	5.00	D	FAIL	NPD	WZ
2.9	58.00	D&A	FAN	NPP	XD
2.94	58.03	D+	FC	NR	XE
2.97	6	D-	FCR	NS	XF
20	6.0	D1	FE	NW	XW
25	60	D2	FI	NX	ZF
28	63	D=	FIN	NY	ZW

Source: CNA tabulations of TA data provided by the Army.
Note: Values highlighted in yellow appear in both the "credit" and "no credit" tables depending on whether the course in question was at the graduate or undergraduate level.

Table 112. Grades in Army data: Inapplicable

			Inapplicable		
+	AMSTY	MH	R	SR	V
-	ANMST	MHD	R0	SS	VTP
1207	DEPLO	MOB	RCR	SU	WA
150	DFSD	MOBED	RECOU	SVP	WAI
1P	DIS	MP	RETAK	T	WAIV
1X	DISCH	MW	RI	TA	WAIV.
235	EXAM	MX	RJ	TBD	WAIVE
2490	EXCEL	N	RM	TC	WAV
3+	HW	NDB	RNC	TF	WAVER
886	J	O	RP	TM	WAVIE
???	K	OR	RPD	TP	X
AM	L	PAI	RS	TR	X.
AMIST	LAB	PAID	RU	U	X1
AMN	LP	PD	RW	UN	XN
AMNES	LR	PDNA	SCHRE	UNA	XUW
AMNS	LW	PIAD	SFW	UNK	Y
AMNST	M	Q	SH	UW	YL
AMS	M+	QI	SM	UW2	YR
AMSNT	MF	QL	SP	UX	Z

Source: CNA tabulations of TA data provided by the Army.

Appendix D: Complete Regression Results for User, Super User, and Consecutive User Estimations (FY99-FY15)

Tables 113-118 contain the complete regression results for our user, super user, and consecutive user estimations, for FY99-FY15.

Table 113. Complete regression results for probability of TA use: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Infantry, Gun Crews, and Seamanship Specialists	-3.7%*** (0.1%)	-2.3%*** (0.2%)	-0.6%*** (0.2%)	-4.2%*** (0.2%)	-3.3%*** (0.1%)
Electronic Equipment Repairers	-1.8%*** (0.2%)	-1.0%*** (0.2%)	-1.1%*** (0.1%)	0.2% (0.2%)	-1.0%*** (0.1%)
Communications and Intelligence Specialists	-3.0%*** (0.1%)	-0.4%** (0.2%)	-0.2% (0.1%)	-1.4%*** (0.2%)	-1.5%*** (0.1%)
Health Care Specialists	1.4%*** (0.1%)	-3.3%*** (0.2%)	-0.7%*** (0.1%)		-0.4%*** (0.1%)
Other Technical and Allied Specialists	-1.1%*** (0.2%)	-3.4%*** (0.3%)	-1.7%*** (0.2%)	-2.1%*** (0.3%)	-1.7%*** (0.1%)
Electrical/Mechanical Equipment Repairers	-4.5%*** (0.1%)	-2.8%*** (0.2%)	-3.7%*** (0.1%)	-2.0%*** (0.2%)	-3.7%*** (0.1%)
Craftsworkers	-5.0%*** (0.2%)	-3.1%*** (0.2%)	-3.0%*** (0.2%)	-5.1%*** (0.4%)	-3.8%*** (0.1%)
Service and Supply Handlers	-3.0%*** (0.1%)	-3.9%*** (0.2%)	-4.8%*** (0.1%)	-2.8%*** (0.2%)	-3.9%*** (0.1%)
Nonoccupational	-0.3% (0.9%)	0.4% (0.3%)	2.9%*** (0.3%)	18.4%*** (0.3%)	6.0%*** (0.2%)
Unknown Occupation Code	-32.8%*** (2.2%)	32.7% (28.9%)		-18.5% (27.5%)	-29.4%*** (2.2%)
Tactical Operations Officers	-36.7%*** (0.5%)	-18.5%*** (1.6%)		-16.1%*** (1.4%)	-33.1%*** (0.4%)
Intelligence Officers	-36.2%*** (0.8%)	-19.9%*** (1.6%)		-19.2%*** (1.8%)	-32.1%*** (0.6%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Engineering and Maintenance Officers	-27.4%*** (0.5%)	-11.2%*** (1.1%)		-14.3%*** (1.2%)	-24.2%*** (0.4%)
Scientists and Professionals	-33.9%*** (2.2%)			-16.4%*** (2.9%)	-28.0%*** (1.7%)
Health Care Officers	-35.2%*** (1.7%)	-14.2% (21.4%)			-32.0%*** (1.7%)
Administrators	-36.1%*** (0.8%)	-11.6%*** (1.5%)		-12.4%*** (1.2%)	-27.1%*** (0.6%)
Supply, Procurement, and Allied Officers	-29.9%*** (0.7%)	-6.3%*** (2.3%)		-12.0%*** (1.5%)	-25.0%*** (0.6%)
Nonoccupational Officers	-45.0%*** (2.1%)			-30.0%*** (9.7%)	-40.2%*** (2.0%)
Functional Support and Administration	Comparison Group				
No High School Degree	-8.1%*** (0.3%)	-1.7%*** (0.4%)	-0.2% (2.1%)	-2.1% (2.4%)	-5.9%*** (0.2%)
Homeschool	-3.0%*** (0.8%)	-5.6%*** (1.2%)		-4.2%*** (1.2%)	-3.5%*** (0.6%)
Adult Education	0.5%** (0.2%)	-2.5%*** (0.3%)	2.9%*** (0.2%)	-1.3%*** (0.4%)	0.9%*** (0.1%)
Associate Degree	8.5%*** (0.2%)	6.7%*** (0.3%)	10.4%*** (0.1%)	8.6%*** (0.5%)	9.2%*** (0.1%)
Bachelor's Degree	0.5%** (0.2%)	0.7%** (0.3%)	-2.6%*** (0.3%)	1.9%*** (0.7%)	-0.5%*** (0.1%)
Professional Degree	5.8%*** (0.4%)	5.9%*** (1.2%)	-5.1%*** (1.2%)	2.7% (2.8%)	5.5%*** (0.3%)
Other Nontraditional High School Credential	-5.8%*** (0.1%)	-1.3%*** (0.3%)	-10.4%*** (1.4%)	-1.2%*** (0.5%)	-4.8%*** (0.1%)
Other Education	-7.9%*** (0.6%)	-2.1% (2.4%)	3.0% (4.0%)	12.8%*** (1.1%)	-2.2%*** (0.5%)
Education Unknown	-2.0%*** (0.3%)	2.0%*** (0.5%)	-3.2%*** (0.5%)	-2.6%*** (1.0%)	-1.9%*** (0.2%)
High School	Comparison Group				
Unknown Number of Dependents	7.8%*** (0.2%)	14.6% (11.7%)	19.5%*** (0.4%)	1.5%*** (0.5%)	8.6%*** (0.1%)
1 or 2 Dependents	-1.0%*** (0.1%)	-3.7%*** (0.2%)	-2.5%*** (0.1%)	-3.1%*** (0.2%)	-2.4%*** (0.1%)
3 or More Dependents	-1.2%*** (0.1%)	-5.0%*** (0.2%)	-2.2%*** (0.1%)	-1.0%*** (0.3%)	-2.3%*** (0.1%)
0 Dependents	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
E4-E6	-22.4%*** (0.1%)	-13.4%*** (0.2%)	-21.5%*** (0.1%)	-17.2%*** (0.2%)	-19.8%*** (0.1%)
E7-E9	-10.5%*** (0.2%)	-6.6%*** (0.2%)	-13.5%*** (0.2%)	-1.0%*** (0.3%)	-9.8%*** (0.1%)
W1-W2	16.1%*** (0.5%)	-2.7%** (1.2%)		8.1%*** (1.1%)	13.1%*** (0.4%)
W3-W5	7.3%*** (0.5%)	3.1%*** (1.1%)		4.5%*** (1.2%)	6.6%*** (0.4%)
E1-E3	Comparison Group				
Years of Service	-1.4%*** (0.0%)	-1.4%*** (0.0%)	-1.2%*** (0.0%)	-1.3%*** (0.0%)	-1.3%*** (0.0%)
Female	8.7%*** (0.1%)	5.1%*** (0.2%)	8.3%*** (0.1%)	7.2%*** (0.3%)	7.6%*** (0.1%)
Female X Unknown Number of Dependents	-1.5%*** (0.4%)	-8.6% (17.8%)	-2.7%*** (0.6%)	3.8%*** (1.2%)	1.9%*** (0.3%)
Female X 1 or 2 Dependents	-1.2%*** (0.2%)	-1.0%*** (0.3%)	-0.8%*** (0.2%)	-0.6% (0.5%)	-0.9%*** (0.1%)
Female X 3 or More Dependents	-3.8%*** (0.2%)	-2.5%*** (0.3%)	-2.9%*** (0.3%)	-4.3%*** (0.7%)	-3.2%*** (0.1%)
Female X Married	-3.5%*** (0.2%)	-4.5%*** (0.2%)	-4.6%*** (0.2%)	-3.5%*** (0.5%)	-3.8%*** (0.1%)
Married	4.4%*** (0.1%)	3.8%*** (0.1%)	6.3%*** (0.1%)	3.3%*** (0.2%)	4.6%*** (0.1%)
Unmarried	Comparison Group				
Asian	0.4%*** (0.1%)	-1.6%*** (0.2%)	-0.7%*** (0.2%)	-0.8%*** (0.4%)	-0.6%*** (0.1%)
Black	3.9%*** (0.1%)	2.6%*** (0.1%)	3.8%*** (0.1%)	3.7%*** (0.2%)	3.6%*** (0.1%)
Other Race	3.0%*** (0.2%)	-2.1%*** (0.2%)	-0.5%*** (0.1%)	1.2%*** (0.2%)	0.3%*** (0.1%)
Unknown Race	-3.7%*** (1.0%)	-1.3%*** (0.4%)	-2.1%*** (0.4%)	-0.1% (0.4%)	-1.9%*** (0.2%)
White	Comparison Group				
Hispanic	-0.6%*** (0.1%)	-1.4%*** (0.1%)	-0.1% (0.1%)	-1.2%*** (0.2%)	-0.6%*** (0.1%)
Non-Hispanic	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Navy					3.0%*** (0.1%)
Air Force					9.5%*** (0.1%)
Marine Corps					-1.9%*** (0.1%)
Army	Comparison Group				
Sample size	2,750,157	1,409,530	2,130,980	734,454	7,025,121
Total R^2	0.0689	0.0611	0.0677	0.0730	0.0690

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 114. Complete regression results for probability of TA use: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Occupation Code	-0.8% (1.0%)	-4.0% (7.8%)	-10.8%*** (1.3%)	-15.2%*** (2.4%)	-3.7%*** (0.8%)
General Officers and Executives, NEC	-4.1% (6.2%)	5.6% (4.9%)	1.2% (1.8%)	2.8% (5.4%)	-2.4%** (1.1%)
Intelligence Officers	-0.4% (0.4%)	-4.0%*** (0.7%)	-6.1%*** (0.4%)	-4.0%*** (1.0%)	-2.6%*** (0.3%)
Engineering and Maintenance Officers	-1.7%*** (0.3%)	10.8%*** (0.5%)	-5.1%*** (0.3%)	4.6%*** (0.8%)	0.1% (0.2%)
Scientists and Professionals	-6.3%*** (0.5%)	0.4% (0.8%)	-10.9%*** (0.5%)	-13.3%*** (2.5%)	-5.9%*** (0.3%)
Health Care Officers	-4.7%*** (0.3%)	-7.0%*** (0.5%)	-6.6%*** (0.4%)		-7.2%*** (0.2%)
Administrators	-1.8%*** (0.3%)	6.8%*** (0.6%)	-4.9%*** (0.4%)	-3.9%*** (0.9%)	-1.0%*** (0.2%)
Supply, Procurement, and Allied Officers	0.2% (0.3%)	-1.6%** (0.6%)	-6.1%*** (0.3%)	-2.5%*** (0.7%)	-1.9%*** (0.2%)
Nonoccupational Officers	-4.8%*** (0.9%)	-16.1%*** (0.7%)	4.4%*** (0.5%)	-17.1%*** (0.9%)	-3.9%*** (0.3%)
Tactical Operations Officers	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
No High School Degree	-5.9%*** (1.4%)	-9.7%*** (3.2%)	-8.8%*** (1.1%)	-22.7% (15.5%)	-6.5%*** (0.9%)
High School	-6.0%*** (0.3%)	-12.0%*** (0.4%)	-1.6%*** (0.4%)	-11.8%*** (0.7%)	-8.2%*** (0.2%)
Homeschool	-16.9%** (8.4%)	-13.4%* (7.8%)		-28.3%** (13.0%)	-19.3%*** (5.3%)
Adult Education	-1.6%* (0.8%)	10.5%*** (0.7%)	3.8%*** (0.7%)	-12.7%*** (3.0%)	8.0%*** (0.4%)
Associate Degree	-3.1%*** (0.7%)	3.0%*** (0.9%)	8.6%*** (0.6%)	4.9%*** (1.6%)	1.6%*** (0.4%)
Professional Degree	-1.9%*** (0.5%)	8.6%*** (0.6%)	11.0%*** (0.5%)	14.2%*** (1.7%)	6.3%*** (0.3%)
Other Nontraditional High School Credential	-1.6% (1.6%)	-11.0%*** (2.2%)	13.3% (10.7%)	-9.3%* (4.7%)	-5.5%*** (1.3%)
Other Education	-7.5% (14.7%)	6.6% (6.2%)	-2.6% (9.9%)	26.4%*** (5.1%)	16.4%*** (3.5%)
Education Unknown	-11.0%*** (0.6%)	-5.8%*** (0.5%)	-8.0%*** (0.4%)	-23.5%*** (6.0%)	-6.9%*** (0.3%)
Bachelor's Degree	Comparison Group				
Unknown Number of Dependents	14.3%*** (1.9%)	-23.1% (27.1%)	39.1%*** (2.0%)	24.1%*** (2.5%)	27.8%*** (1.2%)
1 or 2 Dependents	0.3% (0.3%)	1.1%*** (0.4%)	-3.7%*** (0.3%)	-0.5% (0.7%)	-2.2%*** (0.2%)
3 or More Dependents	-2.1%*** (0.3%)	-0.4% (0.4%)	-10.8%*** (0.3%)	-1.6%** (0.8%)	-6.6%*** (0.2%)
0 Dependents	Comparison Group				
O4-O5	-5.4%*** (0.3%)	-12.6%*** (0.3%)	-10.9%*** (0.2%)	-8.6%*** (0.6%)	-10.1%*** (0.1%)
O6-O10	-11.9%*** (0.7%)	-18.2%*** (0.8%)	-4.4%*** (0.9%)	-15.6%*** (5.2%)	-12.1%*** (0.5%)
O1-O3	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Years of Service	-0.9%*** (0.0%)	-1.2%*** (0.0%)	-2.7%*** (0.0%)	-1.7%*** (0.1%)	-1.5%*** (0.0%)
Female	6.0%*** (0.5%)	-0.9% (0.7%)	-3.6%*** (0.4%)	-0.4% (1.4%)	-0.6%* (0.3%)
Female X Unknown Number of Dependents	12.3%*** (3.5%)		1.7% (3.7%)	2.5% (5.1%)	4.0%* (2.3%)
Female X 1 or 2 Dependents	-5.0%*** (0.5%)	-3.4%*** (0.8%)	-1.5%*** (0.5%)	-5.6%*** (2.0%)	-2.8%*** (0.3%)
Female X 3 or More Dependents	-6.4%*** (0.6%)	-5.1%*** (0.9%)	2.3%*** (0.6%)	-10.1%*** (2.2%)	-2.1%*** (0.4%)
Female X Married	-2.8%*** (0.5%)	1.0% (0.8%)	-3.1%*** (0.5%)	-1.4% (1.9%)	-2.1%*** (0.3%)
Married	4.9%*** (0.3%)	-0.6% (0.4%)	1.4%*** (0.3%)	1.4%* (0.7%)	2.1%*** (0.2%)
Asian	-0.9%* (0.5%)	-3.2%*** (0.7%)	-2.5%*** (0.5%)	-2.0% (1.6%)	-2.5%*** (0.3%)
Black	5.5%*** (0.3%)	4.7%*** (0.4%)	1.0%*** (0.4%)	4.7%*** (0.8%)	4.7%*** (0.2%)
Other Race	4.3%*** (0.5%)	-4.0%*** (0.8%)	-0.1% (0.5%)	1.5% (1.2%)	1.7%*** (0.3%)
Unknown Race	-9.8%*** (0.8%)	1.2% (1.2%)	-5.9%*** (0.6%)	-9.9%*** (2.1%)	-6.4%*** (0.5%)
White	Comparison Group				
Hispanic	1.0%** (0.4%)	-1.3%** (0.6%)	1.8%*** (0.4%)	-2.1%** (0.9%)	0.0% (0.3%)
Non-Hispanic	Comparison Group				
Navy					13.5%*** (0.2%)
Air Force					7.1%*** (0.2%)
Marine Corps					10.0%*** (0.3%)
Army	Comparison Group				
Sample size	245,305	145,355	302,652	53,542	746,854
Total R^2	0.1230	0.0891	0.2513	0.1058	0.1535

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 115. Complete regression results for probability of TA super use: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Infantry, Gun Crews, and Seamanship Specialists	0.5%*** (0.1%)	-0.7%*** (0.3%)	0.1% (0.1%)	-1.7%*** (0.1%)	-0.5%*** (0.1%)
Electronic Equipment Repairers	0.4%** (0.2%)	1.8%*** (0.2%)	-0.1%** (0.1%)	-0.2% (0.2%)	0.6%*** (0.1%)
Communications and Intelligence Specialists	-0.4%*** (0.1%)	-0.4%* (0.2%)	0.0% (0.1%)	-0.3% (0.2%)	-0.3%*** (0.1%)
Health Care Specialists	2.0%*** (0.1%)	2.5%*** (0.2%)	0.1% (0.1%)		1.6%*** (0.1%)
Other Technical and Allied Specialists	0.0% (0.2%)	-1.3%*** (0.4%)	-0.1%* (0.1%)	0.1% (0.3%)	-0.1% (0.1%)
Electrical/Mechanical Equipment Repairers	-0.3%*** (0.1%)	1.1%*** (0.2%)	-0.2%*** (0.0%)	-0.5%*** (0.1%)	0.4%*** (0.1%)
Craftsworkers	-0.1% (0.2%)	-0.7%** (0.3%)	-0.3%*** (0.1%)	0.1% (0.3%)	-0.4%*** (0.1%)
Service and Supply Handlers	-0.3%** (0.1%)	-2.9%*** (0.3%)	0.1% (0.1%)	-0.4%** (0.2%)	-0.1%* (0.1%)
Nonoccupational	-3.2%*** (0.8%)	-3.8%*** (0.4%)	-4.1%*** (0.1%)	-1.6%*** (0.2%)	-4.2%*** (0.1%)
Unknown Occupation Code	-1.3% (2.5%)	22.3% (31.3%)		0.2% (21.8%)	-1.5% (2.2%)
Tactical Operations Officers	-4.6%*** (0.7%)	9.2%*** (2.5%)		-1.0% (1.2%)	-4.1%*** (0.5%)
Intelligence Officers	-2.8%*** (1.0%)	2.5% (2.7%)		1.9% (1.6%)	-2.0%*** (0.8%)
Engineering and Maintenance Officers	1.3%* (0.7%)	6.4%*** (1.7%)		-0.4% (1.0%)	1.6%*** (0.5%)
Scientists and Professionals	0.5% (2.6%)			-0.5% (2.5%)	1.4% (1.9%)
Health Care Officers	-0.6% (2.1%)	12.6% (27.4%)			-1.3% (1.8%)
Administrators	-3.1%*** (1.0%)	5.2%** (2.4%)		-0.5% (1.1%)	-0.3% (0.7%)
Supply, Procurement, and Allied Officers	0.6% (0.9%)	13.2%*** (3.3%)		-0.5% (1.2%)	0.8% (0.7%)
Nonoccupational Officers	-0.1% (2.3%)			2.9% (7.7%)	-1.5% (1.9%)
Functional Support and Administration	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
No High School Degree	-1.3%*** (0.3%)	-1.7%*** (0.6%)	1.1% (0.8%)	2.7% (1.8%)	1.6%*** (0.2%)
Homeschool	-2.6%*** (0.8%)	-3.6%** (1.5%)		-0.4% (0.8%)	-4.1%*** (0.5%)
Adult Education	2.1%*** (0.2%)	-0.7%** (0.4%)	0.7%*** (0.1%)	0.6%* (0.3%)	-3.9%*** (0.1%)
Associate Degree	4.2%*** (0.2%)	2.3%*** (0.4%)	-0.2%*** (0.1%)	-0.7%** (0.4%)	0.3%*** (0.1%)
Bachelor's Degree	0.8%*** (0.2%)	-0.3% (0.4%)	-1.2%*** (0.1%)	-0.7% (0.5%)	-0.6%*** (0.1%)
Professional Degree	3.1%*** (0.4%)	-0.5% (1.6%)	-4.8%*** (0.5%)	1.5% (2.2%)	2.9%*** (0.3%)
Other Nontraditional High School Credential	-1.6%*** (0.1%)	-1.2%*** (0.4%)	-2.6%*** (0.6%)	0.2% (0.4%)	-2.0%*** (0.1%)
Other Education	-2.7%*** (0.6%)	-3.6% (3.3%)	-0.5% (1.5%)	-1.8%** (0.8%)	-3.9%*** (0.5%)
Education Unknown	-0.7%** (0.3%)	0.4% (0.7%)	-1.0%*** (0.2%)	0.0% (0.7%)	0.4%* (0.2%)
High School	Comparison Group				
Unknown Number of Dependents	3.8%*** (0.2%)	-9.3% (10.9%)	-1.5%*** (0.1%)	3.6%*** (0.3%)	3.4%*** (0.1%)
1 or 2 Dependents	0.4%*** (0.1%)	1.3%*** (0.2%)	0.1%** (0.0%)	0.5%*** (0.2%)	0.7%*** (0.1%)
3 or More Dependents	-0.2% (0.1%)	1.0%*** (0.2%)	0.1%*** (0.0%)	0.8%*** (0.2%)	0.4%*** (0.1%)
0 Dependents	Comparison Group				
E4-E6	0.6%*** (0.1%)	5.2%*** (0.2%)	0.3%*** (0.0%)	1.3%*** (0.1%)	1.3%*** (0.0%)
E7-E9	0.8%*** (0.2%)	7.4%*** (0.3%)	0.5%*** (0.1%)	1.0%*** (0.2%)	1.8%*** (0.1%)
W1-W2	-4.4%*** (0.7%)	-0.2% (1.8%)		1.4% (1.0%)	-2.8%*** (0.5%)
W3-W5	-0.7% (0.7%)	1.5% (1.7%)		0.9% (1.0%)	0.5% (0.5%)
E1-E3	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Years of Service	-0.5%*** (0.0%)	-0.3%*** (0.0%)	0.0%*** (0.0%)	0.1%*** (0.0%)	-0.2%*** (0.0%)
Female	1.9%*** (0.1%)	2.8%*** (0.2%)	0.5%*** (0.0%)	1.5%*** (0.2%)	1.5%*** (0.1%)
Female X Unknown Number of Dependents	1.1%*** (0.4%)	11.1% (16.6%)	1.4%*** (0.1%)	-0.8% (0.7%)	-0.8%*** (0.2%)
Female X 1 or 2 Dependents	-1.0%*** (0.2%)	-1.2%*** (0.3%)	-0.2%*** (0.1%)	-0.5% (0.3%)	-0.9%*** (0.1%)
Female X 3 or More Dependents	-2.5%*** (0.2%)	-1.3%*** (0.4%)	-0.2%*** (0.1%)	0.2% (0.5%)	-1.4%*** (0.1%)
Female X Married	-0.4%** (0.2%)	-1.1%*** (0.3%)	0.0% (0.1%)	-0.4% (0.3%)	-0.4%*** (0.1%)
Married	1.2%*** (0.1%)	1.1%*** (0.2%)	0.1%** (0.0%)	0.6%*** (0.2%)	0.6%*** (0.1%)
Asian	-1.4%*** (0.1%)	-0.5%** (0.3%)	0.1% (0.1%)	0.5% (0.3%)	-0.9%*** (0.1%)
Black	0.7%*** (0.1%)	1.3%*** (0.1%)	0.1%*** (0.0%)	0.0% (0.1%)	0.6%*** (0.1%)
Other Race	1.3%*** (0.2%)	0.1% (0.2%)	0.1% (0.1%)	0.0% (0.2%)	1.0%*** (0.1%)
Unknown Race	-0.3% (1.0%)	1.2%** (0.6%)	-0.1% (0.2%)	-0.4% (0.3%)	-0.7%*** (0.2%)
White	Comparison Group				
Hispanic	-1.1%*** (0.1%)	-0.1% (0.2%)	0.1%*** (0.1%)	0.1% (0.1%)	-0.5%*** (0.1%)
Non-Hispanic	Comparison Group				
Navy					-8.4%*** (0.1%)
Air Force					12.7%*** (0.1%)
Marine Corps					7.2%*** (0.1%)
Army	Comparison Group				
Sample size	1,274,716	658,206	1,179,775	338,446	3,451,143
Total R^2	0.0673	0.0228	0.0117	0.0665	0.0806

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 116. Complete regression results for probability of TA super use: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Occupation Code	2.5% (2.3%)	29.2% (28.0%)	0.4% (0.8%)	-1.6% (4.2%)	2.7%** (1.3%)
General Officers and Executives, N.E.C.	32.7% (35.3%)	-13.9% (13.4%)	5.7% (3.5%)	-4.3% (21.8%)	3.9% (3.4%)
Intelligence Officers	-3.0%*** (0.7%)	-3.3%*** (1.2%)	-0.1% (0.2%)	1.6%* (0.9%)	-1.5%*** (0.3%)
Engineering and Maintenance Officers	1.2%** (0.5%)	1.7%** (0.8%)	-0.5%*** (0.1%)	0.7% (0.7%)	0.5%** (0.2%)
Scientists and Professionals	-3.0%*** (1.1%)	-1.1% (1.4%)	-0.9%*** (0.3%)	-1.6% (2.7%)	-1.3%*** (0.4%)
Health Care Officers	1.3%** (0.6%)	-5.1%*** (0.9%)	-0.6%** (0.2%)		-1.5%*** (0.3%)
Administrators	1.6%** (0.6%)	-0.3% (0.9%)	0.0% (0.2%)	1.3%* (0.7%)	0.4% (0.3%)
Supply, Procurement, and Allied Officers	-0.1% (0.6%)	-1.9%* (1.1%)	-0.1% (0.2%)	1.7%*** (0.6%)	-0.3% (0.3%)
Nonoccupational Officers	-1.7% (2.1%)	-7.7%*** (2.1%)	-0.3%* (0.2%)	-4.0%*** (1.2%)	-1.1%*** (0.4%)
Tactical Operations Officers	Comparison Group				
No High School Degree	-13.7%*** (2.7%)	-13.6%** (5.8%)	-0.1% (0.6%)	3.5% (16.2%)	-3.3%*** (1.1%)
High School	-8.7%*** (0.6%)	-4.9%*** (0.9%)	0.6%*** (0.2%)	1.5%** (0.7%)	-3.8%*** (0.3%)
Homeschool	-83.2%** (35.8%)	-14.9% (16.9%)			-26.3%** (11.1%)
Adult Education	-5.2%*** (1.3%)	-0.6% (1.1%)	1.8%*** (0.5%)	2.9% (3.5%)	-1.8%*** (0.5%)
Associate Degree	-7.6%*** (1.6%)	-0.2% (1.5%)	1.0%** (0.4%)	1.8% (1.3%)	-2.3%*** (0.6%)
Professional Degree	-0.8% (1.2%)	0.9% (0.9%)	-6.8%*** (0.3%)	-0.6% (1.3%)	-1.6%*** (0.4%)
Other Nontraditional High School Credential	-4.3% (3.1%)	-0.6% (4.4%)	1.3% (5.2%)	-6.4% (5.2%)	-0.6% (1.9%)
Other Education	14.8% (35.8%)	0.0% (9.3%)	1.0% (5.9%)	-5.1% (3.6%)	-4.8% (3.8%)
Education Unknown	-5.3%*** (1.5%)	-2.5%*** (0.8%)	-0.2% (0.2%)	4.3% (6.2%)	-1.1%*** (0.3%)
Bachelor's Degree	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Number of Dependents	6.5%** (3.2%)		-1.3%** (0.6%)	5.6%*** (1.9%)	1.7% (1.2%)
1 or 2 Dependents	-0.9% (0.6%)	-1.3% (0.9%)	0.1% (0.1%)	0.7% (0.8%)	-0.5%** (0.2%)
3 or More Dependents	-2.2%*** (0.7%)	-1.6%* (1.0%)	0.1% (0.1%)	-0.2% (0.9%)	-1.1%*** (0.3%)
0 Dependents	Comparison Group				
O4-O5	0.5% (0.5%)	-2.6%*** (0.7%)	-0.4%*** (0.1%)	-0.1% (0.6%)	-0.8%*** (0.2%)
O6-O10	6.4% (4.0%)	-3.5% (2.2%)	1.7% (1.4%)	6.3% (21.7%)	-1.5% (1.2%)
O1-O3	Comparison Group				
Years of Service	-0.2%*** (0.0%)	-0.1% (0.1%)	0.0% (0.0%)	0.1% (0.1%)	-0.1%*** (0.0%)
Female	-0.6% (0.8%)	-0.8% (1.3%)	-0.3%* (0.2%)	0.0% (1.2%)	-0.5% (0.3%)
Female X Unknown Number of Dependents	3.6% (5.4%)		2.7%** (1.2%)	-0.8% (4.4%)	3.6%* (2.2%)
Female X 1 or 2 Dependents	0.7% (1.1%)	1.5% (1.7%)	0.3% (0.2%)	2.8% (2.2%)	0.5% (0.4%)
Female X 3 or More Dependents	0.0% (1.3%)	0.6% (2.0%)	0.1% (0.4%)	2.0% (2.8%)	-0.4% (0.6%)
Female X Married	-0.6% (1.0%)	-0.9% (1.6%)	0.0% (0.3%)	-5.4%** (2.1%)	-0.4% (0.4%)
Married	1.1%* (0.6%)	1.0% (0.8%)	0.2%* (0.1%)	0.7% (0.8%)	0.7%*** (0.2%)
Asian	-1.0% (0.8%)	-3.0%** (1.4%)	-0.2% (0.3%)	0.7% (1.3%)	-1.0%** (0.4%)
Black	-1.2%*** (0.5%)	3.3%*** (0.7%)	0.1% (0.2%)	0.3% (0.7%)	0.3% (0.2%)
Other Race	-0.1% (0.9%)	0.9% (1.5%)	0.2% (0.2%)	-1.2% (1.0%)	0.3% (0.4%)
Unknown Race	-2.1% (1.4%)	-0.8% (1.9%)	0.0% (0.3%)	-2.7%* (1.6%)	-0.3% (0.5%)
White	Comparison Group				
Hispanic	-1.1% (0.7%)	0.8% (1.0%)	-0.1% (0.2%)	-0.2% (0.8%)	-0.4% (0.3%)
Non-Hispanic	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Navy					-4.0%*** (0.3%)
Air Force					15.1%*** (0.2%)
Marine Corps					10.2%*** (0.3%)
Army	Comparison Group				
Sample size	48,195	33,786	91,965	13,457	187,403
Total R^2	0.0512	0.0218	0.0185	0.0387	0.0992

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 117. Complete regression results for probability of consecutive TA use: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Infantry, Gun Crews, and Seamanship Specialists	-7.9%*** (0.1%)	-4.6%*** (0.3%)	-7.7%*** (0.2%)	-15.1%*** (0.3%)	-8.0%*** (0.1%)
Electronic Equipment Repairers	-1.8%*** (0.2%)	-4.0%*** (0.2%)	-1.7%*** (0.2%)	-1.7%*** (0.3%)	-2.4%*** (0.1%)
Communications and Intelligence Specialists	-4.0%*** (0.2%)	-3.6%*** (0.2%)	-0.7%*** (0.2%)	-6.1%*** (0.3%)	-3.0%*** (0.1%)
Health Care Specialists	1.2%*** (0.2%)	2.9%*** (0.2%)	1.3%*** (0.2%)		1.7%*** (0.1%)
Other Technical and Allied Specialists	-1.3%*** (0.2%)	-3.1%*** (0.4%)	-1.3%*** (0.2%)	-3.5%*** (0.5%)	-1.5%*** (0.1%)
Electrical/Mechanical Equipment Repairers	-6.0%*** (0.2%)	-5.1%*** (0.2%)	-4.3%*** (0.1%)	-7.3%*** (0.3%)	-5.4%*** (0.1%)
Craftsworkers	-4.8%*** (0.3%)	-4.8%*** (0.3%)	-2.9%*** (0.2%)	-7.2%*** (0.5%)	-4.3%*** (0.2%)
Service and Supply Handlers	-3.7%*** (0.1%)	-1.4%*** (0.3%)	-1.1%*** (0.2%)	-6.9%*** (0.3%)	-2.8%*** (0.1%)
Nonoccupational	-18.5%*** (1.2%)	-11.3%*** (0.4%)	-24.6%*** (0.4%)	-23.3%*** (0.4%)	-18.6%*** (0.2%)
Unknown Occupation Code	24.9%*** (3.7%)	1.5% (33.8%)		-42.6% (45.8%)	31.7%*** (3.7%)
Tactical Operations Officers	14.1%*** (1.0%)	23.0%*** (2.8%)		9.4%*** (2.3%)	21.4%*** (0.8%)
Intelligence Officers	20.8%*** (1.4%)	20.9%*** (2.9%)		9.3%*** (3.0%)	26.3%*** (1.1%)
Engineering and Maintenance Officers	23.7%*** (1.0%)	19.4%*** (1.8%)		9.2%*** (2.0%)	27.1%*** (0.8%)
Scientists and Professionals	28.6%*** (3.4%)			8.1%* (4.5%)	28.8%*** (2.7%)
Health Care Officers	17.9%*** (2.8%)	-33.7% (27.6%)			25.5%*** (2.8%)
Administrators	25.5%*** (1.3%)	23.3%*** (2.6%)		14.2%*** (2.1%)	28.3%*** (1.0%)
Supply, Procurement, and Allied Officers	24.9%*** (1.2%)	20.0%*** (3.4%)		8.0%*** (2.4%)	28.7%*** (1.0%)
Nonoccupational Officers	4.1% (3.4%)			-9.7% (16.3%)	13.0%*** (3.3%)
Functional Support and Administration	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
No High School Degree	8.4%*** (0.3%)	-5.3%*** (0.6%)	6.2%** (2.5%)	-5.3% (3.3%)	3.1%*** (0.3%)
Homeschool	0.4% (1.0%)	-1.8% (1.5%)		0.5% (1.6%)	-1.0% (0.7%)
Adult Education	1.2%*** (0.2%)	0.5% (0.4%)	-2.0%*** (0.3%)	0.9%* (0.5%)	-1.0%*** (0.1%)
Associate Degree	-2.6%*** (0.2%)	-0.2% (0.4%)	-3.3%*** (0.2%)	-2.8%*** (0.6%)	-3.8%*** (0.1%)
Bachelor's Degree	-7.3%*** (0.3%)	-1.7%*** (0.4%)	-10.1%*** (0.3%)	-6.7%*** (0.9%)	-7.5%*** (0.2%)
Professional Degree	-4.9%*** (0.4%)	-3.0%* (1.6%)	-27.0%*** (1.8%)	-7.1%* (3.8%)	-5.4%*** (0.4%)
Other Nontraditional High School Credential	-3.1%*** (0.2%)	-3.8%*** (0.4%)	4.5%** (1.8%)	-4.1%*** (0.6%)	-3.9%*** (0.2%)
Other Education	-2.4%*** (0.8%)	-0.5% (3.2%)	-0.5% (4.8%)	-6.1%*** (1.4%)	-3.3%*** (0.7%)
Education Unknown	1.3%*** (0.4%)	-2.7%*** (0.7%)	7.2%*** (0.6%)	6.7%*** (1.2%)	1.9%*** (0.3%)
High School	Comparison Group				
Unknown Number of Dependents	-7.0%*** (0.2%)	6.2% (12.8%)	-17.7%*** (0.5%)	3.6%*** (0.7%)	-7.3%*** (0.2%)
1 or 2 Dependents	0.4%*** (0.2%)	3.2%*** (0.2%)	2.6%*** (0.2%)	2.3%*** (0.3%)	1.7%*** (0.1%)
3 or More Dependents	1.3%*** (0.2%)	3.3%*** (0.3%)	1.9%*** (0.2%)	1.6%*** (0.4%)	1.8%*** (0.1%)
0 Dependents	Comparison Group				
E4-E6	24.3%*** (0.1%)	19.9%*** (0.2%)	26.2%*** (0.1%)	15.9%*** (0.2%)	23.2%*** (0.1%)
E7-E9	27.9%*** (0.2%)	20.9%*** (0.3%)	34.9%*** (0.3%)	15.2%*** (0.5%)	28.0%*** (0.1%)
W1-W2	11.9%*** (1.0%)	-12.4%*** (2.1%)		-1.5% (2.0%)	4.0%*** (0.8%)
W3-W5	4.5%*** (1.0%)	-1.3% (2.0%)		2.9% (2.1%)	2.0%*** (0.8%)
E1-E3	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Years of Service	0.7%*** (0.0%)	0.6%*** (0.0%)	-0.3%*** (0.0%)	1.0%*** (0.0%)	0.4%*** (0.0%)
Female	9.5%*** (0.2%)	8.3%*** (0.2%)	7.9%*** (0.2%)	8.0%*** (0.4%)	8.7%*** (0.1%)
Female X Unknown Number of Dependents	1.4%*** (0.5%)	-16.4% (19.3%)	-2.5%*** (0.7%)	1.6% (1.5%)	-3.0%*** (0.4%)
Female X 1 or 2 Dependents	1.3%*** (0.3%)	-2.4%*** (0.4%)	-1.3%*** (0.3%)	0.9% (0.7%)	-0.2% (0.2%)
Female X 3 or More Dependents	-0.4% (0.3%)	-1.4%*** (0.5%)	-1.6%*** (0.3%)	-2.2%** (0.9%)	-1.1%*** (0.2%)
Female X Married	-2.3%*** (0.2%)	0.0% (0.3%)	-1.3%*** (0.3%)	0.9% (0.6%)	-1.6%*** (0.1%)
Married	3.0%*** (0.1%)	0.2% (0.2%)	-0.3%** (0.2%)	0.7%** (0.3%)	1.4%*** (0.1%)
Asian	0.6%*** (0.2%)	2.1%*** (0.3%)	4.6%*** (0.3%)	5.2%*** (0.5%)	2.4%*** (0.1%)
Black	0.5%*** (0.1%)	1.6%*** (0.1%)	1.4%*** (0.1%)	-0.6%** (0.2%)	1.2%*** (0.1%)
Other Race	-3.1%*** (0.2%)	1.6%*** (0.2%)	-0.4%** (0.2%)	-2.5%*** (0.3%)	-0.5%*** (0.1%)
Unknown Race	0.7% (1.3%)	3.5%*** (0.6%)	2.1%*** (0.5%)	1.6%*** (0.6%)	2.6%*** (0.3%)
White	Comparison Group				
Hispanic	1.6%*** (0.1%)	2.1%*** (0.2%)	2.2%*** (0.2%)	1.5%*** (0.2%)	1.7%*** (0.1%)
Non-Hispanic	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Navy					-1.4%*** (0.1%)
Air Force					6.5%*** (0.1%)
Marine Corps					0.8%*** (0.1%)
Army	Comparison Group				
Sample size	1,274,716	658,206	1,179,775	338,446	3,451,143
Total R^2	0.1153	0.0804	0.1020	0.1367	0.1049

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 118. Complete regression results for probability of consecutive TA use: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Occupation Code	8.5%*** (3.0%)	45.2% (34.3%)	-18.9%*** (3.6%)	3.7% (9.3%)	-1.7% (2.2%)
General Officers and Executives, NEC	38.7% (47.6%)	11.9% (14.8%)	-16.8% (14.4%)	50.6% (49.0%)	-4.1% (5.5%)
Intelligence Officers	-0.3% (0.9%)	3.1%** (1.3%)	-6.0%*** (0.7%)	1.5% (1.8%)	-2.6%*** (0.5%)
Engineering and Maintenance Officers	0.3% (0.7%)	0.0% (0.8%)	-2.0%*** (0.5%)	3.1%** (1.4%)	-1.2%*** (0.3%)
Scientists and Professionals	4.1%*** (1.4%)	8.1%*** (1.5%)	-2.0%** (0.9%)	2.4% (5.5%)	2.3%*** (0.7%)
Health Care Officers	3.2%*** (0.8%)	0.6% (1.0%)	-8.2%*** (0.8%)		-2.5%*** (0.5%)
Administrators	1.9%** (0.8%)	3.5%*** (1.0%)	-2.1%*** (0.7%)	6.0%*** (1.5%)	0.6% (0.4%)
Supply, Procurement, and Allied Officers	3.5%*** (0.7%)	-0.1% (1.2%)	-2.0%*** (0.7%)	5.5%*** (1.2%)	0.8%* (0.4%)
Nonoccupational Officers	3.2% (2.8%)	-12.4%*** (2.5%)	-31.8%*** (0.8%)	-27.3%*** (2.6%)	-27.3%*** (0.7%)
Tactical Operations Officers	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
No High School Degree	7.8%** (3.3%)	1.1% (5.8%)	3.4%* (1.9%)	6.3% (34.4%)	5.9%*** (1.6%)
High School	6.0%*** (0.8%)	6.7%*** (0.9%)	1.7%** (0.7%)	4.5%**** (1.5%)	3.7%*** (0.4%)
Homeschool	-55.8% (47.6%)	1.9% (17.2%)			-5.2% (16.0%)
Adult Education	4.2%** (1.7%)	-0.3% (1.1%)	4.1%*** (1.5%)	-1.6% (7.2%)	-2.2%*** (0.7%)
Associate Degree	5.2%** (2.0%)	-0.4% (1.6%)	1.0% (1.3%)	6.4%** (2.7%)	0.4% (0.8%)
Professional Degree	-15.9%*** (1.5%)	-1.8%* (1.0%)	-28.7%*** (1.2%)	-10.0%*** (2.8%)	-12.1%*** (0.6%)
Other Nontraditional High School Credential	14.6%*** (3.9%)	18.9%*** (4.3%)	29.9%** (14.8%)	13.0% (10.5%)	14.7%*** (2.7%)
Other Education	-56.3% (47.6%)	-0.4% (9.9%)	0.7% (21.8%)	11.7%* (6.9%)	5.3% (5.2%)
Education Unknown	1.3% (1.9%)	1.8%* (0.9%)	5.9%*** (0.7%)	-11.8% (13.6%)	3.4%*** (0.5%)
Bachelor's Degree	Comparison Group				
Unknown Number of Dependents	13.3%*** (4.3%)		-13.3%*** (3.0%)	2.5% (4.3%)	-3.9%* (2.1%)
1 or 2 Dependents	3.4%*** (0.8%)	1.3% (1.1%)	2.7%*** (0.5%)	-1.0% (1.9%)	2.1%*** (0.4%)
3 or More Dependents	3.5%*** (0.9%)	2.8%** (1.1%)	1.7%** (0.6%)	0.7% (2.0%)	1.9%*** (0.4%)
0 Dependents	Comparison Group				
O4-O5	2.9%*** (0.7%)	-1.2% (0.7%)	-12.5%*** (0.6%)	1.2% (1.3%)	-4.5%*** (0.4%)
O6-O10	-4.4% (5.2%)	-3.6% (2.4%)	-30.1%*** (5.8%)	-53.7% (48.6%)	-8.3%*** (2.0%)
O1-O3	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Years of Service	0.7%*** (0.1%)	0.8%*** (0.1%)	1.4%*** (0.1%)	0.6%*** (0.1%)	1.0%*** (0.0%)
Female	4.0%*** (1.1%)	1.6% (1.5%)	3.3%*** (0.7%)	1.4% (2.5%)	2.7%*** (0.5%)
Female X Unknown Number of Dependents	-9.0% (7.2%)		-1.5% (5.6%)	-2.8% (9.7%)	-2.7% (3.9%)
Female X 1 or 2 Dependents	2.5%* (1.5%)	1.0% (1.9%)	-1.5% (1.1%)	12.8%*** (4.8%)	1.1% (0.8%)
Female X 3 or More Dependents	1.2% (1.7%)	-0.3% (2.2%)	-1.0% (1.5%)	6.4% (6.1%)	0.5% (1.0%)
Female X Married	-3.5%*** (1.3%)	-1.4% (1.8%)	0.7% (1.0%)	-10.9%** (4.6%)	-1.4%* (0.7%)
Married	3.5%*** (0.7%)	3.1%*** (1.0%)	3.2%*** (0.5%)	5.0%*** (1.7%)	3.5%*** (0.4%)
Asian	0.6% (1.1%)	2.9%* (1.5%)	1.6%** (0.8%)	4.6%* (2.6%)	1.6%*** (0.6%)
Black	2.4%*** (0.6%)	1.8%** (0.8%)	-2.0%*** (0.7%)	0.3% (1.3%)	1.3%*** (0.4%)
Other Race	-0.9% (1.2%)	-0.4% (1.5%)	0.3% (0.8%)	-0.2% (2.0%)	0.0% (0.6%)
Unknown Race	0.6% (1.8%)	-3.1% (2.1%)	-0.2% (0.9%)	1.1% (3.4%)	0.3% (0.8%)
	Comparison Group				
Hispanic	0.6% (0.9%)	1.1% (1.1%)	0.2% (0.7%)	-1.5% (1.6%)	0.2% (0.5%)
Non-Hispanic	Comparison Group				
Navy					2.2%*** (0.4%)
Air Force					15.4%*** (0.3%)
Marine Corps					3.1%*** (0.5%)
Army	Comparison Group				
Sample size	48,195	33,786	91,965	13,457	187,403
Total R^2	0.0968	0.0610	0.0877	0.0640	0.0757

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Appendix E: Complete Regression Results for User, Super User, and Consecutive User Estimations (FY14/FY15 only)

Tables 119-124 show the complete regression results for our user, super user, and consecutive user estimations, for FY14 and FY15 only.

Table 119. Complete regression results for probability of TA use: Marginal effects of military and demographic characteristics, enlisted only, FY14-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Infantry, Gun Crews, and Seamanship Specialists	-4.6%*** (0.3%)	-1.5%*** (0.5%)	0.0% (0.6%)	-6.1%*** (0.5%)	-3.6%*** (0.2%)
Electronic Equipment Repairers	-3.2%*** (0.4%)	-2.3%*** (0.4%)	-2.4%*** (0.4%)	-1.6%*** (0.6%)	-2.7%*** (0.2%)
Communications and Intelligence Specialists	-2.8%*** (0.3%)	-2.6%*** (0.5%)	-0.7%* (0.4%)	-2.0%*** (0.6%)	-1.9%*** (0.2%)
Health Care Specialists	0.5% (0.3%)	-0.5% (0.4%)	-1.8%*** (0.4%)		-0.4%* (0.2%)
Other Technical and Allied Specialists	-1.4%*** (0.4%)	-5.2%*** (0.9%)	0.4% (0.5%)	-2.4%*** (0.8%)	-1.3%*** (0.3%)
Electrical/Mechanical Equipment Repairers	-5.5%*** (0.3%)	-4.7%*** (0.4%)	-3.4%*** (0.3%)	-4.4%*** (0.5%)	-4.7%*** (0.2%)
Craftsworkers	-3.8%*** (0.5%)	-4.3%*** (0.6%)	-0.5% (0.5%)	-4.5%*** (1.0%)	-2.8%*** (0.3%)
Service and Supply Handlers	-2.3%*** (0.3%)	-2.1%*** (0.5%)	-2.8%*** (0.3%)	-2.6%*** (0.6%)	-2.7%*** (0.2%)
Nonoccupational	-13.6%*** (2.3%)	7.3%** (3.0%)	-4.3%*** (1.1%)	-4.3%*** (1.4%)	-5.6%*** (0.8%)
Unknown Occupation Code	4.1% (5.9%)			-15.1% (40.0%)	7.2% (5.8%)
Tactical Operations Officers	-7.5%*** (1.1%)	9.8%*** (3.1%)		0.3% (3.1%)	-4.0%*** (0.9%)
Intelligence Officers	-7.3%*** (1.5%)	-1.9% (3.5%)		-4.4% (3.5%)	-4.9%*** (1.2%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Engineering and Maintenance Officers	2.8%** (1.1%)	5.2%** (2.3%)		-3.1% (2.6%)	2.5%*** (0.9%)
Scientists and Professionals	-6.6% (4.3%)			-5.9% (6.1%)	-4.3% (3.5%)
Health Care Officers	-3.0% (3.3%)				-0.3% (3.3%)
Administrators	-3.4%** (1.4%)	9.8%*** (3.1%)		-2.4% (2.8%)	-1.0% (1.1%)
Supply, Procurement, and Allied Officers	-0.9% (1.4%)	12.4%*** (4.6%)		0.2% (3.2%)	1.7% (1.2%)
Nonoccupational Officers	-17.9%*** (3.0%)			-19.1%* (11.2%)	-14.6%*** (2.9%)
Functional Support and Administration	Comparison Group				
No High School Degree	0.9% (0.8%)	-1.3% (1.2%)	-7.3% (6.5%)	-6.4% (7.1%)	0.1% (0.7%)
Homeschool	-2.4%* (1.4%)	1.8% (2.5%)		1.5% (2.4%)	-1.3% (1.1%)
Adult Education	1.2%*** (0.3%)	-0.1% (0.6%)	6.7%*** (1.1%)	0.7% (1.0%)	0.4%* (0.3%)
Associate Degree	-1.5%*** (0.5%)	1.4%* (0.7%)	0.9%* (0.4%)	-2.5%* (1.4%)	-0.8%*** (0.3%)
Bachelor's Degree	-11.3%*** (0.5%)	-6.0%*** (0.7%)	-13.7%*** (0.7%)	-6.3%*** (2.0%)	-10.7%*** (0.3%)
Professional Degree	-12.9%*** (1.6%)	-15.8%*** (3.1%)	-21.4%*** (3.8%)	-16.1%** (7.2%)	-14.3%*** (1.3%)
Other Nontraditional High School Credential	-3.9%*** (0.3%)	-2.1%*** (0.8%)	3.9% (4.8%)	1.0% (1.4%)	-4.1%*** (0.3%)
Other Education	-2.9%** (1.2%)	-7.2% (6.5%)	19.8%** (9.3%)	-2.9% (5.5%)	-3.3%*** (1.2%)
Education Unknown	1.4%* (0.7%)	-0.3% (1.3%)	-1.7% (1.7%)	1.3% (2.1%)	0.8% (0.6%)
High School	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Number of Dependents	-10.8% (23.4%)	30.7%[*] (15.8%)			19.5% (13.5%)
1 or 2 Dependents	0.5%[**] (0.2%)	-2.9%[***] (0.4%)	-2.2%[***] (0.2%)	0.2% (0.4%)	-0.9%[***] (0.1%)
3 or More Dependents	-0.5%[**] (0.2%)	-3.1%[***] (0.4%)	-3.7%[***] (0.3%)	0.6% (0.5%)	-1.5%[***] (0.2%)
0 Dependents	Comparison Group				
E4-E6	-3.9%[***] (0.3%)	1.4%[***] (0.5%)	-7.7%[***] (0.4%)	-1.8%[***] (0.5%)	-3.0%[***] (0.2%)
E7-E9	7.6%[***] (0.5%)	5.4%[***] (0.7%)	0.0% (0.6%)	6.3%[***] (0.9%)	5.5%[***] (0.3%)
W1-W2	14.5%[***] (1.0%)	-7.0%[***] (2.5%)		7.5%[***] (2.4%)	10.3%[***] (0.9%)
W3-W5	2.9%[***] (1.0%)	-1.1% (2.4%)		0.9% (2.5%)	1.6%[*] (0.9%)
E1-E3	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Years of Service	-0.8%*** (0.0%)	-0.9%*** (0.0%)	-1.3%*** (0.0%)	-0.3%*** (0.1%)	-1.0%*** (0.0%)
Female	9.6%*** (0.4%)	6.9%*** (0.6%)	9.8%*** (0.5%)	8.6%*** (0.9%)	9.4%*** (0.3%)
Female X Unknown Number of Dependents		-17.9% (27.2%)			-0.7% (26.8%)
Female X 1 or 2 Dependents	-0.8%* (0.5%)	0.4% (0.7%)	-0.6% (0.5%)	-0.4% (1.0%)	-0.8%*** (0.3%)
Female X 3 or More Dependents	-2.7%*** (0.5%)	0.1% (0.7%)	0.0% (0.5%)	-2.5%** (1.1%)	-1.6%*** (0.3%)
Female X Married	-3.8%*** (0.4%)	-4.1%*** (0.5%)	-5.7%*** (0.4%)	-3.8%*** (0.9%)	-4.6%*** (0.3%)
Married	4.7%*** (0.2%)	2.5%*** (0.3%)	6.7%*** (0.2%)	4.0%*** (0.4%)	4.9%*** (0.1%)
Asian	1.0%*** (0.3%)	-0.4% (0.5%)	0.5% (0.5%)	0.4% (0.9%)	0.8%*** (0.2%)
Black	2.7%*** (0.2%)	4.6%*** (0.3%)	2.1%*** (0.2%)	3.9%*** (0.4%)	3.1%*** (0.1%)
Other Race	-2.0%*** (0.5%)	-0.5% (0.4%)	0.1% (0.4%)	1.7%** (0.7%)	0.2% (0.2%)
Unknown Race	-3.8% (4.4%)	-0.7% (1.0%)	-2.1%** (1.0%)	-1.6% (1.2%)	-1.8%*** (0.6%)
White	Comparison Group				
Hispanic	1.1%*** (0.2%)	1.0%*** (0.3%)	1.3%*** (0.3%)	1.5%*** (0.4%)	1.4%*** (0.1%)
Non-Hispanic	Comparison Group				
Navy					-1.1%*** (0.2%)
Air Force					9.4%*** (0.1%)
Marine Corps					-5.1%*** (0.2%)
Army	Comparison Group				
Sample size	392,510	181,704	321,854	91,676	987,744
Total R^2	0.1591	0.2091	0.1189	0.1957	0.1593

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively.
Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 120. Complete regression results for probability of TA use: Marginal effects of military and demographic characteristics, officers only, FY14-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Occupation Code	-1.0% (1.4%)	-9.8% (13.2%)	-2.0% (2.2%)	-3.4%* (2.0%)	-1.6% (1.0%)
General Officers and Executives, NEC	-2.0% (6.6%)	-2.5% (6.6%)	-0.3% (2.2%)	1.3% (7.5%)	-0.7% (1.5%)
Intelligence Officers	0.3% (0.5%)	0.7% (0.9%)	-3.8%*** (0.6%)	-1.6% (1.4%)	-1.2%*** (0.3%)
Engineering and Maintenance Officers	-1.7%*** (0.4%)	6.6%*** (0.7%)	-2.6%*** (0.4%)	3.4%*** (1.1%)	-0.4% (0.3%)
Scientists and Professionals	-0.1% (0.6%)	-0.4% (1.2%)	-5.5%*** (0.7%)	-5.6%* (3.2%)	-1.7%*** (0.4%)
Health Care Officers	-1.5%*** (0.4%)	-3.1%*** (0.7%)	-4.7%*** (0.6%)		-3.6%*** (0.3%)
Administrators	0.1% (0.4%)	6.5%*** (0.8%)	-2.7%*** (0.5%)	1.4% (1.3%)	0.4% (0.3%)
Supply, Procurement, and Allied Officers	1.2%*** (0.4%)	0.5% (0.9%)	-2.7%*** (0.5%)	1.2% (1.0%)	-0.1% (0.3%)
Nonoccupational Officers	0.9% (1.5%)	-10.6%*** (1.2%)	-1.7% (1.2%)	-7.6%*** (1.7%)	-5.5%*** (0.7%)
Tactical Operations Officers	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
No High School Degree	2.3% (1.7%)	6.9%* (3.9%)	-5.0%*** (1.8%)	-4.8% (28.4%)	-1.1% (1.2%)
High School	1.2%*** (0.4%)	3.9%*** (0.7%)	7.2%*** (0.6%)	4.3%*** (1.2%)	2.7%*** (0.3%)
Homeschool	-0.5% (9.1%)	4.9% (8.0%)		-4.0% (13.5%)	0.5% (5.6%)
Adult Education	2.4%** (0.9%)	3.8%*** (1.0%)	2.8%** (1.1%)	7.4%** (3.7%)	3.2%*** (0.6%)
Associate Degree	-0.6% (1.0%)	0.1% (1.4%)	2.1%** (0.9%)	5.9%** (2.8%)	-1.0% (0.6%)
Professional Degree	-5.6%*** (0.7%)	1.6%* (0.9%)	-0.9% (1.0%)	-2.1% (3.0%)	-1.8%*** (0.5%)
Other Nontraditional High School Credential	4.9%*** (1.8%)	6.4%** (2.6%)	10.6% (12.1%)	1.6% (6.1%)	4.7%*** (1.5%)
Other Education	17.0% (15.2%)	-2.6% (7.9%)	22.4% (14.8%)	21.5%* (12.2%)	8.9% (5.6%)
Education Unknown	0.9% (0.8%)	0.2% (0.7%)	-0.1% (0.6%)	-6.2% (5.8%)	0.0% (0.4%)
Bachelor's Degree	Comparison Group				
Unknown Number of Dependents	-1.5% (8.2%)	-3.6% (19.6%)			-2.8% (8.1%)
1 or 2 Dependents	-0.5% (0.4%)	0.6% (0.5%)	-1.4%*** (0.4%)	-1.3% (0.8%)	-1.1%*** (0.2%)
3 or More Dependents	-2.0%*** (0.4%)	-2.1%*** (0.6%)	-7.5%*** (0.4%)	-1.8%* (0.9%)	-5.3%*** (0.2%)
0 Dependents	Comparison Group				
O4-O5	-5.0%*** (0.4%)	-6.4%*** (0.6%)	-8.5%*** (0.5%)	-2.9%** (1.1%)	-8.0%*** (0.3%)
O6-O10	-8.3%*** (0.9%)	-8.8%*** (1.3%)	-7.2%*** (1.2%)	-5.5% (7.3%)	-10.0%*** (0.6%)
O1-O3	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Years of Service	0.0% (0.0%)	0.2%*** (0.1%)	-0.6%*** (0.0%)	0.0% (0.1%)	0.0% (0.0%)
Female	2.4%*** (0.8%)	1.2% (1.4%)	-2.9%*** (0.8%)	-0.1% (2.8%)	-0.7% (0.5%)
Female X Unknown Number of Dependents					
Female X 1 or 2 Dependents	0.8% (0.8%)	0.2% (1.2%)	1.5%* (0.8%)	1.4% (2.7%)	1.0%* (0.5%)
Female X 3 or More Dependents	-0.5% (0.8%)	-2.1% (1.3%)	4.0%*** (0.8%)	-2.1% (2.9%)	1.3%** (0.5%)
Female X Married	-1.7%** (0.7%)	0.3% (1.2%)	-1.7%** (0.7%)	-5.0%* (2.6%)	-1.1%** (0.5%)
Married	2.8%*** (0.4%)	0.3% (0.7%)	0.9%** (0.4%)	2.7%** (1.0%)	1.4%*** (0.2%)
Asian	1.6%*** (0.6%)	0.4% (1.0%)	0.9% (0.7%)	2.5% (2.0%)	1.1%*** (0.4%)
Black	3.3%*** (0.3%)	4.5%*** (0.6%)	0.3% (0.5%)	2.7%** (1.2%)	3.0%*** (0.3%)
Other Race	1.0% (0.7%)	0.5% (1.0%)	0.0% (0.7%)	2.6%* (1.5%)	0.9%** (0.4%)
Unknown Race	-0.4% (0.9%)	-1.7% (1.8%)	-1.5%* (0.8%)	-2.5% (2.4%)	-1.3%** (0.6%)
White	Comparison Group				
Hispanic	2.5%*** (0.5%)	1.8%** (0.8%)	2.6%*** (0.6%)	-0.4% (1.1%)	2.0%*** (0.3%)
Non-Hispanic	Comparison Group				
Navy					3.0%*** (0.3%)
Air Force					3.8%*** (0.2%)
Marine Corps					0.4% (0.4%)
Army	Comparison Group				
Sample size	58,770	26,677	66,968	9,288	161,703
Total R^2	0.3674	0.2635	0.4177	0.3281	0.3605

Source: CNA analysis of DMDC and TA data.

Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.

Note: Additional controls not shown include state of residence and cohort year.

Table 121. Complete regression results for probability of TA super use: Marginal effects of military and demographic characteristics, enlisted only, FY14-FY15

Variable	Army	Navy	Air Force	Marine Corps	DOD
Infantry, Gun Crews, and Seamanship Specialists	-1.0%** (0.4%)	0.7% (0.8%)	-0.1% (0.1%)	-0.3% (0.2%)	-1.3%*** (0.2%)
Electronic Equipment Repairers	0.8% (0.6%)	2.4%*** (0.6%)	0.1% (0.1%)	0.5%* (0.3%)	0.8%*** (0.2%)
Communications and Intelligence Specialists	-0.7% (0.5%)	-0.7% (0.7%)	0.1%* (0.1%)	0.1% (0.2%)	-0.5%** (0.2%)
Health Care Specialists	7.9%*** (0.4%)	5.6%*** (0.6%)	0.1% (0.1%)		4.5%*** (0.2%)
Other Technical and Allied Specialists	-0.2% (0.6%)	-1.8% (1.5%)	0.0% (0.1%)	0.6% (0.4%)	-0.1% (0.3%)
Electrical/Mechanical Equipment Repairers	-0.7% (0.5%)	0.7% (0.6%)	-0.1% (0.1%)	-0.8%*** (0.2%)	0.0% (0.2%)
Craftsworkers	1.2% (0.8%)	0.5% (1.0%)	0.2% (0.1%)	0.0% (0.4%)	0.5% (0.3%)
Service and Supply Handlers	0.4% (0.4%)	-2.8%*** (0.7%)	0.1% (0.1%)	-0.3% (0.2%)	-0.2% (0.2%)
Nonoccupational	7.3%* (4.0%)	-9.6%*** (3.0%)	-0.1% (0.2%)	-0.1% (0.6%)	2.0%*** (0.7%)
Unknown Occupation Code	13.2% (8.2%)				13.3%** (6.0%)
Tactical Operations Officers	3.5%* (2.0%)	19.3%*** (5.8%)		1.2% (1.5%)	3.9%*** (1.3%)
Intelligence Officers	5.5%** (2.6%)	-7.0% (7.8%)		1.2% (1.8%)	4.4%** (1.7%)
Engineering and Maintenance Officers	11.4%*** (2.0%)	7.2% (4.5%)		0.9% (1.3%)	9.9%*** (1.3%)
Scientists and Professionals	16.6%** (7.6%)			1.8% (3.2%)	13.9%*** (4.8%)
Health Care Officers	9.7%* (5.6%)				10.0%** (4.2%)
Administrators	10.2%*** (2.5%)	9.9% (6.1%)		1.2% (1.4%)	8.3%*** (1.6%)
Supply, Procurement, and Allied Officers	12.1%*** (2.4%)	16.9%* (8.5%)		1.1% (1.6%)	11.2%*** (1.6%)
Nonoccupational Officers	7.0% (4.8%)			1.7% (10.8%)	6.1%* (3.5%)
Functional Support and Administration	Comparison Group				

Variable	Army	Navy	Air Force	Marine Corps	DOD
No High School Degree	-1.5% (1.4%)	-1.1% (2.0%)	0.5% (1.5%)	1.2% (4.5%)	-0.9% (0.8%)
Homeschool	-4.9%*** (1.9%)	2.2% (3.5%)		0.4% (1.0%)	-3.9%*** (1.1%)
Adult Education	2.2%*** (0.5%)	0.7% (1.0%)	-0.1% (0.3%)	-0.5% (0.5%)	0.7%** (0.3%)
Associate Degree	2.0%*** (0.7%)	3.3%*** (1.0%)	-0.4%*** (0.1%)	-0.3% (0.6%)	1.1%*** (0.3%)
Bachelor's Degree	-3.5%*** (0.8%)	-4.1%*** (1.1%)	-0.6%*** (0.2%)	0.4% (0.9%)	-2.4%*** (0.4%)
Professional Degree	-1.6% (3.2%)	-6.8% (6.0%)	0.5% (1.0%)	1.4% (5.1%)	-1.0% (1.9%)
Other Nontraditional High School Credential	-1.9%*** (0.5%)	-0.4% (1.3%)	0.6% (1.0%)	-1.3%* (0.7%)	-1.7%*** (0.4%)
Other Education	-1.4% (2.0%)	9.1% (11.6%)	0.3% (1.6%)	1.0% (2.7%)	-1.4% (1.4%)
Education Unknown	2.0% (1.2%)	-2.3% (2.2%)	0.0% (0.4%)	-0.8% (0.8%)	1.3%* (0.7%)
High School	Comparison Group				
Unknown Number of Dependents	-76.0%* (43.0%)	-19.2% (16.7%)			-28.1%** (12.2%)
1 or 2 Dependents	1.1%*** (0.3%)	-0.7% (0.5%)	0.0% (0.1%)	0.5%*** (0.2%)	0.8%*** (0.1%)
3 or More Dependents	0.8%** (0.4%)	0.2% (0.6%)	-0.1% (0.1%)	0.3% (0.2%)	0.8%*** (0.2%)
0 Dependents	Comparison Group				
E4-E6	1.6%*** (0.4%)	1.4%** (0.6%)	0.0% (0.1%)	0.3% (0.2%)	0.7%*** (0.2%)
E7-E9	3.4%*** (0.7%)	5.3%*** (1.0%)	0.0% (0.1%)	0.4% (0.4%)	2.6%*** (0.3%)
W1-W2	-3.9%** (1.8%)	-6.8% (5.3%)		-0.2% (1.2%)	-3.2%*** (1.2%)
W3-W5	-2.6% (2.0%)	3.5% (4.8%)		0.0% (1.2%)	-1.5% (1.3%)
E1-E3	Comparison Group				

Variable	Army	Navy	Air Force	Marine Corps	DOD
Years of Service	-0.1%*** (0.0%)	-0.5%*** (0.1%)	0.0%* (0.0%)	0.0% (0.0%)	-0.2%*** (0.0%)
Female	4.2%*** (0.6%)	2.0%** (0.8%)	0.0% (0.1%)	1.0%*** (0.3%)	1.9%*** (0.3%)
Female X Unknown Number of Dependents		32.8% (30.3%)			44.6%* (23.3%)
Female X 1 or 2 Dependents	-0.5% (0.6%)	0.6% (0.9%)	0.0% (0.1%)	-1.0%*** (0.4%)	-0.5%* (0.3%)
Female X 3 or More Dependents	-1.3%* (0.7%)	-1.3% (1.0%)	-0.1% (0.1%)	-1.0%** (0.5%)	-1.1%*** (0.3%)
Female X Married	-2.2%*** (0.6%)	-1.1% (0.8%)	0.1% (0.1%)	0.1% (0.4%)	-1.0%*** (0.3%)
Married	3.2%*** (0.3%)	1.9%*** (0.4%)	0.0% (0.0%)	0.0% (0.2%)	1.4%*** (0.1%)
Asian	-0.4% (0.5%)	0.0% (0.7%)	-0.1% (0.1%)	0.2% (0.4%)	-0.1% (0.2%)
Black	0.9%*** (0.3%)	1.3%*** (0.4%)	0.0% (0.1%)	-0.1% (0.2%)	0.7%*** (0.1%)
Other Race	-3.6%*** (0.8%)	-0.1% (0.5%)	-0.1% (0.1%)	-0.3% (0.3%)	-0.3% (0.2%)
Unknown Race	7.3% (7.3%)	-0.8% (1.6%)	0.1% (0.2%)	-0.9% (0.6%)	-0.1% (0.7%)
White	Comparison Group				
Hispanic	-1.9%*** (0.4%)	-0.5% (0.4%)	0.1% (0.1%)	0.3%* (0.2%)	-0.7%*** (0.2%)
Non-Hispanic	Comparison Group				
Navy					3.8%*** (0.2%)
Air Force					24.8%*** (0.2%)
Marine Corps					24.7%*** (0.2%)
Army	Comparison Group				
Sample size	152,446	68,983	154,071	30,285	405,785
Total R^2	0.0232	0.0154	0.0023	0.0152	0.1251

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 122. Complete regression results for probability of TA super use: Marginal effects of military and demographic characteristics, officers only, FY14-FY15

Variable	Army	Navy	Air Force	Marine Corps	DOD
Unknown Occupation Code	4.8% (8.7%)		4.1%** (2.0%)	1.1% (2.0%)	1.6% (3.7%)
General Officers and Executives, N.E.C.				-1.5% (4.1%)	14.3% (13.8%)
Intelligence Officers	-1.6% (2.1%)	-7.1%** (3.4%)	-0.1% (0.4%)	0.9% (1.1%)	-2.1%** (0.8%)
Engineering and Maintenance Officers	3.8%** (1.5%)	1.3% (2.4%)	0.1% (0.3%)	-0.5% (0.8%)	1.4%** (0.6%)
Scientists and Professionals	7.9%*** (2.9%)	0.0% (4.9%)	0.2% (0.5%)	0.0% (3.9%)	1.4% (1.1%)
Health Care Officers	6.5%*** (1.9%)	-3.9% (2.7%)	0.3% (0.5%)		1.5%* (0.9%)
Administrators	6.7%*** (1.8%)	0.3% (2.7%)	0.6% (0.4%)	0.0% (1.0%)	2.3%*** (0.7%)
Supply, Procurement, and Allied Officers	4.8%*** (1.7%)	-5.6% (3.4%)	0.3% (0.4%)	1.4%* (0.7%)	0.5% (0.7%)
Nonoccupational Officers	2.2% (6.9%)	-17.6%** (7.6%)	-0.8% (0.5%)	1.3% (2.2%)	-1.8% (1.4%)
Tactical Operations Officers	Comparison Group				
No High School Degree	-4.1% (7.9%)	12.5% (13.0%)	3.8% (5.4%)		0.9% (4.5%)
High School	4.9%** (2.0%)	0.2% (3.5%)	1.5%** (0.6%)	0.7% (1.0%)	1.5% (0.9%)
Homeschool	-52.7% (43.3%)	-11.7% (26.0%)			-29.0%* (15.8%)
Adult Education	-3.3% (3.4%)	2.8% (4.3%)	6.4%*** (1.9%)	0.4% (2.9%)	1.5% (1.5%)
Associate Degree	3.6% (5.6%)	3.5% (7.2%)	3.0%** (1.3%)	1.6% (2.3%)	2.7% (2.3%)
Professional Degree	-28.2%*** (6.4%)	-4.1% (3.7%)	-3.1%** (1.2%)	1.5% (2.2%)	-6.8%*** (1.8%)
Other Nontraditional High School Credential	20.9%*** (7.6%)	-4.6% (8.8%)	1.7% (8.1%)	0.1% (6.9%)	6.6%* (3.9%)
Other Education	32.7% (43.1%)	-29.3% (29.4%)	0.3% (8.1%)	1.1% (7.1%)	-3.8% (12.0%)
Education Unknown	3.0% (3.9%)	-1.2% (2.2%)	-0.8%** (0.3%)	-0.2% (4.3%)	-0.9% (0.8%)
Bachelor's Degree	Comparison Group				

Variable	Army	Navy	Air Force	Marine Corps	DOD
Unknown Number of Dependents	43.5% (43.1%)				34.6% (29.7%)
0 Dependents	Comparison Group				
1 or 2 Dependents	-3.0%** (1.5%)	-1.8% (2.0%)	-0.1% (0.2%)	-0.1% (0.7%)	-1.0%** (0.5%)
3 or More Dependents	-5.3%*** (1.7%)	-3.7% (2.3%)	-0.2% (0.3%)	-1.1% (0.7%)	-2.8%*** (0.6%)
O4-O5	-4.2%** (1.6%)	-1.8% (2.4%)	0.3% (0.6%)	-0.1% (0.9%)	-2.9%*** (0.8%)
O6-O10	15.1% (20.1%)	-11.7% (9.7%)	-19.7%*** (4.5%)		-11.0%* (5.6%)
O1-O3	Comparison Group				
Years of Service	0.0% (0.2%)	0.0% (0.2%)	0.0% (0.0%)	0.0% (0.1%)	0.1% (0.1%)
Female	-4.9% (3.0%)	3.0% (4.5%)	-0.2% (0.4%)	-2.3% (2.0%)	-0.8% (1.0%)
Female X 1 or 2 Dependents	3.9% (3.1%)	-3.2% (4.3%)	0.2% (0.4%)	3.5% (2.1%)	0.7% (1.0%)
Female X 3 or More Dependents	7.1%** (3.3%)	-0.3% (5.2%)	0.5% (0.7%)	6.3%** (2.7%)	2.5%* (1.4%)
Female X Married	-0.3% (2.5%)	-3.7% (4.1%)	0.0% (0.4%)	-4.4%** (2.1%)	-0.9% (1.0%)
Married	1.8% (1.4%)	-1.1% (2.2%)	0.1% (0.2%)	0.5% (0.7%)	0.6% (0.5%)
Asian	-0.7% (2.1%)	-2.8% (3.6%)	-0.4% (0.4%)	1.0% (1.4%)	-0.9% (0.9%)
Black	-0.1% (1.4%)	3.7%* (2.1%)	-0.3% (0.4%)	0.0% (1.0%)	0.2% (0.7%)
Other Race	0.9% (2.9%)	5.6%* (3.1%)	0.2% (0.5%)	0.6% (1.2%)	1.3% (1.0%)
Unknown Race	3.4% (3.0%)	-12.4%* (6.7%)	0.7% (0.5%)	0.2% (1.5%)	0.8% (1.2%)
White	Comparison Group				
Hispanic	-0.2% (1.9%)	4.2% (2.6%)	0.1% (0.4%)	0.7% (0.9%)	0.6% (0.8%)
Non-Hispanic	Comparison Group				

Variable	Army	Navy	Air Force	Marine Corps	DOD
Navy					6.2%*** (0.8%)
Air Force					25.9%*** (0.65)
Marine Corps					27.1*** (1.0%)
Army	Comparison Group				
Sample size	8,151	3,671	13,083	1,288	26,193
Total R^2	0.0459	0.0345	0.0148	0.1020	0.1523

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 123. Complete regression results for probability of consecutive TA use: Marginal effects of military and demographic characteristics, enlisted only, FY14-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Infantry, Gun Crews, and Seamanship Specialists	-4.6%*** (0.4%)	-1.7%** (0.8%)	-2.5%*** (0.8%)	-5.2%*** (0.9%)	-4.1%*** (0.3%)
Electronic Equipment Repairers	-1.1%* (0.6%)	-1.2%* (0.6%)	-1.5%*** (0.5%)	-0.5% (1.0%)	-1.3%*** (0.3%)
Communications and Intelligence Specialists	-2.2%*** (0.5%)	-1.4%* (0.7%)	-0.2% (0.5%)	-1.3% (0.9%)	-1.4%*** (0.3%)
Health Care Specialists	0.1% (0.5%)	-0.6% (0.7%)	-0.5% (0.5%)		0.0% (0.3%)
Other Technical and Allied Specialists	-1.7%*** (0.7%)	-5.2%*** (1.5%)	-1.6%** (0.7%)	-0.7% (1.4%)	-1.7%*** (0.4%)
Electrical/Mechanical Equipment Repairers	-3.2%*** (0.5%)	-2.1%*** (0.6%)	-4.3%*** (0.4%)	-1.8%** (0.9%)	-3.4%*** (0.3%)
Craftsworkers	-3.8%*** (0.8%)	-2.1%** (1.0%)	-3.5%*** (0.6%)	-4.1%** (1.7%)	-3.2%*** (0.4%)
Service and Supply Handlers	-1.8%*** (0.4%)	-0.7% (0.7%)	-3.3%*** (0.4%)	-1.8%* (0.9%)	-2.1%*** (0.3%)
Nonoccupational	-13.8%*** (4.1%)	-13.3%*** (3.1%)	-22.8%*** (1.2%)	-8.9%*** (2.6%)	-18.7%*** (1.0%)
Unknown Occupation Code	27.2%*** (8.5%)				28.3%*** (8.4%)
Tactical Operations Officers	11.2%*** (2.0%)	14.0%** (5.9%)		12.2%** (6.0%)	12.5%*** (1.7%)
Intelligence Officers	15.0%*** (2.7%)	4.6% (7.9%)		13.8%* (7.0%)	15.0%*** (2.3%)
Engineering and Maintenance Officers	22.2%*** (2.0%)	15.1%*** (4.6%)		9.6%* (5.3%)	20.9%*** (1.7%)
Scientists and Professionals	42.7%*** (7.7%)			1.8% (12.4%)	30.1%*** (6.5%)
Health Care Officers	13.8%** (5.7%)				15.2%*** (5.6%)
Administrators	23.3%*** (2.5%)	17.4%*** (6.2%)		10.0%* (5.7%)	20.3%*** (2.1%)
Supply, Procurement, and Allied Officers	22.4%*** (2.5%)	18.7%** (8.6%)		3.0% (6.2%)	20.6%*** (2.1%)
Nonoccupational Officers	-6.3% (4.9%)			-47.5% (43.0%)	-4.6% (4.8%)
Functional Support and Administration	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
No High School Degree	-1.3% (1.4%)	-4.9%** (2.0%)	3.1% (9.5%)	9.6% (16.4%)	-2.3%** (1.1%)
Homeschool	-1.0% (1.9%)	-1.8% (3.6%)		-3.1% (3.9%)	-1.4% (1.5%)
Adult Education	0.5% (0.5%)	0.4% (1.0%)	2.4% (1.8%)	-0.9% (1.8%)	1.0%*** (0.4%)
Associate Degree	2.5%*** (0.7%)	2.5%** (1.0%)	3.1%*** (0.6%)	6.1%** (2.4%)	2.9%*** (0.4%)
Bachelor's Degree	-1.5%* (0.8%)	1.7% (1.1%)	-1.9%* (1.0%)	1.7% (3.3%)	-0.5% (0.5%)
Professional Degree	-3.3% (3.3%)	-0.3% (6.1%)	-9.0% (6.4%)	7.2% (18.8%)	-3.0% (2.6%)
Other Nontraditional High School Credential	-4.2%*** (0.5%)	-2.5%** (1.3%)	1.5% (6.6%)	-2.7% (2.5%)	-3.9%*** (0.5%)
Other Education	-2.5% (2.0%)	3.3% (11.6%)	7.5% (10.4%)	-9.8% (10.1%)	-2.3% (1.9%)
Education Unknown	1.7% (1.3%)	-0.7% (2.2%)	5.5%** (2.3%)	0.2% (3.2%)	2.1%** (0.9%)
High School	Comparison Group				
Unknown Number of Dependents	-86.9%** (43.9%)	5.9% (16.8%)			-6.2% (16.4%)
1 or 2 Dependents	-0.9%*** (0.3%)	2.9%*** (0.6%)	2.7%*** (0.3%)	0.9% (0.7%)	1.2%*** (0.2%)
3 or More Dependents	0.8%** (0.4%)	3.7%*** (0.6%)	3.1%*** (0.4%)	2.3%*** (0.9%)	2.1%*** (0.2%)
0 Dependents	Comparison Group				
E4-E6	13.1%*** (0.4%)	7.2%*** (0.6%)	10.7%*** (0.4%)	6.8%*** (0.9%)	10.1%*** (0.3%)
E7-E9	18.0%*** (0.7%)	6.3%*** (1.0%)	24.1%*** (0.8%)	7.1%*** (1.5%)	16.2%*** (0.4%)
W1-W2	2.7% (1.9%)	-11.0%** (5.4%)		-9.1%* (5.0%)	-0.9% (1.6%)
W3-W5	4.7%** (2.0%)	-5.2% (4.9%)		-1.9% (5.2%)	2.1% (1.7%)
E1-E3	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Years of Service	0.0% (0.0%)	0.1% (0.1%)	-0.7%*** (0.0%)	0.5%*** (0.1%)	-0.2%*** (0.0%)
Female	4.7%*** (0.6%)	3.0%*** (0.8%)	5.2%*** (0.6%)	2.1% (1.4%)	4.3%*** (0.4%)
Female X Unknown Number of Dependents		-20.7% (30.8%)			-5.8% (31.4%)
Female X 1 or 2 Dependents	1.2%* (0.7%)	1.9%** (0.9%)	1.3%** (0.6%)	1.3% (1.6%)	1.7%*** (0.4%)
Female X 3 or More Dependents	-0.4% (0.7%)	1.1% (1.0%)	-0.6% (0.7%)	-0.5% (1.9%)	-0.1% (0.4%)
Female X Married	0.0% (0.6%)	-2.0%** (0.8%)	-2.3%*** (0.6%)	1.1% (1.5%)	-1.0%*** (0.4%)
Married	2.2%*** (0.3%)	1.5%*** (0.4%)	2.6%*** (0.3%)	0.4% (0.7%)	2.0%*** (0.2%)
Asian	-0.3% (0.5%)	0.2% (0.8%)	1.0% (0.7%)	-0.9% (1.6%)	0.0% (0.3%)
Black	0.6%** (0.3%)	0.6% (0.4%)	0.2% (0.3%)	-0.3% (0.7%)	0.4%** (0.2%)
Other Race	-3.2%*** (0.8%)	-0.3% (0.5%)	-0.5% (0.5%)	-2.8%** (1.1%)	-0.7%** (0.3%)
Unknown Race	-2.3% (7.4%)	1.0% (1.6%)	0.0% (1.3%)	-3.7%* (2.2%)	-0.5% (0.9%)
White	Comparison Group				
Hispanic	-0.8%** (0.4%)	0.6% (0.4%)	-0.8%** (0.4%)	-0.3% (0.7%)	-0.5%** (0.2%)
Non-Hispanic	Comparison Group				
Navy					1.1%*** (0.2%)
Air Force					4.5%*** (0.2%)
Marine Corps					1.0%*** (0.35)
Army	Comparison Group				
Sample size	152,446	68,983	154,071	30,285	405,785
Total R^2	0.2731	0.3156	0.2647	0.3095	0.2792

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 124. Complete regression results for probability of consecutive TA use: Marginal effects of military and demographic characteristics, officers only, FY14-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Occupation Code	3.4% (8.4%)		6.1% (7.4%)	9.0% (10.3%)	3.8% (4.8%)
General Officers and Executives, NEC				-2.4% (20.0%)	-1.2% (17.7%)
Intelligence Officers	-0.6% (2.0%)	-1.5% (3.6%)	-4.7%*** (1.3%)	2.3% (5.1%)	-3.8%*** (1.0%)
Engineering and Maintenance Officers	-0.9% (1.4%)	3.3% (2.5%)	-0.7% (1.0%)	-3.9% (3.8%)	-1.4%* (0.7%)
Scientists and Professionals	2.8% (2.8%)	-3.4% (5.2%)	-4.8%*** (1.7%)	-34.3%* (19.7%)	-3.1%** (1.5%)
Health Care Officers	1.6% (1.8%)	-1.2% (2.8%)	-7.1%*** (1.8%)		-2.6%** (1.1%)
Administrators	0.3% (1.7%)	3.7% (2.8%)	-4.1%*** (1.3%)	6.3% (4.8%)	-1.6% (0.9%)
Supply, Procurement, and Allied Officers	2.5% (1.6%)	-0.2% (3.6%)	-0.2% (1.3%)	6.4%* (3.5%)	0.5% (0.9%)
Nonoccupational Officers	12.3%* (6.7%)	-3.9% (8.1%)	-15.9%*** (1.9%)	-15.8% (11.0%)	-13.9%*** (1.9%)
Tactical Operations Officers	Comparison Group				
No High School Degree	12.3%* (6.7%)	-3.9% (8.1%)	-15.9%*** (1.9%)	-15.8% (11.0%)	-13.9%*** (1.9%)
High School	1.0% (1.9%)	-5.4% (3.7%)	-4.3%* (2.2%)	2.0% (5.0%)	-1.2% (1.2%)
Homeschool	-47.8% (42.4%)	7.3% (27.4%)			-7.4% (20.0%)
Adult Education	-3.1% (3.3%)	-4.6% (4.6%)	-18.9%*** (6.7%)	-8.5% (13.9%)	-1.9% (1.9%)
Associate Degree	2.1% (5.4%)	-6.6% (7.7%)	-12.1%** (4.6%)	2.8% (11.3%)	-3.8% (3.0%)
Professional Degree	-4.7% (6.2%)	0.3% (4.0%)	-8.8%* (4.5%)	2.8% (10.8%)	-3.5% (2.3%)
Other Credential	15.3%** (7.3%)	4.6% (9.3%)	-24.6% (25.5%)	-1.2% (31.7%)	7.5% (4.9%)
Other	-54.7% (42.2%)	-29.4% (31.2%)	-33.6% (25.3%)	42.2% (32.7%)	-14.8% (15.2%)
Education Unknown	-6.4%* (3.7%)	0.8% (2.3%)	2.3%* (1.2%)	-0.3% (21.4%)	0.1% (1.0%)
Bachelor's Degree	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Number of Dependents	60.5% (42.2%)				50.6% (39.3%)
1 or 2 Dependents	-3.1%** (1.5%)	0.0% (2.2%)	0.6% (0.8%)	-0.2% (3.5%)	-0.2% (0.7%)
3 or More Dependents	-4.5%*** (1.6%)	5.6%** (2.5%)	-0.4% (1.3%)	1.6% (3.8%)	-0.2% (0.9%)
0 Dependents	Comparison Group				
O4-O5	2.8%* (1.6%)	2.6% (2.6%)	-15.1%*** (2.3%)	2.0% (4.5%)	-0.5% (1.0%)
O6-O10	-5.3% (19.5%)	-2.6% (10.3%)	-27.5% (18.2%)		-8.4% (7.2%)
O1-O3	Comparison Group				
Years of Service	0.5%*** (0.2%)	0.2% (0.2%)	1.1%*** (0.2%)	0.2% (0.4%)	0.7%*** (0.1%)
Female	0.8% (3.0%)	-0.4% (4.8%)	5.1%*** (1.6%)	7.0% (10.3%)	4.0%*** (1.4%)
Female X Unknown Number of Dependents					
Female X 1 or 2 Dependents	5.3%* (3.1%)	4.2% (4.6%)	-5.3%*** (1.7%)	-3.2% (11.2%)	-1.7% (1.5%)
Female X 3 or More Dependents	3.1% (3.2%)	1.8% (5.5%)	-3.4% (2.7%)	-15.6% (13.4%)	-2.4% (1.8%)
Female X Married	-5.3%** (2.5%)	-2.5% (4.4%)	0.5% (1.6%)	-14.7% (10.2%)	-2.4%* (1.3%)
Married	3.3%** (1.3%)	5.1%** (2.3%)	1.7%** (0.8%)	6.5%* (3.5%)	3.0%*** (0.6%)
Asian	-1.5% (2.1%)	9.7%** (3.9%)	1.1% (1.4%)	15.5%** (6.7%)	1.3% (1.1%)
Black	0.5% (1.3%)	2.9% (2.3%)	-1.5% (1.3%)	7.3% (4.6%)	-0.3% (0.8%)
Other Race	-0.5% (2.8%)	-6.7%** (3.3%)	1.5% (1.6%)	-3.2% (5.6%)	-1.4% (1.3%)
Unknown Race	1.9% (2.9%)	-10.3% (7.1%)	2.2% (1.7%)	-2.1% (7.2%)	0.9% (1.5%)
White	Comparison Group				
Hispanic	-0.9% (1.8%)	6.6%** (2.7%)	-1.0% (1.3%)	-0.5% (4.4%)	0.1% (1.0%)
Non-Hispanic	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Navy					5.0%*** (1.0%)
Air Force					13.9%*** (0.7%)
Marine Corps					2.3%* (1.3%)
Army	Comparison Group				
Sample size	8,151	3,671	13,083	1,288	26,193
Total R^2	0.3145	0.2834	0.4028	0.3606	0.3646

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Appendix F: Complete Regression Results for Any Degree, Bachelor's Degree or Higher, and TA-Funded Course Completion Rate (FY99-FY15)

Tables 125-130 show the complete regression results for any degree, Bachelor's degree or higher, and the TA-funded course completion rate, for FY99-FY15.

Table 125. Complete regression results for probability of attaining any degree, conditional on TA use: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Percent of Years Consecutive User	-1.1%***	8.1%***	8.9%***	-1.3%***	4.0%***
	(0.2%)	(0.3%)	(0.3%)	(0.2%)	(0.1%)
Percent of Years Super User	0.3%*	-11.1%***	-11.9%***	0.5%***	-4.9%***
	(0.2%)	(0.3%)	(0.3%)	(0.2%)	(0.1%)
Most Courses PFP	2.0%***	-1.4%***	2.5%***	-0.2%**	0.9%***
	(0.1%)	(0.2%)	(0.1%)	(0.1%)	(0.1%)
Most Courses PNFP	-0.2%*	3.2%***	5.3%***	0.0%	2.5%***
	(0.1%)	(0.2%)	(0.1%)	(0.1%)	(0.1%)
Most Courses OTH	-2.5%***	-6.6%***	-0.1%	0.4%	-2.2%***
	(0.5%)	(1.9%)	(0.9%)	(1.2%)	(0.4%)
Most Courses PFP and PNFP	-1.5%**	-1.2%	-5.7%***	0.4%	-2.8%***
	(0.7%)	(1.1%)	(0.5%)	(0.5%)	(0.4%)
Most Courses PFP and PUB	-2.8%***	1.6%**	-1.6%***	0.5%**	-0.9%***
	(0.3%)	(0.7%)	(0.4%)	(0.3%)	(0.2%)
Most Courses PFP and OTH	-1.2%	1.8%	-3.0%	-0.7%	-0.2%
	(2.7%)	(10.7%)	(6.1%)	(4.9%)	(2.5%)
Most Courses PNFP and PUB	0.5%	-0.1%	-3.9%***	0.0%	-1.6%***
	(0.4%)	(0.6%)	(0.3%)	(0.3%)	(0.2%)
Most Courses PNFP and OTH	-0.4%	-1.7%	-0.7%	-2.3%	-1.3%
	(2.6%)	(15.9%)	(4.6%)	(4.3%)	(2.3%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Most Courses PUB and OTH	1.7% (1.3%)	-4.6% (8.1%)	2.0% (3.1%)	-0.8% (4.6%)	1.2% (1.3%)
Most Courses PFP, PNFP, and PUB	-1.2% (1.9%)	1.1% (3.3%)	-6.1%*** (1.3%)	-0.5% (1.3%)	-2.6%*** (0.9%)
Most Courses PFP, PNFP, and OTH	-13.0% (10.5%)		-43.7%* (25.4%)		-19.1%* (10.4%)
Most Courses PFP, PUB, and OTH	1.4% (5.1%)	29.7% (22.4%)	-4.0% (10.4%)	-1.5% (11.8%)	3.4% (4.7%)
Most Courses PNFP, PUB, and OTH	-1.7% (5.9%)	-14.8% (22.4%)	-4.1% (6.6%)		-2.4% (4.4%)
Most Courses PFP, PNFP, PUB, and OTH	-4.2% (16.6%)				-3.6% (18.0%)
Most Courses PUB	Comparison Group				
Total Credits in Prior Year	0.5%*** (0.0%)	0.8%*** (0.0%)	0.4%*** (0.0%)	0.1%*** (0.0%)	0.5%*** (0.0%)
Infantry, Gun Crews, and Seamanship Specialists	0.7%*** (0.1%)	-1.2%*** (0.3%)	0.4%* (0.2%)	0.4%*** (0.1%)	0.7%*** (0.1%)
Electronic Equipment Repairers	0.0% (0.2%)	2.1%*** (0.3%)	-0.6%*** (0.2%)	0.3%** (0.1%)	0.6%*** (0.1%)
Communications and Intelligence Specialists	0.2%* (0.1%)	0.0% (0.3%)	-0.2% (0.2%)	0.2% (0.1%)	0.2%** (0.1%)
Health Care Specialists	1.1%*** (0.1%)	0.1% (0.3%)	-0.7%*** (0.2%)		0.2%* (0.1%)
Other Technical and Allied Specialists	0.1% (0.2%)	0.1% (0.5%)	0.4%* (0.2%)	-0.3% (0.2%)	0.3%* (0.1%)
Electrical/Mechanical Equipment Repairers	0.3%** (0.1%)	-1.0%*** (0.2%)	-0.8%*** (0.1%)	0.3%*** (0.1%)	-0.4%*** (0.1%)
Craftsworkers	0.4% (0.3%)	-0.2% (0.4%)	0.0% (0.2%)	0.2% (0.2%)	0.3%** (0.1%)
Service and Supply Handlers	0.1% (0.1%)	-1.5%*** (0.3%)	-0.3%* (0.2%)	0.1% (0.1%)	0.0% (0.1%)
Nonoccupational	8.3%*** (2.3%)	-2.8%*** (0.6%)	-2.6%*** (0.8%)	0.0% (0.4%)	-1.5%*** (0.4%)
Unknown Occupation Code	-4.0% (2.9%)	-9.2% (31.6%)			-9.0%*** (3.1%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Tactical Operations Officers	7.8%*** (0.5%)	6.0%*** (2.2%)		1.5%** (0.7%)	3.1%*** (0.5%)
Intelligence Officers	7.9%*** (0.8%)	8.6%*** (2.3%)		3.4%*** (1.0%)	5.3%*** (0.7%)
Engineering and Maintenance Officers	11.3%*** (0.5%)	4.3%*** (1.4%)		3.5%*** (0.6%)	6.9%*** (0.5%)
Scientists and Professionals	9.5%*** (2.4%)			-0.7% (1.7%)	0.4% (2.1%)
Health Care Officers	12.2%*** (1.8%)				9.0%*** (1.9%)
Administrators	9.5%*** (0.7%)	2.5% (2.1%)		1.7%*** (0.6%)	1.5%** (0.6%)
Supply, Procurement, and Allied Officers	9.8%*** (0.7%)	-4.6% (3.4%)		3.0%*** (0.8%)	4.3%*** (0.7%)
Nonoccupational Officers	2.6% (2.2%)			-0.7% (3.8%)	-1.9% (2.2%)
Functional Support and Administration	Comparison Group				
No High School Degree	1.0%*** (0.3%)	-2.5%*** (0.6%)	0.8% (2.7%)	-0.8% (1.2%)	-0.9%*** (0.3%)
Homeschool	-1.2% (0.7%)	-3.2%** (1.6%)		0.6% (0.6%)	-0.7% (0.6%)
Adult Education	1.3%*** (0.2%)	0.4% (0.4%)	-4.6%*** (0.3%)	0.0% (0.2%)	0.8%*** (0.1%)
Associate Degree	-1.6%*** (0.2%)	1.3%*** (0.4%)	8.1%*** (0.2%)	0.7%** (0.3%)	4.9%*** (0.1%)
Bachelor's Degree	2.3%*** (0.2%)	-0.9%* (0.4%)	8.3%*** (0.3%)	0.7%** (0.4%)	3.8%*** (0.2%)
Professional Degree	-4.2%*** (0.4%)	-4.0%** (1.7%)	-4.0%*** (1.3%)	-0.4% (1.6%)	-5.4%*** (0.4%)
Other Nontraditional High School Credential	-1.2%*** (0.1%)	-1.0%** (0.4%)	-4.6%** (1.8%)	-0.1% (0.2%)	-0.7%*** (0.1%)
Other Education	-1.2%** (0.6%)	3.2% (3.7%)	-2.0% (4.8%)	-0.5% (0.6%)	-1.5%** (0.6%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Education Unknown	0.2%	-1.4%*	0.4%	0.7%	0.2%
	(0.3%)	(0.8%)	(0.7%)	(0.5%)	(0.3%)
High School	Comparison Group				
Unknown Number of Dependents	1.1%***	34.0%	1.6%**	0.4%	0.8%***
	(0.3%)	(22.4%)	(0.8%)	(0.3%)	(0.2%)
1 or 2 Dependents	-1.0%***	0.1%	-0.7%***	-0.3%***	-0.5%***
	(0.1%)	(0.3%)	(0.2%)	(0.1%)	(0.1%)
3 or More Dependents	-1.1%***	1.2%***	-0.5%***	-0.2%*	-0.5%***
	(0.1%)	(0.3%)	(0.2%)	(0.1%)	(0.1%)
0 Dependents	Comparison Group				
E4-E6	-1.3%***	0.3%	-2.4%***	-0.1%	-1.6%***
	(0.2%)	(0.3%)	(0.2%)	(0.1%)	(0.1%)
E7-E9	4.0%***	7.8%***	6.8%***	0.7%***	5.1%***
	(0.2%)	(0.4%)	(0.3%)	(0.2%)	(0.1%)
W1-W2	0.4%	14.3%***		-1.6%***	3.5%***
	(0.5%)	(1.8%)		(0.6%)	(0.5%)
W3-W5	-1.3%***	5.8%***		-1.1%*	0.2%
	(0.5%)	(1.5%)		(0.6%)	(0.5%)
E1-E3	Comparison Group				
Years of Service	0.1%***	0.1%***	-0.1%***	0.0%	0.0%***
	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Female	-1.6%***	-0.6%*	-1.2%***	-0.5%***	-1.8%***
	(0.2%)	(0.3%)	(0.2%)	(0.2%)	(0.1%)
Female X Unknown Number of Dependents	0.7%	-46.5%	-0.5%	1.0%	-0.7%
	(0.5%)	(31.6%)	(1.2%)	(0.7%)	(0.5%)
Female X 1 or 2 Dependents	0.1%	1.4%***	0.1%	0.0%	0.7%***
	(0.2%)	(0.4%)	(0.3%)	(0.3%)	(0.2%)
Female X 3 or More Dependents	0.3%	4.0%***	0.3%	0.2%	2.1%***
	(0.2%)	(0.5%)	(0.3%)	(0.3%)	(0.2%)
Female X Married	0.1%	-1.4%***	-0.2%	0.1%	-0.3%**
	(0.2%)	(0.4%)	(0.2%)	(0.2%)	(0.1%)
Married	0.2%**	1.6%***	0.7%***	0.4%***	0.6%***
	(0.1%)	(0.2%)	(0.1%)	(0.1%)	(0.1%)
Asian	0.3%**	0.6%**	-0.1%	-0.1%	0.2%*
	(0.2%)	(0.3%)	(0.3%)	(0.2%)	(0.1%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Black	-0.5%***	-0.7%***	-0.6%***	0.0%	-0.7%***
	(0.1%)	(0.2%)	(0.1%)	(0.1%)	(0.1%)
Other Race	-0.7%***	0.5%*	-0.7%***	-0.1%	-0.9%***
	(0.2%)	(0.2%)	(0.2%)	(0.1%)	(0.1%)
Unknown Race	-0.2%	0.4%	-0.3%	0.1%	0.2%
	(1.0%)	(0.6%)	(0.5%)	(0.2%)	(0.3%)
White	Comparison Group				
Hispanic	-0.3%***	0.1%	-0.5%***	-0.2%**	-0.3%***
	(0.1%)	(0.2%)	(0.2%)	(0.1%)	(0.1%)
Non-Hispanic	Comparison Group				
Navy					7.8%***
					(0.1%)
Air Force					-1.6%***
					(0.1%)
Marine Corps					-4.5%***
					(0.1%)
Army	Comparison Group				
Sample size	438,891	222,904	331,454	137,771	1,131,020
Adjusted R^2	0.2526	0.2653	0.2805	0.0572	0.2428

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 126. Complete regression results for probability of attaining any degree, conditional on TA use: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Percent of Years Consecutive User	4.4%***	4.2%***	-0.6%	-0.4%	3.1%***
	(1.1%)	(1.3%)	(0.6%)	(1.1%)	(0.5%)
Percent of Years Super User	17.0%***	-11.3%***	1.8%**	0.6%	1.3%*
	(1.6%)	(1.9%)	(0.7%)	(1.3%)	(0.7%)
Most Courses PFP	1.7%**	0.0%	2.0%***	-0.3%	1.7%***
	(0.7%)	(0.8%)	(0.3%)	(0.6%)	(0.3%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Most Courses PNFP	11.6%*** (0.5%)	4.9%*** (0.6%)	3.0%*** (0.2%)	0.2% (0.5%)	6.8%*** (0.2%)
Most Courses OTH	-7.8%*** (1.8%)	-9.8% (6.6%)	0.8% (1.4%)	-0.6% (6.3%)	-6.3%*** (1.1%)
Most Courses PFP and PNFP	-20.7%*** (4.0%)	10.1%* (5.5%)	-4.6%*** (1.6%)	-2.6% (3.7%)	-5.9%*** (1.7%)
Most Courses PFP and PUB	-3.4% (3.6%)	2.2% (4.0%)	-0.2% (1.9%)	-3.1% (3.3%)	-0.9% (1.7%)
Most Courses PFP and OTH	-6.1% (15.8%)	5.1% (38.2%)	-4.0% (8.8%)		-1.3% (8.9%)
Most Courses PNFP and PUB	-9.9%*** (2.5%)	0.0% (2.7%)	-0.2% (1.5%)	-1.4% (2.4%)	-4.0%*** (1.2%)
Most Courses PNFP and OTH	-8.3% (8.6%)	5.7% (38.2%)	-3.7% (8.1%)		-6.0% (6.0%)
Most Courses PUB and OTH	13.7%* (7.1%)	13.4% (38.2%)	4.7% (5.8%)	-0.5% (19.0%)	7.4% (4.8%)
Most Courses PFP, PNFP, and PUB	-20.0% (19.2%)	15.6% (18.8%)	-4.1% (10.6%)		-2.7% (9.2%)
Most Courses PFP, PNFP, and OTH	1.6% (38.7%)				-17.4% (31.8%)
Most Courses PFP, PUB, and OTH	19.2% (38.5%)	5.6% (38.2%)			-8.5% (22.4%)
Most Courses PNFP, PUB, and OTH	-32.1% (38.5%)				-18.4% (31.7%)
Most Courses PFP, PNFP, PUB, and OTH					
Most Courses PUB	Comparison Group				
Total Credits in Prior Year	0.5%*** (0.0%)	0.6%*** (0.0%)	0.2%*** (0.0%)	0.1%*** (0.0%)	0.4%*** (0.0%)
Unknown Occupation Code	4.0%* (2.3%)	-41.7%** (18.8%)	-4.1%** (1.8%)	-0.6% (1.3%)	91.4% (1.3%)
General Officers and Executives, NEC	6.1% (11.1%)	2.9% (8.3%)	0.0% (1.7%)	1.2% (4.5%)	0.0%*** (1.7%)
Intelligence Officers	-1.5% (0.9%)	1.2% (1.2%)	-0.3% (0.4%)	-1.2% (0.9%)	0.1%*** (0.4%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Engineering and Maintenance Officers	4.4%*** (0.7%)	2.4%*** (0.8%)	-0.9%*** (0.3%)	0.1% (0.7%)	0.0%*** (0.3%)
Scientists and Professionals	0.6% (1.1%)	-3.5%** (1.5%)	0.0% (0.5%)	-1.0% (2.1%)	27.2% (0.5%)
Health Care Officers	-5.5%*** (0.7%)	-6.2%*** (0.9%)	0.3% (0.4%)		0.0%*** (0.4%)
Administrators	6.1%*** (0.8%)	1.6% (1.0%)	-0.9%** (0.4%)	-0.8% (0.8%)	0.0%*** (0.4%)
Supply, Procurement, and Allied Officers	-1.4%* (0.7%)	-0.9% (1.2%)	-0.1% (0.4%)	0.3% (0.6%)	15.7% (0.3%)
Nonoccupational Officers	0.5% (2.8%)	3.3%* (1.9%)	6.0%*** (1.2%)	0.9% (1.4%)	0.0%*** (0.9%)
Tactical Operations Officers	Comparison Group				
No High School Degree	1.6% (2.9%)	17.4%*** (5.2%)	2.0%* (1.2%)	-1.1% (12.6%)	2.1% (1.3%)
High School	1.6%** (0.7%)	10.1%*** (0.9%)	8.9%*** (0.4%)	0.9% (0.7%)	6.2%*** (0.3%)
Homeschool	12.6% (17.2%)	-11.6% (11.9%)		0.5% (10.3%)	-1.6% (7.5%)
Adult Education	-3.6%** (1.7%)	0.9% (1.2%)	6.2%*** (0.8%)	5.3%** (2.5%)	0.0% (0.6%)
Associate Degree	2.7%* (1.6%)	6.0%*** (1.6%)	7.6%*** (0.7%)	1.3% (1.5%)	4.5%*** (0.6%)
Professional Degree	-7.5%*** (1.3%)	-3.2%*** (1.0%)	0.4% (0.6%)	-2.7%* (1.4%)	-4.5%*** (0.5%)
Other Nontraditional High School Credential	5.7%* (3.1%)	13.0%*** (3.7%)	29.2%*** (10.6%)	0.3% (3.7%)	8.5%*** (1.9%)
Other Education	63.8%** (27.2%)	2.8% (10.5%)	31.5%** (12.2%)	1.7% (4.5%)	5.8% (5.4%)
Education Unknown	-3.2%** (1.6%)	-0.1% (0.9%)	-0.2% (0.4%)	-2.9% (4.8%)	-4.7%*** (0.5%)
Bachelor's Degree	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Unknown Number of Dependents	-1.9% (6.9%)		7.2% (10.6%)	2.8% (4.2%)	4.1% (4.3%)
1 or 2 Dependents	0.3% (0.8%)	-3.1%*** (1.0%)	-0.7%** (0.3%)	-1.0% (0.7%)	-1.4%*** (0.3%)
3 or More Dependents	2.4%*** (0.8%)	-5.3%*** (0.9%)	-2.5%*** (0.4%)	0.0% (0.7%)	-1.8%*** (0.3%)
0 Dependents	Comparison Group				
O4-O5	8.4%*** (0.7%)	-4.5%*** (0.8%)	-3.2%*** (0.3%)	1.1% (0.7%)	0.5%* (0.3%)
O6-O10	0.8% (1.5%)	-6.9%*** (1.6%)	-4.2%*** (0.9%)	-0.7% (4.4%)	-6.2%*** (0.7%)
O1-O3	Comparison Group				
Years of Service	0.0% (0.1%)	0.2%*** (0.1%)	0.4%*** (0.0%)	0.0% (0.1%)	0.3%*** (0.0%)
Female	-5.3%*** (1.5%)	0.0% (1.7%)	0.1% (0.6%)	-0.4% (1.6%)	-1.1%* (0.6%)
Female X Unknown Number of Dependents	7.6% (17.1%)		1.7% (18.4%)	13.4%* (8.0%)	11.2% (9.2%)
Female X 1 or 2 Dependents	3.6%** (1.6%)	3.0% (1.9%)	0.4% (0.7%)	-1.5% (2.0%)	1.6%** (0.7%)
Female X 3 or More Dependents	5.2%*** (1.5%)	1.1% (1.9%)	1.2%* (0.7%)	-1.7% (2.0%)	1.9%*** (0.7%)
Female X Married	-1.1% (1.2%)	-3.7%** (1.6%)	-1.6%*** (0.6%)	0.3% (1.7%)	-1.6%*** (0.6%)
Married	0.8% (0.7%)	3.9%*** (0.9%)	1.2%*** (0.3%)	0.1% (0.7%)	1.4%*** (0.3%)
Asian	-1.0% (1.0%)	0.5% (1.3%)	-1.0%** (0.5%)	-0.4% (1.3%)	-0.4% (0.5%)
Black	1.3%** (0.6%)	0.5% (0.8%)	-0.7%* (0.4%)	0.4% (0.7%)	0.7%** (0.3%)
Other Race	2.7%** (1.1%)	2.3%* (1.4%)	0.0% (0.5%)	1.4% (1.0%)	1.0%** (0.5%)
Unknown Race	3.9%** (2.0%)	-1.5% (2.0%)	-0.5% (0.6%)	-0.7% (1.7%)	-0.3% (0.7%)
White	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Hispanic	1.1% (0.9%)	2.3%** (1.0%)	0.0% (0.4%)	-1.2%* (0.7%)	1.0%** (0.4%)
Non-Hispanic	Comparison Group				
Navy					-2.2%*** (0.3%)
Air Force					-21.5%*** (0.3%)
Marine Corps					-22.9%*** (0.4%)
Army	Comparison Group				
Sample size	32,318	20,157	46,975	7,541	106,991
Adjusted R^2	0.2211	0.1944	0.1210	0.0326	0.1918

Source: CNA analysis of DMDC and TA data.
Notes: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses. Additional controls not shown include state of residence and cohort year.

Table 127. Complete regression results for probability of attaining a bachelor's degree or higher, conditional on TA use: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Percent of Years Consecutive User	-4.1%*** (0.1%)	-1.1%*** (0.2%)	8.1%*** (0.2%)	-1.1%*** (0.1%)	-0.1% (0.1%)
Percent of Years Super User	-2.4%*** (0.1%)	-8.9%*** (0.2%)	-12.5%*** (0.3%)	-0.3%** (0.1%)	-5.9%*** (0.1%)
Most Courses PFP	3.4%*** (0.1%)	2.2%*** (0.1%)	2.7%*** (0.1%)	-0.1%*** (0.1%)	2.4%*** (0.1%)
Most Courses PNFP	2.9%*** (0.1%)	3.9%*** (0.1%)	5.6%*** (0.1%)	0.3%*** (0.1%)	3.8%*** (0.1%)
Most Courses OTH	-1.0%*** (0.3%)	-2.9%** (1.3%)	0.3% (0.8%)	0.3% (0.9%)	-0.7%** (0.3%)
Most Courses PFP and PNFP	-3.0%*** (0.6%)	-4.7%*** (0.8%)	-6.0%*** (0.5%)	-0.6% (0.3%)	-4.6%*** (0.3%)
Most Courses PFP and PUB	-2.7%*** (0.2%)	-1.4%*** (0.5%)	-1.7%*** (0.4%)	0.4%** (0.2%)	-1.6%*** (0.2%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Most Courses PFP and OTH	-1.2% (2.1%)	-7.0% (7.7%)	-8.1% (5.7%)	-0.3% (3.5%)	-1.9% (2.0%)
Most Courses PNFP and PUB	-1.6%*** (0.3%)	-2.6%*** (0.5%)	-3.9%*** (0.3%)	-0.1% (0.2%)	-2.9%*** (0.2%)
Most Courses PNFP and OTH	-2.9% (1.9%)	-2.3% (11.5%)	-3.4% (4.4%)	-1.8% (3.0%)	-2.9% (1.8%)
Most Courses PUB and OTH	1.9%* (1.0%)	-2.3% (5.9%)	2.2% (2.9%)	-0.3% (3.2%)	1.6% (1.0%)
Most Courses PFP, PNFP, and PUB	-2.2% (1.4%)	-5.5%** (2.4%)	-8.0%*** (1.2%)	-0.2% (0.9%)	-5.6%*** (0.8%)
Most Courses PFP, PNFP, and OTH	-15.8%** (7.9%)		-42.0%* (24.0%)		-19.9%** (8.3%)
Most Courses PFP, PUB, and OTH	-2.8% (3.9%)	-15.2% (16.2%)	-4.3% (9.8%)	-0.6% (8.3%)	-3.4% (3.7%)
Most Courses PNFP, PUB, and OTH	-3.7% (4.4%)	-10.0% (16.2%)	-3.9% (6.3%)		-3.3% (3.6%)
Most Courses PFP, PNFP, PUB, and OTH	-7.3% (12.5%)				-4.4% (14.4%)
Most Courses PUB	Comparison Group				
Total Credits in Prior Year	0.4%*** (0.0%)	0.6%*** (0.0%)	0.4%*** (0.0%)	0.1%*** (0.0%)	0.4%*** (0.0%)
Infantry, Gun Crews, and Seamanship Specialists	0.1% (0.1%)	-0.3% (0.2%)	0.5%** (0.2%)	0.2%*** (0.1%)	0.3%*** (0.1%)
Electronic Equipment Repairers	-0.5%*** (0.1%)	0.1% (0.2%)	-0.7%*** (0.2%)	0.2%* (0.1%)	-0.3%*** (0.1%)
Communications and Intelligence Specialists	-0.1% (0.1%)	0.7%*** (0.2%)	-0.3% (0.2%)	0.1% (0.1%)	0.1% (0.1%)
Health Care Specialists	0.3%** (0.1%)	0.7%*** (0.2%)	-0.6%*** (0.2%)		0.2%** (0.1%)
Other Technical and Allied Specialists	-0.2% (0.1%)	1.0%*** (0.4%)	0.3% (0.2%)	-0.1% (0.1%)	0.1% (0.1%)
Electrical/Mechanical Equipment Repairers	-0.3%*** (0.1%)	-0.2% (0.2%)	-0.9%*** (0.1%)	0.1%* (0.1%)	-0.5%*** (0.1%)
Craftsworkers	-0.5%*** (0.2%)	-1.2%*** (0.3%)	-0.2% (0.2%)	0.1% (0.1%)	-0.4%*** (0.1%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Service and Supply Handlers	-0.5%*** (0.1%)	-1.0%*** (0.2%)	-0.2% (0.2%)	0.0% (0.1%)	-0.3%*** (0.1%)
Nonoccupational	7.5%*** (1.7%)	-1.1%** (0.5%)	-2.5%*** (0.7%)	-0.1% (0.3%)	-1.0%*** (0.3%)
Unknown Occupation Code	-1.7% (2.2%)	-0.3% (22.8%)			-5.3%** (2.5%)
Tactical Operations Officers	9.2%*** (0.4%)	5.2%*** (1.6%)		1.6%*** (0.5%)	5.7%*** (0.4%)
Intelligence Officers	9.6%*** (0.6%)	10.5%*** (1.7%)		4.5%*** (0.7%)	7.3%*** (0.6%)
Engineering and Maintenance Officers	9.4%*** (0.4%)	4.8%*** (1.0%)		3.4%*** (0.4%)	5.8%*** (0.4%)
Scientists and Professionals	13.7%*** (1.8%)			1.3% (1.2%)	5.3%*** (1.7%)
Health Care Officers	11.1%*** (1.4%)				8.2%*** (1.6%)
Administrators	11.9%*** (0.6%)	7.2%*** (1.5%)		2.3%*** (0.4%)	4.2%*** (0.5%)
Supply, Procurement, and Allied Officers	10.9%*** (0.5%)	1.2% (2.5%)		3.5%*** (0.6%)	6.1%*** (0.5%)
Nonoccupational Officers	6.1%*** (1.6%)			1.3% (2.6%)	3.2%* (1.8%)
Functional Support and Administration	Comparison Group				
No High School Degree	0.6%*** (0.2%)	-1.6%*** (0.5%)	0.9% (2.5%)	-0.3% (0.9%)	-0.4%** (0.2%)
Homeschool	-0.2% (0.6%)	-2.2%* (1.1%)		0.0% (0.4%)	0.1% (0.5%)
Adult Education	0.7%*** (0.1%)	-0.3% (0.3%)	-4.5%*** (0.3%)	0.1% (0.1%)	1.0%*** (0.1%)
Associate Degree	3.2%*** (0.1%)	10.1%*** (0.3%)	8.6%*** (0.2%)	1.6%*** (0.2%)	8.5%*** (0.1%)
Bachelor's Degree	4.8%*** (0.2%)	5.8%*** (0.3%)	7.0%*** (0.3%)	1.4%*** (0.3%)	6.2%*** (0.1%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Professional Degree	-0.6%[*] (0.3%)	2.5%[**] (1.3%)	-5.3%[***] (1.3%)	0.5% (1.1%)	-1.8%[***] (0.3%)
Other Nontraditional High School Credential	-0.7%[***] (0.1%)	-0.9%[***] (0.3%)	-4.4%[***] (1.7%)	-0.2% (0.2%)	-0.2%[**] (0.1%)
Other Education	-0.3% (0.5%)	3.1% (2.7%)	-4.5% (4.5%)	-0.2% (0.4%)	-0.3% (0.5%)
Education Unknown	0.2% (0.2%)	2.5%[***] (0.5%)	0.3% (0.6%)	0.0% (0.3%)	0.9%[***] (0.2%)
High School	Comparison Group				
Unknown Number of Dependents	1.7%[***] (0.2%)	-3.1% (16.1%)	1.4%[*] (0.7%)	0.3% (0.2%)	1.3%[***] (0.2%)
1 or 2 Dependents	-0.7%[***] (0.1%)	-0.7%[***] (0.2%)	-0.7%[***] (0.1%)	-0.3%[***] (0.1%)	-0.6%[***] (0.1%)
3 or More Dependents	-1.3%[***] (0.1%)	-0.2% (0.2%)	-0.6%[***] (0.2%)	-0.2%[***] (0.1%)	-1.0%[***] (0.1%)
0 Dependents	Comparison Group				
E4-E6	-1.6%[***] (0.1%)	-1.5%[***] (0.2%)	-2.5%[***] (0.2%)	-0.2%[***] (0.1%)	-1.9%[***] (0.1%)
E7-E9	1.8%[***] (0.2%)	3.8%[***] (0.3%)	6.5%[***] (0.3%)	0.5%[***] (0.1%)	3.4%[***] (0.1%)
W1-W2	-5.1%[***] (0.4%)	0.6% (1.3%)		-2.7%[***] (0.4%)	-3.0%[***] (0.4%)
W3-W5	-3.0%[***] (0.4%)	1.3% (1.1%)		-1.8%[***] (0.4%)	-2.0%[***] (0.4%)
E1-E3	Comparison Group				
Years of Service	-0.1%[***] (0.0%)	-0.1%[***] (0.0%)	-0.1%[***] (0.0%)	0.0% (0.0%)	-0.1%[***] (0.0%)
Female	-1.2%[***] (0.1%)	-1.0%[***] (0.2%)	-1.3%[***] (0.2%)	-0.4%[***] (0.1%)	-1.5%[***] (0.1%)
Female X Unknown Number of Dependents	0.6% (0.4%)	-0.8% (22.8%)	-0.2% (1.1%)	1.2%[**] (0.5%)	0.0% (0.4%)
Female X 0 Dependents					
Female X 1 or 2 Dependents	-0.2% (0.2%)	0.4% (0.3%)	0.2% (0.3%)	0.1% (0.2%)	0.2% (0.1%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Female X 3 or More Dependents	-0.1% (0.2%)	0.2% (0.3%)	0.1% (0.3%)	0.1% (0.2%)	0.6%*** (0.1%)
Female X Married	0.4%** (0.1%)	-0.7%*** (0.3%)	-0.2% (0.2%)	0.1% (0.2%)	0.1% (0.1%)
Married	-0.3%*** (0.1%)	0.8%*** (0.1%)	0.6%*** (0.1%)	0.2%*** (0.1%)	0.2%*** (0.1%)
Asian	-0.4%*** (0.1%)	0.0% (0.2%)	-0.4% (0.3%)	-0.2% (0.1%)	-0.5%*** (0.1%)
Black	-0.3%*** (0.1%)	-0.8%*** (0.1%)	-0.5%*** (0.1%)	0.0% (0.1%)	-0.7%*** (0.0%)
Other Race	0.0% (0.1%)	0.2% (0.2%)	-0.7%*** (0.2%)	-0.1% (0.1%)	-0.6%*** (0.1%)
Unknown Race	0.6% (0.7%)	-0.6% (0.5%)	-0.4% (0.5%)	0.0% (0.2%)	-0.2% (0.2%)
White	Comparison Group				
Hispanic	-0.4%*** (0.1%)	-0.6%*** (0.1%)	-0.5%*** (0.2%)	-0.2%*** (0.1%)	-0.5%*** (0.1%)
Non-Hispanic	Comparison Group				
Navy					2.8%*** (0.1%)
Air Force					1.9%*** (0.1%)
Marine Corps					-2.2%*** (0.1%)
Army	Comparison Group				
Sample size	438,891	222,904	331,454	137,771	1,131,020
Adjusted R^2	0.2309	0.2352	0.2836	0.0527	0.2356

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 128. Complete regression results for probability of attaining a bachelor's degree or higher, conditional on TA use: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Percent of Years Consecutive User	4.0%***	3.2%***	-0.7%	-0.2%	2.3%***
	(1.1%)	(1.3%)	(0.5%)	(1.0%)	(0.5%)
Percent of Years Super User	16.6%***	-12.9%***	1.8%**	0.6%	1.1%
	(1.6%)	(1.8%)	(0.7%)	(1.2%)	(0.7%)
Most Courses PFP	2.6%***	1.3%*	2.1%***	-0.3%	2.1%***
	(0.7%)	(0.7%)	(0.3%)	(0.5%)	(0.3%)
Most Courses PNFP	12.7%***	6.1%***	3.1%***	0.4%	7.2%***
	(0.5%)	(0.6%)	(0.2%)	(0.4%)	(0.2%)
Most Courses OTH	-7.2%***	-7.2%	0.8%	-0.9%	-6.2%***
	(1.7%)	(6.2%)	(1.3%)	(5.8%)	(1.1%)
Most Courses PFP and PNFP	-21.5%***	0.9%	-4.5%***	-2.4%	-7.3%***
	(4.0%)	(5.2%)	(1.6%)	(3.3%)	(1.7%)
Most Courses PFP and PUB	-3.6%	-2.0%	-0.1%	-2.2%	-1.6%
	(3.5%)	(3.8%)	(1.9%)	(3.0%)	(1.6%)
Most Courses PFP and OTH	-6.9%	0.1%	-4.1%		-1.4%
	(15.7%)	(36.3%)	(8.7%)		(8.7%)
Most Courses PNFP and PUB	-9.6%***	-4.8%*	-1.4%	-2.4%	-5.4%***
	(2.4%)	(2.5%)	(1.5%)	(2.2%)	(1.2%)
Most Courses PNFP and OTH	-9.5%	0.9%	-3.5%		-6.2%
	(8.5%)	(36.3%)	(8.0%)		(5.8%)
Most Courses PUB and OTH	13.4%*	6.3%	4.9%	0.5%	7.3%
	(7.0%)	(36.3%)	(5.8%)	(17.3%)	(4.6%)
Most Courses PFP, PNFP, and PUB	-21.1%	-5.6%	-4.3%		-9.8%
	(19.0%)	(17.9%)	(10.5%)		(8.9%)
Most Courses PFP, PNFP, and OTH	0.2%				-16.1%
	(38.3%)				(31.1%)
Most Courses PFP, PUB, and OTH	17.6%	2.8%			-7.3%
	(38.1%)	(36.3%)			(21.9%)
Most Courses PNFP, PUB, and OTH	-34.3%				-20.1%
	(38.1%)				(30.9%)
Most Courses PFP, PNFP, PUB, and OTH					
Most Courses PUB	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Total Credits in Prior Year	0.5%***	0.5%***	0.2%***	0.1%***	0.4%***
	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Unknown Occupation Code	4.1%*	-30.0%*	-4.0%**	0.1%	0.1%
	(2.2%)	(17.9%)	(1.8%)	(1.2%)	(1.2%)
General Officers and Executives, N.E.C.	6.1%	3.7%	-0.1%	1.7%	7.9%***
	(11.0%)	(7.9%)	(1.7%)	(4.1%)	(1.6%)
Intelligence Officers	-1.1%	1.6%	-0.3%	-0.5%	1.5%***
	(0.9%)	(1.1%)	(0.4%)	(0.8%)	(0.4%)
Engineering and Maintenance Officers	4.6%***	-1.1%	-0.8%***	0.2%	2.6%***
	(0.7%)	(0.8%)	(0.3%)	(0.6%)	(0.3%)
Scientists and Professionals	0.9%	-3.6%**	0.0%	-0.6%	0.7%
	(1.0%)	(1.5%)	(0.5%)	(1.9%)	(0.5%)
Health Care Officers	-5.3%***	-5.2%***	-0.2%		-3.0%***
	(0.7%)	(0.8%)	(0.4%)		(0.3%)
Administrators	6.5%***	-0.3%	-1.0%***	-0.7%	4.0%***
	(0.8%)	(1.0%)	(0.4%)	(0.7%)	(0.4%)
Supply, Procurement, and Allied Officers	-1.4%*	-0.1%	-0.1%	0.3%	0.6%*
	(0.7%)	(1.1%)	(0.4%)	(0.5%)	(0.3%)
Nonoccupational Officers	1.0%	4.1%**	5.0%***	0.5%	4.0%***
	(2.8%)	(1.8%)	(1.2%)	(1.2%)	(0.9%)
Tactical Operations Officers	Comparison Group				
No High School Degree	1.1%	0.0%	2.1%*	-1.0%	0.2%
	(2.9%)	(4.9%)	(1.2%)	(11.5%)	(1.3%)
High School	-0.8%	3.5%***	8.0%***	0.3%	3.1%***
	(0.7%)	(0.8%)	(0.4%)	(0.6%)	(0.3%)
Homeschool	-5.6%	-4.5%		0.8%	-3.8%
	(17.0%)	(11.4%)		(9.4%)	(7.3%)
Adult Education	-4.1%**	-1.6%	5.9%***	6.2%***	-0.9%
	(1.7%)	(1.1%)	(0.8%)	(2.3%)	(0.6%)
Associate Degree	3.0%*	7.6%***	7.6%***	0.9%	5.4%***
	(1.6%)	(1.5%)	(0.6%)	(1.3%)	(0.6%)
Professional Degree	-7.9%***	-3.2%***	0.3%	-2.6%**	-4.1%***
	(1.3%)	(1.0%)	(0.6%)	(1.3%)	(0.5%)
Other Nontraditional High School Credential	3.7%	3.0%	29.8%***	1.2%	3.7%**
	(3.1%)	(3.5%)	(10.5%)	(3.4%)	(1.8%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Other Education	66.7%**	-2.1%	31.6%***	2.5%	5.0%
	(26.9%)	(9.9%)	(12.1%)	(4.1%)	(5.3%)
Education Unknown	-4.2%***	-0.4%	-0.2%	-2.5%	-4.1%***
	(1.6%)	(0.9%)	(0.4%)	(4.3%)	(0.4%)
Bachelor's Degree	Comparison Group				
Unknown Number of Dependents	-2.9%		7.1%	3.4%	2.5%
	(6.8%)		(10.5%)	(3.8%)	(4.2%)
1 or 2 Dependents	0.6%	-1.6%*	-0.7%**	-0.6%	-0.9%***
	(0.8%)	(0.9%)	(0.3%)	(0.6%)	(0.3%)
3 or More Dependents	3.3%***	-3.1%***	-2.3%***	0.2%	-0.7%**
	(0.8%)	(0.9%)	(0.3%)	(0.7%)	(0.3%)
0 Dependents	Comparison Group				
O4-O5	9.2%***	-1.2%*	-2.9%***	1.4%**	2.0%***
	(0.7%)	(0.7%)	(0.3%)	(0.6%)	(0.3%)
O6-O10	1.6%	-3.3%**	-3.9%***	-0.5%	-3.8%***
	(1.5%)	(1.5%)	(0.9%)	(4.0%)	(0.7%)
O1-O3	Comparison Group				
Years of Service	-0.1%	0.1%**	0.3%***	0.0%	0.1%***
	(0.1%)	(0.1%)	(0.0%)	(0.1%)	(0.0%)
Female	-5.3%***	-1.8%	0.0%	-0.1%	-1.3%**
	(1.5%)	(1.7%)	(0.6%)	(1.4%)	(0.6%)
Female X Unknown Number of Dependents	6.8%		1.1%	12.4%*	10.6%
	(17.0%)		(18.2%)	(7.3%)	(9.0%)
Female X 1 or 2 Dependents	3.5%**	2.7%	0.4%	-1.5%	1.5%**
	(1.6%)	(1.8%)	(0.7%)	(1.8%)	(0.7%)
Female X 3 or More Dependents	5.5%***	1.3%	1.4%**	-1.2%	2.0%***
	(1.5%)	(1.8%)	(0.7%)	(1.8%)	(0.7%)
Female X Married	-1.4%	-2.2%	-1.5%***	0.1%	-1.4%**
	(1.2%)	(1.5%)	(0.5%)	(1.5%)	(0.5%)
Married	0.6%	2.6%***	1.1%***	0.2%	1.0%***
	(0.7%)	(0.9%)	(0.3%)	(0.6%)	(0.3%)
Asian	-1.2%	0.1%	-1.1%**	0.3%	-0.6%
	(1.0%)	(1.3%)	(0.5%)	(1.2%)	(0.5%)
Black	1.4%**	0.4%	-0.6%*	0.3%	0.7%**
	(0.6%)	(0.8%)	(0.4%)	(0.6%)	(0.3%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Other Race	2.6%**	2.6%*	-0.1%	0.5%	0.9%*
	(1.1%)	(1.3%)	(0.5%)	(0.9%)	(0.5%)
Unknown Race	4.2%**	-0.9%	-0.5%	-0.2%	0.0%
	(2.0%)	(1.9%)	(0.6%)	(1.5%)	(0.7%)
White	Comparison Group				
Hispanic	1.1%	1.9%*	0.0%	-1.3%**	0.9%**
	(0.9%)	(1.0%)	(0.4%)	(0.7%)	(0.4%)
Non-Hispanic	Comparison Group				
Navy					-5.1%***
					(0.3%)
Air Force					-21.2%***
					(0.3%)
Marine Corps					-22.2%***
					(0.4%)
Army	Comparison Group				
Sample size	32,318	20,157	46,975	7,541	106,991
Adjusted R^2	0.2173	0.1387	0.1148	0.0255	0.1707

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 129. Complete regression results for course completion rate, conditional on TA use: Marginal effects of military and demographic characteristics, enlisted only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Total Courses	0.5%***	0.4%***	0.2%***	0.4%***	0.3%***
	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Percent of Years Consecutive User	10.3%***	19.8%***	7.1%***	12.0%***	11.7%***
	(0.2%)	(0.3%)	(0.2%)	(0.5%)	(0.1%)
Percent of Years Super User	12.2%***	1.9%***	7.3%***	11.1%***	8.7%***
	(0.2%)	(0.2%)	(0.2%)	(0.4%)	(0.1%)
Most Courses PFP	3.6%***	0.6%***	1.3%***	1.2%***	2.0%***
	(0.1%)	(0.2%)	(0.1%)	(0.2%)	(0.1%)
Most Courses PNFP	4.4%***	4.7%***	4.1%***	7.4%***	4.9%***
	(0.2%)	(0.2%)	(0.1%)	(0.2%)	(0.1%)
Most Courses OTH	-3.8%***	3.1%*	10.3%***	-9.4%***	-0.8%*
	(0.6%)	(1.7%)	(0.8%)	(3.1%)	(0.5%)
Most Courses PFP and PNFP	-9.0%***	-8.3%***	-5.9%***	-8.4%***	-7.2%***
	(1.1%)	(1.1%)	(0.5%)	(1.4%)	(0.5%)
Most Courses PFP and PUB	-8.8%***	-5.0%***	-2.6%***	-4.4%***	-5.4%***
	(0.5%)	(0.7%)	(0.4%)	(0.7%)	(0.3%)
Most Courses PFP and OTH	-11.3%***	-15.7%	-3.5%	18.3%	-9.3%***
	(3.9%)	(10.3%)	(6.0%)	(14.1%)	(3.0%)
Most Courses PNFP and PUB	-5.4%***	-3.2%***	-1.7%***	-7.8%***	-3.1%***
	(0.6%)	(0.6%)	(0.3%)	(1.0%)	(0.3%)
Most Courses PNFP and OTH	-9.0%**	-17.6%	-8.4%*	10.2%	-7.9%***
	(3.7%)	(15.3%)	(4.7%)	(12.3%)	(2.8%)
Most Courses PUB and OTH	-1.8%	-10.2%	-9.3%***	12.1%	-4.1%***
	(1.9%)	(7.8%)	(3.1%)	(13.1%)	(1.5%)
Most Courses PFP, PNFP, and PUB	-12.1%***	-8.7%***	-6.6%***	-15.6%***	-8.6%***
	(2.8%)	(3.1%)	(1.3%)	(3.8%)	(1.2%)
Most Courses PFP, PNFP, and OTH	-22.7%		-0.4%		-19.2%
	(15.2%)		(25.9%)		(12.7%)
Most Courses PFP, PUB, and OTH	-9.4%	16.2%	3.5%	40.5%	-3.6%
	(7.4%)	(21.6%)	(10.6%)	(33.8%)	(5.7%)
Most Courses PNFP, PUB, and OTH	-5.0%	-17.2%	-12.4%*		-5.6%
	(8.5%)	(21.6%)	(6.7%)		(5.5%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Most Courses PFP, PNFP, PUB, and OTH	-30.9% (24.0%)				-34.0% (22.1%)
Most Courses PUB	Comparison Group				
Total Credits in Prior Year					
Infantry, Gun Crews, and Seamanship Specialists	2.0%*** (0.2%)	0.5% (0.3%)	0.0% (0.2%)	8.0%*** (0.3%)	2.4%*** (0.1%)
Electronic Equipment Repairers	2.4%*** (0.2%)	2.8%*** (0.2%)	2.9%*** (0.2%)	6.2%*** (0.3%)	3.3%*** (0.1%)
Communications and Intelligence Specialists	3.1%*** (0.2%)	2.1%*** (0.3%)	1.0%*** (0.2%)	2.8%*** (0.3%)	2.2%*** (0.1%)
Health Care Specialists	2.2%*** (0.2%)	1.3%*** (0.2%)	0.9%*** (0.2%)		1.9%*** (0.1%)
Other Technical and Allied Specialists	2.1%*** (0.3%)	3.7%*** (0.5%)	2.7%*** (0.2%)	4.5%*** (0.5%)	2.8%*** (0.2%)
Electrical/Mechanical Equipment Repairers	3.4%*** (0.2%)	2.6%*** (0.2%)	1.5%*** (0.1%)	3.8%*** (0.3%)	2.7%*** (0.1%)
Craftsworkers	2.7%*** (0.4%)	2.5%*** (0.3%)	2.3%*** (0.2%)	3.7%*** (0.5%)	2.8%*** (0.2%)
Service and Supply Handlers	1.6%*** (0.2%)	0.0% (0.3%)	-1.2%*** (0.2%)	1.5%*** (0.3%)	0.5%*** (0.1%)
Nonoccupational	6.3%** (2.5%)	-1.5%*** (0.6%)	2.5%*** (0.6%)	2.8%** (1.1%)	1.2%*** (0.4%)
Unknown Occupation Code	21.6%*** (4.2%)	29.7% (30.4%)			21.3%*** (3.8%)
Tactical Operations Officers	21.1%*** (0.7%)	16.7%*** (2.1%)		20.2%*** (2.1%)	19.2%*** (0.6%)
Intelligence Officers	20.4%*** (1.1%)	17.3%*** (2.2%)		20.8%*** (2.7%)	19.5%*** (0.8%)
Engineering and Maintenance Officers	19.6%*** (0.8%)	15.8%*** (1.3%)		19.7%*** (1.8%)	18.7%*** (0.6%)
Scientists and Professionals	16.8%*** (3.4%)			20.2%*** (4.7%)	17.2%*** (2.5%)
Health Care Officers	17.7%*** (2.6%)				18.1%*** (2.4%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Administrators	17.1%*** (1.1%)	12.2%*** (2.0%)		16.8%*** (1.8%)	16.1%*** (0.7%)
Supply, Procurement, and Allied Officers	16.6%*** (1.0%)	14.3%*** (3.3%)		17.9%*** (2.3%)	17.0%*** (0.8%)
Non-Occupational Officers	25.4%*** (3.0%)			22.2%** (10.8%)	23.6%*** (2.6%)
Functional Support and Administration	Comparison Group				
No High School Degree	-1.1%*** (0.4%)	-3.5%*** (0.6%)	1.6% (2.7%)	0.1% (3.2%)	-0.5% (0.3%)
Home School	-0.3% (1.0%)	-0.4% (1.5%)		0.5% (1.5%)	-0.5% (0.7%)
Adult Education	-0.3% (0.3%)	-3.1%*** (0.4%)	-0.7%** (0.3%)	-2.1%*** (0.6%)	-1.6%*** (0.1%)
Associate's Degree	4.0%*** (0.3%)	2.4%*** (0.4%)	1.4%*** (0.2%)	1.6%** (0.7%)	2.0%*** (0.1%)
Bachelor's Degree	6.1%*** (0.3%)	3.2%*** (0.4%)	4.7%*** (0.3%)	1.6% (1.0%)	5.0%*** (0.2%)
Professional Degree	2.1%*** (0.6%)	4.3%*** (1.6%)	4.5%*** (1.2%)	-8.1%* (4.3%)	4.3%*** (0.5%)
Other Nontraditional High School Credential	-6.8%*** (0.2%)	-3.3%*** (0.4%)	-10.0%*** (1.8%)	-5.5%*** (0.7%)	-7.0%*** (0.2%)
Other Education	-4.7%*** (0.8%)	-1.6% (3.4%)	8.4%* (4.8%)	-1.9% (1.7%)	-5.1%*** (0.7%)
Education Unknown	0.1% (0.4%)	-2.3%*** (0.7%)	0.9% (0.7%)	1.4% (1.3%)	-0.5%* (0.3%)
High School	Comparison Group				
Unknown Number of Dependents	4.0%*** (0.4%)	23.8% (17.6%)	5.5%*** (0.7%)	2.4%*** (0.8%)	5.1%*** (0.3%)
1 or 2 Dependents	-0.8%*** (0.2%)	0.1% (0.2%)	0.1% (0.1%)	-0.9%*** (0.3%)	-0.5%*** (0.1%)
3 or More Dependents	-2.2%*** (0.2%)	-0.4% (0.2%)	0.0% (0.2%)	-0.7%** (0.3%)	-1.1%*** (0.1%)
0 Dependents	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
E4-E6	9.5%***	8.2%***	6.7%***	8.8%***	8.2%***
	(0.2%)	(0.3%)	(0.2%)	(0.3%)	(0.1%)
E7-E9	14.0%***	11.5%***	10.3%***	13.0%***	12.3%***
	(0.3%)	(0.4%)	(0.3%)	(0.5%)	(0.2%)
W1-W2	-0.8%	-0.7%		-2.2%	-1.3%**
	(0.7%)	(1.7%)		(1.7%)	(0.6%)
W3-W5	-0.2%	0.1%		0.6%	-0.1%
	(0.7%)	(1.5%)		(1.7%)	(0.6%)
E1-E3	Comparison Group				
Years of Service	0.2%***	0.3%***	0.4%***	0.3%***	0.3%***
	(0.0%)	(0.0%)	(0.0%)	(0.0%)	(0.0%)
Female	0.0%	0.4%	0.2%	-2.2%***	-0.2%*
	(0.2%)	(0.3%)	(0.2%)	(0.5%)	(0.1%)
Female X Unknown Number of Dependents	2.9%***	-49.4%*	2.6%**	3.6%*	3.0%***
	(0.7%)	(27.8%)	(1.0%)	(2.0%)	(0.6%)
Female X 1 or 2 Dependents	-1.5%***	-2.3%***	-0.8%***	-0.2%	-1.0%***
	(0.3%)	(0.4%)	(0.3%)	(0.7%)	(0.2%)
Female X 3 or More Dependents	-3.3%***	-2.8%***	-2.6%***	-1.1%	-2.5%***
	(0.3%)	(0.4%)	(0.3%)	(0.9%)	(0.2%)
Female X Married	-0.3%	-0.6%*	0.3%	0.2%	0.0%
	(0.3%)	(0.3%)	(0.2%)	(0.6%)	(0.2%)
Married	1.4%***	1.6%***	2.1%***	1.0%***	1.5%***
	(0.1%)	(0.2%)	(0.1%)	(0.3%)	(0.1%)
Asian	-0.3%	0.7%***	0.1%	0.3%	0.1%
	(0.2%)	(0.3%)	(0.3%)	(0.5%)	(0.1%)
Black	-7.5%***	-6.9%***	-6.7%***	-7.3%***	-7.0%***
	(0.1%)	(0.2%)	(0.1%)	(0.3%)	(0.1%)
Other Race	-1.9%***	-1.6%***	-2.4%***	-1.0%***	-1.7%***
	(0.2%)	(0.2%)	(0.2%)	(0.4%)	(0.1%)
Unknown Race	-0.1%	-1.7%***	-2.2%***	-0.1%	-0.7%**
	(1.4%)	(0.6%)	(0.5%)	(0.6%)	(0.3%)
White	Comparison Group				
Hispanic	-2.0%***	-1.6%***	-1.7%***	-3.0%***	-2.1%***
	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.1%)
Non-Hispanic	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Navy					8.1%*** (0.1%)
Air Force					10.1%*** (0.1%)
Marine Corps					6.7%*** (0.1%)
Army	Comparison Group				
Sample size	477,832	243,446	359,198	154,151	1,234,627
Adjusted R^2	0.1210	0.1212	0.0954	0.0990	0.1330

Source: CNA analysis of DMDC and TA data.
Note: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively. Standard errors are in parentheses.
Note: Additional controls not shown include state of residence and cohort year.

Table 130. Complete regression results for course completion rate, conditional on TA use: Marginal effects of military and demographic characteristics, officers only, FY99-FY15

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Total Courses	0.3%*** (0.0%)	0.2%*** (0.0%)	0.2%*** (0.0%)	0.2%*** (0.0%)	0.2%*** (0.0%)
Percent of Years Consecutive User	17.0%*** (0.7%)	14.5%*** (0.8%)	16.7%*** (0.5%)	17.6%*** (1.3%)	16.1%*** (0.3%)
Percent of Years Super User	0.1% (0.9%)	-2.0%** (1.0%)	-7.8%*** (0.6%)	-5.2%*** (1.6%)	-5.1%*** (0.4%)
Most Courses PFP	-3.3%*** (0.4%)	-0.2% (0.4%)	-0.9%*** (0.2%)	-3.1%*** (0.7%)	-1.7%*** (0.2%)
Most Courses PNFP	3.2%*** (0.3%)	3.1%*** (0.4%)	2.6%*** (0.2%)	4.3%*** (0.6%)	3.0%*** (0.2%)
Most Courses OTH	-28.9%*** (1.1%)	-2.2% (3.8%)	1.6% (1.2%)	-1.6% (8.3%)	-18.5%*** (0.8%)
Most Courses PFP and PNFP	-11.8%*** (2.6%)	-9.4%*** (3.2%)	-10.7%*** (1.4%)	-8.5%* (4.8%)	-10.8%*** (1.2%)
Most Courses PFP and PUB	-6.4%*** (2.4%)	-3.0% (2.3%)	-10.6%*** (1.7%)	-4.4% (4.3%)	-7.0%*** (1.2%)
Most Courses PFP and OTH	-11.0% (10.5%)	17.2% (22.2%)	-10.1% (7.7%)		-2.6% (6.2%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Most Courses PNFP and PUB	-6.1%*** (1.6%)	-5.7%*** (1.6%)	-5.0%*** (1.3%)	-3.8% (3.1%)	-5.5%*** (0.8%)
Most Courses PNFP and OTH	-10.5%* (5.7%)	6.7% (22.2%)	2.1% (7.2%)		-9.9%** (4.2%)
Most Courses PUB and OTH	12.6%*** (4.7%)	22.7% (22.2%)	0.5% (5.1%)	-36.0% (24.8%)	7.5%** (3.3%)
Most Courses PFP, PNFP, and PUB	-15.6% (12.7%)	12.1% (9.8%)	-32.3%*** (9.4%)		-11.4%* (6.1%)
Most Courses PFP, PNFP, and OTH	-10.3% (25.6%)				-21.0% (22.1%)
Most Courses PFP, PUB, and OTH	21.8% (25.4%)	-16.0% (22.2%)			6.6% (15.6%)
Most Courses PNFP, PUB, and OTH	-27.9% (25.4%)				-35.8% (22.0%)
Most Courses PFP, PNFP, PUB, and OTH					
Most Courses PUB	Comparison Group				
Total Credits in Prior Year					
Unknown Occupation Code	-1.3% (1.5%)	-9.9% (11.0%)	-1.1% (1.6%)	0.0% (1.7%)	-0.9% (0.9%)
General Officers and Executives, NEC	1.6% (7.4%)	-2.6% (4.8%)	0.8% (1.5%)	-6.0% (5.8%)	0.3% (1.1%)
Intelligence Officers	0.1% (0.6%)	-2.0%*** (0.7%)	-0.3% (0.4%)	-1.5% (1.1%)	-0.4% (0.3%)
Engineering and Maintenance Officers	0.1% (0.4%)	-0.2% (0.5%)	-0.5%** (0.3%)	0.4% (0.8%)	0.1% (0.2%)
Scientists and Professionals	0.0% (0.7%)	-2.9%*** (0.9%)	0.1% (0.4%)	-0.4% (2.7%)	-0.4% (0.4%)
Health Care Officers	0.2% (0.5%)	-2.0%*** (0.5%)	0.1% (0.4%)		-0.2% (0.2%)
Administrators	0.6% (0.5%)	-1.7%*** (0.6%)	-0.3% (0.3%)	0.6% (1.0%)	0.2% (0.3%)

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Supply, Procurement, and Allied Officers	-1.4%*** (0.5%)	-0.4% (0.7%)	-0.4% (0.3%)	-0.2% (0.8%)	-0.7%*** (0.2%)
Non-Occupational Officers	-1.3% (1.9%)	-2.5%** (1.1%)	-0.7% (0.9%)	0.8% (1.7%)	-0.4% (0.6%)
Tactical Operations Officers	Comparison Group				
No High School Degree	-4.7%** (1.9%)	-5.0%* (3.0%)	-1.9%* (1.1%)	-9.8% (16.5%)	-2.3%** (0.9%)
High School	-2.2%*** (0.5%)	-0.8% (0.5%)	-1.7%*** (0.4%)	2.1%** (0.9%)	-1.1%*** (0.2%)
Homeschool	3.5% (11.4%)	-8.9% (6.9%)		12.3% (13.5%)	-1.6% (5.2%)
Adult Education	-3.5%*** (1.1%)	-3.3%*** (0.7%)	-2.3%*** (0.7%)	-1.6% (3.3%)	-2.5%*** (0.4%)
Associate Degree	0.7% (1.0%)	0.0% (0.9%)	1.3%** (0.6%)	2.0% (1.9%)	0.9%** (0.4%)
Professional Degree	-3.3%*** (0.9%)	-2.0%*** (0.6%)	2.3%*** (0.5%)	-0.9% (1.8%)	-0.9%** (0.4%)
Other Nontraditional High School Credential	-5.7%*** (2.0%)	-2.7% (2.2%)	-6.1% (9.4%)	1.7% (4.8%)	-4.0%*** (1.3%)
Other Education	-14.5% (18.0%)	-7.0% (5.9%)	-5.0% (10.8%)	1.8% (5.9%)	-3.7% (3.7%)
Education Unknown	-0.9% (1.0%)	-1.6%*** (0.5%)	-1.4%*** (0.4%)	1.5% (5.5%)	-1.6%*** (0.3%)
Bachelor's Degree	Comparison Group				
Unknown Number of Dependents	8.8%** (4.3%)		2.2% (9.4%)	1.9% (5.3%)	6.2%** (2.9%)
1 or 2 Dependents	0.3% (0.5%)	0.4% (0.5%)	-0.6%** (0.3%)	0.2% (0.9%)	-0.2% (0.2%)
3 or More Dependents	-0.4% (0.5%)	-0.6% (0.5%)	-0.8%*** (0.3%)	0.2% (0.9%)	-0.6%*** (0.2%)
0 Dependents	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
O4-O5	2.5%*** (0.4%)	1.5%*** (0.4%)	0.3% (0.3%)	1.9%** (0.9%)	1.7%*** (0.2%)
O6-O10	6.4%*** (1.0%)	3.0%*** (0.9%)	3.0%*** (0.8%)	11.1%* (5.7%)	4.1%*** (0.5%)
O1-O3	Comparison Group				
Years of Service	0.0% (0.0%)	0.0% (0.0%)	0.0% (0.0%)	0.1% (0.1%)	0.0%*** (0.0%)
Female	-1.1% (1.0%)	-0.4% (1.0%)	0.5% (0.5%)	3.9%** (2.0%)	0.3% (0.4%)
Female X Unknown Number of Dependents	-0.8% (10.5%)		13.7% (16.2%)	2.5% (10.4%)	1.5% (6.2%)
Female X 1 or 2 Dependents	-0.4% (1.1%)	-0.5% (1.1%)	-0.2% (0.6%)	-3.4% (2.6%)	-0.4% (0.5%)
Female X 3 or More Dependents	0.3% (1.0%)	1.3% (1.1%)	0.0% (0.6%)	-0.7% (2.6%)	0.1% (0.5%)
Female X Married	-0.3% (0.8%)	0.8% (0.9%)	-0.4% (0.5%)	-2.5% (2.1%)	-0.4% (0.4%)
Married	1.6%*** (0.4%)	2.2%*** (0.5%)	3.1%*** (0.3%)	3.4%*** (0.8%)	2.6%*** (0.2%)
Asian	-0.8% (0.7%)	-0.3% (0.8%)	-1.7%*** (0.5%)	-3.6%** (1.7%)	-1.1%*** (0.3%)
Black	-5.7%*** (0.4%)	-3.2%*** (0.5%)	-4.5%*** (0.3%)	-7.5%*** (0.9%)	-5.1%*** (0.2%)
Other Race	-1.4%** (0.7%)	-3.7%*** (0.8%)	-2.2%*** (0.4%)	-1.2% (1.3%)	-2.3%*** (0.3%)
Unknown Race	0.2% (1.2%)	-0.4% (1.2%)	-0.9% (0.5%)	-0.1% (2.1%)	-0.6% (0.5%)
White	Comparison Group				
Hispanic	-2.1%*** (0.6%)	-0.9% (0.6%)	-1.7%*** (0.4%)	-0.9% (0.9%)	-1.5%*** (0.3%)
Non-Hispanic	Comparison Group				

Characteristic	Army	Navy	Air Force	Marine Corps	DOD
Navy					4.9%*** (0.2%)
Air Force					4.8%*** (0.2%)
Marine Corps					3.8%*** (0.3%)
Army	Comparison Group				
Sample size	33,611	20,558	48,170	7,803	110,142
Adjusted R^2	0.1129	0.0674	0.0814	0.0919	0.0950

Source: CNA analysis of DMDC and TA data.
Notes: Statistical significance at the 1-, 5-, and 10-percent levels are denoted by ***, **, and *, respectively.
Standard errors are in parentheses. Additional controls not shown include state of residence and cohort year.

Part 4: Service-Level Differences in Tuition Assistance Use and Outcomes: A Qualitative Analysis

Authors: Lauren Malone, Kyle Neering, and Chris Gonzales, with Jacklyn Kambic

Executive Summary

Background

Tuition Assistance (TA) is the primary education benefit that the Department of Defense (DOD) provides to Servicemembers to ease the financial burdens of continuing education while serving in the military. It also aims to make them more academically ready—i.e., set them up for academic success (via degree attainment and course completion)—both in service and after they transition to civilian life. A 2017 CNA study revealed several Service-level differences in TA use, which ultimately were related to such outcomes as course completion and degree attainment. That analysis revealed, for example, that enlisted Airmen and Sailors are more likely than Soldiers or Marines to use TA and successfully complete their courses. It was unclear, however, what led to such differences. Possible reasons include differences in TA use policy, Servicemembers' abilities to use TA, Servicemembers' educational goals, and Service-level incentives for TA use.

To better understand the driving factors behind Service-level differences in TA use and outcomes, the DOD Voluntary Education Office asked CNA to evaluate Service-level differences in continuing education incentives and motivations, TA access, and TA awareness. The ultimate objective of this effort is to equalize access and awareness across the Services while minimizing the risks of course and degree noncompletion.

Approach

In this study, we took a qualitative approach to answering these questions and focused primarily on enlisted Servicemembers because they make up the majority of the TA-using population. Our approach included a comprehensive policy review, conversations with on-installation education counselors and other relevant subject matter experts (SMEs), and focus groups (FGs) with both officers and enlisted Servicemembers (junior enlisted, TA-using mid-grade enlisted, non-TA-using mid-grade enlisted, and senior enlisted). Synthesizing these inputs allowed us to hypothesize why we observe Service-level differences in both TA use and outcomes (such as course completion and degree attainment) and ultimately to recommend ways to maximize TA use and equalize overall TA success across the Services. This study was originally published in June 2020, and our focus groups and SME discussions were conducted in the summer/fall of 2019. Some of the findings and recommendations discussed in this report will have been resolved or acted on prior to the publication of this final version, approved for

public release. This study and its resulting recommendations should be viewed as representative of the state of Service-level TA differences at the time of the original study's execution.

We caution readers that the generalizability of our findings is questionable. This is not only because we visited only one installation per service, but also because our focus groups were based on a convenience sample, with some demographic groups being over- or under-represented. Without further study, we cannot be certain that our findings regarding any one Service would apply to Servicemembers *throughout* the Service, as opposed to only reflecting experiences of those in our FGs (and on that specific installation). More generalizable findings would require a representative survey. That said, our findings do represent inputs from a diverse group of people, and we are confident in those findings that emerge consistently across the FGs and find them informative as to how TA policies, TA practices, and Servicemember perceptions about TA differ across Services. Our findings will assist the Department of Defense in identifying particular areas in need of greater focus, thereby informing how to shape future policy with the end-goal of further standardizing the TA learner experience across the Services.

Findings

Our findings reveal that the variation across the Services in TA policy, TA understanding, and occupational responsibilities and operational tempo (OPTEMPO), as well as in support from senior leaders and immediate supervisors, likely is the primary driver of these differences. The most important policy differences are those that limit Servicemembers' TA use, including when they are first able to use TA. Prominent among these are time-in-service restrictions: from September 2013 through April 2019, the Marine Corps *required* Marines to have served two years before using TA, and the Navy *implemented the same restriction* in October 2019. Other important policy differences, as reported by our FG participants,[90] include the following:

- The Army's and Navy's FY funding limits—$4,000 and $3,000 per Servicemember, respectively—are lower than DOD's $4,500 maximum.
- The Army, Navy, and Air Force all impose annual credit-hour limits. Specifically, the Army limits TA use to 16 semester hours (SHs) per FY, the Navy limits the lifetime number of credits to 120, and the Air Force limits the lifetime number of credits per degree type (124 SHs for a BA/BS; 42 SHs for an MA/MS).

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[90] Not all FG perceptions are codified in policy.

- The Army and Marine Corps require minimum General Technical (GT) scores on the Armed Services Vocational Aptitude Battery (ASVAB) for TA use.[91]
- The Air Force *requires* additional educational attainment and degrees for promotion, whereas it is simply an added advantage for promotion in the other Services.

We also find substantial variation in Servicemembers' understanding of the TA program. The most concerning knowledge gaps were those among mid-grade TA users, whose experience with TA should make them more informed, as well as those among senior enlisted and officers, who advise those in their chains of command. We also find differences in whether Servicemembers were aware of the TA benefit at enlistment and in when and how they first learned about the TA program. With the exception of Airmen, who primarily learn about TA in a training session, most Servicemembers learn about the program from mentors or by word of mouth. They noted that either the TA program (a) was not covered in their Welcome Aboard briefs or installation in-processing or (b) was only briefly mentioned as an available benefit, with little-to-no information provided on what the benefit covers or how to start the process. Given the significant misinformation regarding the TA program, there are risks of further dissemination of incorrect information when program knowledge is being spread via word of mouth or by leaders and mentors without the most up-to-date information.

Differences in TA use across the Services may be significantly influenced not only by leaders' understanding of the TA program but also by their TA "buy-in." That is, leaders' support for and encouragement of TA use are key determinants of Servicemembers' TA use. Although many Servicemembers learn about TA from a supervisor, their experiences vary widely across commands. Some supervisors use their one-on-one counseling sessions as opportunities to encourage TA participation and stress the benefits of continued education to young Servicemembers. In other cases, particularly in the Army and Marine Corps, leaders are less supportive of TA use. Army and Marine Corps SMEs noted that some commanders do not consider the pursuit of civilian education to be mission relevant and therefore do not encourage TA use. Relatedly, when asked about command approval, roughly a third of Army and Marine Corps FG respondents indicated that obtaining command approval was a challenge, whereas no Navy or Air Force mid-grade user participants said that it was an issue.[92]

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[91] Though noted by the Army's education counselors, Army representatives reviewing this document stated that in fact there is no longer a minimum GT score requirement for TA use. This suggests a miscommunication, thus creating a de facto GT requirement.

[92] Army representatives who reviewed this document stated that the Army does not require command approval for TA use. That said, one-third of mid-grade Army TA users cited this as a challenge to TA use, suggesting that they are in fact getting command pushback when attempting to use TA.

Finally, occupational requirements—and the resulting OPTEMPO and deployment frequency—significantly influence TA use and help to explain cross-Service differences. Servicemembers noted that those in different occupations have varying amounts of downtime during their workdays, which determines whether they are able to complete any coursework while at work. Servicemembers in different occupations (and Services) also spend varying amounts of time on field exercises, in training, or deployed. Many noted that deployments can be an ideal time to use TA, owing to the absence of family responsibilities, but there are unique challenges, including internet connectivity and communication challenges. In *some* downrange locations, in-person classes are offered, but discussions revealed that this option is not available to all Servicemembers.

Recommendations

Based on these findings, if DOD seeks to maximize Servicemembers' use of TA, we recommend that it take the following actions:

- Standardize TA policy across the Services.
- Provide uniform TA funding across the Services (annual funding limits, per-course maximum costs).
- Standardize the content and delivery of TA messaging, to eliminate misinformation.
- Ensure that the Services present TA information *early* in Servicemembers' careers and reinforce TA messaging *throughout* their military lifecycle.
- Ensure that education counselors are available to all Servicemembers.

We also recommend that the Services maximize TA use in the following ways:

- Work to ensure leadership buy-in across commands, perhaps by implementing standardized leadership training on the benefits—both to the individual Service-member and to the command—of increased educational attainment.
- As part of this buy-in, encourage commands to include TA training as part of in-processing, ideally by having education counselors brief the units.
- Provide junior Servicemembers and first-time TA users with guidance on how to effectively juggle TA use with their other responsibilities and how to effectively use TA when deployed.
- Counsel TA users on the trade-offs between online versus brick-and-mortar courses and help to prepare them for online-specific challenges.

If implemented, these recommendations will make both Servicemembers' ability to use TA and their overall TA success rates more similar across the Services. Of course, some Service- and

command-level differences will persist because the ability of Servicemembers to successfully use TA will vary by circumstance. These recommendations, however, certainly will decrease the magnitude of current differences.

Introduction

Tuition Assistance (TA) is the Department of Defense's (DOD's) primary program for providing educational benefits to Servicemembers. With a maximum benefit of $250 per semester credit hour and up to $4,500 in tuition per fiscal year, TA aims to ease the financial burden of continuing an education while serving. Per DOD policy, TA is available for Servicemembers participating in high school completion courses and other approved courses that are part of a preestablished degree program *or* are non-degree-related language courses "integral to the Defense Language Transformation Roadmap" [103]. All undergraduate and graduate courses must be taken at accredited institutions recognized by the US Department of Education [103].

As with other DOD-level policies on specific aspects of the TA program (e.g., eligibility requirements or approved and disapproved TA uses), the Services can impose *more* restrictive guidelines than those prescribed by DOD. Such differences could at least partially explain Service-level differences in members' likelihood to use TA (as well as the frequency and concentration of TA use) found in a 2017 CNA study [104]. These Service-level differences in TA use ultimately were related to outcomes, such as course completion and degree attainment [104].

Specifically, among both enlisted and officers, the Navy and the Air Force were the two Services with the highest percentages of TA-using members. In addition, the Air Force had the most Servicemembers using TA both actively and persistently (as defined by consecutive terms of TA use and the number of courses taken).[93] This likely is at least partially because the Air Force requires an associate degree for promotion above the junior ranks. Sizable differences in TA-related outcomes emerged as well; Airmen and Sailors had the highest course completion rates, and TA-using enlisted Sailors were the most likely to attain a degree of any level using TA. Thus, with a few exceptions (including Army officers being the most likely to attain degrees using TA), Sailors and Airmen emerged as the largest and most successful groups of TA users.

These Service-level differences led to a number of questions regarding underlying causes, including the following:

- Are differences in outcomes due to Service-level policy differences or differences in the Service-level implementation of DOD-level policy?
- Are they due to differences in TA access?
- Are they due to differences in TA awareness?

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[93] A more detailed summary of these findings can be found in Appendix A.

- Are they due to differences in Service-level obstacles to or incentives for TA use (e.g., due to deployment schedules or occupational operational tempo (OPTEMPO))?
- Are they due to differences in Servicemembers' average education levels at accession and, relatedly, their educational goals?

Identifying the source of these Service-level differences in TA use and success is important so that they can be properly addressed. Research shows that off-duty education is important for Servicemembers' quality of life [18, 44], promotion opportunities [105], and after-service transitions into the civilian labor market [44, 66, 106], but it is not without risks. Specifically, education can be costly for those who ultimately do not attain a degree; such Servicemembers might acquire educational debt but never receive the full benefits of taking on that debt. In addition, variance in college graduates' earnings and debt levels has increased over the past several decades, making college more financially worthwhile for some (those with ultimately higher earnings) but no longer worthwhile for others (those with higher debt) [91].[94]

The DOD Voluntary Education Office asked CNA to evaluate Service-level differences in continuing education incentives or motivations, TA access, and TA awareness, with the ultimate objective of equalizing access and awareness across the Services while minimizing the risks of course and degree noncompletion. In this study, we take a largely qualitative approach to addressing these issues, and we focus on enlisted Servicemembers because they make up the majority of the TA-using population. Our approach includes a comprehensive policy review, conversations with on-installation education counselors and other relevant subject matter experts (SMEs), and focus groups (FGs) with both enlisted Servicemembers and officers. The synthesis of these inputs informs why Service-level differences likely exist in TA use and TA outcomes, such as course completion and degree attainment.

The rest of this report is organized as follows. In the section that follows, we review our qualitative approach and discuss a few methodological caveats regarding the generalizability of our findings. In the next few sections, we review the primary cross-Service differences in *how* Servicemembers use TA (including when in their careers they typically use TA and the educational goals that they tend to pursue), the perceived benefits from TA use, and, ultimately, the challenges that Servicemembers face in using their TA benefits. These differences help to inform why both proclivity to use TA and TA success rates may vary by Service. In the final section, we offer conclusions and recommendations.

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[94] For a more in-depth discussion of the existing literature, see [91].

Approach

This study uses a multipronged qualitative approach, incorporating a policy review, SME discussions, and FGs with active-duty enlisted Servicemembers and officers in all four Services. In compiling information from all these sources, we gained a comprehensive understanding of the possible underlying factors that cause TA use and success rates to vary by Service.[95] Whereas our previous report summarized TA use from FY99 to FY15, this report summarizes the *current* TA environment. It is reasonable to expect that current TA policies, processes, or experiences may differ from those contributing to our previously observed Service-level differences. Here we focus on highlighting current Service-level differences that could contribute to differences in TA use and TA success rates. If DOD seeks to standardize TA opportunities and experiences across the Services, understanding these differences is a necessary first step. In the rest of this section, we provide details on each of our methodological elements.

Policy review

We had two primary objectives in conducting the policy review. First, written DOD-level policies informed our understanding of DOD's intent in providing TA, as well as its expectations regarding Servicemember and Education Service Officer (ESO) responsibilities, the counseling that should be made available, and other aspects of TA use. We then reviewed Service-level policies to identify areas in which they differ from DOD policies, most often by being more restrictive regarding TA's approved uses or by providing more support for Servicemembers. Second, we highlighted Service-level differences that might affect how Servicemembers understand, access, and use TA. Table 131 lists the policies that were reviewed.

In reviewing these documents, we searched for information related to a predetermined set of subject areas, including the Services' perspectives on the TA program's mission and objectives, the courses and educational purposes for which TA can (and cannot) be used, eligibility requirements, and counseling requirements. We used Service-level policy differences to inform differences (if any) in Service cultures surrounding continuing education—and using TA to

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[95] We cannot extrapolate findings for members of the reserve component because our SME discussions and FGs were restricted to active-duty Servicemembers.

finance it. We then evaluated whether these themes emerged consistently in all Services' policies or only in certain ones. Table 132 presents our themes of interest, by subject area.[96]

Table 131. TA policies reviewed

Date	Policy number	Policy name or description
United States Code (U.S.C.)		
N/A	10 U.S.C. 2005	Advanced education assistance: active-duty agreement; reimbursement requirements
N/A	10 U.S.C. 2007	Payment of tuition for off-duty training or education
DOD policies		
Apr. 2, 2020	DOD Instruction 1322.25 w/ change 4	Voluntary Education Programs
July 7, 2014	DOD Instruction 1322.25 w/ change 3	Voluntary Education Programs
Mar. 14, 2013	DOD Instruction 1322.19	Voluntary Education Programs in Overseas Areas
Apr. 23, 2007	DOD Directive 1322.08E	Voluntary Education Programs for Military Personnel
Army policies		
June 6, 2018	Army Directive 2018-09	Army Tuition Assistance Policy
Sept. 6, 2009	Army Regulation 621-5	Army Continuing Education System
Navy policies		
May 19, 2019	NAVADMIN 114/19	Tuition Assistance Policy Update
Oct. 18, 2018	SECNAV Inst. 1560.4B	Department of the Navy Voluntary Education Programs
May 21, 2018	NAVADMIN 127/18	Navy Tuition Assistance May 2018 Update
Sept. 30, 2016	NAVADMIN 219/16	Voluntary Education/Navy College Program Transformation
Mar. 4, 2008	OPNAV Inst. 1560.9A	Voluntary Education for Navy Sailors
Marine Corps policies		
Apr. 4, 2019	MARADMIN 218/19	Tuition Assistance Guidelines Update
Mar. 11, 2019	MARADMIN 150/19	Tuition Assistance Guidelines Update
May 7, 2018	MARADMIN 255/18	FY18 Tuition Assistance Guidelines Update
Sept. 1, 2010	MCO 1560.25	Marine Corps Lifelong Learning Program
Air Force policy		
June 5, 2018	AFI36-2649_AFGM2018-01	Air Force Guidance Memorandum (AFGM) to AFI 36-2649, Air Force Voluntary Education Program

Source: CNA.

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[96] We discuss the most relevant policy differences within the corresponding sections of this report. For a more complete review of all TA-related policy, both at the DOD and Service levels, see [107].

Table 132. Primary TA themes of interest, by predetermined subject areas

TA mission/ objectives	What TA can be used for	What TA cannot be used for	TA eligibility requirements	Counseling requirements
• Educational gains • Military career advancement • Equity in educational opportunities • Financial support • Personal and professional development • Benefits to the Service • Service culture of lifelong learning • Developing leaders • Responsiveness	• Declared educational goal • Limited fees • Non-degree-related language courses • Certificate programs • Approved nonlateral degrees[a] • Coursework within semester-hour/ quarter-hour limits • Off-duty courses • Coursework up to funding caps • Coursework when deployed, under certain conditions	• College preparatory courses • Non-degree-related languages "dominant in the force" • Doctorate courses • Additional courses if have unresolved grades • Repeat courses • More than 2 TA-funded courses per term • Courses for lateral degrees • Failed courses[b]	• Prerequisites • First-time TA user requirements • Initial degree plan • Sufficient time remaining on contract • Active-duty/reserve differences • Good standing/ career progression • Command approval	• Delineated counselor responsibilities • Counselor accessibility • Required counseling intervals/ checkpoints • Well-defined counseling objectives/ purposes

Source: CNA analysis of DOD- and Service-specific policies.

[a] Nonlateral degrees are defined as being at a higher level than any degree a Servicemember already has attained. For example, a Servicemember with an associate degree pursuing an additional associate degree would be pursuing a lateral degree. The same Servicemember pursuing a bachelor's degree would be pursuing a nonlateral degree.

[b] TA funds are recouped when Servicemembers fail courses (i.e., receive a grade of "D" or below for undergraduate courses; receive a grade of "C" or below for graduate courses).

Subject matter expert discussions

We visited one installation per Service to conduct SME discussions and hold focus groups. Throughout this report, we refer to these installations generically as "Army installation," "Navy installation," "Marine Corps installation," and "Air Force installation" in order to protect participants' anonymity. At each installation, we met with the Services' education SMEs, including (in different cases) education counselors or education program directors at each of the four installations we visited.[97] We asked these SMEs for their perspectives on Servicemembers' knowledge of the TA program and available educational benefits. We also discussed how they would characterize "typical" TA users, in terms of (a) their military characteristics and educational goals and (b) when (in their military careers) and how (in terms of TA concentration and online versus brick-and-mortar institutions) they tend to use TA. Other discussion topics included the primary benefits of TA use, how Servicemembers might feel encouraged or incentivized to use TA, and what obstacles or challenges might prevent Servicemembers from using TA. Finally, we asked them to discuss their primary objectives and strategies in providing effective education counseling.[98] Again, our ultimate objective was to identify cross-Service differences—in this case, in SMEs' perspectives and responses—that might help to explain substantial cross-Service differences in both TA use and outcomes, such as course completion and degree attainment.

Focus group discussions

At each of the four installations we visited (one per Service), we conducted focus groups with both enlisted Servicemembers and officers. We separated our groups by paygrade for two reasons. First, our discussion questions varied for each of the FG populations. Second, no Servicemember should be in the same FG as his or her supervisor.[99]

We conducted separate FGs with junior enlisted, TA-using mid-grade enlisted, non-TA-using mid-grade enlisted, and senior enlisted and officers (together). For all but the senior enlisted

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[97] Because of the Navy's recent elimination of stateside education counselors, the only SMEs available for the discussion at the Navy installation were the two education program directors.

[98] We have incorporated the relevant SME inputs within the corresponding sections of this report. For a more complete review of all SME discussions, see [108].

[99] Servicemembers may hesitate to voice their opinions (especially if they are contradictory) in the presence of their supervisors. Servicemembers also may fear repercussions from statements made in FGs if their direct supervisors are present. Separating FGs by paygrade helps to ensure that all participants feel free to participate honestly and openly, thereby increasing the number of inputs we receive and the accuracy of our findings.

and officers, we aimed to glean information on their overall awareness of the TA program, ways they may have felt encouraged to use TA (or discouraged from using it), their educational goals, and (among those who had used TA) any particular challenges that they faced. We focused on different topics with different populations. In the junior enlisted FGs, for example, we focused primarily on their understanding of the TA program and their in-service educational goals, whereas the senior enlisted and officer FGs were designed to inform how leaders decide whether to approve a TA request and what factors they consider. The separation of TA-using mid-grade enlisted from their non-TA-using counterparts helped to ensure that the nonusers' inputs on their *perceptions* of the TA program (and its associated benefits and challenges) would not be influenced by the users' inputs on their actual experiences. In addition, some questions—such as why they have not used TA—are relevant only to nonusers, and others— such as their experiences with the TA approval process—are relevant only to users.[100]

In addition to guided discussions, we collected information via short surveys administered at the beginning of each FG. This information includes both demographic (gender, race, ethnicity, age, marital status, and number of dependents) and military (paygrade, Service, and occupation) characteristics. These surveys also had questions about prior (or current) TA use, such as the number of TA-funded courses they had taken, school type (private for-profit, private not-for-profit, or public), percentage of TA classes passed, and degree discipline.

Table 133 shows the number of participants, by population and Service. In total, we spoke with 299 Servicemembers, primarily junior and mid-grade enlisted members. Fewer senior enlisted and officers participated, likely because of their lesser availability due to leadership responsibilities and the smaller number of senior Servicemembers at each installation. Because we do not have information on the number of Servicemembers, per population, solicited at each installation, we are not able to report a participation rate.

Table 133. Number of FG participants, by Service and paygrade

	E-1–E-3	E-4–E-7 TA users	E-4–E-7 TA nonusers	E-8–E-9	O-1–O-5	Total
Air Force	18	37	16	13	12	96
Army	17	31	15	15	0	78
Marine Corps	31	18	28	6	4	87
Navy	1	22	7	3	5	38
Total	67	108	66	37	21	299

Source: CNA.

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[100] Although we split the mid-grade enlisted FGs by TA use, we did not do so for the junior enlisted or for leadership (senior enlisted/officer) FGs. This is both because we expected there would be insufficient junior enlisted and leadership FG participants to warrant this separation (as there were) and because mid-grade enlisted make up the majority of the TA-using population.

As the table reveals, the Air Force had the largest turnout (96 total participants) and the Navy had the lowest turnout (38 total participants). Overall, E-4–E-7 Servicemembers were the most represented population in all four Services, likely influenced by our FG design of splitting this population into TA users and nonusers and asking the installations to solicit equal numbers of participants for each population. Within E-4–E-7 participants, TA users were the most represented population in the Air Force, Army, and Navy (each of these Services provided at least twice as many E-4–E-7 TA users as E-4–E-7 nonusers), whereas the majority of the Marine Corps' E-4–E-7 participants had never used TA.[101]

Junior enlisted Servicemembers were fairly well represented in the Air Force, Army, and Marine Corps FGs. Regrettably, only one E-1–E-3 Sailor attended the Navy FGs. As a result, we do not report on the experiences of junior Sailors because our single respondent does not adequately represent the junior enlisted Navy force, and it is important that no FG inputs be traceable to individual respondents.

Similarly, though more than 20 senior enlisted and officers from the Air Force participated in FGs, we had sparse participation from these populations in the other Services. No Army officers and fewer than 5 Marine Corps officers and Navy senior enlisted participated. Since the officer and senior enlisted populations generally are smaller than the junior and mid-grade enlisted populations in these (and all) Services, caution should be taken in generalizing the perspectives of these small groups to those of all Sailors and Marines in the senior enlisted or officer ranks.

Note that, because our findings are informed by qualitative analysis, they are meant to highlight trends and *suggest* possible explanations for Service-level variation. The generalizability of our findings is questionable, both because we visited only one installation per Service and because our FG participants were a convenience sample (i.e., those who attended did not have conflicting obligations at our scheduled times) and may not be representative of Servicemembers overall. However, we do find that our participants' demographic characteristics often align with those of the general population. For example, with the exception of the Navy, Servicemembers in the E1-E3 and E4-E7 paygrades are well represented in our sample, and generally reflective of the their Services' general population. In addition, the race, ethnicity, and marital status of our FG participants closely mirrors the characteristics of Servicemembers overall.

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[101] Concerns were raised as to whether Marines were primarily concentrated in only one or two occupations and, if so, whether that might explain this finding. The Marines in our FGs, however, had varied occupations; those most represented were Service and Supply Handlers, Communications and Intelligence, Functional Support/ Administration, and Other Technical and Allied Specialists. Our participants also came from varied occupations in the other Services. The occupations most represented in the other Services were Infantry/Gun Crews/Seamen, and Service and Supply Handlers in the Army; Health Care Specialists, Functional Support/Administration, and Communications and Intelligence in the Air Force; and Communications and Intelligence, Craftsworkers, and Electrical/Mechanical Equipment repairers in the Navy.

However, we have identified a few ways in which our FG populations are not representative of the larger Service populations. In particular, we find that our FG participants are *over*representative of women in the Navy, Marine Corps, and Air Force; *under*representative of officers and *over*representative of senior enlisted across DOD; and *under*representative of younger, junior enlisted in the Navy. A more detailed description of our FG participants' characteristics—including how they differ from the general population—can be found in Appendix B.

To the extent that TA use or TA experiences vary by gender, paygrade, or years of service, our FG participants' responses may differ from those that would have been provided by a larger and more representative subset of Servicemembers. More generalizable findings would require a representative survey. That said, our findings do represent inputs from a diverse group of people. Therefore, we are confident in any themes or findings that emerge consistently across the FGs and find them generally informative as to how TA policies, TA practices, and Servicemember perceptions about TA differ across Services. However, readers should keep in mind that, without further study, we cannot be certain that our findings regarding any one Service would apply to Servicemembers *throughout* the Service, as opposed to only reflecting experiences of those in our FGs (and on that specific installation).

TA Use

As we noted earlier, this report primarily was motivated by a prior CNA report on TA use across DOD [104], which found significant disparities in use across the four Services. In particular, the percentage of Servicemembers who ever used TA was highest in the Air Force and lowest in the Marine Corps.[102] The difference between these two Services was 10 percentage points or more. In this section, we describe TA use across Services and paygrades in our FG sample. We also discuss some policy differences across the Services, as well as senior leaders' and SMEs' perceptions about TA in the different Services.

TA use among FG participants

We begin by describing FG participants' TA use, collected from their intake forms completed prior to FG discussions. While these responses do not come from representative samples of all Servicemembers from each Service and, therefore, should not be interpreted as actual TA use rates, they provide a useful comparison point to our previous work. As noted earlier, we previously found that Sailors and Airmen were, on average, more likely than their Army or Marine Corps counterparts to use TA, complete their TA-funded courses, and ultimately attain degrees. Thus, if we were to find that Airmen in our sample are the least likely to use TA, we might be concerned that the experiences of those in our FGs do not reflect those of the typical Airman. Table 134 shows the percentage of participants who have ever used TA, by Service and paygrade.

Table 134. Percentage of FG participants who have used TA

Paygrade	Army	Navy	Marine Corps	Air Force
E-1–E-3	17.6%	N/A	12.9%	22.2%
E-4–E-7	67.4%	75.9%	39.1%	69.8%
E-8–E-9	93.3%	N/A	66.7%	100%
O-1–O-5	N/A	100%	N/A	83.3%

Source: CNA analysis of intake form data.
Note: N/A means that the subgroup had insufficient observations (<5) to calculate a percentage.

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[102] We remind the reader that the particularly high TA use in the Air Force is likely influenced by the requirement of an associate degree for promotion.

The relative proportions of TA use across Services shown in Table 134 align with those found in our previous work. Marines in our sample use TA at a lower rate than participants from the other Services. Conversely, TA use across paygrades in our sample was highest among Airmen and Sailors. The relative rankings in TA use align with those in our previous study [104].

SME discussions also indicated less consistent TA use in the Marine Corps than in the other Services. Education counselors noted that Marines use TA sporadically, as their personal and professional commitments allow, and often do not make steady educational progress. Marines often start using TA shortly after accessing, but various responsibilities (e.g., adapting to military life, becoming proficient in their occupations, and starting families) cause Marines to "pause" pursuit of their educational goals. They note that Marines then tend to reengage closer to the ends of their careers.

All other SMEs indicated that Servicemembers largely use TA continuously. Navy and Air Force SMEs noted that TA users' course loads might alternate between one and two classes, depending on whether they are deployed and their other commitments, but they do tend to take at least one class per term. Finally, Army counselors noted that TA-using Soldiers in paygrades E-3 through E-7 tend to progress continuously. Since these Soldiers represent 84.5 percent of the Army's TA users, we can conclude that most Army TA users are taking courses continuously.

One potential explanation for the relatively low rates of TA use among Marines might be that the Marine Corps is composed primarily of first-term Marines, who have a lower average length of service and thus have fewer opportunities to take advantage of TA. Another potential explanation might be that the Marine Corps installation is known for having a particularly high operational tempo; therefore, Marines' assignments at this location are less conducive to TA use. As we see in Table 134, however, Marines in our FGs have the lowest utilization of TA across all paygrades, including E-8 and E-9. Though the percentage of Marines who have ever used TA increases across paygrades, the overall percentage does not catch up with that from the other Services. This suggests that lower TA use in the Marine Corps may be driven by factors other than lower average time in service.

Because the Marine Corps typically accesses Servicemembers with less education than other Services, we may be concerned that lower TA use rates among Marines simply reflect less familiarity with formal education. We find, however, that this likely is not the case. Figure 5 breaks down TA use by participants' educational level at accession. That is, it shows the percentage of Servicemembers who used TA, within a "Service-education" group. Regardless of initial education, Marines are the least likely of FG participants to use TA. The Marine Corps' relatively low use of TA is, therefore, likely not due to its relatively low percentage of accessions with more than a high school degree.

Figure 5 also shows that, among Army, Navy, and Air Force FG participants, the majority who entered with an HSD/GED (i.e., high school degree or equivalent) or a college degree used TA. However, FG participants from these Services who entered with some college credits were the least likely to use TA. The relative dip in TA use among those with some college in these three Services may suggest that many Servicemembers mainly pursue associate degrees since our "some college" sample includes those who have any number of college credits but have not attained bachelor's degrees; those with associate degrees will be part of this some-college population. Alternatively, it may suggest that those who enter with some college enlisted because they started college and decided that they would rather join the military than continue their secondary education. This could make them unlikely to use TA in service. Of course, we do not have sufficient data to determine the underlying cause for the lower TA use among those accessing with "some college." Not surprisingly, these FG responses also indicate that most Servicemembers in the Army, Navy, and Air Force who joined with college degrees (predominantly officers) used TA in pursuit of an advanced degree (not shown).

Figure 5.   Percentage of FG respondents who used TA, by Service and education at accession
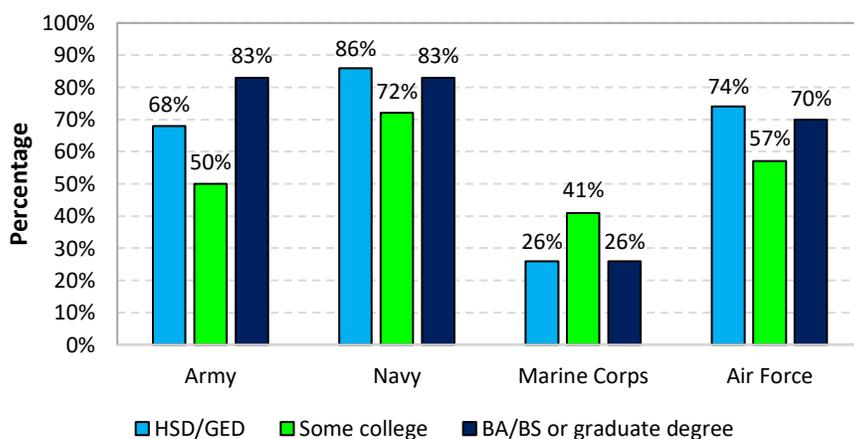
Source: CNA analysis of intake form data.

Educational goals and fields of study

DOD policy requires TA users to have a degree plan on file with the education office before a TA request is approved. This degree plan includes the Servicemember's field of study and the university that he or she will attend. We asked participants to describe their educational goals, including their field of study and level of degree. While TA nonusers do not have an official

degree plan filed with their education office, many indicated having educational goals in specific fields of study.

Nearly all junior enlisted and mid-grade TA nonusers from all Services said that they had education goals. Those from the Marine Corps, however, were the least likely to provide specifics, such as level of degree or field of study. Of interest, Marine Corps counselors discussed a disconnect between Marines' educational goals and the program types that TA will cover, which could explain the lack of concrete goals mentioned in the FGs. They noted that not all Marines are degree driven, and they have seen an increasing demand for certifications, which TA will not fund. As an example, they highlighted that certification as a welder or emergency medical technician can lead to high-paying civilian jobs, setting Marines up for post-transition success. This policy seems counterintuitive—especially when national higher education trends are shifting away from traditional degree paths and toward specific skills training and certifications [109]. SMEs suggested that many Marines' interest levels dwindle once they learn that TA will not fund certifications and that "TA needs to evolve with the population." They noted that the TA program at present excludes those Servicemembers interested in pursuing occupations requiring certifications (e.g., information technology, program management, and many blue-collar occupations) from beginning their educational trajectory while in service. In fact, the TA program does fund certification programs (such as welding and IT programs) that are offered for college credit. This apparent contradiction between policy and counselor input suggests that either the counselors with whom we spoke were unaware of this policy or they believe that Marines are more interested in working toward certifications that are not offered for college credit.

DOD policy does not restrict the fields of study that a Servicemember can pursue, as long as the school is accredited. Figure 6 shows the wide array of FG members' disciplines. Despite being given a list of 13 different disciplines from which to choose, the most common response to degree discipline was "Other." The next three most common responses were Business/Finance (23 percent), Social Sciences (15 percent), and Technology (11 percent). The remaining 26 percent of responses indicated a variety of other disciplines, such as Engineering, Health, Arts, Physical Sciences, Education, and Biology.

Army and Marine Corps SMEs also discussed whether TA users tend to pursue degrees in particular disciplines. Army counselors noted that many Soldiers pursue criminal justice or management degrees but that others, particularly those in combat arms, are more interested in trade schools than in four-year colleges. According to Marine Corps SMEs, many Marines' initial education plans have a criminal justice or law enforcement degree as their ultimate objective, though the counselors opined that these are preliminary decisions, often based on the degree that is easiest to attain and has the most direct link to military service. However, the counselors with whom we spoke noted that, in one-on-one counseling sessions, counselors often shift Marines' goals to align with degrees that will offer them more civilian opportunities,

partially by advising them on how to maximize the transferable credits that they can accrue for their military service. Marine Corps SMEs reported that TA-using Marines ultimately pursue a variety of fields of study, including teaching, psychology, engineering, nursing, exercise science, physical therapy, and business.

Figure 6.   Degree discipline of TA users from FGs
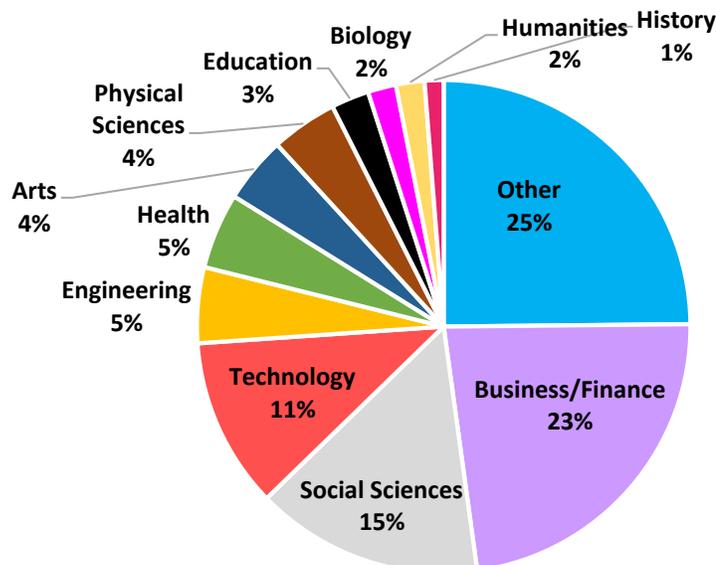
Source: CNA analysis of intake form data.

Education counselors

As part of the TA program, DOD requires that the Services provide education counseling to TA users; however, DOD provides little prescription about what specific services counselors should provide or how often they should interact with TA users. This leaves a lot of discretion to the Services and, in turn, has allowed for explicit differences in counseling policy. Our policy review found that counseling requirements are much more prescriptive in the Navy and Air Force than in the other Services [110-113]. Air Force and Navy policy documents mention counselors' responsibility for getting struggling TA users "back on track."[103] Similarly, Air Force and Army policy documents include language about ensuring TA users' progression toward

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[103] The Navy's policy prescriptions, however, stand in stark contrast to its recent elimination of education counselor positions.

their academic goals [113-114]. In contrast, the Marine Corps does not stipulate *any* specific objectives for education counselors.

Given the policy differences across Services, we asked FGs containing TA users about their access to and experiences with education counselors. Figure 7 shows awareness of education counselors among junior and mid-grade TA-using FG participants for the Army, Air Force, and Marine Corps.[104] Awareness is relatively high across these subpopulations; in all but one Service-by-paygrade subgroup, 75 to 100 percent of FG TA users were aware of their access to education counselors. However, there appears to be a disparity between junior and mid-grade Marines' awareness of education counselors. While every mid-grade TA user from the Marine Corps FGs indicated that education counselors were made available to them, only half of TA-using junior Marines said that they were aware of this. In contrast, around 80 percent of TA users from the Army and Air Force indicated that education counselors were made available to them, regardless of paygrade. These results may suggest room for improvement in junior Marines' awareness of education counselors.

Figure 7.   Awareness of education counselors for junior and mid-grade FG TA users
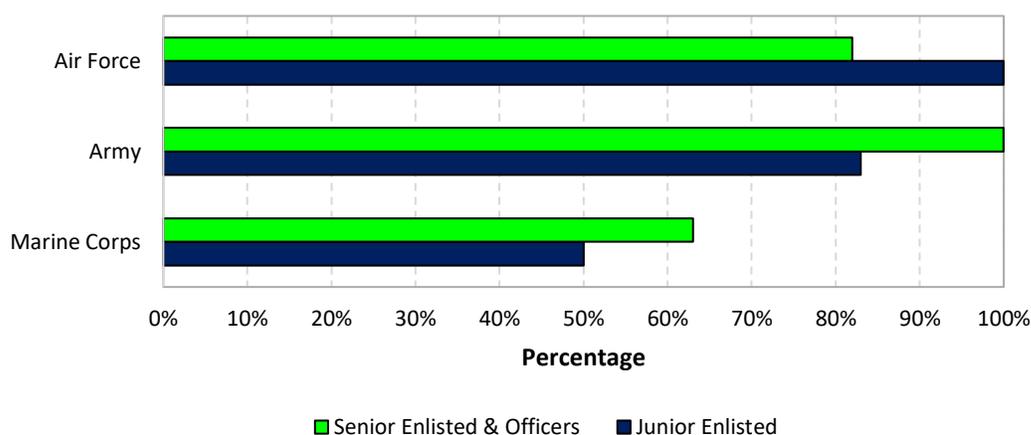
Source: CNA analysis of FG data.
Note: Navy junior enlisted are excluded from the analysis due to insufficient sample size. Since the purpose of this figure is to compare the junior enlisted to mid-grade TA users, we exclude the Navy entirely.

Disparities in awareness to education counselors may contribute to differences in both TA use and course completion. All Service SMEs stressed the importance of educational counseling,

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[104] We omit the Navy due to an insufficient number of junior enlisted respondents.

describing a number of ways in which counselors contribute to Servicemembers' success in continuing education. Army SMEs, for example, noted the importance of consistent and regular counselor contact because their primary role is to provide a safe space where Servicemembers can ask questions without fear of retribution or command responses to their questions or requests. They also emphasized that education counselors can keep Soldiers motivated to continue their educational pursuits through adversity, which makes it important to maintain counselor-Soldier contact even after Soldiers are enrolled in classes and have learned how to administratively navigate the TA system. Similarly, Marine Corps counselors contended that their advice is instrumental in minimizing TA course failures (and subsequent repayment). Air Force counselors noted the importance of getting Airmen started on their educational paths, such as navigating the administrative processes, but also determining their interests and strengths, leading to the development of a degree plan. Still, Army and Navy SMEs noted a recent decline in the use of counseling services because of decreased requirements for counselors to approve TA in the Army's and the Navy's move to a virtual counseling environment.

To understand how SMEs' perceptions compare to Servicemembers' experiences, we asked FG participants to describe the role of education counselors and whether they found the counselors helpful. Servicemembers who had used education counselors responded positively. The most frequent response among junior and mid-grade Servicemembers was that counselors mostly helped with degree plan formulation and administrative issues, Examples of such administrative issues included filling out TA application paperwork and helping to process degree plan changes. Mid-grade Soldiers also frequently reported that education counselors helped them to create a degree plan, while the majority of Marines said that counselors helped them to navigate the education system to help achieve their goals. Although these particular statements are consistent with SMEs' claims that counselors determine Servicemembers' strengths and lead them in developing degree plans, Servicemembers' overarching statements that counselors' primary roles are administrative suggest that there may be room for improvement in communicating the types of guidance and mentorship these counselors can provide. Their true strategic value needs to be emphasized, not only to the Servicemembers, but also to the counselors. Along these lines, the only group with a potentially negative perception of counselors was junior Soldiers; more than half of these participants said that they were unclear on what counselors do or what role they fill. These findings suggest that education counseling could become more effective via the establishment of a feedback mechanism—namely, a survey or some forum for Servicemembers to provide feedback on their interactions with education counselors.

Summary

Overall, we find TA use among our sample to be lowest in the Marine Corps and highest in the Navy and Air Force. These relative rankings persist even when we look within paygrade or by initial education level, suggesting that differences in TA use across Services are not likely driven by differences in education background or typical length of service. It may be that differences in benefits, awareness, or challenges contribute to differences in TA use across the Services. We explore each of these topics in subsequent sections.

Servicemembers who pursue continuing education with TA do so in a wide variety of disciplines. This reflects both the flexibility inherent in DOD policy and Servicemembers' varied educational goals. Though education counselors often help Servicemembers to overcome administrative obstacles that stand in the way of these goals, awareness of and access to these counseling services seems to be unequal across subgroups in our FG sample. Establishing parity in Servicemembers' access to these services will help to ensure that administrative obstacles do not drive any TA-use differences across the Services. Otherwise, there is risk that the current variation in TA program access (and therefore use) across Services will persist.

Benefits of TA Use and Educational Goals

To better understand what drives Servicemembers' TA use, we asked FG participants about the benefits of using TA to pursue continued education while in service. When considering TA use, Servicemembers weigh potential in-service and post-service benefits. How these benefits compare across Services could drive differences in TA use. If, for example, members of one Service have clearer in-service incentives to pursue continuing education, they may be more likely to consistently use TA. In this section, we discuss the benefits most commonly cited by Servicemembers from each Service and paygrade and the role of supervisors' encouragement in shaping Servicemembers' perceptions of TA's benefits.

In-service benefits

Although most FG respondents in every subgroup said that in-service benefits exist, we found some important differences across the Services in the types of benefits perceived. Figure 8 shows the percentage of FG respondents who believed that there are in-service benefits to use of TA.[105] Marines were the least likely to indicate any in-service benefits, particularly at the junior and senior levels. Of all senior enlisted and officer FG respondents, Marines were the least likely to indicate that TA use has in-service benefits, followed by senior Air Force respondents and, ultimately, senior Army and Navy respondents, who *all* noted in-service benefits.[106] Responses from junior enlisted Servicemembers show a similar disparity. Notably, more junior Soldiers and junior Airmen, compared with their Marine Corps counterparts, said that TA use has in-service benefits. Conversely, mid-grade TA users tend to have similar perspectives; in all Services, the vast majority believes that TA provides in-service benefits. However, this is not surprising since this population has elected to use TA.

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[105] This is the percentage believing that there are in-service benefits *regardless* of TA use since the junior enlisted and senior enlisted and officer FGs were not split by TA use.

[106] Throughout this document, in the interest of brevity, we sometimes shorten the term *senior enlisted and officer* to *senior* or *leadership*. We use these long and short terms interchangeably.

Figure 8.   Percentage of FG respondents who believe that there are in-service benefits to TA use
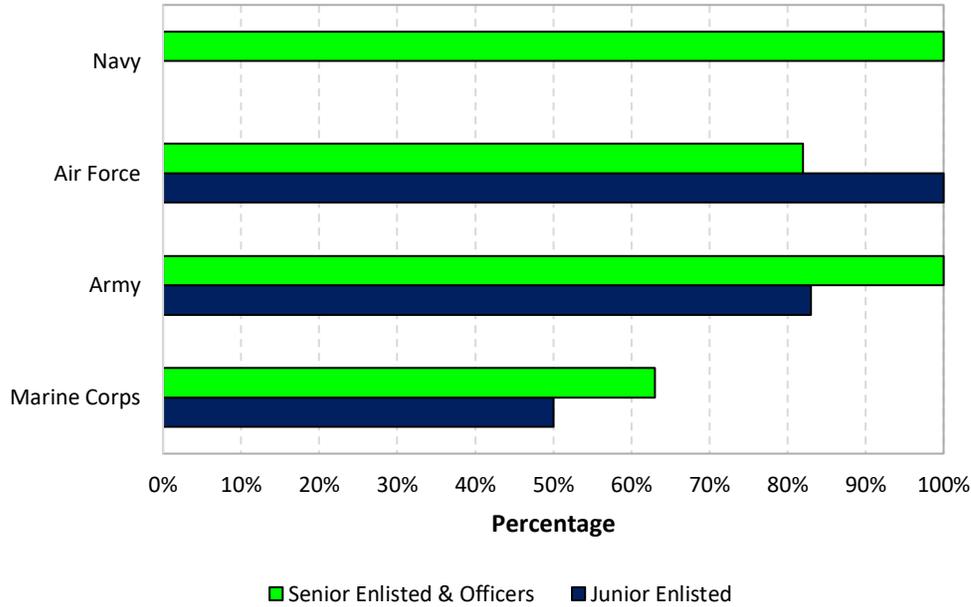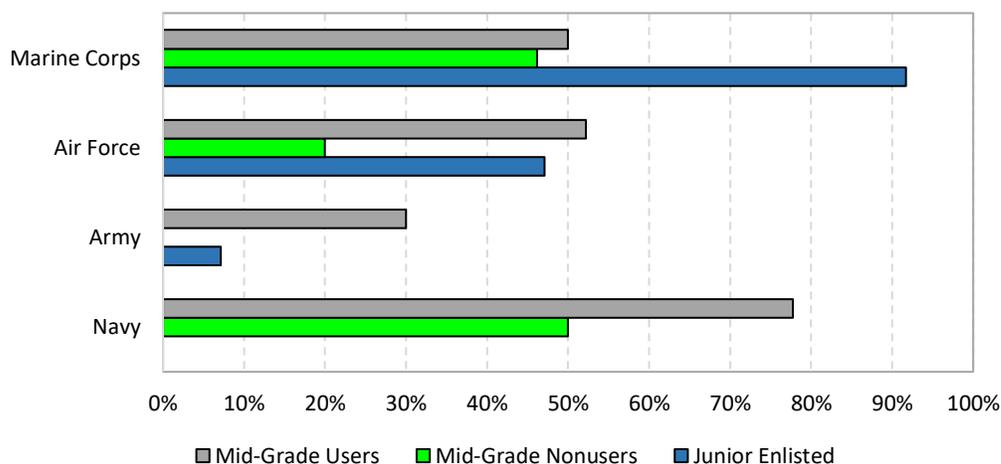

Source: CNA analysis of FG data.
Note: Navy junior enlisted are excluded from the analysis due to insufficient sample size.

Respondents who mentioned in-service benefits frequently pointed to TA use helping with promotion and career progression.[107] In all Services, most senior enlisted and officer respondents indicated in-service benefits of TA in promotions. Junior and mid-grade Marines, however, are less likely than their peers in other Services to see TA as beneficial to promotions. Specifically, promotion benefits were voiced by all junior Air Force respondents and most junior Army respondents; less than half of similarly ranked Marine Corps FG respondents expressed the same sentiment. Among mid-grade TA users, Marines also were the least likely to say that TA helps with promotion. That Marines are less likely to view TA use as important in promotion decisions may significantly affect their likelihood of using TA. If it does not assist their career progress in the near term, Marines will not be as motivated to pursue TA as their peers in the other Services.

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[107] Though at times Servicemembers talked about evaluations as separate from promotion decisions, we focus here on discussions about promotion because they closely mirror those about evaluations and reflect the same types of incentive structures.

Disparities in how Servicemembers perceive TA's promotion impact seem to reflect what they have been told by their supervisors. Nearly every Navy and Air Force respondent, as well as all nonjunior Soldiers, indicated that a supervisor had suggested or encouraged TA use. Rates were high, though, for all groups. Marines in every paygrade, however, were the least likely to say that the supervisor who suggested TA use also told them it would be useful for promotions. Given the role that supervisors play in the evaluation process, their communication of TA's promotion benefits likely is a strong and influential signal to Servicemembers. If Marines are the least likely to experience this type of encouragement, it is likely that they will be less incentivized to pursue continuing education.

Conversations with SMEs largely support the FG participants' sentiments. According to SMEs in the Army, Navy, and Marine Corps, Servicemembers accrue promotion points for civilian education, but continuing education is not an explicit promotion requirement. Only Air Force SMEs noted an explicit educational *requirement*, which was that junior Airmen must attain associate degrees to promote above the junior ranks. In addition, officers must attain master's degrees to promote to O-5. According to Air Force SMEs, much of the degree attainment among Airmen is motivated by these requirements, including TA-funded degrees and associate degrees from the Community College of the Air Force. Similarly, Army counselors stated that TA use often is motivated by promotion potential, noting that many Soldiers pursue general education (Gen Ed) associate degrees simply for promotion points.

While the Air Force may place the largest emphasis on TA use for promotions, our policy review found no emphasis on this relationship in official Marine Corps documents. The Marine Corps is the only Service whose policies do not reference the military career advancement that often results from Servicemembers' TA use in other Services. In addition, Marine Corps policy documents do not state that TA is important in developing responsive and effective leaders—a theme present in the other Services' policy documents. These policy differences likely contribute to differences in FG participants' perceptions about the importance of TA in promotion.

In addition to promotion benefits, we asked Servicemembers whether they believed that continuing education would make them better at their occupations, regardless of any promotion or evaluation benefits. FG participants in all Services and paygrades consistently indicated that TA use does not help with occupational job proficiency.[108] Figure 9 shows the percentage of FG respondents in each group that reported TA use as improving occupational proficiency. In all groups, very few respondents said that TA use helped in their occupations.

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[108] Upon reviewing this document, Army representatives noted that, unlike the other Services, it does not combine professional military education (PME) with off-duty post-secondary education. They suspect that, for the Army, this is the reason that FG participants did not feel that continued education would improve their occupational proficiency.

We expect that Servicemembers' opinions on this issue will vary by occupation. Those in infantry, for example, might be less likely to expect TA use to increase their occupational proficiency than those in a more technological field, such as communications or intelligence. Based on these relatively low percentages, however, we conclude that, overall, Service-level differences in TA use are not driven by differences in the relevance of continuing education to Servicemembers' occupations. It is worth noting that TA policy does not require TA-funded courses to align with military occupation. Given the various fields of study shown in the previous section, it is likely that many TA users take courses unrelated to their occupations.

Figure 9.   Percentage of FG respondents who feel that continued education will help with occupational proficiency
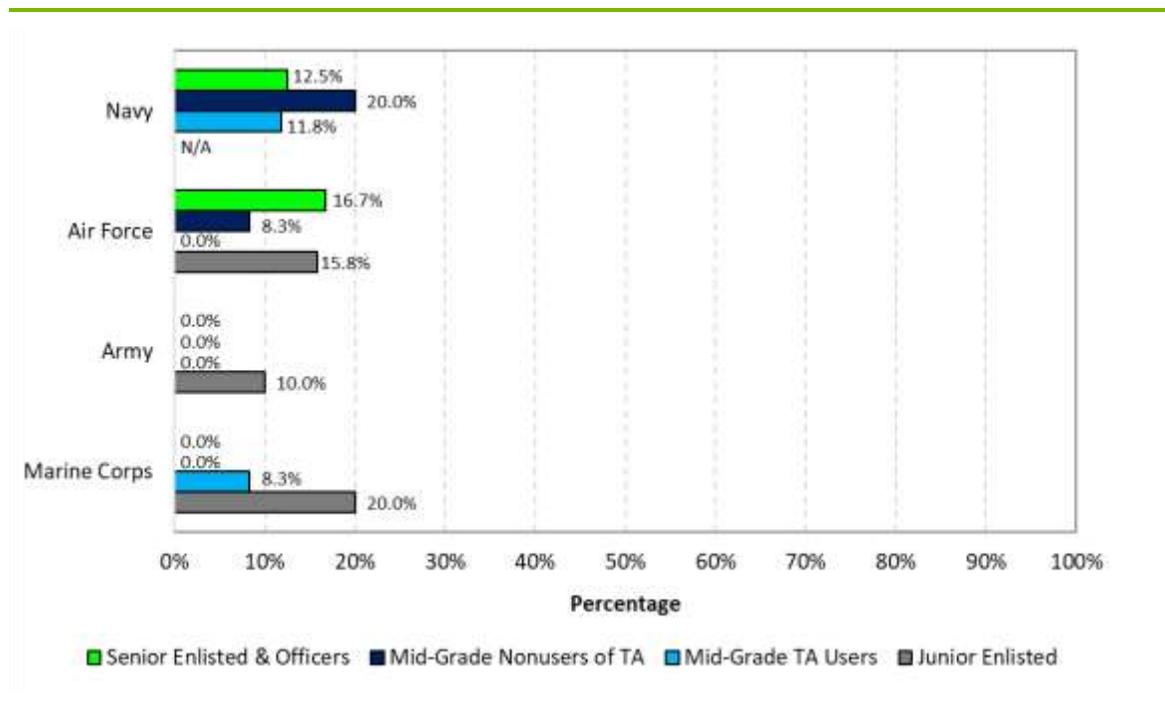
Source: CNA analysis of FG data.
Note: Navy junior enlisted are excluded from the analysis due to insufficient sample size.

Finally, some FG participants noted the ability to commission as a potential benefit of TA use. Across paygrades, Navy respondents were the most likely to mention this benefit, especially among senior enlisted and officers. This finding was supported by Navy SMEs, who noted that a number of TA users plan to commission. This relatively higher focus on commissioning in the Navy may increase Navy TA use relative to the other Services. Still, senior Sailors were the only subgroup in which the majority of respondents mentioned this benefit. In comparison to the

number of Servicemembers who discussed promotion benefits, it appears that commissioning likely is less of a motivating factor than promotion for TA use.

Post-service benefits

Servicemembers also discussed potential TA benefits for life after military service. There is no widespread consensus that these benefits exist; in 8 out of 15 subgroups, less than half of respondents indicated that education attained from TA use would help in life after the military. However, this percentage varies noticeably by Service and paygrade. Of all the subgroups, senior enlisted and officers from the Navy were the most likely to state that TA helps with the transition. Conversely, mid-grade Marines had the lowest response rate; both mid-grade users and nonusers in the Marine Corps were less likely than their other-Service counterparts to say that education from TA use would help with transition. Benefits cited by respondents across the Services included better employment opportunities after transition, making progress toward vocational certifications, and accruing credits toward degrees that they will finish after separating. While mid-grade Marines saw the least benefit of TA use to civilian transition, less than half of Army respondents in all paygrade groups indicated that education from TA would help in post-service civilian life. Together, these responses suggest that Soldiers and Marines are the least likely to believe that there are post-service benefits to TA use.

These differences were not reflected in SMEs' perceptions. Though we did not explicitly ask SMEs about post-service benefits, all except the Navy SMEs mentioned—unprompted—these transition benefits from TA use, though we suspect that the Navy SMEs likely would agree that TA use better prepares Sailors for life after military service. Marine Corps SMEs specifically noted that leaving service with a degree significantly increases civilian career opportunities and that, even if unable to complete a degree using TA, having accrued some college credits still will make Marines more competitive in the civilian economy. In addition, both Marine Corps and Air Force SMEs stressed the benefit of using TA to shorten any post-service time to degree, enabling Servicemembers to more quickly reach their educational goals and qualify for their desired civilian occupations. Despite these perceived post-service benefits expressed by SMEs, our policy review found no mention of the importance of TA to the military-to-civilian transition in the Services' policy documents.

Finally, few respondents indicated the ability to pass along GI Bill benefits to dependents or to get a "free" education as benefits of TA use, stressing that attaining education through TA kept them from accumulating student debt. Still, in nearly every Service-paygrade subgroup, the number of respondents that indicated free education or the ability to pass on the GI Bill benefit to a dependent as a post-service benefit was lower than the number that mentioned transition as a benefit. While this benefit is important to some, it does not appear to drive differences in TA use across Services among our FG participants.

Summary

While FG discussions suggest slight differences across the Services in perceived post-service benefits, we find the starkest differences in Servicemembers' perceptions of in-service benefits. Given that the vast majority of respondents feel that education does not directly contribute to military occupational skills, we conclude that differences in promotion benefits are the primary difference in in-service benefits to Servicemembers. While TA use improves promotion potential for Soldiers, Marines, and Sailors, continuing education is an explicit requirement for Airmen. This relatively higher importance of education in the Air Force likely contributes to the high use rates among Airmen because Air Force SMEs said that many Airmen pursue continuing education for this reason. In contrast, Marines were the least likely to report promotion benefits and the least likely to be encouraged by a supervisor to use TA. Based on these findings, we conclude that Marines perceive the least benefit of TA use, a difference that may significantly reduce TA utilization in the Marine Corps relative to the other Services.

Servicemembers' TA Understanding

In this section, we focus on differences in Servicemembers' TA knowledge, including the TA program's existence, what TA covers, and how to get approval for TA use. We also review the perceived *quality* of currently available information on the TA program and summarize recommendations provided by Servicemembers and SMEs to improve the content and delivery of TA messaging. Because TA awareness and understanding could affect the probability that Servicemembers use TA, it is important to address any knowledge gaps, perhaps by increasing TA messaging and/or standardizing both the content and timing of information provided.

TA knowledge

We gauged Servicemembers' TA understanding via "knowledge check" questions on our intake survey. The questions that were asked (and their corresponding correct answers) follow:

- Can TA be used to take any course, regardless of subject matter?[109] (No)
- Can TA be used to take courses at any educational institution?[110] (No)
- Will TA pay the full cost of any approved course? (No/It depends)
- Is there an annual limit on the number of TA-funded courses that you can take? (Yes)
- Is there an annual limit on the dollar amount of TA benefits that you can receive? (Yes)
- Can TA benefits be transferred to your dependents? (No)

Table 135 presents the percentage of Servicemembers answering these questions correctly, by Service and FG population. These numbers reveal significant misunderstanding of TA benefits across both Services and paygrade groups. In most cases, fewer than half of respondents understood that TA will not necessarily cover *any* course or courses taken at *any* institution. In all paygrade groups, less than half of respondents (and often less than a third) answered these questions correctly in the Army, Navy, and Marine Corps; the one exception was that the majority of Army senior enlisted and officers understood that TA cannot be used at *any*

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[109] Per Army representatives, Soldiers now are able to take any desired course for their first six credit hours. This was a change made in a November 2019 policy update; it therefore was not reflective of current policy at the time of our installation visits. Soldiers' understanding of TA policy would have been based on the previous policy.

[110] Responses to this question may not be perfectly reflective of Servicemembers' understanding of the types of schools where TA can be used (i.e., the fact that it cannot be used for courses at unaccredited schools). Although we recognize this limitation, the question design was intentional; it was meant to capture how many Service-members had enough understanding of TA restrictions to interpret the question correctly.

institution. That said, we still find that there is insufficient understanding across Service-members regarding the TA program's course and institution requirements.

Table 135. Percentages of FG respondents providing correct responses to knowledge-check questions, by Service and FG population

Service	FG population	Cannot use TA for any course	Cannot use TA at any insti-tution	TA does not neces-sarily pay full cost	Cannot transfer TA benefit to depen-dents	Annual limit on number of courses	Annual limit to dollar amount of TA benefits
Army	E-1–E-3	13%	27%	27%	27%	33%	47%
	E-4–E-7 users	29%	35%	45%	48%	77%	81%
	E-4–E-7 nonusers	0%	20%	27%	14%	33%	43%
	E-8–E-9/O-1–O-5	47%	53%	67%	86%	100%	100%
Navy	E-1–E-3[a]	-	-	-	-	-	-
	E-4–E-7 users	41%	45%	91%	82%	100%	95%
	E-4–E-7 nonusers	0%	17%	43%	43%	71%	71%
	E-8–E-9/O-1–O-5	38%	38%	88%	75%	75%	100%
Marine Corps	E-1–E-3	10%	29%	29%	35%	58%	52%
	E-4–E-7 users	33%	28%	56%	72%	61%	100%
	E-4–E-7 nonusers	19%	30%	44%	37%	67%	67%
	E-8–E-9/O-1–O-5	40%	20%	70%	50%	60%	70%
Air Force	E-1–E-3	33%	17%	22%	56%	67%	78%
	E-4–E-7 users	54%	57%	78%	84%	78%	97%
	E-4–E-7 nonusers	50%	50%	75%	63%	94%	94%
	E-8–E-9/O-1–O-5	46%	48%	96%	72%	68%	96%

Source: CNA analysis of intake form surveys.
[a] We do not report average statistics for the Navy E-1–E-3 population since only one person was in this FG.

In most cases, as expected, junior enlisted and mid-grade nonusers of TA were among the least informed. There are striking differences in understanding between these groups and the senior enlisted and officers, as well as the mid-grade TA users. As an example, relatively few FG Army junior enlisted and mid-grade nonusers correctly indicated that TA *cannot* be transferred to dependents as compared with their mid-grade TA user and leadership counterparts. Similarly, junior enlisted and mid-grade non-TA-using Marines were the least likely to know that TA will not necessarily pay the full course cost, followed by mid-grade TA users, and knowledge was highest among leadership. With a few exceptions in the Marine Corps and Air Force, less than half of junior enlisted answered the knowledge-check questions correctly, across the Services.

We also asked junior enlisted and mid-grade nonusers to describe the minimum requirements for TA use (not shown). Notable findings include the following:

- Air Force and Navy mid-grade nonusers of TA often replied that they "do not know" what the minimum requirements are.
- Many Air Force and Marine Corps junior enlisted were uncertain whether command approval is necessary.
- Army and Marine Corps junior enlisted were confused as to whether there is a minimum time-in-service requirement.

It is important to address the confusion prevalent among junior enlisted and mid-grade nonusers of TA. Poor understanding of TA may decrease the likelihood of TA use or negatively affect users' experiences if they are unaware of the program's limitations.

As noted, we expected TA understanding to be highest among senior enlisted and officers who are responsible for mentoring and advising Servicemembers, as well as among mid-grade TA users who have personal experience with the TA program. We were surprised, therefore, that many within these two populations were unable to answer many of the knowledge-check questions correctly. For example, relatively few Army mid-grade TA users correctly indicated that TA cannot be used for *any* course or that it cannot be used at *any* institution. Similarly, most Navy senior enlisted and officers answered these questions incorrectly. In addition, half of Marine Corps senior enlisted and officer participants incorrectly indicated that the TA benefit can be transferred to dependents. These knowledge gaps among mid-grade TA users and senior leadership are particularly worrisome. Servicemembers considering using TA may consult those currently using TA or their leadership for information on program specifics and how the process works; in fact, as we later report, many Servicemembers learn of the TA program via word of mouth. Knowledge gaps among leadership and mid-grade TA users can create misinformation that ripples throughout the Service populations.

Although our survey findings indicate relatively consistent misunderstandings and lack of TA knowledge across the Services,[111] the installation SMEs' perspectives on Servicemember awareness did vary by Service. Army and Marine Corps SMEs agreed that there is misinformation as well as a simple lack of information regarding TA. Army SMEs noted, for example, that (a) some Soldiers pay for classes out of pocket without realizing that TA benefits are available, (b) many do not use TA because they think it incurs an additional service obligation, and (c) many mistakenly believe that the per-FY tuition cap is the maximum tuition TA will cover over their entire career. They also explained that many leaders are unaware of

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[111] We differentiate these terms as follows: a misunderstanding can be characterized as a Servicemember having incorrect information (which he or she thinks is correct); a lack of knowledge, also referred to elsewhere as confusion, simply reflects that the Servicemember *lacks* information or is uninformed.

or misinformed about TA—a fact that becomes apparent during the leaders' own out-processing. In these cases, the information void affects junior Soldiers as well. Marine Corps SMEs noted that the policy's verbiage and concepts can be challenging for those with no prior college experience. The primary information disconnects they cited included a lack of information on the TA approval process (such as understanding all the required steps and documentation) and Marines' mistaken belief that they qualify for TA only if they complete a degree in service. Marine Corps SMEs also noted that information regarding TA policy changes does not seem to reach many Marines. Many are not aware, for example, that the two-year minimum time-in-service restriction was lifted in March 2019.

Navy and Air Force SME responses stand in stark contrast to those provided by the Army and Marine Corps. Navy SMEs said that Sailors' TA awareness varies greatly and depends most on Sailor proactivity and interest. They did not identify any particular gaps in Sailors' knowledge or any widespread misinformation. Finally, Air Force SMEs were the only ones to assert that their Servicemembers are not only aware of the TA program but are sufficiently informed to navigate the process and use TA independently. Thus, there seems to be a disconnect between Servicemembers' TA knowledge and these Services' SMEs' *perceptions* of that knowledge. It is important that these Services' leadership and education SMEs be made aware of current TA knowledge gaps because efforts to improve Sailors' and Airmen's TA understanding cannot be made until these gaps are recognized.

How Servicemembers learn about TA

In this subsection, we summarize when (and how) Servicemembers learn about the TA program because we expect that the Services' current approaches to providing program information may be partially responsible for current knowledge gaps. We first present findings on whether Servicemembers were aware of TA at enlistment and whether this knowledge affected their enlistment decisions, both of which could contribute to junior Servicemembers' likelihood of using TA. We then discuss the other ways in which Servicemembers have learned about the TA program; we expect that the source of their information could influence its accuracy and further affect their likelihood of using the benefit.

Figure 10 presents the percentage of FG Servicemembers who were aware of the TA program when they enlisted, by Service and FG population. A few interesting findings emerge:

- TA awareness prior to enlistment was noticeably higher for junior enlisted, in all Services, than for their mid-grade enlisted counterparts.[112] This may suggest that

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[112] Here, and elsewhere, Navy junior enlisted are removed from the analysis due to insufficient FG participation. For this population, when we refer to "all Services," we in fact mean "the Army, Marine Corps, and Air Force."

recruiters have begun to incorporate the TA program in their review of military benefits.

- Counterintuitively, a higher percentage of Army and Navy mid-grade nonusers of TA were aware of the TA benefit at enlistment than mid-grade TA users. This indicates that TA information is being provided in service; we discuss specific mechanisms for TA information dispersion later in this subsection.

- Navy mid-grade Servicemembers were least aware of TA at enlistment. This is true for both TA users and nonusers.

Figure 10. Percentage of FG Servicemembers aware of TA at enlistment, by Service and FG population
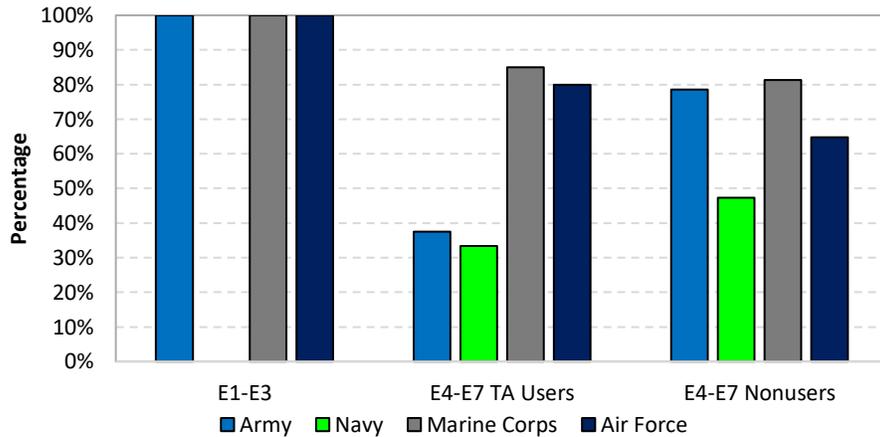
Source: CNA analysis of FG data.
Note: Navy junior enlisted are excluded from the analysis due to insufficient sample size.

Due to variation in Servicemembers' awareness of TA at enlistment, we found it important to ask those who *were* aware of the TA benefit whether TA was among the benefits that encouraged them to enlist. Figure 11 displays these results. It reveals that TA benefits had the largest effect on enlistment decisions in the Marine Corps, Air Force, and Navy. With the exception of TA nonusers in the Air Force, roughly 50 percent or more of Marines, Airmen, and Sailors in all three FG populations indicated that TA affected their enlistment decisions. Among the most notable exceptions are the low percentages of mid-grade nonusers in the Air Force, mid-grade TA users in the Army, and junior enlisted in the Army citing an effect. Conversely, in the Marine Corps, nearly half of mid-grade TA users and nonusers indicated that TA affected

their enlistment decisions, as well as nearly all junior enlisted. These differences may indicate that those attracted to each Service differ in terms of what they value most or how they intend to incorporate military service into their longer term objectives. However, they also could reflect differences both over time and by Service in the emphasis recruiters are placing and the specific information that they are providing on TA benefits. Standardizing recruiter-provided TA information, therefore, might both improve Servicemembers' understanding of TA policy and make TA more influential in enlistment decisions. In both cases, we would expect an increase in TA use.

Figure 11.   Percentage of FG participants whose enlistment decisions were affected by TA benefits, by Service and FG population

Source: CNA analysis of FG data.
Note: Navy junior enlisted and Army mid-grade nonusers of TA are excluded from this figure due to insufficient observations.

We asked mid-grade Servicemembers who were not aware of the TA program at the time of enlistment when they first learned about TA. The most common response in the Navy and Air Force was that TA was presented during in-processing when they arrived at their first duty stations. Notably, this response was provided by half of the Navy TA nonusers, but relatively few Air Force and Marine Corps TA nonusers, and *no* Army TA nonusers. Another common (and concerning) response was that half of Army mid-grade nonusers of TA indicated first learning about the TA program "in this session today." These Service-level differences in awareness of and exposure to the TA program could certainly contribute to Service-level differences in TA use. Differences in when Servicemembers first learn about the TA benefit also could influence when they establish educational goals, engage with education counselors, or

seek information on the overall process, potentially slowing any educational progress that they can make via the TA program while in service.

In addition to *when* Servicemembers learn about the TA program, it is important to highlight differences in *how* they learn about TA. For example, was the program introduced to them by a mentor or leader, as part of a training session, or by other Servicemembers via word of mouth? Figure 12 summarizes these findings. These categories are not mutually exclusive; for example, a Servicemember could have learned about the TA program both from a training session *and* via word of mouth.

Figure 12. **Primary ways in which FG Servicemembers are learning about TA, by Service and FG population**
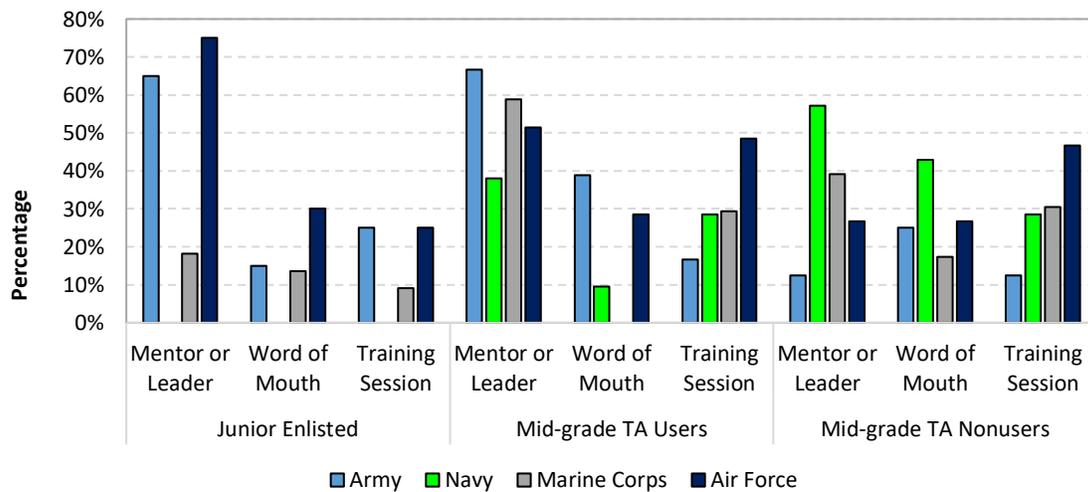
Note: Navy junior enlisted are excluded from the analysis due to insufficient sample size.

As the figure reveals, learning about TA from a mentor or leader is relatively common, with some exceptions. Among junior enlisted, a clear majority of Army and Air Force FG respondents were introduced to TA by their leadership. The preponderance of mid-grade enlisted TA users indicated learning about TA from a leader or mentor in all Services except the Navy, though this response was more common among Navy enlisted mid-grade nonusers than other Navy paygrade groups. Similarly, although many junior enlisted and mid-grade TA users in the Army indicated that they learned about TA from a leader or mentor, very few Army mid-grade nonusers said so. Such differences across populations *within* each Service confirm that TA exposure often is command dependent, as voiced by Army and Navy education SMEs. For those learning about TA from mentors or leaders, the precise *timing* of this exposure also varies

among Servicemembers because they may not learn about the TA program until being assigned to a TA-supportive command. Being introduced to TA later in their careers will, of course, limit possible educational progress that they can make in service. Introduction to TA by leadership also is notably low among Marine Corps junior enlisted. This lack of encouragement from leadership could influence Servicemembers' propensity to use TA, especially if they infer that leadership views TA and the pursuit of higher education as a relatively low priority.

The remaining two primary methods by which Servicemembers learn about TA—word of mouth and training sessions—are less prominent, except for mid-grade nonusers of TA in the Army and Air Force. Fewer than half of respondents learned about TA via word of mouth, across Services and paygrades. That said, we do find the higher prevalence of respondents learning about TA via word of mouth to be worrisome in certain cases, particularly among Air Force junior enlisted, Army mid-grade TA users, and Navy mid-grade TA nonusers. Given the relatively widespread misunderstanding of the TA program and policies previously shown, word of mouth transmission carries risks of disseminating incorrect information.

Finally, Figure 12 shows the percentage of respondents who learned about TA in a training session, either at entry-level training or during unit in-processing. Mid-grade enlisted Air Force respondents were most likely to have learned about TA in a training session, regardless of prior TA use. This is likely due to the Air Force requirement (at least at the Air Force installation we visited) that Airmen attend a TA brief before applying to use TA; based on this, however, we would expect this percentage to be higher. Conversely, this was true of less than a third of mid-grade enlisted in the other Services. This suggests that these Services may favor TA program introduction via mentors or leaders over training. This, of course, will increase the variation in the information provided as well as its accuracy, given the TA misunderstandings among leadership previously shown. Given the importance of disseminating consistent and accurate TA information, the differences revealed here may be problematic. We recommend that the Services prioritize training sessions with predeveloped and consistent curricula over other methods of information dissemination.

Quality of TA information and recommendations for improvement

As we have illustrated, many Servicemembers in our FGs do not have an accurate understanding of the TA program, and many have misconceptions about what the program covers, how to use the benefit, or the necessary requirements or prerequisites for TA use. We suspect that the information they are receiving about TA is at least partially responsible for

these knowledge deficiencies, not only in terms of how and when the program is introduced to them (as previously shown), but also in terms of the *quality* of the information provided.[113]

We therefore asked Servicemembers whether they felt that the information provided—in either quantity *or* quality—was sufficient to provide a basic understanding of the TA program and a "starting point" for those interested in using the benefit. High numbers of Servicemembers responded in the negative, as shown in Figure 13, indicating that current TA information was *insufficient.* There are notable differences both by Service and by paygrade. With the exception of junior enlisted, Air Force FG participants were least likely to feel that TA information provided was insufficient.

Figure 13. Percentage of FG respondents indicating that TA information provided is insufficient, by Service and FG population
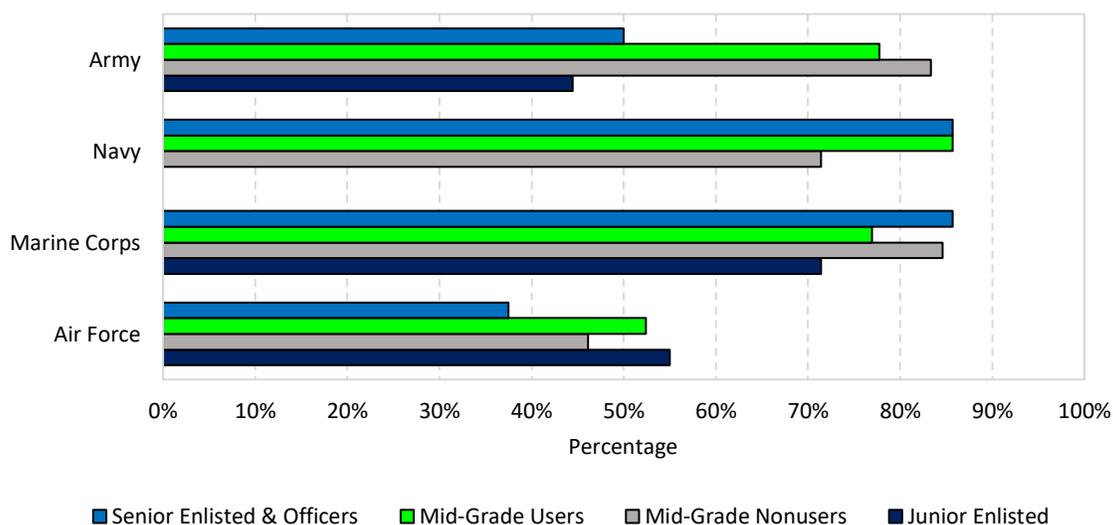
Source: CNA analysis of FG data.
Note: Navy junior enlisted are excluded from the analysis due to insufficient sample size.

Across the Services, the relative consistency of mid-grade TA users' opinions that TA information was insufficient, regardless of previous TA use, suggests that information quality may not significantly affect TA use since mid-grade users and nonusers felt similarly informed. Alternatively, it could be that mid-grade TA users were sufficiently self-motivated to seek

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[113] Servicemembers' misunderstandings about the TA program suggest that they are not consulting education counselors as a primary information source because the counselors can provide in-depth (and accurate) information.

additional information, while the mid-grade nonusers of TA were insufficiently informed to even consider using the benefit.

Other FG populations also believed that TA information was insufficient. Notably, among senior enlisted and officers, the majority of Army respondents and most Navy and Marine Corps respondents suggested that current TA information was insufficient. If leadership finds the available information to be insufficient, the leaders may be unable to appropriately mentor their Servicemembers on TA use or answer their questions. Marine Corps and Air Force junior enlisted felt similarly uninformed, with the majority of these respondents also suggesting that information was insufficient. We find it striking that Army junior enlisted FG respondents were the least likely, among all Army FG populations, to indicate being dissatisfied with the available information. This could suggest that TA information in the Army has been improving over time, or it could suggest that most current junior enlisted are not pursuing TA, thereby making them ambivalent to the quality of available information. If the Army has made efforts to improve TA information, this suggests that they are effective and should be continued. That said, these findings suggest that all Services could benefit from improved TA information campaigns.

Servicemembers' TA information recommendations

Given FG participants' responses that information available on the TA program is insufficient, we asked for their recommendations on how to improve the information and its dissemination. Figure 14 displays the three most cited recommendations—that TA information be provided early, reinforced frequently, and standardized across commands—separately by Service and FG population. Our question here was broad: "If you think that the amount of information and quality of information Servicemembers are receiving regarding the TA program is insufficient, what recommendations would you make for [TA information] improvement?" That is, it was a freeform question for which participants had the opportunity to list any recommendations they had; it was not a list of recommendations from which to choose. As a result, the fact that a participant did not make a particular recommendation does not necessarily reflect that he or she would not agree with that recommendation were it directly presented. It simply means that it was not among the primary recommendations that came to mind.

The most striking finding is the high percentage of respondents across Services who suggested that TA program information be provided early (whether by recruiters, at entry-level training, or when Servicemembers are in-processing at their first unit). In all Services, the majority of mid-grade enlisted participants made this recommendation, as did the majority of Navy junior enlisted, the majority of Marine Corps senior enlisted/officers, and the plurality of Army senior enlisted/officers. Many participants also indicated that TA information should be reinforced at

numerous points throughout Servicemembers' careers, though this response was most prominent among Army and Navy FG participants. Finally, a number of mid-grade enlisted in the Army, Navy, and Marine Corps noted the importance of providing consistent information across commands—that is, that neither the quantity nor the quality of information provided should differ by command, as is currently the case.

Figure 14. Primary information recommendations from FG participants, by Service and FG population

The Services' SMEs also spoke about the importance of disseminating information early and often as well as the current lack of (and need for) consistent information across commands. Army and Navy SMEs both noted that this is largely dependent on commanders and leaders. As one Army SME noted, "TA awareness is as good as the leader chooses to make it." Army counselors have numerous avenues for distributing TA information to Soldiers (e.g., education fairs, visiting the units to present a TA overview, and assigning an education counselor to each

unit). That said, they are only able to effectively increase Soldiers' TA awareness when they have leadership buy-in and are supported by commanders who make time for their Soldiers to visit the education center and invite the counselors to come brief their units.

Similarly, at the Navy installation, SMEs noted that *some* commanders bring counselors or other education center representatives to their units to brief Sailors; in other cases, Sailors who are not independently motivated or proactively seeking TA information do not receive it. Air Force SMEs also noted leadership's role in fostering TA program understanding and commented that they consistently and repeatedly work to build this understanding. They stated that "leadership puts [this information] forward in a variety of ways," such as in-processing briefs, education fairs, and education center briefs given at *numerous* points throughout Airmen's careers. This approach of not only presenting and reinforcing TA information at numerous points throughout the career but also, critically, having the leadership buy-in to do so effectively was unique to our Air Force discussions.

We suggest that the Services consider each recommendation, regardless of which populations were most likely to voice them. Providing TA information early, reinforcing it throughout Servicemembers' careers, and providing consistent program information are efforts that will come with little additional cost or effort and can only serve to increase overall understanding of the TA program, thus allowing all Servicemembers to make more informed decisions.

Summary

There are significant knowledge gaps regarding what the TA program will cover, the program's limitations, and the minimum requirements for TA use. We found notable variation by Service in whether Servicemembers were aware of the TA benefit at enlistment (for mid-grade FG participants only—all junior enlisted were aware) as well as in *when* and *how* they first learned about the TA program. These cross-Service differences likely contribute to differences not only in program understanding but also in propensity to use TA. Based on these findings, it is not surprising that most Servicemembers find the currently available TA information to be insufficient for making informed decisions regarding TA use. The primary recommendations for improving TA understanding and TA awareness are to present TA information *early* in Servicemembers' careers, reinforce TA information *throughout* Servicemembers' careers, and ensure that the same information is made available to all Servicemembers (and is not command dependent).

TA Use Challenges

In this section, we review the challenges FG participants have faced in using TA, including challenges that may have prevented them from using TA at all, as well as those that made their experiences using TA difficult. We highlight how these challenges differ across Services and, where applicable, across FG populations within a Service.

TA approval

When asked what the primary challenges were in navigating the TA process, many Service-members noted issues in getting TA approval; however, most FG participants had never had a request for TA use denied. In all Services, very few junior enlisted FG participants and a third or less of mid-grade TA users had been denied TA use after applying. The primary reasons provided for TA denial were administrative or policy constraints, such as having already reached FY limits, the Service running out of TA funds, or proximity to end of active service (EAS). A few Service-members provided more operational reasons, such as the nature of their upcoming assignments, including the incompatibility of TA use with field operations or training schedules. That said, some Servicemembers may be discouraged from applying for TA because of challenges either in being approved for TA use or in using TA successfully. If such challenges discourage some Service-members from considering TA use at all, and some of those who decided not to apply would have been denied, then these denial rates may be artificially low.

The most frequently cited TA approval challenges included administrative process challenges and getting command approval. This question was asked only of mid-grade TA users since they had been through the approval process relatively recently. As Figure 15 shows, the majority of mid-grade TA-using FG respondents in the Army, Marine Corps, and Air Force experienced administrative challenges in the TA approval process. The Navy is a clear outlier, suggesting that its process may be more streamlined. Among the challenges most commonly voiced in the other Services were that the approval process is confusing (including that it is often unclear how to start the process) and that they struggled to obtain command approval.

Given the importance of command approval—that is, it is not an impediment that can be overcome—we asked mid-grade TA users if they found receiving it to be especially

challenging.[114] When asked about command approval, no Navy or Air Force mid-grade TA-using participants said it was an issue. Conversely, roughly a third of Army and Marine Corps TA-using respondents indicated that obtaining command approval was a challenge.[115] Such differences are consistent with our findings indicating that TA use is not only more encouraged in the Navy and Air Force but expected. Therefore, it is not surprising that their command culture is more supportive of TA use.

Figure 15. Percentage of mid-grade TA-using FG respondents indicating administrative challenges in the TA approval process, by Service
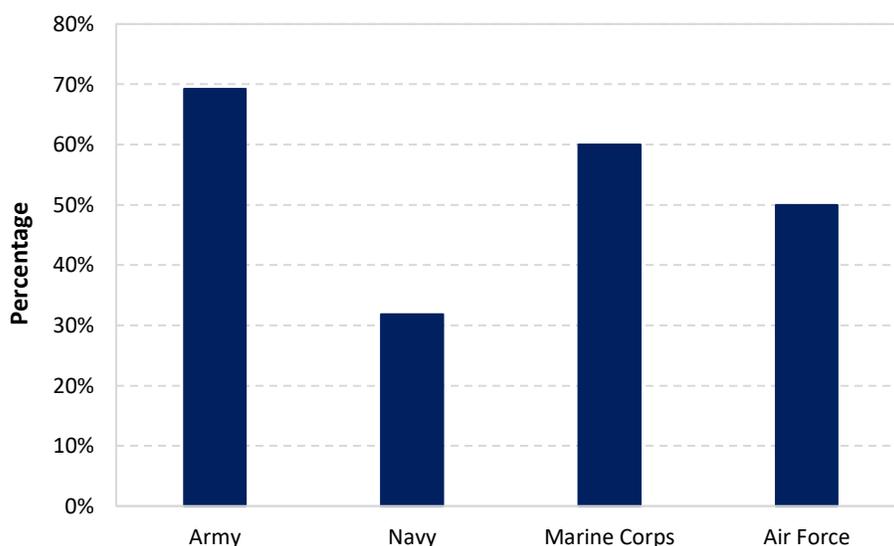
Source: CNA analysis of FG inputs.

Army and Marine Corps SMEs' inputs were consistent with these findings and highlighted potential long-term impacts on educational attainment. Marine Corps counselors noted that some commanders consider the pursuit of civilian education to be incompatible with mission prioritization. Although duty stations (and, thus, commanders) change over time, Marine Corps

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[114] In addition to having the opportunity to list command approval as among the primary TA use challenges in the free-form question, these Servicemembers were directly asked if command approval was a challenge for them personally.

[115] Upon reviewing this document, Army representatives noted that, in fact, command approval is not required in the Army. Although not a hardline requirement, the fact that one-third of mid-grade Army TA users cited this as a challenge to TA use suggests that they are, in fact, getting command pushback when attempting to use TA.

SMEs explained that, if a junior Marine's command does not support TA use, there could be long-term consequences. Because "young Marines do what they are told," if denied TA use at an early assignment, they are unlikely to question that decision (even internally) and may be unlikely to request TA at subsequent commands. In addition, given that most enlisted Marines serve only one term (i.e., the Marine Corps is more of a first-term force than any other Service), any delay in enrolling in TA-funded classes can significantly limit the degree progress a Marine can make before separation.[116] This concern is particularly pertinent at present because not all commanders are aware that the restriction that prevented Marines from using TA in their first two years of service has been lifted. As a result of the variation in command support for TA use *and* in command knowledge regarding this policy change, not all Marines are equally able to use their TA benefits.

Army SMEs expressed similar sentiments on the role of command support. Many commanders, they noted, simply do not view TA as relevant to their missions and therefore do not encourage TA use. While all commanders will prioritize the mission and occupational proficiency over TA use, the determination of whether a Soldier is sufficiently contributing to the mission, or is proficient in his or her skills, can be subjective. Thus, unit commanders' perspectives may unduly influence Soldiers' TA access. Although counselors noted significant senior-level support for TA use, there often is a gap between these senior leaders and how their messages and intentions filter down to the unit level.

Finally, given the importance of command support in approving TA requests, we asked senior enlisted and officers what factors they consider in making these decisions. These responses, summarized in Figure 16, reveal important differences across Services,[117] such as the following:

- In all Services, senior leaders note Servicemembers' performance as an important consideration, though mid-grade enlisted are significantly less likely to perceive their performance as important.
- Most Navy, Marine Corps, and Air Force senior leaders noted that they consider whether Servicemembers are likely to succeed academically when determining TA approval. This response was least common in the Army.

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[116] In fairness, it is unclear how early is "too early" for TA use because it is important for Marines to be fully trained and to have adjusted to the military lifestyle before using TA.

[117] We do not present the complete set of responses given to the question of which factors are most important in determining whether a given TA request is approved. These bullets represent only the three most commonly voiced responses.

- Only Marine Corps and Air Force senior leaders cited the importance of OPTEMPO and work responsibilities. They also voiced its importance notably more frequently than mid-grade participants did.

Figure 16. Primary factors that leadership considers in supporting TA use, by Service
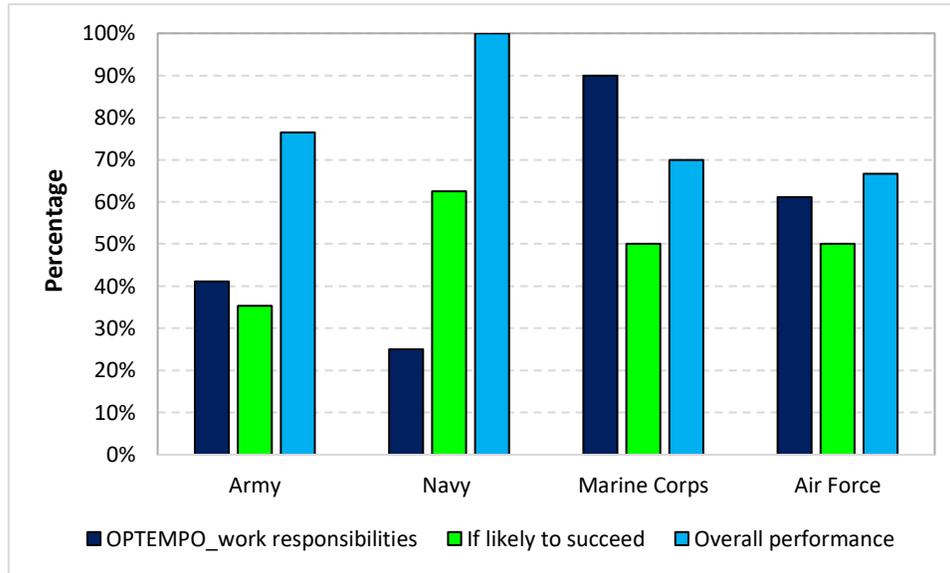
Occupational OPTEMPO and deployments

As part of our discussion of TA use challenges, we asked FG participants whether their occupation's day-to-day responsibilities (or frequency of deployments) ever impeded their ability to use TA or affected their course completion rates or other measures of TA success. Across Services and FG populations, the majority of (and, in many cases, nearly all) respondents either replied "yes" or "it depends" to this question, indicating that Service-members' occupations are important in determining both their ability to use TA and their overall TA success. Those indicating that it depends mainly stated that TA success depends on the following:

- Whether Servicemembers have predictable schedules or work long and inconsistent hours
- The amount of time spent in the field, whether in training, on exercises, or deployed

- The amount of downtime that Servicemembers have and whether they are able to complete coursework during their workday (administrative or other "desk jobs" are ideal for this)

All Services' SMEs agreed that Servicemembers' ability to use TA varies by assignment and occupation. Navy SMEs, for example, stated that TA use largely depends on whether a Sailor's duty schedule is conducive to completing coursework (and attending classes, for those enrolled at brick-and mortar institutions). Similarly, Army SMEs noted that it is not feasible for Soldiers working long or intense hours to pursue off-duty coursework, especially considering their competing responsibilities, including family. OPTEMPO further affects Servicemembers' ability to successfully use TA. According to Air Force SMEs, although it is technically feasible for Airmen to use TA while deployed, TA use is not feasible on all deployments. Airmen who excel in the classroom (but not the virtual environment) will be especially challenged. In addition, those who deploy often find it difficult to establish an educational "battle rhythm." Since TA access and the ability to successfully complete TA courses vary greatly by duty station and assignment, many Servicemembers become discouraged about trying to use TA. As Marine Corps and Air Force SMEs explained, uncertainty regarding upcoming assignments and deployment schedules—and the resulting uncertainty surrounding internet connectivity and time for coursework—leads many Servicemembers to not use TA for fear of not being able to successfully complete a course and having to repay those funds.

Navy, Marine Corps, and Air Force SMEs all concurred that TA use is most challenging for those in occupations requiring Servicemembers to deploy frequently or be in the field for extended periods. Navy SMEs noted that submariners likely are those least able to use TA, since they have no internet connectivity without surfacing. Air Force counselors specifically stated that Airmen in the security forces and those with Explosive Ordnance Disposal or Tactical Air Control Air Force Specialty Codes (AFSCs) deploy frequently, making it difficult to complete coursework and communicate with professors. Marine Corps SMEs agreed that those frequently in the field or deployed lack internet connectivity and the necessary schedule predictability—not only to attend classes in person, but also to ensure that they will be able to complete assignments on time. They noted that TA use is especially challenging for infantry and artillery Marines.

As part of our discussion on the effect of occupational demands, we asked FG participants if using TA while deployed introduced any unique challenges. Responses to this question varied notably by FG population. Among junior enlisted, Marine Corps and Air Force participants often said that deployments always present additional challenges, whereas Army respondents indicated that it varies by deployment. The majority of mid-grade nonusers of TA, in all Services, indicated that they expect TA use to be challenging on deployments; strikingly, this answer was provided by the vast majority of Air Force respondents, and *all* Army and Navy respondents. Of course, these Servicemembers have not actually *used* TA. These responses, as

well as those provided by junior enlisted, are based entirely on perceptions and suggest that it might be fruitful to provide Servicemembers with information on how to successfully use TA on deployments. Among mid-grade TA users (i.e., those most likely to have used TA while deployed), deployments were cited as a challenge primarily among Sailors, likely because of connectivity issues and the inability to complete coursework when at sea.

Many other Servicemembers indicated either that it is *easier* to use TA when deployed or that the difficulty of using TA on deployments depends on the particular circumstances. Mid-grade enlisted TA users were the most likely to say that TA use is easier on deployments and noted that, when deployed, there are fewer distractions and fewer demands on their time. In addition, there is often significant downtime and few options for how to spend this time; taking a course is a productive way to fill that gap. Those reporting that ease of TA use depends on the deployment stated that it depends on the following factors:

- Deployment length (easier for longer deployments)
- Whether it is a unit-level deployment or an individual augment (TA use is nearly impossible in the latter case)
- The deployment's mission and, as a result, how much downtime there is
- Whether there is a space to sit and complete coursework
- Internet connectivity
- Whether the deployment is to a main base, a forward-operating base (FOB), or a ship because FOBs and ships likely will not have the necessary internet bandwidth or physical space

As in other cases, SMEs' inputs were largely consistent with FG participants' responses. SMEs noted that, although deployments can be an ideal time to use TA, they also can present insurmountable challenges. Army SMEs noted, for example, that deployed Soldiers often have a lot of downtime. They also are removed from their families and other personal responsibilities, and coursework can provide a productive way to fill the time and a distraction from focusing on the home life that they are missing. For these reasons, many Soldiers wait until they are deployed to start using TA. Coursework also can help to minimize misbehavior; TA-using Soldiers will have less time to get into trouble. The feasibility of TA use on deployment, however, does vary by occupation. Some Servicemembers are too busy and lack sufficient time to successfully complete their courses on deployment, while others are limited by internet connectivity. Counselors noted that, for those in occupations that deploy frequently—such as Airmen in the EOD community, Sailors in the submariner community, or Marines in infantry or artillery—TA use is simply infeasible. In addition, last-minute mission changes can present a challenge, primarily if the new location lacks internet connectivity, because deployed Servicemembers take online courses only.

The fact that deployed, TA-using Servicemembers are limited to online courses presents unique challenges beyond those associated with internet connectivity. Although they were roughly evenly split on whether they prefer to take their courses online or at a brick-and-mortar institution, mid-grade enlisted TA users largely agreed that there are unique benefits from taking classes in person—namely, (1) it is harder to get distracted in the classroom, making students more engaged in the subject matter, (2) it is easier to get additional help from the instructor, and (3) there are benefits from in-person discussion and collaboration with other students. They noted that different students learn best in different ways and that not all can thrive in an online environment. They also noted that online courses and institutions often provide lower quality education. That said, online courses often are the only option available. Commanders are less likely to approve TA use at brick-and-mortar schools because of their predetermined and inflexible course times and because schedule uncertainty (whether in terms of day-to-day work hours or deployments and field time) often makes brick-and-mortar courses nearly impossible to attend. Air Force junior enlisted FG participants as well as Marine Corps junior enlisted and mid-grade TA users agreed that scheduling limitations—whether because commands will only approve courses offered in the evening or on weekends or because of general course availability—were a TA use challenge. Such scheduling limitations, of course, are what restrict many TA users to online courses, regardless of their preferences or how they learn best. Once again, SMEs agreed, noting that uncertainty in assignments and deployment schedules serves as an additional impediment for those taking classes in brick-and-mortar institutions, not only because they may not remain in the same geographic location for enough time to complete their courses, but also because of concerns about whether accrued credits will transfer to another institution.

Time management

Throughout our FGs, time management was frequently mentioned as a primary barrier to TA use. FG participants were asked if they ever found it difficult to juggle their TA work with their personal or professional responsibilities. They also often provided time management issues as a response to the free-form question of primary challenges to TA use. We combine these responses in Figure 17; it therefore represents, by Service and FG population, the percentage of respondents who indicated that time management was a primary TA challenge. In all Services, the majority of junior enlisted and mid-grade nonusers of TA, who are speaking mostly to their *perceptions* of TA use rather than from experience, indicated that balancing TA work with other commitments would be a challenge. Strikingly, this also was noted by most mid-grade TA-using respondents in the other Services (and all of those in the Navy). That said, although they noted time management as a challenge, mid-grade TA users also indicated that

it was a challenge that could be overcome; that is, they "buckle down" and figure out a way to meet all responsibilities, even if it means sacrificing sleep or personal time.

Figure 17. Percentage of participants saying that time management is a primary TA challenge, by Service and FG population
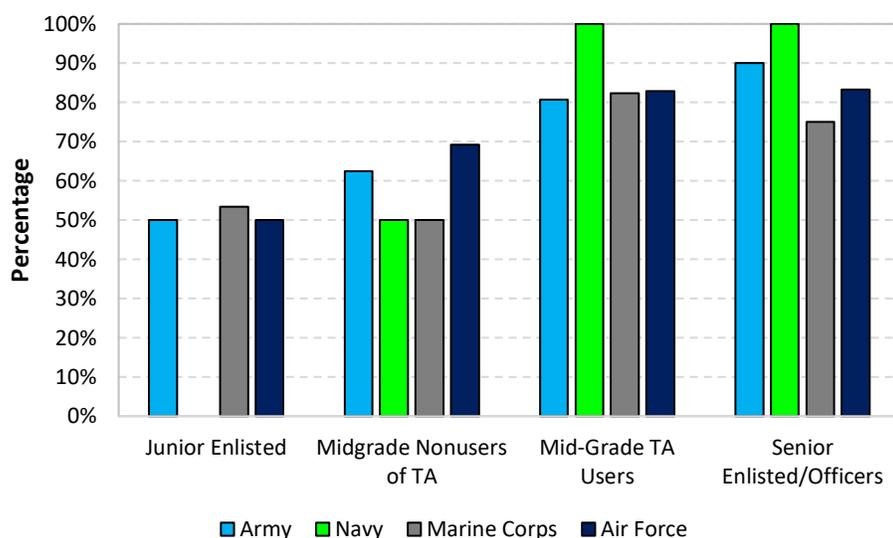
Note: Navy junior enlisted are excluded from the analysis due to insufficient sample size.

It also is important to evaluate whether time management concerns affect Servicemembers' TA use decisions, so we asked our FG participants if there had ever been a time when they considered using TA but ultimately did not apply, and we asked them to explain the factors that led to this decision. Figure 18 reveals that over half of all mid-grade non-TA-using FG participants in each Service had considered using TA at some point but did not apply, including *all* such participants in the Army and Marine Corps. A significant number of mid-grade enlisted TA users also had not applied at some point when they were considering using TA (nearly all in the Army and Marine Corps); the same is true of many junior enlisted across the Services. Among the primary reasons given for why they did not ultimately apply for TA were not having enough time, family or personal responsibilities, operational commitments, work responsibilities, and uncertainty regarding the ability to complete coursework. All of these relate to juggling multiple responsibilities and, thus, time management. Based on these responses, it seems that Servicemembers—in particular, junior Servicemembers and those who have not yet used TA—could benefit from guidance or counseling on how to balance their military careers with other opportunities and responsibilities. Reinforced messaging on

effective time management from commanders, education counselors, and perhaps successful TA users likely would increase Servicemembers' confidence in their ability to juggle multiple responsibilities and thereby would increase their likelihood of successfully using TA.

Figure 18. Percentage of FG participants who ever considered using TA but did not apply, by Service and FG population
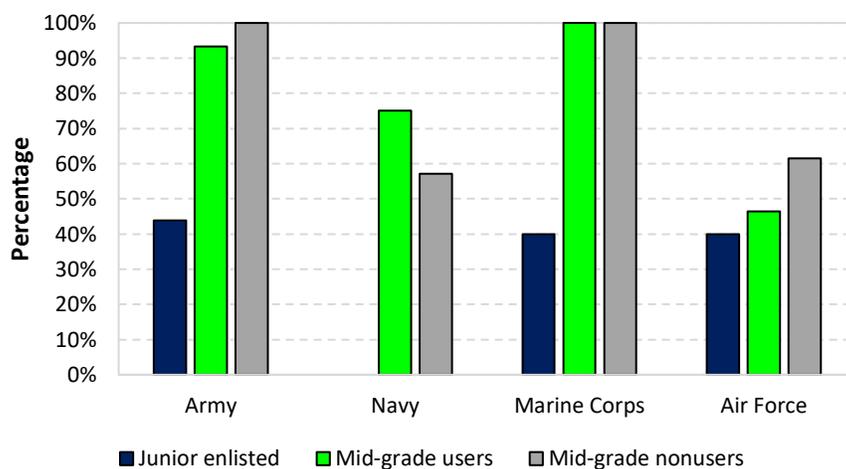
Note: Navy junior enlisted are excluded from the analysis due to insufficient sample size.

Policy impediments

In this subsection, we discuss policies that interfere with TA use. FG participants indicated that TA policies present their own unique challenges because they frequently impede the educational progress that Servicemembers can make while in service. This is supported by our synthesis of existing policy documents and SME inputs. We start by reviewing Service-specific policies that restrict when Servicemembers are first able to use TA. We then combine FG participants' and SMEs' inputs on additional policy restrictions that slow Servicemembers' educational progress.

Policies limiting first-time TA use

Service-level policies differ along several dimensions, including when Servicemembers are first able to use TA. From September 2013 through March 2019, the Marine Corps required all first-time TA applicants to have at least 24 months of service before applying for TA and limited

them to only one course in their first quarter or semester [115].[118] Although this restriction has been lifted, SMEs report that not all commanders are aware of the change. Thus, many Marines who would like to use their TA benefits within their first two years of service are not doing so. As of October 1, 2019, the Navy imposed a 2-year minimum time-in-service requirement on TA use [117]. On one hand, minimum time-in-service policies clearly delay TA use, thereby restricting the number of credits that Servicemembers are able to acquire and the degree progress that they are able to make while in service. On the other hand, this policy likely also prevents first-time TA users from taking on more commitments than they can handle, thereby increasing overall course completion rates and decreasing the prevalence of TA repayment among first-time users.

The Army, Navy, and Marine Corps further restrict first-time TA use via established TA prerequisites. The Marine Corps requires all first-time TA users to complete a "TA orientation (college 101)" course, as well as the Marine Corps Institute Personal Financial Management Course [115, 118]. The Navy requires its Servicemembers to complete WebTA training and a DOD higher education preparation training course [110]. Sailors also are "strongly encouraged to complete warfare and professional qualifications prior to pursuing education courses….First assignments are challenging and rigorous as Sailors learn their professional responsibilities" [112, p. 6]. In addition, there are minimum General Technical (GT) score requirements for TA use in the Army and Marine Corps [118].[119]

Army and Marine Corps SMEs noted that their Services' GT-score prerequisites for TA use and (more important) the inability to retake the GT in service eliminate the *possibility* of TA use for a number of Soldiers and Marines. Some Soldiers, Army counselors noted, read at the 7th or 8th grade level when they enlist but, if given the opportunity, could raise these scores via basic skill classes. They expressed, however, that there is no way for them to attend such classes, partly because they are not part of a "degree plan" and therefore are not TA funded, and also because commands will not give them the necessary time to attend such classes.[120] They felt

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[118] MARADMIN 255/18 [115] reduced this 24-month time-in-service requirement to 18 months for those with a waiver, and MARADMIN 150/19 [116] eliminated it.

[119] The GT score is one of the composite scores from the Armed Services Vocational Aptitude Battery (ASVAB). It is calculated by combining the Verbal Expression and Arithmetic Reasoning scores. Though these minimum GT score requirements were noted by the Army's education counselors, Army representatives reviewing this document stated that, in fact, there is no minimum GT score requirement for TA use. This suggests that the counselors may not have had the most up-to-date information and were advising Soldiers accordingly, thus creating a de facto GT requirement.

[120] Per Army representatives, Soldiers are in fact able to take preparatory courses via the Army's Basic Skills Education Program. It is problematic that the education counselors with whom we spoke thought that preparatory courses could only be taken via the TA program and would be advising Soldiers accordingly.

that, given the ability to attend such classes and then retake the GT test, these Soldiers could join the TA-eligible population. In addition, higher GT scores could enable lateral changes in military occupational specialty (MOS) for those who love the Army but are unhappy with their MOSs. Marine Corps SMEs concurred that GT retesting should be allowed, especially since many Marines took the GT as teenagers, perhaps with little motivation or incentive to fully apply themselves to the test. One SME told us that "the GT score does not accurately reflect the Marines sitting at my desk." It is important to realize that these statements are based on misconceptions. According to OSD, college preparatory and remedial courses are, in fact, acceptable uses of TA funds. This suggests that there may be broader misunderstandings or misinterpretations of TA policy, beyond those voiced at the installations we visited.

Although the policies reviewed here have delayed some Servicemembers' TA use, they likely were implemented to decrease the risk of course failure. The Marine Corps' course number limits—one for first-time TA users and two for all other Marines—reduce the likelihood that any Marine's course load will become too arduous and lead to course failure and TA repayment, a potential consequence that weighs heavily on Servicemembers. We expect that there were similar intentions in establishing TA prerequisites, which are designed to better prepare Servicemembers for college coursework, and minimum time-in-service requirements, which help to ensure that Servicemembers fully adjust to military life and fulfill occupational requirements before taking on additional obligations.

Policies slowing overall educational progress

Both FG participants and education SMEs cited TA policies that they found to slow Service-members' educational progress, often restricting their ability to attain a degree in service. Figure 19 illustrates the primary policy impediments voiced by mid-grade TA users as well as the senior enlisted and officers across the Services. As the figure reveals, both FG populations primarily expressed feeling limited by the $4,500 annual funding cap per Servicemember, the $250 cap per semester credit hour, and the fixed amount of annual TA funding afforded to each Service, all of which fall under the theme, "FY cap slows degree progress." A few Service-level differences regarding the most restrictive caps did emerge, although not shown in the figure. These include that the annual Service-level cap on TA funding is primarily a concern in the Navy and that the $4,500 annual funding cap was of notable concern in the Army and Navy (as well as in the Air Force for senior enlisted and officers).

When asked whether any TA policies (at either the DOD or the Service level) impeded Service-members' progress toward their educational goals, the most common responses cited by Army, Navy, and Air Force SMEs were annual limits—both funding amounts and number of credit hours. Army SMEs noted that the 16-hour credit limit severely limits the progress that Soldiers can make in a given year. This is especially problematic for those trying to concentrate their TA use during assignments or periods (based on personal life responsibilities) when they are

most able to dedicate sufficient time to their TA courses. They also find the annual funding limit restrictive, given the Army's annual limit of $4,000 per Soldier per year (versus the $4,500 DOD limit). Army SMEs felt that this policy, along with the fact that TA does not cover academic fees, encourages Soldiers to take courses at for-profit schools, which may be of lower quality. Soldiers are incentivized to attend for-profit schools because they "operate on a flat-rate tuition schedule that directly correlates to the $250 per semester-hour cap, [whereas] the vast majority of state-funded (public) colleges and universities operate on tuition plus academic fee costing" [119]. For-profit schools also are less likely to grant credits that are transferable. Navy SMEs similarly noted a new Navy policy limiting annual TA funds to $3,000 per Sailor and limiting Sailors to 120 credits over a career [117]. They pointed out that this change will decrease the number of courses that Sailors can take, thus decreasing the educational progress that Sailors can make in service. It is especially limiting for those already using TA when the policy was implemented. They may not have optimized their educational "path" to complete their degree within 120 credit hours, and the policy does not exempt those already using TA. Air Force SMEs stated that they found the $4,500 DOD-imposed cap to be insufficient.

Figure 19. Primary policy impediments, by Service and FG population
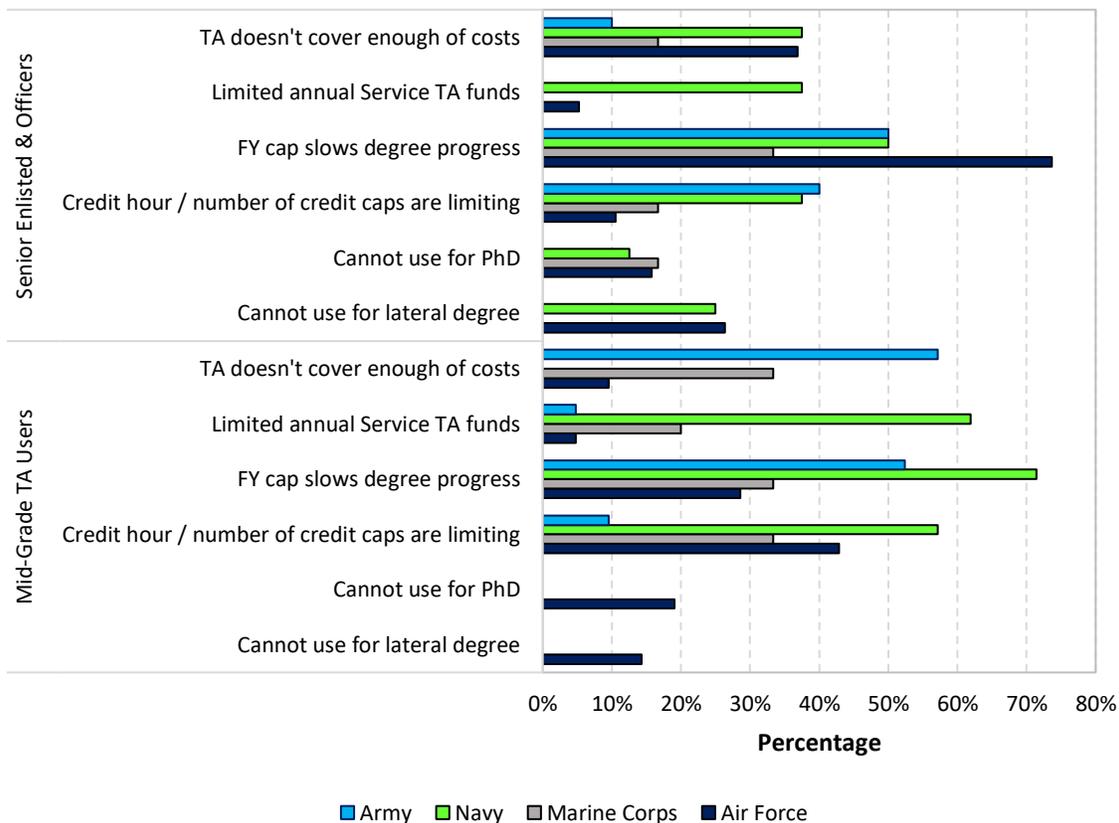
Source: CNA analysis of FG inputs.
Note: A considerable percentage of FG participants, in all populations, said that they did not feel that any policy was impeding their educational progress. Many of those who made this statement, however, also later listed specific policy impediments. Due to the contradictory nature of these comments, we are not able to accurately present the percentage indicating that there were no policy impediments.

Many FG participants noted that TA doesn't cover enough of total course costs, often leaving Servicemembers with significant out-of-pocket expenses, such as books, lab fees, and any tuition or credit-hour cost that exceeds the program's limits. These concerns were most prominent among Army mid-grade enlisted TA users but also were voiced by at least a third of Marine Corps mid-grade TA users as well as the Navy and Air Force leadership (i.e., senior enlisted and officers). Army SMEs concurred that TA funding per Servicemember is insufficient and stated that, although many Soldiers would *prefer* to take courses at brick-and-mortar institutions—and might learn better in an in-class environment—the additional fees and other associated costs make these schools seem unaffordable to the average Soldier. As a suboptimal

alternative, they attend for-profit or online schools, which reduces the quality of their education, or they choose not to use TA at all if they know that they are not likely to be successful in the virtual environment. For these reasons, the Army installation has proposed that the Army simply provide Soldiers with their annual funding allocation and let the Soldiers manage their individual TA resources—that is, give them greater agency in how those funds are distributed and in determining the courses and schools that are affordable to them [119].

As Figure 19 shows, Navy and Air Force Servicemembers also lamented the inability to use TA for lateral degrees. Similarly, Air Force education counselors said that they found the restriction on lateral degrees to be unnecessarily limiting. Many Airmen, they explained, enter the Service with a bachelor's degree and want to attain another bachelor's, in a different field, to better prepare themselves for the military-to-civilian transition. It is not possible, however, to pursue such degrees using TA. It is unclear to them why Servicemembers enlisting with a degree should not be eligible for the same educational benefits as their counterparts—whether to ultimately prepare themselves for transition or to acquire education (and skills) that will make them more productive in their military occupations. The fact that Airmen often enlist with bachelor's degrees likely explains why the only mid-grade TA users who listed the inability to use TA for lateral degrees or doctoral degrees were in the Air Force.

Air Force and Marine Corps SMEs discussed two other limiting policies. First, Air Force SMEs found the ability to change degree plans only once to impede educational progress, although they did note hearing that this policy would change soon.[121] Air Force SMEs felt that Service-members should not be limited to a one-time change in degree plan, which can include a change in either major or university. In some cases, Airmen commit to a particular major and then, after taking some classes, realize that it is not where their interests lie or that they are unlikely to succeed in that field, making a degree plan change necessary. The prevalence of degree plan (or major) changes is not unique to TA-using Servicemembers. A 2017 report by the National Center for Education Statistics revealed that 30 percent of undergraduates enrolled in either associate's or bachelor's degree programs change majors at least once in the first three years of enrollment [120]. Given this national trend, revisiting this restriction may be warranted, especially if there is no substantiated reason to expect Servicemembers to change their degree plans less frequently than other students. There also are cases in which Airmen associate with one university—usually an online university—and then realize that they are unable to learn effectively in that environment. Education counselors felt that they should be empowered to make this determination.

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[121] From the perspective of DOD, this policy actually aids Servicemembers because it increases the likelihood that they will complete a degree in service and also reduces the overall cost, since additional coursework is required any time a degree plan or major is changed.

Second, Marine Corps education counselors felt that TA should apply to certifications. In particular, they noted the disconnect between Marines' educational goals and the program types that TA will cover. They noted that not all Marines are degree driven, and that they have seen increasing demand for certifications, which TA will not fund. They noted, as examples, that certifying as a welder or emergency medical technician can lead to high-paying civilian jobs, setting Marines up for post-transition success. It seems counterintuitive that TA funds cannot be used to cover such programs—especially in an era in which, at a national level, higher education is shifting away from traditional degree paths and toward specific skills training and certifications (per Marine Corps SMEs, and substantiated by [14]). Many Marines' interest levels dwindle once they learn that TA will not fund certifications. SMEs noted that "TA needs to evolve with the population." The TA program at present excludes those Service-members interested in pursuing occupations requiring certifications (e.g., information technology, program management, and many blue-collar occupations) from beginning their educational trajectory while in service.

Summary

FG participants and the Services' education SMEs agreed that there are three primary challenges to Servicemembers' successful TA use:

1. Barriers in the TA approval process
2. Variation in Servicemembers' occupational OPTEMPO and responsibilities
3. Policies that often slow educational progress

Both Servicemembers and SMEs noted significant variation in commands' support of TA use, making it challenging for some Servicemembers to obtain command approval. As our results show, there are some disconnects between what senior leadership views as important in making TA approval decisions and what junior enlisted and mid-grade enlisted *suspect* are the most important factors in these decisions. It seems that better communication regarding the overall TA process is needed.

There was general agreement on the importance of occupational responsibilities and overall OPTEMPO (to include deployments) in determining Servicemembers' ability to use TA as well as their likely TA success. Nearly all agree that work-schedule predictability and the amount of downtime vary by occupation, making some assignments more amenable to TA use than others. FG participants noted that their ability to use TA while deployed depended largely on the nature of the deployment. It is particularly striking that nearly all mid-grade nonusers of TA expected deployments to be a significant challenge, whereas those who had used TA were more likely to state that it depends. Increased counseling and mentorship potentially could reduce nonusers' hesitation in using TA while deployed. It also could provide time

management strategies for successful TA use since this was a primary reason noted as to why Servicemembers had considered using TA but ultimately had not applied.

Finally, the primary policy impediments noted by both FG participants and SMEs were the imposed caps—both on total TA funding and costs per credit hour. SMEs noted that the credit-hour caps often incentivize Servicemembers to attend lower quality (often online) schools and slow overall educational progress. They suggested that Servicemembers be given an annual TA allocation but then be provided the discretion to spend those funds as they see fit—which could include applying some funds to academic fees (which are higher at high-quality schools and not currently covered by TA) or taking fewer courses with higher costs per credit hour. This would allow Servicemembers to optimize their TA use to meet their specific educational goals.

Conclusions and Recommendations

In this report, we qualitatively analyzed policy documents, SME discussions, and FGs to identify possible reasons for cross-Service differences in TA use and TA outcomes, as found in a previous CNA report. Our findings reveal that variation across the Services in TA policy, TA understanding, occupational responsibilities and OPTEMPO, and support from senior leaders and immediate supervisors are likely the primary drivers of these differences.

TA policy is standardized across the Services; however, each Service is provided leeway in how it administers its respective TA programs. The most important differences are those that limit Servicemembers' TA use, including when they are first able to use TA. Prominent among these are time-in-service restrictions: the Marine Corps *previously* required Marines to have served two years before using TA, whereas the Navy recently implemented the same restriction (as of October 2019). Although the Marine Corps policy has been changed, SMEs indicated that not all commanders are aware of this. Thus, for many Marines, the two-year TIS requirement is effectively still in place. Other important policy differences include the following:

- The Army's and Navy's FY funding limits—$4,000 and $3,000 per Servicemember—are lower than DOD's $4,500 maximum.
- Three Services impose credit-hour limits (16 per FY in the Army; 120 over the course of the career in the Navy; 124 for a bachelor's and 42 for a master's in the Air Force).
- The Army and Marine Corps require minimum GT scores.[122]
- The Air Force *requires* additional educational attainment and degrees for promotion, whereas it is simply an extra benefit for promotion in the other Services.

There is also significant variation in Servicemembers' understanding of the TA program. Although substantial program knowledge gaps were found in all FG populations and across all four Services, most concerning were those among mid-grade TA users, whose TA experiences should make them more informed, as well as among senior enlisted and officers, who will be advising those in their chains of command. Notable differences include that (a) relatively few FG Army mid-grade TA users correctly indicated that TA cannot be used for any course and cannot be used at any institution, respectively, and (b) the majority of FG Navy senior enlisted and officers answered these questions incorrectly. In addition, only half of the Marine Corps' senior enlisted and officer FG participants were aware that the TA benefit cannot be

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[122] Army representatives reviewing this document stated that there are no minimum GT score requirements for TA use. This suggests that the counselors were misinformed and were advising Soldiers accordingly, thus creating a de facto GT requirement.

transferred to dependents. We also find differences in whether Servicemembers were aware of the TA benefit at enlistment as well as in when and how they first learn about the TA program. With the exception of Airmen, who primarily learned about TA in a training session, most Servicemembers learned about the program from mentors or by word of mouth. Given the prevalence of misinformation regarding the TA program, there are risks of further dissemination of incorrect information when program knowledge is being spread via word of mouth or by misinformed leaders.

Differences in TA use across the Services may be significantly influenced not only by leaders' understanding of the TA program, but also by their TA buy-in. That is, leadership support for and encouragement of TA use also will be key determinants of Servicemembers' TA use. Although many Servicemembers learn about TA from a supervisor, this experience varies widely across commands. In some cases, supervisors use their one-on-one counseling sessions as opportunities to encourage TA participation and stress the benefits of continued education to young Servicemembers. In other cases, particularly in the Army and Marine Corps, leaders are less supportive of Servicemembers' TA use. Army and Marine Corps SMEs noted that some commanders do not consider the pursuit of civilian education as mission relevant and, therefore, do not encourage TA use. Relatedly, when asked about command approval, roughly a third of Army and Marine Corps FG respondents indicated that obtaining command approval was a challenge, whereas no Navy or Air Force mid-grade TA-using FG participants said it was an issue.

Finally, occupational requirements—and the resulting OPTEMPO and deployment frequency—also significantly influence TA use and help to explain cross-Service differences. Servicemembers noted that those in different occupations have varying amounts of downtime, which determines whether they are able to complete any coursework while at work without compromising their occupational responsibilities. Servicemembers in different occupations (and Services) also spend varying amounts of time in the field on exercises, in training, or deployed. Although many noted that deployments can be an ideal time to use TA owing to the absence of family responsibilities, they also introduce unique challenges, including internet connectivity and communication with professors. Thus, the ability to successfully use TA while deployed largely depends on whether the deployment is to a main base, a FOB, or a ship because, in the latter two cases, Servicemembers most often will lack the necessary resources. Since the frequency of FOB and ship deployments varies by Service, TA use will vary as well.

Taken together, our analysis provides a number of explanations for cross-Service TA differences. If DOD seeks to make Servicemembers' TA understanding and TA use more equitable, we recommend that it take the following actions:

- Standardize the content and delivery of TA messaging across the Services to eliminate misinformation and ensure that all Servicemembers learn about TA early in their careers.

- As part of this standardization, present TA information *early* and reinforce TA messaging *throughout* Servicemembers' careers.

- Mandate that all commands include TA training as part of in-processing, ideally by having education counselors brief the units.

- Provide a mechanism—perhaps a survey—for Servicemembers to offer feedback on their interactions with education counselors and their recommendations for how counselors could be more effective in helping them to meet their educational goals.

- Ensure that education counselors are available to all Servicemembers—this will require reinstating these counselors in the Navy.

- Provide junior Servicemembers and first-time TA users with guidance on how to effectively juggle TA use with other responsibilities and how to use TA while deployed.

- Counsel TA users on the trade-offs between online versus brick-and-mortar courses, helping to prepare them for online-specific challenges.

- Work to ensure leadership buy-in across commands, perhaps by implementing standardized leadership training on the benefits—to the individual Servicemember as well as to the command—from increased educational attainment.

If implemented, these recommendations will make both the ability of Servicemembers to use TA and their overall TA success rates more equitable across the Services. Of course, some Service- and command-level differences will persist since successful use of TA will vary by Servicemember and by circumstance. That said, these recommendations should decrease the magnitude of the differences that currently exist. If not implemented, these differences likely will persist, maintaining the status quo of unequal access to TA (and differences in TA outcomes) not only across Services, but also across Servicemembers within a Service. With lower TA use in some Services, TA funding may eventually be at risk since unused funds can be viewed as low demand for the benefit. Differences in TA use (and outcomes) *within* a Service could ultimately have negative impacts on morale and thereby on retention.

In closing, we remind readers that, since we visited only one installation per service and the FGs were based on convenience samples, the generalizability of our findings is questionable; findings regarding any one Service may not necessarily apply to Service-members *throughout* the Service but rather may be representative of those on that specific installation. However, since our FGs within each Service comprised diverse groups of individuals (in terms of demographic and military characteristics), we are confident in those findings that emerged consistently, summarized here. The volume and diversity of our participants allow us to overcome some of the limitations of convenience sampling. By conducting multiple FGs per installation—and, when sample size allowed, multiple groups *per* population (e.g., mid-grade TA users)—we replicate the diversity in

participants' experiences and opinions that would have been achieved had we visited multiple installations per Service. We are therefore confident that those findings that emerged consistently across the FGs are reflective of how TA policies, TA practices, and Servicemember perceptions about TA differ across Services.

Appendix A: Service-Level Differences from Our 2017 Estimations

In this appendix, we provide detailed findings from our 2017 report revealing numerous Service-level differences in Servicemembers' likelihood to use TA (as well as the manner in which they use TA) and in their TA outcomes, such as course completion and degree attainment. That study was conducted in response to the 2014 DOD Appropriations Bill, mandating a study tracking TA users' outcomes [104]. The analysis focused not only on identifying the characteristics of those Servicemembers who use TA (compared with their non-TA-using counterparts) but also on identifying which TA-using Servicemembers were most likely to experience positive outcomes (i.e., completing their TA-funded courses, attaining any degree using TA, and/or attaining a bachelor's or graduate degree using these funds).

In those estimations, after controlling for Servicemembers' military and demographic characteristics, a number of sizable and statistically significant differences were found across the Services, not only in whether and how Servicemembers used TA, but also in their TA-related outcomes. These differences are summarized in Table 136 and Table 137, respectively.[123]

Enlisted

Among enlisted Servicemembers, Airmen were notably more likely than their other-Service counterparts to use TA; specifically, Airmen were 11.4 percentage points more likely than Marines, 9.5 percentage points more likely than Soldiers, and 6.5 percentage points more likely than Sailors to use TA. Airmen and Marines were notably more likely to both be "super users" (defined as taking at least the median level of credits or the median level of courses in their Service for a given year) and to use TA in at least two consecutive years. Airmen were 12.7 and 21.1 percentage points more likely to be super users than their Army and Navy counterparts, respectively, whereas Marines were 7.2 and 15.6 percentage points more likely. In terms of consecutive use, Airmen were 6.5 percentage points more likely than Soldiers and 7.9 percentage points more likely than Sailors to use TA in at least two consecutive years.

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[123] The full set of estimation results can be found in our November 2017 report [104].

Table 136. Differences in TA use, by enlisted/officer status and Service

	Enlisted				Officers			
	Army	**Navy**	**Marine Corps**	**Air Force**	**Army**	**Navy**	**Marine Corps**	**Air Force**
Probability of TA use								
As compared to:								
Army	N/A	+3	-1.9	+9.5	N/A	+13.5	+10	+7.1
Navy	-3	N/A	-4.9	+6.5	-13.5	N/A	-3.5	-6.4
Marine Corps	+1.9	+4.9	N/A	+11.4	-10	+3.5	N/A	-2.9
Air Force	-9.5	-6.5	-11.4	N/A	-7.1	+6.4	+2.9	N/A
Probability of TA super use								
As compared to:								
Army	N/A	-8.4	+7.2	+12.7	N/A	-4	+10.2	+15.1
Navy	+8.4	N/A	+15.6	+21.1	+4	N/A	+14.2	+19.1
Marine Corps	-7.2	-15.6	N/A	*5.5*	-10.2	-14.2	N/A	+4.9
Air Force	-12.7	-21.1	*-5.5*	N/A	-15.1	-19.1	-4.9	N/A
Probability of consecutive TA use								
As compared to:								
Army	N/A	-1.4	+0.8	+6.5	N/A	*+2.2* [a]	+3.1	+15.4
Navy	+1.4	N/A	*2.2* [a]	+7.9	-2.2	N/A	*0.9* [a]	+13.2
Marine Corps	-0.8	*-2.2* [a]	N/A	+6.6	-3.1	*-0.9* [a]	N/A	-12.3
Air Force	-6.5	-7.9	-6.6	N/A	-15.4	-13.2	+12.3	N/A

Source: CNA analysis from [104].
Note: Within each subsection, the differences in the upper and lower diagonals are the inverse of each other. In the first column, for example, we note that enlisted Soldiers are 3 percentage points *less* likely than their enlisted Sailor counterparts to use TA. Similarly, in the first row, we see that enlisted Sailors are 3 percentage points *more* likely than their enlisted Soldier counterparts to use TA.
[a] Italicized differences are *not* statistically significant, based on the F-test; all others are statistically significant.

Officers

A number of striking TA-use differences emerged among officers, including the following:

- Navy officers were 13.5 percentage points more likely than their Army officer counterparts to use TA.

- Air Force officers were 15.1 percentage points more likely than Army officers and 19.1 percentage points more likely than Navy officers to be TA super users.

- Air Force officers were 15.4, 12.3, and 13.2 percentage points more likely to consecutively use TA than Army, Marine Corps, and Navy officers, respectively.

The Air Force emerges strongly as the Service with not only the most TA-using members (among enlisted) but also the most actively and persistently TA-using members, among both officers and enlisted. Sizable differences emerge in terms of TA-related outcomes as well; notably, compared to their Army and Navy officer counterparts, we found both Air Force and Marine Corps officers to be roughly 20 percentage points less likely to attain any degree (and to attain a bachelor's or graduate degree) using TA. In addition, enlisted Marines, Sailors, and Airmen had average course completion rates that were 10.1, 8.1, and 6.7 percentage points higher, respectively, than their Marine Corps, Navy, and Army counterparts. There were no statistically significant differences in officers' course completion rates.

Table 137. Servicemember differences in TA-related outcomes

	Enlisted				Officers			
	Army	**Navy**	**Marine Corps**	**Air Force**	**Army**	**Navy**	**Marine Corps**	**Air Force**
Probability of any degree								
As compared to:								
Army	N/A	+7.8	-4.5	-1.6	N/A	-2.2	-21.5	-22.9
Navy	-7.8	N/A	-12.3	-9.4	+2.2	N/A	-25.1	-23.7
Marine Corps	+4.5	+12.3	N/A	+2.9	+21.5	+25.1	N/A	+1.4 [a]
Air Force	+1.6	+9.4	-2.9	N/A	+22.9	+23.7	-1.4 [a]	N/A
Probability of BA/BS or higher								
As compared to:								
Army	N/A	-2.8	-1.9	+2.2	N/A	-5.1	+22.2	+21.2
Navy	+2.8	N/A	-5.0	-0.9	+5.1	N/A	-17.1	-16.1
Marine Corps	+1.9	+5.0	N/A	+4.1	-22.2	+17.1	N/A	+1.0 [a]
Air Force	-2.2	+0.9	-4.1	N/A	-21.2	+16.1	-1.0 [a]	N/A
Course completion rate								
As compared to:								
Army	N/A	+8.1	+10.1	+6.7	N/A	+4.9 [a]	+4.8 [a]	+3.8 [a]
Navy	-8.1	N/A	-1.4	+2.0	-4.9 [a]	N/A	-1.1 [a]	-0.1 [a]
Marine Corps	-10.1	+1.4	N/A	+3.4	-4.8 [a]	+1.1 [a]	N/A	+1.0 [a]
Air Force	-6.7	-2.0	-3.4	N/A	-3.8 [a]	+0.1 [a]	-1.0 [a]	N/A

Source: CNA analysis from [104].
Note: Within each subsection, the differences in the upper and lower diagonals are the inverse of each other. In the first column, for example, we note that enlisted Soldiers are 7.8 percentage points *less* likely than their enlisted Sailor counterparts to attain any degree using TA. Similarly, in the first row, we see that enlisted Sailors are 7.8 percentage points *more* likely than their enlisted Soldier counterparts to attain any degree using TA.
[a] Italicized differences are *not* statistically significant, based on the F-test; all others are statistically significant.

Appendix B: FG Population

In this appendix, we provide information on our FG participants. We first show their distribution, by population and Service, and then summarize their demographic characteristics and military occupations. This information was collected through short surveys administered at the beginning of each FG. When possible, we also compare our participants' characteristics with those of other Servicemembers—both within their Service and in the other Services. Such comparisons highlight ways in which our sample differs from the general population and, thus, ways in which our findings may not be representative of the opinions and experiences of *all* Servicemembers. To make these comparisons, we rely on the *Population Representation in the Military Services* (also known as the "PopRep")—a report mandated by the Senate Committee on Armed Services in May 1974 and produced every year since. The most recent version of the study describes the characteristics of US military personnel in FY18 [121].

Participants' demographic characteristics

To understand how representative our FG findings might be of a particular Service as a whole—i.e., if they likely represent the views of each Service versus only the views of our FG participants—we show how our participants' demographic characteristics compare with those of each Service overall. Our objective in presenting these comparisons, both here and in subsequent tables, is to identify ways in which our FG findings may not be representative of overall TA experiences.

In Table 138, we show our FG sample's paygrade distribution and provide the comparative breakdown for each Service. Across all Services, officers are underrepresented in our FG sample. Conversely, E-8–E-9s are consistently overrepresented, particularly in the Army (19 versus 2 percent) and the Air Force (14 versus 2 percent). E-4–E-7s make up the majority of our sample, as well as the majority of each of the Services' overall populations. In addition, the share of these Servicemembers in our FG sample generally aligns with that of each Service's general population, except in the Navy, where there is a significant overrepresentation of E-4–E-7s, likely because of low attendance by junior enlisted Sailors (only 1 FG participant). It is not surprising that our representation of junior enlisted (E-1–E-3) is notably poor in the Navy (3 versus 22 percent), though our FG sample is largely representative of E-1–E-3s in the other Services.

Table 138. FG participants' demographic characteristics, as compared to FY18 Service populations (PopRep), by percentage and number of Servicemembers

Demographic		Army		Navy		Marine Corps		Air Force	
		FG sample	Pop Rep	FG sample	Pop Rep	FG sample	Pop Rep	FG sample	Pop Rep
Gender	Male	85% 66	85% 330,240	61% 23	80% 220,118	66% 57	91% 151,137	67% 64	80% 210,923
	Female	12% 9	15% 56,097	39% 15	20% 54,619	32% 28	9% 14,510	33% 32	20% 53,047
	Prefer not to identify	4% 3	0% 0	0% 0	0% 0	2% 2	0% 0	0% 0	0% 0
Pay-grade	E-1–E-3	22% 17	23% 103,550	3% 1	22% 71,025	36% 31	41% 74,155	19% 18	23% 72,963
	E-4–E-7	59% 46	58% 262,012	76% 29	59% 190,372	53% 46	46% 84,428	55% 53	56% 178,300
	E-8–E-9	19% 15	3% 14,113	8% 3	3% 9,261	7% 6	3% 5,500	14% 13	2% 7,715
	O-1–O-5	0% 0	16% 73,682	13% 5	16% 49,663	5% 4	10% 18,446	13% 12	19% 59,103
Race	White	55% 43	67% 309,138	58% 22	62% 200,865	72% 63	80% 146,711	78% 75	72% 230,471
	Black	24% 19	21% 98,387	24% 9	17% 55,225	14% 12	11% 19,270	14% 13	15% 46,741
	Asian	9% 7	5% 22,487	11% 4	6% 17,967	5% 4	3% 5,416	4% 4	4% 12,639
	Other	3% 2	0% 10911	0% 0	11% 34,634	2% 2	3% 5,869	0% 0	6% 19,283
	Prefer not to identify	9% 7	4% 18,948	8% 3	5% 14,969	7% 6	3% 5,999	4% 4	4% 12,484
Ethnic-ity	Hispanic	19% 15	16% 71,419	18% 7	16% 50,349	24% 21	22% 39,658	7% 7	14% 46,569
	Not Hispanic	69% 54	84% 384,227	66% 25	69% 221,719	66% 57	78% 143,607	86% 83	81% 261,627
	Prefer not to identify	12% 9	0% 2,075	16% 6	16% 51,592	10% 9	0% 0	6% 6	4% 13,422

Demographic		Army		Navy		Marine Corps		Air Force	
		FG sample	Pop Rep	FG sample	Pop Rep	FG sample	Pop Rep	FG sample	Pop Rep
Marital status[a]	Single (never married)	38% 29	40% 218,052	16% 6	43% 163,200	45% 39	54% 109,718	29% 28	37% 143,933
	Married	55% 42	55% 304,466	68% 26	53% 200,211	47% 41	43% 88,519	65% 62	57% 218,571
	Divorced/ separated	8% 6	5% 26,691	16% 6	4% 13,932	8% 7	3% 6,273	5% 5	6% 21,495

Source: [121].

[a] The "divorced/separated" category included annulled, divorced, and legally separated.

The gender distributions in Table 138 reveal that, on the whole, the gender composition of our FGs is not representative of DOD. Although the gender composition of our Army FG sample aligns fairly well with that Service's gender composition (85 percent male and 12 to 15 percent female in both cases), female representation in our Navy, Marine Corps, and Air Force FG samples far exceeds that found in each of those Services' FY18 endstrengths. If female Service-members are either more or less inclined than male Servicemembers to use TA, or have notably different TA experiences than their male counterparts, our findings from the Navy, Marine Corps, and Air Force may be influenced by those underlying differences. This general overrepresentation of women in our FGs, however, may be advantageous for disentangling our findings from the 2017 report that, compared with their male counterparts, female enlisted Servicemembers are less likely to use TA whereas female officers are more likely to use TA. That is, a greater representation of female Servicemembers will necessarily increase female inputs, thus painting a more complete picture of their experiences. That said, we will need to exercise caution in making generalizable statements regarding DOD-wide differences in male versus female TA experiences.

The race, ethnicity, and marital status of our FG participants closely mirrors the characteristics of Servicemembers overall. There are some exceptions, such as an underrepresentation of white Servicemembers in the Army and Marine Corps FG samples and an overrepresentation of married and divorced/annulled Servicemembers in the Navy FG samples (likely due to the underrepresentation of junior enlisted Sailors in our FGs). That said, the fact that our participant population looks similar to the overall population suggests that our FG findings will not be biased across dimensions of race, ethnicity, or marital status.

In Table 139, we show the age distribution of our FG participants as compared to the distribution within each Service. Because the age ranges from which Servicemembers could choose on our intake form do not exactly match those from the PopRep, we show the most

closely aligned age ranges possible. As in the previous table, enlisted and officers are combined in each cell. In general, the numbers in this table suggest a relative underrepresentation of younger Servicemembers in our sample (e.g., 26 percent 18-to-22-year-olds in our Army FG sample versus 40 percent 17-to-24-year-olds in the Army overall). FG participants are relatively concentrated in the 23-to-45-year-old range compared with each Service's general population. They represent, for example, 80 percent of our Navy FG participants and 72 percent of our Army FG participants, compared with 60 percent and 55 percent of their respective Service populations. Despite these differences, no representation of FG participants in a particular age range differs drastically from that of the Services' populations. The only exception is for Navy 18-to-22-year-olds; in this case, our sample significantly underrepresents the overall population because of poor turnout in our E-1–E-3 discussion groups.

Table 139. Participants' age distribution compared to FY18 Service populations (PopRep)

Service	Ages		Percentage		Number	
	FG sample	PopRep	FG sample	PopRep	FG sample	PopRep
Army	18–22	17–24	26%	40%	20	185,280
	23–27	25–29	26%	23%	20	106,208
	28–35	30–34	23%	15%	18	68,346
	36–45	35–44	23%	17%	18	77,718
	46–55	45–55	3%	4%	2	20,165
Navy	18–22	17–24	5%	36%	2	116,393
	23–27	25–29	34%	25%	13	80,849
	28–35	30–34	26%	17%	10	55,557
	36–45	35–44	26%	18%	10	58,423
	46–55	45–55	8%	4%	3	12,432
Marine Corps	18–22	17–24	55%	63%	48	115,698
	23–27	25–29	21%	17%	18	31,228
	28–35	30–34	15%	9%	13	16,899
	36–45	35–44	9%	9%	8	16,410
	46–55	45–55	0%	2%	0	3,030
Air Force	18–22	17–24	16%	33%	15	107,160
	23–27	25–29	20%	25%	19	80,482
	28–35	30–34	36%	19%	35	60,256
	36–45	35–44	24%	20%	23	63,767
	46–55	45–55	4%	3%	4	9,949

Source: [121].

Finally, Table 3 shows our FG participants' average numbers of dependent children. The PopRep does not contain information on dependent children for the Services, so those numbers do not appear in Table 3. Overall, at least 40 percent of the FG participants in each Service have one or more dependents. The Marine Corps has the highest percentage of respondents without children (66 percent), while the Navy has the lowest percentage without children (37 percent). This difference mirrors the relative overrepresentation of junior enlisted in the Marine Corps FG sample and the relative underrepresentation of junior enlisted in the Navy sample; this difference likely is driven by those disparities. If having children affects a Servicemember's TA use, average Marine Corps and Navy TA use could be influenced by their higher and lower percentages of participants with no children, respectively.

Table 140. Participants' number of dependent children (no Service population comparison), percentage and number by Service

Number of dependent children	FG sample			
	Army	Navy	Marine Corps	Air Force
0	58%	37%	66%	45%
	45	14	57	43
1-2	23%	42%	21%	42%
	18	16	18	40
3-4	14%	18%	14%	11%
	11	7	12	11
5+	4%	3%	0%	1%
	3	1	0	1
Prefer not to identify	1%	0%	0%	1%
	1	0	0	1

Source: CNA analysis of intake form data.

Overall, we find that our participants' demographic characteristics align with those of the general population, though we have identified a few ways in which our FG populations are not representative of the larger Service populations. Specifically, as the tables reveal, our FG populations have the following characteristics:

- *Over*representative of women in the Navy, Marine Corps, and Air Force
- *Under*representative of officers and *over*representative of senior enlisted, across DOD
- *Over*representative and *under*representative of junior enlisted in the Marine Corps and Navy, respectively
- *Under*representative of younger, junior enlisted in the Navy

These findings simply highlight that, because our analysis is based on FG inputs (not a survey or randomized control trials), the inputs from our participants may not be representative of the experiences/opinions of all Servicemembers. To the extent that TA use or TA experiences vary by gender, paygrade, or years of service, our FG participants' responses may differ from those that would have been provided by a larger and more representative subset of Servicemembers. They do, however, represent inputs from a diverse group of people; therefore, we will place confidence in any themes or findings that emerge consistently across the FGs.

Occupations

In addition to standard demographic information, participants indicated their primary occupational specialty on the intake forms. Because our study spans all four Services, we use DOD occupation codes to provide consistent categorization across Services. Figure 20 shows the total number of participants, by occupational category. "Service and Supply Handlers" were the largest group of respondents, followed by "Communications and Intel" and "Functional Support/Administration." Combined, these three occupational areas make up nearly half of all respondents. As a result, our FG findings rely predominantly on Servicemembers in support roles and may underrepresent the experiences of more operational or commonly deployed occupations. That said, 28 participants did come from "Infantry, Gun Crews, and Seaman" occupations, suggesting that the feedback and experiences of these Servicemembers' inputs will not be an insignificant proportion of total FG responses.

Figure 20. Primary DOD occupational specialties of FG participants

Source: CNA analysis of FG intake form data.

Figures

Tables

Abbreviations

ACES	Army Continuing Education System
ADMF	Active Duty Master File
AFGM	Air Force Guidance Memorandum
ASVAB	Armed Services Vocational Aptitude Battery
BLS	Bureau of Labor Statistics
CCAF	Community College of the Air Force
DMDC	Defense Manpower Data Center
DOD	Department of Defense
EAS	end of active service
E-O	Enlisted to Officer
ESO	Education Service Officer
FG	focus group
FOB	forward-operating base
FY	fiscal year
GAO	Government Accountability Office
GED	General Educational Development (i.e., high school degree equivalent)
GT	General Technical
HSD	high school degree
IPEDS	Integrated Postsecondary Education Data System
MCO	Marine Corps Order
MGIB-AD	Montgomery GI Bill-Active Duty
MOS	military occupational specialty
MyCAA	My Career Advancement Account
NEC	Navy Enlisted Classification
NPR	National Public Radio
OPE	Office of Postsecondary Education
OPTEMPO	operational tempo
PDV	present discounted value
PFP	private for-profit
PNFP	private not-for-profit
PopRep	Population Representation Report
PUB	public
SH	semester hour
SME	subject matter expert
TA	tuition assistance; Tuition Assistance program
U.S.C.	United States Code

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