Can Information and Advising Affect Postsecondary Participation and Attainment for Non-Traditional Students? Evidence from a Large-Scale Experiment with the U.S. Army

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Abstract

Non-traditional students disproportionately enroll in institutions with weaker graduation and earnings outcomes. One hypothesis is that these students would have made different choices had they been provided with better information or supports during the decision-making process. We conducted a large-scale, multi-arm field experiment with the U.S. Army to investigate whether personalized information and the offer of advising assistance affect postsecondary choices and attainment among non-traditional adult populations. We provided U.S. Army service members transitioning out of the military with a package of research-based information and prompts, including quality and cost information on a personalized set of matched colleges, messages targeted at addressing veteran-specific concerns or needs, and reminders about key stages in the college and financial aid application process. For a randomly selected subset of the experimental sample, we also provided service members with opportunities to connect with a college advisor. We find no overall impact of the intervention on whether service members enroll in college, on the quality of their college enrollment, or on their persistence in college. We find suggestive evidence of a modest increase in degree completion within the period of observation, with these impacts mainly driven by increased attainment at for-profit institutions. Our results suggest that influencing non-traditional populations' educational decisions and outcomes will require substantially more intensive programs and significant resources.

I.   Introduction

For over a decade, policy makers and veterans advocates have expressed concern about the postsecondary choices and outcomes of U.S. military veterans. While military service appears to increase rates of post-secondary participation, similar to other non-traditional student populations, veterans enroll disproportionately at less selective institutions and are unlikely to attain a bachelor's degree (Loughran, Martorell, Miller, and Klerman, 2011; Greenberg, Gudgeon, Isen, Miller, and Patterson 2021). Policy makers have expressed particular concern with the rate at which veterans enroll at--and use taxpayer-funded G.I. Bill education expenses-- to fund for-profit colleges and universities (Emrey-Arras, 2019; Martorell and Bergman 2013). In the first five years of the program nearly 25 percent of Post-9/11 GI Bill funds went to eight for-profit colleges, with seven of these schools under state or federal investigation by 2014 (U.S Senate, 2012).

More generally, the 2010 Harkin Commission on For-Profit Higher Education in the U.S. Senate claimed that for-profit colleges and universities in the U.S. used deceptive and manipulative recruiting practices to entice veterans to enroll at their institutions (U.S Senate, 2012), and subsequently proposed legislation (e.g., the Military and Veterans Education Protection Act of 2017, the Protect VETS Act of 2019, and the Protect the GI Bill Act of 2019) has sought to restrict use of Veteran benefits at these institutions, similar to how the federal government restricts the use of other federal education benefits (Wong, 2015; Douglas-Gabriel, 2019). As these policies have been debated, recent GI Bill expenditures have averaged around $10 billion, approximately $17,000 per student, annually (Bass, 2019).

At the individual veteran level, policy makers and advocates note that veterans who enroll at for-profit institutions or other lower-quality institutions may be less likely to earn their degree, or conditional on completing their program, may receive a credential that has limited value in the labor market (Martorell and Bergman 2013). These concerns are supported by a growing body of research which demonstrates less labor market value associated with credentials from for-profit institutions for veterans (Emrey-Arras, 2019) and more broadly (Darolia, Kordel, Martorell, Wilson, Perez-Arce 2015; Cellini and Turner, 2019; Armona, Chakrabarti, and Lovenheim 2018), and generally worse outcomes for students who attend lower-quality institutions (Goodman, Hurwitz, and Smith, 2020; Zimmerman, 2014). For taxpayers and policy makers, concerns stem from the fact that a disproportionate share of G.I. Bill education funding flows to for-profit and lower-quality institutions, and that taxpayers may receive little if any return on this investment,

either in the form of increased tax revenue from improved veteran employment outcomes or more generally from improved health and well-being for veterans (U.S. Senate, 2012; Emery-Arras, 2019). Indeed, in contrast to evaluations of earlier iterations of the G.I. Bill (e.g., Bound and Turner 2002, Angrist 1993), recent work that evaluates the effects of the recent GI Bill expansion finds negative overall effects on earnings that result in part from the relatively low returns of the schools chosen by veterans (Barr, Kawano, Sacerdote, Skimmyhorn, and Stevens, 2021). Individuals who attend these types of institutions are more likely to regret their educational choices, suggesting frictions in the navigation of the college choice process (Strada-Gallup, 2017).

To increase service members' awareness of well-matched, affordable colleges and universities and to support them to make informed decisions about whether and where to pursue postsecondary education, we designed and tested a large-scale experiment to provide service members separating from the U.S. Army with personalized and simplified information, reminders, and advising about their college and university options. For each treated service member, we identified four colleges and universities that (1) were located in the communities service members would be transitioning to after the Army; (2) appeared likely to admit the soldier, based on their performance on the Armed Services Vocational Aptitude Battery (ASVAB); and (3) maximized a combination of institutional quality (proxied for by institutions' six-year graduation rate) and affordability (price net of G.I. Bill funding). The average graduation rate for the institutions we identified to include in the project materials is at the 60th percentile in the national distribution of graduation rates at four-year institutions; comparatively, the average graduation rate among institutions attended by service members in the absence of the intervention is at the 41st percentile. [1,2] This improvement in quality did not come at the expense of affordability as nearly all of the institutions that we recommended had a price net of G.I. Bill funding of $0.

While some early evidence suggested sizable effects of the provision of information and/or assistance on students' college choice (e.g., Hoxby and Turner 2013), an emerging body of research has found more mixed evidence on this margin (Avery, Castleman, Hurwitz, Long, and Page, 2021; Sullivan, Castleman, Lohner, and Bettinger, 2021; Gurantz, Howell, Hurwitz, Larson, Pender, and White, 2019; Gurantz, Pender, Mabel, Larson, and Bettinger, 2020). At the same time, this evidence focuses largely on the enrollment choices of high-achieving high-school

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[1] We calculate the latter based on the average graduation rate of institutions attended by control group service members in our experiment.
[2] Source: authors' calculations using data from the College Scorecard.

students following a traditional path to college. We are unaware of any prior informational or nudge interventions aimed at influencing the college choice of non-traditional students. Given their reduced familiarity with the college process (e.g., many lack parents or peers with college degrees), reduced access to education planning resources relative to those present in high schools, and greater scope for improvements in college quality, one might expect that non-traditional students would be more strongly affected.

Our intervention materials moreover draw on a variety of evidence-based, behavioral science strategies to maximize service member's engagement with and responsiveness to the materials. For instance, drawing on recent papers which make concrete either the financial returns to college or price net of generous financial aid (Barr and Turner, 2018; Hoxby and Turner 2013; Dynarski, Libassi, Michelmore, and Owen, 2020), we made salient the labor market returns to pursuing college and the monetary value of service members' GI Bill funding. We leveraged the social norms literature (e.g., Alcott, 2011) by including information about student veterans' groups at each of the institutions we identified and by providing contact information for group leaders. Our materials also drew on evidence-based strategies to simplify choices for service members (e.g., Iyengar and Lepper, 2000; Beshears, Choi, Laibson, and Madrian, 2013.; Bailey 2015), address anxiety about college entrance exam taking (e.g., Aronson, Good, and Fried, 2002; Jenner, 2017), and provide reminders for service members to follow through on important college application actions (e.g., Karlan, McConnell, Mullainathan, and Zinman, 2010).

We delivered this information through a combination of postal mail, email, and text message, and also created a project-specific website where service members could find information about additional colleges and universities at which they were likely to be admitted and that maximized quality and affordability. In Figure 1 we present an overview of the intervention materials; we present the full set of materials in the Appendix and a more detailed description in Section III.

All treated service members (two-thirds of the experimental sample) received these materials. We also randomly assigned half of treated service members to receive additional proactive and personalized, text-based college advising from the Virginia College Advising Corps (VCAC), a chapter within the national College Advising Corps, given evidence that intensive

college advising has large positive impacts on postsecondary enrollment and attainment (Avery, 2013; Barr and Castleman, 2021; Carrell and Sacerdote, 2017).[3]

We conducted our experiment in 2016 and 2017 with enlisted active-duty service members who were in the process of separating from six of the largest Army installations in the country. We restricted the sample to service members without a college degree and with an Armed Forces Qualification Test (AFQT) score (a subscore of the ASVAB) at or above the 65th percentile.[4] Within base, quartile of aptitude, and month of initiation of transition from active-duty, we randomized service members at the individual level to one of the two treatment arms (information only or information and advising) or to the control condition. Our randomization waves took place from March 2016 through November 2017, resulting in a total experimental sample of n = 13,173.

We find no overall impact of the intervention on whether service members enroll in college, on the quality of their college enrollment, or on their persistence in college. We find no added benefit of offering service members proactive and personalized advising compared with providing the information we describe above. We can rule out that the null effects are because of a lack of exposure to the intervention materials: 37 percent responded to at least one of the text messages (with a response rate of 67 percent specifically for the advising group). This is a conservative estimate of engagement given that materials were also sent in paper and e-mail form, mediums for which we cannot track engagement.

We find suggestive evidence of a modest increase in degree completion within the period of observation, with these impacts mainly driven by increased attainment at for-profit institutions. At 24 months following the intervention, treated service members were 0.8 percentage points more likely to earn a degree, which represents a 13 percent increase over the control mean graduation rate of six percent. The modest degree impacts we estimate are concentrated among service members with substantial pre-intervention college enrollment, particularly prior enrollment at for-profit institutions. This suggests that the intervention may have nudged them to complete for-profit degrees for which they had already made substantial progress, perhaps by earning credit for additional military experience they had accumulated. This result is somewhat surprising in the context of the motivation for the experiment, and further suggests that a lack of information is not

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[3] The VCAC advisors completed additional training related to the military, military education benefit programs, military transitions, and the GI Bills prior to the pilot program.

[4] The AFQT is normed on a nationally representative population so this corresponds to the 65th percentile of scores in the U.S. population.

the driving force behind the continued disproportionate enrollment of veterans in institutions with poor average outcomes. Furthermore, given prior research on the limited labor market returns to for-profit credentials (Cellini and Turner, 2019), it is questionable whether these degrees will improve service members' post-Army well-being.

We provide new evidence that indicates that informational, nudge, and advising strategies to improve college choice with a non-traditional student population are unlikely to be effective. Unlike traditional students, service members in our experimental sample have significant work experience (an average tenure in the Army of 5.4 years) and family responsibilities (54 percent were married). The status quo college choices for these individuals are also substantially lower-quality than for the high-achieving student population in much of the existing college choice intervention literature. For instance, Sullivan, Castleman, Lohner, and Bettinger (2021) investigate the impact of a national virtual advising program for high-achieving, low- and moderate-income students. The average graduation rate of institutions attended by the control group in that study was 73 percent. By contrast, only 23 percent of the control group of service members in our study attended a college or university with a graduation rate of 50 percent or higher. Our intervention materials identified colleges and universities with objectively higher quality and affordability indicators in the communities where service members planned to live after separating from the Army, so the choices we identified did not require a trade-off between institutional quality and affordability or staying closer to home. Given the low baseline quality of enrollment among service members, and the fact that we leveraged (1) numerous communications channels, (2) evidence-based behavioral strategies that have been shown to influence enrollment and college choice among traditional students, and (3) text-based advising, there was substantially more room and opportunity to improve the quality of veterans' college enrollment. And yet, we find no impact on either overall enrollment or the quality of institution veterans attended. These results suggest that more intensive interventions than what we provided are necessary to improve the quality of veterans' postsecondary enrollment and outcomes.

II.   Background

A. *Office of Economic and Manpower Analysis*

We designed and executed our randomized controlled trial in conjunction with the U.S. Army Office of Economic and Manpower Analysis (OEMA) at West Point under the program

"Soldier for Life, Student for Life," which builds on the Army's existing transition program brand of "Soldier For Life." OEMA secured program approvals from the Department of the Army, coordinated implementation with the Army's education and transition offices and military installations, distributed the program materials, created and monitored the program website, administered the program surveys, and collected and stored all program related data.[5]

B. Transition Assistance Program

Military service members leaving active-duty are required to complete the Transition Assistance Program (TAP) under the National Defense Authorization Act of 1991 and the revisions of the Veterans Opportunity to Work Hire Heroes Act of 2011. The TAP is executed by each military service, coordinated by the Department of Defense, and includes contributions from other agencies including the Department of Education, Department of Labor (DOL), Veterans Affairs (VA), and the Small Business Administration. The TAP includes a number of required events (e.g., creation of a transition plan, VA benefits counseling, DOL employment transition session) as well as optional events (e.g. a 2-day module on accessing higher education, or a similar session on entrepreneurship) with the objective of helping service members achieve Career Readiness Standards.[6] Service members are encouraged to begin the TAP no later than 12 months prior to their separation, though compliance varies, and they are required to complete the TAP prior to separation. We designed our program materials to complement and not replace existing military programs and resources, including the TAP program and the optional higher-education module, by providing contact information for the servicemember's local education office and the transition assistance office, and by coordinating our program launch and execution with the local education and transition counselors.

C. G.I. Bill Education

The 1944 Serviceman's Readjustment Act of 1944 and the Montgomery GI Bill of 1984, commonly known as the "GI Bill," or the "Montgomery GI Bill" (MGIB), established significant education benefits for eligible veterans. Under the MGIB, military service members must pay $100 into the program each month for 12 months, with the default set as opting-in to payments, to obtain non-taxable benefit payments directly from the VA to cover their living expenses and tuition

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[5] OEMA merged and de-identified all program data prior to analysis. The research team accessed this data via secure methods on Army servers.
[6] For more details on the TAP, see: https://www.dodtap.mil/

and fees while enrolled in school. Previous research on the GI Bill documents significant labor market returns to the program (Bound and Turner, 2002; Angrist 1993).

The Post 9/11 Veterans Educational Assistance Act of 2008 established the "Post 9/11 GI Bill" (PGIB). The PGIB offers more generous benefits in a slightly different structure. Service members can earn eligibility and use MGIB or PGIB benefits. Under the PGIB, service members are not required to pay into the program, and they gain eligibility based on the length of their honorable service. Average benefits levels are nearly twice as high under the PGIB, largely due to a locality-adjusted housing allowance and expanded tuition benefits authorized up to the most expensive in-state tuition rate for a public institution in the state. PGIB payments are delivered separately to the Veteran (i.e., book stipend and housing allowance) and the institution (i.e., tuition and fees). Many institutions complement the PGIB tuition payments with their own contributions if their tuition exceeds the state maximum under the "Yellow Ribbon Program." Research has documented positive effects of the PGIB on enrollment and degree completion (Barr, 2015; Barr, 2019). Recent work indicates that the overall labor market effects of the benefit expansion were negative, with these effects driven by reduced work experience among veterans as well as low returns to the schools they attended (Barr, Kawano, Sacerdote, Skimmyhorn, and Stevens, 2021). Particularly relevant for this paper, additional for-profit investments induced by the PGIB appeared to generate *negative* effects on subsequent earnings, underscoring the significant body of more descriptive evidence suggesting that these institutions generated poor outcomes.

Our program and materials were designed to support educational pathways using either version of the GI Bill, and that choice was not a focus of the current study. Since the decision of which benefit to use, if eligible for both, can be complicated and unique to each person, our materials encouraged individuals to contact the education counselors at their military installation. That said, in practice over 90 percent of veterans have elected to use the PGIB in recent years. We also provided contact information for the VA and local education offices for individuals to determine their unique eligibility levels.

III. Intervention Design

A. *Institution matching algorithm*

The primary purpose of the intervention was to provide service members with personalized information about colleges and universities in the communities they were returning to after the

Army that soldiers (1) appeared likely to be admissible at based on their academic performance and (2) that maximized a combination of quality (proxied for by institutional graduation rates) and price net of anticipated GI Bill funding. To identify these institutions for each service member we developed an algorithm that incorporated service member inputs, including estimated SAT score (based on service members' GT score) and the location where service members indicated they plan to reside after the Army,[7] and institutional inputs, including institutional graduation rate and estimated price net of GI Bill funding. We identified service members as likely admissible at a given institution if their predicted SAT score was at or above the 25th percentile of the SAT scores of incoming freshmen.[8] We generated a list of four institutions that included the top public institution and the top private institution within 50 miles of their location (zip code or city), as well as the top public and top private institutions in their intended state. The "top" option for public institutions was determined by sorting on graduation rate (the higher, the better); the top private institution was determined by giving equal weight to graduation rate and veteran net price (the lower, the better). We limited the number of recommended institutions to four to mitigate against choice overload. We also included a link to a dedicated project website where service members could find a longer list of matched institutions generated by the algorithm.

B. Outreach materials

We sent each treated service member a combination of postal mail, emails, and text messages. All treated individuals received weekly postal mailers and emails for one month (totaling four letters and four emails) and twice-weekly text messages (totaling nine messages, which included one introductory text). Each week's postal and email content were identical, just delivered through different channels. The twice-weekly texts for the information-only treatment arm prompted service members to give a closed-ended response (e.g., "Yes" or "No") to receive information about matched institutions. The twice-weekly texts for the information and advising treatment arm were conversational and framed as coming from a particular advisor at the Virginia

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[7] When soldiers initiated their transition assistance program, they were asked to provide their intended location after separation by providing a zip code, city, or state. We used the most specific information the soldier provided when generating the college recommendations. If a soldier did not provide any location information when signing up for transition services, we used their home of record information on file. For soldiers with no home of record on file, we used the location of their current Army base.

[8] To generate soldiers' predicted SAT score, we used data from the College Board to merge in SAT scores for applicable soldiers in historical cohorts. We then regressed SAT scores on a quartic model of GT scores to develop a GT - SAT concordance table. For example, a GT score of 117 (roughly the median of soldiers eligible for our sample) corresponds to a predicted SAT score of 1000 on the 1600 scale.

College Advising Corps (VCAC). They prompted service members with open-ended questions to engage directly with a VCAC advisor to explore the matched institutions we identified. We include a full set of the intervention materials in the Appendix.

As we reference in the introduction, we designed the materials to leverage a combination of evidence-based, behavioral science strategies to strengthen service member's engagement with and responsiveness to the materials. The first week's letters and emails had three main objectives. First, they reinforced the financial benefits of obtaining a college degree with a concrete estimate of the lifetime premium service members could expect from earning a degree and attempted to create an endowment effect by defining the amount of GI Bill service members had earned through their military service. Second, they delivered the list of matched institutions. We included the institution name, graduation rate, tuition, and price net of GI Bill funding. We included graduation rates to provide an easily understood measure of college quality.[9] We included tuition to provide a concrete reference point for the magnitude of the price reduction service members could realize by using their GI Bill funding. Finally, the first set of letters provided concrete next steps, including encouragement to search for additional well-matched schools on the dedicated project website and to attend the higher education transition module at their installation.

The second week's material aimed to create a positive social norm of veterans attending college by providing specific veterans' group contacts at each of the four institutions we identified in the first week's materials. We also normed that the broad set of skills service members developed through the Army could support their success in college, and encouraged service members to contact student veterans' groups as a next step. The third week's materials repeated the set of matched institutions with graduation rate and net price from the first week and addressed common questions service members often have about postsecondary educational options, specifically whether they should prioritize in their search flexible online options and institutions that are more flexible in their acceptance of transfer credits. The final and fourth week's materials aimed to address potential anxiety among service members about whether they would score sufficiently high on college entrance exams by providing each service member an estimate of their SAT score range based on a concordance we calculated between service members' GT scores and SAT scores,[10] and how these ranges map to the interquartile range of SAT scores at the matched

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[9] Graduation rates correlate strongly with measures of instructional expenditures, post-college earnings and loan repayment, and even estimates of value-added (Rothwell and Kulkarni, 2015)

[10] See footnote 8 for more details.

list of institutions. We also informed service members that they may be able to take the SAT for free at their installation's education office.

The postal letters and emails were identical in content for both treatment groups except that the information and advising letters and emails included as a next step encouragement to contact a VCAC advisor, along with a phone number and email.

IV.   Experimental Design

Our experimental sample was comprised of service members who entered the Transition Assistance Program to begin their separation from the Army and prepare for their transition back to civilian life. We defined service members as eligible for the intervention if they had not already earned a college degree and had an Armed Forces Qualification Test (AFQT) score (a subscore of the ASVAB) at or above the 65th percentile. We imposed this latter restriction since these service members were more likely admissible at moderately or more selective institutions with higher graduation rates and more instructional spending per student. We conducted the intervention at six of the largest Army installations across the United States: Forts Bragg (near Fayetteville, North Carolina), Campbell (near Clarksville, Tennessee), Carson (near Colorado Springs, Colorado, Hood (near Killeen, Texas), Stewart, and Hunter Army Airfield (both near Savannah, Georgia). Because Army personnel enter the Transition Assistance Program on a rolling basis over the calendar year, we conducted our randomization on roughly a monthly basis from March 2016 to November 2017, for a total of 17 waves. We performed our randomization within wave*installation*GT blocks.[11]

V.   Data

Our data come from four primary sources. Service member-level administrative data from the U.S. Army provided baseline data for the experimental sample including service members' race/ethnicity, gender, number of dependents, GT score, monthly pay, years of service, rank, and the number of months of service members spent in hostile environments. Text interaction data from the Signal Vine platform provided information on the share of service members that received and responded to text messages we sent. The National Student Clearinghouse (NSC) provided

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[11] We used four GT bins that correspond to the quartiles of GT scores within AFQT CAT I and II (based on a sample from September 2015): (1) less than 113; (2) 113-116; (3) 117-122; and (4) 123 or higher.

student*term-level college enrollment data, with coverage across 96 percent of college enrollments in the country. Finally, we incorporate administrative data from the Department of Veteran's Affairs on monthly payments made as part of the Post 9/11 GI Bill.[12]

VI.   Sample and Baseline Equivalence

In Table 1, we present descriptive statistics on our sample and report results from models in which we regress student-level baseline characteristics on the treatment indicator and wave*installation*GT bin fixed effects. The sample is primarily male (92 percent) and majority White (74 percent). Just over half of the sample (54 percent) had ever been married and 56 percent reported dependents. The mean service member in the sample had served for just over five years and received just over $2,500 in monthly pay from the Army. Across 19 baseline measures we only find two significant differences at the 0.05 level between the treatment and control group. Treated service members are slightly less likely to be Hispanic and slightly more likely to have lower rank within the Army. We include covariates in our models both to account for this slight imbalance and to improve our precision.[13]

VII.   Empirical Strategy

We estimate the impact of providing service members personalized information and advising about college options on a variety of college enrollment, enrollment quality, persistence, and completion measures.
 Our primary specification is:

$$Outcome_i = \beta_0 + \beta_1 Treatment_i + \beta_2 X_i + RandomizationBlockFE_i + \epsilon_i$$

where $Outcome_i$ is generally a college enrollment or success outcome for individual i and X_i includes the baseline characteristics from Table 1. We include randomization blocks fixed effects, of which there are 408 combinations of wave*installation*GT bin, to account for the level at which we randomized service members to the intervention. We estimate two versions of this model, one which pools both treatment arms into an "any treatment" indicator and another which includes

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[12] Payment data (as opposed to months of benefits used) for the Montgomery GI Bill was not available for analysis. As mentioned above, the vast majority of recently separated veterans use PGIB benefits instead of MGIB.
[13] We also test baseline equivalence for assignment to any treatment versus control and see similar patterns.

separate indicators for each treatment arm. These coefficients represent the intention to treat (ITT) estimate of being assigned to a treatment condition.[14]

We measure and report our outcomes separately based on whether they occurred after the intervention, after the intervention and before service members separated from the Army, or after service members separated.[15] Our college enrollment and persistence measures include indicators for whether service members enrolled anywhere; weighted days of enrollment; and indicators for whether service members attended institutions with graduation rates above 30 percent. We also measure impacts on enrollment by at for-profit four-year institutions. We similarly measure degree attainment impacts by whether service members obtained a degree during our window of observation and by the graduation rate, institution type, and sector of the institution from which a service member obtained their degree (if any). For our attainment outcomes we also estimate the impact of the intervention on the time horizon in which service members earned a degree. We estimate the impact of the intervention on whether service members use any post-9/11 GI Bill (PGIB) funding and on the total number of months of PGIB funding used.

VIII. Results

A. Intervention engagement

In Table 2 we present text message engagement statistics separately for the information-only and information+advising treatment arms. Approximately 90 percent of both groups received at least one intervention text. The substantial majority of both groups (80 percent for the information-only treatment; 75 percent for the information+advising treatment) received all nine campaign texts, indicating that opt-out rates were relatively low among treated service members. Response rates were much higher in the information+advising group (as intended). Two-thirds of service members in the information+advising group responded to at least one text, compared with only 17 percent of service members in the information-only group. Conditional on ever responding, service members in both treatment arms sent relatively few responses (three on average for information-only service members; four for information+advising service members), with responses tending to be quite short. The mean total number of characters in service members'

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[14] We also estimated logistic regression models, and found very similar results.
[15] One concern may be that the intervention affected the soldier's choice to stay in the Army by re-enlisting or attempting to separate sooner. We test whether the intervention impacted separation timing, and find no evidence to support this hypothesis. We show these results in Appendix Table A1.

responses in the information-only treatment was 24, which largely consisted of service members replying to the keyword prompts contained in the information-only messages. In the information+advising treatment the mean total number of characters was 158; across an average of four responses these were relatively short responses from service members either to the scheduled messages or advisors' queries. In both groups the highest response rates were to the second text message, which included the personalized college recommendations. In the information+advising group response rates were also relatively high for the third message, which inquired as to whether the soldier attended the higher education model. These statistics provide conservative estimates of engagement given that all intervention materials were also sent in paper and e-mail form, mediums for which we cannot track engagement at the individual level.

B. Impacts on college enrollment and enrollment quality

In Table 3 we present impact estimates of the intervention on whether service members enrolled in college and on the quality of their college enrollment. The top panel presents results pooling across treatment arms while the second panel presents results separately by treatment. All outcomes in Table 3 are measured after the intervention. We do not observe any impact of the intervention on overall enrollment: fifty-six percent of both treated and control service members enrolled in college at some point following the intervention, and based on our confidence intervals we can rule out treatment impacts larger than 1.9 percentage points, which would reflect a three percent effect size when compared to the mean outcome. Nor do we observe impacts of the intervention on whether service members attended an institution with a graduation rate greater than 30 percent or on whether service members enrolled at for-profit institutions. As we show in the bottom panel, we do not observe differential effects of the intervention based on whether service members were assigned to the information-only or information+advising treatment arms.

The intervention was primarily intended to influence the post-separation behavior of service members. In Appendix Table A1, we demonstrate that assignment to treatment had no effect on a service members timing of separation. In Appendix Table A2 we decompose the same enrollment outcomes from Table 3 by whether they occurred after the intervention and *before* service members separate from the Army or after the intervention and *after* service members separate from the Army. We see no significant impacts on enrollment either before or after the point of separation.

In Table 4 we show impacts of the intervention on different measures of college persistence, pooling across treatment arms. In column 1 we present impacts on the total number of days following the intervention that a soldier was enrolled at a higher education institution, weighted by enrollment intensity.[16] In columns 2 and 3 we estimate impacts of the intervention on military-specific measures of college participation: whether service members used any post-9/11 G.I. Bill benefits towards a college education (column 2) and the number of G.I. Bill benefit months used by service members (column 3). Across measures we find no impact of the intervention. Nearly half (48.9 percent) of the control group had used G.I. Bill benefits and we can rule out treatment impacts on G.I. Bill use greater than 2.6 percentage points, a five percent increase when compared to the mean. As we show in Appendix Table A2, we also do not observe significant impacts of the intervention on the number of days enrolled when we decompose this outcome as occurring before or after service members separated from the Army, and in Appendix Table A3 we show that the impacts of the intervention on our college persistence measures do not vary by treatment arm.

In Table 5 we present impacts of the intervention on three measures of degree attainment, pooling across treatment arms: whether service members earned any degree within our observation window (columns 1-3); whether service members graduated from an institution with a graduation rate of at least 30 percent (columns 4-6); and whether service members graduated from a for-profit institution (columns 7-9). Within each outcome the first column presents estimates of impacts occurring after the intervention, while the second two columns decompose each outcome into whether it occurred before or after the servicemember separated from the Army. As we show in column 1, we estimate a significant 0.96 percentage point increase in the probability of service members earning any degree, which represents an eight percent increase relative to the control group. This slight increase in degree attainment is entirely driven by service members who earned a degree after the intervention and before their separation from the Army. We find no impact of the intervention on whether service members graduated from an institution with a graduation rate of 30 percent or higher, but do estimate a significant 0.6 percentage point increase in degree attainment from a for-profit institution (31.5 percent relative to a control mean of two percent). As we show in Appendix Table A4, the impacts of the intervention on attainment are very similar

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[16] The "Days enrolled" outcome is the number of days from the start to the end of an enrollment period (not the number of instructional days), and is weighted by enrollment status (e.g., 0.5*days enrolled for half-time enrollment).

across the information-only and information+advising treatments. These increases in degree attainment show up between 12 and 18 months after the intervention (Table 6).

One possibility is that these service members had time to take additional college courses through the Army's Tuition Assistance program and/or to request college credit for military work experience. Either channel could have supported service members to complete a credential or degree towards which they had already made substantial progress. To investigate this hypothesis, we present in Table 7 impacts of the intervention on degree attainment by service members' number of days of college enrollment pre-intervention (columns 1-3) and by whether service members had any pre-intervention enrollment at for-profit institutions (columns 4-5). We focus on the latter outcome because for-profit institutions may have more liberal policies around awarding college credit for military experience. The degree impacts we estimate are concentrated among service members with 400 or more days of pre-intervention enrollment (column 3) and among service members with prior enrollment at for-profit institutions. In Appendix Table A6 we show that these impacts by prior college enrollment do not meaningfully vary across treatment arms. It therefore seems likely that the modest overall degree attainment results we observe are a function of the intervention nudging service members who were already close to a credential to either take the additional courses they needed through Tuition Assistance or gain credit for additional military experience they had accumulated.

IX. Discussion

We implemented a well-powered and multi-faceted field experiment to evaluate the effects of information and advising services on the postsecondary choices and attainment outcomes of transitioning Army service members. To our knowledge the intervention is the first large field experiment to study the impact of information and assistance intended to alter college choices of adults. Our intervention leveraged multiple communications strategies (i.e., postal mail, email, and text messages) and sequential information and resource provision over a period of approximately four weeks; evidence-based behavioral approaches (i.e., personalized information, social norming, simplification, and specific action steps); and professional advising resources to increase service members' pursuit of college admission, attendance, and completion at higher quality institutions. Our results suggest no statistically significant effects on overall enrollment, institutional quality, or persistence (days enrolled or benefits used). Our large samples enable us

to rule out any economically meaningful effects and our program engagement data enable us to rule out a lack of engagement as an explanation. We observe small increases in degree attainment that occur primarily before separation from the military and at for-profit institutions, likely arising from treated service members with some college credits completing their degrees.

Our results provide new evidence on the challenges associated with affecting the postsecondary education decisions for non-traditional students, and the first such evidence for military service members. Our paper also contributes significantly to a growing body of research on behavioral economic "nudge" strategies whose performance at scale is much smaller (or zero) compared to laboratory and small pilot settings (Della Vigna and Linos, 2020). Even among a population for which there is significant reason to believe that such information and assistance could make a difference, we see no effect.

From a policy perspective, the results suggest the provision of thoughtful information, nudges, and assistance is insufficient to alter the educational choices and outcomes of non-traditional students. While it is clear that many students regret their investment choices, the optimal design and delivery of programs to improve outcomes warrants future study.

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Table 1: Baseline equivalence and summary statistics for the control group

	Info only		Plus Advising		Control mean	Coef Test P-value
	(1)	(2)	(3)	(4)	(5)	(6)
White	0.0038	(0.0092)	0.0076	(0.0092)	0.743	0.678
Black	0.0021	(0.0066)	0.0056	(0.0066)	0.105	0.599
Hispanic	-0.0068	(0.0062)	-0.0189***	(0.0062)	0.102	0.0517
Other Race	0.0009	(0.0047)	0.0057	(0.0047)	0.0493	0.305
Female	0.0085	(0.0059)	0.0097	(0.0059)	0.0797	0.852
Ever Married	0.0069	(0.0106)	0.0103	(0.0106)	0.541	0.743
Has dependents	0.0187*	(0.0105)	0.0179*	(0.0105)	0.569	0.941
GT score	-0.1089*	(0.0583)	0.0058	(0.0582)	117.5	0.0487
Base monthly pay	4.4284	(15.5270)	-9.5507	(15.5208)	2580	0.368
Years of service	0.0041	(0.1081)	-0.0744	(0.1080)	5.436	0.467
Hostile fire pay (months)	0.1030	(0.2519)	-0.2909	(0.2518)	7.700	0.118
TA credits	0.2528	(0.4179)	-0.1365	(0.4174)	8.312	0.351
SAT score	-3.6064	(5.9362)	-3.4164	(6.0010)	1027	0.975
E01 to E04	0.0057	(0.0101)	0.0210**	(0.0101)	0.645	0.131
E05 to E06	-0.0014	(0.0096)	-0.0148	(0.0096)	0.292	0.165
E07 to E09	-0.0043	(0.0051)	-0.0062	(0.0051)	0.0635	0.706
Prior days enr, grad rate < 30%	-2.3082	(5.5228)	-4.4267	(5.5170)	165.4	0.701
Prior days enr, grad rate 30-50%	-3.4813	(2.8551)	-1.0793	(2.8521)	42.70	0.400
Prior days enr, grad rate > 50%	-2.7776	(3.6617)	-6.5761*	(3.6579)	56.27	0.299
N	4,389		4,403		4,381	

Notes: each row corresponds to a separate regression of the baseline variable on the two indicators for treatment assignment (info only, plus advising) and randomization block fixed effects (base x GT bin x intervention wave). Columns (1) and (3) display the coefficient estimates for the treatment assignment indicators, and columns (2) and (4) display the standard errors. Column (6) displays the "Coef Test P-value" is the p-value from the test that the coefficients for the Info only and Plus advising indicators are equal. All baseline variables are measured immediately prior to the relevant intervention wave launch. TA credits refer to college credits the soldier earned through the Army's Tuition Assistance program. SAT scores are linked using data from the College Board. E01 through E09 categories refer to rank, with E01 being the lowest. The "prior days enrolled" measures are constructed using National Student Clearinghouse matches in the same manner as the weighted days enrolled outcome measures. The sample size for each regression is n = 13,173 with the exception of Base monthly pay (n = 13,067), Hostile fire pay (n = 13,067); and SAT score (n = 2,134).

Table 2: Text message interaction statistics

	Info only (1)	Plus advising (2)
Received any texts	89.4%	90.0%
Received all 9 texts	80.3%	74.6%
Any response (conditional on receipt)	17.2%	65.7%
Conditional on any response		
Total number of text responses	3.1	4.2
Total length of text responses (characters)	23.5	157.8
Responded to specific intervention text (conditional on receipt)		
1	1.1%	13.1%
2	18.4%	44.3%
3	1.1%	36.2%
4	3.3%	20.7%
5	3.0%	13.5%
6	0.3%	18.0%
7	0.3%	13.3%
8	0.3%	15.3%
9	0.2%	17.0%
N	4,389	4,403

Notes: calculated using text interaction data. The ~10% of soldiers who did not receive any texts were due to invalid cell phone numbers. Soldiers who received all 9 texts are those who had a valid cell phone number and did not opt-out of the text messages at some point during the intervention. Response to a particular intervention text is measured by whether the soldier texted back before the subsequent program message was sent.

Table 3: Impact on enrollment and enrollment quality

Panel A: Overall treatment impacts

	Any enrollment (1)	Enrolled at inst with grad rate > 30% (2)	Enrolled at For-profit 4-year (3)
Any treatment	0.0018	-0.0055	-0.0007
	(0.0088)	(0.0078)	(0.0054)
N	13,173	13,173	13,173
R-squared	0.1171	0.1191	0.0887
Control mean	0.559	0.273	0.0988

Panel B: Impacts by experimental variation

	Any enrollment (1)	Enrolled at inst with grad rate > 30% (2)	Enrolled at For-profit 4-year (3)
Info only	0.0032	-0.0061	-0.0031
	(0.0101)	(0.0091)	(0.0062)
Plus advising	0.0004	-0.0049	0.0016
	(0.0101)	(0.0090)	(0.0062)
N	13,173	13,173	13,173
R-squared	0.1171	0.1191	0.0887
Control mean	0.559	0.273	0.0988
Coef Test P-value	0.783	0.902	0.449

Notes: within each panel, each column corresponds to a separate regression of the outcome variable indicated in the column header on indicator(s) for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave). In Panel B, the "Coef Test P-value" is the p-value from the test that the coefficients for the Info only and Plus advising indicators are equal.

Table 4: Impacts on college persistence

	Days enrolled	Any 9/11 GIBill benefits used	Months of 9/11 GI Bill benefits used
	(1)	(2)	(3)
Any treatment	-1.8366	0.0083	0.1154
	(4.5805)	(0.0091)	(0.1540)
N	13,173	13,173	13,173
R-squared	0.1223	0.0727	0.0981
Control mean	185.2	0.488	6.472

Notes: each column corresponds to a separate regression of the outcome variable indicated in the column header on indicator for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave). The "Days enrolled" outcome is the number of days from the start to the end of an enrollment period (not the number of instructional days), and is weighted by enrollment status (e.g. 0.5*days enrolled for half-time enrollment).

Table 5: Impacts on degree attainment

	Earned degree			Degree from inst with grad rate > 30%			Degree from For-profit 4-year		
	After intervention	Before separation	After separation	After intervention	After int, before sep	After separation	After intervention	Before separation	After separation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Any treatment	0.0096*	0.0081**	0.0035	0.0059	0.0021	0.0046	0.0064**	0.0045**	0.0012
	(0.0058)	(0.0037)	(0.0051)	(0.0039)	(0.0023)	(0.0034)	(0.0028)	(0.0022)	(0.0019)
N	13173	13173	13173	13173	13173	13173	13173	13173	13173
R-squared	0.1441	0.1259	0.0854	0.132	0.1039	0.0819	0.0974	0.0836	0.05
Control mean	0.121	0.0415	0.084	0.0477	0.0155	0.0336	0.0203	0.0126	0.00959

Notes: each column corresponds to a separate regression of the outcome variable indicated in the column header on indicator for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave). All outcomes are measured after the intervention. If a soldier had not yet separated as of March 2020 (the most recent NSC data to which we have access), then their "After separation" outcomes are recorded as zero.

Table 6: impacts on college graduation by timing after intervention

	Earned degree within … of intervention			
	6 months	12 months	18 months	24 months
	(1)	(2)	(3)	(4)
Any treatment	0.0031	0.0047	0.0086**	0.0076*
	(0.0023)	(0.0031)	(0.0037)	(0.0043)
N	13,173	13,173	13,173	13,173
R-squared	0.0902	0.1231	0.1323	0.1380
Control mean	0.0144	0.0299	0.0422	0.0600

Notes: each column corresponds to a separate regression of the outcome
variable indicated in the column header on indicator for treatment assignment,
baseline variables shown in Table 1, and randomization block fixed effects
(base x GT bin x intervention wave).

Table 7: impacts on degree attainment by prior college enrollment

	Days of pre-intervention college enrollment			Any pre-intervention enrollment at for-profit institution?	
	Zero	0-399	400+	No	Yes
	(1)	(2)	(3)	(4)	(5)
Any treatment	0.0016	0.0016	0.0257*	0.0035	0.0635***
	(0.0073)	(0.0091)	(0.0135)	(0.0059)	(0.0220)
N	4,024	4,750	4,399	11,275	1,898
R-squared	0.1148	0.1100	0.1774	0.1294	0.2960
Control mean	0.0431	0.0896	0.222	0.107	0.208

Notes: each column corresponds to a separate regression of the outcome variable "earned degree" on indicator for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave), with the sample limited to soldiers corresponding to the column headings.

Figure 1: Overview of intervention materials
The SFL2 intervention consisted of postal and digital messaging, sent weekly for four weeks. The full set of intervention materials are available in the Appendix and a more detailed description of the intervention is on pages 8-10.

	Week 1	Week 2
Primary content focus	- Identify matched institutions - Make salient the financial benefits of going to college - Provide next steps re: college search	- Create a positive social norm around veterans attending college - Encourage service members to contact student veterans groups
Illustrative content (for information + advising treatment)		

	Week 3	Week 4
Primary content focus	• Resend set of matched institutions • Encourage service members to consider institutional quality alongside program flexibility and credit transfer	• Address anxiety about taking college entrance exams • Inform service members of opportunities to take exams for free
Illustrative content (for information + advising treatment)	**Two questions we know many soldiers have about college:** 1. **Wouldn't online programs give me more flexibility?** Online programs do offer more flexibility, but they also vary a lot in graduation rates and in how employers view the degree. 2. **Should I go somewhere I can transfer my credits?** Credit transfer is worth exploring, but make sure that colleges that accept a lot of transfer credits have the same high graduation rates and low costs as the colleges above. I know lots of soldiers have questions about transferring credits they earned in the Army. Is this something you've looked into?	Did you know that soldiers like you with a GT score between 110 - 120 tend to score between 920 and 1090 on the SAT? As you can see in the table below, this puts you well within the SAT score range of students who attend each of these colleges. | College	SAT score range (25th -75th percentile of students)	Your estimated SAT/ACT score range
Colorado State Univ	SAT: 1020 – 1250 (ACT 22- 27)	SAT: 920 – 1090 (ACT 19- 24)
Univ of Colorado Boulder	SAT: 1060 – 1280 (ACT 24- 29)	SAT: 920 – 1090 (ACT 19- 24)
Colorado Christian Univ	SAT: – (ACT -)	SAT: 920 – 1090 (ACT 19- 24)
Univ of Denver	SAT: 1100 – 1320 (ACT 25- 30)	SAT: 920 – 1090 (ACT 19- 24) | [Soldier name], have you already taken the SAT or ACT? Many colleges require it. If not, can I help you with a plan to take the SAT or ACT? You might do better than you think!

APPENDIX

Table A1: Impact of intervention on separation timing

Panel A: Overall treatment impacts

| | Separated as of… | | | | | | Days between intervention and separation | |
| | 31-Dec-17 | 30-Jun-18 | 31-Dec-18 | 30-Jun-19 | 31-Dec-19 | 30-Jun-20 | Using future separation dates | Using observed separation dates |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Any treatment	-0.0016	0.0051	0.0041	0.0013	-0.0006	-0.0016	0.9986	-1.2993
	(0.0078)	(0.0085)	(0.0082)	(0.0078)	(0.0074)	(0.0071)	(14.5696)	(5.3378)
N	13,173	13,173	13,173	13,173	13,173	13,173	13,173	10,628
R-squared	0.2960	0.1454	0.0927	0.0847	0.0877	0.0884	0.1116	0.1143
Control mean	0.428	0.595	0.703	0.754	0.786	0.808	718.4	369.9

Panel B: Impacts by experimental variation

| | Separated as of… | | | | | | Days between intervention and separation | |
| | 31-Dec-17 | 30-Jun-18 | 31-Dec-18 | 30-Jun-19 | 31-Dec-19 | 30-Jun-20 | Using future separation dates | Using observed separation dates |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Info only	-0.0034	0.0046	0.0064	0.0058	0.0040	-0.0004	-3.8467	-1.3706
	(0.0090)	(0.0099)	(0.0095)	(0.0090)	(0.0085)	(0.0082)	(16.8210)	(6.1666)
Plus advising	0.0001	0.0056	0.0019	-0.0032	-0.0050	-0.0027	5.8338	-1.2283
	(0.0090)	(0.0099)	(0.0095)	(0.0090)	(0.0085)	(0.0082)	(16.8121)	(6.1596)
N	13,173	13,173	13,173	13,173	13,173	13,173	13,173	10,628
R-squared	0.2960	0.1454	0.0927	0.0848	0.0877	0.0884	0.1116	0.1143
Control mean	0.428	0.595	0.703	0.754	0.786	0.808	718.4	369.9
Coef Test P-value	0.699	0.921	0.638	0.315	0.291	0.787	0.564	0.982

Notes: within each panel, each column corresponds to a separate regression of the outcome variable indicated in the column header on indicator(s) for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave). In Panel B, the "Coef Test P-value" is the p-value from the test that the coefficients for the Info only and Plus advising indicators are equal.

Table A2: Impact on enrollment and enrollment quality, by timing relative to separation

Panel A: Overall treatment impacts

	Any Enrollment		Enrolled at inst with grad rate > 30%		Enrolled at For-profit 4-year		Days Enrolled	
	Before separation (1)	After separation (2)	Before separation (3)	After separation (4)	Before separation (5)	After separation (6)	Before separation (7)	After separation (8)
Any treatment	0.0020	0.0041	-0.0028	-0.0021	0.0018	-0.0019	2.8372	-4.6681
	(0.0083)	(0.0088)	(0.0059)	(0.0073)	(0.0046)	(0.0038)	(1.8855)	(4.0834)
N	13,173	13,173	13,173	13,173	13,173	13,173	13,173	13,173
R-squared	0.1131	0.0994	0.0971	0.0987	0.0856	0.0554	0.0841	0.1075
Control mean	0.315	0.416	0.127	0.213	0.0694	0.0463	42.10	143.1

Panel B: Impacts by experimental variation

	Any Enrollment		Enrolled at inst with grad rate > 30%		Enrolled at For-profit 4-year		Days Enrolled	
	Before separation (1)	After separation (2)	Before separation (3)	After separation (4)	Before separation (5)	After separation (6)	Before separation (7)	After separation (8)
Info only	0.0015	0.0097	-0.0018	0.0017	-0.0012	-0.0022	2.8864	-3.9790
	(0.0095)	(0.0102)	(0.0068)	(0.0084)	(0.0053)	(0.0044)	(2.1769)	(4.7144)
Plus advising	0.0025	-0.0016	-0.0037	-0.0059	0.0048	-0.0017	2.7882	-5.3557
	(0.0095)	(0.0102)	(0.0068)	(0.0084)	(0.0053)	(0.0044)	(2.1758)	(4.7120)
N	13,173	13,173	13,173	13,173	13,173	13,173	13,173	13,173
R-squared	0.1131	0.0995	0.0971	0.0987	0.0857	0.0554	0.0841	0.1075
Control mean	0.315	0.416	0.127	0.213	0.0694	0.0463	42.10	143.1
Coef Test P-value	0.914	0.268	0.788	0.365	0.261	0.894	0.964	0.770

Notes: within each panel, each column corresponds to a separate regression of the outcome variable indicated in the column header on indicator(s) for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave). In Panel B, the "Coef Test P-value" is the p-value from the test that the coefficients for the Info only and Plus advising indicators are equal. All outcomes are measured after the intervention. If a soldier had not yet separated as of March 2020 (the most recent NSC data to which we have access), then their "After separation" outcomes are recorded as zero. The "Days enrolled" outcome is the number of days from the start to the end of an enrollment period (not the number of instructional days), and is weighted by enrollment status (e.g. 0.5*days enrolled for half-time enrollment).

Table A3: Impacts on college persistence, by experimental variation

	Days enrolled (1)	Any 9/11 GIBill benefits used (2)	Months of 9/11 GI Bill benefits used (3)
Info only	-1.0934	0.0162	0.2357
	(5.2884)	(0.0105)	(0.1778)
Plus advising	-2.5783	0.0005	-0.0046
	(5.2856)	(0.0105)	(0.1777)
N	13,173	13,173	13,173
R-squared	0.1223	0.0728	0.0983
Control mean	185.2	0.488	6.472
Coef Test P-value	0.779	0.132	0.176

Notes: each column corresponds to a separate regression of the outcome variable indicated in the column header on indicators for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave). "Coef Test P-value" is the p-value from the test that the coefficients for the Info only and Plus advising indicators are equal. The "Days enrolled" outcome is the number of days from the start to the end of an enrollment period (not the number of instructional days), and is weighted by enrollment status (e.g. 0.5*days enrolled for half-time enrollment).

Table A4: Impacts on degree attainment, by experimental variation

	Earned degree			Degree from inst with grad rate > 30%			Degree from For-profit 4-year		
	After intervention	Before separation	After separation	After intervention	After int, before sep	After separation	After intervention	Before separation	After separation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Info only	0.0091	0.0067	0.0034	0.0078*	0.0028	0.0071	0.0062*	0.0050**	0.0005
	(0.0067)	(0.0043)	(0.0058)	(0.0045)	(0.0026)	(0.0045)	(0.0032)	(0.0026)	(0.0022)
Plus advising	0.0100	0.0094**	0.0036	0.0040	0.0014	0.0043	0.0066**	0.0040	0.0019
	(0.0067)	(0.0043)	(0.0058)	(0.0045)	(0.0026)	(0.0045)	(0.0032)	(0.0026)	(0.0022)
N	13,173	13,173	13,173	13,173	13,173	13,173	13,173	13,173	13,173
R-squared	0.1441	0.1259	0.0854	0.1321	0.1039	0.0697	0.0974	0.0836	0.0501
Control mean	0.121	0.0415	0.0840	0.0477	0.0155	0.0438	0.0203	0.0126	0.00959
Coef Test P-value	0.890	0.538	0.971	0.384	0.598	0.525	0.894	0.691	0.514

Notes: each column corresponds to a separate regression of the outcome variable indicated in the column header on indicators for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave). All outcomes are measured after the intervention. If a soldier had not yet separated as of March 2020 (the most recent NSC data to which we have access), then their "After separation" outcomes are recorded as zero. "Coef Test P-value" is the p-value from the test that the coefficients for the Info only and Plus advising indicators are equal.

Table A5: impacts on college graduation by timing after intervention, by experimental intervention

	Earned degree within … of intervention			
	6 months	12 months	18 months	24 months
	(1)	(2)	(3)	(4)
Info only	0.0008	0.0043	0.0083*	0.0063
	(0.0026)	(0.0036)	(0.0043)	(0.0050)
Plus advising	0.0054**	0.0050	0.0089**	0.0090*
	(0.0026)	(0.0036)	(0.0043)	(0.0050)
N	13,173	13,173	13,173	13,173
R-squared	0.0904	0.1231	0.1323	0.1380
Control mean	0.0144	0.0299	0.0422	0.0600
Coef Test P-value	0.0753	0.830	0.875	0.592

Notes: each column corresponds to a separate regression of the outcome variable indicated in the column header on indicators for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave). "Coef Test P-value" is the p-value from the test that the coefficients for the Info only and Plus advising indicators are equal.

Table A6: Impacts on degree attainment by prior college enrollment

	Days of pre-intervention college enrollment			Any pre-intervention enrollment at for-profit institution?	
	Zero	0-399	400+	No	Yes
	(1)	(2)	(3)	(4)	(5)
Info only	0.0050	0.0049	0.0141	0.0023	0.0733***
	(0.0084)	(0.0105)	(0.0156)	(0.0069)	(0.0253)
Plus advising	-0.0018	-0.0018	0.0372**	0.0047	0.0538**
	(0.0083)	(0.0105)	(0.0156)	(0.0069)	(0.0253)
N	4,024	4,750	4,399	11,275	1,898
R-squared	0.1150	0.1100	0.1779	0.1294	0.2963
Control mean	0.0431	0.0896	0.222	0.107	0.208
Coef Test P-value	0.415	0.523	0.142	0.730	0.433

Notes: each column corresponds to a separate regression of the outcome variable "earned degree" on indicators for treatment assignment, baseline variables shown in Table 1, and randomization block fixed effects (base x GT bin x intervention wave), with the sample limited to soldiers corresponding to the column headings. "Coef Test P-value" is the p-value from the test that the coefficients for the Info only and Plus advising indicators are equal.

Intervention Materials

- Information only – emails and mailers
- Information only – text messages
- Information + advising – emails and mailers
- Information + advising – text messages

You served your country. Now let your GI Bill Benefits serve you.

VETERANS WITH COLLEGE DEGREES EARN **$800,000-$1,200,000** MORE IN A LIFETIME THAN THOSE WITHOUT.

Dear MSG DUKES,   [#1 of 4 weekly letters]

Your service to our country has earned you **up to $200,000 - $300,000** in GI Bill education funding. We want to help you make the best use of your benefits.

High-quality, affordable colleges where <u>YOU</u> have a good chance of being admitted:

College	% of students who graduate	Full price of tuition & fees per year	Price/year for vets with full GI Bill benefits
Colorado State Univ	63%	$9,313	$0
Univ of Colorado Boulder	68%	$10,347	$0
Colorado Christian Univ	40%	$19,160	$0
Univ of Denver	76%	$40,707	$20,472

Your GI Bill benefits also come with a monthly housing allowance!

Your next steps:

Find schools that are right for you. To learn about these colleges, or others near where you'll be living, visit http://college.army.mil. You can also find information about how to apply to these colleges.

Sign up for the higher education module at Ft. Bragg by calling (910) 396-2227 / 7188. You can take this module even if you have already completed another module.

Sincerely,

Anthony J. Stamilio
Deputy Assistant Secretary of the Army

Visit http://college.army.mil to learn more about how we identified these colleges and came up with our cost estimates. Costs may differ based on your circumstances. Contact the college's financial aid office to learn more.

You served your country. Now let your GI Bill Benefits serve you.

VETERANS WITH COLLEGE DEGREES EARN **$800,000-$1,200,000** MORE IN A LIFETIME THAN THOSE WITHOUT.

Dear MSG DUKES,

Soldiers like you develop unique skills and experience in the Army and are more successful in college than civilian students of a similar age:

Many colleges have student veterans groups as well as specific admissions officers dedicated to helping veterans apply. Here are specific contacts at the colleges we shared with you last week:

College	Contact info for a veteran at this college you can talk to	Admissions office website
Colorado State Univ	Jan Rastall, svacsu@gmail.com	
Univ of Colorado Boulder	Stewart Elliott, custudentveterans@colorado.edu	www.colorado.edu/prospective/
Colorado Christian Univ	No SVA chapter at this school.	www.ccu.edu/admissions/
Univ of Denver	James Moran, SVA@du.edu	

Your next steps:

Contact one of the student vet groups or reach out to the admissions office to learn about how veterans are succeeding at each college.

To learn about student veterans' groups and admissions contacts at more colleges, visit http://college.army.mil.

Sincerely,

Anthony J. Stamilio
Deputy Assistant Secretary of the Army

Visit http://college.army.mil to learn more about how we identified these colleges and came up with our cost estimates. Costs may differ based on your circumstances. Contact the college's financial aid office to learn more.

You served your country. Now let your GI Bill Benefits serve you.

VETERANS WITH COLLEGE DEGREES EARN **$800,000-$1,200,000** MORE IN A LIFETIME THAN THOSE WITHOUT.

Dear MSG DUKES,

Two weeks ago we sent you a letter or email with the following high-quality, affordable colleges where you have a good chance of being admitted:

College	% of students who graduate	Full price of tuition & fees per year	Price/year for vets with full GI Bill benefits
Colorado State Univ	63%	$9,313	$0
Univ of Colorado Boulder	68%	$10,347	$0
Colorado Christian Univ	40%	$19,160	$0
Univ of Denver	76%	$40,707	$20,472

Two questions we know many soldiers have about college:

1. **Wouldn't online programs give me more flexibility?** Online programs do offer more flexibility, but they also vary a lot in graduation rates and in how employers view the degree.

2. **Should I go somewhere I can transfer my credits?** Credit transfer is worth exploring, but make sure that colleges that accept a lot of transfer credits have the same high graduation rates and low costs as the colleges above.

Your next step:

To learn more about flexible programs and credit transfer policies at each college, visit http://college.army.mil.

Sincerely,

Anthony J. Stamilio
Deputy Assistant Secretary of the Army

Visit http://college.army.mil to learn more about how we identified these colleges and came up with our cost estimates. Costs may differ based on your circumstances. Contact the college's financial aid office to learn more.

You served your country. Now let your GI Bill Benefits serve you.

VETERANS WITH COLLEGE DEGREES EARN **$800,000-$1,200,000** MORE IN A LIFETIME THAN THOSE WITHOUT.

Dear MSG DUKES,   [#4 of 4 weekly letters]

Did you know that soldiers like you with a GT score between 110 - 120 tend to score between 920 and 1090 on the SAT?

As you can see in the table below, this puts you well within the SAT score range of students who attend each of these colleges.

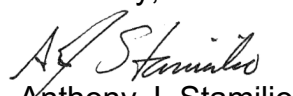| College	SAT score range (25th -75th percentile of students)	Your estimated SAT/ACT score range
Colorado State Univ	SAT: 1020 – 1250 (ACT 22- 27)	SAT: 920 – 1090 (ACT 19- 24)
Univ of Colorado Boulder	SAT: 1060 – 1280 (ACT 24- 29)	SAT: 920 – 1090 (ACT 19- 24)
Colorado Christian Univ	SAT: – (ACT -)	SAT: 920 – 1090 (ACT 19- 24)
Univ of Denver	SAT: 1100 – 1320 (ACT 25- 30)	SAT: 920 – 1090 (ACT 19- 24)

Your next steps:

Service members can often take the SAT for FREE! To sign up, call the **Ft. Bragg education office** at (910) 396-2537. For free SAT prep resources consider using: http://bit.ly/mysatkhan

Sign up for regular reminders about key deadlines in the college application process. We can send these to you even after you've returned to civilian life. Text 1-202-759-0249 or email advising@usma.edu to sign up.

We wish you the best of luck in your transition back to civilian life.

Sincerely,

Anthony J. Stamilio
Deputy Assistant Secretary of the Army

Visit http://college.army.mil to learn more about how we identified these colleges and came up with our cost estimates. Costs may differ based on your circumstances. Contact the college's financial aid office to learn more.

Msg. #	Content
1	**Part 1:** (1/2) [first_name], the Army wants you to succeed in your transition. Stay tuned for personalized options and info. V/R Project Soldier for Life, Student for Life **Part 2:** (2/2)To confirm these messages are legit come by the TAP or Ed office or call [INST_PHONE]
2	[first_name], we found high-quality, affordable colleges in [state] that YOU have a good chance of getting into. Want to learn about these schools? Reply COLLEGE **Response to COLLEGE** **Part 1:** (1/2) Great! We'll start with four colleges. **Part 2:** (2/2) [COLLEGE1] in [C1_STATE_ABBREV] has a [C1_GRAD_RATE] graduation rate & costs vets w/ GI Bill benefits [C1_GI COST] per year. Text NEXT for #2 **Response to NEXT:** [COLLEGE2] in [C2_STATE_ABBREV] has a [C2_GRAD_RATE] graduation rate & costs vets w/ GI Bill benefits [C2_GI_COST] per year. Text NEXT for #3 **Response to NEXT:** [COLLEGE3] in [C3_STATE_ABBREV] has a [C3_GRAD_RATE] graduation rate & costs vets w/ GI Bill benefits [C3_GI_COST] per year. Text NEXT for #4 **Response to NEXT:** **Part 1:** (1/2) [COLLEGE 4] in [C4_STATE_ABBREV] has a [C4_GRAD_RATE] graduation rate & costs vets w/ GI Bill benefits [C4_GI_COST] per year. **Part 2:** (2/2) Visit https://college.army.mil to explore more colleges.
3	**Part 1:** (1/2) Hi [first_name], want to learn more about college? Sign up for the [INST_NAME] education module—even if you've already done another module

	Part 2: (2/2) At the module you can get one-on-one help with GI Bill questions and learn more about college options. Visit the TAP office to sign up.
4	**Part 1:** (1/2) Hi [first_name], soldiers like you develop unique skills and experience in the Army and are more successful in college than civilian students of a similar age. **Part 2:** (2/2) Many colleges have student veterans groups to help vets adjust to campus & build community. Want to see contact info for these vet groups? Reply VETS. **RESPONSE TO VETS:** **Part 1:** (1/2): Great! We'll start w/ vet contacts at four colleges. **Part 2:** (2/2) To contact the student vet group at [COLLEGE1], email [C1_SVA_CONTACT]. Text NEXT for #2 **RESPONSE TO NEXT:** To contact the student vet group at [COLLEGE2], email [C2_SVA_CONTACT]. Text NEXT for #3 **RESPONSE TO NEXT:** To contact the student vet group at [COLLEGE3], email [C3_SVA_CONTACT]. Text NEXT for #4 **RESPONSE TO NEXT:** **Part 1:** (1/2) To contact the student vet group at [COLLEGE4], email [C4_SVA_CONTACT]. **Part 2:** (2/2) Visit https://college.army.mil to find more vet contacts.
5	**Part 1:** (1/2) Hi [first_name], many colleges also have specific staff in the admissions office dedicated to work with and help veterans. **Part 2:** (2/2) I'd suggest contacting admissions & ask to speak to the counselor who works w/ vets. Want to see contact info for admissions offices? Reply ADMIT. **Response to ADMIT**

	Part 1: (1/2) Great! We'll start w/ contacts at four colleges. **Part 2**: (2/2) To contact the admissions office at [COLLEGE1], visit [COLLEGE1_URL] or call [COLLEGE1_PHONE]. Ask for the counselor who works w/ vets. Text NEXT for #2 **Response to NEXT:** To contact the admissions office at [COLLEGE 2], visit [COLLEGE2_URL] or call [COLLEGE2_PHONE]. Ask for the counselor who works w/ vets. Text NEXT for #3 **Response to NEXT:** To contact the admissions office at [COLLEGE 3], visit [COLLEGE3_URL] or call [COLLEGE3_PHONE]. Ask for the counselor who works w/ vets. Text NEXT for #4 **Response to NEXT:** **Part 1:** (1/2) To contact the admissions office at [COLLEGE 4], visit [COLLEGE4_URL] or call [COLLEGE4_PHONE]. Ask for the counselor who works w/ vets. **Part 2:** (2/2) Visit https://college.army.mil to find more admissions contacts.
6	**Part 1:** (1/2) Hi [first_name], we know many soldiers like the appeal of online programs. But these vary in quality and cost. And employers may not value the degree as much. **Part 2:** (2/2) You can also find flexibility at traditional colleges. Visit https://college.army.mil to explore options.
7	**Part 1:** (1/2) Interested in transferring credits you earned? This is worth exploring, but make sure the colleges that accept lots of credits are a good investment. **Part 2:** (2/2) They may have lower grad rates or higher costs. Visit https://college.army.mil to explore options.
8	**Part 1:** (1/3) Hi [first_name], did you know that soldiers like you with a GT score between [GT_LO] – [GT_HI] tend to score between [SAT_EST_LO] and [SAT_EST_HI] on the SAT? **Part 2:** (2/3) This puts you right in the score range of students at high-quality colleges, visit https://college.army.mil to learn more.

	Part 3: (3/3) You may be able to take the SAT for free! Call the [INST_NAME] education office at [INST_PHONE] to learn more.
9.1	**Part 1:** (1/2) Hi [first_name], your GI Bill also comes with a housing allowance. To find out how much you might receive, visit *GI BENEFITS COMPARISON TOOL*. **Part 2:** (2/2) Did you know that you may qualify for additional grant aid on top of your GI benefits? Visit http://fafsa.ed.gov.

You served your country. Now let your GI Bill Benefits serve you.

VETERANS WITH COLLEGE DEGREES EARN **$800,000-$1,200,000** MORE IN A LIFETIME THAN THOSE WITHOUT.

Dear MSG DUKES,

Your service to our country has earned you **up to $200,000 - $300,000** in GI Bill education funding. We want to help you make the best use of your benefits.

High-quality, affordable colleges where YOU have a good chance of being admitted:

College	% of students who graduate	Full price of tuition & fees per year	Price/year for vets with full GI Bill benefits
Colorado State Univ	63%	$9,313	$0
Univ of Colorado Boulder	68%	$10,347	$0
Colorado Christian Univ	40%	$19,160	$0
Univ of Denver	76%	$40,707	$20,472

Your GI Bill benefits also come with a monthly housing allowance!

Your next steps:

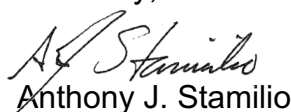**One-on-one advising is only a text away!** Text 1-202-759-0249 or email advising@usma.edu day or night with any questions about college or how to apply.

Find schools that are right for you. To learn about these colleges, or others near where you'll be living, visit http://college.army.mil. You can also find information about how to apply to these colleges.

Sign up for the higher education module at Ft. Bragg by calling (910) 396-2227 / 7188. You can take this module even if you have already completed another module.

Sincerely,

Anthony J. Stamilio

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Deputy Assistant Secretary of the Army

Visit http://college.army.mil to learn more about how we identified these colleges and came up with our cost estimates. Costs may differ based on your circumstances. Contact the college's financial aid office to learn more.

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Dear MSG DUKES,

Soldiers like you develop unique skills and experience in the Army and are more successful in college than civilian students of a similar age:

Many colleges have student veterans groups as well as specific admissions officers dedicated to helping veterans apply. Here are specific contacts at the colleges we shared with you last week:

College	Contact info for a veteran at this college you can talk to	Admissions office website
Colorado State Univ	Jan Rastall, svacsu@gmail.com	
Univ of Colorado Boulder	Stewart Elliott, custudentveterans@colorado.edu	www.colorado.edu/prospective/
Colorado Christian Univ	No SVA chapter at this school.	www.ccu.edu/admissions/
Univ of Denver	James Moran, SVA@du.edu	

Your next steps:

Contact one of the student vet groups or reach out to the admissions office to learn about how veterans are succeeding at each college.
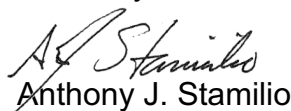
Text an advisor, who can help you learn more about veterans' programs at each college. Text 1-202-759-0249 or email advising@usma.edu day or night.

To learn about student veterans' groups and admissions contacts at more colleges, visit http://college.army.mil.

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VETERANS WITH COLLEGE DEGREES EARN **$800,000-$1,200,000** MORE IN A LIFETIME THAN THOSE WITHOUT.

Dear Specialist MSG DUKES,

Two weeks ago we sent you a letter or email with the following high-quality, affordable colleges where you have a good chance of being admitted:

College	% of students who graduate	Full price of tuition & fees per year	Price/year for vets with full GI Bill benefits
Colorado State Univ	63%	$9,313	$0
Univ of Colorado Boulder	68%	$10,347	$0
Colorado Christian Univ	40%	$19,160	$0
Univ of Denver	76%	$40,707	$20,472

Two questions we know many soldiers have about college:

1. **Wouldn't online programs give me more flexibility?** Online programs do offer more flexibility, but they also vary a lot in graduation rates and in how employers view the degree.

2. **Should I go somewhere I can transfer my credits?** Credit transfer is worth exploring, but make sure that colleges that accept a lot of transfer credits have the same high graduation rates and low costs as the colleges above.
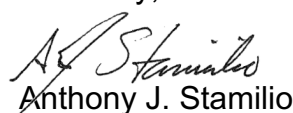
Your next steps:

CONTACT

Work with an advisor to find flexibility and credit transfer options at great colleges! Text 1-202-759-0249 or email advising@usma.edu day or night.

SEARCH

To learn more about flexible programs and credit transfer policies at each college, visit http://college.army.mil.

Sincerely,

Anthony J. Stamilio

Anthony J. Stamilio
Deputy Assistant Secretary of the Army

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U.S.ARMY

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Dear MSG DUKES,

Did you know that soldiers like you with a GT score between 110 – 120 tend to score between 920 and 1090 on the SAT?

As you can see in the table below, this puts you well within the SAT score range of students who attend each of these colleges.

College	SAT score range (25th -75th percentile of students)	Your estimated SAT/ACT score range
Colorado State Univ	SAT: 1020 – 1250 (ACT 22- 27)	SAT: 920 – 1090 (ACT 19- 24))
Univ of Colorado Boulder	SAT: 1060 – 1280 (ACT 24- 29)	SAT: 920 – 1090 (ACT 19- 24)
Colorado Christian Univ	SAT: – (ACT -)	SAT: 920 – 1090 (ACT 19- 24)
Univ of Denver	SAT: 1100 – 1320 (ACT 25- 30)	SAT: 920 – 1090 (ACT 19- 24)

Your next steps:

Service members can often take the SAT for FREE! To sign up, call the **Ft. Bragg education office** at (910) 396-2537. For free SAT prep resources consider using: http://bit.ly/mysatkhan

Sign up for regular reminders about key deadlines in the college application process. We can send these to you even after you've returned to civilian life. Text 1-202-759-0249 or email advising@usma.edu to sign up.

Advisors are also available to you even after the service. Text 1-202-759-0249 or email advising@usma.edu day or night.

We wish you the best of luck in your transition back to civilian life.
Sincerely,

Anthony J. Stamilio
Deputy Assistant Secretary of the Army

Visit http://college.army.mil to learn more about how we identified these colleges and came up with our cost estimates. Costs may differ based on your circumstances. Contact the college's financial aid office to learn more.

Msg. #	Content
1	**Part 1: "**(1/2) Hi [first_name], I'm [advisor_name], a college adviser working with the Army to answer questions soldiers have about college options after the Army." **Part 2:** "(2/2) I'll reach out occasionally & you can text any questions you have. To confirm these messages are legit come by the TAP or Ed office or call [INST_PHONE]"
2	**Part 1: "**(1/2) Hi, it's [advisor_name] again. The Army sent letters and emails with colleges in [STATE] that you might be interested in. Did you get your list? Reply YES or NO" **If NO:** "That's OK, it will probably come soon. You can find the same schools & more at http://college.army.mil. Can I help you explore college options?" **If YES:** *No automated response.* Adviser follows up to ask if the soldier has questions, or wants to discuss any of the options.
3	"Hi! Just checking to see if you've been able to attend the higher education transition module at [INSTALLATION]? Reply YES or NO" **If NO:** "That's OK, I know you can still sign up at the TAP office even if you've already done another module. The module will have useful info on using your GI Bill." **If YES:** *No automated response.* Adviser follows up to see how soldier thought it went and if they have any questions, or need any help, coming out of the module.
4	"Hey [SOLDIER NAME]. Lots of colleges have student vet groups. Want to connect with a student vet at schools you are interested in? Reply YES or NO"

	IF NO: "OK, no problem, let me know if I can help with anything else college-related."
	If YES: *No automated response.* Adviser uses college.army.mil or SVA site to help soldier find vet contact
5	"Hi there. Lots of college admissions offices have specific point people to help soldiers. Can I help you connect to a vet rep at any specific colleges?"
	IF NO: "OK, let me know if I can you find contacts down the road, or if there's anything else I can help with"
	If YES: *No automated response.* adviser helps soldier figure out who to connect with at a particular college
6	"Hi [SOLDIER NAME]. What kind of colleges are you looking into—traditional schools, mostly online programs, or both?"
	No automated response.
	If soldier responds traditional or both, advisor can ask soldier to share schools they're interested in and use that as a touching-off point to provide additional advising.
	If soldier responses online, advisors can use the language above and offer to help soldier look into quality of online programs and also explore other options.
7	"I know lots of soldiers have questions about transferring credits they earned in the Army. Is this something you've looked into?"
	No automated response.
	Regardless of response, advisor can use this as an opportunity to help soldier recognize that institutions that accept a lot of credits may not be of very high quality, and help soldiers explore transfer options at higher quality schools

8	(1/2) "[Soldier name], have you already taken the SAT or ACT? Many colleges require it." (2/2) "If not, can I help you with a plan to take the SAT or ACT? You might do better than you think!" *No automated response.* Adviser can use this as an opportunity to reinforce how GT corresponds to SAT and the types of schools this might make the soldier eligible for (by referring to letters/emails or going on college.army.mil). Advisers can also help soldier look into taking the SAT for free.
9	"Did you know the GI Bill comes with a housing allowance as well? And you might qualify for free grant aid on top of GI $$. Want more info?" *No automated response.* If soldier replies yes, advisor can direct them to GI Bill comparison tool or to fafsa site.