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## Abstract

The Post-9/11 GI Bill allows service members to transfer generous education benefits to a dependent. We run a large-scale experiment that encourages service members to consider the transfer option among a population that includes individuals for whom the transfer benefits are clear and individuals for whom the net-benefits are significantly more ambiguous. We find no impact of a one-time email about benefits transfer among service members for whom we predict considerable ambiguity in the action, but sizeable impacts among service members for whom education benefits transfer is far less ambiguous. Our work contributes to the nascent literature investigating conditions when low-touch nudges at scale may be effective.

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## **Introduction**

Nudges are an increasingly popular strategy used to advance policy goals across a variety of sectors, from increasing financial and retirement savings and preventative health practices, to reducing home energy use and domestic violence (Allcott, 2011; Beshears et al., 2013; ideas42, 2019; Karlan et al., 2016; Madrian and Shea, 2001; Milkman et al., 2012; Stockwell et al., 2012). There has been a particularly dramatic expansion in the application of nudges in education over the last decade. Researchers and policymakers have leveraged behavioral economic approaches to increase early literacy, improve school attendance; promote parental engagement in their children's schooling, and increase college affordability, access, and persistence (Bergman, 2015; Bettinger et al., 2012; Castleman and Page, 2015; Castleman and Page, 2016; Hoxby and Turner, 2013; Mayer et al., 2019; Rogers and Feller, 2018; York and Loeb, 2014).

The success of these nudge applications in education have catalyzed numerous efforts to bring evidence-based strategies to scale. For instance, based on the impact of York and Loeb's (2014) Ready4K text messaging campaign that provided parents with early literacy strategies to practice with their children, the program now operates in five states. Rogers and Feller's (2018) school attendance intervention inspired wider adoption in several large districts including the Philadelphia and Chicago Public Schools.

In postsecondary education, numerous recent papers have reported on researchers' efforts to scale to state or national level messaging campaigns that demonstrated positive impacts in prior randomized trials (Avery et al., 2019; Bergman, Denning, and Manoli, 2019; Bird et al., 2019; Gurantz et al., 2019; Oreopoulos and Petronijevic, 2019; Page et al., 2019). For instance, Bergman, Denning, and Manoli (2019) implemented a statewide email campaign in Texas to inform students about tax benefits associated with college enrollment. Bird et al. (2019) implemented a text, postal, and email campaign with a large state agency and with a large national non-profit organization to

encourage students to complete the Free Application for Federal Student Assistance (FAFSA). Gurantz et al. (2019) investigate the impact of sending hundreds of thousands of students who took the PSAT or SAT personalized college list and fee waivers. Each of these large-scale studies drew on evidence from similar, rigorously evaluated strategies that were demonstrated to be effective on smaller, often local, scales. Yet none of these recent campaigns had any impact on FAFSA completion, college enrollment, or college persistence.

Despite increasing research on behavioral economics and education, and specifically nudge strategies to improve postsecondary educational outcomes, there has been comparatively little theoretical attention to or empirical evidence on the conditions in which nudges are likely to be effective. Bird et al. (2019) hypothesize that their state- and national-level FAFSA completion nudges may have been ineffective for several reasons. First, the nudges were sent by an organization with whom the students did not have a direction or meaningful relationship, so may not have trusted the messages. Second, the nudges only provided information, whereas earlier campaigns also invited students to write back and connect remotely with an advisor; the authors speculate that information-only nudges may be less effective. Finally, the nudges provided generic content that was common across all students; this may have reduced salience. Gurantz et al. (2019) hypothesize that their lack of impacts could be attributed to students' overall saturation with informational campaigns or to students' distrust of the motives behind the campaign, e.g. the College Board using their outreach to encourage additional college entrance exam or advanced placement test taking.

If these hypotheses are true, then we should not expect large scale, information-only, generic nudges to affect individual decision-making across contexts without additional information on the relative costs and benefits of action for individuals and subgroups. Yet we

believe prior research on scaling nudge campaigns and the hypotheses offered for why these campaigns have not worked to date overlooks an important dimension: the extent to which the nudges are encouraging individuals to take actions or pursue educational pathways that have ambiguous benefits. For instance, many nudge campaigns have focused on encouraging students to apply for or to renew financial aid. Yet if people are uncertain whether pursuing or staying in college is optimal at that stage in their lives, it is ambiguous whether investing even modest time and effort to complete financial aid applications is worthwhile. By contrast, consider students who have all the credits they need to earn a degree, but who have not yet submitted their college's required graduation application. These students have already invested all the necessary time and effort to earn their degree, so submitting their graduation application before the deadline would appear to be unambiguously to students' benefit.

We extend the nascent literature on scaling nudges in education by investigating whether the same nudge is differentially effective based on the degree of ambiguity around whether it is to an individual's benefit to follow the action encouraged by the nudge. We investigate this question in the context of Veterans' education benefits. The Post-9/11 GI Bill (PGIB), signed into United States law under the Veterans Educational Assistance Act of 2008, provides generous education benefits to American military service members and their families. Under the current version of the bill (the PGIB), the baseline benefit for service members includes 36 months paid in-state tuition and fees at any public institution (or up to \$23,672 for annual tuition and fees at private or out-of-state public institutions) in addition to a locality-adjusted monthly housing allowance and stipend for books and supplies.

Instead of using the PGIB for their own education, service members have the option to transfer their PGIB education benefits to dependent family members.<sup>1</sup> PGIB benefits cover up to four years of college tuition and include allowances for both housing and textbooks; the total package can be worth \$200,000 or more. Service members must opt-in to transfer benefits while still serving on active duty and agree to four years of additional service. While the transfer provision is available to active duty service members with at least six years of service, the degree of ambiguity soldiers face in making a transfer decision varies substantially across service members. On the one hand, career service members who have already have a graduate degree and have served ten or more years and face very little ambiguity: they already have an advanced degree, and they have likely already decided to stay in the service for twenty years to secure their retirement benefits. They face essentially no cost to transferring their benefits. On the other hand, service members who do not have an advanced degree and are earlier in their career (e.g. 6-9 years of service) face considerable ambiguity, both in terms of whether to reserve the benefits for themselves and whether to commit to four more years of service in a hazardous profession.

We conducted a large scale, very low-touch nudge campaign, consisting of one-way emails, that encouraged service members to make an active choice between using the PGIB benefits for themselves or to transfer the benefits to a dependent. We evaluate, through a randomized controlled trial, whether service members sought additional information about PGIB benefits use and eventually transferred benefits to their dependents. We randomly assigned 97,213 eligible active duty service members to either control, information only (Figure 1), active choice framing (Figure 2), or active choice + planning prompt (Figure A.1) treatments.<sup>2</sup> The key feature

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<sup>1</sup> To transfer full benefits to a dependent, service members must have served for six years and commit to an additional four years of service from the time they elect to transfer benefits.

<sup>2</sup> Each of the service members in this sample have served at least six years of service in the Army and are eligible to transfer their benefits to a dependent family member.

of the active choice treatments was their explicit framing of GI Bill benefits as a choice between own use and transfer to a family member, whereas the information only treatment provides relevant program information without imposing a choice architecture. The active choice + planning prompt treatment added an (opt-in) reminder capability to the intervention. We use a unique tracking system to identify individual-level Army website activity responses to our treatments and data from the U.S. Department of Veterans Affairs (VA) to identify short-run PGIB transfer behavior. With our sample restrictions, we sought to identify a group for whom benefits transfer was a potentially a good option. However, even within that sample and as discussed above, we posit that there is still variation and uncertainty around which group or groups for whom transfer might be the “best” decision.

To preview our results, we find no impact of the nudge among service members for whom we predict considerable ambiguity in whether transferring the benefit is beneficial for the service member. On the other hand, we find sizeable impacts for service members with advanced degrees and for officers, for whom the benefit of transferring the benefits is unambiguous. Specifically, service members with advanced degrees who received the nudge were two percentage points (21 percent relative to the control) more likely to transfer their benefits than their counterparts in the control group. As we discuss below, our results suggest that very low touch nudges can, in fact, be effective at scale, but that researchers and policymakers should carefully consider the degree of ambiguity in whether the outcome they are trying to influence is beneficial for the target population, and how this ambiguity is likely to affect responses to the nudge.

The rest of the paper proceeds as follows. We describe our setting in Section II and our sample and data in Section III. Section IV provides our empirical strategy. We present results in Section V and conclude in Section VI.

## II. The Post-9/11 GI Bill

The Post-9/11 GI Bill (PGIB), signed into United States law under the Veterans Educational Assistance Act of 2008, provides generous education benefits to American military service members and their families. Under the current version of the bill (the PGIB), the baseline benefit for service members includes 36 months paid in-state tuition and fees at any public institution (or up to \$23,672 for annual tuition and fees at private or out-of-state public institutions) in addition to a locality-adjusted monthly housing allowance and stipend for books and supplies.<sup>3</sup> In higher-cost states, the total value of the PGIB benefit can exceed \$200,000.<sup>4</sup> The PGIB additionally authorizes active-duty service members with six or more years of service the option to transfer educational benefits to a spouse or child in exchange for an additional four years of active duty service. After transfer, the service member can change the recipients and benefit allocation (to include using some or all of the benefit himself).<sup>5</sup>

Numerous researchers have studied the GI Bill and its impact on educational attainment and Veterans' welfare. For instance, Bound and Turner (2002) and Angrist and Chen (2011) found positive effects on college enrollment and attainment for Veterans. Barr (2015, 2019) examines

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<sup>3</sup> Source: [https://www.benefits.va.gov/GIBILL/resources/benefits\\_resources/rates/ch33/ch33rates080118.asp](https://www.benefits.va.gov/GIBILL/resources/benefits_resources/rates/ch33/ch33rates080118.asp) accessed 5/22/2019. In-state tuition applies to dependents who are (1) a resident of the state of the institution or (2) live in the state and have received the transfer benefits from a service member or veteran who is currently on active duty or has been discharged from service for fewer than three years. Many private and public institutions participate in the Yellow Ribbon Program and contribute additional amounts to GI-Bill recipients when private or out-of-state tuition exceeds the maximum threshold ([https://www.benefits.va.gov/gibill/post911\\_residentraterequirements.asp](https://www.benefits.va.gov/gibill/post911_residentraterequirements.asp) accessed 5/22/2019).

<sup>4</sup> For instance, in New York City in 2019, the housing rate is \$3366 per month. Assuming 4 years of tuition and fees at the maximum rate (\$23,672), 36 months of housing allowance, and 4 annual stipends of \$1000 each for books and supplies, the total value is \$219,864.

<sup>5</sup> Spouses are eligible to use benefits immediately after transfer. Children are eligible to use the benefit after a parent has served 10 years in the Army and before the age of 26.

the increased generosity of the PGIB and finds that the higher levels of benefit increased college enrollment of Veterans by as much as 20 percent and degree attainment by 25 percent.

Castleman, Murphy, and Skimmyhorn (2019), hereafter CMS-19, study the transfer provision of the PGIB as a multi-period, intra-household dilemma in which the service member parent weighs the benefit of providing for a child's college education against the costs of foregoing that parent's own use of the GI Bill and continued military service.<sup>6</sup> The dilemma of benefits transfer is complex and varies considerably by household, as one might expect. For instance, the opportunity cost of giving one's education benefits to a family member is likely lower for a service member who already has a graduate degree than for an individual who is less educated and might plan to use the GI Bill himself. Moreover, the perceived cost of four more years of active service (in order to transfer benefits) is presumably much lower for a senior service member who is near retirement eligibility – and would continue to serve anyway – than for a junior soldier with fewer years of service. To that point, CMS-19 examine conditional probabilities of serving four more years using active-duty Army personnel data from the period just before PGIB implementation. They find that the probability is around 60% for service members at 6 years of service and increases monotonically with time in service, approaching 100% for individuals who are 4 years shy of retirement eligibility (at 20 years).<sup>7</sup> As such, the decision to transfer benefits would appear to be more ambiguous for some types of service members and far less ambiguous for other types. Descriptive analysis in CMS-19 suggests that underlying household-specific circumstances tied to that ambiguity bear on the decision to transfer benefits: they find clear socioeconomic differences

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<sup>6</sup> In a non-peer reviewed technical report, Wenger et al. (2017) review and analyze the effects of some military education benefits (including the Post-9/11 GI Bill) on recruiting and retention. The report attributes a small positive retention effect to the transfer provision. In unpublished analyses, Castleman, Murphy, and Skimmyhorn (2019) find that differential pre-trends between service members eligible to transfer and those not eligible to transfer make causal inference of transfer benefits on retention problematic.

<sup>7</sup> See Figure 1 in their paper.

in transfer patterns that are highest among more-educated and nearer-to-retirement senior service members, and lowest among less-educated and less-tenured junior soldiers.

Our proposed intervention, therefore, provides a unique opportunity to test the efficacy of a low-touch nudge on subpopulations for whom the ambiguity of benefit takeup varies considerably. We hypothesize that individuals who already have a graduate education and are more-tenured – and so for whom GI Bill benefits transfer is less ambiguous – will be more responsive to the nudge.

### **III. Study Design**

#### *A. Population and Data*

Our study population consists of 97,213 Army service members, including both officers and enlisted soldiers.<sup>8</sup> Each individual in the study was eligible to transfer PGIB benefits (currently on active duty, at least 6 years of military service, had a dependent family eligible to receive benefits transfer) but had not yet done so as of May 2018.

We observe monthly administrative data that include military rank, time in service, and AFQT (for enlisted soldiers only), as well as standard demographic characteristics such as gender, race, age, and education level from administrative military personnel records.<sup>9</sup> Additionally, we observe the service member's family structure based on information compiled on military families in the Defense Enrollment Eligibility Reporting System (DEERS). The DEERS data are annual snapshots and include the date of marriage to a spouse and number of children by age range.

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<sup>8</sup> Enlisted soldiers typically enter the service with a high school education or its equivalent and serve contracts of fixed length. In contrast, officers are appointed as lieutenants on completion of a commissioning program (like West Point or ROTC); nearly all have finished college on entry into the service, and those who have not must complete a bachelor's degree within 3 years in order to be competitive for promotion.

<sup>9</sup> All data for the study were compiled, merged, and de-identified by the U.S. Army Office of Economic and Manpower Analysis (OEMA). AFQT is the Armed Forces Qualification Test, a measure of aptitude.

Importantly, the administrative data enable us to gauge the degree of ambiguity that the household faces in the transfer decision. For instance, we can contrast service members who have less education (might want to use GI Bill for own use, so ambiguity in transfer decision) against those who already have advanced degrees (less likely to use GI Bill for own use, so far less ambiguity in transfer decision).

We also observe individual-level data that detail how individuals interacted with (i.e., click through) the elements of the intervention – both the email message and the associated website (we provide more on the layouts of each in the next section). For email engagement, we record which button an individual clicks in order to progress to the website. Once an individual reaches the website, we observe the buttons and/or links that they click and whether they pursue information related to either GI Bill own use or transfer.

Finally, the primary outcome measure in our study is a binary variable indicating transfer of any (i.e., at least one month) education benefits to a family member. As noted in CMS-19 many service members transferred only one month of benefits to one recipient, knowing that they could re-allocate the full 36 months at a later date. The observed data, therefore, reflect a lower bound of the amount of benefits transferred. As a result, we focus on the extensive margin of transfer (initial transfer of any benefit) rather than the intensive margin (how much was transferred and to whom).<sup>10</sup> We observe individual transfer behavior – including the date of benefits transfer – from data provided by the Veteran’s Administration (VA). We use the VA transfer data both to confirm eligibility for the study (i.e., eligible for the benefits and have not yet transferred) and as a measure of response to treatment (i.e., whether transfer occurred within an outcome horizon of six months).

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<sup>10</sup> Based on a helpful suggestion from an anonymous referee, we compared the distributions of months transferred by treatment status in our experiment (any treatment vs. control group) and found no differences. This result reinforces the focus on the extensive rather than the intensive margin of benefits transfer, as suggested by CMS-19.

We are currently unable to estimate the impact of the treatments on service members' own use of the education benefits. From the time of the experiment it would take up to a decade to obtain these data: 3-5 years for soldiers to complete their military service obligations and leave the service and then another 3-5 years for those same individuals to use (or not use) the GI Bill as Veterans. Future analyses will evaluate education-related decisions using the VA data.

### *B. Treatments*

Using stratified randomization, we assign eligible individuals into one of four groups: 1) *control* (n=24,271); 2) *information only* (n=24,315); 3) *active choice framing* (n=24,290); and 4) *active choice + planning prompt* (n=24,337), and we observe administrative outcomes for them all.<sup>11 12</sup> We do not communicate with members of the control group.

Each service member in the *information only* treatment receives an email (Figure 1) via their official U.S. Army email account informing him that he can use education benefits himself or transfer to a family member.<sup>13</sup> The email header encourages the service member to avoid leaving the GI Bill benefit on the table and explicitly states a potential value of the GI Bill education funding from \$200,000 - \$300,000. The body of the email contains a list of next steps relevant to GI Bill use (whether for own use or transfer to a family member), including confirming eligibility, looking into schools that may be a good fit, and step-by-step instructions on how to transfer benefits. However, as an important point of contrast against other email treatments, the next steps presented in the *information only* email are lumped together in a single list; there is no attempt to distinguish between action sequences for GI Bill own use versus transfer to a family

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<sup>11</sup> We stratify on sex, race, Armed Forces Qualifying Test (AFQT) categories, college attendance, and marital status.

<sup>12</sup> We do not observe click data for 132 individuals, so the sub-sample sizes for analysis of engagement are 24,287 (information only), 24,256 (active choice framing), and 24,302 (active choice + planning prompt).

<sup>13</sup> Communications for all of our groups occurred via official Army email accounts. Because accessing official Army email requires authenticating with common access card, emails can only be accessed on a computer/device that has a smart card reader or special authentication software. As a result, service members are unable to access these emails via their personal mobile phones.

member. Finally, at the bottom of this email communication, there is a button to click for more information. This button leads to a customized program website that we created to provide information relevant to PGIB use.

In the *active choice framing* treatment, the email clearly frames GI Bill education benefits use as a choice between own use and transfer, as shown in Figure 2. While the header content here is the same as in the *information only* treatment, the body of the email presents two separate lists of next steps; each list is purposely tailored to one choice (own use of benefits) or the other (transfer to a family member) and contains a separate button to click for more information. Importantly, the two lists reside in columns side-by-side in the email, separated by the word “OR” – the visual effect of this design is to impose an active choice architecture<sup>14</sup> in which the service member is prompted to pick option A or option B in order to access additional program information.<sup>15</sup>

Individuals in the *active choice + planning prompt* treatment receive the same active choice framing just described, but additionally receive in the email a planning prompt to assist in the commitment to making a decision. See Figure A1 in the appendix for a visual depiction of this third treatment type. The inclusion of an interactive planning prompt allows the service member to commit to taking action today, in one week, or in two weeks. If an individual clicks “today,” he is immediately redirected to the information website. If he clicks the button for one week or two weeks later, he receives a reminder email in that respective timeframe.

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<sup>14</sup> Other researchers have found that requiring individuals to make an active choice increases contributions to retirement savings (Carroll et al., 2009), leads people to choose lower-cost drug plans (Beshears et al., 2019), and increases engagement with a decision (Putnam-Farr and Riis, 2016). In addition to creating an active choice frame, including in two short lists instead of one long list could make it easier for recipients to process the presented information. Simplifying the presentation of information can increase responsiveness (e.g. Beshears et al. 2013). While our “simplifications” are minor relative to these efforts, it is possible that our treatment email is affecting responses both through framing and simplification.

<sup>15</sup> The bottom of the active choice framing email also contains a third click button for pursuing more information; similar to the click button in the information only email.

The buttons in each of the treatment emails lead to a program website with information relevant to use of the PGIB (see Figure A2 for visual depictions of the website landing page and subsequent content). The website allows the user to investigate separately whether to use the GI Bill benefits or to transfer them. Once the individual makes a choice, he progresses to a new screen with specific information links for either own use or benefits transfer. These pages each contain three distinct buttons to click for actual information (e.g., looking into eligibility or step-by-step transfer instructions). We observe interaction with these buttons in the click data and record an “info click” when an individual clicks one of these buttons to pursue more information. We also tally each individual’s total number of clicks made between the email treatment and the website.

#### IV. Empirical Strategy

To assess the impacts of the intervention on engagement and transfer decisions, we estimate the following intent-to-treat models using ordinary least squares (OLS):

$$y_i = \beta_1 \text{Framing}_i + \beta_2 \text{FramingPlanning}_i + \gamma X_i + \varepsilon_i \quad (1)$$

$$y_i = \beta_1 \text{Info} + \beta_2 \text{Framing}_i + \beta_3 \text{FramingPlanning}_i + \gamma X_i + \varepsilon_i \quad (2)$$

We use equation (1) to measure how *active choice framing* and *framing + planning prompts* affect engagement relative to the *information only* treatment and use equation (2) to measure the effects of each treatment on PGIB transfer decisions.  $y_i$  is an outcome variable indicating either engagement with the intervention materials (i.e., from the click data) or GI Bill transfer;  $\text{Info}_i$ ,  $\text{Framing}_i$ ,  $\text{FramingPlanning}_i$  are indicators for treatment group assignment.  $X_i$  is a vector of individual characteristics (such as civilian education level, military personnel type, race, and family structure) measured prior to the experiment launch, and  $\varepsilon_i$  is the disturbance term.

Identification of a causal treatment effect requires valid random assignment, which we document in Table 1. We observe small differences in the group means of 15 pre-treatment characteristics across our three different treatment conditions and control group. For each characteristic, we conduct an F-test of the equality of 4 group means and fail to find any statistically significant differences. This provides strong evidence that our random assignment was successful.

## V. Results

### A. Engagement with the Intervention

We first investigate the impact of the different treatments on service member engagement with the intervention. Specifically, we measure the extent to which the different email designs prompted individuals to click through to the website for information on the GI Bill. We estimate equation (1) with measures of engagement for the subpopulation of individuals assigned to any of the three treatments and not the control group (we do not observe click behavior for this group since they received no communication from us). For this analysis, in which the sample size is  $n=72,844$ , we compare individuals who received an *active choice framing* or *active choice + planning prompt* email treatment against those who received the *information only* email treatment.

While we observe low overall rates of engagement with the intervention, we find that active choice framing consistently increases engagement by about 60% over the other treatments. The inclusion of a planning prompt does not increase the efficacy of the active choice framing effect. All of our estimates in this section are highly statistically significant ( $p<0.01$ ); results appear in Table 2. For instance, for any email click (the simplest measure of engagement), the *information only* mean is 1.8%, indicating that about 1 in 50 individuals click through the email to get to the website. For *active choice framing* and *active choice + planning prompt*, those same rates are

3.0% and 2.8%, respectively, indicating that active choice framing increased engagement by 61% relative to the information only baseline. Similarly, for the any website click outcome, the information only baseline is 1.6% while the boost from active choice framing is 1.2%, a 75% increase. When we make the same comparison for the any information click outcome, the active choice premium is 0.8% on top of an information only baseline of 1.5%, an increase of 53%. Finally, the same magnitude increase applies to the total number of clicks outcome; active choice leads to 0.058 more clicks per person on a baseline of 0.093 clicks, indicating a 62% increase.

### *B. Benefits Transfer - Full Sample*

In order to investigate the impact of our behaviorally-informed information intervention on the primary program outcome, we estimate equation (2) for the full experimental sample on the outcome of any GI Bill transfer and provide results in Table 3.<sup>16</sup> We find no overall effects on the transfer outcome for each of our three treatments. As expected, the null finding is robust to the inclusion of control variables for demographics, family composition, military career, and civilian education, which we add sequentially in columns 2, 3, and 4. The point estimates for treatment are precise and we are able to rule out treatment effects smaller than -0.4 percentage points (pp) and larger than 0.6pp (0.05 significance level) on a control mean of 5.9 percent.

One possible explanation for the null effect could be the low overall engagement with the light-touch intervention, similar to results in Castleman, Patterson, and Skimmyhorn (2019). Even though individuals who received an active choice-informed email were more likely to click through to the website, that rate of engagement (around 3%) is still low in absolute terms.<sup>17</sup>

### *C. Benefits Transfer - Heterogeneity*

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<sup>16</sup> Specifically, this is an indicator from VA data for any transfer of benefits to a family member in the six months after experiment launch (i.e. – June 2018-December 2018).

<sup>17</sup> Email read receipt data is unavailable for the experiment, so we cannot assess the most basic level of engagement.

Numerous researchers have found that the response to behavioral interventions can vary by the characteristics and backgrounds of the treated individuals (Allcott, 2011; Castleman, Page, and Schooley, 2014; Castleman and Page, 2017; ideas42, 2016). In the current context, our interest in heterogeneous response ties to our premise about nudges and ambiguity: are individuals for whom the net benefits of the decision are less ambiguous more likely to respond to a low-touch nudge? We test for heterogeneous response to treatment by estimating equation (2) for different subgroups within our experimental sample where the benefits of transfer seem more apparent. Our primary focus is on two subgroups for whom the benefits of transfer appear particularly clear. The first group is service members with advanced degrees for whom the value of using the GI Bill to advance their own education is much lower. The second group is officers, who already have a college education and are very likely to serve until retirement conditional on serving at least ten years. Officers also already occupy positions of prestige and have access to strong professional networks, both of which may diminish the value of using GI Bill funding to advance their own education. Secondarily, we consider two other groups for whom the benefits of transferring may be salient but more ambiguous: service members with children (and more potential beneficiaries for a transfer) and service members with more tenure (and corresponding lower costs of additional military service). Both of these latter groups may still have higher personal value in GI Bill use.

Our outcome of interest for these analyses remains any transfer of PGIB benefits and we present results in Table 4. We observe a pronounced difference in treatment effects for transfer-eligible service members with a graduate degree ( $n=9,330$ ). In this subgroup, the control group transfer rate is 0.091. For those assigned to any treatment category, the transfer rate is 0.019 higher – which marks a 21% increase over the comparison group ( $p<0.01$ ).<sup>18</sup> For officers ( $n=18,093$ ), the

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<sup>18</sup> Baseline equivalence holds for the graduate-educated subpopulation – see Appendix A1.

control mean transfer rate is 0.080 and for those assigned to any treatment, the marginal increase in that transfer rate is 0.009 – which marks an 11% increase over the comparison group ( $p < 0.10$ ). We see little heterogeneity for individuals with differing family compositions (i.e. – with or without children) or varying levels of tenure in the military. We further explore heterogeneous treatment effects by sex and family composition (i.e., number of children and presence of high school-aged children) in Appendix Table A2, but do not observe any systematic differences across these groups.

It is surprising to observe that higher-tenured individuals appear no more likely to transfer benefits when nudged, even though we had posited that the marginal cost of additional service to be lower for that subgroup. Our *ex-post* explanation is that an individual’s own education (more precisely, having/not having a graduate degree) is the leading indicator of ambiguity – far more important than other potential factors like tenure that we considered at the outset. Moreover, for the more tenured group, the additional years of eligibility to transfer benefits may mean they are more likely than other groups to have finalized their plan for whether and when to transfer benefits prior to our intervention.<sup>19</sup> It is also possible that these individuals either had legitimate doubts about making it to retirement (20-year career), perhaps based on impending promotion decisions or potential drawdowns, so were hesitant to commit to additional years. Another possibility is that individuals may have been unaware that the 4-year commitment for transferring benefits would run concurrently with service time to reach pension eligibility, rather than in addition to that time.<sup>20</sup>

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<sup>19</sup> Greater eligibility duration may also explain why in Appendix Table A2 we find parents with high school-aged children, who perhaps face less ambiguity for the benefits of transfer relative to parents with only younger children, are no more responsive to the treatments.

<sup>20</sup> As examples, see comments posted to military-related media and other websites, including: <https://rebootcamp.militarytimes.com/news/education/2018/07/18/new-gi-bill-transfer-restrictions-7-things-you-need-to-know/>; <https://www.dcms.uscg.mil/PSD/fs/GI-Bill-FAQ/>; <https://www.bogleheads.org/forum/viewtopic.php?t=225437>. While DOD and VA policies and websites provide guidance on this issue, some service members may have been unaware of this provision, which significantly lowers the marginal cost of transfer.

In the absence of survey data or exit interviews, we cannot firmly distinguish among these possible explanations for why higher-tenured individuals were not more responsive to the nudge intervention.

We also perform an inference adjustment for multiple hypothesis testing, since we are separately considering several subgroups in order to investigate nudge efficacy and ambiguity. Given that there are four subgroups of interest in Table 4 (i.e., Has Children, Officer, 10+ YOS, and Has Grad Degree), the relevant Bonferroni correction parameter is  $k=4$ . As such, the conventional bar for statistical significance changes from  $\alpha = 0.05$  to  $\alpha = 0.05/4 = 0.0125$ . At this more rigorous standard, the result for graduate degree holders remains statistically significant at the 5% level (p-value  $0.006 < 0.0125$ ) while that for officers is no longer statistically significant ( $\alpha = 0.1/4 = 0.025$ ; p-value  $0.069 > 0.025$ ).

Several underlying mechanisms may explain why GI Bill benefits transfer appears to be less ambiguous for service members with graduate degrees and, to a lesser extent, officers in our sample. As we allude to above, both groups are far less likely to make own use of the GI Bill after separating from the service, as one might expect and is confirmed empirically in CMS-19 (ie – whereas 38% of all separating Army veterans use the GI Bill for their own education within 5 years, only 13% of graduate degree holders do so).<sup>21</sup> Transfer could be more likely because own use of benefits is a low-probability event and therefore a less-pressing consideration, further making the transfer decision less ambiguous for this group.

One reason that nudges may not work when benefits are ambiguous is that there could be an option value in not committing to a choice. However, in our setting, individuals actually preserve the greatest option value for GI-bill benefit utilization by transferring as soon as eligible.

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<sup>21</sup> These numbers are strictly for service members who did not transfer benefits and subsequently separated – see CMS-19 for more details.

Service-members who transfer benefits can always reclaim any or all unused benefits for themselves and delaying the decision to transfer increases the total years of service required to claim GI benefits, since their additional service time can be completed concurrently with any other contract obligations and since it does not begin until the transfer is complete. Thus preservation of option value cannot explain why individuals do not respond to nudges when benefits are ambiguous in our setting.<sup>22</sup>

Alternate hypotheses are that these groups are likely more responsive to email-based communication, perhaps based on the nature of daily work tasks in the Army or from prior experiences as both undergraduate and/or graduate students. These individuals could also be more comfortable with college planning processes in the family context, given personal familiarity with higher education. A comparison of engagement with the intervention materials by education level offers some support for these two hypotheses (greater responsiveness to email communication, more familiarity with college planning), as shown in Table 5.<sup>23</sup> Namely, in the *information only* treatment group alone, individuals with a graduate degree are more than three times as likely to click through the email to get to the website than are those with just a high school education (0.039

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<sup>22</sup> In our setting it is also possible that individuals consider option value across employment sectors (i.e., retain in the military or leave military service). Given the 4 year additional service commitment associated with transfer, forgoing the transfer decision preserves the option to leave the military at the end of any existing service requirements. To examine whether this dimension of option value affects choice, we examine whether the effects of our treatments vary by differences in the effective length of the transfer service commitment (because GI Transfer additional service commitment can run concurrent with any existing service commitments, a soldier who has just signed a new 4-year enlistment contract at the time of messaging sacrifices no employment-sector option value by forgoing the transfer decision, while a soldier who has less than a year left on their service contract would sacrifice significant employment-sector option value). In results reported in Appendix A2, we examine the results among the 79,290 individuals in our sample that have an existing contract date and do not find any evidence that differences in employment sector option value affect the response to our treatments. For example we find identical, and insignificant, treatment effects among service members with 0-2 years and 4-6 years of remaining service obligations.

<sup>23</sup> See Appendix A2 for heterogeneity across other factors (sex, family composition, military career) in the effects of treatment on GI-Bill transfers.

versus 0.012). We are unable to differentiate between the role of greater responsiveness to email, general familiarity with college planning, or other mechanisms.

## **VI. Discussion**

In this paper, we report on a large-scale, low-touch email experiment that tests service member responsiveness to the GI Bill transfer option among a population that includes individuals for whom the transfer benefits are clear and individuals for whom the net-benefits are significantly more ambiguous. Following Castleman, Murphy, and Skimmyhorn (2019), who found clear SES differences in use of the PGIB transfer provision or subsequent personal use of the GI Bill, we sought to determine whether behaviorally-informed nudges could influence decision processes and improve outcomes for service members and their families.

We find that individuals who received an email framing GI Bill use as an active choice between own use and transfer to a family member are far more likely to pursue information about the benefit than are individuals who received an “information only” communication. Specifically, active choice framing increases engagement with information by 60%; this result holds across a variety of engagement measures. This finding reinforces other research on active choice framing, particularly in Putnam-Farr and Riis (2016), who found that framing a decision as a Yes/No led to greater engagement with that decision. This type of framing could be valuable for other important decisions that individuals face in the Army (or in other environments as well), such as for retirement planning, continuing education participation, and take-up of consumer debt protection.

While thousands of individuals engaged with either the “information only” or “active choice” communications we sent, we find no overall effect of either intervention on transfer

behavior. These results add to the growing body of evidence that shows limited or no effect of light-touch nudges at scale for low-SES populations with complex decisions like human capital investments (Bettinger et al., 2012; Bird et al., 2019; Bergman, Denning, and Manoli, 2019; Huntington-Klein and Gill, 2019; Oreopoulos et al., 2018).

However, our overall null effects mask important heterogeneity. That is, we find that our interventions increase GI Bill transfers among groups who are likely to face the least ambiguity about the benefits of transferring. Perhaps those that face the least ambiguity about the benefits of transferring are service members who have already attained a graduate degree. Among this group, we find that treated service members are 22 percent more likely to transfer benefits to dependents than those in the control group. We also find that officers who receive treatment communications are 11 percent more likely to transfer their benefits than officers assigned to the control group ( $p < 0.10$ ). Officers earn significantly more than enlisted soldiers and tend to come from higher SES backgrounds. As a result, Officers likely face lower opportunity costs to transferring and better understand the benefits of transferring.

Our finding that officers and those with graduate degrees are most affected by treatment suggest an additional explanatory factor for why so many nudges at scale fail to produce significant effects: the ambiguity of benefits from the perspective of the decision maker. Many of the behaviors that policymakers are trying to nudge individuals toward involve decisions that are both unfamiliar and have unclear benefits to the decision maker. Furthermore, individuals from advantaged backgrounds may face the least uncertainty and ambiguity in decisions that are targets of nudges and, therefore, stand to benefit the most. For instance, Hurwitz and Smith (2018) demonstrated that increased test score sends for college applications as a result of College Scorecard data were driven exclusively by well-resourced families and high schools. Our results

suggest that successful efforts to resolve ambiguity regarding the benefits of nudged behaviors could both increase the efficacy of nudges and reduce potential social inequality generated by nudges.

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Figure 1: Information Only Email Treatment



Your service to our country has earned you up to **\$200,000 - \$300,000** in **GI Bill education funding**. Sadly, a recent study found that *more than 50% of veterans don't use the GI Bill benefits that they worked so hard to earn.*

*Consider your your options:*

You may choose to use your education benefits to pay for your college after you get out of the Army or you may transfer your education benefits to a family member to pay for their college education.

*Next steps:*

- Look into GI Bill eligibility for yourself
- Explore schools that are a good fit for you
- Meet with an Education counselor at your base to explore how to use the GI Bill
- Look into transfer eligibility for your dependents
- Get step-by-step guidance on how to transfer your benefits
- Meet with an Education counselor at your base to discuss how your dependents can use GI Bill benefits

**CLICK BELOW FOR MORE INFORMATION**

**LEARN MORE ABOUT MY GI BILL OPTIONS**

Sincerely,

Office of the Assistant Secretary of the Army  
(Manpower and Reserve Affairs)  
111 Army Pentagon  
Washington, DC 20310-0111

Figure 2: Active Choice Framing Email Treatment



Your service to our country has earned you up to **\$200,000 - \$300,000** in **GI Bill education funding**. Sadly, a recent study found that *more than 50% of veterans don't use the GI Bill benefits* that they worked so hard to earn.

Because transferring your benefits would include a commitment to serve 4 additional years from the date of your request, *now is the time* to choose how will you use your GI Bill.

**Today, I urge you to decide which group of veterans you will be in:**

**I want to use the education benefits to pay for my college education after I get out of the Army**

**OR**

**I will transfer the education benefits to a family member to pay for their college education**

**Learn more about this option:**

- Look into GI Bill eligibility
- Explore schools that are a good fit
- Meet with an Education counselor at my base to explore how to use the GI Bill

**Learn more about this option:**

- Look into transfer eligibility
- Get step-by-step guidance on how to transfer
- Meet with an Education counselor at my base to discuss how my dependents can use GI Bill benefits

**CLICK BELOW TO MAKE YOUR COMMITMENT**

**TAKE ACTION TO USE THE GI BILL MONEY I'VE EARNED**

Sincerely,

Office of the Assistant Secretary of the Army  
(Manpower and Reserve Affairs)  
111 Army Pentagon  
Washington, DC 20310-0111

**Table 1: Baseline Equivalence**

	Control	Info Only	Active Choice	Active Choice + Planning	F test p-value
Female	13.1%	13.1%	13.0%	13.1%	0.996
Black	20.9%	21.0%	20.9%	21.0%	0.991
Hispanic	13.6%	13.6%	13.6%	13.5%	0.996
Other Race	8.0%	8.0%	8.0%	8.0%	0.999
Age	34.33	34.27	34.30	34.26	0.554
Has Children	77.1%	77.4%	76.9%	76.8%	0.334
Has HS-Aged Child	14.5%	13.9%	14.2%	13.9%	0.139
Officer	18.6%	18.6%	18.8%	18.4%	0.760
10-14 Years of Service	30.6%	30.5%	30.2%	30.8%	0.572
15+ Years of Service	22.4%	22.0%	22.4%	22.0%	0.531
AFQT	58.4	58.4	58.4	58.4	0.989
Graduate Degree	9.6%	9.7%	9.6%	9.5%	0.942
College Degree	17.0%	17.1%	17.3%	17.2%	0.890
Some College	25.9%	25.8%	25.7%	25.9%	0.947
High School Graduate	42.9%	42.9%	42.8%	43.0%	0.984
N	24,271	24,315	24,290	24,337	

*Note:* The reported p-values are from an F test for equality of 4 group means, assuming homogeneity. The test for the AFQT (Armed Forces Qualification Test) covariate is for a subset of 74,731 individuals – all of whom are enlisted service members – since the Army does not collect AFQT for commissioned officers. All other covariate tests are for the entire experimental sample (n=97,213).

**Table 2: Engagement with the Intervention**

	Any Email Click	Any Website Click	Any Info Click	Total # of Clicks
(1) Information Only <mean value>	0.0181	0.0160	0.0150	0.0930
(2) Active Choice <treatment effect>	0.0119*** (0.0014)	0.0125*** (0.0013)	0.0084*** (0.0012)	0.0634*** (0.0082)
(3) Active Choice + Planning Prompt <treatment effect>	0.0103*** (0.0014)	0.0113*** (0.0013)	0.0074*** (0.0012)	0.0523*** (0.0080)
n	72,844	72,844	72,844	72,844
<u>Tests of Differential Effects</u>				
p-value 1 = 2	0.000	0.000	0.000	0.000
p-value 1 = 3	0.000	0.000	0.000	0.000
p-value 2 = 3	0.297	0.433	0.459	0.219

*Notes:* The values presented in row 1 are means for the information only treatment group; values in rows 2 and 3 are partial effects for those treatments as compared to information only, along with standard errors in parentheses. Each column presents output from a separate OLS regression. Each regression includes demographic, military career, and education covariates. The outcomes represent increasing levels of engagement with the intervention, ranging from making any click on a button in the email (leftmost column) to clicking through the full website to information links and total number of clicks (rightmost row). We exclude individuals in the control group, since they received no communication from us. Heteroscedastic-robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3: Treatment Effects on GI Bill Transfer – Full Sample**

	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
Info Only	0.00002 (0.002)	0.0002 (0.002)	0.0002 (0.002)	0.0001 (0.002)
Active Choice	0.0012 (0.002)	0.0012 (0.002)	0.0014 (0.002)	0.0014 (0.002)
Active Choice + Planning Prompt	0.0013 (0.002)	0.0015 (0.002)	0.0017 (0.002)	0.0016 (0.002)
Gender, race, age		X	X	X
Family composition			X	X
Mil career, own educ				X
Dependent variable control mean	0.059	0.059	0.059	0.059
R <sup>2</sup>	0.000	0.005	0.010	0.017
Observations	97213	97213	97213	97213

*Notes:* Each column presents a separate OLS regression. The GI Bill Transfer outcome is a binary variable for making a transfer (of any amount of months) to a family member during the post-treatment period. Info Only, Active Choice, and Active Choice + Planning Prompt indicate assignment to that treatment. Family composition variables indicate whether the service member has any children and/or a high school - aged child. Military career covariates indicate whether the service member is a commissioned officer and tenure in the military. Own education is a set of indicator variables corresponding to the individual's highest level of civilian education. All regressions include a constant; we present heteroscedastic-robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4: Heterogeneity in Treatment Response for GI Bill Transfer Outcome**

	Control Mean	Any Treatment	Any Treatment	Any Treatment	Any Treatment
All n=97,213	0.0591	0.0008 (0.0018)	0.0011 (0.0017)	0.0011 (0.0017)	0.0010 (0.0017)
<u>Subgroup</u>					
Has Children n=74,913	0.0672	0.0014 (0.0021)	0.0017 (0.0021)	0.0018 (0.0021)	0.0018 (0.0021)
Officer n=18,093	0.0798	0.0078* (0.0047)	0.0082* (0.0047)	0.0085* (0.0047)	0.0085* (0.0047)
10+ YOS n=51,276	0.0855	-0.0007 (0.0027)	-0.0004 (0.0027)	-0.0003 (0.0027)	-0.0002 (0.0027)
Has Grad Degree n=9,300	0.0908	0.0189*** (0.0070)	0.0192*** (0.0070)	0.0193*** (0.0070)	0.0193*** (0.0070)
Demographics	n/a		x	x	x
Military Career	n/a			x	x
Education	n/a				x

*Notes:* GI Bill Transfer outcome is a binary variable for making a transfer (of any amount of months) to a family member during the post-treatment period. Each cell presents output from a separate OLS regression for the subgroup of interest in that row. Regressions sequentially include demographic, military career, and education covariates for each subgroup. YOS = years of service. Heteroscedastic-robust standard errors in parentheses. While the standard errors in the table above are not corrected for multiple hypothesis testing, the graduate degree results are robust to the relevant Bonferroni corrected 5% significance threshold ( $k=4$ ;  $\alpha = 0.05/4 = 0.0125$ ). At this more rigorous standard, the result for graduate degree holders remains statistically significant at the 5% level ( $p\text{-value } 0.006 < 0.0125$ ) while the coefficient for officers is no longer significant at the Bonferroni corrected 10% level ( $\alpha = 0.10/4 = 0.025$ ;  $p\text{-value } 0.069 > 0.025$ ).

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table 5: Engagement with the Intervention by Education Level**

	Info Only Mean	Active Choice	Active Choice + Planning	Any Active Choice Treatment
All n=72,844	0.018	0.012*** (0.001)	0.010*** (0.001)	0.011*** (0.001)
<u>Subgroup</u>				
Grad Degree n=6,995	0.039	0.016*** (0.006)	0.009 (0.006)	0.013** (.005)
College Degree n=12,541	0.026	0.015*** (0.004)	0.011*** (0.004)	0.013*** (0.003)
Some College n=18,807	0.016	0.012*** (0.003)	0.013*** (0.003)	0.013*** (0.002)
HS Grad n=31,309	0.012	0.010*** (0.002)	0.009** (0.002)	0.010*** (0.002)
Less than HS n=4,238	0.012	0.007 (0.005)	0.012** (0.006)	0.010** (0.005)

*Notes:* Each row presents output from a separate OLS regression. Each regression includes demographic, military career, and education covariates. The outcome in every regression is an indicator variable for making any click on a button in the intervention email, which is our baseline measure for any engagement with the intervention. We exclude individuals in the control group, since they received no communication from us. Heteroscedastic-robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figure A1: Active Choice + Planning Prompt Email Treatment



Your service to our country has earned you up to **\$200,000 - \$300,000** in **GI Bill education funding**. Sadly, a recent study found that *more than 50% of veterans don't use the GI Bill benefits that they worked so hard to earn.*

Because transferring your benefits would include a commitment to serve 4 additional years from the date of your request, *now is the time* to choose how will you use your GI Bill.

Today, I urge you to decide which group of veterans you will be in:

I want to use the education benefits to pay for my college education after I get out of the Army

OR

I will transfer the education benefits to a family member to pay for their college education

*Learn more about this option:*

- Look into GI Bill eligibility
- Explore schools that are a good fit
- Meet with an Education counselor at my base to explore how to use the GI Bill

*Learn more about this option:*

- Look into transfer eligibility
- Get step-by-step guidance on how to transfer
- Meet with an Education counselor at my base to discuss how my dependents can use GI Bill benefits

### TAKE ACTION TO USE THE GI BILL MONEY I'VE EARNED

*I will take action to claim the GI Bill benefits I have earned:*

TODAY

11 JUNE 2018

20 JUNE 2018

Sincerely,

Office of the Assistant Secretary of the Army  
(Manpower and Reserve Affairs)  
111 Army Pentagon  
Washington, DC 20310-0111

Figure A2: Post-9/11 GI Bill Information Website

A. Landing Page



**DON'T LEAVE YOUR  
GI BILL BENEFITS  
ON THE TABLE**

**U.S. ARMY**

Your service to our country has earned you up to **\$200,000 - \$300,000** in GI Bill education funding. Sadly, a recent study found that *more than 50% of veterans don't use the GI Bill benefits* that they worked so hard to earn.

Today, I urge you to decide which group of veterans you will be in:

I want to use the education benefits to pay for my college education after I get out of the Army

OR

I will transfer the education benefits to a family member to pay for their college education

B. Information for Own Use with Links



**DON'T LEAVE YOUR  
GI BILL BENEFITS  
ON THE TABLE**

**U.S. ARMY**

Your service to our country has earned you up to **\$200,000 - \$300,000** in GI Bill education funding. Sadly, a recent study found that *more than 50% of veterans don't use the GI Bill benefits* that they worked so hard to earn.

I want to use the education benefits to pay for my college education after I get out of the Army

	Most servicemembers are eligible for full individual GI benefits after 36 months of service	<a href="#" style="background-color: #666; color: white; padding: 5px 10px; text-decoration: none;">LOOK INTO GI BILL ELIGIBILITY</a>
	You can find schools in your area that fit your skills and interests	<a href="#" style="background-color: #666; color: white; padding: 5px 10px; text-decoration: none;">EXPLORE SCHOOLS</a>
	Education counselors are available to meet with you and help with your GI Bill benefits	<a href="#" style="background-color: #666; color: white; padding: 5px 10px; text-decoration: none;">CONTACT YOUR EDUCATION COUNSELOR</a>

C. Information for Benefits Transfer with Links



Your service to our country has earned you up to **\$200,000 - \$300,000** in GI Bill education funding. Sadly, a recent study found that *more than 50% of veterans don't use the GI Bill benefits* that they worked so hard to earn.

I will transfer the education benefits to a family member to pay for their college education



Most servicemembers are eligible to transfer their benefits after 6 years of total service and a commitment to 4 additional years of active duty service

[LOOK INTO GI BILL ELIGIBILITY](#)



Transferring benefits to a family member only takes a few minutes

[STEP-BY-STEP INSTRUCTIONS](#)



Education counselors are available to meet with you and help with your GI Bill benefits

[CONTACT YOUR EDUCATION COUNSELOR](#)

**Table A1: Baseline Equivalence for Graduate-Educated Subpopulation**

	Control	Info Only	Active Choice	Active Choice + Planning	F test p-value
Female	20.2%	19.8%	21.4%	21.4%	0.409
Black	15.3%	15.9%	16.0%	16.0%	0.908
Hispanic	7.1%	7.6%	7.2%	6.8%	0.747
Other Race	9.7%	9.4%	9.5%	9.6%	0.975
Age	39.8	39.7	39.7	39.8	0.803
Has Children	68.2%	68.1%	68.1%	68.1%	0.999
Has HS-Aged Child	13.8%	14.3%	14.2%	15.5%	0.387
Officer	87.2%	87.6%	87.0%	87.2%	0.938
10-14 Years of Service	33.1%	31.2%	31.5%	30.4%	0.249
15+ Years of Service	39.7%	38.8%	39.9%	40.7%	0.613
N	2,335	2,350	2,332	2,313	

*Note:* The reported p-values are from an F test for equality of 4 group means, assuming homogeneity. The graduate-educated subpopulation consists of N=9,330 service members.

**Table A2: Heterogeneity in Treatment Response for GI Bill Transfer Outcome – Additional Subgroups**

	Control Mean	Any Treatment	Any Treatment	Any Treatment	Any Treatment
All n=97,213	0.0591	0.0008 (0.0018)	0.0011 (0.0017)	0.0011 (0.0017)	0.0010 (0.0017)
<u>Subgroup</u>					
Male n=84,500	0.0586	0.0020 (0.0019)	0.0022 (0.0019)	0.0023 (0.0019)	0.0022 (0.0019)
Female n=12,713	0.0624	-0.0069 (0.0049)	-0.0069 (0.0049)	-0.0068 (0.0048)	-0.0068 (0.0048)
Has Only One Child n=24,351	0.0601	0.0002 (0.0035)	0.0005 (0.0035)	0.0006 (0.0035)	0.0006 (0.0035)
Has 2+ Children n=50,662	0.0704	0.0021 (0.0026)	0.0023 (0.0026)	0.0023 (0.0026)	0.0023 (0.0026)
Has Only Young Children n=52,120	0.0606	0.0014 (0.0024)	0.0018 (0.0024)	0.0019 (0.0024)	0.0018 (0.0024)
Has HS-Aged Children n=13,722	0.0936	-0.0016 (0.0057)	-0.0017 (0.0057)	-0.0015 (0.0057)	-0.0022 (0.0057)
0-2 Contract Years Left n=29,845	0.0297	0.0021 (0.0023)	0.0019 (0.0023)	0.0019 (0.0023)	0.0017 (0.0023)
4-6 Contract Years Left n=14,515	0.0710	0.0011 (0.0049)	0.0022 (0.0049)	0.0022 (0.0049)	0.0022 (0.0049)
Demographics	n/a		x	x	x
Military Career	n/a			x	x
Education	n/a				x

*Notes:* GI Bill Transfer outcome is a binary variable for making a transfer (of any amount of months) to a family member during the post-treatment period. Each cell presents output from a separate OLS regression for the subgroup of interest in that row. Regressions sequentially include demographic, military career, and education covariates for each subgroup. YOS = years of service. Heteroscedastic-robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1