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Abstract

Despite broad public interest in Veterans' education, there is relatively little evidence documenting the postsecondary trajectories of military service members after they return to civilian life. In the current report we investigate how U.S. Army service member college enrollment and progression trends compare to a similar population of civilians, using Army administrative personnel data merged with administrative records from the National Student Clearinghouse and the Educational Longitudinal Study (ELS) of 2002. Civilians were nearly three times as likely to enroll in college within one year of high school graduation (or one year of separation). Civilians were also much more likely to earn a bachelor's degree within the period of study than either of the Army samples. While members of minority race/ethnicity groups in both military samples enroll at higher rates than their white counterparts, racial/ethnic minorities do not graduate at higher rates than their white counterparts. We discuss policy implications of our analyses in the final section of our paper.

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Introduction

Despite broad public interest in Veterans' education, there is relatively little evidence documenting the postsecondary trajectories of military service members after they return to civilian life, or whether service members matriculate at well-matched colleges and universities. Nearly half of U.S. Army soldiers who return to civilian life do not use their GI educational benefits within two years of separating from the Army.¹ When asked why they do not use their benefits, soldiers report that they were either unaware of their educational benefits, did not know how to apply, or were confused by the benefits application process. Existing research suggests that the majority of GI funding is disbursed to for-profit colleges and universities,² where soldiers may be less positioned for success or to earn a credential that has strong labor market value.

Considerable room exists, therefore, to improve postsecondary planning supports for soldiers to ensure that they are aware of quality and affordable colleges to which they have a good chance of being admitted. This information and support is particularly important for young soldiers who have not had as much time during their service to develop extensive trade- or career-specific skills, and whose college choices may be less constrained by family commitments.

In the current report we present results from related analyses investigating how U.S. Army service member or Veteran college enrollment and progression trends compare to a similar population of civilians. These analyses build on prior work investigating trends in Veterans' college outcomes, not only by providing important comparisons about Veterans once enrolled, but also by expanding our understanding of whether and where they attend post-secondary education.

The Million Records Project (MRP) was completed by the Student Veterans of America in conjunction with the U.S. Department of Veteran Affairs (VA) and the National Student Clearinghouse (NSC), and describes the postsecondary outcomes of nearly one million student Veterans who used their Montgomery or Post-9/11 GI Bill (PGIB) benefits between 2002 and 2010. The report finds that 51.7% of student Veterans in the sample earned a postsecondary degree. The majority of student Veterans who graduate at the two and four year levels do so within four or five years, respectively. However, because not all service members or Veterans use their GI Bill benefits to fund their postsecondary education, the MRP analysis does not provide a complete picture of Veterans' postsecondary participation or attainment.

¹ Authors' analyses from the National Survey of Veterans (2010).

² Source: "Benefitting Whom? For-Profit Education Companies and the Growth of Military Educational Benefits." United States Senate Health, Education, Labor, and Pensions Committee; December 8th, 2010.

Some recent academic work attempts to explore the causal effect of the recent PGIB benefit expansion on Veteran outcomes (Barr 2015; Barr 2019). These studies provide some evidence as to the distribution of Veteran enrollment and level of success over this period, but that is not the focus. Small sample sizes and the lack of a civilian comparison group limit the descriptive exploration of heterogeneity in enrollment and degree attainment both across Veteran subgroups and between Veterans and civilians.

The National Veteran Education Success Tracker (NVEST) Project uses VA and NSC data to describe Veteran educational patterns after PGIB implementation. The report focuses primarily on Veteran student outcomes after enrollment (e.g., attrition, degree attainment, major choice) and does not cover the enrollment and graduation patterns of the full Veteran population. The report concludes that “today’s student Veterans, using the Post-9/11 GI Bill, perform better than their peers and that federal investment in higher education through this program is producing demonstrable results.” The report calls for a better cohort comparison between Veteran and non-Veteran students. We address this shortcoming in prior work by comparing postsecondary participation and attainment of a sample of U.S. Army soldiers to a similar sample of civilians. Such comparisons can provide better benchmarks for assessing military service members and Veterans’ achievements, the effectiveness of different policies and programs, and better inform resource allocation decisions. That said, we caution the reader in drawing strong conclusions given differences between the Army and civilian samples driven by selection into the military.

Data and samples

We first construct a nationally representative sample of civilians that we will use to compare to our samples of Army personnel or Veterans. This civilian sample is comprised of students who participated in the Educational Longitudinal Study of 2002 (ELS:2002) and who were enrolled in 10th grade during the 2001-02 academic year (and therefore were on track to graduate from high school in Spring 2004). We limit our sample to ELS respondents who graduated from high school and who were above the 30th percentile in the academic distribution (to approximate human capital levels corresponding to the military restrictions on individuals with Armed Forces Qualification Test scores less than 30). We further remove from our sample to ELS respondents who served in any branch of the military, so that this sample only contains civilians. We use survey weights provided in the ELS data for all analyses described below. For the ELS:2002 sample we can observe longitudinally where students attended college (if anywhere) and whether and when they earned a degree or credential through June 2012.

There is no ideal comparison group for Army service members or Veterans. On one hand, Army personnel could be compared to their high school classmates, with the drawback being that Army personnel often delay their education and therefore enter post-secondary institutions in different educational and economic environments. On the other hand, transitioning service members could be compared to other individuals starting post-secondary education in a given year, with the drawback being that service members will be older on average. Since each method has strengths and drawbacks, we incorporate both in our subsequent analyses. We compare the postsecondary outcomes of the ELS civilian sample to two samples of Army soldiers:

1. *“HS Class of 2004” sample.* Service members with a high school degree who were born between 7/1/1985 and 6/30/1986, who therefore would have graduated high school at the same time as the civilian sample. We also restrict this sample to soldiers who enlisted between 5/1/2004 and 12/31/2008, and do not include any service members or Veterans who earned a BA degree prior to enlistment. Roughly, this sample enables us to make a comparison of the educational outcomes of high school classmates, some of whom entered the military and some of who did not.
2. *“Separation in 2004” sample.* Service members who separated during the 2004 calendar year, and did not earn a BA degree prior to separation. These service members would have separated from the military at the same time as the civilian sample graduated from high school so would have been exposed to the same secular trends affecting postsecondary participation and completion. Roughly, this sample enables us to make a comparison of the educational outcomes of Army personnel or Veterans and civilian individuals likely starting post-secondary education in the same cohort.

For the Army samples we conduct our analyses using a combination of Army administrative data, publicly-available data, and individual-level data on college participation and completion from the National Student Clearinghouse.

We use these civilian and Army data sources to compute the following individual-level characteristics and outcomes:

Individual characteristics at baseline:

- Median income of home zip code (decile) from 2010 census, as a consistent proxy of estimated socioeconomic status across the Army and civilian samples:
 - Civilian: Zip code at time of 10th grade survey
 - Army samples: Zip code at time of enlistment

- Aptitude score (decile, starting with 4th)
 - Civilian: Programme for International Student Assessment (PISA) percentile score
 - Army samples: Armed Forces Qualification Test (AFQT) score
- Whether the person’s home county is classified as an “education desert”, in that the only public broad-access institution nearby is a singly community college, or no options at all.
 - Civilian: County at time of 10th grade survey.
 - Army samples: County at time of enlistment.

Our primary outcomes in this analysis relate to enrollment and graduation from post-secondary education. Outcome definitions:

- Enrollment: Enrollment at different time horizons relative to 7/1/2004. That is, we construct the “Enrolled within 1 year” outcome by considering whether the individual was enrolled during the period of 7/1/2004 through 6/30/2005.
- Graduation:
 - Civilian/HS Class of 2004 samples: Whether individual earned a degree by 6/30/2012
 - Separation sample: Whether individual earned a degree within 8 years of separation.

Summary Statistics

[TABLE 1 About Here]

In Table 1 we provide descriptive comparisons between the civilian and Army samples. Across Army samples the share of individuals that are Black is 2-3 times as high as for the civilian sample. Service members tend to have lower average scores on the cognitive aptitude exams, particularly for the separation sample. Service members are roughly twice as likely to be from a ZIP code with a median income in the bottom 30 percent, whereas civilians are roughly twice as likely to be from ZIP codes in the top decile of median income. Servicemembers are slightly less likely to be from an education desert, although this pattern may reflect the fact that this assessment is based on county at time of enlistment (as opposed to county in 10th grade).

Results

Overall enrollment comparisons (Table 2)

Civilians were nearly three times as likely to enroll in college within one year of high school graduation (or one year of separation). Approximately 71 percent of civilians enrolled within this time frame, compared with approximately one quarter of the Army samples. Within eight years of graduation (or separation) the

gap between civilians and service members or Veterans closed somewhat: 79 percent of civilians had enrolled in college compared with 68 percent of the Army HS Class of 2004 and 56 percent of the Army Separation Cohort in 2004. All of these differences are statistically significant ($p < 0.01$).

[TABLE 2 About Here]

Institutional characteristics (Table 3)

Civilians were much more likely to attend--for their first college or university--four-year institutions and more selective institutions than either of the Army samples. 59 percent of civilians enrolled in a public college or university compared with 55 percent of the Army HS Class and 41 percent of the Army Separation Cohort. Civilians also enrolled in private schools at much higher rates (16 percent) than the Army HS Class (5 percent) and Army Separation Cohort samples (4 percent). These differences are all statistically significant ($p < 0.01$).

[TABLE 3 About Here]

These quality patterns carry over to the institutional level. Here, 53 percent of civilians enrolled in a four-year college or university compared with 23 percent of the Army HS Class and 20 percent of the Army Separation Cohort. The institutional selectivity statistics tell a similar story. Civilians are much more likely to enroll in moderately and highly selective institutions than either sample of Army soldiers. Specifically, 23 percent of civilians enrolled at moderately selective institutions, a rate two to three times higher than the Army HS Class (9 percent) and the Army Separation Cohort (7 percent). The enrollment statistics at highly selective institutions is even starker, with 19% of civilians enrolling, compared to 2% for the Army HS Class and 1% for the Army Separation Cohort. These differences are also statistically significant ($p < 0.01$).

Degree attainment (Table 4)

41 percent of civilians earned a bachelor's degree compared with 2 percent of the Army HS Class and 11 percent of the Army Separation Cohort. A similar pattern emerges when considering the outcome of earning either a bachelor's or associate's degree; with civilians being roughly three times as likely to have earned a degree compared to the Army Separation Cohort, and nearly eight times as likely to have earned a degree compared to the Army HS Class. While coverage rates in the NSC suggest that the Army service member or Veteran attainment rates may be slightly underestimated, these statistics provide another reminder of the importance of analyzing the full samples of individuals who may attend post-secondary education. Even if service members currently enrolled are succeeding, such analyses fail to reveal the large effects of non-enrollment on educational attainment. Both of these sets of differences are statistically significant ($p < 0.01$).

[TABLE 4 About Here]

Variation in college participation and attainment by race/ethnicity (Table 5)

For both the civilian and Army samples, there were fairly small gaps between racial/ethnic groups in the share of individuals who enrolled within eight years of graduation (or separation). Among civilians, 80 percent of white students enrolled within eight years of high school graduation compared with 78 percent of black students and 76 percent of students. Among the Army HS Class, levels of enrollment are lower but the gaps are relatively similar: 67 percent of white students enrolled within eight years of high school graduation compared with 72 percent of black students and 68 percent of students. Similar patterns hold for the Army Separation sample. For all race/ethnicity categories, Army members are less likely to enroll than their civilian peers, and these differences are statistically significant ($p < 0.01$ for White, Black and Hispanic groups, $p < 0.05$ for individuals in the “Other” race/ethnicity category). Comparing across race/ethnicity groups within each sample, our results suggest that minorities separating from the Army are more likely to enroll in post-secondary education than their white peers, which is the opposite from the Civilian sample.

[TABLE 5 About Here]

In terms of degree attainment, similar patterns hold. For each race and ethnicity category, individuals in the Army samples are less likely to obtain a degree than individuals in the analogous civilian subgroup. Degree attainment gaps by race/ethnicity are more pronounced for the civilian sample but remain relatively narrow for the Army samples. Among civilians, 44 percent of white students earned a bachelor’s degree within our period of observation compared with 32 percent of black students and 29 percent of students. While degree attainment levels are much lower for the Army samples, the gaps between racial/ethnic groups are also substantially smaller. Among the Army HS Class, 2.2 percent of white students earned a bachelor’s degree within our period of observation compared with 1.9 percent of black students and 1.5 percent of Hispanic students. The levels of degree attainment are higher for the Army Separation sample (approximately 10-11 percent) but gaps are similarly small by race/ethnicity. Similar patterns hold for any degree attainment. Note that the higher levels of minority enrollment in the Army samples observed above does not translate to higher graduation rates. In other words, while minorities in the Army enroll at higher rates than their white counterparts (opposite from the Civilian sample), they do not earn a degree at higher rates (same as the Civilian sample).

Variation in institutional characteristics by race/ethnicity (Table 6)

Minority populations are overall more likely to enroll at for-profit institutions. For example, 5.2 percent of black civilians and 7.5 percent of Hispanic civilians enroll at for-profit colleges, compared to 3.9 percent of white civilians. The black-white gap in for-profit enrollment appears larger for service members or Veterans compared to civilians, although the Hispanic-white gap is smaller. White civilians are also roughly twice as likely to enroll at a highly selective college compared to Black/Hispanic civilians -- a similar ratio is also observed in both Army samples.

Members of the Army samples differ in important ways from their Civilian counterparts. The general patterns are that Army sample members attend all types of schools at lower rates, whether we measure quality by sector, level, or selectivity. These differences are always statistically significant for Whites ($p < 0.01$), nearly always for H, and often for Army members in the Black/Other race/ethnicity groups.

Variation in college participation and attainment by income (Table 7)

Gaps in college participation by estimated income are relatively similar between the civilian and Army samples. As one would expect, individuals who resided in high income zip codes enroll and graduate from college at higher rates; this holds for both civilians and service members. For instance, among civilians, 76 percent of civilians residing in a zip code in the lowest income decile enrolled in college within eight years compared with 85 percent of civilians residing in a zip code in the highest income decile. For the Army HS Class the enrollment levels for the lowest and highest income zip codes are 66 percent and 75 percent, respectively. Similar patterns hold for the Army Separation Cohort, though overall enrollment levels are lower. Across all income deciles, members of both Army samples enroll in and obtain degrees at lower rates that are statistically different ($p < 0.01$).

[TABLE 7 About Here]

Gaps by estimated income are much more pronounced for bachelor's degree attainment. Among civilians, 29 percent of civilians residing in a zip code in the lowest income decile graduated from college within eight years compared with 58 percent of civilians residing in a zip code in the highest income decile. For the Army HS Class the attainment levels are so low (2-3 percent) that gaps by income are less apparent, though still appear meaningful in relative terms (e.g., rates are twice as high at 3.4 percent for the graduation sample from decile 10 compared to 1.7 percent from decile 1). For the Army Separation sample, nine percent of service members residing in a zip code in the lowest income decile graduated from college

within eight years compared with 15 percent of service members residing in a zip code in the highest income decile. Similar patterns exist when considering any degree attainment as the outcome of interest.

Variation in institutional type, by income (Table 8)

There are pronounced differences in institutional type by income in the civilian sample, with civilians from the highest income zip codes being three times more likely to attend private (non-profit) institutions; roughly 67 percent more likely to attend four-year institutions; and nearly five times more likely to attend highly selective institutions, compared to civilians from the lowest income zip codes. While these directional patterns also hold in the Army samples, the magnitude of the differences between the top and bottom deciles are significantly smaller, particularly when it comes to the private and four-year institution comparisons.

Variation in college participation and attainment by density of higher education options (Table 9)

Prior research has found that individuals living in areas of the country with fewer proximate higher education options enroll and graduate from college at lower rates. We find similar patterns for the civilian sample we investigate in this report. Seventy-seven percent of civilians residing in education deserts enrolled in college within eight years and 36 percent earned a bachelor's degree within the period of our observation. This compares to 80 percent enrollment and 43 percent bachelor's degree attainment for civilians that do not reside in education deserts.

[TABLE 9 About Here]

The enrollment and degree completion gaps by education desert are similar in the Army samples compared to the gaps that exist in the civilian sample. Sixty-eight percent of the Army HS Class who resided in education deserts enrolled in college within eight years and 2 percent earned a bachelor's degree within the period of our observation. This compares to 65 percent enrollment and 2 percent bachelor's degree attainment for service members that do not reside in education deserts. In addition, the education gaps between Civilians and members of both Army samples are very similar in desert vs. non-desert areas for our enrollment and attainment outcomes. One potential explanation is that military service enables individuals to be more mobile (e.g., willing to move, confident about moving to a new area) and so the desert vs. non-desert distinction is not meaningful for this group.

Variation in institutional type by density of higher education options (Table 10)

Similar to the patterns by race and income, civilians in non-education deserts are more likely to attend private, four-year, and highly-selective institutions compared to civilians in education deserts. These directional patterns hold for the Army samples, although the gaps are much smaller in magnitude.

Variation in college participation and attainment by aptitude scores (Table 11)

As expected, enrollment and degree attainment rates are much higher for civilians/service-members with higher aptitude scores, compared to those with lower aptitude scores. The high-low aptitude gaps for enrollment are very similar between civilians/service-members (30-45 percent higher enrollment rates for highest achieving individuals, compared to lowest achieving). The high-low aptitude gaps for BA degree attainment are highest for Army HS Class (nearly ten-fold), followed by Army Separation Cohort (five-fold) and civilians (four-fold). The same pattern of results appears for any degree attainment, although gaps are smaller. High achieving individuals across samples are much more likely to attend private, four-year, highly-selective institutions (Table 12).

Conclusion

This study provides new evidence on the post-secondary educational outcomes of recent Army service members or Veterans. This evidence complements and extends existing research in two important ways. First, it deepens our understanding of service members' educational outcomes by providing comparative evidence to a civilian sample. This enables practitioners, advocates, policy-makers and researchers to better understand how Army personnel or Veterans are faring. For example, knowing that 25% (see Table 2) of service members enroll in post-secondary education within one year of leaving the military might lead some to conclude that current efforts are sufficient. However, without a comparison group it is difficult to know whether there is room for growth. This analysis documents that for a reasonable comparison group of civilians, nearly 77% enroll within one year, suggesting that additional effort could increase Army personnel or Veteran enrollment further.

Second, our research broadens our understanding of the educational attainment of service members or Veterans by including all personnel and not only those who have already enrolled in college or chosen to use their benefits. This perspective highlights that considerable gaps remain in the educational enrollment and graduation rates of service members or Veterans. The Million Records Project and NVEST studies described above document encouraging achievements for Army personnel or Veterans once they are enrolled in schools, but our analysis highlights that large and persistent gaps in enrollment rates drive similar gaps in eventual degree attainment rates.

More generally, the study demonstrates the utility of merging administrative data sources (e.g., personnel data and National Student Clearinghouse Data) for policy and program analysis, the role of government analytic organizations to obtain and combine these types of administrative data with other publicly-available data (e.g., surveys, census data), the value of research partnerships between government organizations and leading academic researchers, and the role of descriptive studies in motivating follow-on pilot programs and potentially, randomized controlled trials to develop more effective policies and programs. As such, this project demonstrates one example of many ongoing efforts to pursue evidence-based policies and programs within the personnel realm of the U.S. Army.

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Table 1: Summary Statistics

	Army H.S. Class of 2004	Army Separation in 2004	Civilian
<i>Sample size</i>	36,266	52,407	10,550
<i>Race/Ethnicity</i>			
White	69.2%	60.1%	61.6%
Black	14.7%	25.3%	8.0%
Hispanic	11.3%	9.8%	9.6%
Other	4.8%	4.8%	20.9%
<i>PISA or AFQT decile</i>			
4	16.4%	20.3%	12.8%
5	14.2%	17.8%	14.6%
6	19.9%	21.5%	12.3%
7	15.6%	14.4%	13.7%
8	15.0%	12.0%	14.1%
9	11.5%	9.2%	14.3%
10	7.4%	4.8%	15.9%
<i>Zip code Income Decile</i>			
1	7.1%	10.7%	5.1%
2	10.3%	12.0%	5.2%
3	11.9%	12.6%	7.3%
4	12.3%	12.2%	10.0%
5	11.5%	11.5%	9.4%
6	11.4%	10.6%	9.1%
7	11.3%	10.0%	10.8%
8	9.7%	8.5%	10.2%
9	8.8%	7.3%	12.0%
10	5.7%	4.6%	11.8%
<i>Education Desert</i>			
No	91.9%	91.9%	83.5%
Yes	8.1%	8.1%	16.5%
<i>Merges with...</i>			
Zip code	96.1%	85.1%	90.8%
County	96.1%	68.2%	97.7%

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions.

Table 2. Post-Secondary Enrollment Timing

Sample	Enrollment within:				N
	1 Year	3 Years	5 Years	8 Years	
Army H.S. Class of 2004	25.4%***	38.9%***	51.1%***	67.8%***	36,266
Army Separation in 2004	24.9%***	37.7%***	45.8%***	55.6%***	52,407
Civilian	70.6%	75.5%	76.9%	79.2%	10,550

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions. We compare the mean rates between each Army sample and the Civilian sample in each column using t-tests that assume unequal variances. ***, **, and * reflect statistically significant differences in the means at $p=0.01$, $p=0.05$, and $p=0.01$ respectively.

Table 3. Post-Secondary Enrollment Institution Types

Sample	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
Army H.S. Class of 2004	54.9%***	4.9%***	2.6%***	23.1%***	39.2%***	0.02%***	4.4%***	9.1%***	2.0%***	36,266
Army Separation in 2004	40.8%***	4.0%***	3.9%***	19.8%***	28.9%***	0.03%***	3.7%***	7.1%***	1.2%***	52,407
Civilian	58.9%	16.1%	4.4%	53.2%	24.6%	1.70%	6.6%	22.8%	18.5%	10,550

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions. We compare the mean rates between each Army sample and the Civilian sample in each column using t-tests that assume unequal variances. ***, **, and * reflect statistically significant differences in the means at $p=0.01$, $p=0.05$, and $p=0.01$ respectively.

Table 4. Post-Secondary Attainment Rates

Sample	Degree Type:		N
	Bachelor	Any Degree	
Army H.S. Class of 2004	2.1%***	6.2%***	36,266
Army Separation in 2004	11.0%***	18.1%***	52,407
Civilian	41.4%	48.8%	10,550

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions. We compare the mean rates between each Army sample and the Civilian sample in each column using t-tests that assume unequal variances. ***, **, and * reflect statistically significant differences in the means at $p=0.01$, $p=0.05$, and $p=0.01$ respectively.

Table 5: Post-Secondary Educational Outcomes by Race/Ethnicity

Sample	Enrollment within 8 Years				Earned Bachelors within 8 Years				Earned any Degree within 8 years			
	White	Black	Hispanic	Other	White	Black	Hispanic	Other	White	Black	Hispanic	Other
Army H.S. Class of '04	66.7%***	71.9%***	68.5%***	69.7%**	2.2%****	1.9%***	1.5%***	2.9%***	6.4%****	4.7%***	6.1%***	7.6%***
Army Separation in '04	53.3%***	60.2%***	56.9%***	58.0%***	11.3%****	10.1%***	11.2%***	12.7%***	18.4%****	17.0%***	18.3%***	20.4%***
Civilian	80.3%	77.5%	75.9%	76.1%	44.3%	32.0%	28.5%	43.2%	51.9%	38.3%	36.3%	49.8%

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions. Sample sizes: White: 31,519, 6,050; Black: 5,335, 13,237, 840; Hispanic: 4,108, 5,151, 1,010; Other: 1,723, 2,500, 220. We compare the mean rates between each Army sample and the Civilian sample. Significant differences in the means at $p=0.01$, $p=0.05$, and $p=0.01$ respectively.

Table 6: Post-secondary institution type, by race

Panel A: Army H.S. Class of 2004										
	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
White	54.5%***	4.9%***	2.2%***	22.8%***	38.8%***	0.02%***	3.5%***	10.0%***	2.3%***	25,080
Black	55.6%	5.8%***	4.3%	27.4%***	38.2%***	0.00%***	9.0%***	7.9%***	1.4%***	5,335
Hispanic	54.2%	4.5%***	3.2%***	20.7%***	41.1%***	0.00%***	5.0%	5.5%***	1.0%***	4,108
Other	60.3%	3.0%	1.7%	20.4%***	44.6%***	0.00%***	2.2%***	8.3%***	2.1%***	1,743
Panel B: Army Separation in 2004										
	By Sector:			By Sector:			By Sector:			N
	Public	Private	For-Profit	Public	Private	For-Profit	Public	Private	For-Profit	
White	40.2%***	3.6%***	3.3%**	19.4%***	27.7%***	0.00%***	3.1%***	8.0%***	1.5%***	31,519
Black	40.9%	4.8%***	5.6%	21.2%	30.1%***	0.00%***	5.0%***	5.8%***	0.6%***	13,237
Hispanic	42.5%	3.8%***	3.5%***	18.0%	31.8%**	0.10%***	4.3%**	4.8%***	0.4%***	5,151
Other	60.3%	3.0%	1.7%	60.3%	3.0%	0.00%***	3.0%***	7.0%***	1.4%***	2,500
Panel C: Civilian										
	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
White	59.1%	17.5%	3.9%	55.3%	23.9%	1.4%	5.2%	24.8%	20.5%	6,500
Black	58.4%	13.9%	5.2%	53.4%	21.0%	3.1%	18.0%	21.0%	9.2%	840
Hispanic	59.5%	9.4%	7.5%	37.8%	35.7%	3.1%	6.0%	14.4%	9.2%	1,010
Other	57.7%	14.8%	3.8%	54.5%	20.2%	1.7%	7.3%	19.3%	23.1%	2,200

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions. We compare the mean rates between each Army sample and the Civilian sample in each column using t-tests that assume unequal variances. ***, **, and * reflect statistically significant differences in the means at $p=0.01$, $p=0.05$, and $p=0.01$ respectively.

Table 7. Post-Secondary Educational Outcomes by Income Percentiles

Panel A: Enrollment within 8 years										
	Income Decile									
Sample	1	2	3	4	5	6	7	8	9	10
Army H.S. Class of 2004	66.2%***	64.1%***	65.5%***	67.0%***	65.8%***	66.7%***	69.5%***	71.5%***	72.3%***	74.8%***
Army Separation in 2004	55.3%***	56.4%***	55.2%***	56.1%***	56.6%***	58.3%***	57.1%***	60.3%***	58.6%***	60.0%***
Civilian	75.8%	73.1%	73.0%	75.6%	77.4%	80.1%	80.7%	78.5%	83.7%	85.3%
Panel B: Bachelor degree within 8 years										
	Income Decile									
Sample	1	2	3	4	5	6	7	8	9	10
Army H.S. Class of 2004	1.7%***	1.4%***	1.4%***	2.1%***	1.6%***	2.2%***	2.4%***	2.5%***	2.9%***	3.4%***
Army Separation in 2004	9.4%***	9.2%***	10.2%***	10.1%***	10.7%***	11.9%***	12.5%***	12.3%***	13.0%***	15.4%***
Civilian	29.0%	31.1%	32.9%	34.0%	34.4%	40.6%	44.1%	44.2%	48.4%	58.1%
Panel C: Any degree within 8 years										
	Income Decile									
Sample	1	2	3	4	5	6	7	8	9	10
Army H.S. Class of 2004	4.7%***	4.7%***	5.1%***	5.9%***	5.7%***	6.3%***	7.1%***	7.4%***	8.2%***	8.1%***
Army Separation in 2004	16.1%***	16.3%***	17.0%***	17.4%***	18.1%***	19.4%***	19.5%***	20.7%***	21.0%***	22.2%***
Civilian	35.6%	38.3%	39.0%	42.4%	44.6%	47.4%	51.8%	52.0%	55.1%	63.7%
N	1	2	3	4	5	6	7	8	9	10
Army H.S. Class of 2004	2,473	3,587	4,154	4,280	4,004	3,984	3,920	3,380	3,067	1,989
Army Separation in 2004	4,811	5,400	5,693	5,490	5,189	4,756	4,504	3,833	3,276	2,082
Civilian	540	550	770	1,060	990	960	1,140	1,080	1,270	1,240

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions. We compare the mean rates between each Army sample and the Civilian sample in each column using t-tests that assume unequal variances. ***, **, and * reflect statistically significant differences in the means at $p=0.01$, $p=0.05$, and $p=0.01$ respectively.

Table 8: Post-secondary institution type by ZIP code median income decile

Panel A: Army H.S. Class of 2004										
	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
1	50.3%	4.9%	4.4%	23.6%	36.0%	0.00%	7.1%	6.6%	1.5%	2,473
2	50.8%	4.1%	3.0%	21.2%	36.5%	0.10%	5.2%	7.8%	1.3%	3,587
3	52.1%	5.0%	2.7%	22.7%	37.1%	0.00%	4.6%	9.0%	1.6%	4,154
4	53.7%	5.0%	2.9%	24.2%	37.4%	0.00%	5.3%	9.7%	1.8%	4,280
5	52.8%	4.8%	2.3%	22.2%	37.7%	0.00%	4.3%	8.5%	1.9%	4,004
6	54.8%	4.4%	2.3%	22.4%	39.0%	0.00%	3.9%	9.6%	1.4%	3,984
7	57.4%	4.2%	2.7%	23.6%	40.6%	0.00%	3.9%	9.5%	2.1%	3,920
8	58.8%	5.2%	2.5%	22.8%	43.7%	0.00%	3.5%	9.6%	2.4%	3,380
9	60.4%	5.0%	1.8%	21.9%	45.3%	0.00%	2.6%	8.7%	2.8%	3,067
10	62.3%	6.9%	1.4%	27.0%	43.6%	0.00%	3.6%	12.0%	4.6%	1,989

Panel B: Army Separation in 2004										
	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
1	38.6%	4.3%	3.9%	18.9%	27.9%	0.00%	5.1%	5.7%	0.7%	4,811
2	40.9%	3.6%	4.6%	19.8%	29.4%	0.00%	4.2%	6.6%	0.5%	5,400
3	41.2%	3.5%	3.7%	19.4%	28.9%	0.10%	3.7%	7.0%	1.2%	5,693
4	42.1%	3.2%	4.2%	20.1%	29.3%	0.10%	3.8%	7.2%	1.0%	5,490
5	42.1%	3.4%	4.2%	19.8%	29.9%	0.00%	3.8%	7.4%	1.2%	5,189
6	44.0%	3.5%	4.0%	20.2%	31.2%	0.10%	3.2%	7.2%	1.6%	4,756
7	44.0%	3.2%	3.5%	19.7%	31.0%	0.00%	3.5%	7.8%	1.7%	4,504
8	46.2%	4.0%	3.6%	20.5%	33.3%	0.00%	3.6%	7.6%	1.4%	3,833
9	44.7%	3.6%	3.4%	19.3%	32.3%	0.00%	3.0%	7.1%	1.8%	3,276
10	45.3%	4.6%	3.9%	20.0%	33.8%	0.00%	2.8%	7.9%	2.5%	2,082

Panel C: Civilian	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
1	62.3%	9.2%	5.3%	40.8%	34.0%	1.9%	8.9%	18.1%	7.6%	540
2	59.3%	9.9%	4.5%	42.9%	28.6%	2.1%	11.0%	15.5%	9.6%	550
3	54.9%	12.5%	5.4%	43.7%	27.4%	1.9%	6.3%	21.7%	10.1%	770
4	58.2%	12.2%	5.0%	45.8%	27.8%	1.9%	8.4%	19.1%	12.8%	1,060
5	58.0%	13.4%	6.0%	47.2%	28.6%	1.9%	8.7%	22.9%	10.3%	990
6	62.1%	14.2%	4.0%	54.5%	24.2%	2.2%	7.2%	23.3%	19.2%	960
7	62.0%	15.4%	3.8%	55.0%	24.7%	1.6%	6.1%	28.2%	14.8%	1,140
8	56.3%	17.7%	4.1%	54.5%	22.0%	1.8%	4.9%	23.8%	21.4%	1,080
9	60.1%	20.2%	3.5%	61.9%	20.5%	1.6%	4.8%	23.6%	29.0%	1,270
10	56.1%	27.1%	2.4%	68.2%	16.8%	0.7%	4.5%	24.0%	35.7%	1,240

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions.

Table 9. Post-Secondary Educational Outcomes by Education Deserts

Sample	Enrollment		Bachelor Degree		Any Degree		N	
	Desert	Non-Desert	Desert	Non-Desert	Desert	Non-Desert	Desert	Non-Desert
Army H.S. Class of 2004	64.6%***	68.4%***	1.7%***	2.1%***	5.6%***	6.3%***	2,823	32,019
Army Separation in 2004	54.9%***	57.8%***	9.9%***	10.9%***	17.4%***	18.1%***	2,956	33,392
Civilian	77.2%	79.7%	36.3%	42.6%	44.9%	49.8%	1,740	8,810

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions. We compare the mean rates between each Army sample and the Civilian sample in each column using t-tests that assume unequal variances. ***, **, and * reflect statistically significant differences in the means at $p=0.01$, $p=0.05$, and $p=0.01$ respectively.

Table 10: Post-secondary institution type, by education desert

Panel A: Army H.S. Class of 2004										
Education Desert?	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
Yes	52.4%	4.1%	2.2%	19.3%	39.4%	0.0%	4.3%	8.0%	1.7%	2,823
No	55.4%	4.9%	2.7%	23.2%	39.7%	0.0%	4.4%	9.2%	2.1%	32,019
Panel B: Army Separation in 2004										
Education Desert?	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
Yes	42.4%	3.0%	3.0%	16.8%	31.7%	0.0%	3.4%	7.2%	1.3%	2,956
No	43.9%	3.2%	3.9%	19.6%	31.4%	0.0%	3.7%	7.1%	1.3%	33,392
Panel C: Civilian										
Education Desert?	By Sector:			By Level:			By Selectivity:			N
	Public	Private	For-Profit	Four Year	Two Year	Sub Two	Inclusive	Moderate	Highly	
Yes	62.3%	10.9%	4.4%	44.8%	31.2%	1.5%	4.7%	22.1%	14.1%	1,740
No	58.2%	17.3%	4.4%	55.2%	23.0%	1.8%	7.1%	23.0%	19.5%	8,810

Note. Department of Defense (DOD), Educational Longitudinal Study (ELS), and National Student Clearinghouse (NSC) data. See text for sample definitions.

