# Post-9/11 GI Bill-Eligible Enlisted Veterans' Enrollment and Outcomes at Public Flagship Institutions, With a Focus on The Great Lakes Region


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# Introduction

**Never before has there been an assessment of the outcomes associated with the critical federal investment in the Post-9/11 GI Bill (PGIB) for American veterans.** Thanks to an historic interagency effort to merge previously siloed federal data, we were able to examine how recent military service members from all branches are using their PGIB benefits, along with their outcomes and earnings. This analysis was possible due to unprecedented access to federal data and interagency cooperation. The need for federal agencies to share data about veterans and the PGIB was singled out over the past decade by the bipartisan Congressional Commission on Evidence-Based Policymaking, by the Senate Committee on Health, Education, Labor and Pensions, and by a White House executive order.[1]

This report is about the relationship between attending public flagship universities and degree completion and earnings. It was made possible through Arnold Ventures' overall investment in this larger PGIB research project (examining PGIB-eligible enlisted veterans' use of PGIB, completion of degrees using PGIB, and labor market outcomes after using PGIB), plus support from The Joyce Foundation to investigate enrollment in flagship universities nationally and specifically in the Great Lakes Region. In this report, we drew on this unique dataset to examine enlisted veterans' enrollment and outcomes at public flagship universities.

## Why Study PGIB Outcomes?

The Post-9/11 Veterans' Educational Assistance Act of 2008 (also known as the Post-9/11 GI Bill, or PGIB) substantially increased the education benefit available to military service members who served after September 10, 2001. PGIB was enacted on June 30, 2008 (PL 110-252) and became effective on August 1, 2009. PGIB-eligible veterans[2] can receive benefits that fully cover their tuition and fees at any public college or university (or a capped amount[3] that can be spent at a private college), a monthly housing allowance calculated based on local cost of living, and a books and supplies stipend (Congressional Research Service, 2021a).[4]

It is important to understand PGIB outcomes for multiple reasons. First, the U.S. Congress has shown substantial interest in veterans and appropriated $14.95 billion in Fiscal Year (FY) 2022 to the U.S. Department of Veterans' Affairs (VA) for readjustment benefits, which includes education benefits. Second, while military service members are eligible for various education benefits both during and after their service,[5] PGIB is the largest education program. Specifically, PGIB has represented more than 70% of total GI Bill participation and more than 80% of spending each year since FY 2013.[6] A Congressional Research Service report (2021a) disclosed that PGIB obligations between 2009 and 2020 amounted to $108 billion. The report also estimated that, in FY 2022 alone, PGIB would benefit more than 600,000 individuals and expend almost $10

[1] For more information, see Commission on Evidence-Based Policymaking (2017), U.S. Senate Committee on Health, Education, Labor and Pensions (2014), and Exec. Order No. 13607 (2012).

[2] Generally, veterans and service members who serve an aggregate minimum of 90 days on active duty after September 10, 2001, and continue serving or are discharged honorably are considered eligible. In addition, individuals awarded the Purple Heart for service after September 10, 2001, and individuals who have been discharged or released for a service-connected disability, after serving a minimum of 30 continuous days on active duty after September 10, 2001, can be eligible. For current eligibility details, consult this VA website: https://www.va.gov/education/about-gi-bill-benefits/post-9-11. PGIB benefits may also be transferred to a spouse or dependent. For current details, refer to this VA website: https://www.va.gov/education/transfer-post-9-11-gi-bill-benefits.

[3] For August 1, 2022, through July 31, 2023, the capped amount that could be used to attend a private institution was $26,381.37 per year (U.S. Department of Veterans Affairs, 2022).

[4] The dollar amount of the benefits PGIB recipients can receive is regularly updated. VA information for 2022 can be found here: https://benefits.va.gov/GIBILL/resources/benefits_resources/rates/ch33/ch33rates080122.asp.

[5] See Congressional Research Service (2021b) for descriptions of these VA programs.

[6] See Congressional Research Service (2021a). Among veterans who are PGIB eligible, use of 1984 Montgomery GI Bill (MGIB) over PGIB benefits is very low. Our analysis of PGIB-eligible enlisted veterans who separated as of June 30, 2018, indicated that less than 1% (0.3%) used MGIB but not PGIB benefits. That percentage was even lower (less than 0.1%) among those who first enlisted between 2009 and 2018, when PGIB was in effect.

billion. Third, understanding PGIB outcomes is important due to their relevance for other questions in post-secondary education research and policy. Because of the large number of PGIB participants and the comprehensive financial support PGIB provides, data on the outcomes of PGIB veterans are potentially relevant to broader policy discussions regarding college access and tuition-free college, and the labor market value of credentials at different types of institutions. However, despite PGIB's size and significance, little research has been conducted on the program and its beneficiaries, and no other study has incorporated veterans across all branches, as we do here.[7]

To understand PGIB outcomes, the U.S. Census Bureau agreed to host an interagency data-sharing effort to combine previously siloed data from multiple agencies to enable the first-ever look at combined federal administrative data regarding veterans' postsecondary outcomes across all branches of the U.S. military.[8] Support from Arnold Ventures enabled a team of researchers from the American Institutes for Research, a nonpartisan, nonprofit research organization, to join the Census Bureau as Special-Sworn-Status employees for the purposes of this project. This support also enabled the critical purchase of student records from the National Student Clearinghouse (Clearinghouse), a nonprofit organization that provides data on enrollment and degree completion for students nationwide.[9] The nonprofit organization Veterans Education Success helped to conceptualize the project and provide assistance.

This work would not have been possible without the cooperation of multiple agencies. This project combined individual-level data from VA, the Veterans Benefits Administration (VBA) at VA, Defense Manpower Data Center (DMDC) at the U.S. Department of Defense, Internal Revenue Service (IRS), and U.S. Census Bureau, as well as postsecondary institution-level data from the U.S. Department of Education. Over seven years, representatives of these agencies worked to establish the data-sharing processes and agreements needed to merge these disparate data. The benefits of combining these data are numerous, allowing the project, for example, to examine veterans' earnings (using IRS data) by PGIB use and degrees completed (using VA, VBA, and Clearinghouse data), while simultaneously accounting for veterans' military occupations, service in hostile war zones, and academic preparation at enlistment (using DMDC data).

[7] One National Bureau of Economic Research paper released on PGIB had access only to Army data and looked only at cohorts who left between 2002 and 2010 (Barr et al., 2021). Kofoed (2020) was able to look at a slightly more recent range of cohorts (2008 to 2016) using Army data and found many results consistent with those reported in our previous report (Radford et al., 2024) (e.g., female veterans are more likely to use PGIB benefits). In contrast to these earlier studies, our data allow us to examine outcomes for all branches of the military and follow veterans who left the service though 2018, thereby providing a look at the outcomes for those separating after the recovery of the Great Recession.

[8] As stated here, https://www.census.gov/about/what/evidence-act/working-papers.html, "The Census Bureau seeks to be the federal leader in the collection and secure provisioning of data for evidence building and evaluation. This research is consistent with the vision and mission of the Census Bureau, the provisions of the Foundations of Evidence-Based Policymaking Act of 2018, and in support of the Presidential Memorandum on Restoring Trust in Government Through Scientific Integrity and Evidence-Based Policymaking."

[9] More specifically, the Clearinghouse's student records include more than 3,600 participating public and private colleges and universities, which enroll 98% of students in the United States. For more information, see https://www.studentclearinghouse.org/educational-organizations/studenttracker-for-educational-organizations.

## Why Focus on Flagships?

Public flagship universities (also referred to as flagship universities or flagships throughout this report) are the top public colleges in their states, with relatively selective student admissions criteria for public institutions. They are well-resourced and are leaders in terms of their research output.[10] Yet studies indicate that flagships are not affordable for many students (Mugglestone et al., 2019) and that the student composition of flagships often does not represent the college-aged population of the state (Eckerson & Voight, 2018). However, while flagships may be accessible and affordable to only a small slice of a state's college-goers, they offer rigorous, high-quality education (Marshall, 2019; Mugglestone et al., 2019). Students who attend these institutions are more likely to complete a bachelor's degree: based on public data, 6-year completion rates of flagship universities were 72% on average, compared to 45% for other four-year institutions.[11] Some research has also found that graduates of flagship universities earn more than graduates of other four-year institutions (Hoekstra, 2009).

This report explores how the use of PGIB at flagship universities relates to veterans' outcomes. The report first examines the percentage of enlisted veterans who applied PGIB to attend a flagship university. It then investigates how enlisted PGIB veterans' bachelor's degree completion rates and post-bachelor's degree earnings varied between those who used their benefits at flagship vs. non-flagship four-year institutions.[12] The analysis was conducted looking at veterans nationally, as well as specifically for veterans who settled in the Great Lakes Region (defined as including Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin).[13] The report also describes how flagships are defined in Exhibit 1, and provides a complete list of the flagships examined in Appendix A.

In addition, because flagship universities have been criticized for failing to adequately enroll members of underrepresented groups, such as Black and Hispanic students (Robinson & Boyer-Andersen, 2022; Rodriguez, 2018), resulting in student cohorts that do not reflect the demographic distribution of the college students in the flagship's state (Eckerson & Voight, 2018; Lumpkin et al., 2021), we further explore our national results by race and ethnicity. Specifically, we examine enrollment, completion, and earnings outcomes for veterans of different races and ethnicities who used PGIB benefits to investigate how outcomes differ between veterans who first enrolled at flagship universities vs. non-flagship four-year institutions.

A word of caution at the outset: an association between a variable and an outcome (which we can show in this report) differs from causation (which we do not address here). Specifically, while our analyses show relationships between attending a public flagship and education and employment outcomes, our study did not use causal methods and so cannot conclude that using PGIB benefits to attend a flagship caused any of the outcomes found. Exhibit 2 elaborates on the samples analyzed and limitations of the interpretation of our results for this report. Additional information on our methods can be found in Appendix B.

[10] For more on flagships historically and a new vision for them see: https://link.springer.com/book/10.1057/9781137500496.

[11] We used Outcome Measures data from the Integrated Postsecondary Education Data System (IPEDS) to calculate the 6-year bachelor's degree graduation rate for the 50 flagship universities we identified based on our methodology and the more than 2,600 non-flagship institutions that had a sector status of "Public, four-year or above," "Private not-for-profit four-year or above," or "Private for-profit, four-year or above" and did not primarily grant associates degrees, according to their Carnegie Classification 2018 basic code.

[12] These analyses focus on whether veterans earned at least a bachelor's degree after their first separation date. These veterans may have pursued graduate education and earned a graduate degree after their first separation date as well. Veterans who attained a bachelor's degree prior to joining the military or prior to their first separation are not included in these analyses. Non-flagship four-year institutions include four-year private nonprofit, four-year private for-profit, and other four-year public institutions.

[13] As noted above, The Joyce Foundation, which partially funded this work, has a particular interest in the Great Lakes region.

## **Exhibit 1:** Defining Flagship Institutions

Researchers have taken several approaches in analyzing flagships.[14] We reviewed these approaches and adopted the College Board list of flagship universities, which identifies a single flagship for each state (Ma & Pender, 2022), resulting in 50 institutions for our national analysis and six for our Great Lakes Region analysis.

## **Exhibit 2:** Samples Analyzed and Limitations

### Samples Analyzed

This report focuses on enlisted personnel (as opposed to officers) as they represent most military service members. In addition, enlisted personnel, in contrast to officers, predominantly enter the military without a postsecondary degree[15] and are thus more likely to directly use PGIB benefits.[16]

**We examine two subsamples of enlisted veterans in this report.**

1. **PGIB-Clearinghouse Users** are enlisted veterans who were eligible for PGIB[17] and received a PGIB payment according to VBA. They also had an enrollment record in the Clearinghouse data after first activation in the military or August 1, 2009, whichever was later,[18] and before June 30, 2019.[19] Veterans do not have to use their PGIB benefits at an institution that reports to the Clearinghouse,[20] but completion data are not available for PGIB use that occurs outside of the Clearinghouse, and these data were critical to this study's examination of PGIB recipients' postsecondary degree completion and labor market outcomes. Exact details about which institutions are and are not included in Clearinghouse data can be found on a constantly updated coverage descriptor.[21] We found that 84% of all those who used PGIB had a Clearinghouse record, representing the PGIB-Clearinghouse Users examined in this study. For this report, the research team used this sample to examine usage of the PGIB benefits at flagship universities and 2019 earnings of those who completed a bachelor's degree.

[14] Many researchers have applied the College Board's list of flagship universities (e.g., Mugglestone et al., 2019; Rodriguez, 2018) in their studies. This approach limits each state to one flagship, and results in a list of institutions that are generally (but not always) a Research 1 institution based on Carnegie Classifications, the most selective institution in the state, and the institution with the highest student enrollment in their state. Exceptions occur, however: College Board lists Indiana University-Bloomington as Indiana's state flagship, yet Purdue University is more selective in terms of percentage of students admitted. Rizzo & Ehrenberg (2004) follow a different approach that researchers have also applied. Unlike the College Board, their approach allows for more than one flagship per state. The list comprises Research 1 and Research 2 institutions (using the 1994 Carnegie Classification) that are the most selective and largest public institutions in each state. It also factors in institutions with the largest shares of nonresidents or out-of-state students in each state. Rizzo and Ehrenberg's approach results in 90 flagship institutions, with California having eight institutions classified as flagships and Texas and Ohio each having four. We selected College Board's shorter and more commonly used list to define flagship.

[15] On the basis of our calculations using Clearinghouse data, we find that about 5% of PGIB-eligible enlisted veterans had an associate degree, 6% had a bachelor's degree, and 1% had a graduate degree before their military duty.

[16] Officers, on the other hand, must have a bachelor's degree and thus face different considerations in thinking about how best to use their PGIB benefits. Spouses and dependents can also use veterans' PGIB benefits, but complete and vetted data on their use were not yet available from the VBA. We hope to examine the use of PGIB benefits by officers and dependents in the future.

[17] These PGIB-eligible enlisted veterans include veterans identified by VA as eligible for receiving PGIB benefits who were 65 years or younger as of December 31, 2019, had a pay plan of "Enlisted" as their final rank, and separated prior to June 30, 2018. The study team used this separation cutoff date because July 1, 2018, through June 30, 2019 is the last full academic year for which VBA PGIB beneficiary information were available. Using this cutoff gave veterans at least one year to use PGIB benefits after separating from active duty. The study team used this sample to examine flagship versus non-flagship enrollment rates.

[18] This timing was used because veterans would not be eligible to use PGIB benefits before their first activation date and PGIB benefits were not available prior to August 1, 2009.

[19] This date was used because it represents the end of the last full academic year for which we had VBA PGIB payment information.

[20] For example, veterans can use PGIB benefits for apprenticeships and on-the-job training, as well as other training like flight training, emergency medical technician training, and heating, ventilation, and air conditioning repair. Veterans can also use PGIB benefits for licensing and certification examinations and other national tests. See this VA website for current details: https://www.va.gov/education/about-gi-bill-benefits/how-to-use-benefits.

[21] As of 2019, while overall Clearinghouse coverage was 97%, there is a notable coverage gap for two-year for-profit schools at 12% (National Student Clearinghouse Student Research Center, 2023).

2. **PGIB-Clearinghouse Post-Separation Users** are PGIB-Clearinghouse Users who had at least one enrollment record after their first separation date. Although veterans can use PGIB benefits before they separate from the military, using PGIB after separating allows veterans to receive the housing allowance portion of PGIB and to enroll without the pressure of active-duty military service.[22] This group represents 96% of all PGIB-Clearinghouse Users. For this report, the research team used this sample to explore bachelor's degree completion.

[22] At the time of this analysis, the VBA had not yet validated and thus could not provide veterans' specific PGIB payment dates, which would facilitate calculations of when PGIB-Clearinghouse Users' benefit use occurs (i.e., between first activation and first separation or after first separation). While it is possible to use PGIB benefits while serving on active duty, PGIB-eligible veterans have access to other military education programs while serving, such as U.S. Department of Defense tuition assistance programs and Credentialing Opportunities On-Line. PGIB-eligible enlisted veterans may therefore take courses while serving, using other military education programs and saving the full support provided under PGIB (in particular, the housing allowance) when not already receiving housing as part of their military service. Measuring degree completion for PGIB-Clearinghouse Users who first enrolled while on active duty (when veterans would be less likely to attend full time) together with PGIB-Clearinghouse Users who first enrolled after separating (when veterans would be more likely to attend full time) would make it difficult to understand completion rates for veterans making full use of their PGIB benefit. We further found that only 3% of PGIB-Clearinghouse Users in our prior report (Radford et al., 2024) attained a degree between first activation and first separation. For all these reasons, we focus our examination of bachelor's degree completion rates on PGIB-Clearinghouse Post-Separation Users.

## Limitations on the Interpretation of Our Results

This study first presents bivariate descriptive statistics that examine PGIB-eligible enlisted veterans' outcomes (e.g., completion of a bachelor's degree) by PGIB-eligible enlisted veterans' enrollment at a flagship university versus another four-year non-flagship institution. The study also incorporated regression analysis as a further set of descriptive statistics that can account for other variables, such as academic preparation and military experiences. A relationship between the factor of interest (flagship enrollment) and the outcome (e.g., completion of a bachelor's degree) that is consistent in both bivariate descriptive statistics and in regression results suggests that the other factors included in the regression are not explaining the relationship. However, it is still possible that the relationship is the result of another, unincluded factor shaping veterans, such as motivation or preferences for certain careers. The methods used in this analysis are not causal, meaning the results cannot show whether enrollment or degree attainment at a flagship institution caused outcomes.

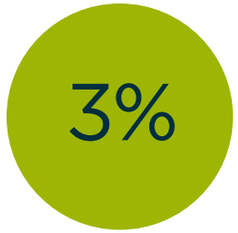
# Results

## What Percentage of Veterans Using Their PGIB Benefits Use Them at Flagship Universities?

The study first examined usage of PGIB benefits at flagship universities. As noted above, PGIB provides full tuition and fee reimbursement at public universities and a capped amount for use at private universities, providing access to a wide selection of institutions from which veterans can choose. The study looked first at enlisted veterans and their flagship enrollment nationally. The study identified over 1.3 million PGIB-eligible enlisted veterans who enrolled in postsecondary education using PGIB benefits (i.e., were PGIB-Clearinghouse Users). Of these PGIB-Clearinghouse Users, 2% first enrolled at a flagship university.

The study then focused on veterans whose state of residence after separation was in the six Great Lakes states of focus and their enrollment within these states.[23] Within these geographic parameters, we identified 99,500 PGIB-Clearinghouse Users, of which around 3% first enrolled at a flagship university in one of these Great Lakes states. In short, **both nationally and in the Great Lakes region, 3% or less of PGIB-eligible enlisted veterans first enrolled at public flagship universities.** For context, analysis of IPEDS enrollment data indicates that 6% of all undergraduate students enrolled at flagship universities in the 2020-21 academic year.[24]


of veterans nationally first enrolled at a **flagship university**




of veterans in the Great Lakes states first enrolled at a **flagship in a Great Lakes state**


of all undergraduate students enrolled at **flagship universities in the 2020-21 academic year**

[23] As noted in the introduction, those states are Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

[24] We used enrollment data from IPEDS to sum the total undergraduate enrollment for the 50 flagship universities we identified based on our methodology and more than 2,600 non-flagship institutions that had a sector status of "Public, four-year or above," "Private not-for-profit four-year or above," or "Private for-profit, four-year or above" and did not have a Carnegie Classification 2018: Basic code indicating that they primarily granted associate's degree.

## What Percentage of Veterans Completed Bachelor's Degrees?

The study found that **veterans who first enrolled at flagship institutions completed a bachelor's degree at a higher rate on average than veterans who first enrolled at other institutions,** but they completed degrees at a slightly lower rate than that of all students who attended flagships. Specifically, when we examined PGIB-Clearinghouse Post-Separation Users who first enrolled at a four-year institution[25] and for whom at least six years since their first enrollment post-separation had passed (to enable them time to complete a degree[26]), we found a completion rate of 60% for those who first enrolled at a flagship institution compared to 45% of those who first enrolled at another four-year institution – a difference of 15 percentage points. This spread is consistent with the better completion rates at flagships for all students. (As noted above, 72% of all students completed a bachelor's degree within six years at flagship universities compared to 45% of students at non-flagship four-year universities, according to IPEDS data.) Thus, the completion rate gap between flagships and non-flagship four-year institutions is consistent for veterans and all students. However, when we looked more closely at students who were financially independent – like veterans – we found that veterans at flagships and non-flagships had better completion rates than their financially independent peers. Specifically, nationally representative U.S. Department of Education data from the 2011/17 Beginning Postsecondary Students Longitudinal Study (BPS:12/17) indicated that, among first-time postsecondary students who began at any four-year institution and were financially independent from their parents,[27] 19% had earned a bachelor's degree as their highest undergraduate degree six years later,[28] a significantly lower completion rate than veterans' 45% and 60% completion rates at non-flagship and flagship four-year colleges, respectively. This suggests that **veterans using PGIB are completing their degrees at much higher rates than financially independent students at large, though at a slightly lower rate than all students who attend flagship institutions.**

[25] Although flagship universities and other four-year institutions can grant associate degrees, four-year colleges confer many more bachelor's degrees, as U.S. Department of Education IPEDS data attest (https://nces.ed.gov/ipeds/TrendGenerator/app/build-table/4/24?rid=5&cid=33). We further filtered out the small number of PGIB-Clearinghouse Post-Separation Users who attained a bachelor's or higher degree prior to their first separation to focus on the veterans who were likely to be seeking a bachelor's degree at these four-year institutions.

[26] Since 1995, the U.S. Department of Education's Beginning Postsecondary Students Longitudinal Study (BPS) has used a 6-year window to examine the attainment of first-time postsecondary students pursuing a range of postsecondary credentials that take different amounts of time to complete. A six-year window gives bachelor's degree students 150% of the normal time needed to complete a four-year degree, an often-used yardstick by the U.S. Department of Education and others in measuring bachelor's degree completion.

[27] Students who are financially independent include those age 24 or over and students under 24 who are married, have dependents, are veterans or on active duty, are orphans or wards of the courts, are homeless or at risk of homelessness, or were determined to be independent by a financial aid officer using professional judgment (Chen et al., 2019).

[28] See Chen et al. (2019).

**In the Great Lakes region, PGIB veterans outperformed their peers in other regions of the country at both non-flagship and flagship institutions.** To be specific, 65% of PGIB Clearinghouse Post-Separation Users who were Great Lakes region residents and first enrolled at flagship institutions in the Great Lakes region completed a bachelor's degree within six years (compared to 60% of veterans at flagships nationally). About 49% of those who first enrolled at another four-year institution in the Great Lakes region completed (compared to 45% of veterans at other four-year institutions nationally).

The descriptive results above do not control for potential differences between veterans who enroll at flagships and those who enroll at non-flagship institutions – differences that may also affect completion rates. To control for these possible differences, the study incorporated variables such as academic preparedness[29], demographic characteristics, and military experiences[30] into the analysis of the relationship between flagship enrollment and completion. **With these other variables accounted for, looking at veterans nationally, those who first enrolled at a flagship university were 9 percentage points more likely than veterans at non-flagship four-year institutions to graduate within 6 years of first enrolling. Similarly, veterans from the six Great Lakes states who first enrolled at a flagship university in one of these states were 8 percentage points more likely to complete a bachelor's degree in 6 years than their counterparts who first enrolled at a non-flagship four-year institution in these states, after controlling for other variables. In short, accounting for academic preparation, demographic characteristics, and other variables, veterans at flagships experienced still better completion rates both nationally and within the Great Lakes region.**

## Completion rates


[29] The Armed Forces Qualification Test (AFQT) measures arithmetic reasoning, mathematical knowledge, paragraph comprehension, and word knowledge of incoming service members, and thus can provide a snapshot of veterans' academic preparedness at the time they enlisted.

[30] See Appendix Table B-1 for a full list of the variables included in these completion regression analyses.

## What Were Veterans' Earnings After Bachelor's Degree Completion?

Finally, the study explored the earnings of PGIB-Clearinghouse Users. Specifically, we looked at the 2019 W-2 wage data of PGIB-Clearinghouse Users whose highest degree earned while PGIB eligible (i.e., not a degree earned prior to first activation) was a bachelor's degree and who were not enrolled in postsecondary education in 2019 (i.e., were not students balancing school with work). We then examined the degree to which earnings varied by whether veterans were awarded this bachelor's degree from a flagship institution or another four-year institution.[31]

**Overall, we found higher earnings for veterans who attended flagships, and a slightly larger difference by flagship status in the Great Lakes region.** Nationally, average W-2 earnings for veterans who received a bachelor's degree from a flagship university were 3% higher than average earnings for veterans who received a bachelor's degree from a non-flagship.[32] This difference held true for veterans who settled in the six Great Lakes states as well: The average W-2 earnings for those who completed a bachelor's degree at a flagship university in one of these states was 6% higher than average earnings for those that completed a bachelor's degree at a non-flagship four-year institution in one of these states.[33]

The study also incorporated potentially relevant variables such as academic preparedness, demographic characteristics, and military experiences[34] into the analysis of the relationship between receiving a bachelor's degree from a flagship institution and post-degree earnings. We found the same relationship between earnings and flagship status. **Controlling for other variables, nationally, we found that veterans who received a bachelor's degree from a flagship university earned 3% more on average than veterans who received a bachelor's degree from a non-flagship four-year institution.** In short, accounting for other variables that could affect earnings, veterans who graduated from flagships nationally experienced higher earnings than their peers who graduated from non-flagship four-year universities. Within the Great Lakes region, the difference was larger. **Controlling for other variables, veterans who settled in one of the six Great Lakes region states and completed a bachelor's degree at a flagship in one of the Great Lakes states earned 10% more on average than their peers who completed a bachelor's degree at a non-flagship four-year institution in one the Great Lakes states.**


**Veterans at flagships nationally had 3% higher earnings than those at non-flagship four-year institutions, after accounting for other variables**


**Veterans at Great Lakes flagships had 10% higher earnings than those at non-flagship four-year institutions, after accounting for other variables**

[31] Note that in this analysis flagship status is based on the institution that conferred the bachelor's degree, whereas in our bachelor's degree completion analysis above, flagship status is based on the institution at which veterans first enrolled post-separation.

[32] To provide some context, in our previous report (Radford et al., 2024), we found that PGIB-Clearinghouse Users who attained a bachelor's degree earned $55, 680 on average (this degree could have been earned from a four-year institution or a predominantly two-year institution that offers some bachelor's degree). This average is slightly lower than what we found looking at PGIB Clearinghouse Users who earned a bachelor's degree from a four-year institution.

[33] When we examined 2019 American Community Survey data on the U.S. population calibrated to have the same age and sex distribution as our PGIB-eligible enlisted veteran population, we found that the average earnings for those who held a bachelor's degree was $74,700. As we note in our previous report, wages may be lower for PGIB-Clearinghouse Users, particularly those who complete a bachelor's degree, because they had a job (with the U.S. military) before completing their degree and thus may have had less time working in the labor market with their degree in their possession. See Radford et al. (2024).

[34] See Appendix Table B-1 for a full list of the variables included in these completion regression analyses.

## Outcome Differences by Race/Ethnicity and Flagship Status

Flagship universities have recently been criticized for inadequately serving state residents who are members of underrepresented groups (Lumpkin et al., 2021; Robinson & Boyer-Andersen, 2022; Rodriguez, 2018). In addition, while many flagships have increased completion rates for Black students, for example, sizable gaps in completion rates still exist between White and Black students at these universities (*The Persisting Racial Gap in College Graduation Rates at Flagship State Universities*, 2020). It is thus worthwhile to investigate whether enrollment and completion vary by flagship status in the same way for veterans who belong to different race/ethnicity groups, and whether earnings following a bachelor's degree differ for students in different race/ethnicity groups depending on their enrollment at a flagship versus non-flagship institution.[35] Note that the analyses below do not examine overall differences by race/ethnicity, which can be found in our previous report (Radford et al., 2024). Rather the analyses below examine whether differences in enrollment, completion, and earnings between veterans who enroll at flagships versus non-flagships are consistent across race/ethnicity groups.

### Enrollment

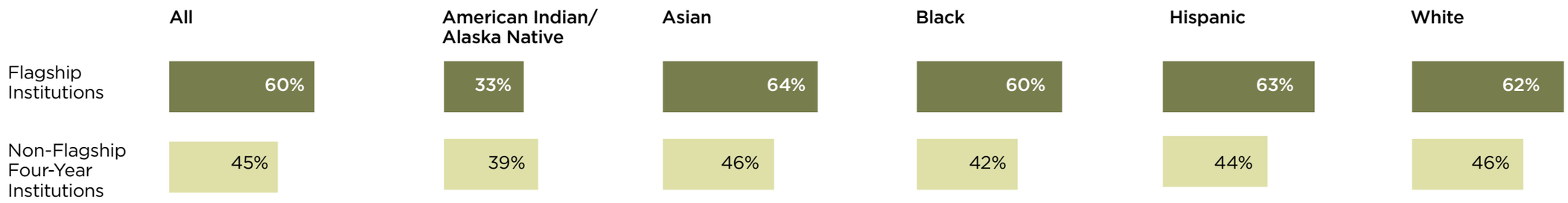
As noted above, around **2% of all PGIB-Clearinghouse Users first enrolled at one of the 50 flagship institutions in the United States. Comparatively, less than 1% of Black PGIB-Clearinghouse Users first enrolled at flagship institutions, and 1% of Hispanic veterans first enrolled at these institutions.** The percentage of White (3%), Asian (2%), and American Indian/Alaska Native students (4%) who first enrolled at flagship institutions was at or above the average of 2%.

### Completion

Next, we looked at how completion of a bachelor's degree within six years of first enrollment post-separation varied by race/ethnicity for veterans who first enrolled at a flagship versus a non-flagship institution. As in the overall analyses, where we found a 15-percentage-point higher completion rate of bachelor's degrees for veterans at flagship universities, we found **completion rates were higher at flagships than non-flagships for nearly all race/ethnicity groups.** However, the figure on the next page highlights that the difference in completion rates by flagship status varied among racial and ethnic groups. Specifically, Asian, Black, and Hispanic veterans who attended flagship universities completed a bachelor's degree at a rate 18 to 19 percentage points higher than Asian, Black, and Hispanic veterans who first enrolled at a non-flagship institution – a gap three or four percentage points greater than the overall veteran gap. White veterans who first enrolled at flagship universities completed at a rate 16 percentage points higher than those who first enrolled at non-flagships – one percentage point higher than the veteran average. American Indian/Alaska Native veterans who first enrolled at a flagship university, by contrast, completed at a rate six percentage points *lower* than those who first enrolled at a non-flagship institution. In other words, the completion gap between flagships and non-flagship four-year institutions was greater or similar for Asian, Black, Hispanic, and White veterans as for all veterans, but American Indian/Alaska Native veterans did not enjoy better completion rates at flagships than at non-flagship four-year institutions.

[35] The size of the race/ethnicity categories "Race: Other" and "Hispanic: Other" did not meet our statistical reporting requirements, so we do not discuss them here. In addition, the race/ethnicity group sizes for the Great Lakes Region did not meet our reporting requirements, so we examine the relationship between race/ethnicity and flagship status only at the national level.

## Completion rates




The study also examined the role of race/ethnicity and flagship status in completion of a degree in a regression analysis. Controlling for other variables such as demographic characteristics and academic preparedness, differences by flagship status within each race/ethnicity category were smaller, but the way differences varied across categories remained. Asian veterans showed the largest difference after accounting for other characteristics, with those who first enrolled at flagship universities completing at a rate nearly 11 percentage points higher than those who first enrolled at non-flagship institutions. For Black veterans, that remaining gap after accounting for other factors was 10 percentage points; for White veterans, it was 9 percentage points; and for Hispanic veterans, it was 6 percentage points. As for American Indian/Alaska Native veterans, they went from being 6 percentage points less likely to complete at flagships than at non-flagships (as shown in the figure) to being similarly likely to complete at both institution types once other characteristics were taken into consideration.

### Earnings

As noted above, veterans who graduated with a bachelor's degree from a flagship university earned, on average, 3% more than those who graduated with a bachelor's degree from a non-flagship institution, nationally, and 6% more within the Great Lakes region. These differences in earnings by flagship status did not significantly vary for any of the veterans' race/ethnicity groups discussed above before or after controlling for othervariables. Essentially, **the study found no real differences in earnings for different racial/ethnic groups than for veterans overall when comparing flagships and non-flagship four-year institutions.** The lack of a significant interaction between race/ethnicity group and flagship status for earnings does not mean that differences in earnings by *race/ethnicity* were not observed, only that attending a flagship did not have a different relationship to earnings for different race/ethnic groups.

# Conclusion

Our results indicate that veterans used their PGIB benefits to attend flagship universities, but at a rate lower than that seen in the general population (2% vs. 6%). **Attendance at flagship universities was positively associated with the likelihood of completing a bachelor's degree in six years (60% vs. 45%),** and this relationship held even after controlling for a host of variables likely to influence completion, such as academic preparedness, military experiences, and demographic characteristics. Similarly, **earning a bachelor's degree at a flagship university was associated with higher wages** (3% higher on average) and this relationship remained significant even after controlling for other variables.

The same relationships found for flagship universities overall were present for flagships within the Great Lakes region (Illinois, Indiana, Michigan, Minnesota, Ohia, and Wisconsin) in comparison to other four-year institutions in that region, with some minor variations. Specifically, **the veterans' earnings gap between flagship and non-flagship institutions in the Great Lakes region was larger than the national earnings gap,** and Great Lakes region veterans completed non-flagship four-year institutions at higher rates than their peers in other regions of the country, while the completion rate at flagships was the same for veterans in the Great Lakes and nationally.

In our deeper dive into the national data, our analysis found variation by veterans' race/ethnicity in how flagship status was related to enrollment and completion, but not earnings. In particular, **Black veterans were less likely to enroll at a flagship university than veterans at large** (less than 1% versus 2%). **However, Black veterans who attended a flagship university were nearly 10 percentage points more likely to complete in six years than those who attended a non-flagship,** after controlling for other veteran chracteristics. This significant difference in completion rates is important to policy conversations about how to increase college enrollment and attainment for Black Americans and merits additional study. American Indian/Alaska Native veterans were more likely to attend flagships than veterans at large (4% versus 2%) but their bachelor's degree completion rate did not significantly differ by flagship attendance after controlling for other variables. **Understanding why the apparent flagship advantage in completion did not extend to American Indian/Alaska Native veterans the way it did for Black veterans and veterans of other racial and ethnic backgrounds merits additional study.**

It is important to remember that there are many other potential variables that could affect outcomes that we were not able to control for in these analyses. For example, parental income has been found in previous research to be related to student outcomes in postsecondary education (D'Amico & Dika, 2013; Hahs-Vaughn, 2004) and the percentage of Pell Grant recipients at flagship universities is lower than the percentage of Pell Grant recipients at other public universities (Jaquette, 2017), but our study was not able to include parental income. It is also possible the flagship universities, which tend to be better resourced than other four-year public institutions, are offering services that increase completion rates for veterans who enroll, such as more hands-on academic counseling or early interventions for struggling students (Andrews et al., 2020). In addition, completion of a bachelor's degree from a flagship may affect wages because employers perceive flagships as producing more well-prepared graduates (Hoekstra, 2009; Oreopoulos & Petronijevic, 2013). Finally, we are unable to measure intangible factors like personal motivation.

# Appendix A
# Flagship Universities

***Note:*** *The six Great Lake states of focus in this report are shown in bold.*

| OFFICIAL INSTITUTION NAME | STATE ABBREVIATION | CARNEGIE CLASSIFICATION[36] |
|---|---|---|
| University of Alaska Fairbanks | AK | R2 |
| University of Alabama | AL | R1 |
| University of Arkansas | AR | R1 |
| University of Arizona | AZ | R1 |
| University of California, Berkeley | CA | R1 |
| University of Colorado at Boulder | CO | R1 |
| University of Connecticut | CT | R1 |
| University of Delaware | DE | R1 |
| University of Florida | FL | R1 |
| University of Georgia | GA | R1 |
| University of Hawaii at Manoa | HI | R1 |
| University of Iowa | IA | R1 |
| University of Idaho | ID | R2 |
| **University of Illinois Urbana-Champaign** | **IL** | **R1** |
| **Indiana University Bloomington** | **IN** | **R1** |
| University of Kansas | KS | R1 |
| University of Kentucky | KY | R1 |
| Louisiana State University and Agricultural & Mechanical College | LA | R1 |
| University of Massachusetts Amherst | MA | R1 |
| University of Maryland, College Park | MD | R1 |
| University of Maine | ME | R1 |
| **University of Michigan** | **MI** | **R1** |
| **University of Minnesota Twin Cities** | **MN** | **R1** |
| University of Missouri-Columbia | MO | R1 |
| University of Mississippi | MS | R1 |

[36] R1: Doctoral Universities – Very high research activity; R2: Doctoral Universities – High research activity; https://carnegieclassifications.acenet.edu/classification_descriptions/basic.php

| OFFICIAL INSTITUTION NAME | STATE ABBREVIATION | CARNEGIE CLASSIFICATION[36] |
|---|---|---|
| University of Montana | MT | R2 |
| University of North Carolina at Chapel Hill | NC | R1 |
| University of North Dakota | ND | R2 |
| University of Nebraska-Lincoln | NE | R1 |
| University of New Hampshire-Main Campus | NH | R1 |
| Rutgers University-New Brunswick | NJ | R1 |
| University of New Mexico-Main Campus | NM | R1 |
| University of Nevada, Reno | NV | R1 |
| University at Buffalo | NY | R1 |
| **Ohio State University – Columbus Campus** | **OH** | **R1** |
| University of Oklahoma – Norman Campus | OK | R1 |
| University of Oregon | OR | R1 |
| Pennsylvania State University Park | PA | R1 |
| University of Rhode Island | RI | R2 |
| University of South Carolina | SC | R1 |
| University of South Dakota | SD | R2 |
| The University of Tennessee, Knoxville | TN | R1 |
| University of Texas at Austin | TX | R1 |
| University of Utah | UT | R1 |
| University of Virginia | VA | R1 |
| University of Vermont | VT | R2 |
| University of Washington | WA | R1 |
| **University of Wisconsin – Madison** | **WI** | **R1** |
| West Virginia University | WV | R1 |
| University of Wyoming | WY | R2 |

# Appendix B
# Methods

## Data sources

**As noted, this project required significant cooperation across U.S. government agencies and the National Student Clearinghouse.** Below we note the data that each entity provided to help us answer the research questions. Table B.1 shows more specifically how the data were used.

- **The U.S. Department of Veterans Affairs (VA):**
  - A list of all PGIB-eligible veterans
  - Veteran demographic data from 2020 included in the U.S. Veterans Trends and Statistics (USVETS) data
- **The Veterans Benefits Administration (VBA):** Veterans' use of PGIB benefits through March 2020 and veteran demographic data from 2020 included in the VA Benefits Administration's Education Services Files.
- **National Student Clearinghouse:** PGIB-eligible veterans' postsecondary enrollment and attainment records through June 2020
- **U.S. Department of Defense:** Defense Manpower Data Center (DMDC) data on veterans' Armed Forces Qualification Test (AFQT) percentile upon activation, service experience (e.g., rank, military occupation), all activation and separation dates as of 2020
- **Internal Revenue Service (IRS):** W-2 income from tax year 2019 and marital and dependents status, region, and ZIP code as of year of first separation
- **The U.S. Census Bureau:** Crosswalk of Rural-Urban Commuting Area (RUCA) codes and region for U.S. ZIP codes
- **The Integrated Postsecondary Education Data System (IPEDS):** Institution-level 2020 data on institution control and sector, as well as by-institution counts of students involved exclusively in distance education courses, merged with information on students' institutions using the Clearinghouse's Unit-ID Crosswalk Table

All individual-level data were merged using the U.S. Census Bureau's Protected Identification Key (PIK), which uses a variety of record linkage techniques to identify individuals on incoming files while simultaneously protecting respondent confidentiality (Wagner & Layne, 2014).

## Methods

**Here we discuss the methods used to answer the research questions in this report.**

**Use at a Flagship.** Analyses addressed the question of where PGIB-eligible enlisted veterans first enrolled following separation. The study team used bivariate descriptive statistics to examine the extent to which PGIB-Clearinghouse Users first enrolled at a flagship university or another institution. Bivariate descriptive statistics were next used to identify flagship enrollment in the Great Lakes region relative to enrollment at another institution in the Great Lakes region.

**Completion.** Analyses addressed postsecondary completion using PGIB benefits, with the subsample of PGIB-Clearinghouse Post-Separation Users. To investigate whether enrollment at a flagship university was associated with the likelihood of receiving a bachelor's degree or higher within six years after first enrolling, the study team used bivariate descriptive statistics and logistic regression. Logistic regression models completion in a difficult-to-interpret latent space, so we mapped the outcomes to percentage point changes for interpretability. Appendix table B.1 lists the variables included in the regressions for each research question. Because of the number of variables, the study team used lasso regularization, tuning regularization with 10-fold cross-validation to reduce nonreporting variables to just those that improve prediction quality. To account for the number of policy-relevant variables included in the logistic regression, the study team used false discovery rate (Benjamini & Hochberg, 1995) on a robust (HC-3) Wald test statistic that tested whether all levels in a variable were statistically significant.

**Earnings.** We examined earnings of PGIB-Clearinghouse Users who attained a bachelor's degree were eligible to use PGIB. The study team used W-2 wage data. We conducted bivariate descriptive statistics, as well as linear regression, to examine the association between receiving the degree from a flagship university versus another four-year institution and W-2 reported income while controlling for demographic and military service variables. The same methods of lasso, HC-3 Wald tests, and false discovery rate were applied as in completion analyses.

APPENDIX TABLE B-1. VARIABLES INCLUDED IN REGRESSIONS

| VARIABLE | DEFINITION | SOURCE | COMPLETION | EARNINGS |
|---|---|---|---|---|
| **Flagship enrollment** | Institution of first enrollment after first separation from the military and after August 1, 2009 | Clearinghouse and USVETS data, or DMDC data if USVETS missing | ● | |
| **Flagship completion** | Institution that granted first bachelor's degree after first separation from the military and after August 1, 2009 | Clearinghouse and USVETS data, or DMDC data if USVETS missing | | ● |
| **Age range** | Difference in years between birth date and December 31, 2019 | VA PGIB eligibility file | ● | ● |
| **Race** | Race category | USVETS data | ● | ● |
| **Ethnicity** | Hispanic category | USVETS data | ● | ● |
| **Sex** | USVETS categorizes veterans into two sexes: male or female | USVETS data | ● | ● |
| **Disability rating category** | Latest non-missing value where available; veterans with only missing values were categorized as having "No Disability Rating" | USVETS data | ● | ● |
| **Years since separation** | Difference, in years between first separation date and December 31, 2019 | USVETS data; if missing, DMDC | ● | ● |
| **Rank** | Pay plan and pay grade | DMDC | ● | ● |
| **Two-digit Standard Occupational Classification (SOC) grouping for military occupation** | Two-digit SOC code, clustered for some codes with low incidence rates | DMDC | ● | ● |
| **Academic preparation as measured by AFQT percentile** | The AFQT percentile associated with veterans' earliest available Uniform Service Agreement Date from DOD Military Entrance Processing Command records | DMDC | ● | ● |

APPENDIX TABLE B-1. VARIABLES INCLUDED IN REGRESSIONS

| VARIABLE | DEFINITION | SOURCE | COMPLETION | EARNINGS |
|---|---|---|---|---|
| **Family responsibilities** | Combined filing status and dependent information from tax filing year of first separation from military | IRS | ● | ● |
| **Region** | Derived from ZIP code, based on Census Bureau crosswalk | IRS if available, USVETS data if available, and VA eligibility file as last data source if previous two sources were missing | ● | ● |
| **Census Bureau rural-urban commuting area (RUCA) codes** | Derived from ZIP code, based on Census Bureau crosswalk, combined into the higher-order categories of "rural," "micropolitan," and "metropolitan" | IRS if available, USVETS data if available, and VA eligibility file as last data source if previous two sources were missing | ● | ● |
| **Combat status** | Served in Afghanistan, Syria, or Iraq | DMDC | ● | ● |
| **Sex X race** | | | ● | ● |
| **Sex X ethnicity** | | | ● | ● |
| **Sex X family status** | | | ● | ● |
| **RUCA X race** | | | ● | ● |
| **RUCA X ethnicity** | | | ● | ● |
| **RUCA X sex** | | | ● | ● |
| **AFQT percentile X race** | | | ● | ● |
| **AFQT percentile X ethnicity** | | | ● | ● |
| **AFQT percentile X sex** | | | ● | ● |

## APPENDIX TABLE B-1. VARIABLES INCLUDED IN REGRESSIONS

| VARIABLE | DEFINITION | SOURCE | COMPLETION | EARNINGS |
|---|---|---|---|---|
| **AFQT percentile X RUCA** | | | ● | ● |
| **Year of first enrollment** | | | ● | |
| **Percent of all students enrolled exclusively in distance education courses at institution of first enrollment** | Students exclusively enrolled at distance education courses as a proportion of all students at the first enrollment institution for the year of enrollment | IPEDS and Clearinghouse | ● | |
| **Major for highest credential where bachelor's degree earned under PGIB** | Major information for highest Clearinghouse attainment record | Clearinghouse | | ● |
| **Percent of all students enrolled exclusively in distance education courses at institution of bachelor's degree under PGIB** | Students exclusively enrolled at distance education courses as a proportion of all students at the highest credential institution for the year of completion | IPEDS and Clearinghouse | | ● |
| OUTCOME VARIABLES | | | | |
| **Bachelor's degree completion within six years** | Attained at least a bachelor's degree per Clearinghouse records within six years of first enrollment record post-separation | Clearinghouse | ● | |
| **W-2 earnings** | W-2 earnings for 2019 or the most recent tax year available for those who were not enrolled at postsecondary education in 2019 according to the Clearinghouse. Zero was imputed when a veteran was missing all W-2 information. Analyses for earnings include veterans not in the labor force and those not working full time. | IRS | | ● |

**AFQT =** Armed Forces Qualification Test, **Clearinghouse =** National Student Clearinghouse, **DMDC =** Defense Manpower Data Center, **IPEDS =** Integrated Postsecondary Education Data System
**IRS =** Internal Revenue Service, **PGIB =** Post-9/11 GI Bill, **RUCA =** Rural-Urban Commuting Area, **VA =** Veterans Administration

# Appendix C
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