# Estimating the Graduate Coverage of Post-Secondary Employment Outcomes

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**Abstract**

This paper proposes a new methodology for estimating the coverage rate of the Post-Secondary Employment Outcomes data product (PSEO), both as a share of new graduates and as a share of total working-age degree holders in the United States. This paper also assesses how representative PSEO is of the broader population of college graduates across an array of institutional and individual characteristics.

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# 1 Introduction

The Post-Secondary Employment Outcomes data product (PSEO) combines graduation records from postsecondary education systems with jobs data from the Longitudinal Employer-Household Dynamics program (LEHD) at the U.S. Census Bureau to measure the earnings, geographies, and industries of college graduates at varying points in their careers. Participation in PSEO is voluntary. As a result, the set of participating institutions represented in the PSEO data is neither exhaustive nor necessarily representative of the broader population of postsecondary institutions. Researchers and policy makers who hope to extrapolate beyond the current set of participating institutions should consider how the incomplete and potentially biased nature of PSEO affects their analysis. Furthermore, as new institutions are added to PSEO each year, it is important to have a consistent methodology for measuring the coverage of PSEO on an ongoing basis.

This paper makes three contributions. First, it describes a method for calculating an annual coverage rate of new graduates in PSEO by degree level. In the most recent year of data, PSEO captures 31% of new postsecondary degree and award conferrals, a marked increase from the 19% in PSEO's first full academic year of 2001-2002. Second, this paper offers multiple ways for converting coverage rates of *new* graduates into coverage rates of the *total* working-age postsecondary degree and credential holding population in the United States. PSEO currently includes data on 16-18% of bachelor's degree holders in the United States under the age of 65, 16-19% of master's degree holders, 14-19% of doctoral research degree holders, and 10-13% of professional degree holders. Finally, this paper quantifies the differences between participating institutions and non-participating institutions and the characteristics of their students. PSEO graduates are significantly more likely to come from large, public institutions without a specific program specialization. They are slightly more male than the general population of graduates and ten percentage points more likely to be white, non-Hispanic. Relative to all new graduates, PSEO graduates skew only slightly younger, but relative to the total population of degree holders, the cumulative set of PSEO

graduates are significantly younger. By 2021, only a quarter of bachelor's degree graduates in PSEO are over the age of 39, while 65% of bachelor's degree graduates in the overall population are over 39.

# 2 PSEO coverage rate of new graduates

## 2.1 Coverage rates relative to IPEDS

I calculate PSEO coverage rates for new graduates by comparing the count of graduates in PSEO with the count of graduates reported in the Integrated Postsecondary Education Data System (IPEDS) Completions Survey (U.S. Department of Education (2021)).[1] Title IV of the Higher Education Act of 1965 mandates that every postsecondary institution that receives or applies to receive federal student aid must submit to IPEDS, among other things, their count of graduates by degree level and field of study (20 USC 1094, Section 487(a)(17) and 34 CFR 668.14(b)(19)). In 2023, 5,960 institutions, including all of the current participating institutions in PSEO, provided data on 282 thousand students to IPEDS. It is not clear how many students graduate from colleges that do not report to IPEDS, so I cannot quantify the coverage rate of PSEO relative to every credential- and degree-granting institution. Thus, the following coverage rate should be considered an upper bound.

Across academic years 2001-2002 to 2020-2021, the count of degree and sub-baccalaureate certificate awardees included in PSEO is 28% of all awardees across all IPEDS-participating institutions. Not every PSEO data provider submits data as far back as 2001, so the coverage rate is lower in early years (19% in academic year 2001-2002) than later years (32% in academic year 2020-2021). Bachelor's degrees (37%) and doctoral research degrees (36%)

[1]The current public-facing PSEO data aggregates graduates across time in three-year (baccalaureate) or five-year (non-baccalaureate) cohorts, starting with graduates on January 1, 2001. Data for cohorts are released when the entire cohort is available, most recently ending with graduates before December 31, 2021 (baccalaureate) or December 31, 2020 (non-baccalaureate). IPEDS publishes graduation counts for full academic years, e.g., academic year 2022: July 1, 2001 to June 30, 2002. Using the underlying microdata of PSEO, it is possible to calculate the count of graduates in PSEO by academic year.

have the highest coverage rate in 2020-2021, while less than 2-year certificates (20%) and 2-4 year certificates have the lowest (9%).[2] Coverage rates over time and by degree level are provided in Figure 1 and Appendix Table A1.

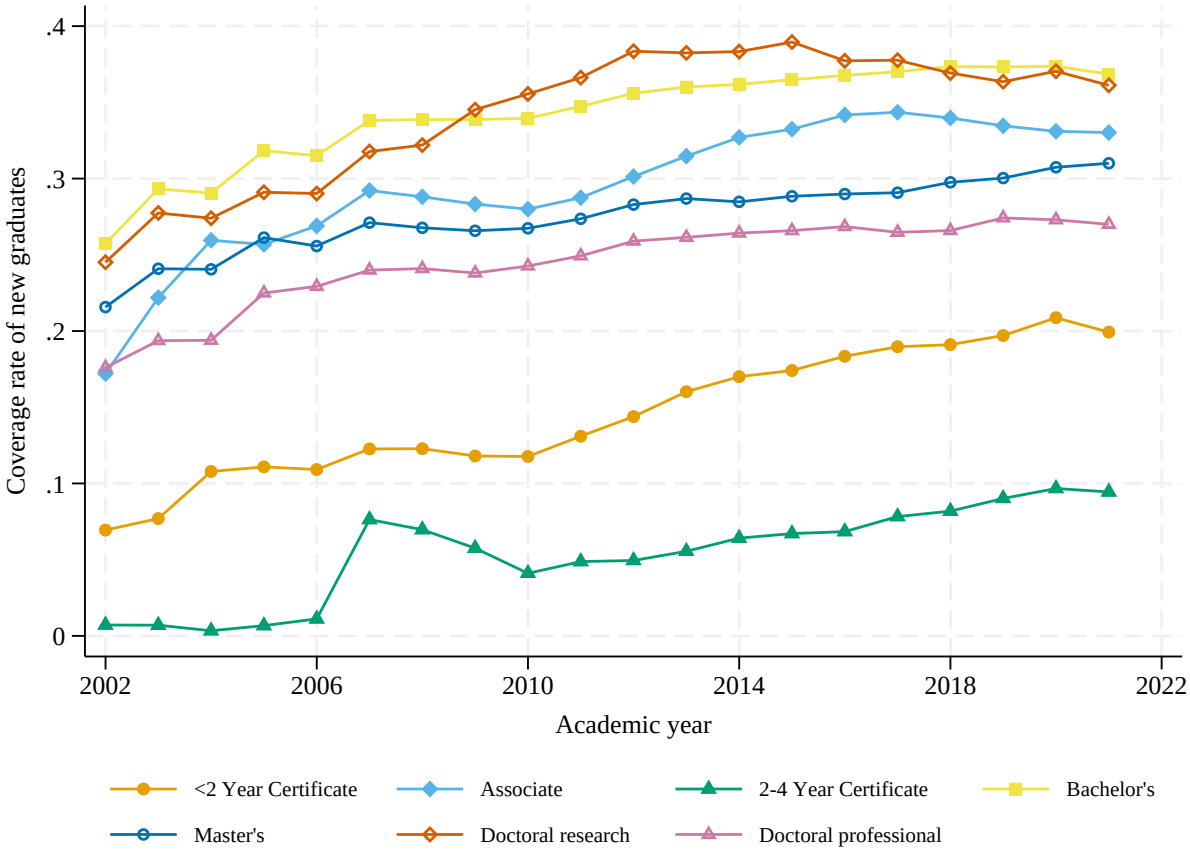


Figure 1: PSEO Coverage Rate of New Graduates

Coverage rates are calculated by dividing the total number of graduates in PSEO by the total number of reported graduates in IPEDS in a given academic year. Year denotes the calendar year of the Spring semester, e.g., 2002 represents July 1, 2001 through June 30, 2022. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

[2]I combine "less than 1-year certificates" and "1-2 year certificates" into one category due to observed inconsistencies in how these certificates are reported to Census versus IPEDS.

## 2.2 Sources of differences between PSEO and IPEDS

Most of the incomplete coverage rate is due to institutions not yet participating in PSEO, but a small share may be due to erroneous or missing data. When submitting data for PSEO, postsecondary education systems are instructed to include a roster of all credentials and degrees granted.[3] Most graduates can be identified by name, date of birth, and Social Security Number, though a small number of records may be missing all three and are dropped from the data. Some data providers only submit names and dates of birth, and others only submit Social Security Numbers. Regardless of which identifiers are provided by the education systems, Census attempts to assign each graduate a Protected Identification Key (PIK) via the Person Identification Validation System (PVS).[4] The primary reference file for the PVS process is the Social Security Administration's Numident File. Thus, there are three reasons why an education system's roster of graduates may be incomplete in PSEO.[5] In what I consider data errors, the institution may not have included a student in their data transmission, or the institution did not provide sufficient identifying information to successfully PIK a graduate. In what I consider true missing data, a graduate with accurate name and date of birth may not have appeared in the Numident because they did not have a Social Security Number as of the date their data underwent the PVS process. This is expected to occur, among other reasons, for international students on F-1 and J-1 visas that did not earn wages in the United States before, during, or after college.

[3]The PSEO degree records are at the individual-institution-degree level-graduation date-degree field level. For the purposes of calculating coverage rates, I restrict the data to one observation per individual-institution-degree level-graduation quarter. The primary effect of this deduplication is abstracting away from differences due to double and triple majors. The IPEDS completion file that I use as a point of comparison for PSEO includes counts by first and second field of study; however, I have observed differences in how consistently data providers report double majors to Census and IPEDS.

[4]For more information on the PVS process, see Wagner and Layne (2014) and Layne et al. (2014).

[5]It is also possible that the counts of graduates in IPEDS are incorrect. See Kelchen (2023) for a discussion. For this paper, I treat IPEDS as if it does not contain errors.

### 2.3 Comparison of institution counts between PSEO and IPEDS

Quantifying how much of the coverage rate is due to data errors and missing data requires merging institution-level counts in PSEO, identified by Office of Postsecondary Education Identification (OPEID) number, with institution-level counts in IPEDS, identified by Unit ID. I begin with the publicly available OPEID-Unit ID crosswalks provided by College Scorecard to list every Unit ID associated with an institution's OPEID number. A series of adjustments are made to reflect known deviations for the PSEO data, such as mergers that are reflected in PSEO but not IPEDS and vice versa. I also exclude the first and final years of data for an institution in PSEO since they may be partial semesters and not the full academic year. When an institution in PSEO has multiple matching institutions in IPEDS (e.g., the data provider combined all branch campuses when submitting their data for PSEO), I allocate the count of graduates in PSEO to each institution in IPEDS according to the proportion of graduates in each IPEDS institution. Across all in-scope institutions and awards, the median difference in graduation counts between PSEO and IPEDS is -3 people (-2.1% of IPEDS graduate count). PSEO and IPEDS have nearly identical counts for a majority of doctoral degree cells, while bachelor's and master's degree counts have a median error of -1.7% and -2.0%, respectively. The largest discrepancies occur for short-term certificate programs; here the median error is -5.5%.

## 3 PSEO coverage rate of current graduates

### 3.1 Construction of measures

While an annual coverage rate of new graduates is useful for analysis involving individual cohorts, it is less useful to researchers who want to use all cohorts of PSEO as a sample of the set of college graduates in the United States for a given point in time. Economists often describe this characterization as a "stock" measure, while the aforementioned rate of new

graduates is considered a "flow" measure.

There are two general approaches for estimating a stock coverage rate. First, individual records in PSEO can be merged with a random sample of known college graduates, and the share of records in the source data that are found in PSEO is an unbiased estimate of the share of total graduates covered by PSEO. Second, the cumulative count of graduates in PSEO can be compared to a known count of graduates, and their ratio is the share of total graduates covered by PSEO. The first method allows for fine adjustments to the population of interest based on individual-level characteristics, but it requires access to the restricted-use PSEO microdata and a representative survey for the population of interest that contains PIKs for merging. The second approach requires assuming the total count, and by extension the sampling weights, is accurate, but it can be performed with aggregate, non-PIKed data. Below, I estimate coverage rates using both approaches with three sources of data: the Current Population Survey-Annual Social and Economic Supplement (CPS), the American Community Survey (ACS), and IPEDS.

The CPS and ACS are two of the largest annual surveys of households in the United States that elicit educational attainment, and the majority of respondents in both surveys have PIKs that enable merging with PSEO.[6, 7] The ACS is significantly larger than the CPS (over 3 million households per year versus 60,000 households per year) and response is federally mandated, so the ACS should have more precise, though not necessarily more accurate, estimates of educational attainment.[8] Before merging with PSEO, I drop observations without a PIK, observations with imputed educational attainment, and observations residing in institutional group quarters. Given PSEO's focus on labor market outcomes, I also restrict each sample to individuals aged 64 and younger. If an individual appears in PSEO with a

[6] I was not able to apply PIKs to the 2011 CPS, so that year is missing from the merge-based coverage rate.

[7] I assume that anyone who reports earning an advanced degree also earned a bachelor's degree, and anyone who reports earnings a doctoral research degree also earned a master's degree. As not everyone who earns a bachelor's degree also has an associate degree, neither the CPS nor ACS are suitable for estimating the count of associate degree holders.

[8] For more information on the differences between the CPS and ACS, see U.S. Census Bureau (2004).

degree equal to their reported degree no more than 60 days after the date of the survey, I mark them as a successful match.[9]

Using survey weights for the public-use CPS and ACS, I also derive the implied count of college graduates by degree level (Flood et al. (2025), Ruggles et al. (2025)). Worth noting, the surveys correspond to different reference periods. The CPS ASEC is administered from February to April and weighted to reflect the population as of March 1. The ACS is conducted year-round and weighted to reflect the population as of July 1. To calculate the PSEO coverage rate using aggregate data, I calculate a rolling sum of PSEO graduates by degree level, excluding those who turn older than 64, and divide it by the number of graduates in the CPS and ACS, stopping with March PSEO graduates of the current year for the CPS and June PSEO graduates of the current year for the ACS.

Finally, I use IPEDS to construct a third count of college graduates by degree level. IPEDS has key advantages over the CPS and ACS: IPEDS should have smaller sampling error as almost every college responds annually, IPEDS should have smaller measurement error as it avoids scenarios where the respondent and subject differ (e.g., parents responding on behalf of their children), and using IPEDS does not require assuming that all research doctorates have master's degrees / no professional doctorates have master's degrees. Unfortunately, IPEDS data do not contain degrees conferred to residents of the United States by institutions outside of the United States, nor does it identify degrees conferred to U.S. residents who later relocate outside of the U.S. I construct an adjusted IPEDS total to account for these factors. For an initial stock measure of graduates, I use the reported number of college graduates in the public-use 2000 Census Long-Form (Ruggles et al. (2025)). This is an estimate of educational attainment as of April 1 2000, so I add to it an estimate of the share of 1999-2000 IPEDS graduates from April, May, and June (according to the distribution of

[9]While an individual who reports earning a degree before the administrative records indicate the degree was conferred implies an error, I permit this to occur within a small time window to account for inaccuracies in the precise survey date and degree conferral date, and in recognition of the fact that commencement ceremonies, which are more salient to students, may occur before the degree conferral date.

graduates within a year in PSEO).[10] In every subsequent year, I increase the cumulative count of graduates by the annual share of graduates in the public-use ACS who reported living outside of the country in the prior year, decrease the stock of graduates by the annual share of graduates in the public-use ACS who were 64 years old in the prior year, and add the count of new graduates as reported in IPEDS, less a time-invariant fraction of the count of new graduates reported as nonresidents.[11]

## 3.2 Comparison of measures

As shown in Figure 2 and Appendix Tables A2 through A5, the five methods provide similar coverage rate estimates for bachelor's and master's degrees, but they differ substantially for the doctoral degrees. In the most recent year with complete data (2021), the collection of estimates suggest that PSEO contains data on 16-18% of all bachelor's degree holders and 16-19% of all master's degree holders in the United States under the age of 64. Half of the methods provide estimates of PSEO's coverage rate for doctoral research and professional degrees between 10-12% while a couple of estimates are as high as 19%. In the remainder of the section, I explore when and why these methods diverge.

A consistent pattern is that the ACS-based coverage rates tend to exceed the CPS-based coverage rates. This is true in all years for bachelor's, master's, and doctoral research degrees under the count method and at least 95% of years for bachelor's and doctoral research degrees under the merge method. Given the timing of the surveys and the fact that PSEO coverage rates are increasing over time, we should expect the CPS coverage rates to slightly lag behind the ACS coverage rates, though this does not appear to be the primary explanation. The estimated count of graduates in the CPS is actually higher than the count of graduates in

[10] Like the CPS and ACS, the 2000 Census Long-Form elicits highest degree earned, not the list of all degrees earned. For this initial value only, I assume that everyone with a master's degree, doctorate degree, or professional degree also has a bachelor's degree, and everyone with a doctoral research degree also has a master's degree.

[11] In a study of the National Survey of College graduates, the Economic Innovation Group estimates that 17% of nonresident bachelor's degree graduates, 51% of nonresident master's degree graduates, and 76% of nonresident doctoral degree graduates remain in the United States (O'Brien (2024)). I use these estimates for the corresponding degree levels.

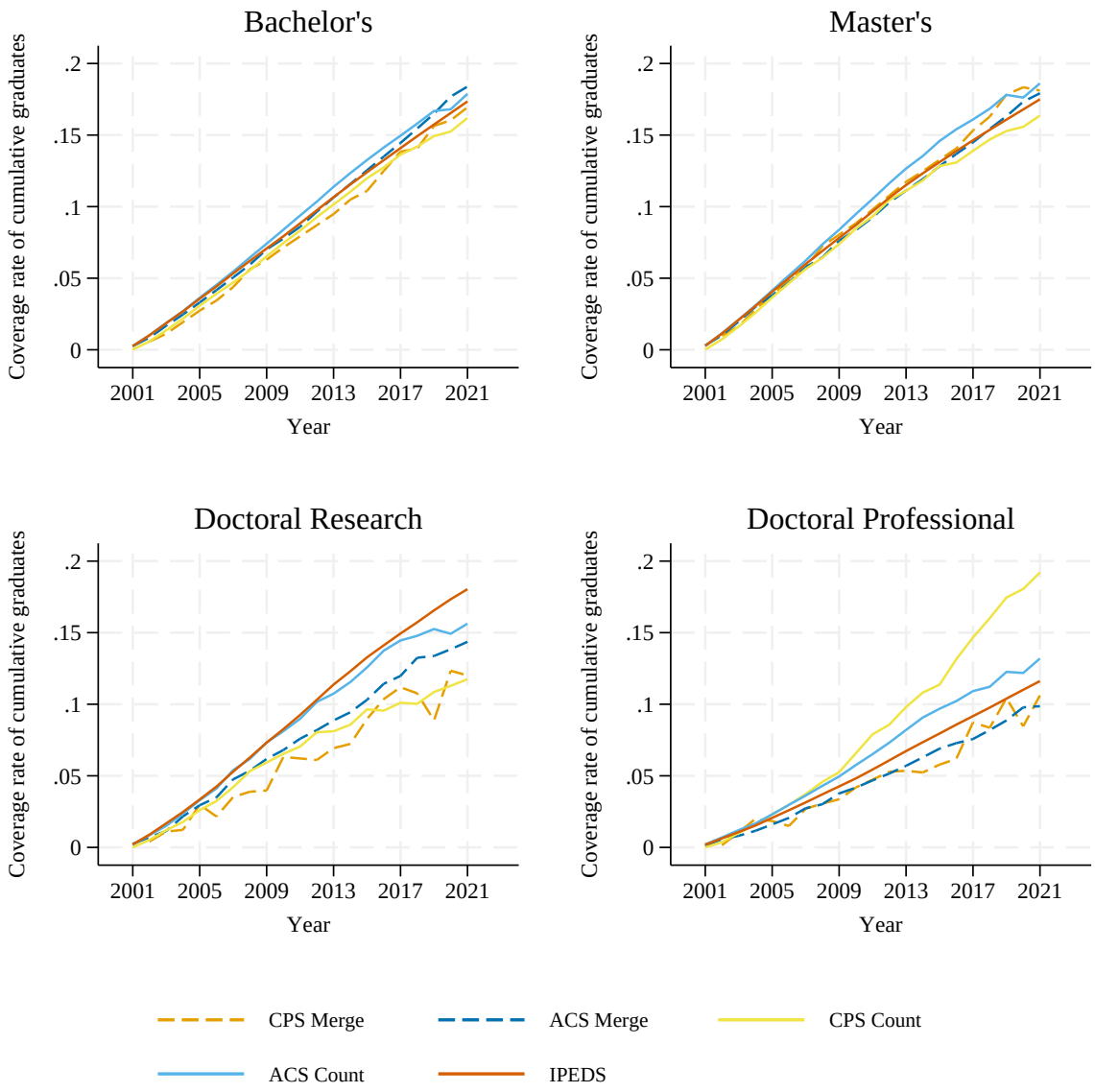


Figure 2: PSEO Coverage Rate of Current Graduates

Merge rates are calculated as the share of graduates in the Current Population Survey (CPS) and American Community Survey (ACS) that are successfully found in PSEO. Count rates are calculated by comparing the cumulative count of graduates in PSEO with the count of graduates in the CPS, ACS, and IPEDS. See text for more details on coverage rate construction. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

the ACS for bachelor's degrees (all years), doctoral research degrees (all years), and master's degrees (2008 onward). Anomalously, the count of professional doctorates in the CPS is significantly lower than in the ACS – so much so that the 2021 CPS count is less than the 2001 ACS count. This explains why the CPS count-based coverage rate for professional doctorates is double that of the CPS match-based coverage rate.

Another remarkable pattern is that the count-based coverage rates tend to exceed the merge-based coverage rates. This is true in over 90% of years in all degrees levels when using the ACS and over 73% of years for bachelor's and doctoral research degrees when using the CPS. Why might this be the case? The merge method restricts the samples to non-imputed observations and observations with a PIK. If the educational attainment of imputed observations is biased down, coverage rates derived from aggregate counts will be biased up. This cannot immediately be ruled out by the data, as imputation rates are higher in the ACS than the CPS, and the ACS counts tend to be lower than the CPS counts (with the exception of professional doctorates). Another explanation is the sample of observations who receive a PIK are less likely to appear in PSEO than observations who do not receive a PIK, so coverage rates derived from merging with PSEO are biased down. This is unlikely to be the case. Past research has found that PIK rates are lower for Hispanics than non-Hispanics (Fernandez et al. (2015)), and PSEO graduates are less likely to be Hispanic than the overall graduate population (see Section 4 below). A small share of PIKs could also be incorrectly assigned in either PSEO, the CPS or the ACS, causing some potential matches to fail (Layne et al. (2014)). This would also bias merge-based coverage rates downward.

Given its aforementioned advantages relative to the other methods, the IPEDS-based coverage rate is of particular import. It is very similar to the average of the other four coverage rates for bachelor's, master's, and doctoral professional degrees (excluding the CPS count method) with a mean absolute deviation under 0.28 percentage points per year. The IPEDS rate differs the most from the other rates for doctoral research degrees. It is consistently the largest estimate, and the mean absolute deviation from the average of the other

four coverage rates is 2%. Until 2012 however, the IPEDS rate closely tracked the ACS-count rate, differing by less than 0.1 percentage points a year.

What estimate for doctoral research degrees is most likely to be true? From 2001 to 2010, the cumulative count of doctoral research degree holders in the CPS increased by 55,200 per year, the cumulative count of doctoral research degree holders in the ACS increased by 42,200 per year, and the count of doctoral research degree holders in the adjusted IPEDS cumulative count increased by 37,300 per year. In the following ten years, the CPS count increased by 119,100 per year, the ACS count increased by 76,900 per year, while the IPEDS count increased by 43,300 per year. What we know with the most certainty is the number of new doctoral research degrees conferred to U.S. residents, which increased from 39,600 per year from 2001 to 2010 to 49,800 per year from 2011 to 2020 according to IPEDS. After adjusting for graduates aging out of the sample, the CPS count implies the average net inflow of doctoral research holders into the United States pre-2010 to post-2010 increased by approximately 68,900 per year, the ACS count implies the average net inflow increased by approximately 39,700 per year, and the IPEDS implies the average net inflow increased by approximately 11,000 per year. Based on reported immigration flows, the IPEDS count is more likely to be true.[12]

[12]Unfortunately, there are no publicly available reports on the educational attainment of new immigrants into the United States each year, so I have to construct an estimate manually. While a doctoral degree holder may be eligible for multiple visas, likely options are H1-B temporary visas ("workers in specialty occupations" that require "theoretical and practical application of a body of highly specialized knowledge"), O-1 temporary visas (individuals with "extraordinary ability" who have reached "the very top of their field"), EB-1 permanent resident visas (workers with "extraordinary ability" with "sustained international acclaim" or "international recognition" of "outstanding achievements in a particular academic field"), or EB-2 permanent resident visas (workers with advanced degrees). According to the Department of Homeland Security, Office of Immigration Statistics Annual Flow Reports for Immigrant and Nonimmigrant Admissions, along with the Department of Homeland Security annual report to Congress on the characteristics of H1-B specialty occupation workers, the number of H1-B visa admissions from doctoral degree holders averaged 44,300 per year from 2002 to 2009 and 43,000 per year from 2010 to 2019 (see Ward (2024), Rukh-Kamaa (2024), and U.S. Department of Homeland Security, U.S. Citizenship and Immigration Services (2025) for latest reports). Assuming the share of total O-1 visas granted to doctoral degree holders is the same as the share for H1-B visas, the number of O-1 visa admissions from doctoral degree holders averaged 4,200 from 2002 to 2009 and 8,800 from 2010 to 2019. The number of EB-1 visas increased from 36,500 to 39,000 per year, and the number of EB-2 visas increased from 39,900 to 48,600 per year; however, only 40% (47%) of permanent resident visas went to new arrivals from 2002-2009 (2010-2019), and not all of EB-1/-2 visas holders have a doctoral degree. Even assuming all EB-1 immigrants have a doctoral degree and half of EB-2 immigrants have a doctoral degree, and assuming that all temporary residents have their

Similar logic can be applied for doctoral professional degrees. Across all years, the cumulative count of doctoral professional degrees in the CPS increased by 12,300 per year, the cumulative count in the ACS increased by 33,800 per year, and the cumulative count in IPEDS increased by 55,300 year. IPEDS reports an average of 100,600 new professional doctoral degree conferrals to U.S. residents each year. Thus, after adjusting for graduates aging out of the sample, the CPS count implies a net outflow of 32,700 professional degree holders per year, the ACS count implies a net inflow of 13,400 per year, and the IPEDS count implies a net inflow of 34,900 per year. Based on Department of Homeland Security reports, an estimated 20,200 H1-B visa holders with a professional doctorate enter the country each year. Adding professional doctorate holders from other visa types (e.g., O-1, EB-1, EB-2) likely pushes this number closer to the net flow that rationalizes the cumulative IPEDS count.

Given the differences between the CPS, ACS, and IPEDS are reversed when comparing doctoral research degrees with doctoral professional degrees, it is possible that the two surveys are suffering from respondents with professional degrees reporting that they have doctoral degrees, despite the survey instruments explicitly listing "MD", "DDS", and "JD" as examples professional degrees.

visas renewed/apply for permanent residence, the net change across H1-B, O-1, EB-1, and EB-2 visas from 2002-2009 to 2010-2019 is only 11,000 per year. While this does not include doctoral degree holders who arrive on other visas, the other assumptions likely overstate the net inflow of doctoral degrees, so the errors partially offset. Remarkably, this is almost exactly the value predicted by the adjusted IPEDS cumulative count. A full accounting would include the roughly 5% of U.S. born PhD recipients who emigrate out of the country (Franzoni et al. (2015)), but I could not find time-varying estimates of this number, nor an estimate derived non-STEM PhDs, and the errors in estimated immigration likely exceeds the magnitude of total emigration.

# 4 Assessing the representativeness of PSEO

## 4.1 Institutional characteristics

While knowing the overall coverage rate of PSEO is valuable, it does not tell us whether PSEO represents all types of institutions and students equally, as the set of institutions that provide data for PSEO are not necessarily representative of the population of postsecondary institutions. In Tables 1 through 4, I provide a list of institutional characteristics with their distribution in academic year 2020-2021 among all IPEDS respondents and their distribution among PSEO partners.[13] All values are weighted by the number of degrees and sub-baccalaureate certificates awarded by each institution in IPEDS.

I begin with the institutional characteristics for colleges that award sub-baccalaureate certificates. The most striking difference between IPEDS and PSEO is 28% of these certificates are awarded by for-profit institutions nationwide, but awardees in PSEO almost exclusively earned their certificates from public institutions. The overall population of sub-baccalaureate certificate awardees is also 16 percentage points more likely to have attended a less-than-two-year institution (19% versus 4%). These differences partially explain the 25 percentage point gap in the likelihood that a sub-baccalaureate certificate awardee attended an institution with fewer than 1,000 students (27% versus 2%). Of awardees that attended institutions with a valid Carnegie Classification code, the PSEO sample is 17 percentage points more likely to have attended an Associate's college with a mix of career/technical and non-career/non-technical programs and a high share of non-degree-seeking students (29% versus 12%). Notably, while 5% of overall awardees attended schools with an emphasis on health professions, no institutions with this designation currently participate in PSEO.

The IPEDS and PSEO distributions of institutional characteristics for associate degree graduates are more similar than those for sub-baccalaureate certificate awardees. PSEO graduates are still almost exclusively coming from public institutions, but now the overall

[13] I choose a fixed point in time because not all the characteristics I analyze are available and consistently coded in IPEDS in every year.

share of graduates from public institutions is over 88%. PSEO graduates are five percentage points more likely to have graduated from a less-than-four-year institution than graduates nationwide (71% versus 66%). Looking at Carnegie Classifications, PSEO students continue to disproportionately graduate from institutions with a mix of career/technical and non-career/non-technical programs and a high share of non-degree-seeking students (17% versus 8%), and almost no PSEO students graduate from a "special focus" two-year institution.

At the baccalaureate level, PSEO graduates continue to over-represent public institutions (89% versus 67%) and very large institutions (56% versus 48%) relative to the overall population of graduates, but this is the first degree level where private institutions have a non-trivial share in PSEO. The distribution of institution urbanization is similar between PSEO graduates and the overall graduate population, as is the share of graduates from Historically Black Colleges and Universities and land-grant colleges. Among graduates from institutions with a valid Carnegie Classification, PSEO graduates are ten percentage points more likely to have graduated from a doctoral-degree-granting university with very high research activity (45% versus 35%) and less likely to have graduated from doctoral/professional universities.

Among all advanced degree graduates, there is a nearly even split between graduating from public and private institutions, but 81% of PSEO graduates come from a public institution. As a result, the share of graduates from a land-grant institution is five percentage points higher in PSEO than overall (17% versus 13%), and the share of graduates from a very large institution is 14 percentage points higher (61% versus 47%). Similar to the bachelor's degree level, graduates with advanced degrees in PSEO are eight percentage points more likely to have graduated from a doctoral-degree-granting university with very high research activity (46% versus 38%) and less likely to have graduated from doctoral/professional universities and special focus four-year colleges.

To summarize: across all degree levels, PSEO graduates are more likely to come from large, public institutions without a specific program specialization than graduates nationally.

This may change as new institutions are added to PSEO in the future, so researchers using the PSEO data should generate updated statistics if they are interested in comparing their sample of graduates with the overall population.

Table 1: Institution Characteristics (Sub-baccalaureate Certificates)

| | **Overall** | **PSEO** |
|---|---|---|
| Control: | | |
| Public | 68.6 | 99.5 |
| Private | 3.1 | 0.5 |
| For-profit | 28.3 | 0.0 |
| Level: | | |
| Four or more years | 21.6 | 28.4 |
| At least two years, less than four years | 59.0 | 68.1 |
| Less than two years | 19.4 | 3.6 |
| Urbanization: | | |
| City | 52.3 | 53.3 |
| Suburb | 29.8 | 23.5 |
| Town | 9.1 | 12.9 |
| Rural | 8.7 | 10.3 |
| Historically Black | 0.3 | 0.4 |
| Land-grant | 1.2 | 3.4 |
| Size: | | |
| Under 1,000 | 26.9 | 1.7 |
| 1,000-4,999 | 26.3 | 29.6 |
| 5,000-9,999 | 16.6 | 22.3 |
| 10,000-19,999 | 15.4 | 17.5 |
| 20,000 and above | 14.8 | 28.9 |
| Carnegie: | | |
| Associate's Colleges: High Transfer-High Traditional | 7.9 | 4.1 |
| Associate's Colleges: High Transfer-Mixed Traditional | 10.0 | 8.0 |
| Associate's Colleges: High Transfer-High Nontraditional | 5.5 | 9.7 |
| Associate's Colleges: Mixed Transfer-High Traditional | 6.3 | 6.2 |
| Associate's Colleges: Mixed Transfer-Mixed Traditional | 5.0 | 6.5 |
| Associate's Colleges: Mixed Transfer-High Nontraditional | 12.0 | 28.9 |
| Associate's Colleges: High Career/Technical-High Traditional | 4.8 | 7.5 |
| Associate's Colleges: High Career/Technical-Mixed Traditional | 11.1 | 6.5 |
| Associate's Colleges: High Career/Technical-High Nontraditional | 5.3 | 4.8 |
| Special Focus Two-Year: Health Professions | 4.5 | 0.0 |
| Special Focus Two-Year: Technical Professions | 2.0 | 0.4 |
| Special Focus Two-Year: Arts and Design Professions | 0.4 | 0.0 |
| Special Focus Two-Year: Other Fields | 0.7 | 0.6 |
| Observations | 4,466 | 576 |

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2021, Institutional Characteristics and Completions data files. Statistics generated by author. Institutions are weighted by their total count of graduates. Carnegie Classification statistics exclude institutions with a missing value. Not all values for every variable are displayed.

Table 2: Institution Characteristics (Associate Degrees)

| | **Overall** | **PSEO** |
|---|---|---|
| Control: | | |
| Public | 88.2 | 98.9 |
| Private | 5.2 | 1.1 |
| For-profit | 6.6 | 0.0 |
| Level: | | |
| Four or more years | 33.9 | 28.7 |
| At least two years, less than four years | 66.1 | 71.3 |
| Less than two years | 0.0 | 0.0 |
| Urbanization: | | |
| City | 52.2 | 52.1 |
| Suburb | 28.1 | 25.4 |
| Town | 11.0 | 14.2 |
| Rural | 8.7 | 8.3 |
| Historically Black | 0.5 | 0.6 |
| Land-grant | 0.5 | 0.5 |
| Size: | | |
| Under 1,000 | 4.4 | 0.9 |
| 1,000-4,999 | 23.9 | 26.0 |
| 5,000-9,999 | 25.6 | 25.2 |
| 10,000-19,999 | 26.4 | 21.1 |
| 20,000 and above | 19.7 | 26.8 |
| Carnegie: | | |
| Associate's Colleges: High Transfer-High Traditional | 14.5 | 14.4 |
| Associate's Colleges: High Transfer-Mixed Traditional | 13.5 | 14.5 |
| Associate's Colleges: High Transfer-High Nontraditional | 6.1 | 8.8 |
| Associate's Colleges: Mixed Transfer-High Traditional | 8.4 | 6.8 |
| Associate's Colleges: Mixed Transfer-Mixed Traditional | 5.7 | 7.2 |
| Associate's Colleges: Mixed Transfer-High Nontraditional | 8.2 | 16.5 |
| Associate's Colleges: High Career/Technical-High Traditional | 3.6 | 5.1 |
| Associate's Colleges: High Career/Technical-Mixed Traditional | 5.2 | 5.4 |
| Associate's Colleges: High Career/Technical-High Nontraditional | 2.6 | 3.6 |
| Special Focus Two-Year: Health Professions | 2.0 | 0.0 |
| Special Focus Two-Year: Technical Professions | 0.5 | 0.0 |
| Special Focus Two-Year: Arts and Design Professions | 0.2 | 0.0 |
| Special Focus Two-Year: Other Fields | 0.2 | 0.1 |
| Observations | 2,598 | 577 |

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2021, Institutional Characteristics and Completions data files. Statistics generated by author. Institutions are weighted by their total count of graduates. Carnegie Classification statistics exclude institutions with a missing value. Not all values for every variable are displayed.

Table 3: Institution Characteristics (Bachelor's Degrees)

| | **Overall** | **PSEO** |
|---|---|---|
| Control: | | |
| Public | 66.7 | 88.5 |
| Private | 28.3 | 11.5 |
| For-profit | 5.0 | 0.0 |
| Level: | | |
| Four or more years | 100.0 | 100.0 |
| At least two years, less than four years | 0.0 | 0.0 |
| Urbanization: | | |
| City | 62.8 | 65.2 |
| Suburb | 23.2 | 19.7 |
| Town | 12.6 | 14.0 |
| Rural | 1.4 | 1.1 |
| Historically Black | 1.6 | 1.4 |
| Land-grant | 17.3 | 19.1 |
| Size: | | |
| Under 1,000 | 2.3 | 0.5 |
| 1,000-4,999 | 16.8 | 10.6 |
| 5,000-9,999 | 13.7 | 14.3 |
| 10,000-19,999 | 19.0 | 18.5 |
| 20,000 and above | 48.2 | 56.2 |
| Carnegie: | | |
| Doctoral Universities: Very High Research | 35.0 | 44.5 |
| Doctoral Universities: High Research | 16.3 | 16.4 |
| Doctoral/Professional Universities | 10.3 | 6.9 |
| Master's Colleges and Universities: Large | 21.0 | 19.6 |
| Master's Colleges and Universities: Medium | 4.3 | 4.5 |
| Master's Colleges and Universities: Small | 2.6 | 2.6 |
| Baccalaureate Colleges: Arts and Sciences Focus | 3.3 | 1.9 |
| Baccalaureate Colleges: Diverse Fields | 3.6 | 2.6 |
| Observations | 2,440 | 495 |

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2021, Institutional Characteristics and Completions data files. Statistics generated by author. Institutions are weighted by their total count of graduates. Carnegie Classification statistics exclude institutions with a missing value. Not all values for every variable are displayed.

Table 4: Institution Characteristics (Advanced Degrees)

| | **Overall** | **PSEO** |
|---|---|---|
| Control: | | |
| Public | 46.9 | 80.5 |
| Private | 45.3 | 19.5 |
| For-profit | 7.9 | 0.0 |
| Urbanization: | | |
| City | 69.2 | 67.9 |
| Suburb | 21.4 | 22.2 |
| Town | 8.2 | 9.2 |
| Rural | 1.2 | 0.7 |
| Historically Black | 0.9 | 0.8 |
| Land-grant | 12.5 | 17.1 |
| Size: | | |
| Under 1,000 | 2.9 | 0.3 |
| 1,000-4,999 | 16.3 | 8.6 |
| 5,000-9,999 | 14.1 | 14.2 |
| 10,000-19,999 | 19.2 | 15.8 |
| 20,000 and above | 47.4 | 61.0 |
| Carnegie: | | |
| Doctoral Universities: Very High Research | 38.0 | 46.0 |
| Doctoral Universities: High Research | 13.9 | 15.2 |
| Doctoral/Professional Universities | 16.9 | 11.7 |
| Master's Colleges and Universities: Large | 18.8 | 20.7 |
| Master's Colleges and Universities: Medium | 2.7 | 2.1 |
| Master's Colleges and Universities: Small | 1.1 | 0.9 |
| Special Focus Four-Year: Medical Schools and Other Health | 3.7 | 1.3 |
| Special Focus Four-Year: Research Institutions | 1.3 | 1.5 |
| Observations | 2,047 | 395 |

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2021, Institutional Characteristics and Completions data files. Statistics generated by author. Institutions are weighted by their total count of graduates. Carnegie Classification statistics exclude institutions with a missing value. Not all values for every variable are displayed.

## 4.2 Student characteristics

Beyond comparing the institutional characteristics of PSEO participants and the overall set of colleges, I also calculate differences in student demographics between graduates that appear in PSEO and those that do not. I consider the full panel of PSEO data and no longer restrict my analysis to academic year 2020-2021. Sex and race/ethnicity for graduates in PSEO are based on the Individual Characteristics File (ICF) in LEHD. I code any graduate with an Hispanic ethnicity as "Hispanic" and any graduate with two or more races as "Other/Unknown". For IPEDS counts, I collapse all categories that are not "Asian", "Black", "Hispanic", or "White" as "Other/Unknown".[14]

As shown in Table 5, graduates in PSEO are one percentage point more likely to be male than the overall population of graduates from 2001-2002 to 2020-2021. This is largely driven by an over-representation of men among certificate awards in PSEO; the difference is less than a quarter of a percentage point across the sum of all other degree levels (see Appendix Tables A6 through A10 for statistics by degree level). Biases by race/ethnicity in PSEO are much larger. 67% of graduates in PSEO are white, non-Hispanic, while only 57% of graduates in IPEDS are white, non-Hispanic; almost half of the difference is due to a decrease of Hispanic graduates. Notably, these patterns are present at every degree level. PSEO graduates also tend to be younger than the overall population of graduates. The proportion of graduates between 18 and 24 years old is 54% in PSEO and 49% overall, though these differences only exist at the associate, bachelor's, and master's degree levels.

Differences in age are particularly interesting because they manifest themselves in two ways. First, each new cohort of graduates in PSEO is younger than the overall cohort of new graduates. Additionally, when looking at the cumulative population of graduates, only those that earned their degree in a year after 2001 will appear in PSEO. Since individuals tend to earn their degrees earlier in life, this results in the age distribution of the population of

[14]Prior to 2011, IPEDS combined "Asian" and "Pacific Islander" as one category while the ICF did not. Based on the 2010 counts in IPEDS, I expect this to add less than half a percentage point to the share of Asian graduates.

Table 5: Student Demographics

| | **Overall** | **PSEO** |
|---|---|---|
| Sex | | |
| Male | 41.1 | 42.0 |
| Female | 58.9 | 57.8 |
| Race/ethnicity | | |
| Asian | 5.7 | 5.2 |
| Black or African American | 11.3 | 9.2 |
| Hispanic | 13.1 | 8.7 |
| White (Non-Hispanic) | 57.2 | 66.9 |
| Other and Unknown | 12.8 | 10.0 |
| Age | | |
| Less than 18 | 0.5 | 0.4 |
| 18 to 24 | 48.9 | 54.3 |
| 25 to 39 | 38.5 | 35.2 |
| 40 and above | 12.2 | 10.2 |
| Observations | 88,129,891 | 24,999,000 |

Overall statistics generated by author from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2002-2021, Completions data files. “Asian” includes “Asian” and “Native Hawaiian/Pacific Islander” in IPEDS prior to 2011. Age only available beginning in 2012. "Age unknown" category excluded from calculation of proportions. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

graduates in PSEO skewing much younger than the age distribution of the overall population of graduates. Figure 3 demonstrates this fact by plotting the interquartile range of ages among the stock of graduates in PSEO at a given point in time relative to the interquartile range of ages among the stock of graduates in the public-use ACS that have the same educational attainment. For each degree level, graduates in PSEO are initially quite young relative to overall population of graduates, representing exclusively the age of graduates in 2001. The interquartile range increases over time as each subsequent year includes aging graduates from prior years. By 2021, graduates from 2001 are mostly in their 40s, but the entire population of graduates in PSEO is significantly younger. For bachelor's degrees, this phenomenon yields a 75th percentile in PSEO that is only five years higher than the 25th percentile in the ACS. The 75th percentile of age among professional degree holders in PSEO is only three years higher than the 25th percentile in the ACS. The age distributions are closest for doctoral research degree holders, yet among these graduates the 75th percentiles differ by 17 percentage points. As a result, PSEO is better suited to applications focused on recent graduates or younger workers, and PSEO will not be representative of the broader prime-age working population.

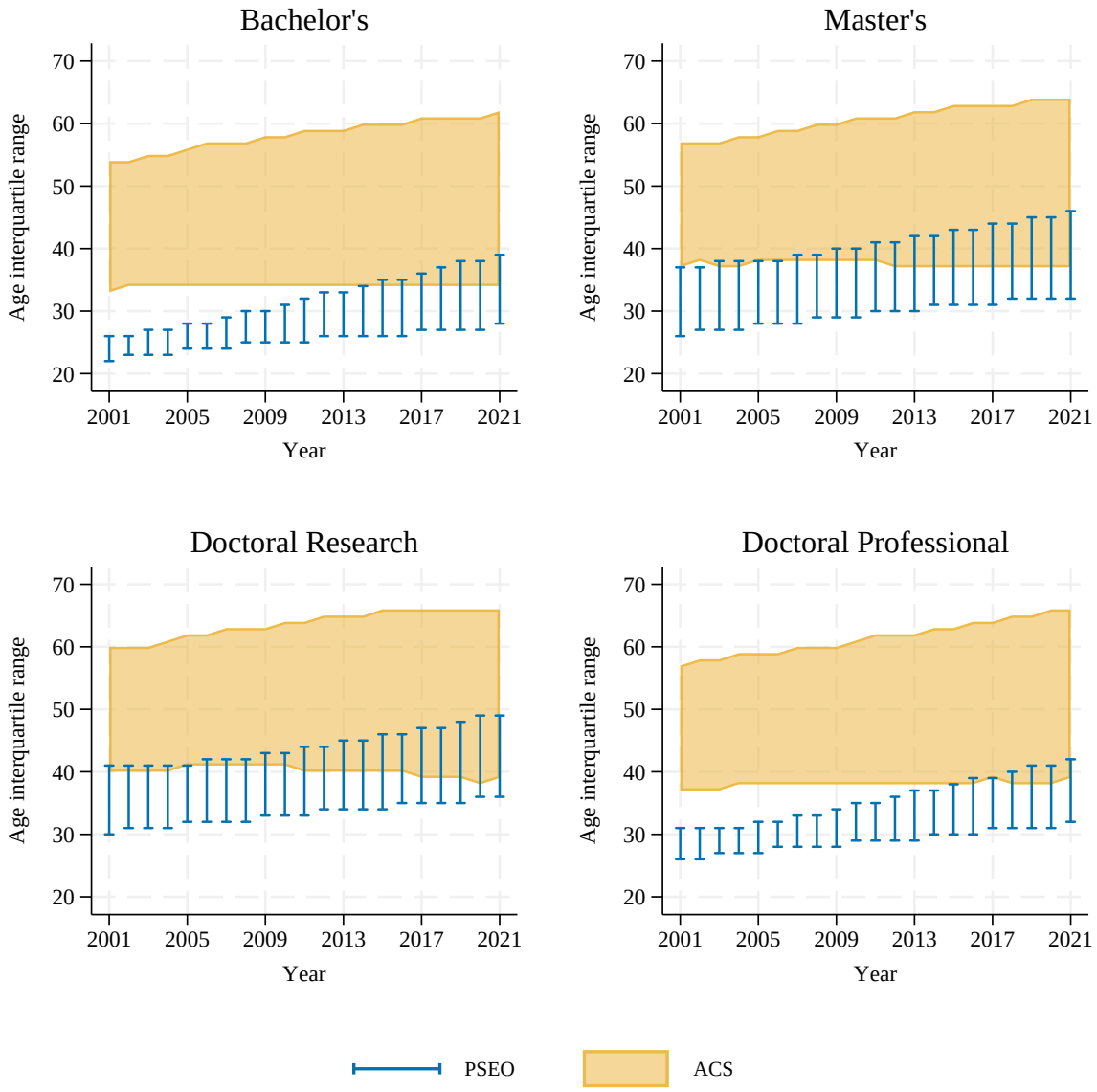


Figure 3: PSEO Coverage Rate of Current Graduates

This figure presents the interquartile range of age among the cumulative set of graduates in PSEO in each year overlayed on the interquartile range of age among the set of graduates in the public-use American Community Survey (ACS). I assume all respondents in the ACS with an advanced degree also have a bachelor's degree, and all respondents in the ACS with a doctoral research degree also have a master's degree. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

# 5 Conclusion

This paper demonstrates how to calculate the coverage of the Post-Secondary Employment Outcomes data product, both as a share of new graduates each year, and as a share of cumulative graduates at a point in time. It also compares the characteristics of institutions that participate in PSEO, and the students they represent, with the characteristics of the full set of postsecondary institutions in the United States. Researchers who use the PSEO data can apply these results to contextualize their work and extrapolate their findings to the broader postsecondary landscape.

As PSEO adds new data partners, the coverage rate of PSEO will continue to increase. The results herein are only accurate for the 2025Q2 vintage released on June 18, 2025, but the proposed methodology can be used to create updated coverage rates for subsequent releases. Future work is needed to better understand why coverage rates based on the CPS, ACS, and IPEDS diverge and which source is more accurate.

# 6 Appendix tables

Table A1: PSEO Coverage Rate of New graduates

| *Academic Year* | *<2 Year Cert.* | *Associate* | *2-4 Year Cert.* | *Bachelor's* | *Master's* | *Doct. Research* | *Doct. Profess.* |
|---|---|---|---|---|---|---|---|
| 2001-02 | 6.9 | 17.2 | 0.7 | 25.7 | 21.6 | 24.5 | 17.6 |
| 2002-03 | 7.7 | 22.2 | 0.7 | 29.3 | 24.1 | 27.7 | 19.4 |
| 2003-04 | 10.8 | 25.9 | 0.3 | 29.0 | 24.0 | 27.4 | 19.4 |
| 2004-05 | 11.1 | 25.7 | 0.7 | 31.8 | 26.1 | 29.1 | 22.5 |
| 2005-06 | 10.9 | 26.9 | 1.1 | 31.5 | 25.6 | 29.0 | 22.9 |
| 2006-07 | 12.3 | 29.2 | 7.6 | 33.8 | 27.1 | 31.8 | 24.0 |
| 2007-08 | 12.3 | 28.8 | 7.0 | 33.9 | 26.8 | 32.2 | 24.1 |
| 2008-09 | 11.8 | 28.3 | 5.8 | 33.9 | 26.6 | 34.5 | 23.8 |
| 2009-10 | 11.8 | 28.0 | 4.1 | 34.0 | 26.7 | 35.6 | 24.3 |
| 2010-11 | 13.1 | 28.7 | 4.9 | 34.7 | 27.4 | 36.6 | 24.9 |
| 2011-12 | 14.4 | 30.1 | 4.9 | 35.6 | 28.3 | 38.4 | 25.9 |
| 2012-13 | 16.0 | 31.5 | 5.5 | 36.0 | 28.7 | 38.2 | 26.1 |
| 2013-14 | 17.0 | 32.7 | 6.4 | 36.2 | 28.5 | 38.3 | 26.4 |
| 2014-15 | 17.4 | 33.2 | 6.7 | 36.5 | 28.8 | 39.0 | 26.6 |
| 2015-16 | 18.3 | 34.2 | 6.8 | 36.8 | 29.0 | 37.7 | 26.9 |
| 2016-17 | 19.0 | 34.4 | 7.8 | 37.0 | 29.1 | 37.8 | 26.5 |
| 2017-18 | 19.1 | 34.0 | 8.2 | 37.3 | 29.8 | 36.9 | 26.6 |
| 2018-19 | 19.7 | 33.5 | 9.0 | 37.3 | 30.0 | 36.4 | 27.4 |
| 2019-20 | 20.9 | 33.1 | 9.7 | 37.4 | 30.7 | 37.0 | 27.3 |
| 2020-21 | 19.9 | 33.0 | 9.4 | 36.9 | 31.0 | 36.1 | 27.0 |

Coverage rates are calculated by dividing the total number of graduates in PSEO by the total number of reported graduates in IPEDS in a given academic year. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

Table A2: PSEO Stock Coverage Rate (Bachelor's Degrees)

| | *Merge method* | | *Count method* | | |
|---|---|---|---|---|---|
| **Year** | **CPS** | **ACS** | **CPS** | **ACS** | **IPEDS** |
| 2001 | – | 0.25 | 0.01 | 0.26 | 0.26 |
| 2002 | 0.57 | 0.85 | 0.59 | 1.02 | 1.01 |
| 2003 | 1.13 | 1.68 | 1.36 | 1.87 | 1.85 |
| 2004 | 1.93 | 2.47 | 2.18 | 2.70 | 2.67 |
| 2005 | 2.74 | 3.31 | 3.08 | 3.63 | 3.56 |
| 2006 | 3.44 | 4.17 | 3.92 | 4.54 | 4.41 |
| 2007 | 4.38 | 5.05 | 4.70 | 5.48 | 5.31 |
| 2008 | 5.62 | 5.95 | 5.55 | 6.47 | 6.19 |
| 2009 | 6.29 | 7.01 | 6.53 | 7.43 | 7.05 |
| 2010 | 7.15 | 7.77 | 7.45 | 8.42 | 7.90 |
| 2011 | – | 8.59 | 8.33 | 9.42 | 8.79 |
| 2012 | 8.70 | 9.65 | 9.27 | 10.39 | 9.70 |
| 2013 | 9.48 | 10.64 | 10.15 | 11.42 | 10.61 |
| 2014 | 10.49 | 11.58 | 11.03 | 12.38 | 11.48 |
| 2015 | 11.10 | 12.54 | 11.98 | 13.30 | 12.33 |
| 2016 | 12.50 | 13.50 | 12.74 | 14.18 | 13.17 |
| 2017 | 13.84 | 14.45 | 13.63 | 15.00 | 13.99 |
| 2018 | 14.06 | 15.46 | 14.20 | 15.85 | 14.81 |
| 2019 | 15.64 | 16.49 | 14.93 | 16.73 | 15.61 |
| 2020 | 16.03 | 17.69 | 15.25 | 16.85 | 16.40 |
| 2021 | 16.94 | 18.39 | 16.20 | 17.92 | 17.19 |

Merge rates are calculated as the share of graduates in the Current Population Survey (CPS) and American Community Survey (ACS) that are successfully found in PSEO. Count rates are calculated by comparing the cumulative count of graduates in PSEO with the count of graduates in the CPS, ACS, and IPEDS. See text for more details on coverage rate construction. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

Table A3: PSEO Stock Coverage Rate (Master's Degrees)

| | *Merge method* | | *Count method* | | |
|---|---|---|---|---|---|
| **Year** | **CPS** | **ACS** | **CPS** | **ACS** | **IPEDS** |
| 2001 | – | 0.30 | 0.02 | 0.29 | 0.28 |
| 2002 | 0.99 | 1.02 | 0.73 | 1.15 | 1.14 |
| 2003 | 1.64 | 1.98 | 1.63 | 2.10 | 2.10 |
| 2004 | 2.82 | 3.00 | 2.59 | 3.10 | 3.06 |
| 2005 | 3.86 | 3.81 | 3.65 | 4.14 | 4.06 |
| 2006 | 4.83 | 4.70 | 4.66 | 5.21 | 5.01 |
| 2007 | 5.74 | 5.77 | 5.64 | 6.24 | 5.99 |
| 2008 | 7.25 | 6.46 | 6.43 | 7.39 | 6.91 |
| 2009 | 8.04 | 7.62 | 7.39 | 8.41 | 7.83 |
| 2010 | 8.83 | 8.37 | 8.47 | 9.51 | 8.73 |
| 2011 | – | 9.25 | 9.32 | 10.58 | 9.69 |
| 2012 | 10.77 | 10.30 | 10.46 | 11.67 | 10.64 |
| 2013 | 11.73 | 11.12 | 11.11 | 12.69 | 11.54 |
| 2014 | 12.47 | 11.92 | 11.83 | 13.56 | 12.36 |
| 2015 | 13.27 | 12.82 | 12.84 | 14.62 | 13.15 |
| 2016 | 14.06 | 13.68 | 13.08 | 15.44 | 13.92 |
| 2017 | 15.32 | 14.49 | 13.90 | 16.13 | 14.68 |
| 2018 | 16.29 | 15.43 | 14.69 | 16.88 | 15.42 |
| 2019 | 17.83 | 16.32 | 15.28 | 17.85 | 16.14 |
| 2020 | 18.34 | 17.33 | 15.58 | 17.66 | 16.85 |
| 2021 | 18.11 | 17.92 | 16.36 | 18.65 | 17.56 |

Merge rates are calculated as the share of graduates in the Current Population Survey (CPS) and American Community Survey (ACS) that are successfully found in PSEO. Count rates are calculated by comparing the cumulative count of graduates in PSEO with the count of graduates in the CPS, ACS, and IPEDS. See text for more details on coverage rate construction. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

Table A4: PSEO Stock Coverage Rate (Doctoral Research Degrees)

| | *Merge method* | | *Count method* | | |
|---|---|---|---|---|---|
| **Year** | **CPS** | **ACS** | **CPS** | **ACS** | **IPEDS** |
| 2001 | – | 0.24 | 0.01 | 0.20 | 0.20 |
| 2002 | 0.41 | 0.71 | 0.52 | 0.86 | 0.90 |
| 2003 | 1.10 | 1.14 | 1.19 | 1.51 | 1.70 |
| 2004 | 1.22 | 2.17 | 1.78 | 2.36 | 2.51 |
| 2005 | 2.99 | 2.94 | 2.60 | 3.29 | 3.42 |
| 2006 | 2.16 | 3.49 | 3.24 | 4.13 | 4.35 |
| 2007 | 3.51 | 4.75 | 4.20 | 5.40 | 5.45 |
| 2008 | 3.89 | 5.35 | 5.33 | 6.21 | 6.50 |
| 2009 | 3.97 | 6.18 | 5.93 | 7.35 | 7.59 |
| 2010 | 6.32 | 6.80 | 6.53 | 8.15 | 8.61 |
| 2011 | – | 7.59 | 7.05 | 9.02 | 9.67 |
| 2012 | 6.11 | 8.19 | 8.05 | 10.19 | 10.81 |
| 2013 | 6.93 | 8.87 | 8.11 | 10.77 | 11.97 |
| 2014 | 7.23 | 9.44 | 8.57 | 11.57 | 13.00 |
| 2015 | 8.97 | 10.31 | 9.64 | 12.60 | 14.07 |
| 2016 | 10.36 | 11.43 | 9.55 | 13.78 | 15.02 |
| 2017 | 11.19 | 11.98 | 10.10 | 14.48 | 15.95 |
| 2018 | 10.76 | 13.25 | 10.03 | 14.80 | 16.83 |
| 2019 | 8.88 | 13.37 | 10.85 | 15.29 | 17.78 |
| 2020 | 12.34 | 13.84 | 11.29 | 14.95 | 18.67 |
| 2021 | 12.01 | 14.36 | 11.75 | 15.66 | 19.48 |

Merge rates are calculated as the share of graduates in the Current Population Survey (CPS) and American Community Survey (ACS) that are successfully found in PSEO. Count rates are calculated by comparing the cumulative count of graduates in PSEO with the count of graduates in the CPS, ACS, and IPEDS. See text for more details on coverage rate construction. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

Table A5: PSEO Stock Coverage Rate (Doctoral Professional Degrees)

| | *Merge method* | | *Count method* | | |
|---|---|---|---|---|---|
| **Year** | **CPS** | **ACS** | **CPS** | **ACS** | **IPEDS** |
| 2001 | – | 0.12 | 0.00 | 0.20 | 0.18 |
| 2002 | 0.16 | 0.57 | 0.36 | 0.70 | 0.63 |
| 2003 | 1.05 | 0.81 | 1.00 | 1.21 | 1.08 |
| 2004 | 2.00 | 1.16 | 1.61 | 1.67 | 1.53 |
| 2005 | 1.84 | 1.61 | 2.30 | 2.31 | 2.07 |
| 2006 | 1.49 | 2.06 | 2.97 | 2.98 | 2.60 |
| 2007 | 2.70 | 2.74 | 3.72 | 3.63 | 3.15 |
| 2008 | 3.06 | 3.01 | 4.57 | 4.31 | 3.72 |
| 2009 | 3.36 | 3.77 | 5.26 | 4.96 | 4.27 |
| 2010 | 4.19 | 4.18 | 6.58 | 5.76 | 4.84 |
| 2011 | – | 4.68 | 7.90 | 6.53 | 5.46 |
| 2012 | 5.29 | 5.16 | 8.58 | 7.33 | 6.11 |
| 2013 | 5.35 | 5.70 | 9.80 | 8.22 | 6.76 |
| 2014 | 5.24 | 6.29 | 10.81 | 9.09 | 7.38 |
| 2015 | 5.78 | 6.90 | 11.37 | 9.70 | 8.00 |
| 2016 | 6.18 | 7.28 | 13.14 | 10.24 | 8.62 |
| 2017 | 8.73 | 7.57 | 14.67 | 10.93 | 9.23 |
| 2018 | 8.36 | 8.20 | 16.01 | 11.24 | 9.83 |
| 2019 | 10.43 | 8.87 | 17.46 | 12.28 | 10.46 |
| 2020 | 8.46 | 9.78 | 18.05 | 12.20 | 11.09 |
| 2021 | 10.62 | 9.86 | 19.20 | 13.21 | 11.70 |

Merge rates are calculated as the share of graduates in the Current Population Survey (CPS) and American Community Survey (ACS) that are successfully found in PSEO. Count rates are calculated by comparing the cumulative count of graduates in PSEO with the count of graduates in the CPS, ACS, and IPEDS. See text for more details on coverage rate construction. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

Table A6: Student Demographics (Certificates)

| | **Overall** | **PSEO** |
|---|---|---|
| Sex | | |
| Male | 40.1 | 45.4 |
| Female | 59.9 | 54.6 |
| Race/ethnicity | | |
| Asian | 4.2 | 2.9 |
| Black or African American | 16.7 | 12.1 |
| Hispanic | 20.2 | 11.4 |
| White (Non-Hispanic) | 50.1 | 63.5 |
| Other and Unknown | 8.9 | 10.1 |
| Age | | |
| Less than 18 | 1.8 | 2.3 |
| 18 to 24 | 43.8 | 43.1 |
| 25 to 39 | 38.5 | 36.6 |
| 40 and above | 15.9 | 18.1 |
| Observations | 17,941,580 | 2,637,000 |

Overall statistics generated by author from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2002-2021, Completions data files. “Asian” includes “Asian” and “Native Hawaiian/Pacific Islander” in IPEDS prior to 2011. Age only available beginning in 2012. "Age unknown" category excluded from calculation of proportions. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

Table A7: Student Demographics (Associate Degrees)

| | **Overall** | **PSEO** |
|---|---|---|
| Sex | | |
| Male | 38.9 | 38.6 |
| Female | 61.1 | 61.3 |
| Race/ethnicity | | |
| Asian | 4.9 | 3.4 |
| Black or African American | 12.1 | 10.4 |
| Hispanic | 16.4 | 12.1 |
| White (Non-Hispanic) | 56.9 | 64.0 |
| Other and Unknown | 9.9 | 10.2 |
| Age | | |
| Less than 18 | 0.7 | 0.5 |
| 18 to 24 | 49.2 | 52.9 |
| 25 to 39 | 37.6 | 34.7 |
| 40 and above | 12.6 | 11.9 |
| Observations | 17,853,950 | 5,393,000 |

Overall statistics generated by author from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2002-2021, Completions data files. “Asian” includes “Asian” and “Native Hawaiian/Pacific Islander” in IPEDS prior to 2011. Age only available beginning in 2012. "Age unknown" category excluded from calculation of proportions. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

Table A8: Student Demographics (Bachelor's Degrees)

| | **Overall** | **PSEO** |
|---|---|---|
| Sex | | |
| Male | 42.6 | 43.1 |
| Female | 57.5 | 56.8 |
| Race/ethnicity | | |
| Asian | 6.6 | 5.3 |
| Black or African American | 9.2 | 8.6 |
| Hispanic | 10.8 | 7.9 |
| White (Non-Hispanic) | 62.2 | 69.8 |
| Other and Unknown | 11.2 | 8.5 |
| Age | | |
| Less than 18 | 0.0 | 0.0 |
| 18 to 24 | 67.9 | 72.4 |
| 25 to 39 | 24.9 | 22.4 |
| 40 and above | 7.2 | 5.3 |
| Observations | 34,836,961 | 12,070,000 |

Overall statistics generated by author from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2002-2021, Completions data files. "Asian" includes "Asian" and "Native Hawaiian/Pacific Islander" in IPEDS prior to 2011. Age only available beginning in 2012. "Age unknown" category excluded from calculation of proportions. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

Table A9: Student Demographics (Master's Degrees)

| | **Overall** | **PSEO** |
|---|---|---|
| Sex | | |
| Male | 40.0 | 39.3 |
| Female | 60.0 | 60.2 |
| Race/ethnicity | | |
| Asian | 5.3 | 7.0 |
| Black or African American | 9.7 | 8.3 |
| Hispanic | 7.3 | 5.9 |
| White (Non-Hispanic) | 54.1 | 65.1 |
| Other and Unknown | 23.7 | 13.7 |
| Age | | |
| Less than 18 | 0.0 | 0.0 |
| 18 to 24 | 16.8 | 19.9 |
| 25 to 39 | 64.2 | 63.2 |
| 40 and above | 19.0 | 16.8 |
| Observations | 14,210,428 | 3,958,000 |

Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2002-2021, Completions data files. "Asian" includes "Asian" and "Native Hawaiian/Pacific Islander" in IPEDS prior to 2011. Age only available beginning in 2012. "Age unknown" category excluded from calculation of proportions. Statistics generated by author.

Table A10: Student Demographics (Doctoral Degrees)

| | **Overall** | **PSEO** |
|---|---|---|
| Sex | | |
| Male | 48.4 | 49.1 |
| Female | 51.6 | 50.8 |
| Race/ethnicity | | |
| Asian | 9.7 | 13.6 |
| Black or African American | 6.6 | 6.0 |
| Hispanic | 6.2 | 4.5 |
| White (Non-Hispanic) | 57.8 | 63.7 |
| Other and Unknown | 19.7 | 12.2 |
| Age | | |
| Less than 18 | 0.0 | 0.0 |
| 18 to 24 | 5.3 | 5.9 |
| 25 to 39 | 80.7 | 81.4 |
| 40 and above | 14.0 | 12.7 |
| Observations | 3,286,972 | 941,000 |

Overall statistics generated by author from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2002-2021, Completions data files. “Asian” includes “Asian” and “Native Hawaiian/Pacific Islander” in IPEDS prior to 2011. Age only available beginning in 2012. "Age unknown" category excluded from calculation of proportions. All results were approved for release by the U.S. Census Bureau, authorization number CBDRB-FY25-CES018-022.

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