



PSEO Coalition

Glossary of Terms and Concepts

Chapter 2

Colin Chellman, Ph.D.
Brianna Moore-Trieu, Ph.D.
David R. Troutman, Ph.D.

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This document provides definitions and background information on key concepts underlying the PSEO Data Explorer. It aims to clarify and define essential terms and concepts to ensure you have a solid foundation for navigating the platform and effectively communicating the information it contains. By familiarizing yourself with the glossary, you will gain insights into the data systems and sources that are the foundation for the PSEO. Whether you are a novice or an experienced user, referring to this section will enable you to extract meaningful insights from the large amount of data available through PSEO.

The Longitudinal Employer-Household Dynamics (LEHD) Data

- 1) **LEHD:** The Longitudinal Employer-Household Dynamics (LEHD) data is the data source for PSEO. The LEHD program is a project of the U.S. Census Bureau. Its primary goal is to provide comprehensive and detailed information on employment, earnings, and job flows in the United States.

What to know?

- a) The LEHD is the primary data source for the PSEO.
- b) LEHD data are based on different administrative sources, primarily Unemployment Insurance (UI) earnings data and the Quarterly Census of Employment and Wages (QCEW), and censuses and surveys.
 - i) LEHD is a collection of individual state UI records.
 - ii) LEHD data cover 96% of employment in the US. (Source: LEHD PSEO Documentation, https://lehd.ces.census.gov/data/pseo_documentation.html)
 - iii) UI data are collected regularly by each state from employers covered by state UI law. Employee categories that are NOT included in the data are not covered by UI law (and, thus, not reported for state UI purposes) include informal work, agricultural work, the self-employed, military, federal workers, and those working outside the country.
 - (1) Some graduates are continuing their education but have part-time jobs or no job. In the underlying PSEO data, these graduates bring down the average for their peers who go directly into the labor force full-time. If a significant portion of graduates are continuing their education and not actively working, the median earnings for this group could be lower than those who have entered the job market. This can result in a lower median earnings figure compared to a scenario where all graduates enter the workforce immediately.
 - (2) The effect on median earnings will depend on factors such as the proportion of graduates continuing their education, the length and nature of their educational programs, job market conditions, and the industry in which they aim to work. These factors can vary significantly between different groups of graduates and can impact the interpretation of median earnings data.

What is it for?

- c) The LEHD program focuses on constructing longitudinal data, which tracks individuals and businesses over time to capture changes in employment and household patterns. This longitudinal perspective enables researchers, policymakers, and businesses to gain insights

into employment dynamics, worker mobility, and the impact of economic events, such as recessions or industry shifts.

- d) LEHD data are anonymized and aggregated at various geographic levels, ranging from national to local areas. LEHD data is available to the public in tabular form in the Census Bureau's Quarterly Workforce Indicators (QWI), LEHD Origin-Destination Employment Statistics (LODES), Job-to-Job Flows (J2J), and Post-Secondary Employment Outcomes (PSEO) data products, as well as in accompanying analysis tools such as QWI Explorer, OnTheMap, J2J Explorer, and PSEO Explorer.
 - e) This allows for the analysis of employment trends at different geographic scales (units of analysis), providing a lens into regional variations and local labor market conditions. The LEHD program provides researchers and policymakers with a rich dataset that can be used to study topics such as job creation and destruction, worker flows between industries and regions, the effectiveness of workforce development programs, and the impact of policy interventions on employment outcomes. It serves as a valuable resource for economic research, policy planning, and informed decision-making.
- 2) **CIP codes:** CIP codes are standardized numerical codes assigned to academic programs to categorize and classify them according to their content and subject matter. CIP stands for Classification of Instructional Programs.

What to know?

Various educational institutions, government agencies, and researchers use the CIP code system to collect and analyze data related to academic programs. Each program is assigned a unique CIP code, which consists of several digits that represent different levels of specificity in terms of program classification. In the PSEO data, a CIP code is a label the college or university assigns to describe a particular academic program. (Note: You may hear colleagues say 4-digit or 6-digit CIP code. A higher number of digits indicates greater specificity in the type of academic program)

- a) While CIP codes offer a standardized classification system -- allowing for comparisons across colleges -- program names can vary and reflect the unique branding and terminology used by each institution.
- b) The PSEO Data Explorer reports data by CIP code and description, not by each individual college's program name.

Metrics

- 3) **Inflation:** Inflation refers to the gradual increase in the general price level of goods and services over time, leading to a decrease in the purchasing power of a currency. Adjusting dollars for inflation when reporting numbers across time is crucial for accurate and meaningful analysis. By adjusting dollars for inflation, we account for the changing value of money and enable valid comparisons of economic data and financial figures across different time periods.
- 4) **Percentiles (25th, 50th, 75th):** Percentiles are statistical measures that divide a dataset into groups: The 25th, 50th (also known as the median), and 75th percentiles provide insights into the distribution of a dataset by dividing it into quarters. The 25th to 75th percentiles represent a middle

range of earnings . Displaying the highest and lowest values –instead of percentiles– may give you a distorted view of the range of earnings of your graduates based on just one or two people. The 25th and 75th percentiles, on the other hand, provide a more reliable view of the range -- 25% of graduates earn even less and 25% earn even more than the percentiles displayed.

- a) **25th Percentile (Q1):** The 25th percentile represents the value below which 25% of the data fall. In other words, it divides the dataset into quarters. This value is also known as the lower quartile (Q1). It indicates that 25% of the data points are lower than or equal to this value, while 75% of the data points are higher than or equal to it.
- b) **50th Percentile (Q2 or Median):** The 50th percentile, often referred to as the median, divides the dataset into two equal halves. It represents the middle value of the dataset when arranged in ascending or descending order. This means that 50% of the data points are lower than or equal to the median, and 50% of the data points are higher than or equal to it.
- c) **75th Percentile (Q3):** The 75th percentile represents the value below which 75% of the data fall. It is also referred to as the upper quartile (Q3). This value indicates that 75% of the data points are lower than or equal to this value, while 25% of the data points are higher than or equal to it.

Median vs. Mean and Earnings vs. Income

What to know?

- 5) ***Median vs Mean:*** Earnings data often follow a skewed distribution, where a small number of extremely high earners can significantly influence the mean. This can lead to a distorted average that does not reflect the typical earnings of the majority. The median is often used to report earnings figures instead of the mean because it provides a more accurate representation of the typical earnings within a group or population, especially when the data contain extreme values. The median is not affected by extreme values and provides a better measure of typical earnings within a group.
- 6) ***Earnings vs Income:*** The terms income and earnings are often used interchangeably. However, earnings are just one kind of income. Earnings are primarily wages from a job and are typically a large source of income. Other sources of income include interest, dividends, annuities, pensions, Social Security, child support, public assistance, among others.

Pointers and Caveats / Tips and Tricks

The official documentation for the PSEO is filled with useful information, and as such, is a critical reference for your work with the PSEO data (See https://lehd.ces.census.gov/data/pseo_documentation.html). However, there are some additional practical pointers and caveats, tips and tricks you can keep in mind to make your experience as efficient as possible and to maximize the usefulness of your results. This section starts with more conceptual pointers and moves into more granular tips about using the tool itself.

Caveats

- 1) **Earnings premiums:** PSEO data cannot offer any insights or information regarding the earning premium of a college degree compared to completing a high school education only. This means that the PSEO data do not provide any specific measurements to determine how much a college graduate would be earning if they had not pursued higher education. In other words, there is no counterfactual. When we say "counterfactual," we refer to a hypothetical scenario or comparison to what would have happened if certain conditions were different. The absence of a counterfactual means that we cannot draw direct conclusions about the earning potential or economic outcomes of college graduates compared to those who did not pursue higher education. The data may provide valuable insights into the earnings of college graduates between institutions or degree programs but it does not offer a direct comparison to their potential earnings if they had followed a different educational path.
- 2) **No guaranteed earning potential:** Earning a degree in a particular major and college does not guarantee you will earn the average. This is not a forecasting model, it is based on historical data.
- 3) **PSEO data are not intended for “diagnosing” wage outcomes:** PSEO data do not provide important information that influences graduate wage outcomes, such as student learning outcomes in their programs and institutions and skills gained by students or required by particular occupations.
- 4) **Occupational data:** PSEO data do not provide insights into occupations, only college majors (programs) and industry. It is not possible to compare the earnings of an accountant working at a hospital to those working in an accounting firm. Without occupation information it may be difficult for students and parents to envision what careers post-graduation looks like. Institutions may seek out tools that use LinkedIn or Lightcast data to assess occupations of graduates, although these tools will have lower coverage than the PSEO data and be limited to LinkedIn users. Lightcast is an example of one company who provides this information:
<https://lightcast.io/solutions/education/alumni-pathways>
- 5) **Exclusions/Match Rate:** Data from PSEO-participating institutions are matched against records held by the LEHD. Non-graduates are not included, as are graduates who do not work throughout the year. The number of omissions from the LEHD match will differ by institution. For more details, see the PSEO’s documentation: https://lehd.ces.census.gov/data/pseo_documentation.html
 - a) To see the match rate for your program and institution, choose [Flows]; unclick [Industry and Geo]; choose 1, 5, or 10 and then a major -- you will see the match rate by major.
 - b) Note that this match rate is labeled "Employed" which is inaccurate. It is a match rate and may not include employed individuals who are not represented in the UI data.
- 6) **Annual earnings by educational attainment level:** Parents and Students may also need more information on employment outcomes by educational attainment level. The PSEO tool does not provide information by terminal degree. For example, outcomes for students from an Associate degree program may also earn a bachelor’s degree later on or graduates of bachelor’s degree program may also earn a graduate degree later on. Currently the PSEO tool does not differentiate earnings outcomes based on the terminal educational attainment level of the student. This information could be collected using 1098-T Tax forms or potentially National Student Clearinghouse Student Tracker data. Information about National Student Clearinghouse data can be found here:
<https://www.studentclearinghouse.org/colleges/studenttracker/>
 - a) **Transfer students:** Note that if a student plans to get an associate degree and then transfer to a baccalaureate degree program, selecting “Associate” or “Baccalaureate” degree level

will produce different numbers on the graph. This provides an opportunity to discuss the implications of getting one degree over another, depending on field of study.

i) **Earnings are influenced by several factors:**

- (1) **Degree level:** Higher degree levels typically provide more specialized knowledge and skills, which are in greater demand and command higher salaries in the job market. Advanced degrees such as baccalaureate and beyond often require a more extensive and rigorous curriculum, allowing graduates to develop expertise in specific fields.
- (2) **Job market demand:** Certain professions or industries may require specific degrees or higher levels of education. For example, professions like medicine, law, engineering, or research often require advanced degrees. The demand for professionals in these fields tends to be higher, resulting in higher median earnings for individuals with higher degrees.
- (3) **Career advancement opportunities:** Higher degrees often open up more significant career advancement opportunities. Many managerial and leadership positions require advanced degrees, and individuals with these qualifications may be more likely to secure higher-paying positions with greater responsibility and authority.
 - (a) You can see this pattern in the growth of earnings when you select 1, 5, or 10 years after graduating.
- (4) **Networking and connections:** Pursuing higher degrees often provides opportunities for networking and building connections with professionals in the field. These connections can lead to better job prospects and higher-paying positions.
- (5) **Long-term earning potential:** While there may be an initial cost associated with pursuing higher degrees, it often translates into higher long-term earning potential. Graduates with higher degrees tend to have better prospects for promotions, salary increases, and career growth over time.

7) **Small programs or group size:** Reporting statistics for a small group (for example, small programs at small colleges) is generally not a good idea for several reasons, including privacy and confidentiality, statistical reliability, inadequate sample representation, increased sensitivity to outliers, and limited comparability. The PSEO's minimum group size is less than 30. For more details, see the PSEO's documentation: https://lehd.ces.census.gov/data/pseo_documentation.html

- a) **Privacy and confidentiality concerns:** Reporting statistics for small groups (also referred to as small cell sizes) can potentially breach privacy and confidentiality standards. When dealing with sensitive or confidential information, reporting statistics for small groups increases the risk of inadvertently revealing individuals' identities. Take the extreme example of program Y at college X with only 1 graduate. Average earnings for that program means reporting that one graduate's earnings.
- b) **Statistical reliability:** When a group is too small, the resulting statistics may not be reliable and can lead to unstable estimates, making it difficult to draw meaningful conclusions or make accurate predictions.
- c) **Inadequate sample representation:** Small groups may not adequately represent the underlying population or subgroup being analyzed. The limited number of observations can introduce bias and distort the true characteristics of the population, leading to misleading or incorrect interpretations. It becomes challenging to generalize findings from small groups to the broader population accurately.

- d) **Increased sensitivity to outliers:** With small groups, the presence of even a single outlier (for example, an individual with extremely high or extremely low earnings) can disproportionately influence the reported statistics. Outliers have a greater impact on smaller groups, potentially skewing the results and leading to erroneous interpretations. It becomes difficult to discern whether an observed effect is genuinely meaningful or simply a result of a few extreme observations.
- 8) **Factors affecting wages reported in the PSEO data:** There are graduates who are continuing their education but have part-time jobs or no job. In the underlying PSEO data, these graduates bring down the average for their peers who go directly into the labor force full-time. If a significant portion of graduates are continuing their education and not actively working, the median earnings for this group could be lower than those who have entered the job market. This can result in a lower median earnings figure compared to a scenario where all graduates enter the workforce immediately.
- a) The effect on median earnings will depend on various factors such as the proportion of graduates continuing their education, the length and nature of their educational programs, job market conditions, and the industry in which they aim to work. These factors can vary significantly between different groups of graduates and can impact the interpretation of median earnings data.
- 9) **Benchmarking:** You will only be able to look up one institution at a time using this tool. The PSEO Data Explorer is most useful for comparing earnings outcomes for degree programs at the same institution rather than the same degree program across institutions. The PSEO explorer tool is based on institutional level data, however the current tool does not allow for direct institutional comparisons.
- a) Other useful benchmarks for putting PSEO earnings data in context:
- b) Median earnings for high school completers in the state to understand the degree premium or
- c) Median earnings for associates/bachelors degree recipients in the state to understand relative standing of this colleges graduates compared to other college graduates or
- d) Cost of living measures (e.g. MIT living wage or ALICE metrics) to compare earnings to a minimum level of income needed to support oneself by geographic region (see chapter 5 on how to merge these data sources with the PSEO data).
- 10) **Weighing student debt against earning potential:** Users may want to know how much students earn compared to the loan debt incurred at the institution. Information on student loan debt must be extracted and estimated from institutional data. Since the PSEO tool is provided in aggregate a commensurate median aggregate loan debt figure must be calculated using the same student records provided to PSEO that were merged with employment data. While this is not a true debt-to-income ratio, it can provide a sufficient estimate, if needed.
- a) **Return on Investment (ROI):** An estimated ROI for most colleges can be found at Georgetown University Center on Education and Workforce website: <https://cew.georgetown.edu/cew-reports/roi2022/>. Note: These metrics are calculated using data from the College Scorecard and include students who have not graduated.

Tips & Tricks

1. **Scale of graphs:** Expect the scale of graphs to change whenever you click a new filter. The scale of the graphs is not fixed.
2. **Finding your program of interest:** Program specificity, CIP codes, and implications for results produced from the PSEO Data Explorer.

- a. At the bottom of the Explorer page, look for the listing of programs at the institution you selected. You can select more than one program at a time to compare earnings for multiple programs at the same institution.
 - i. As an example, select “All Instructional Programs;” “Engineering;” “Liberal Arts and Sciences, General Studies and Humanities.”
 - ii. It is a good idea to select “All instructional programs” –in addition to the specific program(s) you are interested in– so you can make comparisons to the overall average at your college of interest.
- b. Note that degree programs are sorted by size (# of graduates) by default, not in alphabetical order.
 - i. To list programs in alphabetical order, look for the “Sort Program List by” on the left-hand side of the screen and select “Name.”
- c. If the program names are not specific enough, find the Program Specificity filter on the left-hand side of the screen. Click “Detailed.”
 - i. Using Engineering as an example, click “Detailed” Program Specificity and now you will see the broad category of Engineering broken into five specific programs: Agricultural Engineering; Civil Engineering; Computer Engineering; Mechanical Engineering; and Electrical, Electronic, and Communications Engineering.
 - ii. By mousing over the program name, you see the size of the graduation cohort used to calculate these earnings figures.
 - iii. Note that the scale of the chart changes when you go from “General” to “Detailed.”
 1. Computer Engineering graduate earnings are literally off the charts.
 2. When displaying results for Computer Engineering graduates alone, the chart will reflect the earnings distribution specifically for that group. It will show how the earnings are distributed among Computer Engineering graduates and provide a sense of the range and distribution of their earnings within the group. Computer Engineering graduates earn more than other Engineering graduates at the low (25th percentile), middle (50th), and high (75th) points of the range. When separated from other Engineering majors, the scale must expand to display earnings for Computer Engineering graduates -- otherwise, their earnings would be "off the charts."
 3. However, when Computer Engineering graduates are combined with all other engineering graduates, the chart will represent a larger group of Engineering graduates who do not earn as much as Computer Engineering graduates, and thus bring down the average and changing the chart's scale.
- d. One additional method to find your program of interest: You can search for keywords in the box labeled “Filter Degrees” in the lower left-hand corner of the screen. Type the keyword in the box, and the PSEO Data Explorer immediately displays any program names/descriptions containing your keyword.
- e. If you still do not see the program you are looking for, it is most likely a result of the PSEO Data Explorer reporting figures by CIP code and description rather than the exact program name used by individual colleges.
 - i. CIP stands for Classification of Instructional Programs. CIP codes are standardized numerical codes and descriptions assigned to academic programs to categorize and classify them according to their content and subject matter. These standardized codes and descriptions allow for comparisons across institutions.

- ii. A program name is the specific title or label the college or university assigns to describe a particular academic program. While CIP codes offer a standardized classification system -- allowing for comparisons across colleges -- program names can vary and reflect each institution's unique branding and terminology.
- iii. The PSEO Data Explorer reports data by CIP code and description, not by each college's program name.
- f. Note that there may be too few graduates in the major and college that you select to produce results.
 - i. For example, notice that the dark blue (10-year) bar is missing for both Agricultural Engineering and for Computer Engineering. There are either too few graduates in the major, or the programs have not existed long enough to produce graduates.
 - ii. Why does the program size matter? See entry in this section labeled "Reporting statistics for a small group."

3. **Choosing graduation cohorts for reporting**

- a. The graduation cohort is the year in which a student graduated. The default is "All Cohorts," and that is sufficient for many purposes. If you are interested in earnings for only the most recent graduates, select more recent years like 2016-2018 from the pull-down menu.
 - i. You cannot retrieve results for a single graduation cohort, only groupings of three for baccalaureate graduates and five for all others: associate, certificate (<1 year, 1-2 years, 2-4 years), master's, doctoral-professional practice, and doctoral-research/scholarship.
 - ii. Keep in mind that limiting your selection to more recent years reduces the size of the population for which the tool reports data, and results might be subject to small group size limitations (see above).
 - iii. Data in the PSEO Data Explorer have been adjusted for inflation so that earnings over time are comparable (this adjustment addresses the fact that a dollar today is worth less than a dollar tomorrow.) See entry in the glossary for "Inflation."

Results in Context

The third section, "Results in Context," provides guidance for putting PSEO Data Explorer results in context. The PSEO Data Explorer offers valuable insights into past trends and patterns, enabling informed decision-making. While it may not predict future outcomes, it is a reliable reference point for understanding historical data. In examining numbers from the data tool, consider other factors that may have influenced the data, such as policy changes, economic conditions, technological advancements, and variations in individual student characteristics like grit, motivation, and skills attained in school. By examining the broader context, you can better interpret and apply the results obtained from the PSEO Data Explorer. Remember that these findings should be used as a starting point for further analysis and exploration rather than definitive conclusions. The following factors provide important context for the results you will see from the tool.

- 1) **Demand and job market:** The demand for specific majors and careers can vary over time and across regions and states. Some fields may experience higher demand for professionals, leading to better job prospects and potentially higher salaries. Conversely, oversaturated fields may have more competition and lower salaries.
 - a) The data in the PSEO Data Explorer are retrospective or backward-looking. They are not a prediction of future demand for specific majors and careers. However, they give you a sense

of the earnings trajectory for careers chosen by previous graduates of the programs and schools you select.

- b) **Job projections:** Because the PSEO explorer tool is based on historical data, the tool does not necessarily predict the earning potential or workforce demand for degree programs in the future. In this case, *state or federal employment projections* by industry and occupation could inform questions about future employment prospects by geographic region. The U.S. Bureau of Labor Statistics publishes occupational employment projections here: <https://www.bls.gov/emp/>. For state projections, contact your state workforce agency.
 - c) **Companies of employment:** The PSEO explorer tool may also not fully be able to answer questions about which companies employ the institution's graduates. Institutions may choose to supplement this information using LinkedIn's College Alumni Dashboards. These dashboards can be accessed by typing the college name into the search window, then selecting the college and navigating to the "Alumni" tab of the dashboard. This view will show the top ten companies that employ college graduates who are LinkedIn users. An Example can be found here: <https://www.linkedin.com/school/brooklyn-college/people/>
Note: there are many caveats to using LinkedIn as a source of employment outcomes.
- 2) **Curriculum alignment, job placement, and the labor market:** Related to labor market demand for particular majors, curriculum alignment refers to the extent to which the courses and skills taught in institutions of higher education align with the current requirements of the job market. In other words, does the education provided by colleges and universities adequately prepare students for the specific needs of employers and industries? PSEO data allow for comparisons of labor market returns by program and college; variation across colleges in returns for the same field could be driven in part by the extent to which a particular college's curriculum meets the needs of the labor market.
- a) When the college curriculum is aligned well with the labor market, you are more likely to observe higher economic returns for graduates based on:
 - i) **Enhanced employability:** Graduates are more likely to possess the knowledge, skills, and competencies employers seek. This increases their chances of finding suitable job opportunities and securing employment more quickly.
 - ii) **Higher earning potential:** Graduates who have received training relevant to the job market are often better positioned to negotiate higher salaries. Their skills are in demand, and employers are willing to offer competitive compensation.
 - iii) **Reduced skills gap:** Aligning the college curriculum with the labor market helps bridge the skills gap between what graduates have learned and what employers require.
 - iv) **Faster career progression:** When graduates are well-prepared for their careers, they can adapt quickly to their roles and responsibilities. This accelerated learning curve can lead to faster career advancement.
 - v) **Employer satisfaction:** Companies benefit from hiring job-ready graduates who require less on-the-job training, leading to increased employer satisfaction and lower training costs.
 - b) However, if the curriculum does not align with the labor market, you are more likely to observe negative economic returns due to:
 - i) **High unemployment:** Graduates may struggle to find employment if their skills and knowledge are not relevant or in demand, leading to higher unemployment rates or underemployment.

- ii) **Skills mismatch:** Graduates may possess qualifications that are not directly applicable to the available job opportunities, resulting in a mismatch between their skills and the needs of employers.
 - iii) **Reduced productivity:** Employers may face challenges integrating underprepared or unprepared graduates into their workforce, leading to decreased productivity.
 - c) **Job placement rates:** Parents and students might have questions about obtaining employment after graduation. Institutions may administer an *alumni survey* or the *NACE first destination survey* that can estimate job placement rates for graduates. For more information on NACE's First Destination Survey can be found at the following link: <https://www.naceweb.org/job-market/graduate-outcomes/first-destination/>
- 3) **Location and cost of living:** Jobs tend to be concentrated in urban areas, often leading to increased demand for resources and housing. This demand drives up the cost of living, creating variations in living costs that are strongly tied to location. Subsequently, this location-dependent cost of living means that salaries may not carry the same value from one place to another. A salary considered high in one area may not stretch as far in another when considering the overall cost of living, including housing, taxes, and transportation expenses, among others. Consider the specific location where you/your child wants to live and work after graduation: Living in the capital of Hawaii will cost more than living in a rural area in California, for example.
- 4) **Migration and economic competitiveness of a region:** When we talk about the economic competitiveness of a region or state, we are referring to its ability to attract businesses, create jobs, and foster economic growth. A region with a strong and diverse economy will likely have higher demand for skilled workers, including college graduates. This demand can drive up wages due to the limited supply of qualified candidates while attracting workers from other regions and states.
- a) In an economically competitive region or state, employers often require a skilled and educated workforce to remain competitive. Having acquired specialized knowledge and skills, college graduates become attractive candidates for these employers. As the demand for college-educated workers increases, employers are willing to pay higher wages to attract and retain them.
 - b) Conversely, the demand for college-educated workers might be lower in regions or states with weaker economic competitiveness. Consequently, the median wages of college graduates in these areas might be comparatively lower due to reduced competition for skilled workers. In some cases, they might even face difficulty finding suitable employment opportunities, leading to potential under-employment or lower wages.
 - c) **Migration:** As the median wages of college graduates vary across regions, it incentivizes individuals to migrate to areas with better job prospects. When graduates find better opportunities in other regions or states, they might be willing to relocate to maximize their earning potential and career growth. This migration can further exacerbate the wage disparity between different regions. As skilled workers leave less competitive regions, those areas may face a "brain drain" where the most talented individuals seek better opportunities elsewhere. This, in turn, can hinder the economic growth and development of the less competitive regions.
- 5) **Individual skills and qualifications:** Personal skills, qualifications, and experiences can significantly affect earning potential. Factors such as academic performance, internships, certifications, work experience, and networking can make a difference in securing higher-paying positions within a chosen field.
- 6) **Career progression and growth:** Some careers have clear pathways for advancement and higher earning potential over time. Others may have more limited growth opportunities or less clear

pathways for advancement. Researching the potential for career progression and growth within a specific field can provide insights into long-term earning prospects.

- 7) **Life and financial goals and expectations:** What one person considers to be sufficient to live comfortably will vary depending on personal circumstances, lifestyle choices and expectations, and financial goals. Different individuals may have different expectations and priorities for their financial situation and lifestyle. Align your personal goals and expectations with the earning potential of your chosen field.
- 8) **Networking and connections:** Pursuing higher degrees often provides opportunities for networking and building connections with professionals in the field. These connections can lead to better job prospects and higher-paying positions.
- 9) **Long-term earning potential:** While there may be an initial cost associated with pursuing higher degrees, it often translates into higher long-term earning potential. Graduates with higher degrees tend to have better prospects for promotions, salary increases, and career growth over time.
- 10) **Variation in economic returns over time:** PSEO data can help you understand the traditional variation in economic returns over time depending on the field of study pursued. The labor market outcomes for graduates in different fields and degree levels exhibit diverse trajectories over time.
 - a) Some degree programs yield relatively low earnings in the initial year after graduation but by the end of the first decade post-graduation, these same programs demonstrate a considerable increase in economic returns.
 - b) Conversely, some degree programs present students with more promising early economic returns immediately after completing their education, as well as five years post-graduation. However, the upward trajectory of earnings observed during the early stages may start to plateau or stabilize over the subsequent period, resulting in a relatively constant level of earnings by the end of the first decade in the labor market.
 - c) These divergent trends suggest that there are certain career paths where the monetary benefits take time to materialize fully, likely due to the need for skill accumulation, experience, and career progression, while others provide early economic advantages that could taper over time. The PSEO data show past trends that may be reasonably expected to repeat in the future, allowing for appropriate planning for both short-term and long-term career goals. Prospective students should recognize that the financial rewards of certain degree programs may not be immediately apparent and may require commitment and continual investment to realize their full potential over time. On the other hand, individuals attracted to fields offering lucrative early returns should be aware of potential future stagnation and plan accordingly for continued professional growth.
- 11) **Labor market discrimination:** Labor market discrimination can have a significant impact on average wage outcomes, manifesting itself in a number of ways:
 - a) Differential access to employment opportunities: Discrimination can limit certain groups' access to education, training, and job opportunities. If individuals from these groups are unable to secure higher-paying jobs or positions that offer career advancement, it can result in lower average wages for the affected group.
 - b) Occupational segregation: Discrimination can lead to occupational segregation, where certain groups are concentrated in low-paying or less prestigious jobs. For example, if women or racial/ethnic minorities are disproportionately confined to lower-paying sectors or occupations, it can contribute to lower average wages for these groups.
 - c) Wage "penalties": Discrimination can result in wage penalties for individuals from disadvantaged groups, even when they possess similar qualifications and experience as their counterparts. These are often not explicit penalties, rather implicit biases that cannot be attributed to legitimate factors such as differences in productivity or market conditions.

- These implicit or unconscious biases can influence decision-making, including salary-setting. These biases can affect how employers perceive and evaluate employees, leading to wage penalties for certain groups. For instance, implicit biases may lead to lower salary offers for women or minorities during hiring or promotion processes. These wage penalties can lower the average wages for the affected groups in the Census PSEO data.
- d) Hiring and promotion bias: Discrimination in hiring and promotion practices can hinder individuals' ability to secure better-paying positions or advance in their careers. If certain groups face bias in the selection process or are denied opportunities for promotion, it can contribute to lower average wages for members of these groups.
 - e) Negotiation bias: Discrimination can also manifest during salary negotiations, leading to lower starting salaries or reduced bargaining power. These biases can influence the average wage outcomes reported in the Census PSEO data.
 - i) PSEO data can help to empower negotiation and combat labor market discrimination: Data on earnings disparities can empower individuals to negotiate for fair compensation. Armed with knowledge about the average earnings for their degree, they can better advocate for themselves during salary negotiations, reducing the likelihood of being unfairly underpaid.
- 12) **Social value of a degree:** It is important to consider not only the potential economic value of a degree, but also the social value.
- a) Engineering Degrees
 - i) Social Value: Engineering degrees often carry high social value due to their contribution to technological advancements and infrastructure development. Engineers play a crucial role in improving society through innovation, the creation of new structures and products.
 - ii) Economic Value: Engineering degrees generally have a high economic value, as they are in high demand across various industries. Engineers typically earn competitive salaries, and the job market for engineering graduates is often robust, offering numerous opportunities for career growth and financial stability.
 - b) Education Degrees
 - i) Social Value: Education degrees hold significant social value as they prepare individuals to become teachers, educators, and mentors. Educators play a vital role in shaping future generations, imparting knowledge, and fostering critical thinking skills. They contribute to the overall well-being and development of society by nurturing young minds.
 - ii) Economic Value: While education degrees may not always command the highest salaries, they provide stable career options with opportunities for growth, especially in public education systems. The economic value of education degrees can also be enhanced by pursuing advanced degrees or specializing in high-demand fields like special education or STEM education.
 - c) Liberal Arts and Humanities Degrees
 - i) Social Value: Liberal arts and humanities degrees contribute to the social fabric of society by fostering creativity, cultural understanding, and critical thinking. These degrees promote intellectual and emotional growth, encourage diverse perspectives, and address social issues through various mediums such as literature, music, history, and visual arts.
 - ii) Economic Value: The economic value of liberal arts and humanities degrees can vary significantly. While some individuals with these degrees may face challenges in finding high-paying jobs directly related to their field of study, their transferable

skills such as communication, research, and critical thinking can be valuable in a wide range of industries, including media, marketing, publishing, and nonprofit organizations.

- d) Note that social value and economic value are not mutually exclusive. Many college degrees offer both social and economic benefits, although the emphasis may differ. It's essential for individuals to consider their passions, interests, and long-term goals when choosing a college degree, taking into account the potential impact they wish to have on society and their own financial aspirations.
 - e) While there are fewer cited measures of non-economic value of degree programs, there are data available that can help to capture the non-economic returns of their program's degree. Some indicators of non-economic value include student civic engagement (e.g. voting or community involvement) or 21st century skill development (e.g. critical thinking, collaboration) or psychosocial change during their program. Examples of data sources for these and other non-economic measures of value can be found in the University of California's "Fiax Lux: What is the Value of a UC degree?" report here: https://www.ucop.edu/institutional-research-academic-planning//_files/value-of-degree-full-report.pdf
- 13) **Job satisfaction/Student stories:** The PSEO tool does not have a qualitative understanding of career outcomes to offer University Personnel. Students might ask university personnel about the type of work students do after graduation, stories about their career trajectories, or student-rated job satisfaction or career preparation from their degree program. Institutions can collect this kind of information by administering alumni surveys, news clips, interviews, or *focus groups*.
- 14) **Note that there are no guarantees.** These factors are generalizations and may vary based on specific fields, geographic location, and individual circumstances. And remember that although higher degrees generally correlate with higher earnings, it does not guarantee success or job satisfaction.