



PSEO
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Program Productivity Metrics: Integrating PSEO Data at a Public University System

Use-Case Framework for Institutions and Systems



THE UNIVERSITY OF
NORTH CAROLINA SYSTEM

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Overview

This document outlines a framework model for program planning that the UNC System developed over the last 3 years though specifically focuses on metrics and analysis related to [Post-Secondary Employment Outcomes](#) (PSEO) data.

Background: Academic Program Planning Metrics¹

The UNC System revised its [policy](#) and associated [regulation](#) to specify the metrics used to evaluate programs at all stages following an overarching theme to develop a framework built on transparency, replicability, and consistency. The reporting outcome of that effort was the [2025 Biennial Program Productivity Review Report](#). The effort that culminated in these updates and results involved stakeholders from several divisions and months of work.

The [UNC System](#) is comprised of 16 public, 4-year universities and a public residential high school. A driving principle of the UNC System Office's work is to consider what's best for the state and system in addition to the individual institutions in the system, particularly as it is applied to program review. When assessing program review, the following themes were identified:

- Metrics should be student-focused: evaluation of a program as a value to the student
- Measurement should have a universal framework: framework built on transparency, replicability, consistency
- Review should be data-driven: focus on data availability and metric feasibility

The following concepts were identified as integral for program review:

- Is there interest in or demand for this program?
- Is there a need for graduates of this program? - particularly is there a workforce need in North Carolina?
- Do graduates of this program earn more than people without this credential?
- Do graduates of this program stay in North Carolina?
- Is it a good deal? Is it worth the time, money, and effort for a student?

¹ Effort summary based on presentation G. Malak originally delivered at AIR Forum 2025.

Rather than limiting metrics or aggregating into an index, four metric categories were developed such that data assessment could be focused on programs that are excelling or trailing in each or all categories. The four metric categories included in program planning are Student Demand, Workforce Alignment, Education Premium, and Student Return on Investment (ROI). Depending on the results, the UNC System may make different recommendations for targeting programs for expansion, additional support, or discontinuation. Evaluation of metrics is both relative and absolute. For example: a program may be identified as having low productivity if it consistently has fewer than 10 completions per academic year; or a program may be identified as having low productivity if it consistently has the fewest completions at that institution regardless of the count of completions. By category, the data and intended review question are:

- Student Demand: Is there education-market interest in the program?
 - Applied/Admitted/Enrolled (new)
 - Total Enrollment
 - Degree Completions
- Workforce Alignment: Is there workforce demand for graduates of the program?
 - Workforce Demand: Current and Projected Jobs in NC
 - UNC Workforce: Graduates in the NC Workforce
- Education Premium: Is there net-positive income for graduates of the program?
 - Workforce Premium: median wage ratio
 - UNC Completers Premium: median wage ration
- Student ROI: Is it a good deal [for the student]?
 - Median Wages: Cumulative Net Cost
 - $\text{Net Cost} = (\text{Tuition} + \text{Fees}) - (\text{Grants, Scholarships, Tuition Remission, etc.})$
 - Median Wages = Completers NC wage data

Workforce Alignment consists of Workforce Demand in NC and UNC Workforce in NC. Based on a CIP-SOC crosswalk² that includes consideration for the minimum education required³ for the [Standard Occupational Classification](#) (SOC), Workforce Demand will be the estimated current employment in NC, estimated projected employment in NC, net change, and percentage change for the SOC(s) identified. UNC Workforce in NC will be the count of matched-wage completers who are currently filling NC workforce positions.

² [CIP-SOC Crosswalk](#) is jointly published by U.S. Census Bureau and Nation Center for Education Statistics. UNC System published the [UNC System Workforce Alignment Report](#) in April 2026 using empirical data to mimic real world employment practices rather than content/description matching via the CIP-SOC Crosswalk. It is the intention of the UNC System to integrate methodologies into future planning and reporting.

³ Educational attainment data is published by the Bureau of Labor Statistics via the [Occupational Requirements Survey \(ORS\)](#) and the [Employment Projections Program](#).

Workforce Demand in NC for the SOC(s) will be benchmarked against Workforce Demand in NC for all SOC(s) with the same minimum education requirement. Workforce Demand in NC will also be measured against Student Demand (completers). Finally, count of program completers in the workforce will be compared to count of employees in the occupation to assess the impact of the program on meeting NC workforce needs. For example, if many of the UNC System completers are employed outside of NC and/or a majority of the NC workforce is filled by non-UNC System completers, the program may be recommended for expansion.

Education Premium consists of Workforce Premium based on median wages for occupations as well as a UNC Completers Premium based on matched-wage data at a fixed point in time post-completion. The Workforce Premium will be the median wages earned for the SOC(s) identified compared to median wages earned for similar SOC(s) with a lower minimum education requirement as well as all SOC(s) with a lower minimum education requirement. Doctoral will be compared to Masters, Bachelor's, and HS/no credential; Masters will be compared to Bachelor's and HS/no credential; Bachelor's will be compared to HS/no credential. The UNC Completers Premium will be the median wages earned by UNC completers three years post-completion compared to minimum wage, additional consideration for other fixed or relative thresholds.

Some UNC System programs, particularly graduate programs, have small cohorts, and one or two students can drastically impact results. The UNC System is reviewing trends and considering a multi-cohort measure to mitigate this issue. The UNC System has not calculated ROI in this way before so there are no pre-set thresholds: the planning team will use the data to help inform any hardline or relative thresholds, but on a general note, the calculation will be comparing one year of earnings to four years of cost for baccalaureate degree holders who complete on-time. The UNC System also has programs that more broadly fulfill workforce needs in the South Atlantic U.S. or nationally. For example, limiting results to NC-earners for doctoral-research/scholarship completers intending to work in higher education instruction and research would not fully capture the outcomes of these completers; therefore, supplemental data for graduates outside NC or across a different geographic region like those available via PSEO may be helpful to provide additional context.

The ROI metric uses Board-approved tuition and fees for cost: these data are publicly available and can vary by program. All system institutions have a baseline rate by degree level and institution and by residency; there are a few programs that are approved for an additional rate. The planning team considered using IPEDS-reported Cost of Attendance or additional charges to the student's account. Ultimately, these

additional costs, while indicative of the real cost to the student, more typically reflected the student's choice rather than as a direct result of the program enrollment.

With regard to the point-in-time post-completion for the ROI calculation, several options were considered: 1- or 2-years post-completion data more accurately demonstrates the outcomes of the program as it is taught today, but these early-career wages may not accurately reflect the earnings/earnings-potential and ability to repay any debt accrued. 10-yr or even 20-yr post-completion is probably a better measure, though it may no longer be accurate to compare earners from a cohort that started in 2001 to the efficacy of a program being taught today.

Framework and Key Metrics for System-wide Program Review

At the system level, consider data across and within institutions. Across the system and aggregated at a higher level is beneficial for assessing trends particularly what actions to take in the future regarding the addition/expansion or reduction of certain disciplines. Aggregating by institution within the system is beneficial for identifying individual programs that are overperforming or underperforming relative to the system-wide aggregation. This view is particularly helpful when one or more programs are significantly different in size and their outcomes vary significantly.

Framework for reviewing PSEO data for use in program planning noting what purpose the data serve:

1. Start with PSEO data aggregated at the degree level and system-wide, aggregated across all cohorts and aggregated within specific cohort groups. (PSEO Aggregation Level = 26/32)
 - a. Provides summary data for all students that reflects the mix of programs across the system.
 - b. Provides a benchmark for assessing individual programs.
 - c. Provides a benchmark aggregated over time to compare against the most recent cohort.
 - d. Provides a benchmark for comparing trends over time.
2. Within each degree level, review data aggregated at the CIP Broad Subject Area (2-digit) and system-wide, aggregated across all cohorts and aggregated with specific cohort groups (PSEO Aggregation = 28/34)
 - a. Provides summary data given the popularity of programs across the system (popularity = count/percentage of students graduating with a degree in that discipline).
 - b. Rank ordering within degree level for comparison across disciplines.

- c. Provides a benchmark aggregated over time to compare against the most recent cohort.
 - d. Provides data for comparing trends over time.
- 3. Within each degree level, review data aggregated at the CIP Specialization Group (4-digit) and system-wide, aggregated across all cohorts and aggregated with specific cohort groups (PSEO Aggregation = 30/36)
 - a. Provides summary data given the popularity of programs across the system (popularity = count/percentage of students graduating with a degree in that discipline).
 - b. Rank ordering within degree level for comparison across disciplines.
 - c. Provides a benchmark aggregated over time to compare against the most recent cohort.
 - d. Provides data for comparing trends over time.
- 4. Within CIP Broad Subject Areas of interest, review data aggregated at the CIP Specialization Group (4-digit) and system-wide, aggregated across all cohorts and aggregated with specific cohort groups (PSEO Aggregation = 30/36)
 - a. Provides summary data given the popularity of programs across the system and within a given CIP Broad Subject Area (popularity = count/percentage of students graduating with a degree in that discipline).
 - b. Rank ordering within CIP Broad Subject Area for comparison across disciplines.
 - c. Provides a benchmark aggregated over time to compare against the most recent cohort.
 - d. Provides data for comparing trends over time.
- 5. PSEO data aggregated at the degree level and institution, aggregated across all cohorts and aggregated within specific cohort groups. (PSEO Aggregation Level = 38/44)
 - a. Provides summary data given the varying size of institutions across the system.
 - b. Rank ordering within degree level for comparison across disciplines.
 - c. Provides a benchmark aggregated over time to compare against the most recent cohort.
 - d. Provides data for comparing trends over time.
- 6. Within each degree level, review data aggregated at the CIP Broad Subject Area (2-digit) and institution, aggregated across all cohorts and aggregated with specific cohort groups (PSEO Aggregation = 40/46)

- a. Provides summary data given the varying size of institutions and popularity of programs at specific institutions within a degree level.
 - b. Rank ordering within degree level for comparison across institutional disciplines.
 - c. Provides a benchmark aggregated over time to compare against the most recent cohort.
 - d. Provides data for comparing trends over time.
7. Within each degree level and institution, review data aggregated at the CIP Broad Subject Area (2-digit) and institution, aggregated across all cohorts and aggregated with specific cohort groups (PSEO Aggregation = 40/46)
- a. Provides summary data at the institution level given the popularity of programs at specific institutions within a degree level.

Metrics to review:

1. Employment Rate (wage earners as a percentage of graduates) at 1-year post-completion
 - a. What is the rate [nationally]?
 - b. How does this rate compare to the rate within North Carolina? (use data available via NC Department of Commerce)
 - c. What in-group comparisons are notable?
 - d. How does this rate compare to percentage of graduates enrolled in additional credential programs? (use data available via National Student Clearinghouse)
2. Employment Rate at 5-year post-completion
 - a. What is the rate [nationally]?
 - b. How does this rate compare to the rate within North Carolina? (use data available via NC Department of Commerce)
 - c. What in-group comparisons are notable?
 - d. What percentage of these graduates/wage earners have subsequently graduated with an additional credential? (use data available via National Student Clearinghouse)
3. Employment Rate at 10-year post-completion
 - a. What is the rate [nationally]?
 - b. How does it compare to the rate within North Carolina? (use data available via NC Department of Commerce)
 - c. What in-group comparison are notable?
 - d. What percentage of these graduates/wage earners have subsequently graduated with an additional credential? (use data available via National Student Clearinghouse)

4. Trends of Employment Rate
 - a. Does the rate change by cohort or by post-completion years?
 - b. Does the NC/national comparison change by cohort or by years post-completion?
 - c. What are the other in-group trends are notable?
 - d. Are there any insights available for projected employment?
5. Earnings at 1-year post-completion
 - a. What are the median and interquartile range?
 - b. How do these earnings compare to the earnings within North Carolina? (use data available via NC Department of Commerce)
 - c. What in-group comparisons are notable?
6. Earnings at 5-year post-completion
 - a. What are the median and interquartile range?
 - b. How do these earnings compare to the earnings within North Carolina? (use data available via NC Department of Commerce)
 - c. What in-group comparisons are notable?
7. Earnings at 10-year post-completion
 - a. What are the median and interquartile range?
 - b. How do these earnings compare to the earnings within North Carolina? (use data available via NC Department of Commerce)
 - c. What in-group comparisons are notable?
8. Trends of Earnings
 - a. Do the median and interquartile range change by cohort or by post-completion years?
 - b. Does the NC/national comparison change by cohort or by years post-completion?
 - c. What are the other in-group trends are notable?
 - d. Are there any insights available for projected earnings?
9. Geographic location at 1-year post-completion
 - a. How many and what percentage of graduates or wage earners are working in each geographic division?
 - b. What subset are in-state?
10. Geographic location at 5-year post-completion
 - a. How many and what percentage of graduates or wage earners are working in each geographic division?
 - b. What subset are in-state?
11. Geographic location at 10-year post-completion

- a. How many and what percentage of graduates or wage earners are working in each geographic division?
 - b. What subset are in-state?
- 12. Trends of Geographic location
 - a. Does the mix of location change by cohort or by post-completion years?
 - b. What other in-group trends are notable?
- 13. Trends among Institution/Degree Level/CIP Broad Subject Area/CIP Specialization Group
 - a. See above for “in-group” trends; also consider other groups e.g. STEM
 - b. Do any values change by group e.g. rank order or absolute value change?
 - c. Is there an Education Premium e.g. comparing across degree levels in the same CIP Broad Subject Area?
- 14. Return on Investment (ROI) – student-focused calculation
 - a. Comparing net cost for students aggregated at the same level against earnings data at specified post-completion point in time
 - b. What is the rank order and/or any groups that fall above/below a certain threshold e.g. if 15-20% of earnings exceeds 1/12 of net cost? (based on the threshold for [income-drive federal loan repayment](#))

After compiling the metrics, program assessment can also include rank ordering of programs by metrics and evaluating trends over time noting improvements or declines. Review of the data may also identify opportunities for a changing market.

Institutional Program Review

Similar to the system-wide review, it would be helpful to consider data at the state or system level for benchmarking and ranking against programs offered at an institution. Within an institution, review at the CIP Broad Subject Area and degree level is beneficial for assessing trends particularly what actions to take in the future regarding the addition/expansion or reduction of certain disciplines.

From the Framework in the System-wide Review, steps 1-4 are beneficial for benchmarking while steps 5-7 can either be restricted to the institution of interest or across all institutions in the state or system for benchmarking and relative comparisons. A step 8 can be added to review data at the CIP Specialization Group (4-digit) level (PSEO Aggregation Level = 42/48) similar to step 4 at the system level if data are available and not suppressed.

All metrics identified in the system-wide review also apply at the institution level review.

Application of Results

Rank ordering allows for development of appropriate benchmarking and relative comparisons, though it is important to note that when sorting in this way, there will always be a first and last program, which are not inherently indicators that action needs to be taken e.g. a program identified as “low-performing” shouldn’t automatically be discontinued. Consider whether the program is right-sized relative to workforce demand. At the system-level where the same program may be offered at multiple institutions, consider not only the collective size, but the number and location of program offerings. Lower wage programs are still valuable and needed. Focus on net cost to the student and ways to improve ROI and/or incentivize enrollment in these programs.

Public universities have a mission to contribute to the workforce pipeline in-state and in-region. With that concept in mind, consider which programs produce completers that stay in-state or in-region in conjunction with projected workforce needs. If possible, further consider whether needs are being met regionally within state. For instance, assessing whether workforce needs in the area immediately surrounding the university are being served by the programs offered or if completers must move from/to other areas of the state. Once review is completed, if the evaluation identified a discipline with a large need in the future, consider whether your institution(s) are currently producing completers that are frequently leaving the state to fulfill the need. Rather than necessarily expanding the program(s); consider whether the program needs curricular adjustment based on the needs of the employers in-state.

Some disciplines require additional credentials, particularly beyond the baccalaureate degree, so it is important to look at a one-year post-completion “success” as inclusive of enrollment in an advanced degree program. Consider including other source data like [National Student Clearinghouse](#) to flag completers as enrolled in addition to flagging completers as employed.

Wages at five- or ten-year post-completion may more accurately reflect the education premium of the additional credential. Similar but different: medical programs at the doctoral-professional practice level have a comparatively low wage at one-year post-completion when most are employed as residents then have a significant increase at the five-year and ten-year post-completion point when wages reflect their professionally licensed employment.

Consider the mix of programs within a degree level when reviewing in aggregate, particularly if a subset of programs are significantly larger than other programs offers since the aggregated data may be disproportionately representative of the larger

programs e.g. if you offer 10 programs, but one program counts 30% of all graduates at that degree level, the aggregate values at the degree level will disproportionately reflect graduates of that program. The data aggregated at the degree level will accurately reflect your mix of students, but may not be as insightful for program planning.

While the multi-cohort aggregation helps mitigate small counts and smooths single-cohort anomalies, review still needs to consider external factors that may impact results e.g. change in programs offered or reclassification (changes in CIP code) of programs at the institutions over the last 20+ years, change in technology or workforce trends, large social or economic events like The Great Recession (2007-2009) and the COVID-19 pandemic. The data PSEO reports accurately reflects employment outcomes for cohort completers, though the interpretation of the results should note that some impacts are not necessarily reflective of the program itself. Benchmarking against other similar programs can help provide broader context.