BEYOND THE MEDIAN: EARNINGS DISPERSION ACROSS PROGRAMS IN SOUTH CAROLINA

Findings from Postsecondary Employment Outcomes (PSEO) Data

Prepared by:
Cameron Childress, Senior Analyst
Elise Miller McNeely, Senior Program Manager, Educational Transformation, Ithaka S+R

Executive Summary

This brief uses Postsecondary Employment Outcomes (PSEO) data to examine earnings dispersion within programs of study in South Carolina. While median earnings are often used to assess program outcomes, they can obscure wide variation among graduates. By analyzing the 25th and 75th percentile earnings, this study highlights which programs provide consistent economic returns and which leave graduates facing greater uncertainty.

Key Findings

- **Programs with the widest dispersion**: In associate-level computer programming, 75th percentile earners make nearly four times as much as 25th percentile earners, a spread of more than $95,000, at five years after graduation. Among bachelor's programs, graduates in biological and biomedical sciences show the widest range, with top earners making over five times as much as those at the bottom, a spread of more than $120,000 at five years after graduation.
- **Programs with the most predictable outcomes**: Fields such as registered nursing at the associate level and engineering disciplines at the bachelor's level show relatively narrow earnings distributions, with most graduates earning well above the state's living wage threshold.
- **Programs with significant shares of graduates earning less than a living wage**: In some fields, such as human services and social work, a substantial share of graduates earn less than what is needed to meet basic living standards even five or ten years after graduation. In these fields, more than 75 percent of graduates earn below South Carolina's living wage.
- **Earnings distribution widening over time**: In some programs, the spread between high and low earners widens as careers progress. For example, the distribution in earnings for graduates in nuclear engineering and genetics expands significantly

between one and ten years after graduation. For instance, the earnings gap between the 25th and 75th percentile for nuclear engineering graduates grew by 116 percent between one and 10 years post graduation.

- **High upside, high variation programs**: Certain bachelor's fields, including biomedical sciences, economics, and health/medical preparatory programs, combine very strong outcomes for top earners with substantial variability in earnings across graduates.

Implications

These results highlight the importance of looking beyond averages when evaluating program outcomes. Understanding the distribution of earnings within programs can help students and families make more informed choices about the risks and rewards of different fields, guide institutions in identifying where additional advising or support might reduce outcome variability and enable policymakers to target investments in ways that promote both strong opportunities for high earners and economic security for those at the lower end of the distribution.[1]

[1] These patterns should also be viewed in light of South Carolina's policy landscape, where the state invests in higher education through scholarships and targeted support in high-demand fields such as education, STEM, and accounting. These programs reduce debt burdens and shape enrollment patterns, which in turn influence workforce outcomes.

Introduction

This brief examines a central question for higher education in South Carolina: which programs of study lead to consistent earnings outcomes for graduates, and which exhibit wide dispersion in results? While median earnings are often used to assess the value of postsecondary programs, averages can obscure important differences among graduates. Some earn well above state labor market benchmarks, while others fall below a basic living wage. By analyzing the distribution of earnings (specifically the 25th and 75th percentiles reported in the PSEO data) we can identify which programs provide relatively predictable economic security and which carry greater uncertainty.

Understanding these differences matters for students, who weigh tradeoffs between risk and reward when choosing programs of study; for institutions, which need to align advising and career services with graduates' actual workforce outcomes; and for policymakers, who aim to ensure that public investments in higher education supports broadly shared economic opportunity.

This research report was developed in collaboration between Ithaka S+R and the PSEO Coalition, with generous funding from the Strada Education Foundation. We thank the South Carolina state agencies, including the Commission on Higher Education, the Department of Employment and Workforce, the Education Oversight Committee, and the University of South Carolina, that provided feedback on the analyses presented here.

Methodology and Limitations

This analysis draws on South Carolina's Postsecondary Employment Outcomes (PSEO) data to examine program-level earnings distributions. Programs are defined at the four-digit CIP code and are pooled across institutions and cohorts. While four-digit CIP codes offer more granularity than two-digit categories, they still represent broad academic groupings rather than specific majors or degree tracks. For example, a single four-digit CIP may include multiple specialized programs with different curricular emphases and labor market outcomes. As such, variation in earnings within a CIP may reflect true outcome dispersion, but it may also arise from the aggregation of multiple distinct majors. This is particularly important in catch-all fields such as Multi/Interdisciplinary Studies, where internal program differences are not visible in the public PSEO data. We focus on associate and bachelor's degree programs, examining results one, five, and ten years after graduation.

Results are pooled across all available graduation cohorts in the South Carolina PSEO data rather than reflecting a single graduating class. Across programs, cohorts span from as early as 2001 through 2019, with bachelor's degrees reported in three-year cohorts and associate degrees reported in five-year cohorts, following PSEO reporting conventions. The specific cohort years contributing to each program's estimates may vary by program based on when degrees were awarded and whether cells meet Census disclosure thresholds.

Program-level outcomes are aggregated statewide across all participating South Carolina institutions. As a result, the analysis does not capture variation in earnings outcomes across individual institutions within the same program of study.

Two measures are used to capture earnings dispersion:

- **Interquartile range (IQR):** the absolute dollar difference between the 75th and 25th percentile earnings. This measure provides a clear sense of the spread in outcomes, including whether graduates at the lower quartile fall near or below basic living-wage thresholds.
- **Earnings ratio:** the ratio of the 75th to the 25th percentile of earnings. Because it is scale-free, this measure allows comparisons across programs with very different overall pay levels. An earnings ratio of 1.0 would mean no difference between the 25th and 75th percentiles; a ratio of 2.0 would mean that 75th percentile earners earn twice as much as 25th percentile earners.

All values are reported in 2022 dollars. To assess whether graduates meet basic needs, we compare the 25th percentile of earnings to living-wage benchmarks from the MIT Living Wage Calculator, adjusted to 2022 dollars. In South Carolina, these living wage thresholds are $43,326 for a single adult with no children and $69,308 for a household with two adults, one working, and one child.

As with all analyses of PSEO data, results are subject to Census Bureau disclosure standards and suppression rules. We retain only validated outcomes and note that some programs are missing data in certain years. Results are reported statewide and do not adjust for institutional differences or student characteristics. While South Carolina's PSEO data provide relatively strong coverage, capturing about 86 percent of graduates, they are not fully representative of all graduates and should be interpreted as indicative rather than comprehensive.

Earnings dispersion may also reflect differences in institutional capacity and employer reach. Larger bachelor's-granting institutions often connect graduates to a broader set of employers, while smaller associate-level institutions may have more targeted pipelines. These differences likely influence the spread of outcomes we observe.

Key Questions and Findings

Which programs show the widest earnings dispersion?

Some programs have very large gaps in earnings between graduates at the top and bottom of the distribution. The earnings ratio captures the relative gap, while the IQR provides a more intuitive dollar difference. Looking at both measures gives a fuller view of how variation appears within each credential level.

Table 1a: Associate programs with the widest earnings dispersion at Year 5

Program	25P Earnings - Year 5	75P Earnings - Year 5	Earnings Ratio – Year 5	Interquartile Range - Year 5
Computer Programming	$34,877	$130,570	3.74	$95,693
Computer and Information Sciences, General	$29,876	$80,464	2.69	$50,588
Multi/Interdisciplinary Studies, Other	$32,776	$67,718	2.07	$34,942
Agricultural Production Operations	$31,193	$63,113	2.02	$31,920
Building/Construction Finishing, Management, and Inspection	$38,448	$74,516	1.94	$36,068
Information Science/Studies	$46,472	$89,776	1.93	$43,304

Computer programming tops the list among associate degrees, where 75th percentile earners make 3.74 times those at the 25th percentile, producing an interquartile range of more than $95,000. Other technical fields, such as computer and information sciences, also appear near the top, though the sources of dispersion differ. In computer and information sciences, relatively low earnings at the 25th percentile drive the ratio up to 2.7, while information science shows both a higher floor ($46,472 at the 25th percentile) and a strong ceiling, resulting in a narrower ratio of about 2.

Table 1b: Bachelor's programs with the widest earnings dispersion at Year 5

Program	25P Earnings - Year 5	75P Earnings - Year 5	Earnings Ratio – Year 5	Interquartile Range - Year 5
Biological and Biomedical Sciences, Other	$29,361	$150,337	5.12	$120,976
Intercultural/Multicultural and Diversity Studies	$27,726	$86,689	3.13	$58,963
Health/Medical Preparatory Programs	$52,920	$141,959	2.68	$89,039
Health Services/Allied Health/Health Sciences, General	$32,466	$78,303	2.41	$45,837
Germanic Languages, Literatures, and Linguistics	$31,541	$73,032	2.32	$41,491
Area Studies	$36,612	$79,302	2.17	$42,690

The top bachelor's degree fields show wider earnings dispersion than the associate degree fields. All six programs have ratios of 2.17 or higher, led by biological sciences where low-end earners make around $30,000 while high-end earners reach $150,000 at Year 5. Health preparatory programs also stand out, with a relatively strong 25th percentile of about $53,000 and very high upside, as 75th percentile earners approach $142,000.

Which programs have the narrowest earnings dispersion?

Other programs show limited variation in outcomes, with most graduates earning within a relatively tight range. In this analysis, we focus on those fields with the narrowest dispersion and where the 25th percentile is above the living wage threshold. These fields may offer students more certainty about their eventual earnings and more financial security, since at least 75 percent of graduates earn above a living wage. As in the prior section, we explore dispersion using both the ratio and the IQR.

Table 2a: Associate programs with the narrowest earnings dispersion at Year 5 (25th percentile at or above the living wage)

Program	25P Earnings - Year 5	75P Earnings - Year 5	Earnings Ratio – Year 5	Interquartile Range - Year 5
Registered Nursing, Nursing Administration, Nursing Research and Clinical Nursing	$55,889	$80,048	1.43	$24,159
Dental Support Services and Allied Professions	$45,087	$64,782	1.44	$19,695
Allied Health Diagnostic, Intervention, and Treatment Professions	$45,689	$68,321	1.50	$22,632
Precision Metal Working	$45,977	$72,782	1.58	$26,805
Engineering Technologies/Technicians, General	$51,084	$82,423	1.61	$31,339

Each of these programs represent fields where graduates, even at the lower end of the earnings distribution, can earn a living wage and achieve relatively predictable outcomes. Registered nursing, dental support, and allied health lead the way, most likely reflecting strong industry pipelines that connect associate programs to stable, high-floor careers. Precision metalworking and engineering technologies also rank highly, pointing to other programs with clear industry ties and consistent labor market demand.

Table 2b: Bachelor's programs with the narrowest earnings dispersion at Year 5 (25th percentile at or above the living wage)

Program	25P Earnings - Year 5	75P Earnings - Year 5	Earnings Ratio – Year 5	Interquartile Range - Year 5
Materials Engineering	$77,634	$94,987	1.22	$17,353
Mechanical Engineering	$76,762	$102,418	1.33	$25,656
Electrical, Electronics, and Communications Engineering	$79,170	$106,499	1.35	$27,329
Industrial Engineering	$79,306	$106,913	1.35	$27,607
Ceramic Sciences and Engineering	$70,943	$99,286	1.40	$28,343
Civil Engineering	$67,350	$94,399	1.40	$27,049

Highly technical and specialized programs make up most of the bachelor's fields with narrow earnings dispersion and 25th percentile earnings above the living wage. Five of the top six are engineering disciplines, each with earnings ratios of 1.4 or lower. These programs may align with well-defined occupational pathways and employer demand, which may contribute to more uniform earnings outcomes among graduates.

Which programs leave graduates at risk of low wages?

A key question for state leaders is whether programs leave too many graduates below a basic earnings threshold. Even if some graduates in these fields achieve strong outcomes, those with the lowest wages may earn below a living wage, even several years after graduation. This section highlights programs where the 25th percentile of earnings remains below the living-wage threshold in South Carolina. Using the MIT Living Wage Calculator adjusted to 2022 dollars, a single adult with no children requires about $43,326 to meet basic needs. For a household with two adults, one working, and one child, the benchmark is about $69,308. Programs where one quarter of graduates earn below the single-adult threshold may warrant closer review.

Table 3: Programs with the lowest 25th percentile earnings outcomes

Degree	Program	25P Earnings - Year 5	Difference from Living Wage - Year 5	25P Earnings - Year 10
Associate	Human Development, Family Studies, and Related Services	$21,316	-$22,010	$22,307
Associate	Social Work	$23,522	-$19,804	$26,695
Baccalaureate	Mental and Social Health Services and Allied Professions	$23,574	-$19,752	$28,892
Associate	Human Services, General	$25,261	-$18,065	*
Baccalaureate	Parks, Recreation, and Leisure Studies	$25,378	-$17,948	$36,569

* Some elements are suppressed due to data-privacy issues

Each of the programs listed fall well below basic living wage thresholds. At both five and 10 years after graduation, a substantial share (more than 25 percent) of earners in these fields are earning below the living wage for single adults. Programs in human development, social work, and mental health services have high social value, but that value is not reflected in many graduates' earnings. Persistently low wages may also signal challenges in securing stable, related employment or leaky transfer pipelines for associate degree

graduates to earn a bachelor's degree.[2] These results suggest that graduates who do not reach higher earnings trajectories within these fields face long-term financial vulnerability, raising concerns about the balance between the public importance of these professions and the private returns for students.

Which programs show wide earnings dispersion even above the living wage threshold?

The earlier section on *programs with the widest earnings dispersion* identifies fields where earnings outcomes vary widely across graduates, regardless of whether earnings at the lower end of the distribution meet basic living-wage standards. This section narrows that focus to programs that still exhibit wide earnings dispersion *even when* the 25th percentile of earnings is above the living wage for single adults. In these cases, most graduates are economically secure, yet differences in career pathways or opportunities create substantial variation in earnings.

Table 4: Programs with the widest earnings dispersion at Year 5 among fields with a 25th percentile at or above the living wage

Degree	Program	25P Earnings - Year 5	75P Earnings - Year 5	Interquartile Range – Year 5	Earnings Ratio - Year 5
Baccalaureate	Health/Medical Preparatory Programs	$52,920	$141,959	$89,039	2.68
Baccalaureate	Physics	$46,293	$95,237	$48,944	2.06
Baccalaureate	Economics	$49,046	$100,002	$50,956	2.04
Baccalaureate	Computer and Information Sciences and Support Services, Other	$45,826	$91,479	$45,653	2.00
Baccalaureate	Computer/Information Technology Administration and Management	$47,663	$94,741	$47,078	1.99

Each of the programs in this table are bachelor's degrees, and STEM fields dominate the list. Health preparatory programs stand out, with earnings at Year 5 ranging from $52,000 at the 25th percentile to nearly $142,000 at the 75th percentile, a spread of almost

[2] Students who graduated with an associate degree are included in the median earnings estimates, whether or not they subsequently earned a bachelor's degree or higher.

$90,000. Physics, economics, and computer-related fields also show wide gaps, with upper-quartile graduates earning about twice as much as those at the lower quartile.

For state leaders, these findings point to a different kind of risk. Graduates in these programs are not in danger of earning below the living wage, but the wide dispersion in outcomes suggests that students' returns depend heavily on the opportunities they secure after graduation. This raises questions about whether the quality and accessibility of advising, internships, and career placement services varies across institutions or students. If policymakers can identify the pathways and experiences of students who earn at the top end of the distribution, then they can focus resources on ensuring that pathways into high-paying roles are broadly accessible.

How does the earnings dispersion change over time?

Earnings gaps do not remain static. For some programs, the spread between top and bottom earners narrows over time. Others widen as careers progress. Looking across the first 10 years after graduation helps identify whether programs are associated with stable trajectories or diverging outcomes. Ratios offer a clean comparison across years, and dollar changes in IQR add context.

Table 5. Change in earnings dispersion from Year 1 to Year 10

Degree	Program	Earnings Ratio - Year 1	Earnings Ratio - Year 10	Change in Ratio (Year 1-Year 10)	Change in IQR (Year 1 to Year 10)
Baccalaureate	Nuclear Engineering	2.55	3.70	1.16	$54,191
Baccalaureate	Multi/Interdisciplinary Studies, Other*	1.98	2.90	0.92	$75,414
Baccalaureate	Neurobiology and Neurosciences	1.55	2.34	0.80	$73,425
Baccalaureate	Genetics	1.78	2.48	0.70	$78,879
Baccalaureate	Germanic Languages, Literatures, and Linguistics	1.69	2.37	0.69	$41,912
Baccalaureate	Management Sciences and Quantitative Methods	1.51	2.08	0.57	$48,951
Baccalaureate	Philosophy	1.70	2.25	0.55	$48,663

**Note: This field includes a wide range of programs, and variation in outcomes may reflect the aggregation of distinct subfields within the same CIP code. See Methodology section for details.*

The fields that show widening earnings gaps include technical fields, such as nuclear engineering, neuroscience, genetics, and quantitative methods, as well as humanities disciplines like interdisciplinary studies, Germanic studies, and philosophy. In these fields, earnings gaps may widen over time as career trajectories diverge with larger differences between higher- and lower-earning graduates at Year 10 than at Year 1. As a result, differences in earnings at the top and bottom of the distribution become more pronounced over time, while others in the same field remain in lower-paying roles. Even though these data reflect bachelor's-level outcomes, they may partly capture graduates who pursue further education, since advanced degrees can amplify earnings disparities. The pattern suggests that large gaps in earnings can exist immediately after graduation and that those gaps can widen over time. From a policy perspective, these findings raise questions about how institutions prepare students for both immediate employment and longer-term advancement and where the state can focus its efforts on attracting new industries to create more high-paying jobs.

Which programs have the highest risk and reward?

Some programs offer strong earning potential for a subset of graduates, even as others see much weaker outcomes. In this analysis, we explore those programs that offer the highest reward – graduates at the top of the income distribution earn more than their peers – and the highest risk – the gap between high and low earners is relatively wide. First, we identify the bachelor's programs where the 75th percentile of earnings is above the 75th-percentile value across all bachelor's programs at Year 5 ($87,351). Then, we highlight those programs with the widest gaps between top and bottom earners using the 75th to 25th percentile ratio. This approach identifies high-risk, high-reward fields where the benefits are substantial for some but not shared equally across graduates.

Table 6: Bachelor's programs with wide dispersion and high 75th percentile earnings at Year 5.

Program	25P Earnings - Year 5	75P Earnings - Year 5	Interquartile Range - Year 5	Earnings Ratio - Year 5
Biological and Biomedical Sciences, Other	$29,361	$150,337	$120,976	5.12
Health/Medical Preparatory Programs	$52,920	$141,959	$89,039	2.68
Multi/Interdisciplinary Studies, Other*	$41,820	$87,351	$45,531	2.09
Physics	$46,293	$95,237	$48,944	2.06
Economics	$49,046	$100,002	$50,956	2.04

**Note: This field includes a wide range of programs, and variation in outcomes may reflect the aggregation of distinct subfields within the same CIP code. See Methodology section for details*

These fields overlap with earlier tables, reinforcing that they are among the highest-paying overall. Yet several of them, such as biological sciences and interdisciplinary studies, also have 25th percentile earnings below the living wage threshold at Year 5. That combination underscores the high-risk, high-reward nature of these programs: while top earners achieve very strong outcomes, a sizable share of graduates may struggle to reach sustainable wages.

Next Steps and Extensions

Several extensions could add value to this analysis. Examining variation in earnings outcomes across institutions within the same program of study may help surface differences that are obscured in the statewide results presented in this brief. Additionally, merging IPEDS directory information with PSEO institutional data, would allow us to group programs by sector, size, or student demographics and test whether dispersion patterns differ across institutional types. Another possible avenue is to examine whether programs at institutions with higher Pell shares show greater spread at the lower quartile. It may also be useful to explore differences between rural- and urban-serving institutions.

While industry data was not incorporated here, adding that dimension would strengthen the analysis. Linking program outcomes to industry of employment would provide state leaders with clearer insights into the program–industry connections that shape the South Carolina labor market.

Conclusion

This analysis demonstrates that graduates of the same program of study in South Carolina often experience markedly different economic outcomes. While some programs provide stable and predictable earnings for most graduates, others are characterized by substantial dispersion, exposing students to very different levels of risk and reward. In several fields, particularly those with strong technical or professional pathways, earnings dispersion widens over time as career trajectories diverge, amplifying differences between graduates who access high-paying opportunities and those who do not. At the same time, the findings highlight programs, especially in health care and engineering, that consistently deliver living wages and economic security for the vast majority of graduates.

Looking beyond median earnings to examine the full distribution of outcomes offers a more complete picture of postsecondary value. For students and families, these data underscore the importance of understanding not just typical outcomes, but also the range of possible returns associated with different fields of study. For institutions, the results point to opportunities to strengthen advising, career preparation, and employer connections in ways that help more graduates access higher-paying pathways within their fields. For policymakers, the findings help distinguish programs that reliably support economic stability from those that may warrant closer attention to ensure that public investment in higher education leads to sustainable livelihoods and broadly shared opportunity.

More broadly, this analysis illustrates the power of PSEO data to inform conversations about workforce preparation and public trust in higher education. By surfacing both stability and variability in graduate outcomes, PSEO data enable more nuanced decision-making and can support policies and practices that align postsecondary education more closely with the economic well-being of individuals and the long-term needs of the state.