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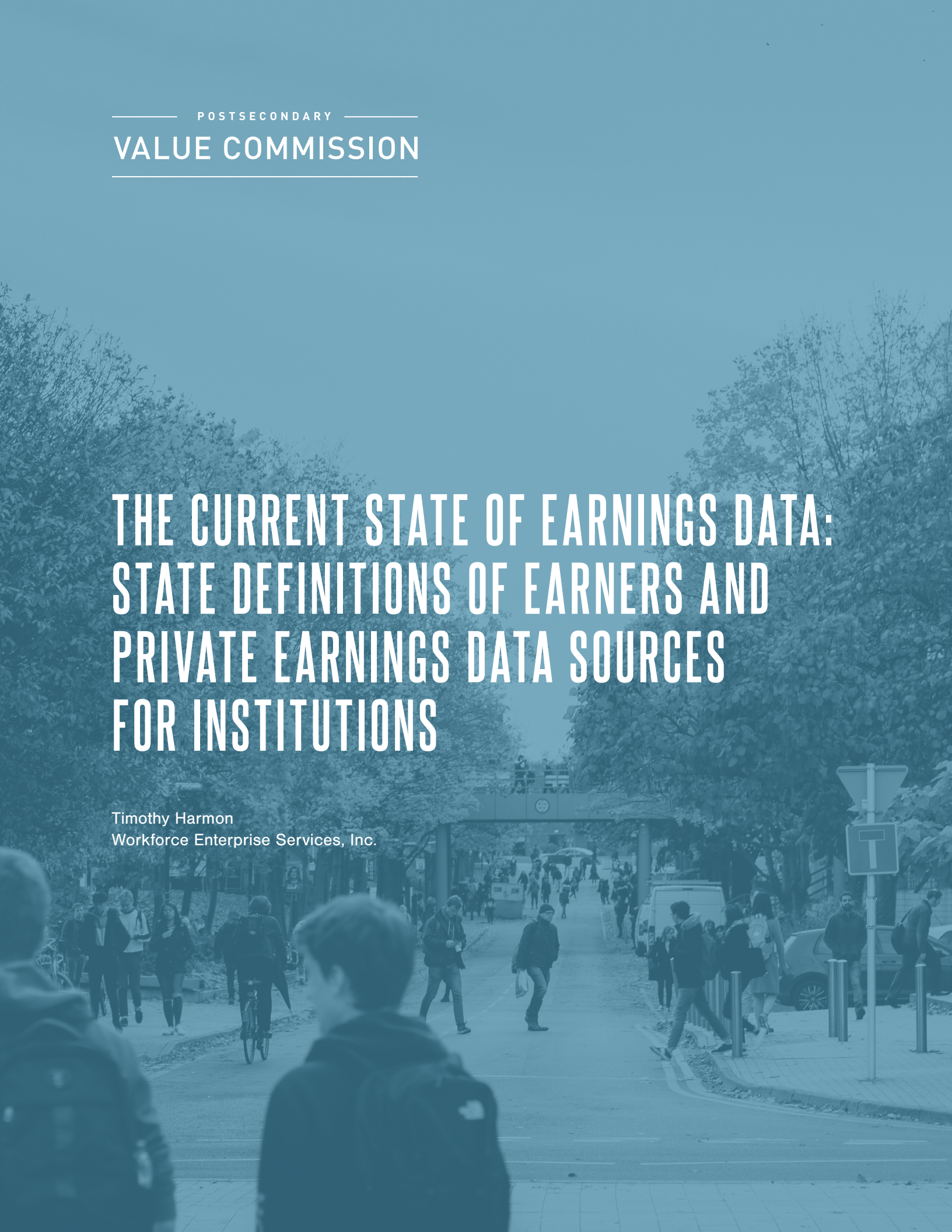

THE CURRENT STATE OF EARNINGS DATA: STATE DEFINITIONS OF EARNERS AND PRIVATE EARNINGS DATA SOURCES FOR INSTITUTIONS

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This paper is one in a foundational research series for the Postsecondary Value Commission authored in summer 2019 by scholars with diverse backgrounds and expertise. The research presented in these papers applies an equity lens to the philosophical, measurement, and policy considerations and assumptions underlying key components of postsecondary value to students and society, including investment, economic and non-economic returns, mobility, and racial and socioeconomic justice.

The Postsecondary Value Commission consulted this foundational research as it developed a conceptual definition of postsecondary value, a framework for measuring how institutions and programs create value and ensure equitable outcomes, and an action agenda with recommendations for applying the definition and framework to change policies and practices. Through this breadth of scholarship, the commission was better able to define the value of postsecondary education and the role institutions can play in creating a more equitable and fair United States.

Following the May 2021 release of the commission's findings, these foundational papers were prepared for publication. The views and opinions expressed in these papers do not necessarily reflect the positions of individual members of the Postsecondary Value Commission or the organizations they represent.

The Postsecondary Value Commission along with the Bill & Melinda Gates Foundation and Institute for Higher Education Policy are deeply grateful to the authors of this series. The authors' extensive expertise and thoughtful engagement in this work provided the foundation for the commission to develop an informed, innovative, and equity-driven framework. They also thank Deborah Seymour for editing the written products and the team at GMMB for their creative design and layout.

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The Postsecondary Value Commission, in its exploration of return on investment and value of a higher education, desired to better understand the current state of earnings data for states and institutions so that they could effectively measure and understand post-college employment and earnings. To that end, this brief includes a review of research on how different state systems define and measure earners and earnings and a scan of private data sources, outside of government administrative data collections, available to institutions for use and purchase. This research was used to inform the development of the threshold methodology for earners and the commission's understanding of whether institutions can apply this work in the absence of state and federal administrative data.

PART 1: METHODOLOGIES FOR POSTSECONDARY EARNINGS MEASURES IN STATES

Background. This research seeks to compile the various methodologies that states use to define postsecondary earnings measures, to summarize these approaches, and to compare them to those being used by several national initiatives, including the College Scorecard and the Census Post-Secondary Employment Outcomes (PSEO). In particular, the brief outlines the criteria used to include each student's earnings outcomes in the summary earnings results for an institution or program of study, including whether low-earning students are included and the implications of this.

Approach. Workforce Enterprise Services (WES) conducted a search of publicly available information on each state's definitions of earnings outcomes for postsecondary students. We were able to find information from 25 states. States that did not appear to produce earnings results from student-level data (such as states that used labor market information about general earnings levels for persons with a particular degree type) or that referred consumers to the College Scorecard were not included. It is possible that some states have created postsecondary earnings measures as part of their own research or evaluation efforts, but we have only included states and measures that were accessible via web search. We reviewed the definitional or other technical notes that were available for the measures.

The summary results of our research are shown in Table 2, which is structured to depict each of the key criteria that states used to determine whose earnings were included in their calculation of postsecondary earnings results. These include:

- Whether the earnings measures are computed for graduates/completers only, for all postsecondary leavers/exiters, or for all enrollees at some point after enrollment.
- Whether an earnings threshold is used to determine if a student's earnings are included in the summary earnings calculation. This includes criteria for the presence of earnings in multiple quarters or sequences of quarters.
- Whether students who are enrolled in subsequent postsecondary instruction are excluded from the earnings measure calculation, along with any other conditions applied to the inclusion of students in the earnings measure.

For comparison purposes, Table 3 outlines these definitional criteria for each of the following national initiatives:

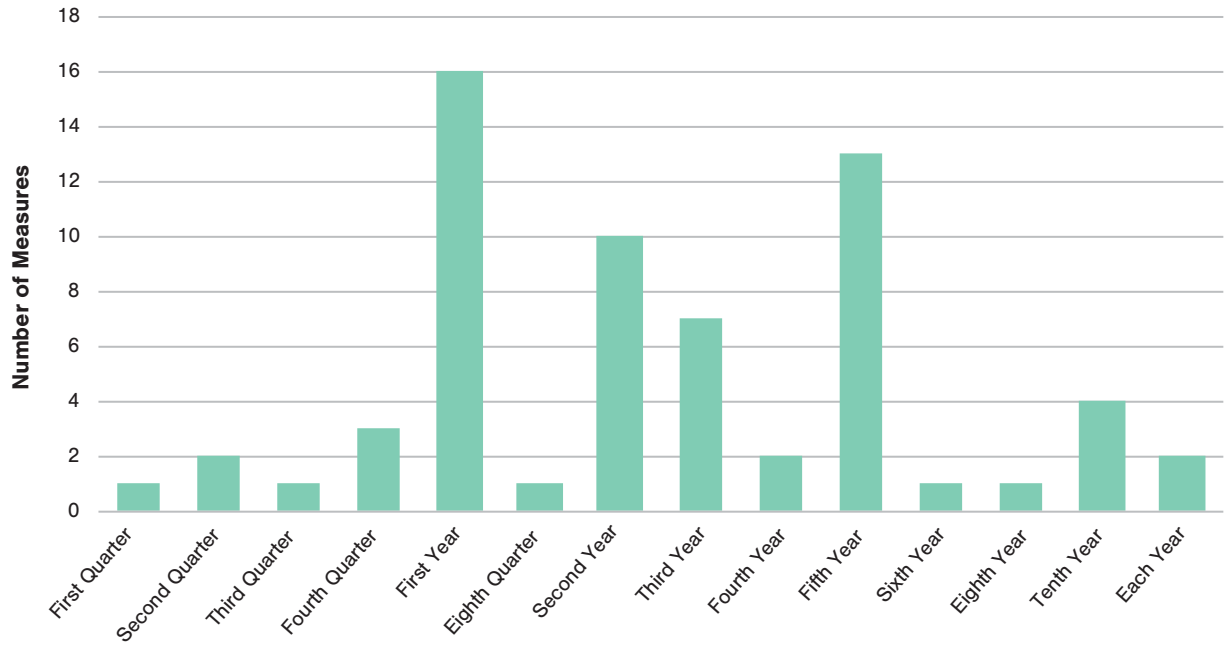
- USED College Scorecard;
- Census Post-Secondary Employment Outcomes (PSEO);
- American Institutes for Research Launch my Career;
- American Association of Community College Voluntary Framework of Accountability; and
- Workforce Innovation and Opportunity Act (WIOA) Common Measures.

Detailed findings for the states' and national initiatives can be found in Appendix A. For each of these key definitional criteria, we have included a discussion of our findings below.

Earnings measures. The 25 states for which we were able to obtain information produced eight unique earnings measures. Most states produced either a median earnings level (17 states) or an average earnings level (eight states). Some states produced both of these measures, and other measures states produced included earnings growth, pre-post earnings, and median hourly wage.

Most of these earnings measures were computed for multiple periods after graduation or leaving school (Figure 1). Each of these states used quarterly unemployment insurance (UI) covered earnings data collected through their respective UI tax systems to generate these measures. As far as we could determine, the states used in-state UI earnings only, though Florida appears to supplement its UI data with data from the U.S. Department of Defense and the U.S. Office of Personnel Management.

Figure 1. Post-graduation or Leaving Measurement Periods



Source: Author's analysis of 25 state postsecondary earnings websites/reports. See Appendix A for details for each state.

Graduates, leavers/exiters, or enrollees. *Do states compute their earnings measures only for the earnings of graduates, or do they include all students who have left school?* Twenty-three states computed earnings results for graduates only. 'Graduate' is typically defined as students who obtain a postsecondary degree or certificate, although one state also included completers of apprenticeship programs. New Jersey uses the term 'completers,' which is everyone who obtained a postsecondary credential.

Massachusetts and Michigan included all leavers/exiters in their earnings measures. Michigan included results for all students graduating from high school in Michigan, and produced data by the type of credential obtained, including those only obtaining their high school diploma. Massachusetts (which has not yet published results) will produce data for two groups: those entering postsecondary instruction directly from high school, and non-traditional students entering postsecondary instruction at a later date. Both groups will include all leavers (i.e., not be restricted to graduates)

The research conducted by the Urban Institute[1] is directly relevant to the use of this criterion. These researchers compared the median earnings of graduates from community colleges and universities in Connecticut with all students who left these institutions. They found evidence that "graduates of two-year schools tend to make more (median earnings) than the broader cohort that left in the same year," and that this gap in earnings increases over time. On the other hand, restriction of earnings measurement to graduates of four-year institutions may have depressed median earnings, possibly because of continued education, or out-of-state employment for graduates as compared with non-graduate leavers.[2]

The restriction of earnings measurement to graduates is consistent with the purpose of the state's public-facing postsecondary consumer reporting systems, which in general exist to provide students and their families with a reasonable estimate of prospective earnings upon completion of the program of study, and attainment of the credential.

Earnings thresholds and quarter attachment. *To what extent do states restrict the calculation of earnings results to include only students whose earnings are above a specific threshold?* Research shows a near-even divide between those states that apply such a restriction and those that use all earnings found in the UI quarterly earnings data.

Ten states applied a full-time minimum wage equivalent (FTMWE) threshold in order to include the earnings record in their earnings measure: Florida, Indiana, Maine, Minnesota, Ohio, South Carolina, Tennessee, Texas, Virginia, and Washington (more detail available in Appendix B). The exact nature of this criterion varied from state to state, based on the minimum wage in the state, and different weekly numbers of hours assumed to be worked per week to be in full-time status. Some states applied the FTMWE earnings criterion to each quarter, and some applied it to the sum of the four quarters in the measurement year and dropped the earnings if the annualized earnings level fell below the annualized FTMWE standard. Ohio excluded any quarterly earnings of less than $4,000. Their technical notes did not provide information about why this earnings level was selected, but it equates to a minimum wage of $8.79 at 35 hours per week.

Minnesota, which collects quarterly hours of employment for each employee through its UI wage reporting system, excluded earnings of less than $4.90 per hour, as these constitute training wages.

Three states imposed a multi-quarter earnings match requirement rather than a FTMWE earnings threshold. In Illinois, to be included in the earnings calculation for a given quarter, the graduate must

appear in the earnings data for that quarter, plus the prior quarter and the subsequent quarter. This ensures that the quarters entering the wage calculation are full quarters of employment, rather than the first or last quarter of employment. In Nevada, the average annual wage was calculated only for those individuals employed in Nevada who have wages reported for all four quarters of the year following graduation. West Virginia graduates must be found working a full year in-state for their earnings data to be included in the median wage measure.

Three states imposed a multi-quarter earnings match requirement in combination with the FTMWE threshold. Indiana required graduates to have at least three or four quarters of wages after graduation beginning two quarters after the graduation date, in order to be included in their average salary calculation, and this test was applied in addition to their FTMWE criterion of $13,195 per year. Maine required graduates to be employed in all four quarters of a given outcome year, plus meet the FTMWE criterion in each quarter (minimum wage * 32 hours * 13 weeks) for their earnings to be included in the median earnings calculation. In addition to its FTMWE criterion of 75 percent of full-time hours at minimum wage ($14,000), Washington only reported its median earnings result for graduates who work all four quarters in a calendar year.

Thirteen states included all earners in their earnings measures: California, Colorado, Connecticut, Florida, Georgia, Kentucky, Massachusetts, Michigan, Missouri, Nebraska, New Jersey, North Carolina, and Oregon. Texas included all earners in its debt to earnings measure but applied a FTMWE to its median earnings measure. Florida provided separate results for all earnings and for those meeting their FTMWE earnings threshold. Each of these states computed median earnings results, except for Nebraska, North Carolina and New Jersey, which computed an average earnings level. Florida computed both average earnings and median earnings (Massachusetts does not indicate if it will produce median or average earnings).

New Jersey excluded quarterly earnings in excess of $40,000, considering these to be suspect entries in the wage data. This may be a reasonable precaution as they compute an average earnings amount for their consumer report card system, rather than a median value, and extreme values can distort the results. Otherwise, they included all earnings in the measurement period.

For any of these measures, are zero earnings values included in the earnings calculation? Although it is not clearly discussed in most of these states' descriptions of how they computed their earnings measures, they all seem to require at least some earnings during the measurement period (i.e., a non-zero result in at least one quarter) in order to include a student's earnings in the calculation. In other words, total 'non-matches' are dropped, not entered as zero earnings.

Unlike the exclusion of leavers who failed to graduate, there is not consensus among the states as to whether an earnings threshold should be applied to these measures. States who applied the FTMWE threshold or a multi-quarter earnings requirement would probably justify this choice as consistent with the purpose of their public-facing postsecondary consumer reporting systems (i.e., providing students and their families with a reasonable estimate of prospective earnings upon entry into full-time employment). States who included all earnings may have decided in favor of a more complete disclosure of graduate/leaver earnings, recognizing that many graduates do not enter full-time employment, or have limited attachment to the labor force for some period following graduation. Particularly in a context in which institutions and programs are being compared based on their earnings results, they may have considered the broader earnings measure to be a fairer basis for such comparisons.

Postsecondary enrollment and other criteria. *To what extent do states exclude from their earnings measures those students who are continuing their education? Are there other conditions that states have used for including student earnings in the measures?* Most states did not appear to exclude students who are enrolled in postsecondary instruction during the measurement period, in that they do not mention this as a condition for inclusion or exclusion in their earnings measures in the definitional notes made available on the web.

We found seven states that checked for the presence of postsecondary enrollment during the measurement period and produced earnings results that excluded those students who were found to be enrolled: Connecticut, Florida, Indiana, Kentucky, Massachusetts, Michigan, and North Carolina. Of these, Connecticut, Florida and North Carolina also provided earnings measures that included these students.

Five of these seven states included all earners in their measures (i.e., they did not impose an earnings threshold). Further, Florida provided both, and Indiana imposed a FTMWE and an enrollment exclusion. For these five states, the postsecondary enrollment exclusion may perform a similar function as the earnings threshold, by removing graduates who are continuing their education and who may therefore have lowered earnings.

The previously cited Urban Institute research[3] also looked at the issue of excluding those enrolled in postsecondary instruction. They included a postsecondary enrollment exclusion in their analysis of Connecticut graduate earnings results and found that excluding postsecondary enrollees from the pool of two-year college graduates increased "...median institutional earnings in Q8 by an average of $6,100." Applying this exclusion to bachelor's degree graduates increased Q8 median earnings by $2,200.

In addition to the exclusion of postsecondary enrollment in the measurement period, three states restricted the reporting of earnings to the highest credential attained by a graduate, rather than reporting earnings for each credential attained: Kentucky, Michigan, and Minnesota. Georgia and Tennessee reported the earnings data for the most recent credential.

Massachusetts used the student's age at enrollment to report different earnings data for two cohorts of students: annual earnings was reported for students who enter postsecondary instruction immediately following high school, and a pre-post earnings comparison was reported for non-traditional aged students. This is apparently based on the idea that non-traditional students are pursuing postsecondary instruction to increase their earnings, so institutions and programs that serve this student population should be compared on this basis.

Discussion. Florida computed earnings results for all graduates, graduates who meet the FTMWE earnings level, and graduates not pursuing continued postsecondary education. This provides the ability to examine the differences in median earnings that result from the choice to impose the FTMWE criterion, or to exclude graduates with subsequent postsecondary enrollment (Table 1).

Table 1. 2017-2018 Florida College System Completers: Fall 2018 Findings[4]

Cohort		Percent of Graduates Included	Median Annualized Earnings
Associate in Arts Degree	All Graduates (any completer with non-zero UI earnings)	66	$ 18,628
	All Graduates with FTMWE Earnings	36	$ 29,164
	All Graduates Not Continuing Education	20	$ 25,076
	All Graduates Not Continuing Education, with FTMWE Earnings	14	$ 30,848
Bachelor's Degree	All Graduates (any completer with non-zero UI earnings)	64	$ 32,744
	All Graduates with FTMWE Earnings	50	$ 38,792
	All Graduates Not Continuing Education	55	$ 34,512
	All Graduates Not Continuing Education, with FTMWE Earnings	45	$ 39,520

Source: Florida Education and Training Placement Information Program. (January 13, 2020). http://www.fldoe.org/core/fileparse.php/7592/urlt/1718AORFall.pdf

The largest impact of including the FTMWE level is seen for Associate degree completers. Those who meet the FTMWE criterion have median annualized earnings that are 57 percent greater than the population of all Associate degree completers, but the FTMWE group represents only 36 percent of graduates, whereas all graduates with any earnings represent 66 percent of graduates.

Those Associate degree completers not continuing their education have earnings that are 34 percent higher than the population of all Associate degree completers. However, among Associate completers with FTMWE earnings, the additional earnings among those not continuing education is only about six percent greater. This implies that at least for Associate degree students, these two criteria may be filtering out the same earners, since many Associate degree students who pursue their baccalaureate degree would be expected to have very low earnings during this period.

Among bachelor's degree graduates, the impact of the FTMWE criterion is in the same direction as for Associate degree graduates but is much less dramatic. Bachelor's FTMWE graduates have earnings that are 18 percent greater than the whole population of bachelor's degree completers. The earnings for bachelor's degree completers who did not continue their education were only about four percent higher than those of all graduates.

When we consider the earnings measurement criteria together: graduates, earnings threshold, and postsecondary enrollment, we see that nearly all states impose some combination of these criteria to restrict earnings reporting to those students whose post-program earnings are considered representative of what successful students can expect. In some states, notably Florida, earnings measures have been computed for various combinations of these criteria.

Recommendations. The following are recommendations for the Postsecondary Value Commission to consider when developing the methodology for defining earners and earnings to assess return on investment.

1. Assessing earnings returns is a function of the perspective of the investor, and a single earnings measure is unlikely to satisfy the needs of multiple investors. From the prospective student's point of view, it is reasonable for earnings results to be presented for graduates, and for

those graduates who enter full-time employment following completion of their degree or other credential. This is the best approximation of the earnings data that a student needs in order to assess potential returns on her investment in postsecondary education. When students ask how much they can expect to earn, the question includes the implicit assumption that the student will enter the institution of interest, enroll in a specific program of study, complete the program and obtain the credential, and after some reasonable period of job search, obtain full-time employment—preferably in an occupation that utilizes the knowledge, skills, and abilities they have developed while in school.

2. However, there are substantial differences in the earnings levels for graduates and non-graduates, and between those with full-time employment and those without, especially for those pursuing sub-baccalaureate credentials. **Therefore, earnings data should be presented to students in conjunction with information on the percent of enrollees who graduate, the percent who meet the FTMWE earnings level, and the percent who pursue subsequent postsecondary instruction.** This is essential context for students to interpret the earnings information. Having these additional data points would help students identify institutions or programs of study that promise excellent earnings to successful graduates, but fail to graduate substantial portions of their students.
3. The perspective of the public (taxpayer) is necessarily broader than that of students or their families. **The public assessment of value should include as complete a picture of the returns on the educational investment as possible.** This requires that all students enrolling in an institution be included, whether they have graduated or left without graduating. Similarly, all subsequent earnings should be included, although the timeframe for measuring these earnings should be medium and longer-term, since earnings immediately following graduation or school leaving are not likely to be representative of returns over time. The public investment is made on behalf of all students, and it would be incorrect to discount any substantial group.
4. Earnings outcomes are also an important focus of institutional or program improvement efforts. For this purpose, **institutions should utilize earnings measures that include all leavers, as well as measures that focus on outcomes for graduates.** Exploring the differences between these results for graduates and all leavers by program of study, and by student demographics, as well as the other outcome differences such as program completion and entry into employment, can provide insights into where to conduct further investigation to support program improvement. Further, institutions should include all earners in their calculations, regardless of earnings level, in order to assess and compare the distribution of earnings across various student populations of interest, including completers and non-completers.

The scope of our state scan did not include an attempt to determine if states provide earnings results for students receiving Pell Grants, or for students of color. For the most part, the descriptions of measure definitions, and the available data at the institution and program of study level did not indicate that this type of information was available to the public, at least through these consumer websites. Minimum cell-size requirements are a barrier here, but the ability of policymakers and the public to assess how well an institution is doing in addressing earnings disparities between these groups is limited without this information.

Table 2. State Earnings Measures Definitions

State	Earnings Measure(s)	Graduates, Leavers, Enrollees			Earnings Threshold for Inclusion				Postsecondary Enrollment and Other Conditions			
		Graduates	Leavers/Exiters	Enrolls After X Years	Full-Time Minimum Wage	Other	All Earners	Multi-quarter Match Required	Excluded if in School	Included if in School	Age at Entry	Highest Credential
California	Median Wages (2, 3, 5 years)	•					•			•		
Colorado	Median Earnings (1, 5, 10 years)	•					•			•		
Connecticut	Median Earnings (Q 3, Q 8)	•	•				•		•	•		
Florida	Average Earnings (Q 4)	•			•		•		•	•		
	Median Earnings (Q4)	•			•		•		•	•		
	Earnings Levels (breakouts by level)	•					•			•		
Georgia	Median Earnings (1, 5 years)	•					•			•		[A]
Illinois	Average Annual Earnings (3 years)	•						•		•		
	Earnings Growth (2-3 years)	•						•		•		
Indiana	Typical [Median] Salary (1, 5, 10 years)	•			•			•	•			
	Cumulative Wages (1, 2, 3 years)	•						•				
Kentucky	Median Wages (3, 5, 10 Years)	•					•		•			•
Maine	Median Earnings (1, 3, 5 Years)	•			•			•		•		
Massachusetts	Annual Earnings (1, 5)		•				•		•		[B]	
	Pre-Post Earnings		•				•		•		[C]	
Michigan	Median Wages (1, 5 Years)		•				•		•			•
Minnesota	Annual Median Wage (2, 4 Years)	•				[D]				•		•
	Median Hourly Wage (2, 3, 5, 8 Years)	•				[D]				•		•
	Full-Time Year-Round Median Wage (Year 2)	•			•					•		•
Missouri	Median Wages (1, 3 Years)	•					•			•		
Nebraska	Average Salary (1st quarter)	•					•			•		

State	Earnings Measure(s)	Graduates, Leavers, Enrollees			Earnings Threshold for Inclusion				Postsecondary Enrollment and Other Conditions			
		Graduates	Leavers/Exiters	Enrolls After X Years	Full-Time Minimum Wage	Other	All Earners	Multi-quarter Match Required	Excluded if in School	Included if in School	Age at Entry	Highest Credential
Nevada	Average Annual Wage (Year 1)	•						•		•		
New Jersey	Average Quarterly Wage (6-month, 1 year, 2 years)		•				[E]			•		
	Estimated annual wage (6-month, 1 year, 2 years)		•				[E]			•		
North Carolina	Mean [Average] Wage (Years 1 up to 16)	•					•		•	•		
Ohio	Average First Year Earnings	•			[F]					•		
Oregon	Median Earnings (5 Years)	•					•			•		
South Carolina	Median Earnings (1, 5 Years)	•			•					•		
Tennessee	Median Wages (1, 5 Years)	•			•					•		[G]
Texas	Median student debt as a percent of first year wage	•					•			•		
	Median earnings (1, 5, 10 Years)	•			•					•		
Virginia	Average First Year Earnings	•			•	[H]				•		
Washington	Median Earnings (Each post-year)	•			•			•		•		
West Virginia	Median Wages (2, 4, 6 Years)	•						•		•		

Source: Author's analysis of 25 state postsecondary earnings websites/reports. See Appendix A for details for each state.

Notes: [A] Most recent credential attained. [B] Entered postsecondary instruction immediately after high school. The accessible notes don't specify if this is an average or a median value. [C] Non-traditional aged student. [D] Hourly wage rates less than $4.90 excluded. [E] Quarterly earnings of greater than $40,000 excluded. [F] Earnings less than $4,000 excluded. [G] Most recent credential. [H] At least 30 percent of graduates must have full-time wage to report.

Table 3. National Earnings Measures Definitions

System	Earnings Measure(s)	Graduates, Leavers, Enrollees			Earnings Threshold for Inclusion				Postsecondary Enrollment			
		Graduates Only	All Leavers	Enrolls After X Years	Full-Time Minimum Wage	Other	All Earners	Multi-quarter Match Required	Excluded	Included	Age at Entry	Highest Credential
College Scorecard	Median Earnings (1 year)			•			•		•			
Census PSEO	Median Earnings (1, 5, 10 Years)	•			•			•		•		
Launch my Career	Median Wages (1, 5 Years)	•			•					•		
Voluntary Framework of Accountability	Median Wage Growth (pre-post)		•		•				•			
	CTE Annualized Earnings (Q 1)		•				•		•			
WIOA Common Measures	Median Earnings (Q 2)		•				•			•		

Source: Author's analysis of each system's earnings definitions, based on descriptive information available on their respective websites.

PART 2: PRIVATE SOURCES OF POSTSECONDARY EARNINGS DATA

Background. This portion of the brief seeks to summarize publicly-available information on private sources of postsecondary earnings data to understand how institutions can make sense of post-college outcomes for their students using these other, private sources, compared with administrative data and alumni surveys. This research answers the following questions:

1. What privately available sources can institutions access for earnings data?
2. What is included in each of these data sources (i.e., how are the data collected and what types of students are represented in the data)?
3. What are the relevant advantages and disadvantages to each data source especially in comparison to state and federal administrative data?
4. How does an institution access data from these sources (e.g., must they pay, negotiate an agreement, etc.)?
5. How many institutions are using data from these sources to evaluate post-college workforce success?

Approach. This analysis discovered three companies that provide this information at scale: Economic Modeling Specialists International (Emsi); Burning Glass Technologies; and PayScale. Emsi and Burning Glass merged in June of 2021, following the completion of this research. It is not

yet known how this merger will affect the product offerings of the combined company.

Equifax, which had introduced a Student Outcomes Metrics product in 2018, appears to no longer be active in this market space.

We contacted each of these companies to receive product demonstrations and interview company representatives about the nature of their data, methodologies used and how colleges can access their service. Table 4 provides a summary of the key results of the reviews and interviews with each company. The detailed results for each of these companies are presented in Appendix C.

Discussion. The approaches taken by these three companies reflect two very distinct value propositions: direct earnings data collection (PayScale) and aggregation and analysis (Burning Glass and Emsi). For PayScale, as a compensation analytics firm, the core question is: how much do people earn? For Burning Glass and Emsi, earnings data is a secondary consideration. If they have a single core question, it would be: what skills do people have, and how do these compare to the skills that employers say they need? Burning Glass is focused on the development of a skills taxonomy that supplements and expands on traditional Standard Occupational Classification (SOC) codes, so that users can observe what jobs require specific skills and use this information to support curriculum development and modification. Emsi also includes skill identification in social media profiles, and both companies are focused on providing seamless aggregation of the various national labor market information data sources (including industry and occupational employment projections and salary survey data) and ease of use. Emsi further differentiates itself by providing an alumni data matching service to colleges, so that colleges can capture what Emsi knows from its harvesting of social media profiles and connect this information to the data that the college already has on its graduates.

Private versus government administrative sources. *How do the earnings data from these sources compare to the Unemployment Insurance (UI) covered earnings data used by many states, or the Social Security earnings data used by the College Scorecard?* PayScale claims that its survey-based earnings data is comparable to traditional sources of labor market information, and that it conducts comparative analysis with these data to validate its results. The only independent examination found of the gross institutional differences between PayScale and College Scorecard[5] suggests that there are differences resulting from 1) scope of the included institutions, 2) types of students included, 3) source of the data, and 4) time periods covered. For the 24 Forbes' top-rated colleges that had both PayScale and College Scorecard data, PayScale produced earnings estimates that were higher than the College Scorecard in eight cases, the same in one case, and lower in fifteen cases (table available in Appendix D). For these colleges, the median difference between the College Scorecard estimate and the PayScale estimate is $4,900, and the average difference is $5,367. The differences range from plus 16 percent to minus 40 percent (PayScale vs. College Scorecard).

UI covered earnings data includes quarterly earnings for all covered employees, but generally only for those employed within the state where the postsecondary institution is located. Because not all types of employees are covered (most notably self-employed and federal employees), the PayScale survey data is more complete in its scope of coverage, since in principle it includes everyone who chooses to complete a PayScale salary survey record. However, as the PayScale survey database is based on a sample of total employees (albeit a large sample) it is limited in the types of disaggregation that can be produced. For instance, while the PayScale College Salary

Report includes earnings data for 4,000 postsecondary institutions, it has only limited estimates for major programs of study within most institutions and those data are not disaggregated publicly by race or ethnicity, among other categories. If UI wage data is obtained for all graduates of a college, then the only limitation on disaggregated reporting is cell-size suppression to preserve the confidentiality of graduates.

With respect to Burning Glass and Emsi, the question of comparability to traditional earnings data sources is less relevant, since these companies use the traditional sources of earnings data, supplemented with their own estimation methodologies to provide more granular reporting. These companies also do not attempt to produce an estimate of earnings for an individual, but rather for an occupation/industry/location/years of experience combination.

How many institutions are accessing these data sources, and how much does it cost them to do so? The College Salary Report includes earnings data for more than 4,000 degree-granting colleges and universities and is available for free. The summary data for each college includes the number of PayScale salary survey respondents from the institution. PayScale sells subscription relationships to businesses to support comparative compensation research.

For Burning Glass, the Labor Insight product, of which Alumni Analysis is an add-on product, has about 400 postsecondary institution customers. The cost of both products varies by institution size, but the median cost of Labor Insight is $20,000 and the median additional cost of Alumni Analysis is $10,000. Colleges must be Labor Insight customers to purchase Alumni Analysis.

Approximately 1,500 institutions are users of the Emsi Analyst product. About 200 institutions have participated in an Alumni Outcomes study. The base subscription to Analyst is $25,000 per year. The cost of the Alumni Outcomes service depends on the size of the institution, with three price points: Small ($15,000) Medium ($25,000) and Large ($35,000).

Table 4. Summary Results for Private Sources of Graduate Earnings Information

Data Product	PayScale College Salary Report	Alumni Analysis/Labor Insight	Alumni Outcomes/Analyst
Company	**PayScale**	**Burning Glass Technologies**	**Emsi**
Approach	Individuals complete a salary survey online, which PayScale uses to create salary profiles. They have amassed over 3.5 million salary survey records. In addition to salary data, the survey records include data on the respondent's occupation, industry, employer, location, and other elements that PayScale uses to create estimates of earnings for occupation, industry, and location categories.	An analytic database is created from social media profiles and online resumes, online job postings, and traditional sources of labor market information. Burning Glass imputes earnings levels to all job postings using a model that leverages the data from the 15 percent of postings that have salary information. Burning Glass identifies graduates of postsecondary institutions by finding them in their online profile postings.	Similar to BGT, an analytic database is created from social media profiles and online resumes, online job postings, and traditional sources of labor market information. Emsi uses an estimation model to overcome cell suppression in the traditional labor market information sources. While it can identify graduates of institutions in their online profile postings, it also has the ability to work directly with institutions to gather their graduate records and create an analysis file customized to the institution and providing positive identification of graduates.
Cost and Access	The College Salary Report is free. It is not known how many institutions use this service, but presumably most do. PayScale sells subscription relationships to businesses that are conducting compensation research.	Median cost of Labor Insight is $20,000 and the median additional cost of Alumni Analysis is $10,000. Approximately 400 institutions use Labor Insight. Alumni Analysis is too recently (2020) introduced to have a customer quantity.	Analyst base subscription is $25,000 per year and has 1,500 institutional users. Alumni Outcomes (customized graduate matching service) cost depends on the size of the institution, with three price points: Small ($15,000), Medium ($25,000), and Large ($35,000). About 200 users so far.
Comment	This is the only company that directly collects salary data from individuals. PayScale is focused narrowly on compensation analytics and support for business compensation decision-making. Many of its analytic products are in service of attracting individuals to its salary survey. Since it is based on a sample of respondents, it is limited in ability to provide earnings by program and institution.	The primary focus of this database is to provide insight into the skills needed by employers, and the skills that job seekers say they have, to help individuals, businesses, and colleges improve their planning. Earnings are a characteristic of occupations at the regional level, and understanding graduate earnings is based on understanding the jobs they are holding and where they are located.	The primary focus is to provide seamless and user-friendly access to the integrated database of traditional LMI, job postings, and individual profile information, along with degree completion data. Its Alumni Outcomes product allows colleges to associate the data that is available in the Emsi profile database with their own data on graduates, to support very detailed analyses of outcomes.
Links	*https://www.payscale.com/college-salary-report*	*https://www.burning-glass.com/products/labor-insight/alumni-analysis/* *https://www.burning-glass.com/products/labor-insight/*	*https://economicmodeling.com/alumni-outcomes/* *https://www.economicmodeling.com/analyst/*

Sources: Author's review of company websites and interviews of company representatives. Details of each product are provided in Appendix D.

APPENDIX A

Postsecondary Earnings Measures Details for Included States and National Initiatives

California	
Earnings Measure(s):	Median Wages (Two, Three, and Five Years after Completion of Award)
Purpose:	**Salary Surfer:** To help students and their families make important decisions about investing time and money in a college education, the California Community Colleges Chancellor's Office, through Salary Surfer, is providing comparative information about the earnings of recent California community college graduates who received an award in a specific program of study. **The College Wage Tracker DataMart** module queries median wages of students who completed credit awards at a particular California Community College over a series of academic years using California Employment Development (EDD) Unemployment Insurance (UI) wage data.
Scope:	Community Colleges
Students Included in the Pool:	The cohorts of students are those who received an award anytime over eight consecutive academic years. The students could not have transferred to a four-year institution, could not be enrolled anywhere in the California Community College system after receiving an award, and were older than 21 at time of award. A student is counted if they show up as having earned wages during any quarter of the year. For instance, if a student earned wages in quarters 1 and 3 in a given academic year, these wages would be summed and this total would be the student's wages for that academic year.
Timeframe for Measurement:	Earnings are examined in each of the quarters for years, two, three, and five following completion of the award.
Data Source and Record Matching:	Chancellor's Office data on students matched with UI earnings data for California.
Comments:	Awards with no graduates in the last two years of the combined eight year group of graduates were excluded. Award categories with fewer than 10 students having wages were also excluded to ensure confidentiality. Data are presented by type of award, instructional program category, and institution (via the DataMart, not Salary Surfer).
Link:	*https://datamart.cccco.edu/Outcomes/College_Wage_Tracker.aspx* *https://salarysurfer.cccco.edu/SalarySurfer.aspx*

Colorado	
Earnings Measure(s):	Median earnings (one, five, and ten years following credential completion)
Purpose:	"Since 2013, the Colorado Department of Higher Education has been working to develop earnings outcomes tools accessible to Colorado students and families... You can use this tool to search for median earnings based on field of study, credential level, and institution."
Scope:	Graduates of Colorado public institutions, plus Regis University, Colorado Christian University, and the University of Denver.
Students Included in the Pool:	Graduates from 2002 to 2017, who are now working in Colorado.
Timeframe for Measurement:	Graduate cohorts vary by measure: • 1-Year: 2002 – 2017 • 5-Year: 2002 – 2013 • 10-Year: 2002 – 2008
Data Source and Record Matching:	CDHE student unit records matched with UI wage data.
Comments:	Programs were grouped into categories using by two-digit CIP codes and the Complete College America Meta Major framework.
Link:	*https://highered.colorado.gov/postsecondary-degree-earnings-outcomes-tools*

Florida	
Earnings Measure(s):	**Average Earnings:** The average earnings reported for those found employed in Florida regardless of the amount of earnings or time worked in a quarter. **Median Earnings:** The median earnings reported for those found employed in Florida regardless of the amount of earnings or time worked in a quarter. **Full Quarter Average and Median Earnings:** Each of the above is also computed for those employed in Florida who had earnings of at least $4,290 (minimum wage of $8.25 per hour X 40 hours X 13 weeks). **Not Continuing Education Average and Median Earnings:** Each of the above is also computed for those employed in Florida who are not continuing their postsecondary education, in Florida, in a public adult education program, Career & Technical Education (CTE) program, community college, or public or private college or university. **Earnings Levels:** Numbers of those found with quarterly earnings equivalent to each of the following hourly wage rates, based on 40 hours per week * 13 weeks per quarter: • Less than $8.25 • $8.25 to $15.39 • $15.40 to $22.54 • Greater than $22.54
Purpose:	Florida Education & Training Placement Information Program (FETPIP) data provide accountability and outcome information for consumer use and career information for students and counselors. One of the benefits of having the FETPIP system is that data are collected that can help facilitate comparisons. A sample is listed below: • Employment and/or education outcomes of a training program can be compared to others. • Employment results can be examined in terms of the training programs that feed them. • Program outcomes can be compared by race, sex, age, or income level. • Earnings can be compared across various education levels. • The level of public assistance can be compared between graduates, dropouts, and others.
Scope:	FETPIP provides follow-up data collection services to a variety of agency applications. The individual information for follow-up is collected from the following sources: • Universities • Community colleges • School districts • Selected private vocational schools, colleges, and universities • Welfare Transition Services • Workforce Investment Act (WIA) • Corrections system • Farm Worker Jobs and Education Programs • Specialized and longitudinal studies
Students Included in the Pool:	4th quarter earnings have been multiplied by four to estimate annual earnings. Full-Time is defined as earning at least minimum wage for 13 weeks ($4,290). Average full-time annual wage is displayed when 10 or more graduates are employed full-time.
Timeframe for Measurement:	Employment outcomes are based on the 4th quarter (October to December) of 2018.

Florida	
Data Source and Record Matching:	All individually identifiable data are protected from public disclosure, as specified in the Buckley Amendments and Florida Statutes. The individual information is compiled into computer files and tapes that are distributed to agencies with administrative records that meet the purposes of the follow-up exercise. The records are electronically linked with the: • Florida Department of Education • Florida Department of Corrections • Florida Department of Children and Families • Florida Department of Economic Opportunity • U.S. Department of Defense • U.S. Office of Personnel Management
Comments:	Graduates represent a total count of individuals by school with valid Social Security numbers and are displayed when there are 10 or more.
Link:	*http://www.fldoe.org/accountability/fl-edu-training-placement-info-program/*

Georgia	
Earnings Measure(s):	Median earnings (one and five years after graduation)
Purpose:	The Georgia Higher Learning and Earnings (GHLE) project provides information for Georgia technical college and college/university graduates who work in Georgia after earning their degrees.
Scope:	Georgia technical colleges, public universities, and private colleges.
Students Included in the Pool:	Students obtaining a degree or credential for the years 2007 – 2016. Certificates do not include advanced certificates. For students with multiple degrees, earnings are presented for the most recent degree.
Timeframe for Measurement:	For each cohort, the relevant year is identified (one year post and five years post) for calculating the median earnings value.
Data Source and Record Matching:	Georgia Academic and Workforce Analysis and Research Data System (GA•AWARDs), the state SLDS. Student degree and certificate data are provided by the University System of Georgia, Technical College System of Georgia, Georgia Independent College Association, and the National Student Clearinghouse. Georgia Department of Labor provides the UI wage data.
Comments:	Observations are excluded if there are fewer than 20 individuals with the award, or fewer than 20 with matching wage data, if the percent of matched graduates is below 20 percent. Programs of study are presented at the 2-digit CIP code level.
Link:	*https://learnearn.gosa.ga.gov/*

Illinois	
Earnings Measure(s):	• Annual earnings for career jobs of graduates in Illinois firms: Average of quarterly earnings values during the third year following graduation. • Earnings Growth: Change in earnings from second year following graduation to third year following graduation, as computed for annual average earnings.
Purpose:	The tool provides an opportunity for students and parents to review a wide range of information on Illinois two-year and four-year institutions that includes career outcomes of graduates from a particular academic area of study at a specific postsecondary institution.
Scope:	Public community colleges, state universities.
Students Included in the Pool:	Graduates of community colleges or state universities. To be included in the earnings calculation for a given quarter, the graduate must appear in the earnings data for that quarter, plus the prior quarter and the subsequent quarter.
Timeframe for Measurement:	Average annual earnings are calculated in the third year after graduation. The reference (t) quarter represents the 9th quarter after graduation, the 10th quarter after graduation, the 11th quarter after graduation and the 12th quarter after graduation. The third year after graduation is the average of these quarterly values. Therefore, average earnings for career jobs is determined for each quarter and then annualized.
Data Source and Record Matching:	This information is made possible through a data sharing partnership between the Illinois Department of Employment Security (IDES), Illinois Student Assistance Commission (ISAC), Illinois Board of Higher Education (IBHE), the Illinois Community College Board (ICCB), and Illinois State University (ISU).
Link:	*https://www.ilcollege2career.com/#/results*

Indiana	
Earnings Measure(s):	• Typical Salary (one year, five year, ten year): Annualized wage calculated for those who qualify (see below). UI earnings are summed across the four quarters in the applicable year, beginning two quarters following graduation. If student has three quarters of wages in the period, sum of wages is multiplied by 4/3. Wages are converted to current dollars. • Cumulative wages (one year, two years, three years): The average cumulative wages of 2011 – 2013 graduates who qualify for state of Indiana need-based aid. Only includes those with at least two quarters of wage records in a year.
Purpose:	"The College Value Report highlights quantitative value (by dollars and cents measures) and qualitative value (by the social and community impact of college and how alumni feel about their experiences) through three lenses: • Statewide: impact of higher learning on individuals and the economy, along with how the investment in state financial aid pays off for both learners and the state and the outcomes of a population with higher levels of education • Industry: economic demands and individuals' decisions of what to study • Institution: tuition costs, average amounts of debt, plus the results of alumni surveys of Indiana public colleges."
Scope:	Indiana public colleges
Students Included in the Pool:	Students who graduated during the year ranges below, and: • Do not have a degree-seeking enrollment record in another Indiana college; • Have at least 3-4 quarters of wages after graduation beginning two quarters after the graduation date; • Have annualized wages at or above $13,195 (federal minimum wage * 35 hours per week * 52 weeks).
Timeframe for Measurement:	Students who graduated during the following fiscal year ranges following graduation, based on the measure: • 1 year: 2005 – 2017 • 3 years: 2005 – 2015 • 5 years: 2005 – 2013 • 10 years: 2005 – 2008
Data Source and Record Matching:	Student data are linked to UI records via the Management Performance Hub Education and Workforce Database (EWD).
Comments:	Earnings data only made available for programs in which there are 30 or more students in at least two-year cohorts who were employed in Indiana.
Links:	*https://www.in.gov/che/files/2020_College_Value_Report_ROI_Data_at_a_Glance_03_04_2020.pdf*

Kentucky	
Earnings Measure(s):	Median Wages (three, five, and ten years following graduation)
Purpose:	Postsecondary feedback report "...allows users to explore the connection between employment outcomes associated with graduates of different majors and credential levels at Kentucky postsecondary institutions."
Scope:	Four-year private independent, two-year public, four-year public. Does not include proprietary institutions.
Students Included in the Pool:	Students obtaining a credential in a given academic year. Students are assigned a year based on the AY in which the highest credential is earned. Students are excluded if re-enrolled in a Kentucky postsecondary institution.
Timeframe for Measurement:	Based on the Federal Fiscal Year (Oct-Sept) that corresponds to the AY of graduation, earnings in the third, fifth, and tenth years following graduation. Cohorts are created with multiple AYs (example shows six), each matched to the corresponding FFYs for earnings measurement.
Data Source and Record Matching:	UI-covered earnings in-state. Matched with student records from Kentucky Council on Postsecondary Education (CPE). Individual earnings amounts are used to create median values for each summary category. Median values are suppressed if fewer than ten graduates are in any cell. Uses Kentucky Longitudinal Data System to perform matches and create the results.
Comments:	Median earnings results are calculated for major group, institution, institution type (sector), credential level. Also shows percentiles.
Links:	*https://kystats.ky.gov/Latest/PSFR*

Maine	
Earnings Measure(s):	Median earnings (one year, three years, five years).
Purpose:	"Maine Education and Attainment Navigation System (MaineEARNS) is a unique data series derived from a variety of sources, designed to shed light on the effect of education program completions and other economic events on earnings over time."
Scope:	Graduates of the University of Maine System and/or Maine Community College System.
Students Included in the Pool:	Median wages are computed for those who meet the criteria for full-year, full-time equivalent employment. To meet this, graduates must be employed in all four quarters of a given outcome year and must have total wages in each quarter equal to or greater than the minimum wage * 32 hours * 13 weeks. Individual graduates are counted once for each program or category in which they earned at least one credential.
Timeframe for Measurement:	First, third, and fifth year wage and employment outcomes are provided for those who graduated between July 2008 and June 2011. First year wage and employment outcomes are provided for those who graduated between July 2011 and June 2014.
Data Source and Record Matching:	Maine Dept. of Labor Center for Workforce Research and Information. Uses the Maine SLDC. Uses SSN to conduct the match.
Comments:	Outcomes are presented by school, credential, area of study, and outcome year. Three academic years are aggregated to enhance reportability by credential and area of study. Outcomes with fewer than 10 graduates are suppressed.
Links:	*https://www.maine.gov/labor/cwri/maineearns/*

Massachusetts	
Earnings Measure(s):	• Earnings of Students who Enroll Immediately After High School: Annual earnings one and five years after completion or last known date of enrollment for students entering postsecondary education compared to earnings of HS graduates without postsecondary education. • Pre- vs. Post-Enrollment Earnings: Annual earnings prior to enrollment compared to annual earnings post-graduation or at last known date of enrollment for students entering as non-traditional students.
Purpose:	"The Performance Measurement Reporting System (PMRS) is designed to fill the DHE's statutory obligation to 'promote accountability for effective management and stewardship of public funds and to achieve and demonstrate measurable educational outcomes' (MGL, Chapter 15a, Section 7). The PMRS provides a comprehensive examination of the performance of each of Massachusetts' community colleges and state universities on a set of key indicators focused on Access & Affordability, Student Success & Completion, Workforce Alignment and Fiscal Stewardship."
Scope:	Massachusetts community college and state university students.
Students Included in the Pool:	For one- and five-year earnings, students entering postsecondary instruction directly from high school, who have graduated or are no longer enrolled. For pre- and post- earnings, all students who have graduated or are no longer enrolled.
Timeframe for Measurement:	One year and five years after last known date of enrollment. Not able to determine pre- and post- enrollment timeframes. Not clear if based on four quarters of UI earnings, or annualization is done if fewer than four quarters are found in the period.
Data Source and Record Matching:	Data collected by Massachusetts Department of Higher Education (HEIRS) and Massachusetts Department of Unemployment Assistance (DUA Wage Records).
Comments:	Data will not be published until 2021. Results suppressed if fewer than 10 students in the cohort.
Links:	*https://www.mass.edu/datacenter/pmrs/home.asp*

Michigan	
Earnings Measure(s):	Median Annual Wages by Field of Study (one year after completion and five years after completion)
Purpose:	"The Parent Dashboard is filled with important school-level information that parents and others say they want to know about Michigan public schools, including charter schools."
Scope:	Michigan high school students
Students Included in the Pool:	Students are included if they received their high school education in Michigan and are currently employed in Michigan. Students may have earned their college certificate or degree from an out-of-state college or university. Students who are continuing in education are excluded from the report.
Timeframe for Measurement:	Two cohorts of students are then determined to calculate median wages one and five years after their highest level of education. For example, students who earned their degree in 2015-16 and are no longer enrolled make up the base population for the 2016-17 Median Wages After 1 Year. Students who earned their highest level of education in 2011-12 and are no longer enrolled make up the base population for the 2016-17 Median Wages After 5 Years. Former students can be counted multiple times within a year if they had multiple fields of studies.
Data Source and Record Matching:	UI wage records are matched to the education records of those employed to ascertain the highest education level received and wages earned. The Center for Educational Performance and Information, National Student Clearinghouse, and the Talent Investment Agency collected the data used to complete this report: • Student Transcript and Academic Record Repository to locate enrollment in a Michigan public community college or university. For details on the data definitions and how the data are collected, refer to the STARR Data Collection Manual (*https://www.michigan.gov/cepi/0,4546,7-113-57943_86896---,00.html*). • The NSC StudentTracker database to locate enrollment from out-of-state or non-STARR participating colleges or universities. For a list of all colleges and universities that CEPI has available in its postsecondary data system, refer to the Postsecondary Entity List (*http://www.michigan.gov/documents/cepi/Postsecondary_Entity_List_553846_7.xlsx*). • Unemployment insurance wage record data submitted by employers through Michigan's Workforce Longitudinal Data System (WLDS; *https://www.michigan.gov/leo/0,5863,7-336-94422_95539_64178_75708---,00.html*).
Comments:	Earnings data are disaggregated by education level, field of study, and high school CTE concentrator status. No data by postsecondary institution. Suppressed if fewer than 10 students.
Links:	*https://www.mischooldata.org/dashboard-home/*

Minnesota	
Earnings Measure(s):	• Annual Median Wage (two years, four years following graduation): For someone graduating in Spring 2010, this figure represents median wages earned from Spring 2011 to Spring 2012. Individuals with reported earnings any time during the year are included regardless of number of hours worked. Hourly rates lower than $4.90 are excluded. • Median Hourly Wage (various periods reported, see below): Among all graduates with reported wages for the quarter starting x months after graduation. Hourly rates lower than $4.90 are excluded from the calculation because they represent training wages paid to employees under 20 years old. • Full-Time Year-Round Median Wage: For someone graduating in Spring 2010, this figure represents median wages earned from Spring 2011 to Spring 2012 by individuals working each quarter of the year for at least 1,820 hours. This measure is based on a smaller subset of employed graduates.
Purpose:	"The Graduate Employment Outcomes tool helps Minnesota's students, job seekers, career counselors, educators, and policy makers better understand the connections between postsecondary education choices and job outcomes."
Scope:	Seven state colleges and universities, and 30 state colleges (community colleges).
Students Included in the Pool:	Students who graduated in the given school year. Graduates who earned more than one degree in the same academic year are classified according to the highest degree obtained.
Timeframe for Measurement:	Hourly wage: First quarter of the 2nd, 3rd, 5th, and 8th years after graduation. Median annual wage: 2nd, 3rd, and 4th year after graduation.
Data Source and Record Matching:	MN State Longitudinal Education Data System (SLEDS). MN employers report hours of employment through their UI quarterly wage reporting (*https://www.uimn.org/employers/wages-taxes/reports-payments/quarterly-wage-detail-report.jsp*), so it can filter out sub-minimum training wages.
Comments:	When there are fewer than 10 valid employment records the figure is suppressed for confidentiality and data quality reasons.
Links:	*https://mn.gov/deed/data/data-tools/graduate-employment-outcomes/*

Missouri	
Earnings Measure(s):	Median wages for graduates one and three years after completing the program.
Purpose:	[MoSCORES] "...is designed to assist job seekers, students, career counselors, educators, and planners with a better understanding of training options and typical work outcomes of program graduates. Information includes program details along with demographic and performance measures when data is available."
Scope:	Most community colleges and state universities.
Students Included in the Pool:	MoSCORES analyzes students who enroll and exit a program of study, called a "Cohort," to develop statistics regarding completion time and work outcomes. Additional Cohort details: Cohort: A group of students enrolled in the same program of study at the same institution. Three years of student enrollees, or Cohorts, are used to increase the number of participants for analysis since some programs are very small. Cohort Exiter: A student who exits a program of study by either completing or graduating (both terms used interchangeably) or by withdrawing from the program prior to completion. Cohort Completer: A subset of students in the Cohort Exiters who completed or graduated from the program of study.
Timeframe for Measurement:	The fourth or twelfth quarter wage records after program completion, one year or three years respectively, are used to determine the student's earnings level. The quarterly number is multiplied by four to annualize the wages and if a student works at more than one business during a quarter then the wages are combined.
Data Source and Record Matching:	Student education records are matched with wages reported quarterly by employers to the DOLIR unemployment insurance program.
Comments:	On the Performance Screen, the median wage is listed for the same graduates based on whether they are working in an urban or rural location of Missouri as defined by metropolitan statistical areas. The median wage for all similar programs in the state is also shown for context.
Links:	*https://scorecard.mo.gov/Public/PublicReports/ProgramWorkOutcomesBySchoolRpt.aspx*

Nebraska	
Earnings Measure(s):	Average Salaries: Annualized wage records are found by taking the graduate's first quarter earnings multiplied by four. This is the same methodology used to estimate the service area earnings, using Quarterly Census of Employment and Wages data.
Purpose:	"Prospective students planning their education need information to help select a college and major. Colleges and regulatory commissions need the information to improve educational programs in the state. Workforce Investment Boards, economic developers, and policy makers need information on labor supply to help meet the needs of businesses in Nebraska."
Scope:	All six of Nebraska's Community Colleges, all three State Colleges and the University of Nebraska–Kearney. Does not include the University of Nebraska-Lincoln and University of Nebraska-Omaha.
Students Included in the Pool:	Graduates of the institutions.
Timeframe for Measurement:	Wage matches are postponed to give graduates time to be working in a career field. There is also a lag time in obtaining unemployment insurance records. In general, for people working January through March, employers have approximately April through June to report the information. The Quarterly Census of Employment and Wage information is added July through September. Past experience tells us that if the queries are run at a later date, more employment is reported, allowing for more accurate and complete data.
Data Source and Record Matching:	Earnings may be for full- or part-time work. Earnings reported in the database include wages, salaries, bonuses, commissions, and other income designated as earnings under Nebraska Unemployment law.
Links:	*https://neworks.nebraska.gov/admin/gsipub/htmlarea/uploads/Graduate%20Outcomes_UNK%20archive.pdf*

Nevada	
Earnings Measure(s):	• Average Annual Wages.
Purpose:	"The 2011 Nevada Legislature passed Senate Bill 449 (Chapter 397, Statutes of Nevada 2011), which requires the Board of Regents of the Nevada System of Higher Education (NSHE) to compile a biennial report concerning completion of degree and certificate programs and employment within the field of study (codified under Nevada Revised Statutes (NRS) 396.531). Part II of the Student Completion and Workforce Report includes: The number and percentage of students who have obtained employment within their field of study in this State, and the average starting salary, which must be reported by institution within the System and by each academic program at the institution."
Scope:	Nevada public colleges and universities.
Students Included in the Pool:	Average annual wages are calculated only for those individuals employed in Nevada who have wages reported for all four quarters of the year following graduation. However, we cannot determine from the records if employment was full- or part-time, which may result in a low average wage.
Timeframe for Measurement:	First year following graduation.
Data Source and Record Matching:	Matched graduates with UI wages in Nevada. "The Nevada P-20 to Workforce Research Data System (NPWR) is a state of the art research tool that provides Nevadans with unparalleled access to the knowledge needed to understand the trends shaping our state's education and workforce outcomes."
Links:	*http://npwr.nv.gov/reports*

New Jersey	
Earnings Measure(s):	• Average Quarterly Wage: (six months, 12 months, two years following completion) • Estimated Yearly Wage: (four times the average quarterly wage for each of the three periods following graduation)
Purpose:	"The New Jersey Training Opportunities website (NJTOPPS) is home to New Jersey's Eligible Training Provider List (ETPL) and Consumer Report Card (CRC). The ETPL is a comprehensive listing of all schools and organizations offering occupational education and job training programs that are eligible to receive publicly funded tuition assistance."
Scope:	The Consumer Report Card (CRC) provides performance data for all training providers and training programs included on the ETPL. Training providers included on the ETPL are required to submit student enrollment and exit records, which populate the CRC.
Students Included in the Pool:	Training providers included on the ETPL are required to submit student enrollment and exit records, which populate the CRC.
Timeframe for Measurement:	Second, fourth, and eighth quarters following completion or exit from the training program.
Data Source and Record Matching:	All calculations of average wages are based on jobs covered by the Unemployment Insurance system. Individuals who are self-employed, work for religious institutions, are enlisted in the military, or are employed by the federal government are excluded from the Unemployment Insurance system and so are not counted in the calculations.
Comments:	The average quarterly wage is calculated by dividing the total wages earned in a quarter by the number of completers earning wages. Individuals who earn $40,000 or more in the post-completion quarter are removed before calculating the average wage measure. Wages have been adjusted for inflation, using the average of the New York Area CPI (Consumer Price Index) and the Philadelphia Metro Area CPI. Together these two metro areas include New Jersey's 21 counties.
Links:	*http://www.njtrainingsystems.org/default.aspx*

North Carolina	
Earnings Measure(s):	Mean Wage (computed for each year following graduation, up to 16 years): Mean wage outcomes data reflect the arithmetic mean annual wage of graduates from selected programs who were employed in "covered employment" in North Carolina a given number of years after their graduation.
Purpose:	**NC TOWER** provides graphs and tables of in-depth information on employment rates, wages, and ongoing higher education enrollment of graduates from the North Carolina Community College System and from University of North Carolina system schools. Information in NC TOWER can be viewed at an aggregate level (e.g., outcomes for all bachelor's degree earners in North Carolina, regardless of where they went to school or what they studied). It can also be broken out by broad subject areas (e.g., 2-digit Classification of Instructional Program code), specific subject areas (e.g., 6-digit Classification of Instructional Program code), and campus. Employment and wage information can also be broken out by the industrial sector of the student's employment, while data on further enrollment in higher education can be broken out by level of study.
Scope:	Public Community Colleges and Universities.
Students Included in the Pool:	Graduates of the selected program(s).
Timeframe for Measurement:	An individual's annual wage is determined by examining quarterly unemployment insurance wage records for that individual in the four quarters representing a given number of years after the individual's graduation. For instance, if a student graduated in May of 2006 (i.e., Q2 2006), that student's annual wage one year after graduation will be determined by the sum of the student's quarterly wages in the next four quarters (i.e., Q3 2006, Q4 2006, Q1 2007, Q2 2007). Students who were not employed in North Carolina covered employment (i.e., had annual wages of $0) for a given year are not included in the mean wage value.
Data Source and Record Matching:	UI covered earnings in NC. The data in NC TOWER are derived from the NC Common Follow-up System (CFS), a longitudinal repository of training, education, and workforce data maintained by the Labor and Economic Analysis Division of the North Carolina Department of Commerce. CFS data on public university students are submitted from the University of North Carolina General Administration, while CFS data on community college students comes from the North Carolina Community College System. Employment and wage information on individuals working in jobs covered by North Carolina's unemployment insurance laws is submitted to the CFS by the Division of Employment Security of the North Carolina Department of Commerce.
Comments:	Provides data by type of degree, program of study, institution, and industry of employment. Also displays data in percentile ranges for the 25th, 50th, and 75th percentiles for each year.
Links:	*https://nctower.com/landing/index.html*

Ohio	
Earnings Measure(s):	First-Year Earnings of Ohio Resident Spring Term Graduates.
Purpose:	Statistical profiles of Ohio higher education by sector.
Scope:	University System of Ohio Institutions (14 four-year research universities, 24 branch and regional campuses, 23 two-four community colleges and technical colleges, as well as 13 graduate schools, seven medical schools, six law schools, and 10 business schools)
Students Included in the Pool:	Spring term graduates with 4th quarter earnings in excess of $4,000.
Timeframe for Measurement:	4th full quarter after Spring graduation.
Data Source and Record Matching:	Spring graduates are cross matched against the employment database maintained by the Ohio Department of Jobs and Family Services (UI covered earnings).
Comments:	Earnings data are computed for each year from 2011. Data are presented in current dollars, and constant 2015 dollars. Data are presented by degree level and discipline area, but not by institution.
Links:	*https://www.ohiohighered.org/content/statistical_profiles_employment_graduates*

Oregon	
Earnings Measure(s):	Median earnings five years following graduation.
Purpose:	Key Performance Metrics for Oregon higher education system.
Scope:	Separate measures for community college students and university students.
Students Included in the Pool:	Students who earned a degree or credential and were employed in Oregon five years after graduation.
Timeframe for Measurement:	Data are presented for each year beginning with 2016.
Data Source and Record Matching:	A wage match was possible if: a. A valid social security number was available for the community college award recipient. Valid social security numbers were available for 98% of 2010-11 Oregon community college completers; AND b. A wage record for the social security number was found in the Unemployment Insurance database of the Oregon Employment Department for quarter 3 of 2016, quarter 4 of 2016, quarter 1 of 2017, or quarter 2 of 2017. Wage data are not available for graduates who are working in other states or countries, who are self-employed, employed by the federal government, or unemployed. A wage match was found for 69% of community college completers with a valid social security number (68% of all completers).
Links:	*https://www.oregon.gov/transparency/Pages/Key-Performance-Measures.aspx*

South Carolina	
Earnings Measure(s):	Median Earnings (first year and fifth years following graduation).
Purpose:	"Understanding the difference in employment and wage rates across fields and degree types can help to inform higher education and economic development policy makers as the state strives to ensure an appropriate workforce talent pipeline."
Scope:	Public and independent undergraduate or graduate postsecondary institutions.
Students Included in the Pool:	Students who completed an undergraduate or graduate program in FY 2009-10 or FY 2014-15. Only students whose earnings exceed 40 hours/week * 50 weeks/year at minimum wage are included ($14,500 at time of report).
Timeframe for Measurement:	For first year earnings, the four consecutive quarters immediately following graduation. For fifth year earnings, quarters 17 to 20 following graduation are examined. For students with less than four quarters of earnings, data are annualized.
Data Source and Record Matching:	Dept. of Employment and Workforce UI covered earnings data. In-state employment only in covered employers.
Comments:	Data presented by demographic characteristics, type of institution, major discipline, two-digit CIP category. Cells with less than 10 students are suppressed.
Links:	*https://dew.sc.gov/docs/default-source/default-document-library/post-secondary-workforce-evaluation-10-12-17.pdf?sfvrsn=5763eadf_2*

Tennessee	
Earnings Measure(s):	Median wages (first year, fifth year).
Purpose:	"College Measures' new EduTrendsTN website (*http://www.edutrendstn.com*), developed in partnership with the State of Tennessee, supports these initiatives by providing prospective students and their families with information about higher education costs, benefits, and affordability and delivering insights into employment demand and wage potential across many fields."
Scope:	The universe of data include completers from the Tennessee Higher Education Commission's Student Information System, which includes public community and technical colleges, and public universities.
Students Included in the Pool:	Completers are the total number of students who graduated from the program in the cohort. Completers were included in the cohort if their total quarterly (Q) wages from Q3 to Q6 after graduation met or exceeded the minimum wage threshold. The Q3–Q6 wages were then summed to get a yearly wage. The quarterly minimum wage threshold was based on a 40-hour work week at the federal minimum wage for that quarter.
Timeframe for Measurement:	Two cohorts of students were used based on the semester the graduate received the award: • 2007–11 for first year out earnings • 2007 for Year 5 earnings The 2007–11 academic years equate to summer 2006 through spring 2011.
Data Source and Record Matching:	Wage data are based on linking Social Security numbers of graduates to wage data from the Unemployment Insurance wage file. The award semester was converted based on a calendar year quarter (e.g., spring = Q2, summer = Q3, fall = Q4).
Comments:	Data for each completer are compared with the completer's school, award level, and the Classification of Instructional Program (CIP) major code for the first major only. For this report, we aggregated information to the 4-digit CIP code to reduce the number of records that needed suppression. If the student had multiple awards, the most recent award was used.
Links:	*https://www.air.org/sites/default/files/downloads/report/Tennessee%20Postsecondary%20Report%20Sept%202014.pdf*

Texas	
Earnings Measure(s):	• Median of individual student loan debt as a percentage of first year wage • Median earnings in first, fifth, and tenth year following graduation.
Purpose:	"On January 22, 2004, Governor Perry issued Executive Order RP 31 requiring the THECB and each institution and system work together to provide "the information necessary to determine the effectiveness and quality of the education students receive at individual institutions" also to provide "... the basis to evaluate the institutions' use of state resources." (See page 3 for text of the RP 31 Proclamation.)"
Scope:	Texas public community and technical colleges and universities.
Students Included in the Pool:	Students awarded a certificate, associate degree, or bachelor's degree in a given year from a Texas public institution.
Timeframe for Measurement:	2015, 2017, 2017.
Data Source and Record Matching:	Each student's loan debt includes all loans reported in the THECB financial aid database (FADS) report by any institution for that student in the last 15 years. First year wages are based on UI wage data reported to the Texas Workforce Commission. Bachelor's degrees awarded at community colleges are not included. Source: CBM009, Unemployment Insurance (UI) wage records, Financial Aid Database System (FADS). How are actual, full-year earnings calculated for graduates of UT System institutions? The earnings data reflect actual earnings reported to the LEHD and TWC for students who graduated with a degree from a UT System institution (academic and health campuses) in academic years 2001-02 through 2016-17. Earnings are based on a calendar year and are inflation-adjusted to reflect 2018 dollars. Aggregate median earnings are reported by institution and major. Who are included/excluded in the earnings data for UT System institutions? The goal of seekUT is to focus on those individuals with full-time, full-year employment. The UI earnings data do not indicate the number of hours worked, length, or type of employment. Annual earnings of $13,195 are established as the minimum earnings and serve as a proxy for full-time employment. Therefore, seekUT excludes graduates with annual earnings of less than that threshold. Individuals who are self-employed are excluded from seekUT.
Comments:	UT System uses data obtained through partnerships with U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program, the Texas Higher Education Coordinating Board (THECB), and the Texas Workforce Commission (TWC). UT System student data are linked to the Unemployment Insurance (UI) earnings record data for the post-graduate earnings of UT degree recipients. Additionally, seekUT incorporates data from the National Student Clearinghouse (NSC), the Texas Workforce Commission's Labor Market and Career Information (LMCI) program, the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor, and the Association of American Medical Colleges (AAMC). The collaboration between the U.S. Census Bureau's LEHD and UT System allows seekUT to provide valuable information to students to assist them on their career pathways.
Links:	*https://www.txhigheredaccountability.org/AcctPublic/* *https://seekut.utsystem.edu/UndergradTX*

Virginia	
Earnings Measure(s):	Average First-Year Earnings (Last Five Years): The average of the earnings from Quarters 3 through 6 after graduation of students in the cohort. Note that earnings for the graduates from each earlier year (2005–06, 2006–07, 2007–08, 2008–09) are not adjusted for inflation to the earnings of the 2009–10 academic year graduates.
Purpose:	"This report is the result of a partnership between SCHEV and College Measures to make publicly available the average first-year wages of recent graduates from programs across the Commonwealth of Virginia, with the long-term goal of providing a single location for reviewing wage outcomes data from multiple states."
Scope:	Public community colleges and universities.
Students Included in the Pool:	In this report we combine five years of data into one cohort, and label the cohort with the most recent year of data. For example, the 2009–10 cohort, which is the most recent cohort with complete unemployment insurance data and which we use as the primary cohort in our report, includes students graduating from 2005–06 through 2009–10.
Timeframe for Measurement:	Quarters 3 through 6 after graduation.
Data Source and Record Matching:	Completer records are matched with UI data. In-state only. Appears to use an earnings threshold of full-time wage equivalent (FTWE) reported wages, which is $13,195/year. Uses Virginia SLDS.
Comments:	To protect confidentiality and accommodate both the many small programs in the Commonwealth and the limits of the available data, these reports display program-level data only under the following conditions: • Single-year data are not to be reported, only rolling five-year aggregates. For example, graduates of 2009–10 are reported with those of 2005–06, 2006–07, 2007–08, and 2008–09. • Cell sizes of wage-reported graduates must be equal to 10 or greater with full-time wage equivalent (FTWE) reported wages. • The current definition of FTWE is $13,195/year, which represents 52 weeks of employment at 35 hours per week at $7.25/hour. • At least 30% of the cohort of graduates must have been matched and reported with full-time wage equivalent (FTWE) reported wages, or 20% with a minimum cell size of 200. • The program must have produced a minimum of three graduates in each of the five successive years.
Links:	*https://www.air.org/sites/default/files/downloads/report/Virginia_EMS_Report1_0.pdf*

Washington	
Earnings Measure(s):	Median Earnings.
Purpose:	"This website displays earnings of students who have received certificates or degrees from public colleges, universities, and apprenticeship programs in Washington, and who were subsequently employed in Washington. Knowing about typical earnings of graduates of programs may assist in decision-making, but personal interest and skills are the most important factors in education and career planning."
Scope:	Public community and technical colleges, universities, and apprenticeship programs.
Students Included in the Pool:	**We display earnings data for individuals who meet certain criteria:** • Those who work all four quarters in a calendar year, and • Those whose annual earnings are at least $14,000 (nominal dollars). $14,000 per year roughly corresponds to employment of 75 percent of full-time hours at Washington's minimum wage.
Timeframe for Measurement:	**Earnings are displayed for full calendar years after program completion.** Earnings data are available through 2015. For example, 2007-08 graduates have earnings data for seven subsequent calendar years (2009-2015).
Data Source and Record Matching:	**The Washington State Employment Security Department provided Unemployment Insurance (UI) wage records for individuals employed in Washington.**
Comments:	**We have adjusted earnings data for inflation.** Earnings are adjusted to 4th quarter 2015 using the Chain-Weight Implicit Price Deflator (IPD) for Personal Consumption Expenditures (*http://www.bea.gov/iTable/*). **Earnings are displayed as percentile values.** The median—or 50th percentile value—is the value that divides the earners into two groups—half earning more than the median and half earning less. In some cases, the 75th percentile (75% of earners make less) and 25th percentile (25% of earners make less) are shown. **There are minimum cell sizes required for display.** We display the median earnings of all cohorts that contain at least 30 individuals. If there are at least 90 individuals in a cohort, the 25th and 75th percentile earnings are also shown.
Links:	*https://erdc.wa.gov/data-dashboards/earnings-for-graduates*

West Virginia	
Earnings Measure(s):	Annual Median Wages (two, four, and six years after graduation)
Purpose:	This dashboard is designed to provide public access to key data elements that provide insight into the employment outcomes of the state's public high school and postsecondary graduates.
Scope:	Public postsecondary institutions.
Students Included in the Pool:	Public high school and postsecondary graduates from the academic year 2010-2011 who were found working a full year in state.
Timeframe for Measurement:	For degree type and program earnings, includes students graduating 2014-2015 and who were working in 2017.
Data Source and Record Matching:	UI covered earnings data through the West Virginia SLDS. Cannot tell if an earnings threshold was used aside from the requirement to be employed in all four quarters of the year.
Comments:	Includes data by program category and degree level. Not by institution.
Links:	*http://www.wvhepc.edu/resources/data-and-publication-center/workforce-data/*

Voluntary Framework of Accountability	
Earnings Measure(s):	• Median Wage Growth: Change in median wage of CTE completers and leavers from before their CTE experience and after their CTE experience.
Purpose:	"The VFA is the principal accountability framework for community colleges with measures defined to encompass the full breadth of the community college mission and the diversity of students' goals and educational experiences."
Scope:	Community College Career and Technical Education completers and leavers.
Students Included in the Pool:	• Median Wage Growth: This measure is intended to be wage growth for workers who are upgrading skills. To control for individuals who were not upgrading skills, please remove: – Students who's 2014 Q2 were below the quarterly minimum wage of $3,625 (federal minimum wage was $7.25 in 2014; multiply it by the number of hours in a full-time work week (40 hours) then by the number of weeks in a quarter (12.5 weeks)); – Students who transfer/enroll in further education.
Timeframe for Measurement:	Six quarters following completion of CTE courses.
Data Source and Record Matching:	VFA recommends matching CTE Completer/Leaver cohort with state Unemployment Insurance Wage (UI Wage) records, and if available, other administrative unit record wage data. Not all colleges will have access to match their cohort with this data, but if it is available, colleges are expected to report this data. Colleges who do not have access to this data may choose to report data based on surveys of students who have left the institution. However, colleges who choose to report wage data based on survey of Completers/Leavers should only do so if they have confidence that the data are representative of the Completer/Leaver cohort.
Links:	*https://vfa.aacc.nche.edu/Documents/VFAMetricsManual.pdf*

Voluntary Framework of Accountability	
Earnings Measure(s):	CTE Education and Earnings Outcomes: Percentage of students in the CTE Completer/ Leaver Cohort (AY 2016-17) who achieved one of the defined mutually exclusive enrollment or earning outcomes: • Enrolled in Education: Number of students in the CTE cohort who were enrolled in a postsecondary institution in the first quarter of 2019 (January-March, 2019). • Number of students in the CTE cohort who were not enrolled in a postsecondary institution and whose annualized earnings fell into the following ranges, based on earnings in the first quarter: – $1 - $19,999 – $20,000 - $24,999 – $25,000 - $29,999 – $30,000 - $39,999 – $40,000 - $51,499 – $51,500 or more • Unemployed/Unknown: Number of students in the CTE cohort who were not enrolled in a postsecondary institution and who had no Unemployment Insurance Wage record in the first quarter of 2019.
Purpose:	"The VFA is the principal accountability framework for community colleges with measures defined to encompass the full breadth of the community college mission and the diversity of students' goals and educational experiences."
Scope:	Community College Career and Technical Education completers and leavers.
Students Included in the Pool:	Please report this measure for: • Credit CTE Cohort (Associate/Certificate/ Left/No Award) • Non-Credit CTE Cohort
Timeframe for Measurement:	Six quarters following completion of CTE courses.
Data Source and Record Matching:	VFA recommends matching CTE Completer/Leaver cohort with state Unemployment Insurance Wage (UI Wage) records, and if available, other administrative unit record wage data. Not all colleges will have access to match their cohort with this data; but if it is available, colleges are expected to report this data. Colleges who do not have access to this data may choose to report data based on surveys of students who have left the institution. However, colleges who choose to report wage data based on surveys of Completers/Leavers should only do so if they have confidence that the data are representative of the Completer/Leaver cohort.
Comments:	
Links:	*https://vfa.aacc.nche.edu/Documents/VFAMetricsManual.pdf*

Launch my Career (Florida)	
Earnings Measure(s):	Median Wages: first-year and fifth-year wages after graduation. Median wages are derived from quarterly earnings multiplied by four for those employed full time/full quarter. Full time/full quarter is defined as earning at least Florida minimum wage (in the applicable year) for 13 weeks.
Purpose:	Launch My Career is the answer for state leaders who want to offer individuals information about the return on investment of enrolling in different certificate or degree programs and fields of study at a state's higher education institutions—before they enroll. For the latest iteration of the tool, see Launch My Career Florida and Launch My Career Utah (available in August 2019).
Scope:	State University System (SUS), the Florida College System (FCS), and the District Technical Centers (DTCs).
Students Included in the Pool:	"Graduates" is representative of students graduating from one of Florida's public postsecondary educational institutions in the 2016-2017 academic year (Summer 2016, Fall 2016, and/or Spring 2017).
Timeframe for Measurement:	Data is based on 4th Quarter 2015 (October to December).
Data Source and Record Matching:	For this site, all graphics, charts, and tables reporting wage information (unless otherwise sourced) have been created using data from FETPIP, OSFA, and occupational projections from the Florida Department of Economic Opportunity (DEO).
Comments:	Graduates and/or wages are displayed only when 10 or more individuals are found employed full time/full quarter. Additional information on FETPIP methodology is available online at *www.fldoe.org/fetpip/method.asp*
Links:	*http://launchmycareerfl.org/*

APPENDIX B:
NOTES ON THE USE OF EARNINGS THRESHOLDS BY STATES

State	Rationale for FTMWE (or notes)	Author's Comment
Florida	4th quarter earnings have been multiplied by four to estimate annual earnings. Full-Time is defined as earning at least minimum wage for 13 weeks ($4,290). Average full-time annual wage is displayed when 10 or more graduates are employed full-time.	They don't really provide a rationale, but they provide the data for all earners as well, so they are letting the user decide which measure they find most appropriate.
Indiana	Typical Annual Salary after Graduation Represents the median salary for each measured period (Years 1, 5, and 10 after graduation). Wages are annualized after 2 quarters of wages. Year 1 is based on 2-5 quarters of wages; Year 5 is based on 18-21 quarters of wages; and Year 10 is based on 38-41 quarters of wages. SOURCE: Management Performance Hub Education and Workforce Database (EWD). [Data is provided for:] Students who graduated during the year ranges below, and: • Do not have a degree-seeking enrollment record in another Indiana college; • Have at least 3-4 quarters of wages after graduation beginning two quarters after the graduation date; • Have annualized wages at or above $13,195 (federal minimum wage * 35 hours per week * 52 weeks).	They don't provide a rationale for their choice of using FTMWE.
Maine	MaineEARNS provides information on employment and wage outcomes for Maine workers who graduated from the University of Maine System and Maine Community College System after July 2008. Students, parents, educators, administrators, policy makers, and anyone interested in earning education credentials and employment in Maine will be able to use this data to research, plan, and make informed decisions. Median wages are computed for those who meet the criteria for full-year, full-time equivalent employment. To meet this, graduates must be employed in all four quarters of a given outcome year and must have total wages in each quarter equal to or greater than the minimum wage * 32 hours * 13 weeks. Individual graduates are counted once for each program or category in which they earned at least one credential.	Their purpose description suggests that the focus is on students and parents, but they include other actors in the list (educators, administrators, policy makers) who might be interested in a broader definition.
Minnesota	Hourly rates lower than $4.90 are excluded from the calculation because they represent training wages paid to employees under 20 years old.	This a special case since they know how many hours each UI covered employee works (not typically collected in the UI tax reporting). So, they are able to isolate these special cases of training wages. Otherwise they include all earners in their calculation.
Ohio	Full-time employment is estimated based on earnings in the 4th quarter of $4,000 or more ($16,000 annually)	A specific rationale for why they use this level wasn't found.

State	Rationale for FTMWE (or notes)	Author's Comment
South Carolina	"Understanding the difference in employment and wage rates across fields and degree types can help to inform higher education and economic development policy makers as the state strives to ensure an appropriate workforce talent pipeline." Students who completed an undergraduate or graduate program in FY 2009-10 or FY 2014-15. Only students whose earnings exceed 40 hours/week * 50 weeks/year at minimum wage are included ($14,500 at time of report).	This statement implies the need to support comparison of wage rates across fields and degree types, so the FTMWE may be used to provide a more stable basis for this comparison.
Tennessee	"College Measures' new EduTrendsTN website (http://www.edutrendstn.com), developed in partnership with the State of Tennessee, supports these initiatives by providing prospective students and their families with information about higher education costs, benefits, and affordability and delivering insights into employment demand and wage potential across many fields." Completers were included in the cohort if their total quarterly (Q) wages from Q3 to Q6 after graduation met or exceeded the minimum wage threshold. The Q3–Q6 wages were then summed to get a yearly wage. The quarterly minimum wage threshold was based on a 40-hour work week at the federal minimum wage for that quarter.	The reference to "wage potential" in their purpose statement suggests that they want to support information for students and families about what earnings graduates may expect.
Texas	The collaboration between the U.S. Census Bureau's LEHD and UT System allows seekUT to provide valuable information to students to assist them on their career pathways. The goal of seekUT is to focus on those individuals with full-time, full-year employment. The UI earnings data does not indicate the number of hours worked, length, or type of employment. Annual earnings of $13,195 are established as the minimum earnings and serve as a proxy for full-time employment. Therefore, seekUT excludes graduates with annual earnings of less than that threshold. Individuals who are self-employed are excluded from seekUT.	The focus of seekUT is on "assisting [students] on their career pathways," so the use of FTMWE is probably to support data on an earnings expectation.
Virginia	"This report is the result of a partnership between SCHEV and College Measures to make publicly available the average first-year wages of recent graduates from programs across the Commonwealth of Virginia, with the long-term goal of providing a single location for reviewing wage outcomes data from multiple states." Completer records are matched with UI data. In-state only. Appears to use an earnings threshold of full-time wage equivalent (FTWE) reported wages, which is $13,195/year. Uses Virginia SLDS.	No specific rationale for their FTMWE, but their use of first-year wages of graduates as their measure may have pushed them to apply the FTMWE filter, so that some of the noise in earnings that arises from different levels of attachment to the labor force can be filtered out.
Washington	"This website displays earnings of students who have received certificates or degrees from public colleges, universities, and apprenticeship programs in Washington, and who were subsequently employed in Washington. Knowing about typical earnings of graduates of programs may assist in decision-making, but personal interest and skills are the most important factors in education and career planning." We display earnings data for individuals who meet certain criteria: • Those who work all four quarters in a calendar year, and • whose annual earnings are at least $14,000 (nominal dollars). $14,000 per year roughly corresponds to employment of 75 percent of full-time hours at Washington's minimum wage.	The reference to "typical earnings of graduates" implies the focus is on identifying earnings potential for students and families.

APPENDIX C:
DATA SOURCE DETAIL FOR PRIVATE EARNINGS DATA SOURCES

	PayScale College Salary Report
Company	PayScale
General Description	PayScale is a compensation analytics company. It sells subscription relationships to businesses. PayScale provides data to help companies compare their compensation to similar businesses in their industry across a wide range of compensation factors. PayScale Insight Lab, PayScale Market Pay, PayScale Team, and PayScale Benchmark are all examples of current products that PayScale has created to serve the employer compensation planning market. In addition, PayScale has created a series of salary research and analysis products that are designed to attract individuals to its salary survey. The College Salary Report is one of these products.
Source of Earnings Data	PayScale compensation data is based on individuals completing a salary profile on PayScale's website. "People complete a salary profile on PayScale's website for many reasons, but mostly to prepare to ask for a raise, evaluate a job offer, or just to know how they stack up against others in similar positions. Upon completing PayScale's salary survey, individuals receive a series of reports that show how their salary compares to other people with similar education, skills, and work experience. Individuals can also explore how changes such as moving to a different city, getting a promotion and going back to school can affect their future earning potential." PayScale employs a sophisticated marketing strategy to attract individuals to its salary survey. They publish a wide array of career-related reports based on their salary data and other information. A recent example includes an article entitled "Here's Why Economists Argue we Need More English Majors," which includes a link to a *Washington Post* report[A] on the work of economist Robert Shiller, author of Narrative Economics. Included about halfway through the article is this invitation: *Curious about how much your English degree is worth in today's job market? Take the PayScale Salary Survey[B] and get your free salary report in minutes.* According to their website, over 150,000 salary survey records are added to their database every month, which would correspond to about 1.8 million new survey records per year. Their database now includes 54 million salary profiles. Each salary survey record includes questions on the respondent's employer, job title and location, rate and type of pay, skills and attributes of the job, travel requirements, licenses and certifications held, employee benefits, education including institutions attended/graduated, degrees and major fields of study, and demographic questions including age, gender, and race/ethnicity. These data are used by PayScale to create detailed salary profiles by occupation, industry, size of firm, and location, as well as supporting summary earnings data calculation for colleges, types of degrees, and major programs of study.
Advantages and Disadvantages	Advantages: • The data are based on a large sample of individual respondents, and do not rely on statistical attribution of earnings or other methods. • Numerous data elements are collected in addition to salary, which allows rich segmentation of the earnings data. Disadvantages: • The data are self-reported by persons who are choosing to disclose their earnings to a private data collection service. There is always a question as to how representative this population is of all earners. However, PayScale "regularly compares PayScale compensation data with external sources of data, both publicly and privately available. This research has shown that our market data is strongly correlated with other sources of compensation data, including employer submitted data." • Since the data are based on a sample, they do not appear to support earnings summary data for detailed program categories or other student characteristics, which is possible through UI data matching.

	PayScale College Salary Report
Number of Institutions Accessing	The College Salary Report includes earnings data for more than 4,000 degree-granting colleges and universities. Since the report is available to anyone, it is assumed that most institutions access this data to explore earnings outcomes for their graduates. The summary data for each college include the number of PayScale salary survey respondents from the institution.
Cost of Access	No cost for colleges and students. PayScale sells subscription relationships to businesses to support comparative compensation research.
Link	*https://www.payscale.com/college-salary-report*

Notes: [A] Long, H. (October 19, 2019). The world's top economists just made the case for why we still need English majors. The Washington Post. https://www.washingtonpost.com/business/2019/10/19/worlds-top-economists-just-made-case-why-we-still-need-english-majors/.

[B] Access the PayScale Salary Survey here: https://www.payscale.com/my/survey/choose.

	Alumni Analysis/Labor Insight
Company	Burning Glass Technologies
General Description	Burning Glass Technologies (BGT), founded in 1999, is an analytics software company that collects daily job posting data from more than 45,000 online sources. In addition, BGT collects resume information from online sources, including social media profiles. BGT has leveraged these data sources, analytic approaches, and traditional sources of labor market information to develop several analysis products targeted to different markets, including: Labor Insight, Program Insight, Career Insight, NOVA, Lens Suite, Burning Glass APIs, and Applied Research. Alumni Analysis is an add-on dashboard available to subscribers of Labor Insight, Burning Glass's primary labor analysis product. Alumni Analysis "tracks graduate career outcomes based on the Burning Glass Technologies database of millions of resumes and current social profiles to provide institutions with accurate, real-time data on alumni's career pathways."
Source of Earnings Data	BGT does not directly collect or predict earnings data for individuals. Instead, it uses the salary information contained in the 15 percent of job posting records which contain salary data, coupled with a sophisticated predictive model that employs key job posting characteristics, to predict a salary level for all of its job posting records. BGT then uses these salary levels, along with traditional forms of earnings data and supplemented with private sources, to generate an earnings estimate (market salary) for a wide array of occupational roles. This is done with sufficient granularity to permit earnings estimates based on occupational title, industry, location, and skill attributes, including years of experience. All of this is done for the Labor Insight product and other analysis products offered by BGT. Users of Alumni Analysis can explore what is known by BGT about the employers, locations, industries, occupations, and further education of their graduates. Although earnings estimates are not directly incorporated into this data, users can explore Labor Insight to review earnings data for occupations, locations, and industries in which they know their alumni have been found, based on the Alumni Analysis results. Alumni Analysis offers institutions insights on program alignment and efficacy with program-specific analysis.

	Alumni Analysis/Labor Insight
Advantages and Disadvantages	Advantages: • BGT has developed a predictive model for salaries of job postings that allows them to associate a salary level with all job postings. This enables salary information to be made available across a wide array of occupational roles and skill levels, as well as by location. • The primary value added of BGT is its ability to provide detailed information on employer skill needs through its proprietary occupational and skill taxonomies. • BGT claims that its resume deduplication process allows it to track individuals longitudinally. Disadvantages: • BGT does not directly measure graduate earnings, but associates the graduates with occupations and roles based on social media profiles. • BGT uses the salary data for postings, along with other data, to associate earnings levels with occupations, locations, etc. Thus, gaining insight into graduate earnings is a two-step process: first, Alumni Analysis is used to understand what graduates are doing, and where they are doing it. Then Labor Insight is used to observe estimated salary levels for these occupations in these locations.
Number of Institutions Accessing	Alumni Analysis was only recently launched, so it is too soon to know the number of institutions that will use this tool. Labor Insight, of which Alumni Analysis is an add-on product, has about 400 postsecondary institution customers. The company hopes that the addition of Alumni Analysis will help them substantially grow this customer segment.
Cost of Access	The cost of both products varies by institution size, but the median cost of Labor Insight is $20,000 and the median additional cost of Alumni Analysis is $10,000. Colleges must be Labor Insight customers to purchase Alumni Analysis.
Link	*https://www.burning-glass.com/products/labor-insight/alumni-analysis/* *https://www.burning-glass.com/products/labor-insight/*

	Alumni Outcomes/Analyst
Company	Emsi
General Description	Emsi, founded in 2001, is a labor market data analytics company with clients in the United States, Canada, the United Kingdom, and Australia. Since 2018 it has been an affiliate of the STRADA Education Network. Emsi collects data from four main sources: • Traditional labor market information, such as BLS occupational projections, Census demographic information, and government wage data (BLS wage data); • Online job postings from hundreds of millions of jobs openings posted in the Internet, unduplicated; • Online profiles and resumes (approx. 135 million profiles); and • Curriculum and degree conferral data from higher educational institutions. Emsi collects government and profile data from sources in several countries in addition to the US. Emsi uses its analytic databases to support several labor market analysis products. Its primary product is Analyst, which brings together regional data on industries, occupations, job postings, skills in demand, related programs of study, and demographic information. Analyst also includes tools such as Profile Analytics, which allows users to filter and search aggregate data and drill down to individual profiles. Emsi also offers a Career Coach tool, focused on assisting students in making career and program choices, GoRecruit, which is focused on marketing alumni outcomes to prospective students, and the Economic Impact Study, which is focused on measuring the impact of the institution on the regional economy and workforce, and calculates a school's return on investment for students, taxpayers, and society. In 2017 Emsi launched its Alumni Outcomes product. This service is a customized report based on data about individual alumni that the institution provides to Emsi. Emsi matches the alumni data file with its own database of online profiles and resumes and returns the file to the school. This allows the institution to do more complex analyses of outcomes for specific subsets of its alumni, such as for specific programs of study or recipients of particular scholarships, etc. According to its project description, Alumni Outcomes allows institutions to answer questions such as: • What are their job titles and where do they work? • Which employers are hiring their grads? • Are alumni employed in fields related to their program of study? • What are their estimated earnings? • What skills do they have? • Are they staying in state or migrating out of state? • Which other institutions have their alumni attended?
Source of Earnings Data	Emsi does not directly collect earnings data for individuals. It assembles government wage data, and supplements this in two ways. First, it incorporates any salary data captured from job postings (they estimate about 8 percent of job postings include some salary information). Second, it uses a predictive model to estimate the values of all suppressed cells in the government labor market information sources (BLS industry and occupational projections, OES salary survey data), enabling more granular estimates on earnings by occupation, industry, and region. Graduate earnings outcomes are estimated based on the occupation, industry, and geographic location of the graduate, which is based on finding the individual's profile information on the Internet. Emsi also applies a normalization curve based on the number of years post-graduation for earnings estimation.

Advantages and Disadvantages	Advantages: • Emsi has a very comprehensive database of online profiles and job postings, which allows it to create estimates for detailed occupational titles and geographic locations. • Emsi has a sophisticated model for incorporating traditional labor market information into its analytics database. • Emsi has leveraged the IPEDS degree completion data by institution and incorporated this into its database to support program analysis. Disadvantages: • Emsi does not produce estimates on individual earnings, but associates earnings with specific occupations, industries, regions, and years of experience.
Number of Institutions Accessing	About 1,500 institutions are users of the Emsi Analyst product. About 200 institutions have participated in an Alumni Outcomes study.
Cost of Access	The base subscription to Analyst is $25,000 per year. The cost of the Alumni Outcomes service depends on the size of the institution, with three price points: Small ($15,000), Medium ($25,000), and Large ($35,000).
Link	*https://economicmodeling.com/alumni-outcomes/* *https://economicmodeling.com/analyst/*

APPENDIX D:
COMPARING EARNINGS BETWEEN PAYSCALE AND COLLEGE SCORECARD

Earnings Comparison for Top 24 Forbes Colleges			
College	**PayScale**	**College Scorecard**	**Difference (PayScale minus Scorecard)**
Swarthmore College	$ 67,500	$ 56,700	$ 10,800
Williams College	$ 67,500	$ 59,000	$ 8,500
University of California-Berkeley	$ 70,700	$ 64,700	$ 6,000
Pomona College	$ 63,800	$ 58,100	$ 5,700
Rice University	$ 71,000	$ 65,400	$ 5,600
Brown University	$ 68,200	$ 67,500	$ 700
Princeton University	$ 75,200	$ 74,700	$ 500
University of Michigan	$ 63,500	$ 63,400	$ 100
Harvey Mudd College	$ 88,800	$ 88,800	$ -
California Institute of Technology	$ 84,100	$ 85,900	$ (1,800)
Dartmouth College	$ 71,500	$ 75,500	$ (4,000)
University of Chicago	$ 64,000	$ 68,100	$ (4,100)
Northwestern University	$ 63,400	$ 69,100	$ (5,700)
Johns Hopkins University	$ 67,200	$ 73,200	$ (6,000)
Cornell University	$ 70,100	$ 77,200	$ (7,100)
Notre Dame University	$ 67,000	$ 78,400	$ (11,400)
Columbia University	$ 71,400	$ 83,300	$ (11,900)
Yale University	$ 70,300	$ 83,200	$ (12,900)
University of Pennsylvania	$ 72,800	$ 85,900	$ (13,100)
Duke University	$ 71,100	$ 84,400	$ (13,300)
Harvard University	$ 74,800	$ 89,700	$ (14,900)
Stanford University	$ 79,000	$ 94,000	$ (15,000)
Massachusetts Institute of Technology	$ 86,300	$ 104,700	$ (18,400)
Georgetown University	$ 66,400	$ 93,500	$ (27,100)

Source: Nietzel, M.T. (November 11, 2019). Comparing the college scorecard and PayScale's college salary report: Four key differences. Forbes. https://www.forbes.com/sites/michaeltnietzel/2019/11/11/comparing-the-college-scorecard-and-payscales-college-salary-report-four-key-differences/?sh=baff8fc1222e

ENDNOTES

1 Blagg, K & Washington, K. (January, 2020). Which dollars get measured? Assessing earning metrics using data from Connecticut. Urban Institute. *https://www.urban.org/research/publication/which-dollars-get-measured-assessing-earnings-metrics-using-data-connecticut*

2 Ibid. pp. 11-12.

3 Ibid. pp. 13-14.

4 Florida Education and Training Placement Information Program. (January 13, 2020). *http://www.fldoe.org/core/fileparse.php/7592/urlt/1718AORFall.pdf*. Earnings are based on the fourth quarter following graduation.

5 Nietzel, M.T. (November 11, 2019). Comparing the college scorecard and PayScale's college salary report: Four key differences. Forbes. *https://www.forbes.com/sites/michaeltnietzel/2019/11/11/comparing-the-college-scorecard-and-payscales-college-salary-report-four-key-differences/?sh=baff8fc1222e*