

Workforce Preparation and Employment Outcomes

By David Radwin and Laura Horn

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Community colleges, the nation's largest provider of postsecondary education, enroll more than 10 million students per year and 4 in 10 undergraduates overall, many of whom seek an accessible and affordable option to prepare for employment or to upgrade their job skills (Ginder, Kelly-Reid, & Mann, 2014; Skomsvold, 2014, table 1.3). Community colleges play a pivotal role in providing training for "middle-skill" level jobs—those that require a postsecondary credential below the bachelor's degree. Since 2011, the U.S. Department of Labor has funded more than \$2 billion in grants to more than 700 community colleges.¹ These grants enable colleges to develop training programs with

employer and industry partners to fill local skill gaps and create programs targeted to emerging industries. As *The New York Times* columnist Thomas Friedman (2014) recently noted in an op-ed column highlighting these programs, ". . . everyone wants employees out of college or technical schools who are as ready to plug and play as possible." Community colleges are poised to scale these initiatives. With so much invested in so many students, how do we measure the success of these programs?

The Completion Arch[™] presents three measures of employment outcomes for community college students: career and professional licensure exam

¹These grants are awarded through the Trade Adjustment Assistance Community College and Career Training program: <http://www.doleta.gov/taaccct/>.

pass rates, job placement rates, and graduates' wages and wage growth. These data are often limited in scope, not commonly or regularly reported, and not presented in a fashion that allows comparisons across groups of students. The indicators included in these measures are important to several audiences for different reasons. National, state, and local policymakers need reliable employment measures to guide workforce development efforts. Colleges need these data to tailor existing programs to improve

outcomes for students and to consider restructuring or eliminating programs with low success rates. Prospective and enrolled community college students and their families can use these data to make decisions about which programs of study would best meet students' career goals and whether they should plan to transfer to a four-year institution to earn a bachelor's degree. And college advisors can use these statistics to inform students about how to reach these goals.

Matching Student Records to Administrative Data

There are two primary sources of employment data for former community college students—administrative records and surveys—each of which has its advantages and disadvantages. The most common method of measuring employment outcomes, currently used by community colleges in more than 15 states represented in *The Completion Arch*[™], is to match student records to administrative data. The match is most often made to unemployment insurance (UI) data that are collected by states to administer unemployment benefits but are used by colleges to calculate annual earnings. Some colleges also report employment rates based on the proportion of former students with earnings in a given time period. (Another use of administrative data for measuring workforce success, not elaborated on here, is licensure exam passage rates for specific occupations such as cosmetology and nursing.)

Students with earnings in a given time period are counted as employed; students with no earnings are counted as not employed; and statistics such as mean and median wages can be calculated over various periods of time to show growth. An increasing number of states and colleges report these outcomes, and as described below, they are doing so in greater detail.

The chief advantage of using UI data is the data system's availability. UI data are collected by states for administrative purposes, so the primary expense for creating measures of em-

ployment rates and wages is setting up the legal, bureaucratic, and data processing infrastructure required to match UI and student records. (Some states already routinely incorporate both postsecondary and UI data in their state longitudinal data systems, and others are beginning to do so.) Once this step is achieved, the marginal cost per additional student is minor, so institutions and states can include entire populations of former students rather than samples and can extend the measure over various cohorts and time spans. Collecting employment data for such a large number of former students also enables disaggregation by field of study; type of award (associate degrees and certificates of various durations); and individual institution and student characteristics (demographics, placement in developmental education courses, participation in specific courses or programs, and so forth). States such as Illinois and California also use UI data to measure students' wages before attending a community college, which allows them to calculate the extent to which students' earnings grow with their educational attainment. And because employers and government agencies have a vested interest in correctly compensating employees, administrative data are widely assumed to be more accurate than equivalent self-reported data (Dudley, 2012; Hotz, Goerge, Balzekas, & Margolin, 1998).

On the other hand, UI data are subject to the fundamental problem of administrative data:

because the records are collected for administrative purposes, they almost inevitably lack some of the desirable characteristics of data collected specifically for research purposes. In particular, the two major shortcomings of UI data for measuring workforce outcomes are lack of coverage for large categories of employment and no details beyond whether the individuals are employed and how much they earn in a given time period. Individuals who are self-employed, employed by the federal government (including the military), or employed out of state do not pay into a state's UI system; therefore, indicators based on UI data tend to underestimate the true employment rate of former community college students and may not accurately reflect their wages if the excluded groups earn appreciably more or less than the included groups.

Some indicators in *The Completion Arch*[™] do include records from other sources to partially fill in these gaps in coverage of earnings. For example, Virginia collects earnings data from neighboring Maryland and Washington, DC as well as five other states; Oregon obtains out-of-state wage records from the federal Wage Record Interchange System; Oklahoma collects wage data from its state tax authority, which covers many federal employees and self-employed individuals; and Texas collects data from the Federal Employment Database Exchange Service, which includes many federal and military employees. Also, unlike more commonly reported state and national unemployment statistics, these UI-based job placement rates cannot exclude individuals categorized as “not looking for work” for such reasons as continuing their education or raising children.

Surveying Former Students

Surveys of former students, which are used to measure employment outcomes in the nationally representative Beginning Postsecondary Students (BPS) Longitudinal Study from the National Center for Education Statistics and in states such as Wisconsin and Wyoming, avoid the major weaknesses of UI data, although they have shortcomings of their own. Surveys have an advantage in coverage because they can reach former students no matter where they are employed, including out-of-state and federal employees and the self-employed. And surveys can collect important employment-related details not usually collected by UI records, such as full-time or part-time employment; number of jobs held; industry type; job title and occupational classification; availability of employer-sponsored health, retirement, or other benefits; occupational licensing status; and subjective factors such as job satisfaction, perceived job security, and perceived opportunities for advancement. Surveys can also determine which community college graduates continued their education to earn additional

credentials, including bachelor's and graduate degrees. These additional details can provide a much richer, more nuanced portrait of community college students' success in the workforce and the relationship between their educational attainment and their economic circumstances than can be found by examining whether they are employed and, if so, how much they earn.

The primary drawback to surveys of former students is that they tend to cost a lot more to reach far fewer individuals, especially if administrators seek the high response rate widely believed to be necessary for accurate results (Seastrom, 2012; for a contrasting view, see Radwin, 2009). Because of the cost of tracing, contacting, and gaining cooperation from students who have already left community college, such surveys are limited to samples rather than populations, which reduces the precision of estimates, particularly for smaller groups of students. Another concern about student surveys in general is that the self-reported data collected by surveys may not represent valid and reliable measures of student outcomes (Porter, 2011).

Finally, regardless of how they are measured, job placement rates and earnings statistics are strongly influenced by local and regional economic conditions that are largely beyond the control of community colleges. Variation in demand for community college graduates may explain differences in job placement rates across states and over time, as can regional differences in overall wages and the cost of living. Certain programs of study may disproportionately attract older individuals with more work experience who already command higher wages on

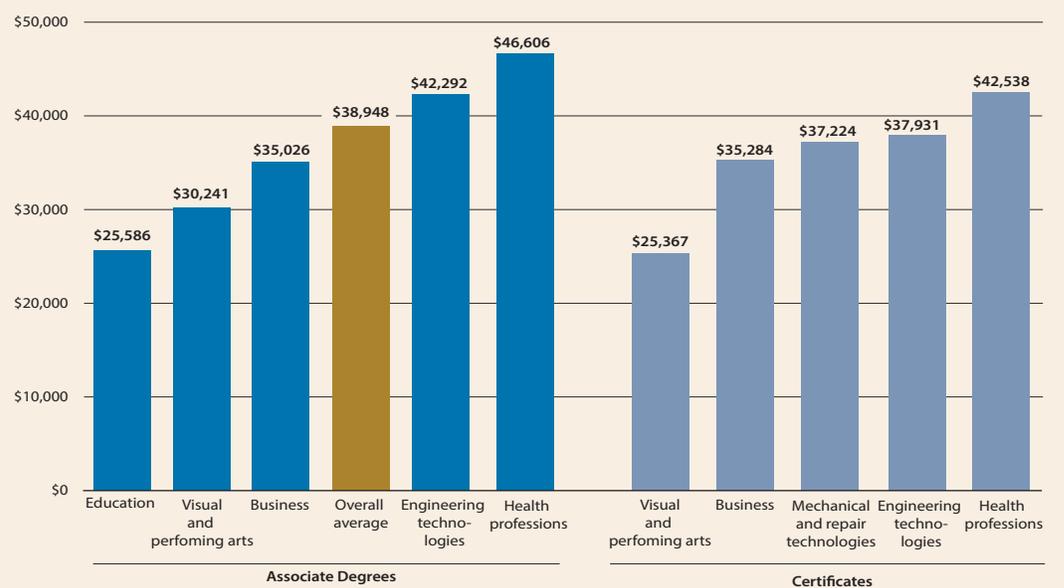
average than younger individuals who have more recently graduated high school. For example, among beginning postsecondary students whose highest award after six years was a certificate, 43 percent were age 24 or older compared with 27 percent of those whose highest award was an associate degree (Ifill & Radford, 2012, tables 3.1, 12.1). And as described in more detail below, because graduates of some fields of study earn more than other graduates, aggregate wage values may reflect the particular mix of programs offered by a state's community colleges.

Earnings by Field of Study

Among the additions to *The Completion Arch*[™] in 2014 are indicators of earnings for certificate and associate degree completers by field of study for several states. Figure 1, for instance, shows annual earnings after one year for Tennessee

Community College students who attained an associate degree or certificate in selected fields of study in academic years 2005–06 through 2009–10. The results, based on state UI data, show that graduates with associate degrees

Figure 1 Mean annual earnings after one year for graduates of selected associate degree or certificate programs in Tennessee Community Colleges in academic years 2005–06 through 2009–10



SOURCE: Schneider, M., & Vivari, B. (2012). *The earning power of graduates from Tennessee's colleges and universities: How are graduates from different degree programs doing in the labor market?* Washington, DC: College Measures, pp. 13, 15.

in health professions earn the most per year, averaging \$46,600, followed by graduates in engineering technologies and related programs, who earn an average of \$42,300. At the other end of the scale, graduates with associate degrees in education and in visual and performing arts earn \$25,600 and \$30,200 per year, respectively, well below the overall average of \$38,900. These results do not mean that every health and engineering graduate is destined to out-earn every education and arts graduate (and not all community college students are solely focused on maximizing their income), but having a reasonable estimate of one's earnings after graduation is extremely helpful to prospective and undecided students and their families and to the community college staff who advise and counsel them.

In the last few years, Tennessee and other states have released earnings not only for associate degree completers but also for bachelor's degree and certificate completers, and some of the results attracted attention from mainstream media sources. The results, which showed that associate degree completers in certain fields earned more than bachelor's degree completers in certain fields, were featured in headlines such as "Forget Four More Years: Why Community College Could Be Your Ticket to Financial Success." The basis of the claim, which was considerably narrower than the headline would suggest, was that associate degrees in applied fields such as nursing led to higher earnings than bachelor's degrees in liberal arts fields such as history among recent public college graduates in Virginia (White, 2012).

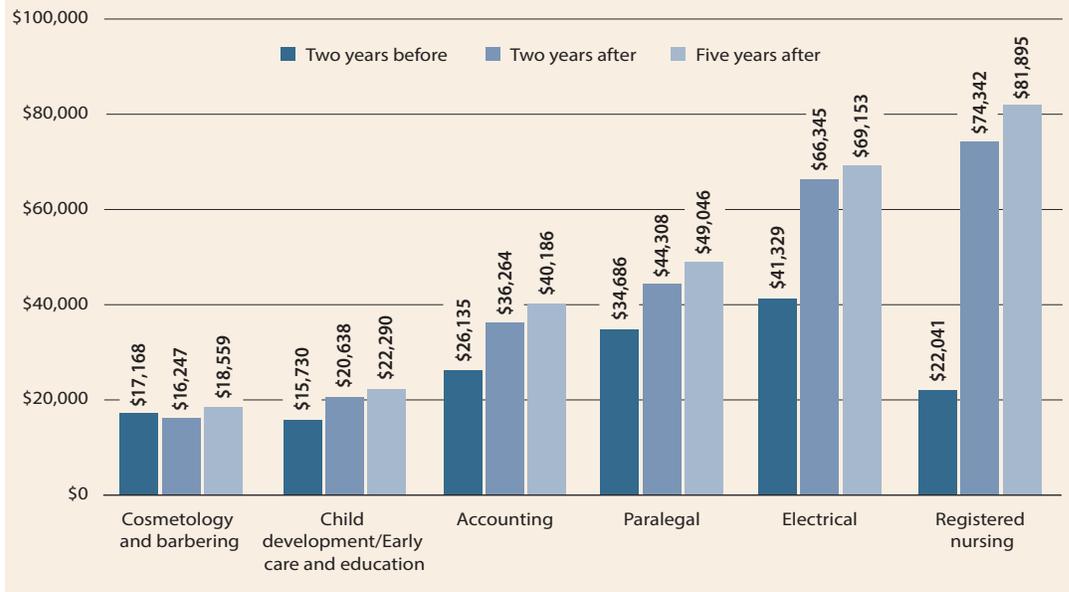
Certificate completers tend to earn less than associate degree completers, although again there is substantial variation by field. As with their counterparts with associate degrees, certificate completers in health and engineering fields earned the most per year on average, at \$42,500 and \$37,900, respectively, while those in the arts earned among the least, at \$25,400 (figure 1). Completers in visual and performing arts were

in one of the lowest earning fields, with average earnings of \$25,400. The highest paid certificate completers earned considerably more than the lowest paid associate degree completers, once again demonstrating that field of study is just as important as type of award for the earnings of community college graduates.

Indicators of growth in wages before and after completing certificates or associate degrees show even more dramatic differences by field of study. Figure 2 portrays median annual earnings two years before, two years after, and five years after completing a certificate in six of the most popular fields of study in California Community Colleges. At one extreme, the median earnings for individuals who completed certificates in registered nursing grew from \$22,000 two years before completing the certificate to \$74,300 two years after and \$81,900 five years after, a nearly four-fold increase. At the other extreme, students who completed certificates in cosmetology and barbering saw their median earnings decrease from \$17,200 two years before completion to \$16,200 two years after (adjusted for inflation) and barely increase to \$18,600 five years after. Indicators like this one that measure wage growth before and after completing an award also illuminate the extent to which certificates and associate degrees contribute to earnings as opposed to other factors such as individuals' prior education, experience, and ability.

Regardless of when wages are measured, disaggregating earnings statistics by field of study also demonstrates another reason why comparisons of workforce outcomes across states can be misleading. A state awarding many associate degrees in well-paying health and engineering fields and few associate degrees in less lucrative arts and education fields would appear to have students earning more on average than a state with the opposite composition, even if the graduates within each field had identical earnings across states. Students' choices of degree program and field of study are largely out of the control of

Figure 2 Median annual earnings two years before, two years after, and five years after completing certificates in California Community Colleges, by selected field of study



NOTE: Selections represent the most popular fields of study statewide among Chancellor's Office-approved certificate programs, which include all certificates requiring at least 18 semester (27 quarter) credit hours. Wages are adjusted for inflation using the California Consumer Price Index. Results exclude completers who transferred to a four-year institution or enrolled in a California Community College after receiving a certificate or who were age 21 or younger at the time of completion.

SOURCE: California Community Colleges Chancellor's Office. (2013). *Salary surfer* and *Salary surfer documentation*.

community colleges, and employment measures that do not account for these differences may reflect these choices and not just how well prepared the students are for the workplace.

It also bears mentioning that irrespective of how they are calculated, many workforce indicators presented in *The Completion Arch*[™] only report outcomes for community college students who completed a certificate or associate degree (exceptions include Florida, Iowa, Oregon, Virginia, and Washington state). Results vary by factors such as student characteristics and program requirements, but overall less than half of first-time United States community college

students complete a certificate or degree within six years of starting (Horn & Skomsvold, 2011, tables 6-A, 6-B; also see "Transfer and Completion" research brief). The available evidence suggests that even individuals who attend community college without completing an award earn more on average than individuals whose highest level of education is a high school diploma but less than certificate and associate degree completers (Belfield & Bailey, 2011). A comprehensive assessment of the economic benefits of attending community college would take into account the likelihood of completing as well as the outcomes associated with completing.

New Developments in Workforce Outcomes

In addition to the evolution and growth of state longitudinal data systems, a number of initiatives are under way to help more colleges and states use data to track the success of community college students in the workplace. The Western Interstate Commission for Higher Education (WICHE) is leading a data-sharing agreement among member states, starting with Hawaii, Idaho, Oregon, and Washington state, to exchange postsecondary and workforce records in order to monitor students' educational and employment progress and success across states (Western Interstate Commission for Higher Education, 2012). The goal of the three-year pilot

project is to develop a system to promote efficient data exchange that respects student privacy and enables reporting on key outcomes. And the Voluntary Framework for Accountability (VFA) works with individual colleges to develop common definitions of student achievement, including employment, for internal improvement and external accountability purposes (American Association of Community Colleges, 2014). At present, these indicators are not included in *The Completion Arch*[™] because they are not reported at the state level, but the VFA definitions help shape the current and future state and national measures of student progress and success.

Data to Gauge Demand

In addition to administrative and survey data, colleges also have other tools at their disposal to gauge current and future employment demand in specific fields and to identify the particular credentials and skills needed for these jobs. They might use analyses of online employment advertisements, for example (Altstadt, 2011)

or network with local employers that tend to hire their students (Rosenbaum, Deil-Amen, & Person, 2006, ch. 7, 8). Community colleges can also look to national employment projections (Carnevale, Smith, & Strohl, 2010) and estimated lifetime earnings (Baum, Ma, & Payea, 2013, p. 12) to inform policy and advise students.

Conclusions

While a growing number of states are using administrative data to measure the employment outcomes of their community college students (regardless of how these outcomes are measured), job placement rates and earnings statistics are strongly influenced by local and regional economic conditions, such as variation in employer demand and wage differences due to the cost of living. Colleges conferring many awards in higher-paying health and engineering fields would appear to have students earning more, on

average, than those colleges with a large proportion of lower-paying graduates in less lucrative arts and education fields, even if the graduates within each field had identical earnings across states. Students' choices of degree program and field of study are largely out of the control of community colleges, and employment measures that do not account for these differences will not accurately reflect how well prepared the students are for the workplace.

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About the Authors

David Radwin is a senior research associate in the Center for Postsecondary Education at RTI International.

Laura Horn is the director of the Center for Postsecondary Education at RTI International.

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