

USING COMPARATIVE INFORMATION TO IMPROVE STUDENT SUCCESS



THE ASPEN INSTITUTE
COLLEGE EXCELLENCE PROGRAM

WE GREATLY APPRECIATE the work of Keith Witham and Dr. Patrick Kelly, who worked in partnership with Josh Wyner to research and craft this guide.

THE ASPEN INSTITUTE gratefully acknowledges America Achieves and Bloomberg Philanthropies for supporting the development and publication of this report. Leadership and support for the Aspen Prize for Community College Excellence, including this report, is generously provided by:

- Bank of America Charitable Foundation
 - The Joyce Foundation
 - The Kresge Foundation
 - Lumina Foundation
 - W.K. Kellogg Foundation
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THE ASPEN INSTITUTE'S COLLEGE EXCELLENCE PROGRAM

The Aspen Institute's College Excellence Program aims to advance higher education practices, policies, and leadership that significantly improve student outcomes in four areas:

- **COMPLETION.** Do students earn degrees and other meaningful credentials while in college?
 - **EQUITY.** Do colleges work to ensure equitable outcomes for minority and low-income students, and others often underserved?
 - **LABOR MARKET.** Do graduates get well-paying jobs?
 - **LEARNING.** Do colleges and their faculty set expectations for what students should learn, measure whether they are doing so, and use that information to improve?
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INTRODUCTION

In recent years, increasing numbers of community colleges have sharpened their focus on improving student success. Driven by a mix of external pressure and internal recognition that more students must complete high-quality degrees and credentials, community college leaders are renewing their commitment to measuring student success as the starting point for answering questions such as:

- How do colleges dramatically increase degree and certificate completion rates?
- What can be done to fully engage faculty in efforts to improve student learning?
- Where are the greatest gaps in success among different groups of students and what can be done to close them?
- How do colleges ensure that the education they provide prepares students for what comes next, whether that is a job or continued study at a four-year institution?

With the steady drive towards a student-outcome orientation, it should come as no surprise that “data use” has become a linchpin of many efforts to improve student success. Major community college reform initiatives, including **Achieving the Dream** and **Completion by Design**, rely on the systematic collection, analysis, and interpretation of data on students’ progress and success. The focus of these data efforts has been

primarily internal: measuring improvement over time and building a culture of evidence tied to student success.

While such initiatives help colleges develop critical capacity to analyze and use institutional data to achieve student success goals, looking only internally may prevent colleges from broadening their sense of what is possible. Looking beyond institutional walls for peer



colleges that achieve significantly better outcomes provides both an aspirational goal and the opportunity to identify specific innovative practices at other institutions that can accelerate improvements in student outcomes.

Making comparative data available to inform community colleges' analysis of their students' outcomes is in no way a new concept for community colleges. Many efforts—including the **National Community College Benchmarking Project** and the **Community College Survey of Student Engagement**—provide ways for community colleges to compare their student outcomes with those from other colleges.¹ And new efforts—such as the **American Association of Community College's Voluntary Framework for Accountability**—offer significant hope that additional comparative data will become available in the near future.²

Notwithstanding these and other comparative data collection efforts, the use of comparative data to inform

student success goals and efforts has not advanced as much in higher education as in other sectors. In health care, for example, efforts to build more effective processes for continuous improvement have increasingly centered on measuring outcomes against clearly defined goals and benchmarking those outcomes against the performance of peer organizations. The Institute for Healthcare Improvement, for example, suggests that effective and sustained organizational improvement must begin with self-assessment on four questions with respect to data-use practices:

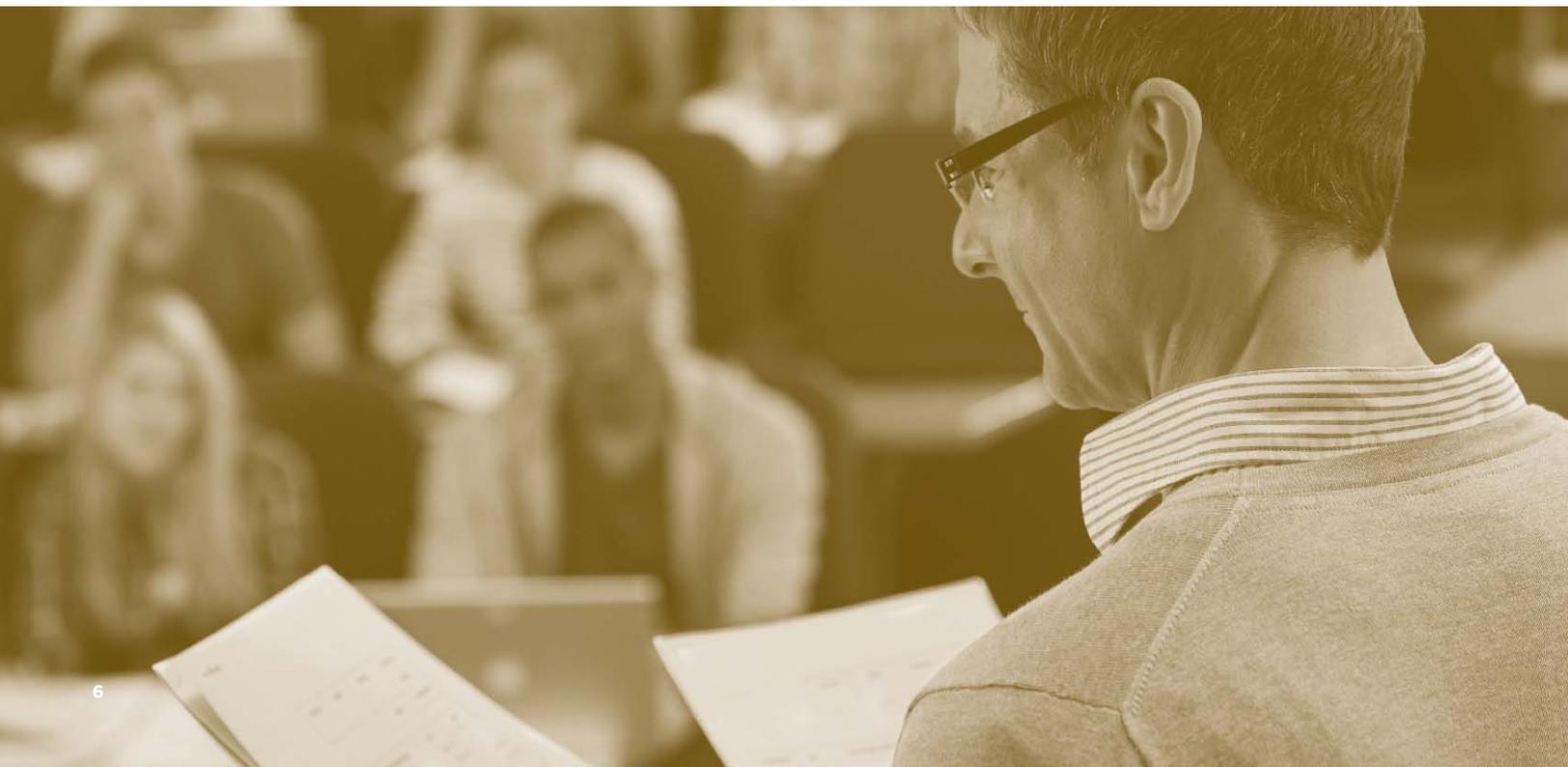
1. Do you know how effective you are, in both quantitative and qualitative terms?
2. Do you know where the variation exists in your performance?
3. Do you know where you stand relative to the best in the field?
4. Do you know your performance trends over time?³

Community colleges that are serious about building a sustained culture of inquiry and process of continuous improvement must, similarly, collect and analyze not just internal data but comparative data over time. They must also then ensure that those data are systematically and broadly used to assess student success and to guide practice and policy decisions campus-wide.

¹ See, e.g., comparative data available at <http://www.nccbp.org/content/benchmarks>.

² For a description of the VFA, see <http://vfa.aacc.nche.edu/about/Pages/default.aspx>.

³ See the IHI's principles for building effective improvement processes at www.ihio.org. The parallel between IHI's work and needs in higher education has been recognized by several reform-minded organizations, including the Carnegie Foundation for the Advancement of Teaching. See, e.g., <http://www.carnegiefoundation.org/carnegie-perspectives/what-were-learning/finding-the-right-fit-reflections-the-use-improvement-resea>



THE CONTENTS OF THIS GUIDE

This guide responds to the growing need among community college practitioners and leaders for tools to help them analyze data on key student outcomes in ways that both provide a big-picture goal for improvement and a starting point for rigorous, internal program-level assessment. The analytic framework presented here builds upon the data collection and analysis conducted for three stages of the **Aspen Prize for Community College Excellence**. The Prize data collection and analytic methodology was developed by expert community college leaders and researchers to make the best possible use of national and state education data sets to build a framework for meaningfully and reasonably comparing community colleges. This guide provides specific analytic structures for comparing data on (and related to) completion. It also outlines principles for the collection and use of institution-level data on learning and labor market outcomes; though this information is still relatively less accessible than other data on student outcomes, it is similarly vital for assessing institutional performance.

This guide focuses on identifying and using student performance metrics as a tool for community colleges to improve student success, including:

1. Guidance on how to identify and make strategic use of a peer group of colleges to benchmark performance over time.
2. An outline for collecting comparative student outcome information relevant to
 - Completion
 - Transfer and bachelor's degree attainment
 - Equitable access and success
 - Learning
 - Post-graduation success in labor markets

THE IMPORTANCE OF CAMPUS-WIDE ENGAGEMENT IN PERFORMANCE BENCHMARKING

Gathering and analyzing comparative institution-wide data on student outcomes should be viewed as one element of a coherent and comprehensive framework of using data to inquire about and improve student success. By beginning with the big picture—*how are we doing on overall critical outcomes compared to our peers*—college leaders can create a sense of possibility and urgency for improvement

regarding new opportunities to increase student success. From this comparative analysis, leaders, faculty, and staff from across the college can identify common challenges and devise concrete student success goals and strategies rooted in evidence. This in turn can provide the impetus and the clarity for faculty and staff to consider how their programs contribute to the college's overall perfor-

mance, conducting rigorous department-level analysis to guide reform in ways that align to institution-wide goals. In this way, comparative benchmarks can play a critical role in connecting department-level change to a broader sense of institutional goals for improving student success, fostering both a common "culture of evidence" and aligned plans for improvement.



CREATING A PEER GROUP

Establishing an appropriate peer comparison group and then consistently benchmarking outcomes against those peers is critical for community colleges—or any organization—to fully assess their performance. Because community colleges across the U.S. operate in vastly different contexts, including the demographics and economic characteristics of the regions they serve and their particular mission and program offerings, comparisons should take into account contextual factors in order to provide meaningful information about where colleges can and should improve.

The Aspen Prize process, for example, incorporates quantitative indicators of community colleges' missions, student demographics, and the local economies in which they operate. These measures are used to help qualify each college's outcomes in order to assess—through comparison to similar colleges nationally—what levels of student success *could* a college achieve given all of the characteristics that impact outcomes?

PRINCIPLES FOR IDENTIFYING A PEER GROUP

There are many ways to go about identifying a peer group that can be used to benchmark outcomes in retention, completion, transfer, learning, and labor market success (the purpose and approach to comparatively examining each of these indicators is described below). Successful peer groups, though, are not “general purpose” but are designed with a specific application in mind. Most institutional researchers are likely to have ideas about appropriate *technical* approaches to identifying and collecting data from peer colleges. But colleges at times accept peer groups devised by outside entities that may not have developed the comparison group based on a clear, strategic, *student success-focused rationale* aimed at informing inquiry and spurring improvement.⁴ Based on the experience administering the Aspen Prize and examples from finalist colleges, the following principles should inform the process of building a comparison group:

- **Include some of the highest-performing institutions in the sector.** One goal in generating a peer comparison group *for driving institutional improvement* is to identify high-performing institutions in the sector—not just as a means to benchmark performance against a high goal but also to identify the most effective practices from around the sector.
- **Collect contextual information to help qualify differences in outcomes, not to filter peers to only those that are the most similar.** The Aspen Prize process, for example, considers institutional size, the percentage of underrepresented minority and Pell recipient students, the mix of associate's degrees versus workforce credentials, and the percentage of students attending part-time. These outcomes are taken into account during each stage of the Aspen Prize process to provide an effective comparative measurement of outcomes.⁵
- **Look at both absolute outcomes and improvement over time to identify high-performing peers.** Looking at colleges with very strong absolute levels of student success can help colleges identify peers that have fully developed and implemented practices correlated with strong student outcomes, providing evidence of policies and practices they may want to adopt over the medium- to long-term. Meanwhile, identifying peer colleges that have seen the greatest improvements in recent years can point the way to shorter-term change strategies aligned to achieving better student outcomes.

⁴ For example, the National Center for Education Statistics provides institutions with Data Feedback Reports (DFR) based on data institutions submit for the Integrated Postsecondary Education Data System. The DFR provides a brief summary of institutional and outcome data on key indicators of institutional performance and student outcomes compared to the median values of an automatically generated peer group. NCES also allows college administrators and institutional researchers to generate DFRs using a custom peer group.

⁵ The Community College Research Center at Columbia University has analyzed which student and institutional characteristics correlate most strongly with student outcomes, finding characteristics quite similar to those used in the Aspen Prize process. See <http://ccrc.tc.columbia.edu/publications/community-college-success-institutional-characteristics.html>

Many state and system accountability frameworks set goals for student success rates that are benchmarked to averages for the sector or averages for institutions that are identified as similar. This comparison may be appropriate for accountability purposes, but to drive maximal improvement, goals should be aspirational and, thus, include benchmarks to top institutions.

For example:

- The average completion/transfer rate (i.e., students who completed a credential or transferred within three years of first enrolling) for the Aspen Prize finalist colleges is 53 percent, compared to 40 percent for the sector overall.
- For underrepresented minority students, the average success rate at the finalist colleges is 44 percent, compared to the 34 percent national average.

These averages span institutions with varied missions, with different student demographics, in a wide range of geographic settings. Moreover, the Aspen Prize finalist institutions are selected on the basis of a combination of strong overall outcomes and evidence of equity in access and outcomes for low-income and underrepresented minority students. Colleges should follow

a similar logic in creating a robust set of peer institutions: Find those that are high-performing in absolute terms and that have improved over time, and then pay particular attention to those that have similar demographic and regional characteristics in order to seek out and understand the practices that have made them successful in a context most likely to be relevant.

IDENTIFYING PEER COLLEGES THAT HAVE SEEN THE GREATEST IMPROVEMENTS IN RECENT YEARS CAN POINT THE WAY TO SHORTER-TERM CHANGE STRATEGIES ALIGNED TO ACHIEVING BETTER STUDENT OUTCOMES.

BUILDING A PEER GROUP: LESSONS FROM THE ASPEN PRIZE

The following describes how the data collection and analysis process conducted for the first round of the Aspen Prize can be used by colleges as they identify peer institutions to serve as reasonable and aspirational benchmarks.

Step 1:

For all community colleges, retrieve a unique institutional dataset from IPEDS that includes the following variables:

- Unduplicated headcount enrollment by race/ethnicity
- # of students attending part-time
- # of students 25 and older
- # of credentials awarded (disaggregated at the two-digit CIP level)
- Full and part-time enrollment
- 150% of time graduation rates (disaggregated by race/ethnicity)
- 150% of time transfer-out rates

Step 2:

Use these data to calculate the following metrics for each college:

- % of students that are underrepresented minority (African American/Black, American Indian, or Hispanic/Latino) by adding up the enrollment of each group and dividing the sum of the three by the total enrollment
- % of students attending part-time
- % of students 25 and older
- % of vocational/technical credentials by totaling awards in defined vocational/technical programs and dividing that number by the total number of credentials awarded during the academic year

Step 3:

Create a large, potential peer group that includes a list of institutions that are alike based on the above characteristics. From this larger list, select a more limited peer group (20–30 colleges) for comparison that includes colleges that are both reasonably similar on key contextual factors and have higher levels of performance on critical student outcomes.



2. COMPLETION AND RELATED METRICS

More than any other student outcome measure, completion of a degree or certificate has been adopted in recent years as a central indicator of institutional success. From a student's perspective, completion matters. Whether they do so at the community college where they start or after transferring to a four-year college and completing a bachelor's degree, completion is strongly correlated with success in the labor market.

The federal Integrated Postsecondary Education Data System (IPEDS) contains the most-used and accessible nationally comparable data on graduation rates and related metrics. The limitations of IPEDS data, particularly given the diversity among community college students and missions, are significant and continue to be discussed as the NCES aims to improve IPEDS data. But there are many important questions about institutional performance that *can be adequately and accurately addressed by examining current IPEDS data*—particularly in a comparative framework. Research shows that, notwithstanding the somewhat limited coverage of community college students in IPEDS, the comparative patterns and trends revealed in IPEDS data are consistent with those from other, more complete data sets.⁶

The Aspen Institute has developed ways to make rigorous use of IPEDS data to assess student outcomes in the early stages of the Aspen Prize process. Specifically, the **Aspen Prize's Data and Metrics Advisory Panel (DMAP)** and the **National Center for Higher Education Management Systems (NCHEMS)** developed an IPEDS-based analytic model that takes into account colleges' demographic and economic contexts as well as their particular mix of academic, transfer, and vocational/technical missions. This comparative model is used to assess colleges' outcomes on student retention and completion, improvement on those outcomes over time, and the extent to which the outcomes are achieved equitably among racial/ethnic and socioeconomic groups. The metrics used in the model, described below, provide useful examples of how data from IPEDS (supported by U.S. Census data to assess access) can be synthesized in a way that overcomes some of IPEDS' greatest limitations in order to provide meaningful comparative information about student success.⁷

ABSOLUTE LEVELS OF COMPLETION AND RETENTION

In community colleges today, the most commonly used indicators of student success are rates of student retention, course completion, and graduation. With these metrics, the objective is to determine how well colleges are doing in helping students who enroll at the college progress towards and complete a certificate or degree program within a reasonable timeframe. The Aspen Institute model analyzes these same metrics, adjusting them in ways described below to account for the limitations of IPEDS data and to provide meaningful comparisons to peer colleges and to the highest-performing community colleges nationally.

FIRST-YEAR RETENTION

For students to complete a degree, they must remain in college long enough to do so. Nationally, nearly half of all first-time, full-time students enrolling in community colleges do not return to the same college the following fall. Ensuring that entering students persist semester-to-semester and year-to-year is thus one of community colleges' primary and most challenging goals. At the same time, however, the goal is not simply to retain students but to ensure that they also make progress towards accumulating credits at a sufficient pace and obtaining a credential or transfer.

The Aspen Prize counts retention from the first to second year as a positive outcome, and includes both full-time and part-time students who return to the college the following year. Community colleges in some states may also be able to find data from peer institutions in the state or region on the percentage of first-year students who accumulated 24 or 30 credits within one academic year (or 12/15 for part-time students), which could be used to complement the retention metric to add a focus on students' academic progress.

⁶ See Bailey, T., Crosta, P., and Jenkins, D. (2006). What Can Student Right-to-Know Graduation Rates Tell Us About Community College Performance? Columbia University Teachers College, Community College Research Center, Working Paper No. 6.

⁷ There are a number of national networks and initiatives that help community colleges build capacity to use data collected. Achieving the Dream, the Gates Foundation's Completion by Design, and the Education Delivery Institute (EDI) focus on retention and completion outcomes generally, while the Education Trust's Access to Success initiative and the Equity Scorecard process offered by the Center for Urban Education at the University of Southern California focus more specifically on issues of equity. For governing boards and trustees, the Governance Institute for Student Success (GISS) initiative—a joint project of the Association of Community College Trustees and the University of Texas—also works to help community college boards of trustees develop capacity for data use and build a culture of evidence.

To account for fluctuations in reported annual data, particularly at smaller colleges that have small numbers of students who are counted in the IPEDS-defined “first-time” cohort, the Aspen metric averages data on the college’s retention rate for the *three most recent years available*. This weighted average “levels out” any possible anomalies in a given year.

GRADUATION RATES

National data suggest that, within six years of entering, only 24 percent of community college students complete a degree or certificate at the college where they first enrolled; nine percent complete a degree after transferring to a four-year institution; and three percent complete a credential at a different community college.⁸ Well over half of all students who start at a community college, then, do not complete any formal credential.

In order to compare community college graduation rates, one must first decide which credentials will be counted. For the purpose of comparison, the Aspen Prize process counts as a positive outcome completion of only those degrees and certificates requiring credits equal to one full-time year or more.⁹ While many shorter-term certificates confer significant value after students graduate, some colleges and systems award

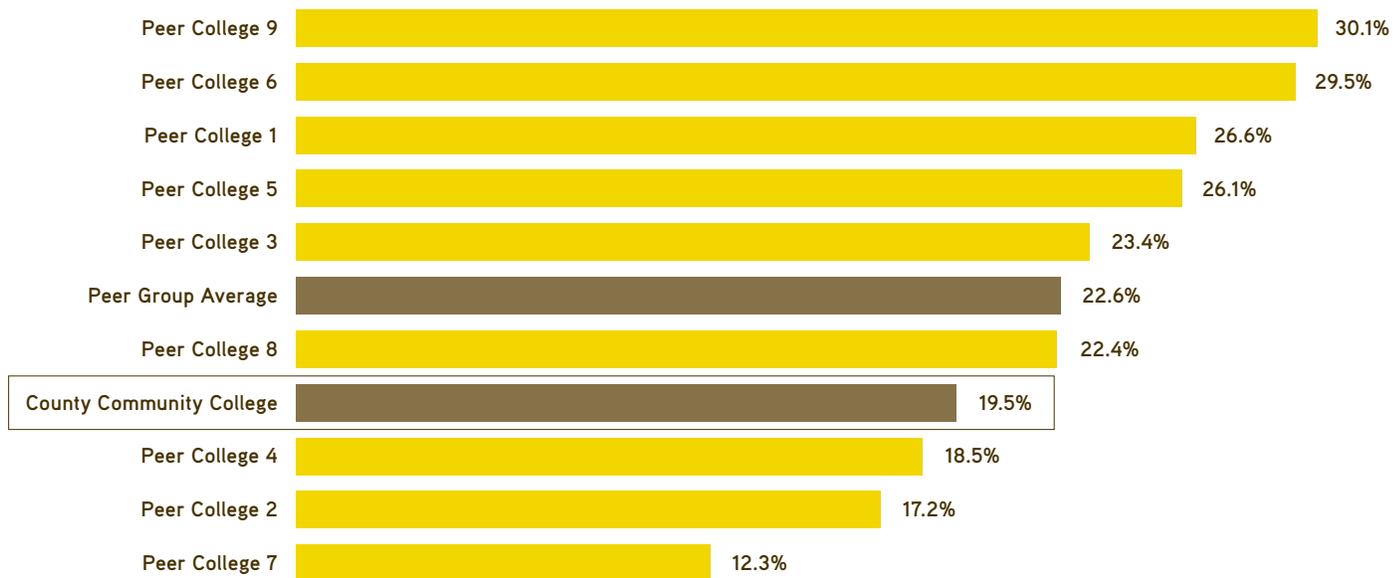
short-term certificates as a way of encouraging students to continue their studies. For this reason, counting such certificates could significantly distort national comparisons.

One challenge with IPEDS graduation rates is that they exclude part-time students and those who had previously enrolled elsewhere—both of which account for large numbers of students at many community colleges. But IPEDS graduation rates are nonetheless one of the few nationally comparable benchmarks to which community colleges can peg their performance. Leaders at many of the Aspen Prize finalist colleges have used these rates as a rallying cry for reform and improvement (while still being aware of the limitations of these data and drawing on additional sources to help complete the picture of their students’ outcomes).

CREDENTIALS PER 100 FTE

While IPEDS graduation rates exclude part-time students, other IPEDS data can be used to gain a broader picture of degree completion rates that include part-time students. Specifically, IPEDS data can be used to construct a “credentials per 100 FTE” metric, which indicates how many degrees and certificates are awarded in a year relative to the number of “full-time equivalent”

Figure 1 **UNDERGRADUATE CREDENTIALS AWARDED PER 100 FTE STUDENTS**
Completion Outcomes



Source: NCES, IPEDS Completions and Enrollment Surveys - Files c2008_a, c2009_a, c2010_a, efi2008, efi2009, efi2010 (Final Release) For definitions and potential alternative data sources, please see Appendix III.

⁸ Rates are within six years of first enrollment and include both full-time and part-time students. Source: Shapiro, D., et al (2012). *Completing College: A National View of Student Attainment Rates*. National Student Clearinghouse Research Center.

⁹ As with the retention metric, the Aspen Institute model takes the weighted average of the three most recent years in order to smooth out fluctuations in reported annual data, particularly for smaller colleges.

students enrolled. Credentials per 100 FTE is essentially a productivity measure; it shows a college's total "outputs" (credentials) relative to its total "inputs" (students), and thus avoids the limitations in IPEDS graduation rates.¹⁰

While the credentials per 100 FTE metric has limitations (including distortions that occur during periods of dramatic changes in an institution's enrollment), it serves as a valuable companion metric to graduation rates because it accounts for all students (including part-time and those previously enrolled elsewhere). However, the credentials per 100 FTE metric lacks the instant clarity and ease of interpretation of graduation rates. For example, a college might calculate its score to be 33.5—is that good or bad? Obviously higher is better, but how high is a reasonable goal? Credentials per 100 FTE is thus most meaningful when shown in comparison to other institutions or when tracked for an institution over time.¹¹

IMPROVING COMPLETION

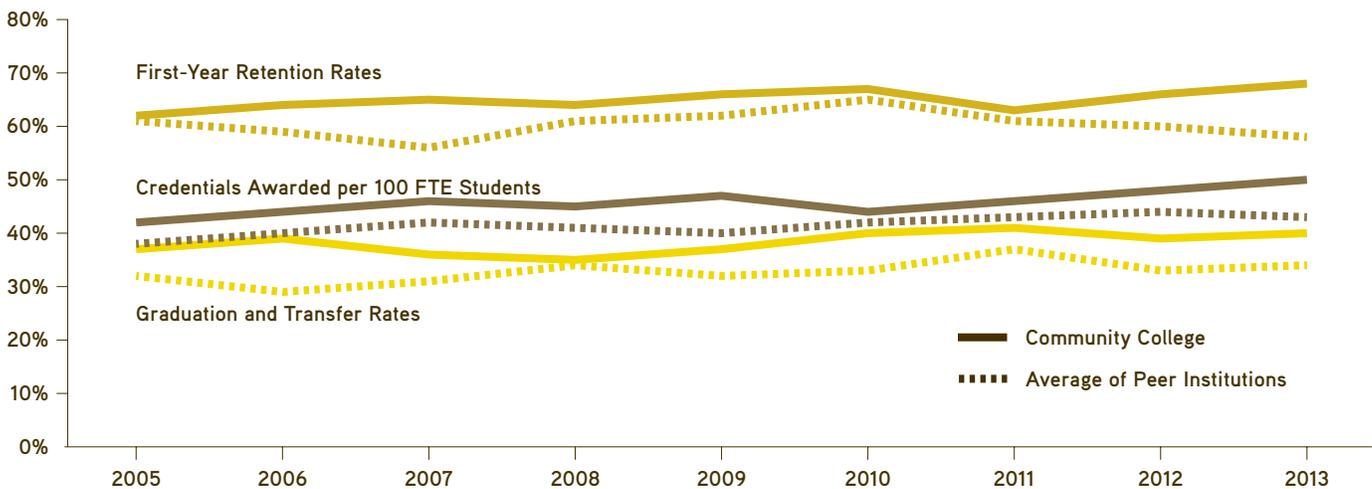
Any effective analytic approach to assessing community college performance must also compare improvement in year-to-year outcomes among similar institutions. Indeed, many community colleges around the nation with relatively low graduation rates

have been doing concerted work to make significant graduation gains in recent years, and are pointing the way for others aiming to improve. The Aspen Institute's approach therefore acknowledges these gains, even when absolute levels of performance fall below those of the highest performers.¹²

Improvement each year is an important benchmarking indicator and should be collected and reported alongside each absolute performance metric, as well as in comparison to a peer group. The critical question is how the institution's outcomes are trending over time. Each of the outcome metrics in the Aspen model, for example, is collected and analyzed for five years prior to the most current year.¹³ Alternately, some states' outcomes-based funding models use improvement on a rolling three-year average in their calculations.

States and institutions looking to develop meaningful frameworks for comparatively analyzing community colleges' outcomes should examine trends in retention and graduation rates over time relative to peers as a way to identify those improving most rapidly and, in turn, the practices aligned to the greatest student success gains. To have the greatest utility, improvement trends should be disaggregated by race and ethnicity, gender, socioeconomic status, and age groups in order to determine if progress is being made for all or only a subset of students.¹⁴

Figure 2 **IMPROVEMENT IN CREDENTIAL ATTAINMENT AND RETENTION**
Completion Outcomes



Source: NCES, IPEDS 2008, 2009, and 2010 Enrollment Surveys - Files ef2008d (Final Release), ef2009d (Final Release), ef2010d (Early Release). For definitions and potential alternative data sources, please see Appendix III.

10 Recognizing that the IPEDS graduation rate data are less indicative of overall success rates for institutions with high percentages of part-time students, those institutions with large part-time enrollments receive greater weight on the "credentials per 100 FTE" metric during the Aspen Prize selection process.

11 In contexts where relatively large numbers of "continuing education" students take credit-bearing courses - as is the case throughout California community colleges - the degree-per-100 FTE metric will be lower than in contexts where "continuing education" enrollment is either relatively low or segmented into non-credit courses. The relative "degree per 100 FTE" metric should be assessed with this difference in mind.

12 In the Aspen Prize's comparative analytic approach, weight is shifted between absolute levels of performance and improvements from year to year (for example, strong absolute performers are not punished for not making improvements but can get extra points if they continue to improve).

13 The specific technical process used by the Aspen Prize for measuring improvement using IPEDs data is described in the Round 1 Model Description, available at http://www.aspeninstitute.org/sites/default/files/content/upload/2015_Round_1_Aspen_Prize_Eligibility_Model.pdf.

14 Aside from campus IR offices and the National Center for Education Statistics Online Data Center, there are many online sources for IPEDS data that have been aggregated and packaged into easily digestible information (see, NCHEMS Data Center, <http://www.higheredinfo.org>; College Results Online, <http://www.collegeresults.org>). In addition, the American Association of Community Colleges is creating a tool based on institution-level data, the Voluntary Framework of Accountability (<http://vfa.aacc.nche.edu/Pages/default.aspx>), which houses comparative institutional data on student success metrics.



3. TRANSFER AND BACHELOR'S DEGREE ATTAINMENT

Preparing students to transfer to a four-year college is one of the primary missions of most community colleges. As many as 80 percent of entering community college students report earning a bachelor's degree as their ultimate goal, but only 15 percent do so within six years of entering community college.¹⁵ And while there may be good reasons for students to obtain an associate's degree before transferring, many do not. Most observers realize that the true "success rate" for community colleges includes not just the completion of a two-year degree or certificate but also transfer to a four-year college and completion of a bachelor's degree. And yet, most public national data—including those collected in IPEDS—do not distinguish between upward transfer and lateral movement between community colleges. This limitation is widely recognized as one of the most significant challenges to accurately assessing and comparing community colleges' performance.¹⁶

While IPEDS data collection rules do not currently distinguish between transfers to two-year versus four-year colleges, there are widespread data collection efforts that do so. Many state data systems, for example, either incorporate both two-year and four-year colleges or maintain agreements between the various sectors that allow institutions and policymakers to follow students as they move between institutions, allowing for a more thorough understanding of student success.

Additionally, data from over 90 percent of all postsecondary students in the U.S. are reported to the **National Student Clearinghouse** (NSC)—a private non-profit organization that provides back-office data support (enrollment verification, transcript orders, etc.) and serves as a data repository and link between institutions and federal student aid lenders. Data reported to the

NSC can only be used according to the parameters approved by institutions, but institutions themselves have the ability to request data on the outcomes of their students.

Community colleges should collect not only data on transfer rates to four-year institutions but also bachelor's degree completion rates of their students after transfer. Community colleges may be hesitant to examine these long-term outcomes, arguing that what happens after transfer is out of their control. Exceptional institutions, however, recognize that the community college is often not an ultimate destination but rather one stop on the way to other academic experiences. These institutions see four-year completion rates as evidence of both the quality of learning and academic preparation they have provided students as well as the effectiveness of structural linkages between institutions. For example, community colleges could examine, for each four-year college to which its students transfer, the ratio of transfers to bachelor's degree completers. By doing so, community colleges can identify institutions where their students are more or less likely to graduate and then ask why. Is it because a four-year institution is selective (e.g., state flagship university) and therefore admits students who are more likely to succeed? Or – controlling for selectivity – are some four-year institutions better than others in helping transfer students

COMMUNITY COLLEGES SHOULD COLLECT NOT ONLY DATA ON TRANSFER RATES TO FOUR-YEAR INSTITUTIONS BUT ALSO BACHELOR'S DEGREE COMPLETION RATES OF THEIR STUDENTS AFTER TRANSFER.

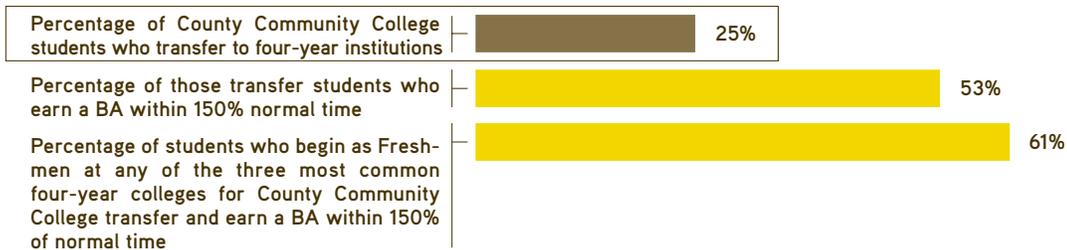
¹⁵ See Table 1 in Handel, S. J., & Williams, R. A. (2012). *The Promise of the Transfer Pathway: Opportunity and Challenge for Community College Students Seeking the Baccalaureate Degree*. The College Board. Available at <http://advocacy.collegeboard.org/sites/default/files/community-college-transfer-pathway-5163.pdf>

¹⁶ See e.g., Newman, J. (2014, February 14). What experts on college-ratings system mean by "we need better data". *The Chronicle of Higher Education: Blogs*. Available at <http://chronicle.com/blogs/data/2014/02/14/what-experts-on-college-ratings-system-mean-by-we-need-better-data/>

complete their bachelor's degrees? Finding four-year partners with strong outcomes can help community college leaders investigate how to improve transfer outcomes at all four-year institutions, decide which four-year colleges should be targets as they develop stronger pathways for students, and inform the advice they give pre-transfer students when choosing from among four-year colleges and universities.

Even in states without sophisticated data systems spanning sectors, institutions across sectors can form data-sharing consortia and use the NSC data to measure the success of students who transfer from community colleges to four-year institutions. Whenever possible, these data can and should be used in lieu of (or as a supplement to) IPEDS data to report more accurate student transfer and bachelor's degree attainment rates for community colleges.

Figure 3 **COMPLETION AND TRANSFER SUCCESS OF STUDENTS TO FOUR-YEAR INSTITUTIONS**
Transfer Outcomes



Source: National Student Clearinghouse. For definitions and potential alternative data sources, please see Appendix III.





EQUITABLE ACCESS AND SUCCESS

For many decades, equity in higher education was understood primarily as an issue of access. The community college sector serves as the gateway of higher education opportunity for diverse student populations, disproportionately enrolling students of color, those from low-income families, those who are the first in their families to attend college, and those who have emigrated from other countries. Access remains vital; but serving as the point of access for this great diversity of students is no longer enough by itself to ensure equity—all students enroll in community colleges hoping to earn credentials, some aim to transfer to a four-year institution, and ultimately all students want to acquire the skills needed to advance in society. Given the disproportionate growth among such diverse populations nationally, the U.S. cannot meet its educational and workforce needs in coming decades without fully developing the human capital these aspiring students offer. The nation's community colleges have a moral and economic imperative to focus on equity in outcomes in addition to access.

An effective comparative analytic approach must examine equity in both access and success. Two of the metrics used to evaluate colleges' overall success—graduation rates and credentials per 100 FTE—can be disaggregated by race and ethnicity, socio-economic status (using eligibility for Pell or state financial aid grant programs), and other sub-populations of interest to the state or institution.

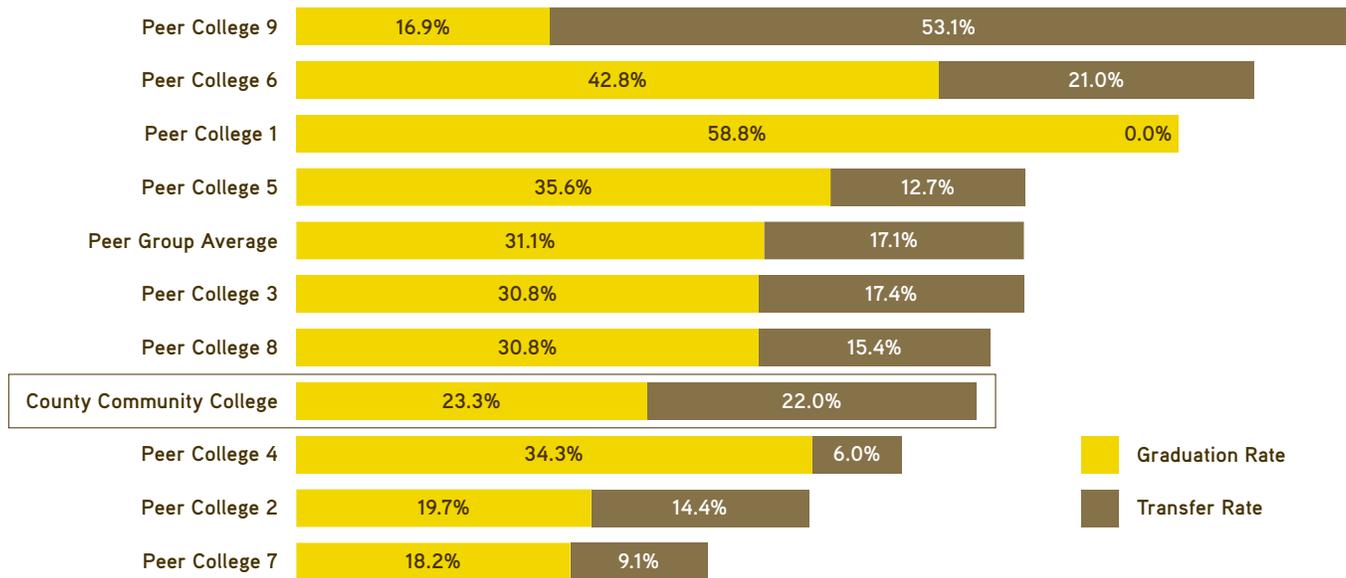
Equity in Outcomes: Graduation/Transfer Rates. For graduation and transfer rates, data can easily be collected separately for African American, American Indian, and Hispanic/Latino students using the race/ethnicity codes available within IPEDS data. Retention rates are not disaggregated by race and ethnicity.

Equity in Outcomes: Credentials Awarded per 100 FTE. The credentials-per-FTE metric provides a comparative snapshot of how effectively the institution ensures that enrolled students graduate. Disaggregating the metric thus answers the question of whether all students are served equally effectively. Here again, the metric can be disaggregated for African American, American Indian, and Hispanic/Latino students using the race/ethnicity codes available in IPEDS.

Equity in Access: Enrollment Relative to Service-Area Demographics. In regards to access, colleges should understand how well they serve groups within their communities that have historically had the lowest postsecondary access and attainment rates. But measuring diversity in enrollment (the indicator most easily available in IPEDS) is not itself a metric that provides information about equity. Because community colleges primarily serve nearby populations, enrollment demographics should be analyzed relative to the nearby population in order to convey an institution's success in providing equitable access.

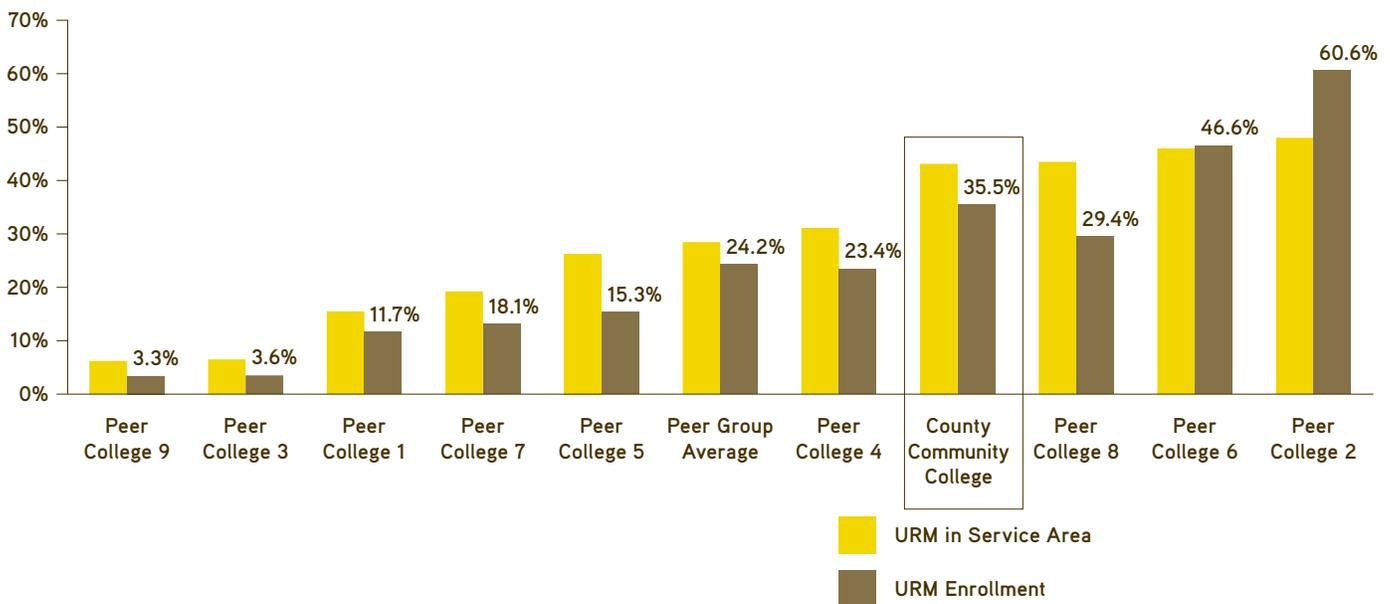
As one example, the Aspen Institute model examines the demographic composition of institutions' service area, roughly speaking, using the census-defined Public Use Microdata Area (PUMA) in which the institution is located as the relevant comparison. Because most community college students attend a college near home, the PUMA represents a reasonable reference point for assessing equity in access. Moreover, this approach facilitates an easier national comparison of access equity than could be accomplished by trying to understand colleges' particular definitions of their service areas. State-wide data efforts or regional consortia of community colleges might find different ways to assess the demographics of their communities; the point, however, is that a comparative analytic approach should incorporate a measure of access equity that is both meaningful and comparable to an appropriate peer group.

Figure 4 EQUITY IN COMPLETION
Completion and Transfer Rates by URM



Note: In this chart, transfer is defined as students who accumulate at least 12 credits and transfer to a four-year college or university. URM includes African American, American Indian/Native Alaskan, and Hispanic/Latino students. Source: National Student Clearinghouse. For definitions and potential alternative data sources, please see Appendix III.

Figure 5 EQUITY IN ACCESS
URM Enrollment versus URM Population in Service Area (18-44)



Note: URM includes African American, American Indian/Native Alaskan, and Hispanic/Latino students. Sources: (URM Enrollment) NCES, IPEDS Completions and Enrollment Surveys - Files c2008_a, c2009_a, c2010_a, efi2008, efi2009, efi2010 (Final Release). For definitions and potential alternative data sources, please see Appendix III.



5. LEARNING OUTCOMES

All measures of community college student outcomes discussed in this guide are, in some ways, proxies for an elusive assessment of college “quality”—at the core of which is the amount that students gain in skills, critical thinking, and a complex mix of personal and intellectual development between the time they enroll and when they graduate. Yet, despite the importance of learning as a primary goal of higher education and the range of learning assessments currently implemented within many institutions, there is not yet any widely used nationally comparable measure of learning in higher education, in either community colleges or four-year institutions. Moreover, despite increasing development of homegrown departmental assessments, even colleges that have systematic assessment processes report only limited use of such data to inform institutional improvements.¹⁷

Nonetheless, learning reflects the core of what community colleges do and, as such, must be included in any complete comparative framework for assessing performance. There are, without a doubt, limitations to learning assessments—particularly with respect to measuring the complexity of what students should hope to gain from a college education or the tremendous variation in the types of learning students may need from various programs and paths in higher education. But it would be a mistake to use that complexity as a reason not to measure student learning as a key lever for institutional improvement. Exceptional community colleges engage faculty deeply and broadly in the work of improving student outcomes. And the means for doing so – above all others – is engaging them in the process of measurably closing student learning gaps. For this reason, measuring learning, perhaps more than any other indicator, is a case where waiting for the perfect assessment should not preclude making use of good assessments that exist now.

Not surprisingly, establishing a viable framework for comparing learning outcomes across community colleges is one of the most significant challenges of the Aspen Prize methodology. The Aspen Prize process examines not only the actual gains in students’ learning that are demonstrated through assessment, but also the extent to which colleges have established a “culture of assessment” through systematic and institutionalized practices that are comparable across departments, internally, and to other colleges externally.

To effectively gauge colleges’ strengths in both outcomes and processes of learning assessment, Dr. Peter Ewell and Dr. Karen Paulson of NCHEMS developed the following framework that strives for a balance between comparability and the very important nuances that exist in measuring learning (e.g., types of programs and institutional contexts).

¹⁷ See Kuh, G. D., Jankowski, N., Ikenberry, S. O., & Kinzie J. (2014). *Knowing What Students Know and Can Do: The Current State of Student Learning Outcomes Assessment in U.S. Colleges and Universities*. National Institute for Learning Outcomes Assessment. Available at http://www.learningoutcomeassessment.org/documents/2013_Survey_Report_Final.pdf

FRAMEWORK FOR BUILDING A COMPARABLE PICTURE OF ASSESSMENT OUTCOMES AND PROCESSES

For associate's degree programs, the Aspen Prize method examines among finalist colleges the following quantitative measures:

- Results of nationally normed general outcome measures (e.g. CLA, ACT-CAAP, ETS Proficiency Profile, C-Base, CAT, etc.), as available.
- Results of learning outcomes assessments reported for state accountability or accreditation purposes, especially if these are externally benchmarked in some way.
- Proportion of transfer students who achieved a GPA of B or better at the four-year transfer institution, broken down by general field of study, where possible. Alternatively, the proportion of courses taken by former students at a transfer institution that were passed with a grade of B or better.¹⁸

For technical and vocational programs, the Aspen Prize method examines among finalist colleges the following:

- Licensure examination pass rates in fields for which these are available.
- Results of learning outcomes assessments reported for state accountability or accreditation purposes, especially if these are externally benchmarked in some way.
- Student self-reports of learning or learning gain on surveys like the Community College Survey of Student Engagement (CCSSE).

In addition to these quantitative measures to assess actual learning outcomes, the Aspen Prize process also examines colleges' assessment practices through sources of qualitative evidence, for example:

- Interviews with deans, assessment directors, and key faculty about the extent and use of learning assessments, including how they are used to make improvements in curricula and teaching practice.
- Excerpts from the institution's most recent accreditation report dealing with the assessment of student learning outcomes.
- External recognition or awards gained by the institution's assessment program (e.g. receipt of the CHEA Award, inclusion as case study in assessment literature reviews, use as an exemplar in assessment academies run by state associations or regional accrediting organizations, etc.)

Of course, this type of qualitative information may be difficult for colleges to assemble across their peer institutions. Accreditation self-study reports and case studies, however, are typically publicly available or can be requested from those institutions and integrated into a comprehensive comparative framework. Here again, comparison to high-performing peers on quantitative measures of learning outcomes can help colleges identify promising practices in the field.

In order to assess student learning, community colleges also can utilize a number of standardized national examinations in areas such as critical thinking and reading comprehension. Some exams have been administered at enough community colleges to create national benchmark scores that colleges can use to assess student learning comparatively across the institution. At West Kentucky Community and Technical College, for example, results from nationally normed reading exams showed that students lagged behind those at peer institutions. Leaders and faculty used these results to create college-wide urgency to close those gaps. With benchmarks in hand, the College was then able to have students retake the test in order to measure the impact of a new faculty professional development program that taught reading strategies to every professor. This kind of comparative information, as well as the study of other existing effective practices of assessment, can be invaluable, particularly for the many colleges nationwide that are currently struggling to engage all faculty in the process of improving student outcomes.

EXCEPTIONAL COMMUNITY COLLEGES ENGAGE FACULTY DEEPLY AND BROADLY IN THE WORK OF IMPROVING STUDENT OUTCOMES. AND THE MEANS FOR DOING SO—ABOVE ALL OTHERS—IS ENGAGING THEM IN THE PROCESS OF MEASURABLY CLOSING STUDENT LEARNING GAPS.

¹⁸ Institutions in many states can obtain these data from the state higher education department or system office. Where unavailable at the state level, many community colleges will gather these data from their primary four-year institutional partners.



LABOR MARKET OUTCOMES

The final element necessary to complete a picture of community colleges' success is to understand outcomes for students after they leave the college. For the many students who transfer, that means colleges must assess academic success after they have enrolled at a four-year institution (also a valuable measure of learning, as described in this report). But regardless of whether they transfer to a four-year institution or enter the labor market immediately after graduating, almost every student enrolled in community college—whether they earn a short-term certificate, an associate's degree, or a bachelor's degree—has a goal of ultimately accessing stable employment with good compensation. Understanding this pervasive student objective, highly effective colleges use data about labor market outcomes of graduates to assess where they need to adjust program size, curricula, and instruction.

Of course, many factors may impact students' short- and long-term employment outcomes, including regional economic conditions, proximity to urban or industrial centers, as well as students' prior experience and their own personal demeanor and ambition. But in the aggregate, students' outcomes form patterns that community colleges have to take seriously as a reflection of their own success. And when compared to an appropriate peer group, labor market outcomes may point to critical strengths and shortcomings in program offerings or curriculum that may contradict enrollment demand.

For example, at Walla Walla Community College in Washington State, one of the highest-enrolled programs had long been the college's carpentry program. As new housing construction waned during the recent economic downturn, demand for the program stayed high despite the fact that graduates were struggling to find jobs. Seeing the lagging success of their graduates, the college took the bold step of closing the program rather than allowing students to enroll in—and pay tuition for—a credential that administrators knew would not lead to labor market success. Soon thereafter, the college developed a wind-energy program that both took advantage of and helped develop the region's green energy industry. This move, along with many other strategic and entrepreneurial uses of comparative labor market data, has helped Walla Walla's graduates achieve some of the highest employment rates and earnings of community colleges anywhere—not just in the region but nationally. Graduates from Walla Walla in 2011 went on to earn in the following year, on average, wages 179 percent higher than other new hires in the county; and after five years, Walla Walla's graduates' earnings are 155 percent higher than overall average wages in the county.

The practice of assessing students' success in employment is most common within vocational and technical programs that have a specific industry connection. Many colleges also collect labor market outcome data through processes that are at best incomplete, primarily through self-reporting by recent graduates on surveys that often post notoriously low response rates. But there are many available sources of reliable data that colleges can use to construct more complete assessments of their graduates' labor market success. Examples of these data sources and methods are available in a guide produced by the Aspen Institute College Excellence Program.¹⁹

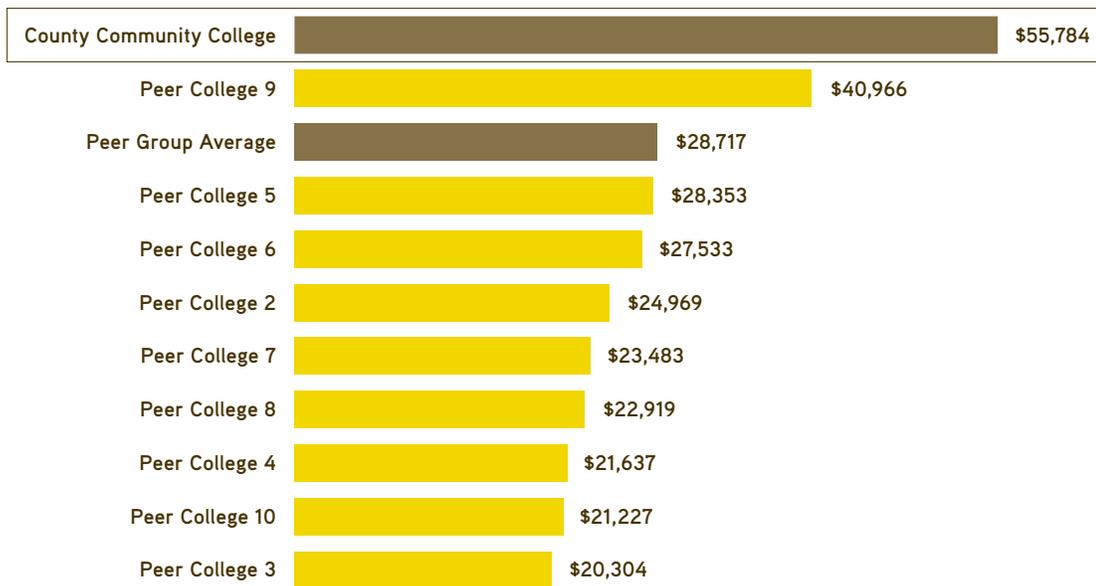
For states, systems, or regional consortia of colleges situated in the same or similar economic ecosystems, standardized labor market outcome data like those available from state unemployment insurance wage databases make peer comparison and benchmarking relatively straightforward. Comparison across state lines or nationally, however, requires a somewhat more sophis-

¹⁹ Available at <http://www.aspeninstitute.org/sites/default/files/content/docs/pubs/New Labor Market Guide.pdf>

ticated analytic approach that accounts for regional variation in wages and economic conditions. The Aspen Prize process relies on such an approach, which standardizes labor market outcome data by examining wages and employment rates relative to county averages and adjusting outcomes for regional unemployment and economic growth trends. An overview of the indicators in this comparative framework of labor market outcomes are described below and a sample schedule of results is presented in Appendix I.

Employment metrics. This comparative model first captures a “Composite Employment Index” for graduates of the most recent year and five years prior. The CEI reflects a composite of the immediate post-graduation placement rate, the placement rate at a 12-month follow-up, and a continuous employment rate (i.e., how many graduates remained continuously employed during the year or five years post-graduation).

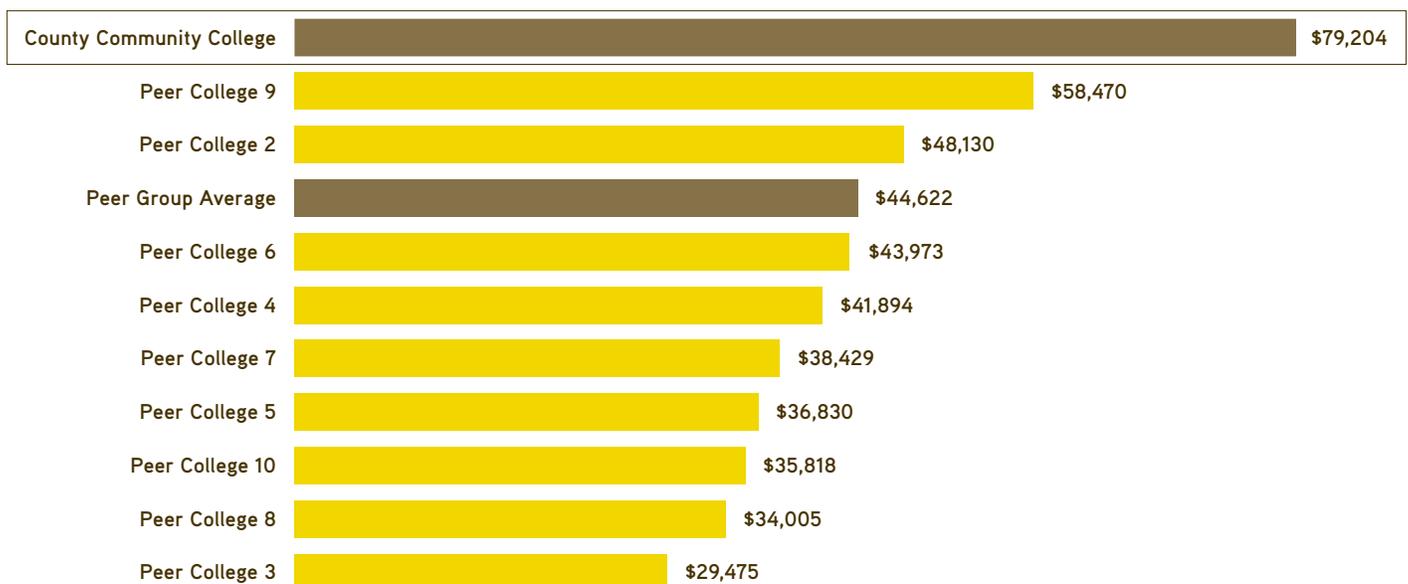
Figure 6 **MEDIAN ANNUAL EARNINGS ONE YEAR AFTER COMPLETION**



Source for Average Annual County New Hire Wage: Local Employment Dynamics, Longitudinal Employer-Household Dynamics, U.S. Census Bureau.

Source for County Civilian Workforce Participation Rate: U.S. Census Bureau, 2007-11 American Community Survey 5-Year Estimates. For definitions and potential alternative data sources, please see Appendix III.

Figure 7 **MEDIAN ANNUAL EARNINGS FIVE YEARS AFTER COMPLETION**



Source for Average Annual County New Hire Wage: Local Employment Dynamics, Longitudinal Employer-Household Dynamics, U.S. Census Bureau. For definitions and potential alternative data sources, please see Appendix III.

Earnings metrics. To measure wages, Aspen’s comparative model looks at annualized salaries/wages—again of both recent graduates and those five years out. The model then calculates the strength of those earnings relative to the average wages in the county where the community college is located. For the most recent graduates, earnings are assessed relative to average wages of new hires; for those five years out, earnings are assessed relative to overall average earnings in the county. The data necessary to calculate regional earning levels are readily available from federal databases.²⁰

County-level economic context. While comparison to the highest-performing peers is vital for identifying areas of weakness (and strength), as with completion rates and other measures, effective comparison requires taking into account contextual factors that mediate outcomes—not to excuse low rates but to facilitate more meaningful interpretations of differences in outcomes. One way to put employment outcomes in context and make them comparable across regions is to juxtapose them to county workforce participation and unemployment rates. Participation rates differ from unemployment rates in that they include the entire working population (ages 25-64) in the county,

whereas unemployment rates measure only the employment rates of those actively seeking employment. Additionally, the five-year employment growth rate of a county provides a measure of economic vitality and helps contextualize colleges’ labor market outcomes both relative to others and from year to year.²¹

While many individual programs or departments, particularly those leading to a vocational or technical credential, may collect similar data and use them to inform changes in their own curricula, the most successful colleges observed in the Aspen Prize process take annual stock of their aggregate labor market outcomes and then drill down into those programs and pathways that seem to be (or not be) contributing to students’ success. If colleges merely tout the strong labor market outcomes they ensure for a small number of students in certain technical programs, they may ignore important weaknesses in outcomes for students graduating from larger associate’s degree or career and technical education programs. Without starting from the “big picture” of labor market outcomes relative to a peer group, as shown in Appendix I, faculty and administrators cannot accurately determine how best to invest resources or energy in revising curricula, hiring or training instructors, or providing needed academic supports.

CONCLUSION

With the growing federal and state interest in publicizing comparative data on student outcomes, community colleges – like all higher education institutions – will find themselves increasingly compared to one other. But while a central policy goal of publicizing comparative information is to better inform students and families, there is another important utility for high-quality comparative data: Informing efforts that lead to continuous institutional improvement. Only by systematically and regularly using comparative data can community colleges fully understand their own strengths and weaknesses and figure out where to look for practices that can lead to the sustained improvement, at scale, that is needed in student outcomes.

The community college sector has entered an era of reform, inventing and scaling new strategies for increasing student success. As promising efforts are refined, tested, and replicated, college leaders must keep a constant watch on the field to identify where the best new models are emerging and succeeding. And as community colleges invest valuable resources in new initiatives, benchmarking both performance and improvement against others in the sector will become an increasingly important method for every institution to continuously improve levels of success for their students.

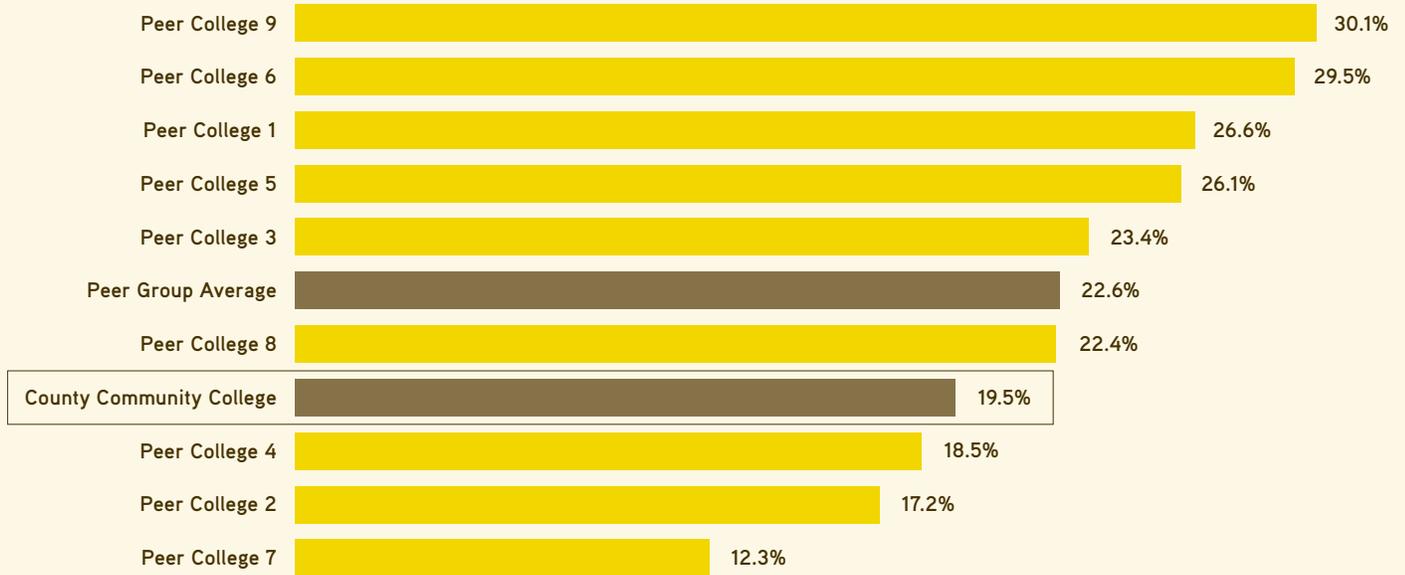
²⁰ For average county new-hire wages, data are available from the U.S. Census Bureau Local Employment Dynamics, Longitudinal Employer-Household Dynamics; for overall annual county wages, data are available from the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages.

²¹ The county civilian workforce participation rate average over five years can be calculated from data available in the U.S. Census Bureau, 2007-11 American Community Survey 5-Year Estimates. The county unemployment rate is available in the U.S. Bureau of Labor Statistics Local Area Unemployment Statistics. The county 5-year employment growth rate can be calculated from data available in the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages.

Appendix I **SAMPLE RESULTS FROM ASPEN INSTITUTE COMPARATIVE MODEL FOR ASSESSING LABOR MARKET OUTCOMES.**

| Institution | Employment Metrics | | Earnings and Wage Metrics | | | | County-level Economic Context Metrics | | |
|--------------------------|--|------------------------------------|---|------------------------------|---|------------------------------|--|-------------------------------|--------------------------------------|
| | Class of 2011 Composite Employment Index | Class of 2006 Composite Employment | Annualized Salaries and Wages for 2011 Employed Graduates | Class of 2011 Relative Wages | Annualized Salaries and Wages for Employed 2006 Graduates in 2011 | Class of 2006 Relative Wages | County Civilian Workforce Participation Rate | 2011 County Unemployment Rate | County 5 Year Employment Growth Rate |
| County Community College | 239 | 209 | \$55,784 | 180% | \$79,204 | 161% | 76% | 8.4% | 7.0% |
| Peer College 2 | 176 | 182 | \$24,969 | 85% | \$48,130 | 102% | 80% | 9.0% | -8.1% |
| Peer College 3 | 175 | 154 | \$20,304 | 89% | \$29,475 | 89% | 67% | 7.5% | 1.4% |
| Peer College 4 | 153 | 151 | \$21,637 | 77% | \$41,894 | 99% | 76% | 9.5% | 9.9% |
| Peer College 5 | 218 | 208 | \$28,353 | 138% | \$36,830 | 100% | 86% | 4.2% | 0.9% |
| Peer College 6 | 137 | 157 | \$27,533 | 101% | \$43,973 | 91% | 77% | 8.6% | -3.0% |
| Peer College 7 | 175 | 170 | \$23,483 | 96% | \$38,429 | 89% | 77% | 7.6% | -7.5% |
| Peer College 8 | 147 | 120 | \$22,919 | 68% | \$34,005 | 76% | 46% | 10.4% | 1.6% |
| Peer College 9 | 164 | 181 | \$40,966 | 177% | \$58,470 | 151% | 72% | 7.5% | 5.0% |
| Peer College 10 | 184 | 146 | \$21,227 | 84% | \$35,818 | 86% | 72% | 8.3% | -2.5% |
| Peer-group average | 177 | 168 | \$28,717 | 109% | \$44,622 | 105% | 73% | 8.1% | -1.4% |

Figure 1 UNDERGRADUATE CREDENTIALS AWARDED PER 100 FTE STUDENTS
Completion Outcomes



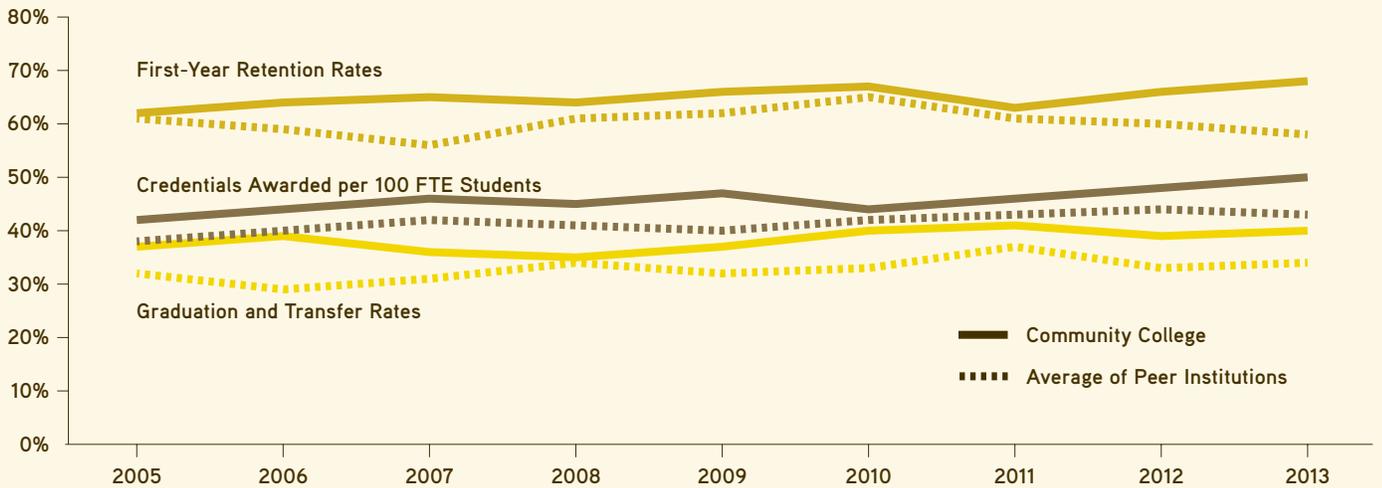
Definition: Undergraduate certificates of one year and more, associate and bachelor's degrees awarded per 100 full-time equivalent undergraduates. The measure combines the most recent three years (2008, 2009, 2010).

Calculation: ((undergraduate credentials awarded annually in 2009-10, 2008-09, and 2007-08) / (credit hour generated annual undergraduate enrollment 2009-10, 2008-09, 2007-08))*100

Source: NCES, IPEDS Completions and Enrollment Surveys - Files c2008_a, c2009_a, c2010_a, efia2008, efia2009, efia2010 (Final Release)

Potential Alternative Sources: Direct institutional reporting or State Longitudinal Data Systems (SLDS) where applicable.

Figure 2 IMPROVEMENT IN CREDENTIAL ATTAINMENT AND RETENTION
Completion Outcomes



First-Year Retention Rate

Definition: Percent of fall first-time (full- and part-time) students returning the following fall semester. The measure combines the three most recent years (2008, 2009, 2010). Calculation: ((Still enrolled or completed fall 2010, 2009, 2008) / (First-time fall 2009, 2008, 2007))*100

Source: NCES, IPEDS 2008, 2009, and 2010 Enrollment Surveys - Files ef2008d (Final Release), ef2009d (Final Release), ef2010d (Early Release)

Potential Alternative Sources: Direct institutional reporting or State Longitudinal Data Systems (SLDS) where applicable.

Credentials Awarded per 100 FTE Students

Definition: Undergraduate certificates of one year and more, associate and bachelor's degrees awarded per 100 full-time equivalent undergraduates. The measure combines the three most recent years (2008, 2009, 2010). Calculation: ((undergraduate credentials awarded annually in 2009-10, 2008-09, and 2007-08) / (credit hour generated annual undergraduate enrollment 2009-10, 2008-09, 2007-08))*100

Source: NCES, IPEDS Completions and Enrollment Surveys - Files c2008_a, c2009_a, c2010_a, efia2008, efia2009, efia2010 (Final Release)

Potential Alternative Sources: Direct institutional reporting or State Longitudinal Data Systems (SLDS) where applicable.

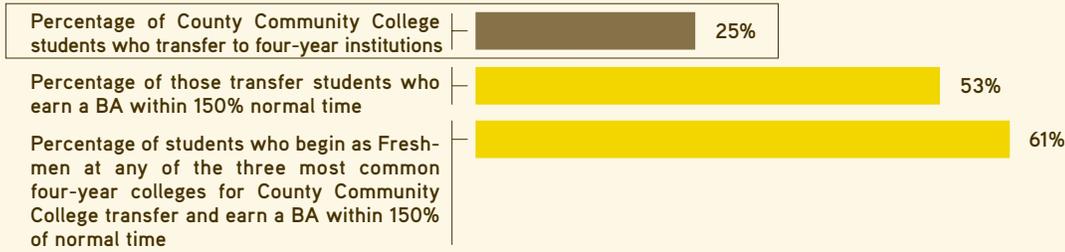
Graduation and Transfer Rates

Definition: Percentages of all first-time students, both full-time and part-time, either graduating within three years (150% normal time) or transferring to a four-year degree-granting institution. The measure combines the most recent cohorts available using a three-year average (though six-year averages are available via NSC data). Within the three-year cohort average, outcomes are examined as of 2008-09 (for example) beginning with the 2004-05 cohort and including the 2005-06 and 2006-07 cohorts.

Sources: National Student Clearinghouse

Potential Alternate Sources: For graduation and transfer activity for full-time students, NCES IPEDS data may be used from the final release Completions and Enrollment Surveys.

Figure 3 **COMPLETION AND TRANSFER SUCCESS OF STUDENTS TO FOUR-YEAR INSTITUTIONS**
Transfer Outcomes



Definition: Percentages of fall first-time (full- and part-time) students who are designated using NSC data as having either completed with no transfer, transferred with no completion, completed and transferred, and those who completed, transferred, and completed a four-year bachelor's degree program. The measure combines the most recent cohorts available using a three-year average (though six-year averages are available via NSC data). Within the three-year cohort average, outcomes are examined as of 2008-09 (for example) beginning with the 2004-05 cohort and including the 2005-06 and 2006-07 cohorts.

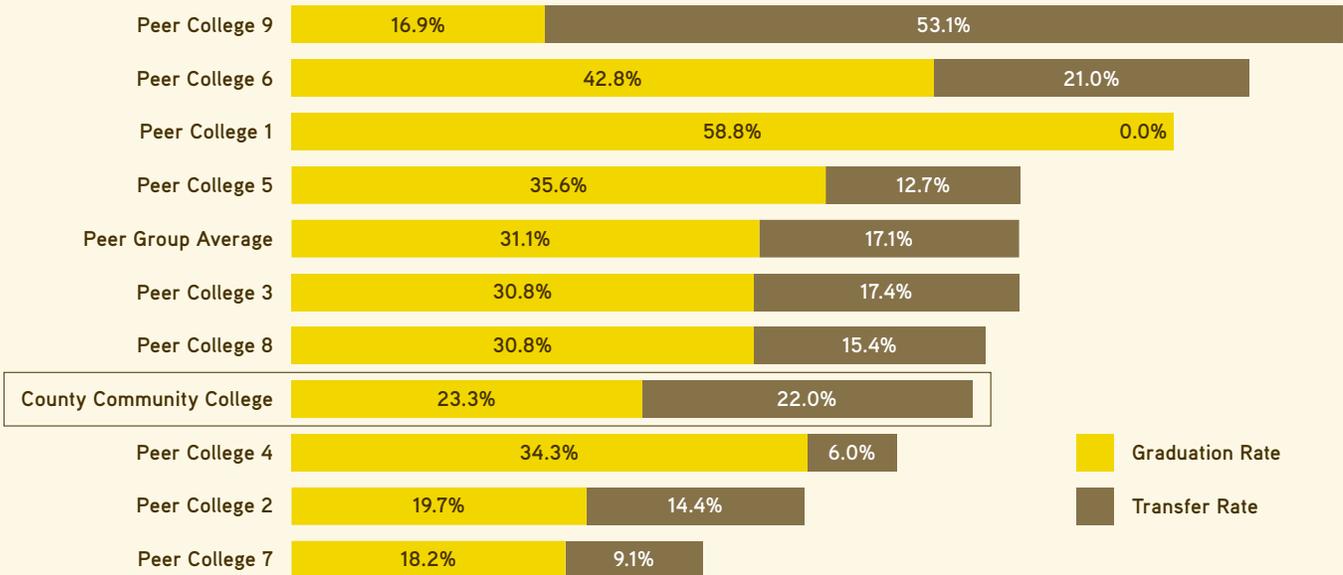
Source: National Student Clearinghouse

Potential Alternative Sources: Direct institutional reporting or State Longitudinal Data Systems (SLDS) where applicable. The added benefit to using National Student Clearinghouse data is a

generally more accurate representation of transfer and completion activity due to their automated enrollment verification procedures. Postsecondary institutions make student-level data available to the Clearinghouse several times per term, making timeliness one of the distinguishing features of the Clearinghouse data. The data available through the Clearinghouse is comprised of student-level data and represents an unduplicated headcount of students across all participating institutions. IPEDS contains institution-level data, which do not reflect the various pathways individual students take to complete their postsecondary education. Also the data presented in this report by the Clearinghouse include not only full-time students, but also part-time as well as mixed enrollment students, a group that comprised more than half of the study's cohort. *

*from: <http://www.studentclearinghouse.info/signature/4/SignatureReport4FAQ.pdf>

Figure 4 **EQUITY IN COMPLETION**
Completion and Transfer Rates by URM



Definition: Percentages of all first-time students, both full-time and part-time, either graduating within three years (150% normal time) or accumulating at least 12 credits and transferring to a four-year degree-granting institution. URM includes African American, American Indian/Native Alaskan, and Hispanic/Latino students. The measure combines the most recent cohorts available using a three-year average (though six-year averages are available via NSC data). Within the three-year cohort average, outcomes are examined as of 2008-09 (for example) beginning with the 2004-05 cohort and including the 2005-06 and 2006-07 cohorts.

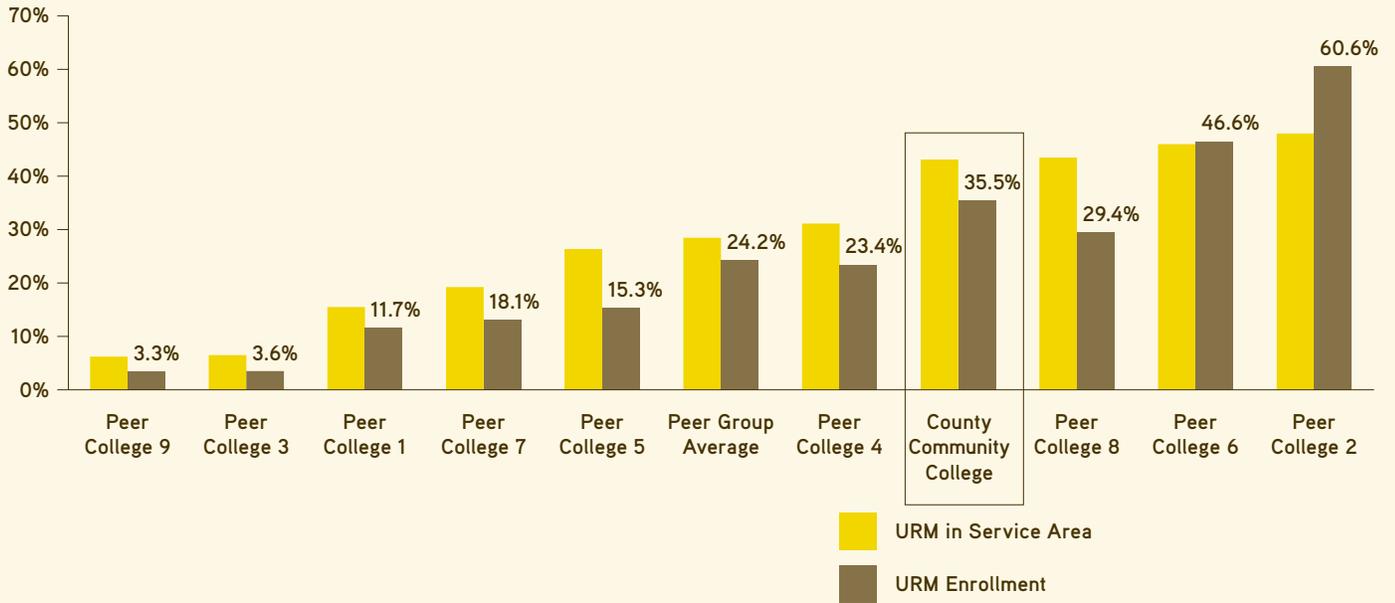
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Figure 5 EQUITY IN ACCESS
URM Enrollment versus URM Population in Service Area (18-44)



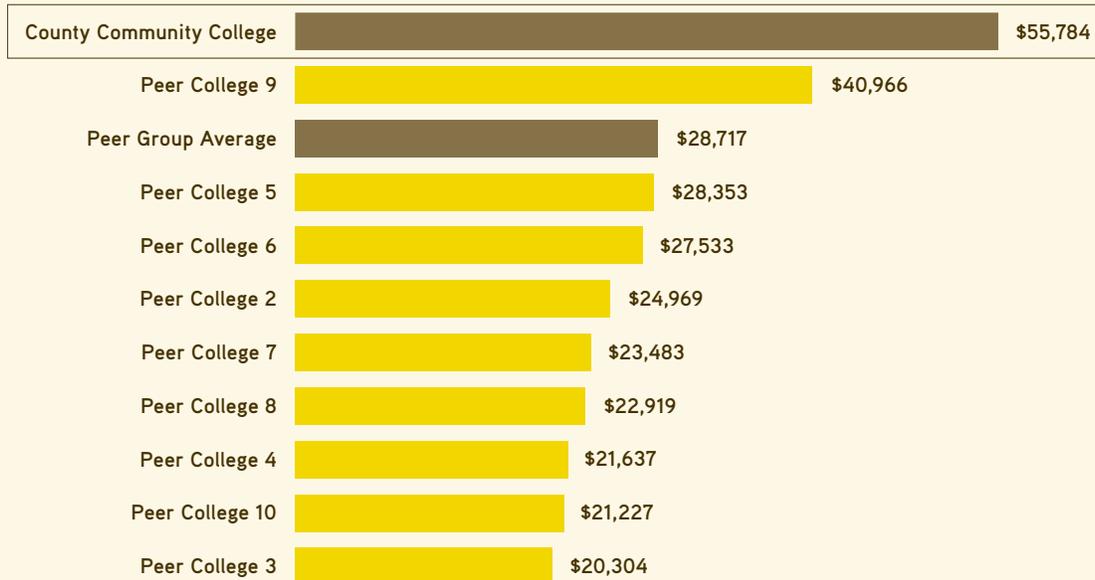
Definition: Under-represented minorities (URM) are defined as the combination of Blacks, Hispanics, and Native Americans from the total enrollment universe. Populations from each service area come from the population estimates in the U.S. Census' American Community Survey using a defined Public Use Microdata Area (PUMA) where each college is located. PUMAs are roughly 100,000 to 150,000 residents - smaller than counties in densely populated areas and larger than counties in sparsely populated rural areas.

Sources:

(URM Enrollment) NCES, IPEDS Completions and Enrollment Surveys - Files c2008_a, c2009_a, c2010_a, efi2008, efi2009, efi2010 (Final Release)

(Service Area) U.S. Census Bureau 2010 American Community Survey (Public Use Microdata Sample)

Figure 6 MEDIAN ANNUAL EARNINGS ONE YEAR AFTER COMPLETION



Definitions:

Class of 2011 Composite Employment Index (CEI) = (Placement Rate at Graduation in 2011 + Placement Rate (12 month follow up) + Continuously Employed Rate).

Annualized Salaries and Wages for 2011 Employed Graduates are based on 12 month follow up data supplied by institution.

Class of 2011 Relative Wages = (Annualized Wages of Employed 2011 Graduates at 12 month follow up) / (Average Annual County 2011 New Hire Wages).

County Civilian Workforce Participation Rate (Estimated percent for 2007 to 2011). This metric differs from employment or unemployment rates because the base population is the entire working age population (25 to 64 years old) in the county; therefore, it includes people who may have stopped actively seeking employment but live in the county.

Sources:

Source for Average Annual County New Hire Wage: Local Employment Dynamics, Longitudinal Employer-Household Dynamics, U.S. Census Bureau.

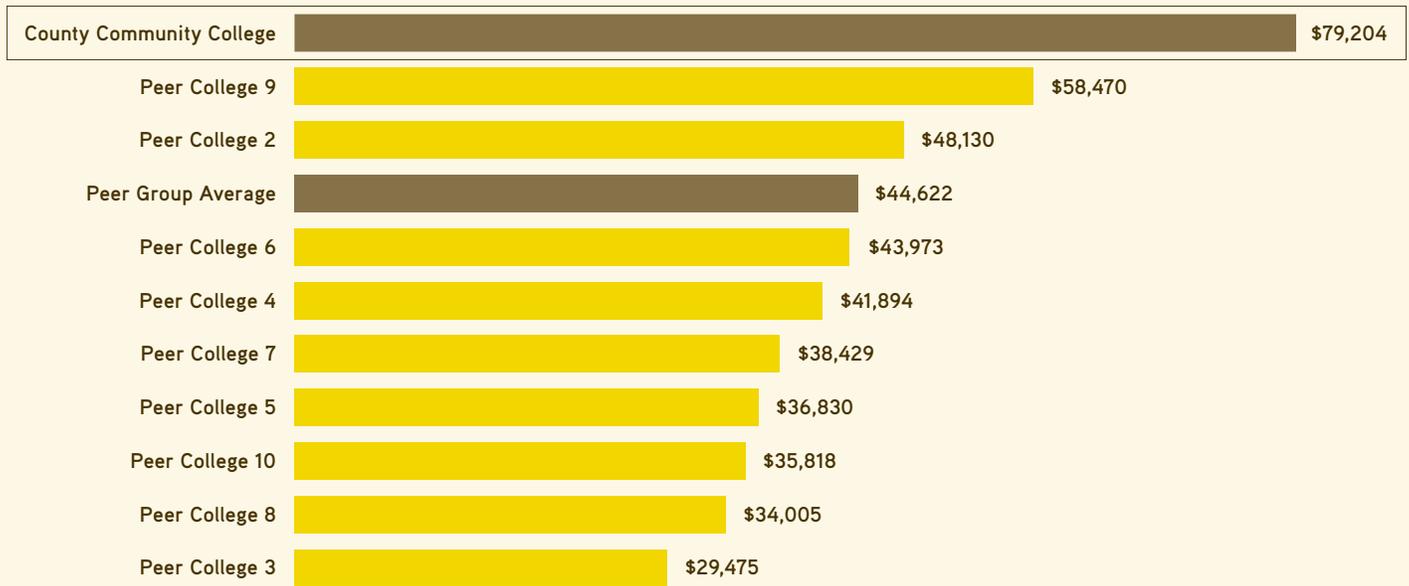
Source for County Civilian Workforce Participation Rate: U.S. Census Bureau, 2007-11 American Community Survey 5-Year Estimates.

More on Sources:

Local Employment Dynamics: a cooperative program between the U.S. Census Bureau and states that match state wage records with Census data to generate Quarterly Workforce Indicators (QWI) including new hires and new hires monthly earnings by statewide, county and metro region.

Quarterly Census of Employment and Wages (QCEW): a cooperative program between the Bureau of Labor Statistics (BLS) and states that provides detailed quarterly employment and earnings data by industry at the state and regional level.

Figure 7 **MEDIAN ANNUAL EARNINGS FIVE YEARS AFTER COMPLETION**



Definitions:

Class of 2006 Composite Employment Index (CEI) = (Placement Rate (12 month follow up in 2007) + Placement Rate in 2011 + Continuously Employed Rate).

Annualized Salaries and Wages for Employed 2006 Graduates in 2011 are based on 5-year follow up data supplied by institution.

Class of 2006 Relative Wages = (Annualized Wages of Employed 2006 Graduates in 2011 (5-year Follow up data)) / (Average Annual County 2011 Wage).

Sources:

Source for Average Annual County New Hire Wage: Local Employment Dynamics, Longitudinal Employer-Household Dynamics, U.S. Census Bureau.

More on Sources:

Local Employment Dynamics: a cooperative program between the U.S. Census Bureau and states that match state wage records with Census data to generate Quarterly Workforce Indicators (QWI) including new hires and new hires monthly earnings by statewide, county and metro region.

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