ACCESS TO SUCCESS

# Access to Success Data Metrics

## Technical Appendix

DECEMBER 2009

NASH
National Association of System Heads

The Education Trust

# Access to Success Data Metrics Technical Appendix

## ACCESS METRICS

The Access metrics compare the economic and racial diversity of the systems' entering student population with that of their state. These metrics are calculated separately for (1) associate's degree-seeking cohorts and bachelor's degree-seeking cohorts[1] and (2) freshman and transfer students.[2] Full-time and part-time students are combined in all Access metrics.

$$\frac{\%\text{ of Entering Undergraduates Who Are Pell Recipients}}{\%\text{ of High School Graduates in State Who Are Low-Income}}$$

$$\frac{\%\text{ of Entering Undergraduates Who Are URMs}}{\%\text{ of High School Graduates in State Who are URMs}}$$

For the income metrics, the economic diversity of the entering class is measured by the percentage of students who were Pell Grant recipients at entry in 2005-06. While using Pell Grant receipt as a proxy for low-income status has its limitations, which we'll discuss later, it is the only income measure that is widely available across all participating systems at this time and represents an improvement over existing information since most institutions and systems do not currently report any Access or Success data by income or financial-aid status.

The economic diversity of the state population is measured by the percentage of high school graduates who were low-income—or below 200 percent of the federal poverty level—in 2005. In 2005, a family of four living at 200 percent of the poverty level had an annual income of about $40,000; an individual at 200 percent of the poverty level had an annual income of about $20,000.[3] These figures are the approximate cut-offs for Pell eligibility for dependent and independent students. The Access metric compares the percentage of entering students who were low-income in

| | BACHELOR'S COHORTS | | ASSOCIATE'S COHORTS | |
|---|---|---|---|---|
| | Low-Income | URM | Low-Income | URM |
| **Freshmen** | High school graduates ages 18-24 without bachelor's degrees in the state who were low-income (below 200% of the poverty level), 2005 | High school graduates ages 18-24 without bachelor's degrees in the state who were URM, 2005 | High school graduates ages 18-34 without associate's degrees in the state who were low-income (below 200% of the poverty level), 2005 | High school graduates ages 18-34 without associate's degrees in the state who were URM, 2005 |
| **Transfer** | High school graduates ages 18-34 without bachelor's degrees in the state who were low-income (below 200% of the poverty level), 2005 | High school graduates ages 18-34 without bachelor's degrees in the state who were URM, 2005 | High school graduates ages 18-34 without associate's degrees in the state who were low-income (below 200% of the poverty level), 2005 | High school graduates ages 18-34 without associate's degrees in the state who were URM, 2005 |

Note: Data are three-year averages drawn from the U.S. Census Bureau's "2003-05 American Community Survey."

2005-06 with the percentage of high school graduates in the state who were low-income in 2005.

For the race metrics, the percentage of entering students who were underrepresented minorities (URMs) in 2005-06 is compared with the percentage of high school graduates in the state who were URMs. In our metrics, URMs include African American, Latino, and American Indian populations.[4] Students with "race unknown/other" are excluded from all race metrics because they cannot be classified as URM or non-URM. Students who are nonresident aliens are excluded from all metrics because they cannot be classified accurately in terms of race and are not eligible for federal financial aid.

We use data from the Census Bureau's "2000 Census" and the "American Community Survey" for our comparison data—or as the denominator—for the Access metrics. We use an age range of 18-24 year-olds for first-time bachelor's degree-seeking students and 18-34 year-olds for all associ-

### Selecting Appropriate Comparisons for the Access and Access+Success Metrics

One of the most useful aspects of the A2S metrics—comparing the diversity of the systems' incoming students and completers to state demographics—is also one of the most challenging in terms of quality data. Here we offer a brief description of the process we used to select the most appropriate comparisons—or denominators—for the Access and Access+Success metrics, including our choices among imperfect data sources and definitions. While limitations with the data remain, this is our best attempt to make use of existing sources for the important purpose of setting goals to improve access to and through higher education for low-income and underrepresented minority students.

1. Our parameters for choosing appropriate data sources and definitions from participating systems included (a) only using the demographics of high school graduates as the basis for comparison so as not to hold systems responsible for low high school graduation rates in their state, particularly among low-income and minority populations, and (b) using an expanded age range for students entering as transfers and students entering associate's degree programs in order to reflect the wider pool from which these groups draw.
2. First, we considered using the NCES Common Core of Data, which provides data on a state's high school graduating class each year, for the Access metrics for freshmen. This source is limited in several ways, however: It (a) does not include the income level of high school graduates, (b) does not include "race unknown/other" category as do IPEDS/A2S data, (c) includes limited information about GED recipients, (d) does not include private school students, and (e) does not account for students who do not immediately enroll in postsecondary education.
3. With our other available option, the "American Community Survey" data from the U.S. Census Bureau, we considered using High School Graduates With No College for the Access metric for freshmen. While this appears to better match IPEDS definitions for freshmen (no prior college), we concluded that this is not the fairest comparison for systems. To use High School Graduates With No College would penalize systems by comparing the demographics of the population that did get access to the population that did not get access—rather than to the population that was available for access, particularly since we are estimating the diversity of the young adult population within an age range.
4. With the Census data, we also considered using all high school graduates regardless of educational attainment level to get a population estimate of race and income levels in the state population within our age ranges. This definition presented two major problems: (a) for the low-income Access metrics and (b) for the associate's degree and transfer metrics.
   a. For the low-income metrics,[8] we recognized that income levels increase as a result of degree attainment. Therefore, using all high school graduates, including those who had already attained degrees, would inaccurately lower the estimate of the college-eligible low-income population in the state.
   b. For the associate's and transfer metrics, we are using an 18-34 year-old age range at the request of the A2S two-year colleges. In this age range, we concluded that the demographics of the entire high school graduate population did not accurately reflect the target population of the two-year colleges, which is more narrowly focused on the young adult population that has not yet gained access to postsecondary education and/or earned a degree.
5. In order to be consistent across the different categories of students (e.g. freshmen/transfer, minority/low-income) and institutions (e.g. two-year and four-year), we defined our comparison groups as follows:
   a. For freshmen in bachelor's programs, we use 18-24 year-olds who have not yet earned bachelor's degrees.
   b. For transfers in bachelor's programs, we use 18-34 year-olds who have not yet earned bachelor's degrees.
   c. For freshmen and transfers in associate's programs, we use 18-34 year-olds who have not yet earned associate's degrees.

The Census data definitions we used for the Access metrics are intended to be estimates of the racial and economic diversity of the population in a state that is eligible to gain access to the degree being sought (e.g. associate's or bachelor's degrees), not the actual pool of potential applicants. In short, our metrics are a refined population estimate, not an applicant pool.

ate's degree-seeking and transfer students to reflect the different populations from which these entering classes draw.[5] We limit our comparison to high school graduates only so as not to hold university systems accountable for low high school graduation rates in their states.

An Access ratio below 1 means that the system's entering class is not as economically or racially diverse as its state's high school graduates. For example, a system with an access ratio of .5 for underrepresented students is only enrolling 50 percent of the URMs it could be serving if its entering class was as racially diverse as the state's population. A ratio of 1 indicates equity, meaning the diversity of the entering student population either matches or exceeds the diversity of the state population. All ratios are capped at 1.

Expressing the Access metric as a ratio puts the size of the gap in context. For instance, a -4 percent Access gap in a state such as Minnesota, where 9 percent of 18-24 year-old high school graduates are URMs, is much more challenging to close (ratio = .44) than a -4 percent gap in a state such as California where 48 percent of high school graduates are URMs (ratio = .92). Using an Access ratio also accounts for the rapid growth in the low-income and minority populations in many states by ensuring that systems are setting goals to enroll more underserved students not only to close current access gaps but to keep up with changing demographics in their states as well.

### Using Ratios and Ratio Goals in the A2S Metrics

Drawing on the work of Estela Bensimon and her colleagues as well as others,[6] we calculate systems' access and success gaps and goals as ratios for purposes of tracking their improvement over the course of the Initiative. In general terms:

$$\textbf{RATIO} = \frac{\text{Representation or performance of target group}}{\text{Representation or performance of reference group}}$$

A ratio below 1 indicates that the target group is lagging behind the reference group. A ratio of 1 indicates equity between the target and the reference group. All ratios are capped at 1 in the A2S metrics.

$$\textbf{RATIO GOAL} = \text{Ratio} + \frac{(1 - \text{Ratio})}{2}$$

The ratio goal is (1) the difference between a system's current ratio and 1, which would indicate equity, (2) divided by 2 to cut the gap in half, and (3) added to the system's current ratio to indicate the goal for 2015.

## SUCCESS METRICS

The Success metrics aim to measure how the success outcomes of low-income and minority students compare with their peers' in the A2S systems. These metrics are calculated separately for (1) associate's degree cohorts and bachelor's degree cohorts and (2) freshman and transfer students. Full-time and part-time students are combined in all Success metrics. All Success metrics measure success anywhere within the system, not at the initial institution of entry only.

For **bachelor's degree cohorts**, the metrics compare the percentage of Pell (or URM) at entry students from the fall 1999 cohort who obtained bachelor's degrees in the system within six years (by summer 2005) with the percentage of non-Pell (or non-URM) at entry students who obtained bachelor's degrees within six years.[7]

$$\frac{\begin{array}{c}\text{\% of Pell Recipients (at Entry) From Cohort}\\ \text{Who Earn Bachelor's Degrees Within Six Years}\end{array}}{\begin{array}{c}\text{\% of Non-Pell Recipients (at Entry) From Cohort}\\ \text{Who Earn Bachelor's Degrees Within Six Years}\end{array}}$$

$$\frac{\begin{array}{c}\text{\% of URM Students From Cohort}\\ \text{Who Earn Bachelor's Degrees Within Six Years}\end{array}}{\begin{array}{c}\text{\% of Non-URM Students From Cohort}\\ \text{Who Earn Bachelor's Degrees Within Six Years}\end{array}}$$

For **associate's degree cohorts**, the metrics compare the percentage of Pell (or URM) at entry students from the fall 2001 cohort who were successful in the system within four years (by summer 2005) with the percentage of non-Pell (or non-URM) at entry students who were successful within four years.

$$\frac{\begin{array}{c}\text{\% of Pell Recipients (at Entry)}\\ \text{Who Are Successful Within Four Years}\end{array}}{\begin{array}{c}\text{\% of Non-Pell Recipients (at Entry)}\\ \text{Who Are Successful Within Four Years}\end{array}}$$

$$\frac{\begin{array}{c}\text{\% of URM Students}\\ \text{Who Are Successful Within Four Years}\end{array}}{\begin{array}{c}\text{\% of Non-URM Students}\\ \text{Who Are Successful Within Four Years}\end{array}}$$

For freshmen, the success rate is an unduplicated count of the percentage of students who transfer/transition into bachelor's programs within the system, earn certificates, or earn associate's degrees within the system. For transfer stu-

## Using Pell Grant Receipt as a Proxy for Income Status in the A2S Metrics

The Access to Success Initiative is committed to closing enrollment and achievement gaps for underrepresented minority and low-income students in public higher education. Although data on enrollment and success rates now are regularly published by race and ethnicity, no such data currently are widely published by income status. In our metrics, we use whether students receive Pell Grants as our indicator of income status because it is the only income measure that is widely available across all participating systems. It does, however, have its limitations, which are discussed here.

**Access**

In our Access metrics, we measure the economic diversity of our systems' entering classes by comparing the percentage of students who receive Pell Grants at entry to the percentage of high school graduates living below 200 percent of the federal poverty level in the state. Using Pell as a proxy in the Access metrics may overstate the size of the access gap in some systems because of factors that affect students' eligibility for Pell Grants. For instance, Pell Grant eligibility is based in part on cost of attendance, which is lower in less expensive institutions such as community colleges and is lower for students attending part-time.

Further, a number of Pell-eligible students do not apply for financial aid because they lack information about and/or experience with the complicated financial aid application process. In fact, in 2003-04 only 59 percent of students filed a Free Application for Federal Student Aid (FAFSA), the form required for Pell Grant eligibility. Even among students most in need of aid, the rates of FAFSA completion are low, with more than 20 percent of lowest income students not applying for financial aid. The American Council on Education estimates that an additional 1.5 million students likely would have received a Pell Grant in 2003-04 had they applied for financial aid.[9]

Using 2008 National Postsecondary Student Aid Study data, however, we found that the percentage of entering students with Pell Grants was the same as the percentage of students with incomes under 200 percent of the federal poverty level among bachelor's degree-seeking students—about 26 percent. We chose 200 percent poverty level as our cut-off because it equates to about $40,000 for a family of four, which is the approximate cut-off for Pell eligibility. Among associate's degree-seeking students nationally, we found that the percentage of entering students who were Pell recipients was about 29 percent, compared with 43 percent of students who were below 200 percent of the poverty level, undercounting by 14 percent the proportion of low-income students enrolled.

**Success**

In our Success metrics, we track and compare the success of students who received Pell Grants at entry to students who did not receive Pell Grants when they entered the system. Unlike with the Access metrics, using Pell status as a proxy for income in the Success metrics may actually understate the success rate gap for two reasons. First, some nonrecipients are low-income but don't receive aid as noted above. Because these needy students without aid are considered nonrecipients, they may lower the completion rate of the comparison group and understate the gap. Second, there is likely a positive impact for low-income students who receive Pell Grants, because getting the grant helps them stay in college, which also narrows the graduation gap with nonrecipients.

In fact, we found in our transfer and associate's cohorts that Pell students often have higher completion rates than nonrecipients. However, to the extent that a number of the nonrecipients are low-income, the data showing higher success rates for Pell recipients here might be evidence that our systems can increase their success rates overall by helping more of their low-income students maximize their eligibility for federal aid by filling out the FAFSA and/or by enrolling full-time.

Despite the limitations, the success rates for Pell recipients reported in our metrics are the first set of national benchmarks on the performance of low-income students at public two-year and four-year colleges that will be available annually. To date, the only nationally representative data on the success rates of low-income students comes from sample studies conducted by the National Center for Education Statistics (NCES) such as the Beginning Postsecondary Students (BPS) study and the National Education Longitudinal Study (NELS). While this information has been invaluable in understanding the gaps in success between low-income students and their peers, the studies are not conducted annually and are not available at the institution, system, or state level. It is our hope that the data generated here will move the colleges and universities in our systems—and elsewhere—forward and faster in terms of closing achievement gaps for low-income students.

**Degrees Conferred**

In the A2S data, we use whether students received Pell Grants at any time during their undergraduate tenure as an indication of low-income status in the degrees-conferred measure. This definition allows systems to earn additional credit for serving low-income students who might not be counted if using Pell receipt at entry or exit only. Due to data-quality issues regarding tracking Pell Grant recipients over time, we only report this number descriptively and do not construct a metric because there is not an appropriate denominator with which to compare the number.

dents, the success rate only measures whether students earn associate's degrees within the system.

A success ratio below 1 means that Pell (or URM) students are lagging behind their peers in terms of achieving successful outcomes in the system. For example, a ratio of .70 indicates that Pell (or URM) students are succeeding at 70 percent the rate of non-Pell (or non-URM) students. A ratio of 1 indicates equity—that Pell (or URM) students are succeeding at the same or higher rates than their peers.

Again, using ratios puts the size of the systems' success gaps in context. For instance, a -10 percent gap is more challenging in a system with a 20 percent overall completion rate than a system with a 60 percent completion rate. Using ratios to measure systems' progress also ensures that the success rates of their low-income and minority students track along with their peers. This means that the success rates of Pell and URM students must increase faster than any improvement among their peers in order to close achievement gaps.

## ACCESS+SUCCESS METRICS

The Access+Success metrics are an indicator of how well the systems' completers reflect the diversity of their states' high school graduate populations. These metrics are calculated separately for (1) associate's degree cohorts and bachelor's degree cohorts and (2) freshman and transfer students. Full-time and part-time students are combined in all Access+Success metrics.

For **bachelor's degree cohorts**, the metrics compare the percentage of students who earned bachelor's degrees in the system within six years from the fall 1999 cohort who were Pell (or URM) at entry with the percentage of high school graduates who were low-income (or URM) in 1999 when the cohort entered the system.

$$\frac{\%\text{ of Students Who Earned Bachelor's Degrees From the Cohort Within Six Years Who Were Pell Recipients (at Entry)}}{\%\text{ of High School Graduates in the State Who Were Low-Income Six Years Prior}}$$

$$\frac{\%\text{ of Students Who Earned Bachelor's Degrees From the Cohort Within Six Years Who Were URM Students}}{\%\text{ of High School Graduates in the State Who Were URM Six Years Prior}}$$

For **associate's degree cohorts**, the metrics compare the percentage of students who were successful in the system from the fall 2001 cohort within four years who were Pell (or URM) at entry with the percentage of high school graduates who were low-income (or URM) in 2001 when the cohort entered the system.

$$\frac{\%\text{ of Students Who Succeeded from the Cohort Within Four Years Who Were Pell Recipients (at Entry)}}{\%\text{ of High School Graduates in the State Who Were Low-Income Four Years Prior}}$$

$$\frac{\%\text{ of Students Who Succeeded from the Cohort Within Four Years Who Were URM Students}}{\%\text{ of High School Graduates in the State Who Were URM Four Years Prior}}$$

For first-time associate's students, the success rate is an unduplicated count of the percentage of students who transfer/transition into bachelor's programs within the sys-

| | BACHELOR'S COHORTS | | ASSOCIATE'S COHORTS | |
|---|---|---|---|---|
| | Low-Income | URM | Low-Income | URM |
| **Freshmen** | High school graduates ages 18-24 without bachelor's degrees in the state who were low-income (below 200% of the poverty level), 1999 | High school graduates ages 18-24 without bachelor's degrees in the state who were URM, 1999 | High school graduates ages 18-34 without associate's degrees in the state who were low-income (below 200% of the poverty level), 2001 | High school graduates ages 18-34 without associate's degrees in the state who were URM, 2001 |
| **Transfer** | High school graduates ages 18-34 without bachelor's degrees in the state who were low-income (below 200% of the poverty level), 1999 | High school graduates ages 18-34 without bachelor's degrees in the state who were URM, 1999 | High school graduates ages 18-34 without associate's degrees in the state who were low-income (below 200% of the poverty level), 2001 | High school graduates ages 18-34 without associate's degrees in the state who were URM, 2001 |

Note: Data are three-year averages drawn from the U.S. Census Bureau's 2000-2002 "American Community Survey." These data were used as a proxy for the 1999 data because data were not available before 2000.

tem, earn certificates, or earn associate's degrees within the system. For transfer students, the success rate only measures whether students earn associate's degrees within the system.

As with the Access metrics, we use data from the Census Bureau's 2000 Census and the "American Community Survey" for our comparison data—or as the denominator—for the Access+Success metrics.

An Access+Success ratio below 1 means that a system's completers (graduates and/or transfers) do not adequately reflect the economic or racial diversity of the states' high school graduates. A ratio of 1 indicates equity, meaning the diversity of the system's completers either matches or exceeds the diversity of the state's population. For instance, a system with an Access+Success ratio of .25 is only graduating one-quarter of the Pell (or URM) students it could be if it closed both its Access and Success gaps.

## ENDNOTES

1 Our metrics focus on cohorts of associate's degree-seeking students and bachelor's degree-seeking students within the systems rather than two-year and four-year institutions since some of the institutions in our initiative serve both associate's and bachelor's cohorts. However, in most cases, associate's degree-seeking students are attending two-year institutions and all bachelor's degree-seeking students are attending public four-year institutions.

2 Freshmen were not previously enrolled in a postsecondary institution inside or outside of the system (with the exception of dual enrollment high school students). Transfer students include those who previously attended a postsecondary institution outside of the system from which the current institution accepted college credits as well as those who moved from a baccalaureate-level to an associate-level program (or vice versa) anywhere within the system.

3 U.S. Census Bureau (2005). Poverty Thresholds, 2005. *http://www.census.gov/hhes/www/poverty/threshld/thresh05.html*

4 In Hawaii, Native Hawaiians and Filipinos are also included as URMs.

5 The age ranges were selected because they cover about 90 percent of entering students in their respective categories (e.g. 92 percent of bachelor's degree-seeking students began postsecondary education between the ages of 18 and 24, and 92 percent of associate's degree-seeking students began postsecondary education between the ages of 18 and 34) according to Ed Trust analysis of NPSAS:08.

6 Bensimon, E.M., Hao, L., Bustillos, L.T. (2006). Measuring the state of equity in higher education. In P. Gándara, G. Orfield & C. Horn (Eds.) *Leveraging promise and expanding opportunity in higher education*. Albany: SUNY Press. Price, D. V. and Wohlford, J.K. (2005). Equity in Educational Attainment: Racial, Ethnic and Gender Inequality in the Fifty States. In *Higher Education and the Color Line: College Access, Racial Equity, and Social Change*, Eds. Gary Orfield, Patricia Marin and Catherine L. Horn. Harvard University.

7 The success metrics track outcomes for both freshman and transfer students to the same number of years, six for bachelor's cohorts and four for associate's cohorts, because there was no minimum credit amount at entry for transfer students that was appropriate to set across all systems. Because the metrics include both students who transfer into the cohort with no or few credits and students who transfer in with a degree, transfer students are tracked for the same amount of time as freshmen from their entry into the system. As a result, transfer success rates tend to be higher than first-time success rates due to the longer timeframe from initial entry to postsecondary education elsewhere through their completion in the system. However, freshmen who persist beyond the first year generally have higher success rates than transfer students.

8 We recognize that there are several limitations to the Census poverty data, particularly with regards to estimated poverty levels among young adult populations. In brief, there are two issues of concern: (1) Some populations are excluded from poverty estimates, including most students living in college dorms, and (2) some dependent college students (meaning financially dependent on their parents) may be considered independent for purposes of Census sampling (meaning their income is counted separately from the parents) if they do not live at home. Because higher income students may be more likely to live in college dorms and less likely to live at home than lower income students, it is possible that the percentage of young adults living in poverty may be inflated due to these sampling problems. We chose to use the Census data despite these limitations because the percentage of young adults living below 200 percent of the federal poverty level is (1) within three percentage points of the percentage of children living below 200 percent poverty in more than half of the A2S states, indicating that the sampling error is not a major problem in these states; (2) is slightly lower than the percentage of children below 200 percent poverty in most of the rest of the states, which was expected since the former excludes young adults who did not graduate from high school while the latter does not; and (3) was higher in only three states, which could be an indication of sampling error since some of these states are small but could also be explained by other factors such as low median incomes in those states or in-migration among lower income populations. We also chose to use the young-adult estimates because more than half of Pell Grant recipients are financially independent from their parents, and a considerable number of dependent Pell Grant recipients live at home with their parents, which means they would not be affected by the sampling issues. Finally, we would not have been able to accommodate the systems' parameters for using only high school graduates and different age ranges in the comparison data if we had used the percentage of children living below 200 percent poverty instead of the percentage of young adults.

9 "Missed Opportunities Revisited: New Information on Students Who Do Not Apply for Financial Aid."ACE Center for Policy Analysis. American Council on Education. February 2006. Available at *www.acenet.edu/AM/Template.cfm?Section=Search&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=14244*.

## ABOUT THE NATIONAL ASSOCIATION OF SYSTEM HEADS

The National Association of System Heads (NASH) is a membership organization of chief executive officers of the 52 public higher education systems in 38 states and Puerto Rico that works to improve the governance of public higher education systems. Its member systems enroll the lion's share of college students nationwide—about 70 percent of all four-year college undergraduates.

## ABOUT THE EDUCATION TRUST

The Education Trust promotes high academic achievement for all students at all levels—pre-kindergarten through college. We work alongside parents, educators, and community and business leaders across the country in transforming schools and colleges into institutions that serve all students well. Lessons learned in these efforts, together with unflinching data analyses, shape our state and national policy agendas. Our goal is to close the gaps in opportunity and achievement that consign far too many young people—especially those who are black, Latino, American Indian, or from low-income families—to lives on the margins of the American mainstream.

NASH
National Association of System Heads

The Education Trust

1250 H STREET, N.W., SUITE 700, WASHINGTON D.C. 20005
T 202/293-1217 F 202/293-2605 WWW.EDTRUST.ORG