Aspen Prize for Community College Excellence

Round 1 Eligibility Model (2017)

Executive Summary

Round 1 of the Aspen Prize for Community College Excellence process is designed to select 152 public two-year institutions (out of 980 potential candidates) as eligible to apply for the Round 2 selection process.[1] The model was developed by the National Center for Higher Education Management Systems (NCHEMS), in consultation with the Aspen Prize's Data and Metrics Advisory Panel, and uses publicly available data from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS) and the U.S. Census Bureau. This document provides details of the analytic model developed to determine the top 152 institutions. Specific calculations for each metric in the model are available in the appendix.

The model is based on institutional performance in three general areas: (1) retention, completion, and transfer, (2) improvement in performance over time, and (3) equity, defined as performance outcomes for underrepresented minorities and institutions in low-income service areas. Subject to modifications described in this document, each of these general categories was equally weighted in the baseline model, with each accounting for one-third of the overall score. Adjustments to the measures were made in the analytic model (where possible) to control for institutions with unusual percentages of part-time and underrepresented minority student enrollment in order not to penalize institutions that serve disproportionately large populations of these students. Also, the model assesses both absolute levels of performance and gains over time, and it contains adjustments designed to give credit to institutions that have made significant in performance outcomes over time. For institutions that have shown significant improvement, greater weight is applied to the improvement in outcomes, while for institutions that have high but relatively constant outcomes, greater weight is shifted to the absolute levels of performance. Finally, in order to produce a representative set of institutions with respect to mission, size, and percent of minority students served, the top overall performers were selected within each quartile of "percent vocational/technical credentials awarded," "unduplicated annual enrollment" and "percent minority enrollment." Additionally, to ensure that there was not disproportionate representation of institutions from certain states, no more than half of the institutions in each state were included in the top 152.

Model Measures

The following metrics were used to determine which colleges are considered eligible to apply for Round 2 of the Aspen Prize. Each is derived from publicly available data. The "weights" given to each metric in the Round I selection were developed in consultation with the Data and Metrics Advisory Panel.

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[1] A list of the DMAP members is available on the Prize website: www.AspenCCPrize.com.

<u>Performance</u>

1. **First-Year Retention Rates**. Defined as the percentage of first-time full- and part-time students in the fall semester who are enrolled the following fall semester. Those who complete a certificate or degree within the first year are also counted as "retained." An average of the three most recent years was used to account for fluctuations in reported annual data – particularly at smaller colleges. (Source: NCES, IPEDS Enrollment Survey)

2. **Three-Year Graduation Rates**. Defined as the percentage of first-time, full-time, degree-seeking students in the fall semester that complete any formal award (certificate or associate degree) within three years. An average of the three most recent years was used to account for fluctuations in reported annual data – particularly at smaller colleges. (Source: NCES, IPEDS Graduation Rate Survey)

   One limitation of the IPEDS graduation rate is that it does not account for students who enroll part-time. In order to address this problem, the weight applied to the graduation rate in the model has varying influence on the overall result, depending on the percentage of first-time degree-seeking students who are full-time. Institutions with high percentages of full-time first-time students (75th percentile or higher) get the full weight applied. For those that have smaller percentages of full-time first-time students, more weight is shifted to the retention and credentials awarded per 100 FTE students measure (described above and below).

3. **Certificates and Degrees Awarded per 100 Full-Time Equivalent Students**. The number of students who earn credentials of one-year or longer in length per 100 full-time equivalent students. Because associate degrees are typically twice the length in duration of certificates, associate degrees are given twice the weight of other credentials in the calculation. An average of the three most recent years was used to account for fluctuations in reported data – of particular importance for smaller colleges. (Sources: NCES, IPEDS Completions and Enrollment Surveys)

<u>Change Over Time</u>

4. **Annual Change in Retention Rates, Graduation Rate, and Certificates and Degrees Awarded per 100 Full-Time Equivalent Students**.

   The most recent 5 years of data were used for retention rates, graduation rates, and credentials awarded per 100 FTE students. For each of the three performance metrics, if an institution improved a percentage point or more from one year to the next, it was given a value of 1. If it held within + or – one percentage point it was given a value of 0. If it declined by a percentage point or more from one year to the next, it was given a value of -1. With three metrics and 5 years of data, the maximum value an institution could earn is 12 and minimum is -12.

   The 1/3 weight given to "change over time" kicks in only for institutions that improved (those with aggregate scores of 1 or greater). If an institution did not improve (with aggregate scores of 0 or less) the entire 1/3 weight gets shifted to the performance category. The 1/3 weight is also sensitive to those that improved. If an institution has the highest aggregate score in the pool for improvement (which is 11), it is given the entire 1/3 weight to change over time. A score of half that maximum yields ½ of the 1/3 weight, and so on.

<u>Equity</u>

5. **Graduation Rate for Underrepresented Minority Students.** Defined as the percentage of first-time, full-time, degree-seeking minority students in the fall semester that complete any formal award (certificate or associate degree) within three years. Underrepresented minority was defined, using the race codes within the IPEDS data set, as Hispanic, African-American, and Native American. This approach was used rather than the "gaps" between whites and minorities because a small gap could yield a high score for the metric even if the actual graduation rate was low for all students. An average of the three most recent years was used to capture fluctuation over time.

6. **Certificates and Degrees Awarded per 100 Full-Time Equivalent Students for Underrepresented Minority Students**. Defined as the number of minority students who earn credentials of one-year in length or higher per 100 full-time equivalent minority students. Since associate degrees are typically twice the length in duration of certificates, associate degrees were given twice the weight of other credentials in the calculation. An average of the three most recent years was used to capture fluctuation over time. (Sources: NCES, IPEDS Completions and Enrollment Surveys)

7. **Low-Income Service Area**. Defined as the median family income of the institution's Public Use Microdata Area (PUMA). Since community colleges tend to draw large percentages of their students from the areas in which they are located, it is reasonable to assume a high correlation between the income levels of students and the income levels of the residents in the college's local area. The PUMA areas defined by the Census Bureau contain roughly 100,000 to 150,000 residents. They are, in most cases, a better unit of analysis than county because they more accurately represent the demographic characteristics of the communities the institutions serve. (Sources: NCES, IPEDS Institutional Characteristics Survey, U.S. Census Bureau, 2010 American Community Survey)

   Note: A standard proxy for income is to use percent Pell Grant recipients, but NCHEMS and the DMAP group chose not to use this approach because it is known to be a poor approximation of the actual financial need of community college students. Many community college students who are eligible for Pell Grants never apply; use of Pell Grants can thus significantly under-represent the percentage of low-income students attending community colleges. Service area income data was thus used to provide a more accurate representation of the income characteristics of the college's service population.

As for the *graduation rate* and *credentials per 100 FTE students'* metrics for minority students, a "sliding scale" was applied to the equity measures. Institutions with high percentages of underrepresented minority students (50th percentile or higher) received the full weight applied to the two equity measures. For those institutions with lower percentages of full-time minority students, more weight was shifted to the income measure above.

The Model Dashboard

Below is the actual "dashboard" of the model. The final weights for each measure are shown.

Measures for Round One Selection of Institutions

Category	Measure	Weighting Value
Performance	First-Year Retention Rate	11.1%
	Three-Year Graduation Rate	11.1%
	Credentials Awarded per 100 FTE Students	11.1%
Change Over Time	Credentials Awarded per 100 FTE Students	33.3%
Equity: Rates for Minorities*	Three-Year Graduation Rate	13.3%
	Credentials Awarded per 100 FTE Students	13.3%
Family Income	Median Family Income of Institution Location	6.7%
	Total (Must Equal 100%)	100.0%

Data and Measures Used to Ensure Adequate Institutional Representation

The following data/metrics were examined to ensure that the selection process did not disproportionately advantage specific types of colleges – e.g., small rural colleges, colleges with technical missions, or colleges with largely full-time student bodies. To test for adequate representation, NCHEMS ranked the colleges using each proposed model and then then placed institutions into quartiles for each of the measures described below.

- **Institution Size**. Total annual unduplicated student headcount. (Source: NCES, IPEDS Enrollment Survey)

- **Percent Part-Time**. The percentage of part-time enrollment in the fall semester. (Source: NCES, IPEDS Enrollment Survey)

- **Percent Non-Traditional Enrollment**. The percentage of students enrolled in the fall semester aged 25 and older. (Source: NCES, IPEDS Enrollment Survey)

- **Percent Minority**. Percentage of students enrolled in the Academic Year that is African-American, Hispanic, or Native American. (Source: NCES, IPEDS Enrollment Survey)

- **Geographic Location**. The options provided in IPEDS are urban, rural, and suburban. (Source: NCES, IPEDS Institutional Characteristics Survey)

- **Low-Income Service Area**. The same metric above was used here to ensure that the model did not over-represent colleges located in wealthy areas. (Sources: NCES, IPEDS Institutional Characteristics Survey, U.S. Census Bureau, 2010 American Community Survey)

- **Vocational/Technical Mission**. Defined by the percentage of credentials and degrees awarded in technical fields. Previous research has shown that "technical" colleges tend to have much higher retention and completion rates because of the nature of the student body (mostly full-time), the terminal nature of many of the awards (i.e. students are less likely to transfer prior to degree completion), and the more direct path to completion (i.e. students are more likely to be enrolled to acquire specific skills and credentials for direct job placement). Adjustments in this category resulted in increased representation of other types of colleges. (Source: NCES, IPEDS Completions Survey)

- **Number of Degree Programs.** The number of 2-digit CIP categories for which the college awards undergraduate credentials. This category was used to ensure representation of colleges that ranged from relatively few programs to a comprehensive array of programs.

In addition, state representation was considered by analyzing the proportion of each state's community colleges represented in the top 150. This was examined to ensure that policies, demographics and other characteristics unique to each state did not have a disproportionately large impact on the inclusion of institutions in the eligible list.

When the proposed model resulted in representation of over 50 percent of institutions in any one quartile on the metrics above, NCHEMS and the DMAP Committee considered whether a potential bias existed in the model and whether to adjust the model to account for that bias. And, when the proposed model resulted in more than half of a state's institutions being represented in the eligible pool, the DMAP Committee considered making an adjustment.

Model Adjustments

Once the final model was created, three adjustments were applied in order to produce a representative set of high-performing institutions with respect to mission and size. First, the top 60 overall performers were selected within each quartile of "percent vocational/technical credentials awarded", generating an initial list of 240 institutions. Second, the top 30 performing institutions were selected within each quartile of "unduplicated annual enrollment." These two steps generated a list of 118 high-performing institutions. A third step was added to ensure that large, minority serving institutions were appropriately represented in the model. Of the remaining colleges (after steps one and two), the 32 overall best performing institutions within the top two quartiles of percent minority and size (unduplicated annual headcount) were selected. In addition, based on demonstrated exceptional performance in the 2015 Prize cycle completion, learning, equity, and labor market outcomes, all 2015 Prize finalists were considered eligible to apply for the 2017 Aspen Prize. Two institutions would not have otherwise qualified through the round 1 eligibility model this year. They were added after running the full model to prevent them from displacing any other institutions.

In the end, the best performing 152 institutions – with respect to the measures and the weights applied above – were colleges that represented the full range of diversity and richness in the sector, from vocational to technical mission, small to large in size, and commitment to high levels of access and success for low-income and minority students. With general agreement among DMAP members, a final adjustment was made to allow no more than half of the institutions in each state to appear in the final list of 152 eligible institutions. In this case, the institutions were ranked by state on the above metrics and the bottom half of the state's colleges were excluded. This adjustment only impacted institutions in Florida.

Characteristics of the 152 Eligible Institutions

The table below displays the characteristics of the final 152 institutions that are eligible for the round two selection process. The final list of 152 institutions is available at www.AspenCCPrize.com.

U.S. Quartile	Size: Annual Headcount	Percent Part-Time	Percent Non-Traditional Age	Percent Minority	Median Family Income of Service Area	Percent Voc Tech Awards	Number of CIP-2 Programs with Credentials	Associates Degrees as % of All Awards
Lowest	19.7%	33.6%	33.6%	29.6%	28.3%	36.2%	23.0%	28.3%
Next Lowest	19.7%	18.4%	30.3%	18.4%	24.3%	15.8%	17.1%	25.7%
Medium	28.3%	22.4%	17.1%	19.1%	29.6%	18.4%	27.6%	23.7%
Highest	32.2%	25.7%	19.1%	32.9%	17.8%	29.6%	32.2%	22.4%

The detailed calculations for each of the measures in the model are included in the appendix below.

Appendix

Measures Used for Selection/Eligibility

Measures	Definitions/Calculations	Sources
First-Year Retention Rate	Percent of fall first-time (full- and Part-time) students returning the following fall semester. The measure combines the most recent three years (2012,2013,2014). Calculation: ((Still enrolled or completed fall 2014,2013,2012) / (First-time fall 2013,2012, 2011))*100	NCES, IPEDS 2012, 2013, and 2014 Enrollment Surveys - Files ef2012d, ef2013d, and ef2014d (All Final Release)
Three-Year Graduation Rate	Percent of fall first-time full-time students earning a certificate or diploma within three years. The measure combines the most recent three years (2011,2012,2013). Calculation:)(Completed by summer of 2013,2012,2011) / (First-time fall 2010,2009,2008))*100	NCES, IPEDS 2011, 2012, and 2013 Graduation Rate Surveys - Files gr2011, gr2012, and gr2013 (All Final Release)
Undergraduate Credentials Awarded per 100 FTE Undergraduate Students	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 (2012,2013,2014). Calculation: ((undergraduate credentials awarded annually in 2013-14, 2012-13, and 2011-12) / (credit hour generated annual undergraduate enrollment 2013-14, 2012-13, 2011-12))*100	NCES, IPEDS Completions and Enrollment Surveys - Files c2014_a, c2013_a, c2012_a, efia2014, efia2013, efia2012 (All Final Release)
Change Over Time: Credentials Awarded per 100 FTE Students	Average annual percent increase in "undergraduate credentials awarded per 100 FTE undergraduate students" from 2009-10 to 2013-14.	NCES, IPEDS Completions and Enrollment Surveys - Files c2010_a, c2011_a, c2012_a, c2013_a, c2014_a and efia2010, efia2011, efia2012, efia2013, efia2014 (All Final Release)
Minority Three-Year Graduation Rate	Same calculation described above for the combination of Blacks, Hispanics, and Native Americans.	NCES, IPEDS 2011, 2012, and 2013 Graduation Rate Surveys - Files gr2011, gr2012, and gr2013 (All Final Release)

Minority Credentials Awarded per 100 FTE Undergraduate Students	Same calculation described above for the combination of Blacks, Hispanics, and Native Americans.	NCES, IPEDS Completions and Enrollment Surveys - Files c2014_a, c2013_a, c2012_a, efia2014, efia2013, efia2012 (All Final Release)
Median Family Income of Location	2010 median family income (CPI-U-RS Adjusted to 2014 Dollars) of the Census 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.	NCES IPEDS Institutional Characteristics Survey; File hd2014 (Final Release). U.S. Census Bureau 2010 American Community Survey (Public Use Microdata Sample). Bureau of Labor Statistics, CPI-U-RS Published Table 1978-2014 http://www.bls.gov/cpi/cpirsai1978-2014.pdf

Index Scores Used in the Model to Normalize the Measures

Measures with Index Scores	Calculation
First-Year Retention Rate	(Institutional Value / U.S. College Average)*100
Three-Year Graduation Rate	(Institutional Value / U.S. College Average)*100
Credentials Awarded per 100 FTE Students	(Institutional Value / U.S. College Average)*100
Minority Three-Year Graduation Rate	(Institutional Value / U.S. College Average)*100
Minority Credentials Awarded per 100 FTE Students	(Institutional Value / U.S. College Average)*100
Median Family Income of Location	(U.S. Median Income / Institution Location Median Income)*100

Measures Used to Gauge Institutional Representation

Measures	Definitions/Calculations	Sources
Carnegie Classification	2010 Basic Carnegie Classification. Included in the model are all institutions in Carnegie Classifications 1-7 and 11-12 (public Title IV 2-year for -3 and 33). See the Table below for detailed reference.	NCES IPEDS Institutional Characteristics Survey - File hd2014 (Final Release)
Size: Annual Unduplicated Headcount	Total unduplicated head count enrollment in 2013-14.	NCES IPEDS Enrollment Survey - File effy2014 (Final Release)
Percent Part-Time	Percentage of students enrolled part-time in fall 2014.	NCES IPEDS Enrollment Survey - File ef2014_a (Final Release)
Percent Non-Traditional Age (25 and Older)	Percentage of undergraduates enrolled in the fall of 2013 who are 25 years of age and older.	NCES IPEDS Enrollment Survey - File ef2013b (Final Release - Reporting Mandatory in Odd Years Only)
Percent Minority	Percentage of undergraduates enrolled in AY 2013-14 who are Black, Hispanic, or Native American.	NCES IPEDS Enrollment Survey - File effy2014 (Final Release)
Location	College is located in a city, suburb of city, town, or rural area.	NCES IPEDS Institutional Characteristics Survey - File hd2014 (Final Release)
Median Family Income of Location	2010 median family income (CPI-U-RS Adjusted to 2014 Dollars) of the Census 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.	NCES IPEDS Institutional Characteristics Survey; File hd2014 (Final Release). U.S. Census Bureau 2010 American Community Survey (Public Use Microdata Sample). Bureau of Labor Statistics, CPI-U-RS Published Table 1978-2014 http://www.bls.gov/cpi/cpirsai1978-2014.pdf
Percent Technical Awards	Percent of undergraduate credentials awarded in 2013-14 in fields **other than** arts and sciences and business. See table below for specific fields.	NCES IPEDS Completions Survey; File c2014_a (Final Release)
Number of CIP-2 Programs with Credentials	Number of CIP-2 categories with undergraduate awards in 2013-14.	NCES IPEDS Completions Survey; File c2014_a (Final Release)

CIP 2010: List By Program Area (2-Digit CIP)

CIP-2	CIP-2 Description	2-Year Degree Groupings
01	AGRICULTURE, AGRICULTURE OPERATIONS, AND RELATED SCIENCES.	Arts and Sciences
03	NATURAL RESOURCES AND CONSERVATION	Technical
04	ARCHITECTURE AND RELATED SERVICES	Technical
05	AREA, ETHNIC, CULTURAL, AND GENDER STUDIES	Arts and Sciences
09	COMMUNICATION, JOURNALISM, AND RELATED PROGRAMS	Service
10	COMMUNICATIONS TECHNOLOGIES/TECHNICIANS AND SUPPORT SERVICES	Technical
11	COMPUTER AND INFORMATION SCIENCES AND SUPPORT SERVICES.	Arts and Sciences
12	PERSONAL AND CULINARY SERVICES	Service
13	EDUCATION	Service
14	ENGINEERING.	Technical
15	ENGINEERING TECHNOLOGIES/TECHNICIANS	Technical
16	FOREIGN LANGUAGES, LITERATURES, AND LINGUISTICS	Arts and Sciences
19	FAMILY AND CONSUMER SCIENCES/HUMAN SCIENCES	Service
22	LEGAL PROFESSIONS AND STUDIES	Service
23	ENGLISH LANGUAGE AND LITERATURE/LETTERS	Arts and Sciences
24	LIBERAL ARTS AND SCIENCES, GENERAL STUDIES AND HUMANITIES	Arts and Sciences
25	LIBRARY SCIENCE	Arts and Sciences
26	BIOLOGICAL AND BIOMEDICAL SCIENCES	Arts and Sciences
27	MATHEMATICS AND STATISTICS	Arts and Sciences
29	MILITARY TECHNOLOGIES	Technical
30	MULTI/INTERDISCIPLINARY STUDIES	Arts and Sciences
31	PARKS, RECREATION, LEISURE, AND FITNESS STUDIES	Service
38	PHILOSOPHY AND RELIGIOUS STUDIES	Arts and Sciences
39	THEOLOGY AND RELIGIOUS VOCATIONS	Arts and Sciences
40	PHYSICAL SCIENCES	Arts and Sciences
41	SCIENCE TECHNOLOGIES/TECHNICIANS	Technical
42	PSYCHOLOGY	Arts and Sciences
43	SECURITY AND PROTECTIVE SERVICES	Service
44	PUBLIC ADMINISTRATION AND SOCIAL SERVICE PROFESSIONS	Service
45	SOCIAL SCIENCES	Arts and Sciences
46	CONSTRUCTION TRADES	Trade
47	MECHANIC AND REPAIR TECHNOLOGIES/TECHNICIANS	Trade
48	PRECISION PRODUCTION	Trade
49	TRANSPORTATION AND MATERIALS MOVING	Trade
50	VISUAL AND PERFORMING ARTS	Arts and Sciences
51	HEALTH PROFESSIONS AND RELATED CLINICAL SCIENCES	Health Sciences
52	BUSINESS, MANAGEMENT, MARKETING, AND RELATED SUPPORT SERVICES	Business
54	HISTORY	Arts and Sciences