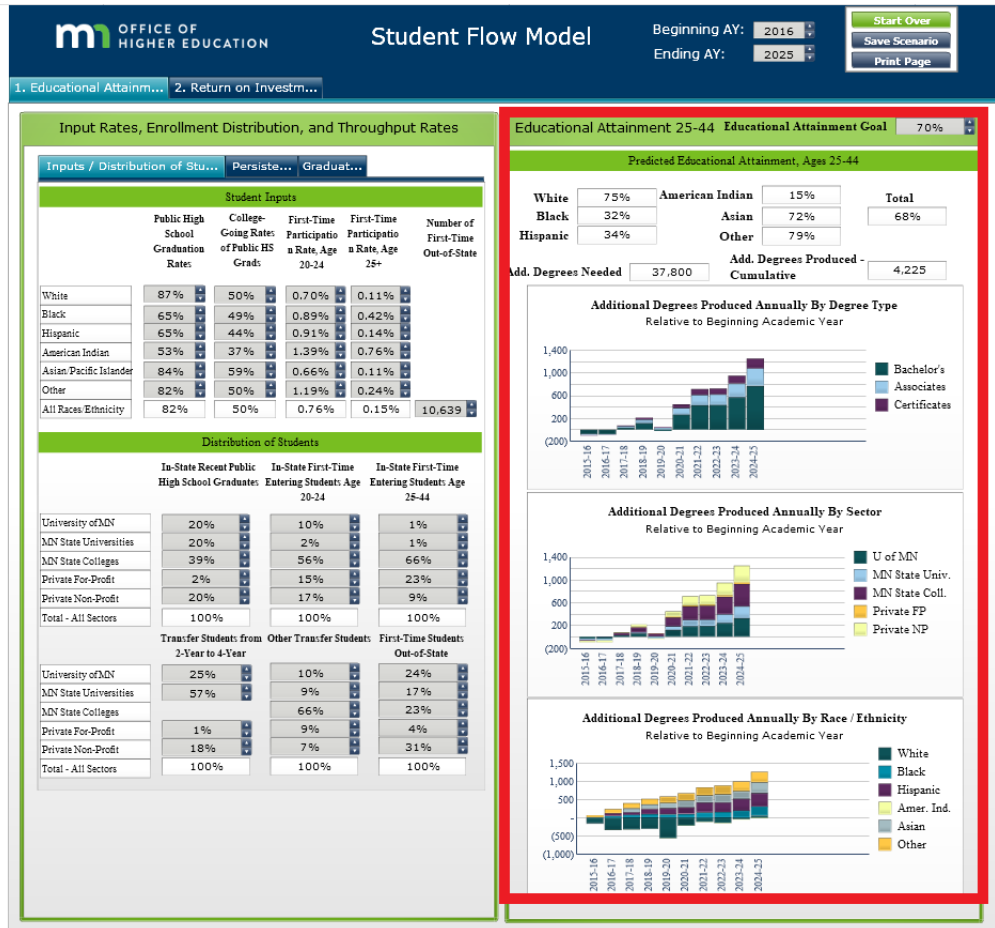# How to Read the NCHEMS Chart

On the right side of the dashboard is displayed the projected educational attainment rates and additional postsecondary credentials awarded as a result of the combination of inputs, retention, and completion rates specified elsewhere in the dashboard. In reading the results, it is important to be aware of several things:

- The cell indicating the additional degrees needed is based on the percentage specified in the educational attainment goal and the ending academic year that is selected.
- Initially (prior to making any changes), projected outcomes are based on changes in the population over time. That is, assuming the most recently available rates of enrollment and graduation, Minnesota can expect to produce some additional credentials between 2016 and 2025. Furthermore, assuming current trends continue, the model projects the educational attainment rate in 2025 of each racial/ethnic group. All of these projections will change as the user makes adjustments in the input, enrollment distribution, retention, and completion rates of population subgroups.
- Each of the three graphs show the number of credentials awarded in each year relative to the number of credentials awarded in the most recent year for which data were available, 2014-15. That year, 71,672 credentials were awarded. These columns will be negative in years in which

the credential production is likely to shrink from the 2014-15 level. Most likely such cases will be due to declines in the population projected, although it is possible for the user to make changes that would create this result, such as if he/she reduces the college-going rate for a population, or redistributes student enrollments to a sector that has lower rates of student success. (For example, assuming the user makes no changes to the initial data, Minnesota can expect total number of credentials awarded in the first year out, which is 2015-16 unless changed by the user, to decline by 102 – 10 certificates, 16 associate's degrees, and 76 bachelor's degrees.)

- The cell indicating the additional credentials produced is the cumulative sum over all the years indicated in each of the graphs separately. In order for Minnesota to reach its educational attainment goal, the number in this cell should equal or exceed the number in the adjacent cell for additional degrees needed.

Model Instructions, Calculations, and Data Sources

1. Select a beginning and end academic year in the upper right corner of the title bar. Set a college attainment goal for these years in the upper right corner of Tab 1. Below the college attainment goal is a cell that indicates how many additional undergraduate certificates, Associate, and Bachelor's degrees are needed to reach the goal between the selected academic years (note: this step is optional).

2. Choose different scenarios for increasing college degree production by moving the levers on the dashboard in Tab 1. There are three sets of measures that enable you to gauge the additional college credentials produced. The first set measures the additional credentials produced as a result of improving high school graduation and college access rates. On tab 2, another set measures additional credentials produced as a result of changes in college persistence rates by type of institution. The third set measures additional credentials produced by changes in college graduation rates by type of institution.

3. Back on the first tab (Inputs / Distribution of Students), assess the impact of redistributing the first-time enrollment patterns of the additional students generated by improving college participation and completion. For instance, in some states, there may be efforts to expand enrollment in the community college system, while limiting enrollment growth in four-year institutions.

OFFICE OF HIGHER EDUCATION

Student Flow Model

Beginning AY: 2016
Ending AY: 2025

Start Over
Save Scenario
Print Page

1. Educational Attainm... | 2. Return on Investm...

Input Rates, Enrollment Distribution, and Throughput Rates

Inputs / Distribution of Stu... | Persiste... | Graduat...

Student Inputs

	Public High School Graduation Rates	College-Going Rates of Public HS Grads	First-Time Participation Rate, Age 20-24	First-Time Participation Rate, Age 25+	Number of First-Time Out-of-State
White	87%	50%	0.70%	0.11%	
Black	65%	49%	0.89%	0.42%	
Hispanic	65%	44%	0.91%	0.14%	
American Indian	53%	37%	1.39%	0.76%	
Asian/Pacific Islander	84%	59%	0.66%	0.11%	
Other	82%	50%	1.19%	0.24%	
All Races/Ethnicity	82%	50%	0.76%	0.15%	10,639

Distribution of Students

	In-State Recent Public High School Graduates	In-State First-Time Entering Students Age 20-24	In-State First-Time Entering Students Age 25-44
University of MN	20%	10%	1%
MN State Universities	20%	2%	1%
MN State Colleges	39%	56%	66%
Private For-Profit	2%	15%	23%
Private Non-Profit	20%	17%	9%
Total - All Sectors	100%	100%	100%

	Transfer Students from 2-Year to 4-Year	Other Transfer Students	First-Time Students Out-of-State
University of MN	25%	10%	24%
MN State Universities	57%	9%	17%
MN State Colleges		66%	23%
Private For-Profit	1%	9%	4%
Private Non-Profit	18%	7%	31%
Total - All Sectors	100%	100%	100%

Educational Attainment 25-44 Educational Attainment Goal 70%

Predicted Educational Attainment, Ages 25-44

				Total
White	75%	American Indian	15%	
Black	32%	Asian	72%	68%
Hispanic	34%	Other	79%	

Add. Degrees Needed 37,800   Add. Degrees Produced - Cumulative 4,225

Additional Degrees Produced Annually By Degree Type
Relative to Beginning Academic Year
Legend: Bachelor's, Associates, Certificates

Additional Degrees Produced Annually By Sector
Relative to Beginning Academic Year
Legend: U of MN, MN State Univ., MN State Coll., Private FP, Private NP

Additional Degrees Produced Annually By Race / Ethnicity
Relative to Beginning Academic Year
Legend: White, Black, Hispanic, Amer. Ind., Asian, Other

4. Once you have modified the dashboard in Tab 1, you can review the returns on investment in Tab 2. The costs to the state are in current $ per full-time equivalent student – assuming state funding per student would be maintained through the selected academic years. The returns reflect additional revenues to individuals, the state, and the federal government. Data sources are described below.

OFFICE OF HIGHER EDUCATION

Student Flow Model

Beginning AY: 2016
Ending AY: 2025

Start Over
Save Scenario
Print Page

1. Educational Attainm... 2. Return on Investm... ← 4

Input Rates, Enrollment Distribution, and Throughput Rates

Inputs / Distribution of Stu... | Persiste... | Graduat...

Student Inputs

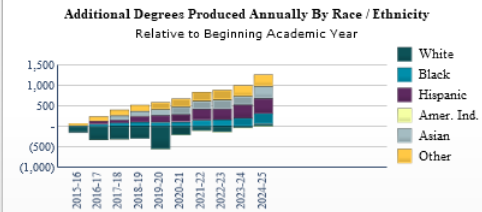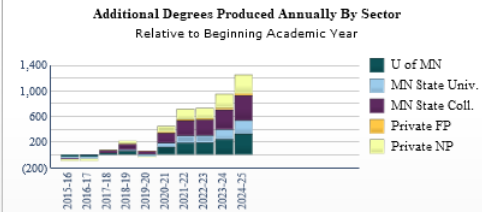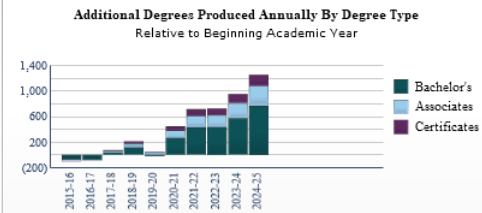|	Public High School Graduation Rates	College-Going Rates of Public HS Grads	First-Time Participation Rate, Age 20-24	First-Time Participation Rate, Age 25+	Number of First-Time Out-of-State
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Educational Attainment Goal 70%

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- MN State Univ.
- MN State Coll.
- Private FP
- Private NP

Additional Degrees Produced Annually By Race / Ethnicity
Relative to Beginning Academic Year
- White
- Black
- Hispanic
- Amer. Ind.
- Asian
- Other

General Model Assumptions

(1) The model assumes linear progress toward ending academic year goals/targets - incremental improvements rather than all at once.

(2) Included in the model are projections of 9th grade enrollments and young adults age 20 to 24 and 25 to 44 to the year 2029. This leads to declines in degree production (at current levels of performance) in states that have projected declines in population - and vise-versa. (Sources: WICHE Knocking at the College Door, U.S. Census Bureau, Minnesota State Demographic Center)

(3) The projected personal earning gains associated with increases in educational attainment assume the same level of gains current residents experience.

(4) All numbers expressed in currency are in 2016 dollars

Measures	Calculations	Sources
Closing the Gap Measures		
College Attainment of 25 to 44 Year Olds	Percent of 25 to 44 Year olds with at least a postsecondary certificate.	U.S. Census Bureau, American Community Survey three-year estimates (2005-07 through 2014-16). Minnesota State Demographic Center (age 25-44 postsecondary certificate attainment estimates by race/ethnicity, 2008-12).
9th Grade Enrollment and Projections	Number of 9th grade enrollments (actual through 2013-14, projected 2014-15+)	Western Interstate Commission for Higher Education, Knocking at the College Door: Projections of High School Graduates, 2016.
High School Graduation Rate	High school graduates as a percent of 9th graders four years earlier	MN Department of Education
In-State College-Going Rate Directly Out of High School	Fall first-time students directly out of high school (within the past year) as a percent of recent high school graduates (the previous spring)	Minnesota Statewide Longitudinal Education Data System
Participation Rate of Population Age 20-24 and 25-44	Fall first-time students not directly out of high school age 20-24 or 25-44 as a percent of total population age 20-24 or 25-44	MN Office of Higher Education. MN State Demographic Center. U.S. Census Bureau.
Number of First-Time from Out-of-State	Number of first-time undergraduates from out-of-state	MN Office of Higher Education
Persistence to Second Year Fall Term	Percent of fall 2009 cohort of first-time undergraduates still enrolled in fall 2010.	MN Office of Higher Education
Graduation Rate (200%)	Percent of fall 2009 cohort of	MN Office of Higher Education

Measures	Calculations	Sources
	first-time undergraduates completing an undergraduate certificate, Associate, or Bachelor's program within 200% of normal program time.	
Return on Investment Measures	**Return on Investment Measures**	
Personal Income	Annual wage earnings by level of education (difference in wages from high school diploma and less, and certificates, associates and bachelor's degrees) multiplied by the additional number of college degree-holders generated in the model	U.S. Census Bureau, 2014 American Community Survey (Public Use Microdata Sample)
State Costs for Postsecondary Education	State and local revenues per full-time equivalent student by sector (University of Minnesota, Minnesota State Universities, Minnesota State Colleges, Private For-Profit, and Private Non-Profit).	NCES, IPEDS 2014-15 Finance and Enrollment Surveys
State Income Tax Revenues	Average state income tax liability (after credits) per resident by level of education attained - difference between those with college degrees and those without (applied to the additional numbers of college degree-holders generated by the model).	2013-2015 Current Population Surveys - Public Use Microdata Samples (downloaded from IPUMS)
State Sales Tax Revenues	(Total general sales tax generated as a percent of total personal income) * the additional income generated in the model	U.S. Census Bureau, State Government Tax Collections Summary Report: 2014
State Property Tax Revenues	Average property income tax liability (after credits) per resident by level of education attained - difference between those with college degrees and those without (applied to the additional numbers of college degree-holders generated by the model).	2013-2015 Current Population Surveys - Public Use Microdata Samples (downloaded from IPUMS)
State Medicaid Savings	Percent of 25 to 64 year olds covered by Medicaid (and the	2012-2015 Current Population Surveys - Public Use Microdata

Measures	Calculations	Sources
	mean person market value of those covered) by level of education attained - difference between those with college degrees and those without (applied to the additional numbers of college degree-holders generated by the model).	Samples (downloaded from IPUMS)
Corrections Savings	((Probability of incarceration among college-degree holders minus probability of incarceration among adults with high school diplomas and less) * additional college degree-holders generated by the model) *state prison expenditures per prisoner. Note: The U.S. educational attainment rates for prisoners was applied to all states.	National Association of State Budget Officers, State Expenditure Report Fiscal Year 2009.Bureau of Justice Statistics, Prisoners in 2009.
Federal Income Tax Revenues	Average federal income tax liability (after credits) per resident by level of education attained - difference between those with college degrees and those without (applied to the additional numbers of college degree-holders generated by the model).	2013-2015 Current Population Surveys - Public Use Microdata Samples (downloaded from IPUMS)
Federal Medicare Savings	Percent of 25 to 64 year olds covered by Medicare (and the mean person market value of those covered) by level of education attained - difference between those with college degrees and those without (applied to the additional numbers of college degree-holders generated by the model).	2012-2015 Current Population Surveys - Public Use Microdata Samples (downloaded from IPUMS)