

HIGHER EDUCATION SUMMARY

INVENTORY AND BENEFIT-COST ANALYSIS



RESULTS FIRST

DECEMBER 2018

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Acknowledgements

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The Minnesota Legislature instructed Minnesota Management & Budget to conduct benefit-cost analyses for state investments, using the Pew-MacArthur Results First framework. This framework allows Minnesota to estimate the cost-effectiveness of programs using the best national evidence. Under this initiative, MMB does not evaluate the impact of programs as currently implemented in Minnesota. Rather, MMB estimates the expected benefits if outcomes resemble those found in previous evaluations. Insights generated from the work help inform state and local decision-makers on evidence-based programs.

Results First Higher Education – Executive Summary

Through the Minnesota Results First Initiative, Minnesota Management and Budget (MMB) uses high-quality evidence to estimate the extent to which publicly funded programs generate positive, cost-effective outcomes for Minnesotans. We collaborate with state, local, and national entities to identify and estimate the benefits and costs of a range of public programs that support the well-being of Minnesotans.

This report examines programs and practices that improve higher education outcomes. Minnesota’s public colleges and universities and the Minnesota Office of Higher Education offer a range of programs across the state with the goal of increasing student enrollment, persistence, and graduation for certificate, associate, and bachelor’s degrees (two and four-year degrees). By improving enrollment, persistence, and graduation outcomes of Minnesota students, these investments have the potential to increase labor market earnings for participants. Improved earnings for participants also generate benefits to state, local, and federal taxpayers.

In 2016, more than 250,000 students enrolled as undergraduates in higher education in Minnesota (Minnesota Office of Higher Education, 2017). Nearly three-quarters of student enrollment is at Minnesota’s public colleges and universities either through the Minnesota State Colleges and Universities system (59% of total enrollment) or the University of Minnesota system (18% of total enrollment). Educational costs between 2-year institutions (those that offer associate degrees as well as other certificates or diplomas) and 4-year institutions (those that offer bachelor’s degrees) vary widely across Minnesota. Additionally, who bears the costs of higher education varies by the type of institution. On average, taxpayers pay 33 percent of a bachelor’s degree at 4-year institutions and 70 percent of an associate degree at 2-year institutions, including direct state appropriations of \$1.5 billion in fiscal year 2017.

For this analysis, MMB worked with the Office of Higher Education, Minnesota State Colleges and Universities, and the University of Minnesota to identify existing, publicly funded higher education programs. We identified programs offered in Minnesota and reviewed the evidence of effectiveness for each program. We then rated each program as Proven Effective, Promising, No Effect, or Theory Based.

The resulting inventory contains 61 programs and practices, many of which are available across the state while others are unique services created as campuses explore new ways to support students.

- **5** programs are **Proven Effective** (multiple qualifying studies show favorable impact)
- **5** programs are **Promising** (one qualifying study shows favorable impact)
- **1** program is **No Effect** (multiple qualifying studies show no impact)
- **50** programs are **Theory Based** (qualifying evidence is not currently available)

Of the programs and practices offered in Minnesota, practices identified in the inventory as “evidence-based” are widely available across the state – either on a statewide basis administered through the Office of Higher Education or available at nearly all campuses. Nearly half of the programs are designed to specifically reach traditionally underrepresented students such as students of color, American Indians, first-generation students, and low-income students.

For the benefit-cost analysis, MMB uses a statistical model to estimate benefits from improved labor market earnings when people enroll, persist, and graduate from associate and bachelor’s degree programs. We do not

evaluate the impact of programs as currently implemented in Minnesota. Rather, MMB estimates the benefits Minnesota can expect if the outcomes resemble those found in previous high-quality evaluations.

This reliance on high-quality research means that MMB is currently able to examine three services offered as part of Minnesota’s higher education system. Each produce benefits, most of which accrue to participants through future labor market earnings.

Estimated benefits per dollar invested range from \$5.10 for first-year Student Success courses at 2-year institutions to \$0.40 for Intrusive Advising with Case Management.

Figure 1: Comparison of benefit-cost ratios for higher education programs

Program name	Per participant benefit minus cost	Benefit-cost ratio (A+B)	State and local taxpayer ratio (A)	Other Minnesota societal ratio (B)
First-Year Experience Courses/Student Success Courses at 2-year institutions	\$458	\$5.10	\$0.00	\$5.10
Need-based grants	\$7,247	\$4.10	\$0.20	\$3.90
Intrusive Advising with Case Management	(\$958)	\$0.40	\$0.00	\$0.40

Per participant benefit minus cost is the difference between the present value of cash inflows (anticipated benefits) from a given service and the present value of cash outflows (costs).

Benefit-cost ratio (A+B) is the net present value of anticipated benefits to state residents for every dollar invested in the program.

State and local taxpayer ratio (A) accrues primarily from increased tax revenues from labor earnings.

Other Minnesota societal ratio (B) accumulates to society through increased labor market earnings.

Benefit-cost analysis is a valuable tool for informing decisions about how to use scarce public resources, but cost-effectiveness is only one factor to consider when evaluating higher education investments. Equity, innovation, and workforce demands are other key factors.

1. Results First higher education analysis

Minnesota's Results First Initiative implements a framework based on research synthesis and benefit-cost modeling provided by the [Pew Charitable Trusts and MacArthur Foundation](#). The approach enables us to identify opportunities for investments that generate positive outcomes for citizens and achieve long-term savings. Minnesota is one of a growing number of states that are customizing this approach to their state-specific context and using its results to inform policy and budget decisions.

Figure 2: A framework for evidence-based decision-making

The nationally recognized Results First Initiative framework uses a three-step process:

1. **Use high-quality research** from across the nation to identify which programs work
2. **Use this research and state-specific data** to project the effect of implementing these programs
3. **Compare a program's costs and projected benefits** to identify the best return on investment of public dollars

The Results First framework has two major products: the program inventory and the benefit-cost analysis. The higher education inventory identifies the degree to which there is evidence of effectiveness for each program, and if there is evidence, how the program affects three main outcomes: increased college enrollment, persistence, and graduation. We developed an inventory of 61 higher education programs and conducted in-depth benefit-cost analyses on three programs for which there is sufficient research and fiscal data available (more detail and methodology in Appendix A and B). The benefit-cost analyses estimate the monetary value of improving enrollment, persistence, or graduation. Changes in these outcomes affect participants' future earnings which in turn generate taxpayer benefits through increased tax revenue. The benefit-cost ratio compares per-participant benefits to the per-participant cost of the program.

Section 3 presents findings from the inventory and benefit-cost analysis. To frame that analysis, the report outlines enrollment and graduation trends in the state (Section 2. A.), acknowledges gaps in educational attainment (Section 2. B.), highlights trends at Minnesota State and University of Minnesota system schools (Section 2. C.), and describes the structure and funding of public institutions in Minnesota (Section 2. D.).

A. Assumptions and Scope

This analysis focuses on programs and practices with a stated goal of improving student enrollment, persistence, or graduation from associate and bachelor's degree programs (2- and 4-year institutions). We include programs in Minnesota funded at least partially by the State. There are three possible scenarios: the Office of Higher Education (OHE) administers the program, the State of Minnesota funds the program through the higher education institution, or OHE awards a grant to the organization administering the program.

We partnered with the Minnesota Office of Higher Education, Minnesota State, and the University of Minnesota for this analysis. The inventory does not include programs primarily designed and funded by the K-12 education system or programs administered by private institutions. Publically funded programs described in the Results First inventory and benefit-cost analysis only apply to students at private institutions to the extent they participate in programs funded through OHE (e.g., Minnesota State Grant).

MMB did not directly evaluate program outcomes or effectiveness of programs delivered in Minnesota. Rather, MMB estimated the benefits the state can expect if programs have the same impact found in high-quality evaluations previously conducted in Minnesota or elsewhere in the country. Confirming that Minnesota higher education programs actually achieve these outcomes would require conducting separate impact evaluations. To achieve the estimated benefit reported in the profile pages of this report, evidence-based programs in Minnesota must be implemented effectively.

We collected program data for the inventory from the Office of Higher Education (OHE), the Minnesota State system, and the University of Minnesota system. We also relied on aggregate state data from the Integrated Postsecondary Education Data System (IPEDS), the Minnesota Statewide Longitudinal Education Data System (SLEDS), and OHE for Minnesota enrollment, graduation, and attainment data in this report. Where noted, this data may include private and certificate-granting institutions.

The inventory and benefit-cost analysis focus on programs that increase enrollment in undergraduate programs, increase persistence rates, or increase attainment of undergraduate degrees, including certificates (subbaccalaureate certificates less than 120 semester credit hours), associate degrees (typically two years of college-level work) and bachelor's degrees (typically four years of college-level work).

2. Higher Education in Minnesota

A. Overview

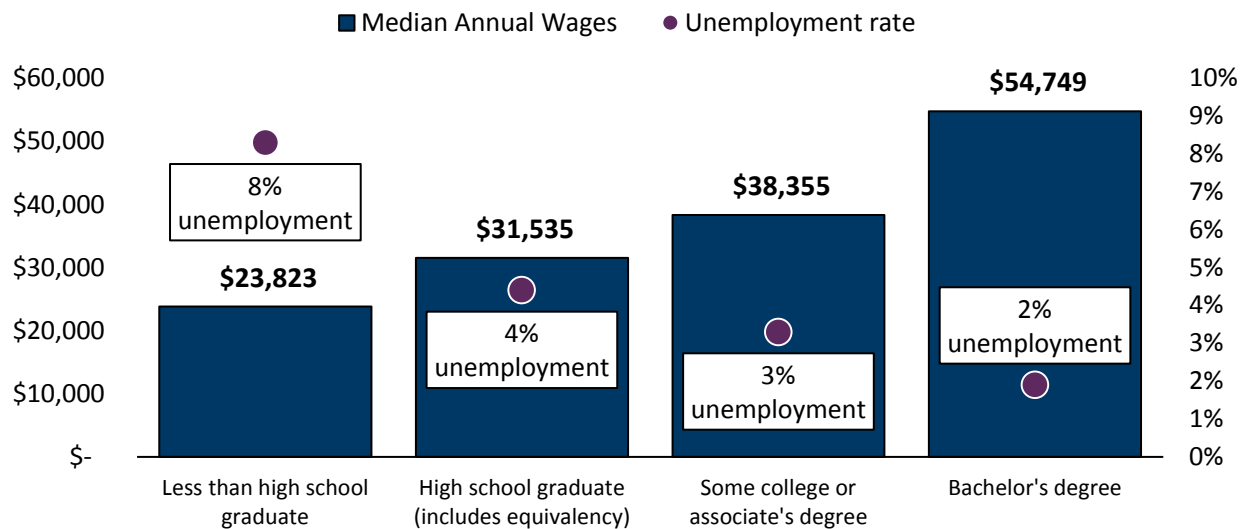
Higher education is an important stage in the education to workforce pipeline, not only providing value to the individuals who continue into postsecondary education but also contributing to a more informed and productive society. Minnesota has a long tradition of supporting accessible higher education with more than 50 public college and university campuses across the state. Minnesota has one of the highest rates of degree attainment (Lumina Foundation, 2017), but there is an educational attainment gap across racial and ethnic groups. Before reviewing higher education trends in Minnesota, it is important to understand the relationship between a postsecondary degree and overall earnings and unemployment.

Value of higher education

College participation leads to increased earnings (Heckman, Humphries, & Veramendi, 2016) and higher rates of employment. Data suggests that Minnesotans experience higher median annual wages, and are more likely to be employed based on higher levels of educational attainment (Djurovich & Fergus, 2017; U.S. Census Bureau, 2017).¹ As Figure 3 shows, there are economic benefits of an undergraduate degree.

¹ 2016 American Community Survey 1-year estimates

Figure 3: Median annual wages and unemployment rate, by educational attainment (2016)



Source: U.S. Census Bureau, 2016 American Community Survey 1-Year Estimates

Note: Minnesota population age 25 to 64 years. Tables B20004 and S2301. Both tables group “Some College” and “Associates Degree” together. Table S2301 groups Bachelor’s degree and Graduate or professional degree as one category; “Bachelor’s degree or higher” for unemployment rate.

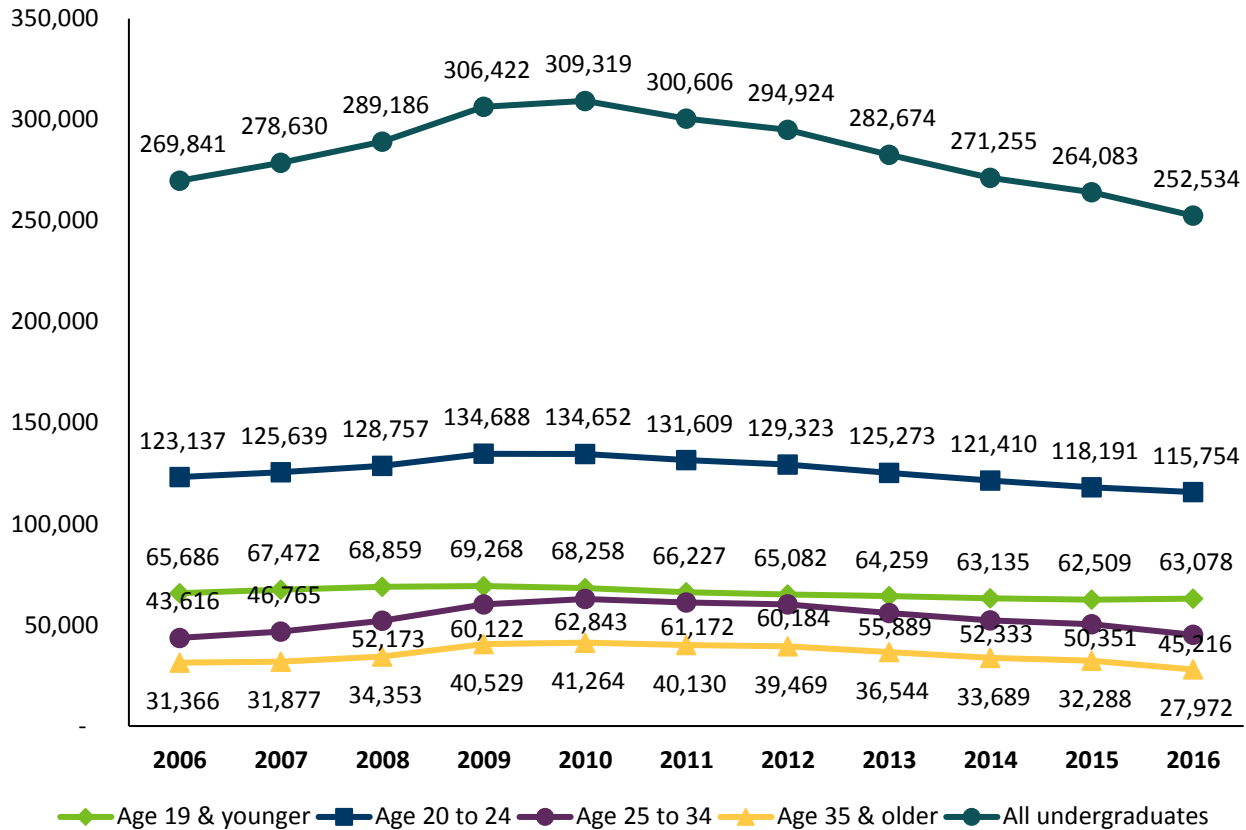
Minnesotans with at least some college, or an associate degree or bachelor’s degree earn \$6,800-\$23,200 more than Minnesotans with only high school diplomas (includes equivalency) (U.S. Census Bureau, 2017). The unemployment rate also decreases with higher education attainment. Minnesotans with some college or an associate degree have a 3% unemployment rate compared to 4% for Minnesotans who only graduated high school (U.S. Census Bureau, 2017). Minnesotans with a bachelor’s degree or higher have an unemployment rate of 2% (U.S. Census Bureau, 2017).

Undergraduate enrollment

During the last decade, student enrollment in higher education has fluctuated. It increased during the financial recession in 2008 (Brown & Hoxby, 2014) and has decreased as the economy rebounded. As Figure 4 shows, Minnesota undergraduate enrollment peaked in 2010 with 309,319 fall enrollments, but has since declined (Minnesota Office of Higher Education, 2017b; Minnesota State Demographic Center, 2017).²

² Minnesota’s public and private postsecondary education institutions report enrollment data during the fall term to the Minnesota Office of Higher Education. Undergraduate enrollment includes part time and full time enrollment, but omits high school students enrolled in college through dual credit programs. Program type could include associate or bachelor degrees. Excludes two online-only institutions: Capella University and Walden University.

Figure 4: Minnesota undergraduate enrollment, by age group (2006 - 2016)



Source: Minnesota Office of Higher Education, “Student Enrollment Data”

Note: Enrollment includes private and public institutions, part time and full time students, resident and non-resident. All undergraduates are the sum of each age group, including those who did not report age.

The enrollment declines in past years mark the receding tide of students’ continuing education during the recession (Friedrich, 2013). Similar to national trends, the biggest enrollment increases during the recession were students age 25 and 40, often enrolling to retrain or enter a new job market (Friedrich, 2013, 2015).

While short-term fluctuations occurred as a result of the 2008 economic recession, the long-term enrollment trend remains steady. Between 2001 and 2016, there was only a 3% increase in undergraduate enrollment (Minnesota Office of Higher Education, 2017b). In fall 2016, 252,534 undergraduate students, both resident and nonresident, were enrolled part time or full time in public and private Minnesota institutions (Minnesota Office of Higher Education, 2017b).³ These students are mostly young, white, and live in Minnesota.

³ Excludes high school students also enrolled through dual credit programs and two online-only institutions: Capella University and Walden University.

Who are Minnesota undergraduates?

- 71% are age **24 or younger**
- 77% are **Minnesota residents**
 - 69% are **White**
- 25% are **Students of Color or American Indian**
 - 55% are **Women**

Source: Minnesota Office of Higher Education (2016)

Where are Minnesota undergraduates?

- 39% are at **state colleges**
- 20% are at **state universities**
- 18% are at **U of M schools**
- 23% are at **private colleges, universities, or career schools**

Source: Minnesota Office of Higher Education (2016)

Additional enrollment statistics

- Enrollment in **dual credit programs** (which allow high school students to earn high school and college credit for successfully completing courses) was at **a record high** in 2016 (43,596 high school students)
- **New entering students** (first-time students that have not enrolled previously in a postsecondary institution) were at **a fifteen-year low** in 2016 (44,026)

Source: Minnesota Office of Higher Education (2016)

Completing college

Minnesota institutions awarded over 102,000 academic degrees or certificates in 2014-15 (National Center for Education Statistics, 2017). Since 2004-05, Minnesota has seen a thirty percent increase in the number of degrees awarded, at all higher education levels (from certificates to doctoral degrees) (Djurovich & Fergus, 2017).

Despite the increases in degrees and certificates awarded, not all students who enroll complete their degree. There are multiple factors at different stages in education that influence student success. A student's high school experience can influence undergraduate student success: for example, receiving adequate academic preparation and study skills, or building a support network of mentors, role models, and advisors (Fishman Dovey, Ludgate, & Tutak, 2017). Undergraduate enrollment in remedial or developmental coursework, nonlinear postsecondary pathways, and increasing net price of college for students are just a few factors that can delay graduation.

Terms and Definitions

Higher education institution: a credential granting institution which offers schooling beyond a high school diploma. This excludes seminaries and other religious institutions, schools licensed by state agencies other than the Office of Higher Education, and tuition free or nearly tuition free educational courses.

Bachelor's degree: An award (baccalaureate) that normally requires 120 or more credit hours of college-level work.

Associate degree: An award that normally requires at least 60 credit hours but less than 120 credit hours of college-level work.

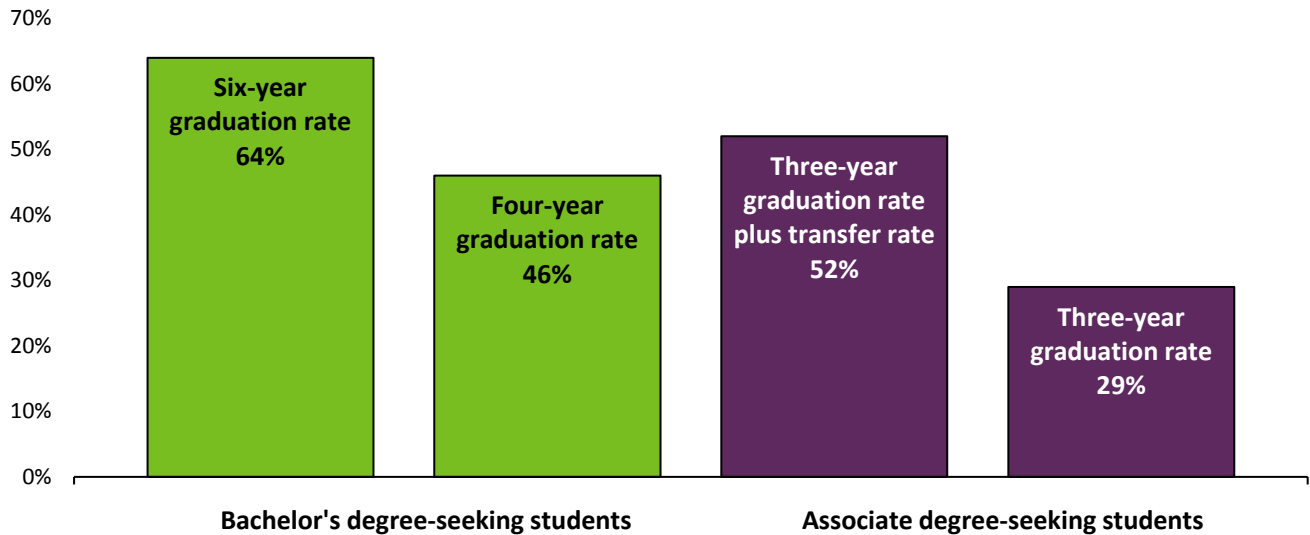
Certificate: Programs of study less than 60 semester credits; often includes diplomas for reporting purposes.

Graduation rate is a measurement of degree completion relative to when students initially enrolled in their program. Graduation rates reported in Figure 5 reflect first time, full-time degree-seeking undergraduates.

Graduation rate plus transfer rate is a measurement of degree completion or transfer to another higher education institution. The three-year graduation rate plus transfer rate is an appropriate measure of degree attainment for associate degree-seeking students since many use the Minnesota Transfer Curriculum to transfer to an institution that awards bachelor's degrees.

Educational attainment refers to the highest level of education an individual has completed at the time of data collection. The U.S. Census Bureau annually collects information on educational attainment for individuals age 18 and older via the American Community Survey. However, the Census Bureau does not collect data on certificates or diplomas.

Figure 5: Minnesota graduation rates for undergraduate degrees (2016)



Source: Minnesota Office of Higher Education, 2017a

Note: Includes public and private institutions.

In Minnesota, the four-year graduation rate for bachelor’s degrees was 46 percent for students who started in 2008. The six-year graduation rate was 63 percent for students who started in 2008.^{4,5} The three-year graduation rate plus transfer rate for associate degrees was 50 percent for those who started in 2011, and completed a degree or transferred to another school by 2014 (National Center for Education Statistics, 2017).⁶ The Minnesota Transfer Curriculum, offered at state colleges, is designed to help students transfer to institutions which award bachelor’s degrees; therefore, the degree rate plus transfer rate is a better measure for associate degree-seeking students (Djurovich & Fergus, 2017).

Level of educational attainment

The level of educational attainment is a population statistic which refers to the highest level of education completed, regardless of the timing of degree completion. Minnesota has one of the most educated adult populations in the nation. In 2016, Minnesota ranked third with 54 percent of the adult population between 25

54 percent of Minnesotans aged 25 to 64 have an associate degree or higher, which is the third highest rate in the nation.

Source: The Lumina Foundation (U.S. Census Bureau data)

⁴ Data collected from bachelor’s degree granting institutions includes Minnesota State Universities, University of Minnesota, and private colleges and universities.

⁵ Graduation rates vary widely between individual institutions. Minnesota Office of Higher Education reports graduation rates by institution name at this site: <http://www.ohe.state.mn.us/dPg.cfm?pageID=2086>. The graduation rate is a measurement of degree completion relative to when students initially enrolled in their program. The U.S. Department of Education estimates graduation rates by tracking a cohort of students for four, five, and six years if they enrolled in a bachelor’s degree program, or for three years if they enrolled in an associate degree program.⁵

⁶ Data collected from two-year institutions includes state colleges and private two-year colleges. Private two-year colleges include only six institutions and do not report transfer-out data.

and 64 having an associate degree or higher (Lumina Foundation, 2017).^{7,8} The national average is 46 percent (Lumina Foundation, 2017).

While Minnesota on average has high enrollment rates, an educated adult population, and many degrees awarded each year, there are disparities by race and ethnicity. Disparities exist at early indicators during infancy and early childhood all the way to higher education attainment and income levels. The following section highlights disparities in graduation rates and in the level of educational attainment.

B. Education attainment gaps for students of color and American Indians

There are multiple factors at earlier life stages that influence an individual's path to higher education and the workforce. Sometimes referred to as an education pipeline or a cradle to career pathway, each stage includes key indicators that measure a specific goal needed to continue progress toward higher education and a career. Sometimes, when the indicators are broken down by race and ethnicity categories, there are gaps between white students and students of color and American Indians. These gaps from birth through young adulthood can accumulate and affect opportunities—including access to higher education—and later outcomes.

Experiences early in an individual's life influence progress at the next stage. The accumulation of community and parental factors, childhood and adolescent experiences, and different types of learning result in an individual's college and career readiness. Many state definitions of "college and career readiness" include concrete knowledge, skills, and dispositions that students must demonstrate mastery of to be prepared for postsecondary success: academic knowledge, critical thinking/problem solving, social and emotional skills/communication, grit/resilience/perseverance, and community involvement (Mishkind, 2014).

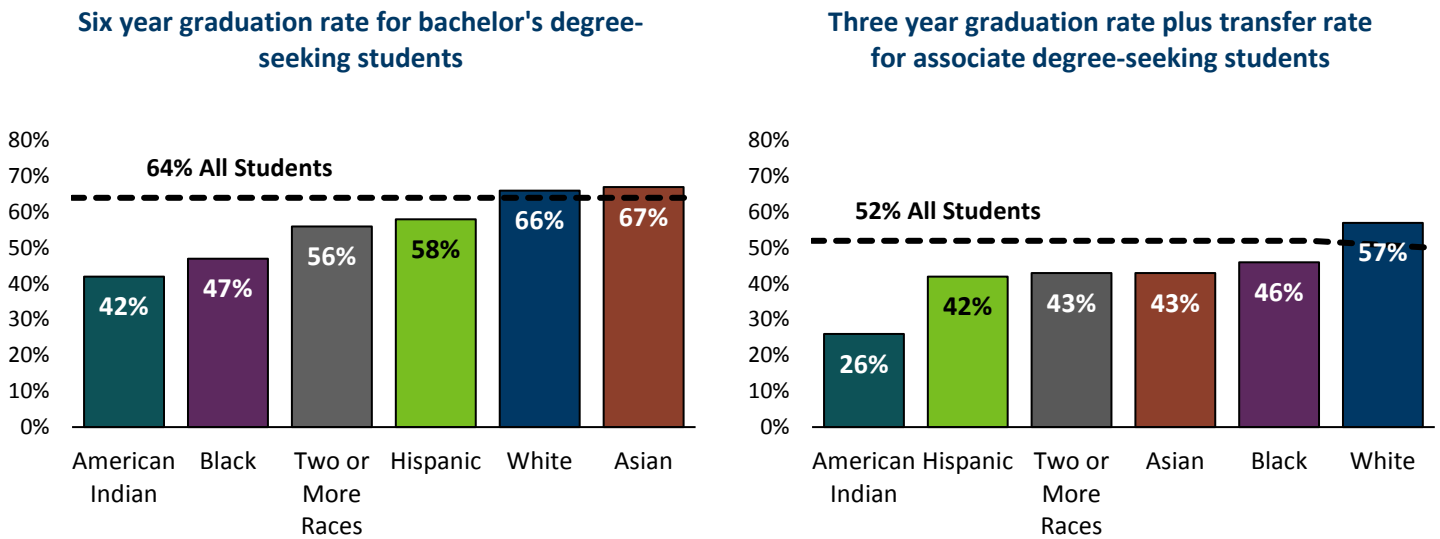
Unfortunately, in Minnesota there are differences in Minnesota students' college readiness between race/ethnicity, socio-economic status, and geographic location (Lewin, Sheff, & Sorenson, 2015). These gaps manifest from inequalities at earlier life stages in areas such as K-12 instructional offerings, quality of teachers, segregation of students by classroom and school, and inadequate support from guidance counselors (Lewin, Sheff, & Sorenson, 2015; Ross et al., 2012; U.S. Department of Education, 2001).

The Office of Higher Education (2017b) finds that students of color and American Indian students 1) graduate from high school at lower rates than white students; 2) enroll in college at a rate lower than white high school graduates; 3) have a high concentration at two-year institutions; 4) enroll in developmental education at higher rates; and 5) graduate from college in lower rates. For example, when the data from key college outcome indicators are disaggregated by race and ethnicity, there are clear differences between students of color, American Indian students, and white students as shown in Figure 6.

⁷ The Lumina Foundation uses American Community Survey 1-year estimates to create the [Stronger Nation Report](#), which ranks states and metro areas.

⁸ Massachusetts ranks first (55.2%) and Colorado second (54.7%).

Figure 6: Minnesota graduation rates for undergraduate degrees, by race (2016)

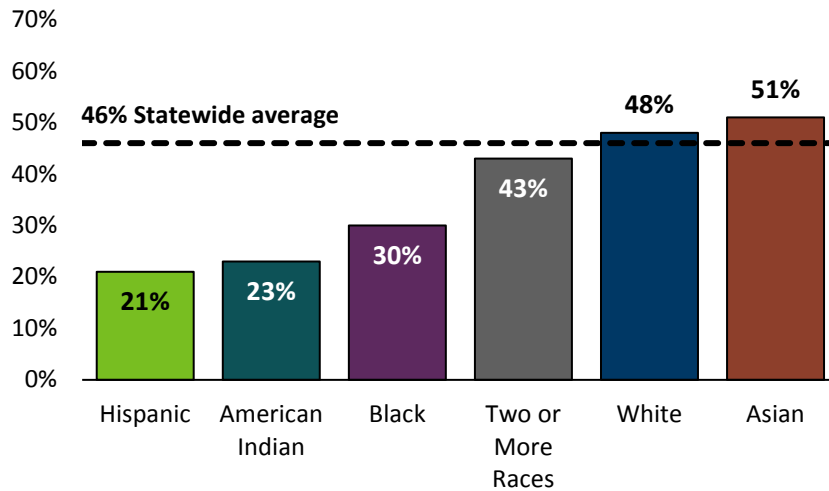


Source: Minnesota Office of Higher Education, 2017a
Note: Includes public and private institutions.

Source: Minnesota Office of Higher Education, 2017a
Note: Includes public and private institutions

Figure 7 shows the proportion of individuals of color and American Indians who have an associate degree or higher.⁹ Asian, White, and two or more race populations are more educated than American Indian, Black, or Hispanic populations. White and Asian students are more than two times as likely to have obtained at least an associate degree as compared to students identifying as Hispanic or American Indian.

Figure 7: Minnesotans age 25 and older with an associate degree or higher, by race/ethnicity (2016)



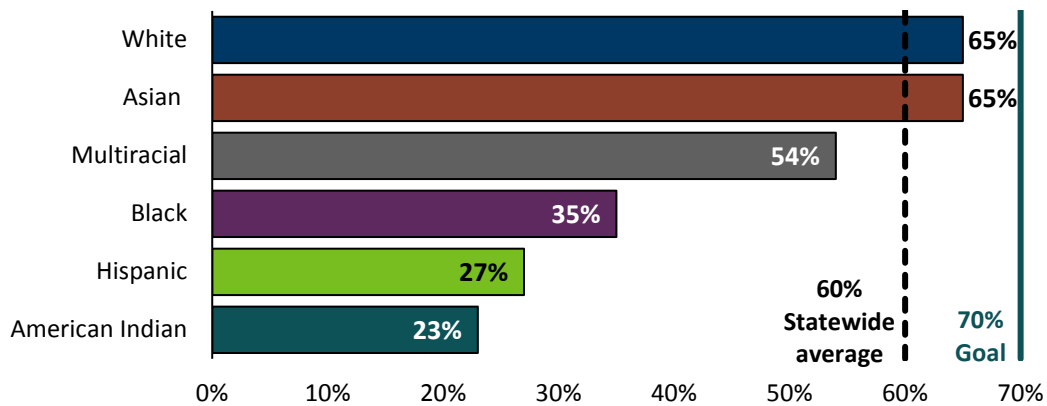
Source: American Community Survey 2016 1-year estimates. Tables B15002 (B,C,D,G,H,I).

⁹ Education attainment is the highest level of education. It does not consider the time taken to obtain the degree, or where the individual obtained the degree.

Educational Attainment Goal 2025

Communities of color are growing in Minnesota. United States Census Bureau data and Minnesota State Demographic Center projections expect the percentage of Minnesotans of color to almost double from 2005 to 2035 (14% to 35%) (Fergus, Williams-Wyche, Brower, & Egbert, 2016). If the educational disparities shown above (Figures 6 and 7) persist, there will be significant gaps in graduation, attainment, and income among students of color. Recognizing this trend in 2015, the Minnesota Legislature enacted a state postsecondary educational attainment goal that 70 percent of adults age 25 to 44 have attained a certificate or degree by 2025.¹⁰ In order to meet this goal, Minnesota needs an estimated 143,900 additional individuals age 25 to 44 to complete their first educational credential (Office of Higher Education, 2017b).¹¹

Figure 8: Minnesotans age 25-44, with a certificate or higher, by race/ethnicity (2010-2014)



Source: Minnesota Office of Higher Education, *Educating for the Future 2016 Update and Policy Guide*, 2017.

The Office of Higher Education and the state demographer's office track the progress towards this goal for all Minnesotans, as well as estimates by race and ethnicity. In a recent report (2016), OHE states the increases needed for each race group to meet the 70 percent goal by 2025, as well as two levers that will move Minnesota closer toward this goal: increase completion rates of students who dropped out of college, and increase completion rates of currently enrolled students within the state's higher education institutions. The latter may be the most direct and effective lever to meet the 70 percent goal by 2025 and to reduce educational attainment gaps for communities of color (Williams-Wyche, Fergus, & Djurovich, 2017).

Adding or increasing the use of evidence-based programs shown to increase completion rates is a tool which policymakers can use to increase completion rates of currently enrolled students. Many strategic decisions occur at the institutional level, which can be public or private.

¹⁰ Minnesota Statutes 2017, section 135A.012. Higher Education Attainment Goal

¹¹ Assuming current rates of mortality, migration, and postsecondary completion, this number will grow by 2025.

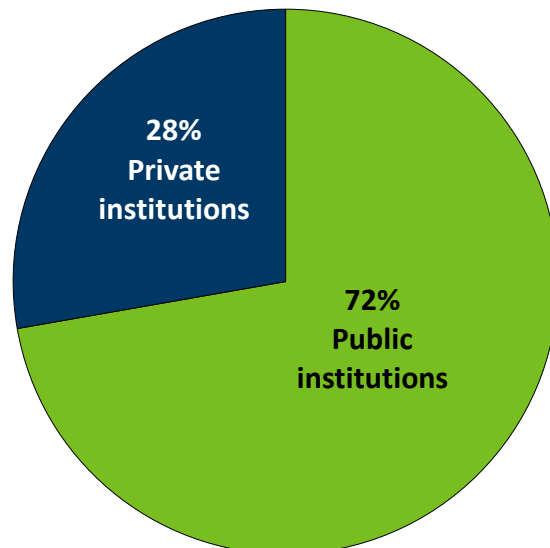
C. Public institutions

There are almost two hundred public and private degree-granting postsecondary institutions in Minnesota offering certificate, associate, undergraduate, doctorate, or professional degrees.¹² This section focuses on public higher education institutions offering undergraduate degrees: state colleges and universities, University of Minnesota campuses, and public tribal colleges (Minnesota Office of Higher Education, 2017b). These public institutions receive state funding for operational support.

Although enrollment at private institutions makes up a quarter of the undergraduate market share, the scope of this analysis does not include them.¹³ Programs described in the Results First inventory and benefit-cost analysis only apply to students at private institutions to the extent they participate in programs funded through OHE (e.g., Minnesota State Grant).

Nearly three-quarters of undergraduate enrollment in Minnesota is at public institutions. There are two large postsecondary systems in the state: Minnesota State Colleges and Universities (Minnesota State), and the University of Minnesota.

Figure 9: Undergraduate enrollment at public and private institutions, 268,181 students (fall 2016)



Source: Minnesota Office of Higher Education, 2017

Note: Enrollment data comes from 119 public and private institutions offering undergraduate degrees.

¹² Degree-granting higher education institutions include schooling beyond a high school diploma.

¹³ There are seventy-six private higher education institutions in Minnesota offering certificate, associate, and bachelor's degrees (Minnesota Office of Higher Education, 2017d). Private institutions differ from public schools because they do not receive any maintenance and operation funding from the state budget. Private institutions offering an associate degree or higher must register with the OHE. Private career schools offering programs below an associate degree level must be licensed by OHE, unless exempt under state law. Minnesota Administrative Rules 2017, Chapter 4840, Higher Education, Nonpublic; Minnesota Administrative Rules 2017 Chapter 4880, Private Career Schools.

Minnesota State system

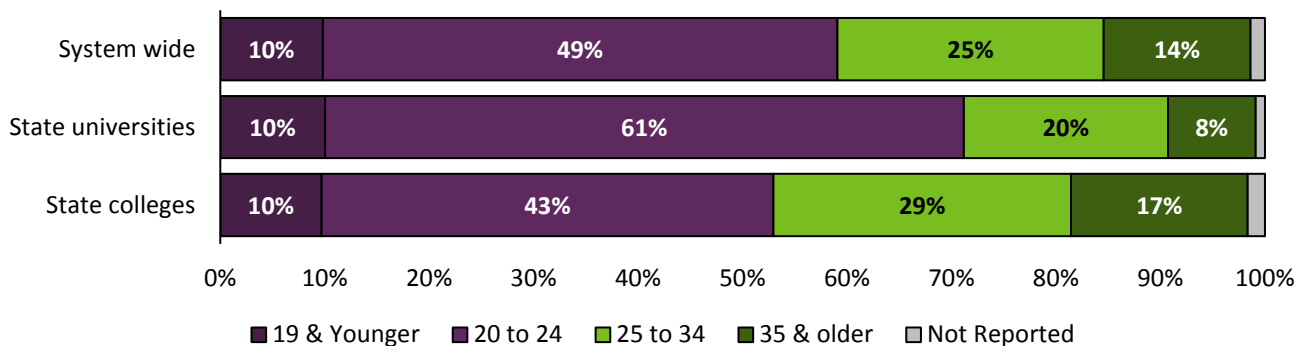
Fifty-four campuses across the state make up the Minnesota State Colleges and Universities, also called Minnesota State, including thirty colleges and seven universities.¹⁴ The history of Minnesota State began in the early 1990s, when legislation merged the seven state universities and several community and technical colleges under one governing board to increase institutional accountability, improve student transfer, coordinate program delivery, and improve facility planning (Minnesota State, 1996). Minnesota State is the fourth largest system of state colleges and universities in the United States (Minnesota State, 2017a).

Minnesota State Colleges and Universities enrolled 147,954 part-time and full-time students in fall 2016; 66 percent enrolled at State Colleges and 34 percent enrolled at State Universities.¹⁵ The Minnesota State system serves 55 percent of all Minnesota undergraduates in public and private institutions (Minnesota Office of Higher Education, 2017b).

In the past four years, fall enrollment has gradually declined across Minnesota State Colleges and Universities.¹⁶ This decline is part of the national trend of declining college enrollment following the recession. For example, enrollment at all Minnesota State campuses surged between 2006 and 2011 (18%), but declined between 2012 and 2016 (-12%) (Minnesota State, 2017b). These enrollment declines affect campuses within the Minnesota State system differently, but reduced tuition revenue caused many campuses to cut staff, limit course offerings, or otherwise achieve budgetary savings (Verges, 2018).

Across Minnesota State Colleges and Universities, age of undergraduates varies. A little over half of students system wide (59%) are age 24 and younger. Nearly 40 percent of students are considered nontraditional students, or older than 24 years. Nontraditional students make up a larger proportion of state colleges, accounting for 46 percent of all students. Across all campuses, 54 percent of undergraduates were women, and 28 percent were students of color (Minnesota Office of Higher Education, 2017b).

Figure 10: Minnesota State system undergraduate enrollment, by age (2016)



Source: Minnesota Office of Higher Education, "Student Enrollment Data"

¹⁴ Formerly known as MnSCU.

¹⁵ Starting with the 2016-17 academic year, institutions reported data at the end of each fall term versus previous reporting of the institution's official fall reporting date. The number reported (147,954) does not include high school students in dual enrollment programs.

¹⁶ High school students enrolled in Post-Secondary Enrollment Options (PSEO) programs continue to increase, as more high school and college partnerships appear in the state. Minnesota State has a robust college catalog of courses that many secondary students (21,134 in fall 2016) take advantage of while still in high school.

The following two graphs (figures 11 and 12) report enrollment and graduation rates for Minnesota State Colleges and Universities from 2013 to 2016.¹⁷ In 2016, Minnesota State Colleges had greater undergraduate enrollment (119,230) than Minnesota State Universities (59,155) and the University of Minnesota (56,682) combined. At Minnesota State Colleges the three-year graduation rate plus transfer rate for associate degrees was 49 percent for a cohort year 2012, meaning degree completion or transferring to another school by 2015 (Minnesota Office of Higher Education, 2017b; National Center for Education Statistics, 2017).¹⁸

Enrollment at Minnesota State Universities is half of enrollment at Minnesota State Colleges.¹⁹ At Minnesota State Universities, the six-year graduation rate for bachelor's degrees was 47 percent for students starting in 2009; meaning degree completion by 2015 (Minnesota Office of Higher Education, 2017a; National Center for Education Statistics, 2017).²⁰

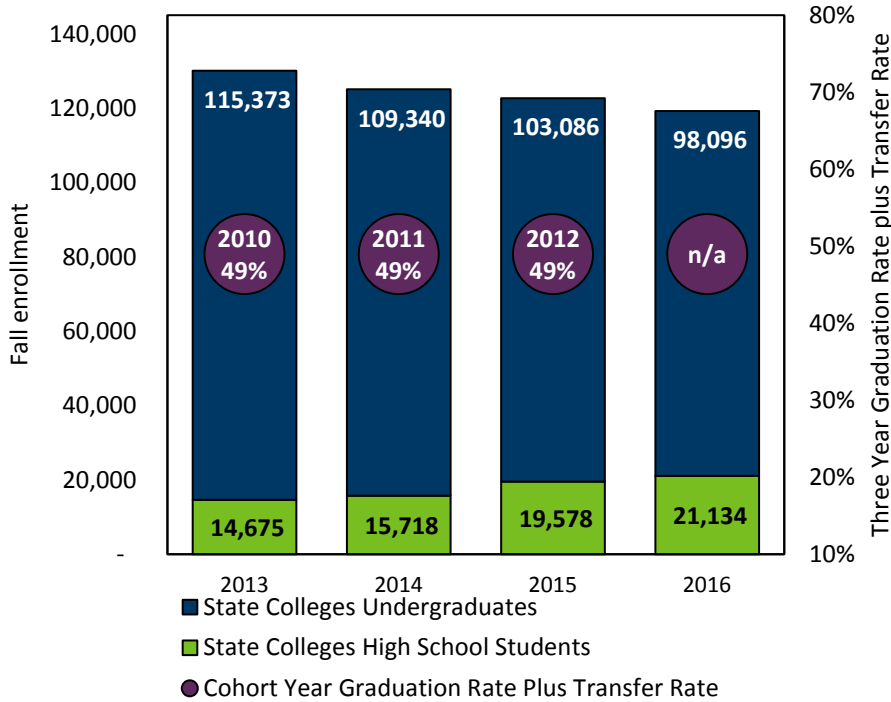
¹⁷ The blue and green bars represent enrollment, split by undergraduate students and high school students. Scales on figure 11 and 12 are equal to show the volume of students is greatest at Minnesota State Colleges. The purple data points in each graph report the graduation rate collected from the National Center for Education Statistics (NCES) Graduation Rate Survey. The survey estimates the graduation rate of full-time, first-time, degree-/certificate-seeking students who started and finished at the same institution. NCES estimates graduation rates by tracking a cohort of students for six years if they enrolled in a bachelor program, or for three years if they enrolled in an associate program. Although students included in reported graduation rates do not represent all students at an institution (e.g., part-time and transfer students not included), the NCES graduation rates are respected estimates used by policymakers, schools, and students or parents.

¹⁸ This is 150% of normal time which is two years for an associate degree. See [OHE Graduation Rates](#) website for 100%, 150%, or 200% of normal time for all institutions. The Minnesota Transfer Curriculum (MnTC), offered at state colleges, helps students transfer credits from lower-division general education. For this reason, the three-year graduation rate includes the transfer rate.

¹⁹ The blue and green bars represent enrollment, split by undergraduate students and high school students.

²⁰ The purple data points in each graph report the graduation rate collected from the National Center for Education Statistics (NCES) Graduation Rate Survey.

Figure 11: Minnesota State Colleges undergraduate fall enrollment and graduation plus transfer rates (2013-2016)

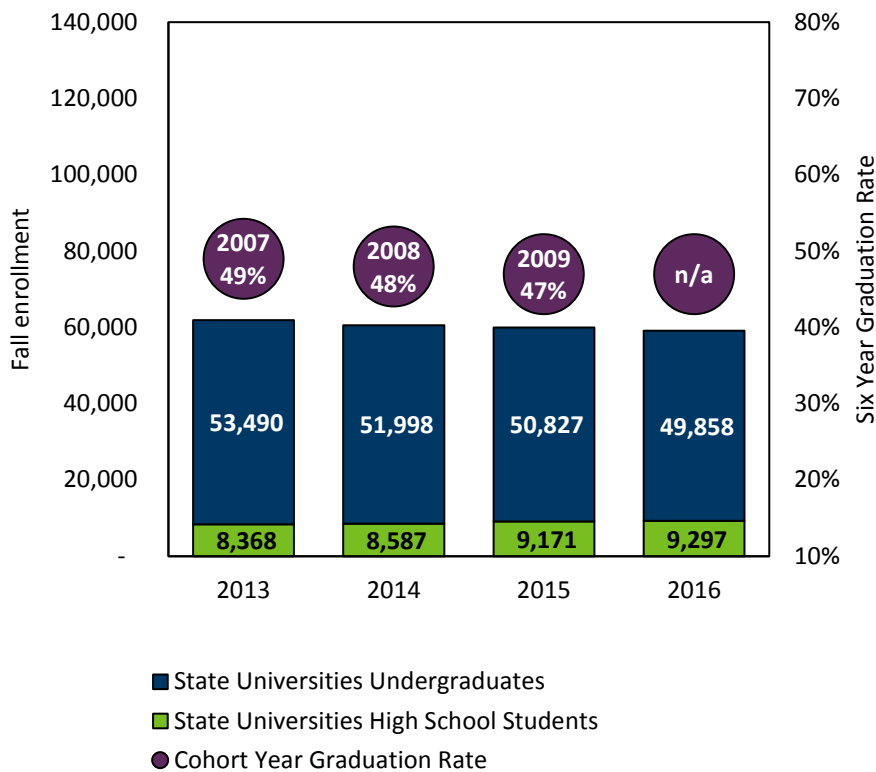


Graduation rate data source: Minnesota Office of Higher Education, 2017

Graduation rate note: Results include a cohort of students who were full-time, first-time undergraduates intending to earn any degree or certificate and started their program three years before the data were reported (i.e., the status of students who enrolled full-time, first-time in fall 2010 is reported in the 2013 collection year).

Fall enrollment data source: Minnesota Office of Higher Education, 2017.

Figure 12: Minnesota State Universities undergraduate fall enrollment and graduation rates (2013-2016)



Graduation rate data source: Minnesota Office of Higher Education, "Graduation Rates"

Graduation rate note: Results include a cohort of students who were full-time, first-time undergraduates intending to earn a Bachelor's degree and started their program four years before the data were reported (i.e., the status of students who enrolled full-time, first-time in fall 2009 is reported in the 2013 collection year). Students who transfer negatively affect an institution's graduation rate.

Fall enrollment data source: Minnesota Office of Higher Education, "Student Enrollment Data". Starting in 2016, institutions report their fall enrollment at the end of term.

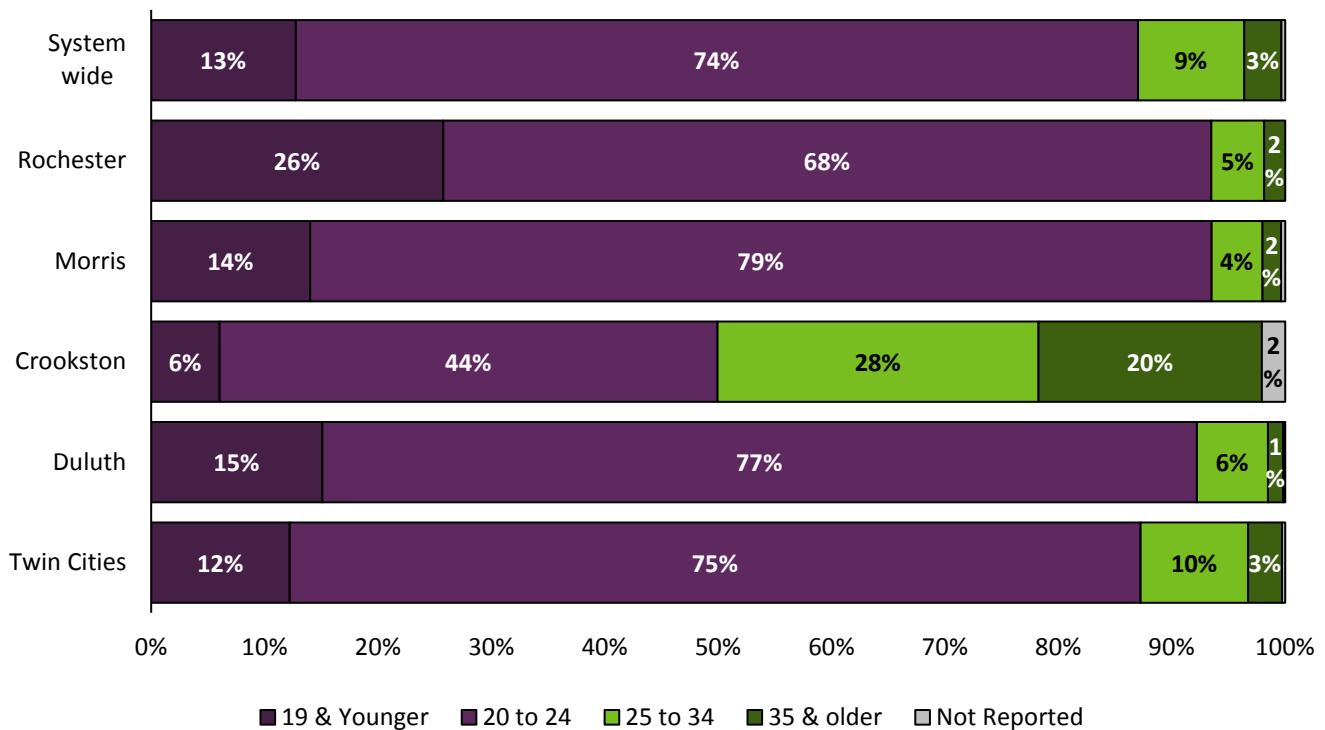
University of Minnesota system

The University of Minnesota Twin Cities began as a preparatory school in 1851. After the civil war, in 1867, using public support from the Morrill Land-Grant Act, policymakers designated it as Minnesota’s land-grant university (University of Minnesota, 2014). Since then, the University of Minnesota system expanded to five campuses across the state (Office of Higher Education, 2016):

- Twin Cities campus offers bachelor’s, professional, graduate, and doctorate education
- Morris campus offers undergraduate liberal arts curriculum
- Crookston campus focuses on career and technology based undergraduate programs
- Duluth campus offers undergraduate and graduate education
- Rochester campus specializes in health professions

The majority of undergraduate students at the U of M are traditional students (students under age 24).²¹ In fall 2016, 87 percent were age 24 and younger at all U of M campuses, but the Crookston campus has a larger share of older students (48% were age 25 and older in fall 2016). Across all campuses, 50 percent of undergraduates were women, and 19 percent were students of color (Minnesota Office of Higher Education, 2017b).

Figure 13: University of Minnesota system undergraduate enrollment, by age (2016)



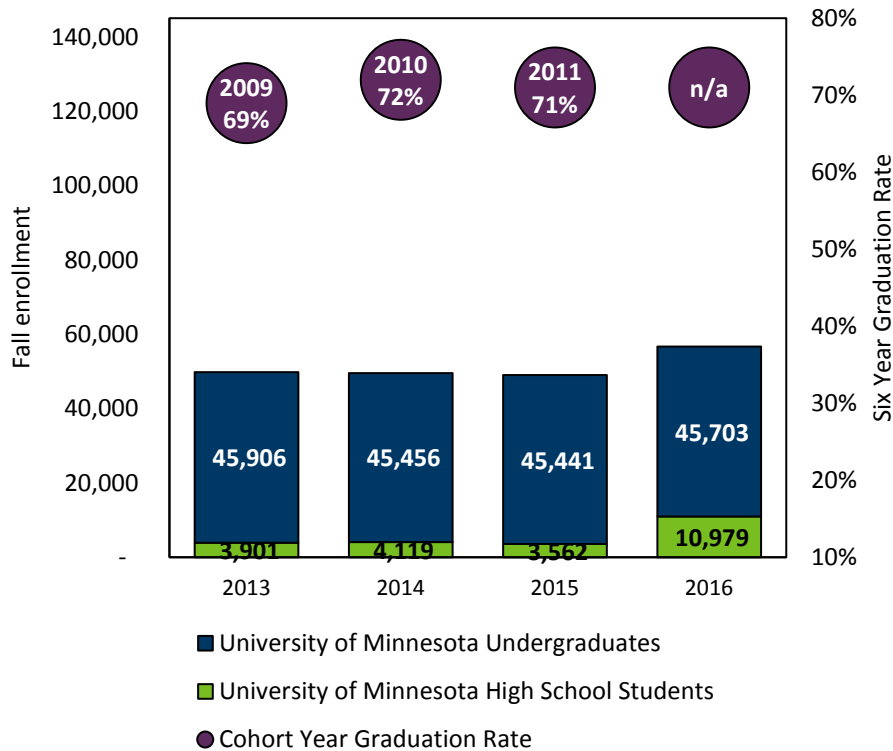
Source: Minnesota Office of Higher Education, “Student Enrollment Data”

²¹ The University of Minnesota system (U of M) reports fall term student enrollment data to the Minnesota Office of Higher Education (OHE). Starting with the 2016-17 academic year, institutions reported data at the end of each fall term versus previous reporting of the institution’s official fall reporting date.

The following graph (Figure 14) reports both enrollment and graduation rates for the U of M campuses from 2013 to 2016.²²

At all U of M campuses, the six-year graduation rate for bachelor’s degrees was 71 percent for students starting in 2009, meaning degree completion by 2015 (National Center for Education Statistics, 2017).

Figure 14: University of Minnesota undergraduate enrollment and graduation rates (2013-2016)



Graduation rate data source: U.S. Department of Education, NCES Graduation Rate Survey

Graduation rate note: Results include a cohort of students who were full-time, first-time undergraduates intending to earn a Bachelor’s degree and started their program four years before the data were reported (i.e., the status of students who enrolled full-time, first-time in fall 2009 is reported in the 2013 collection year). Students who transfer negatively affect an institution’s graduation rate.

Fall enrollment data source: Minnesota Office of Higher Education, “Student Enrollment Data”. The University of Minnesota did not report dual enrollment students prior to 2016.

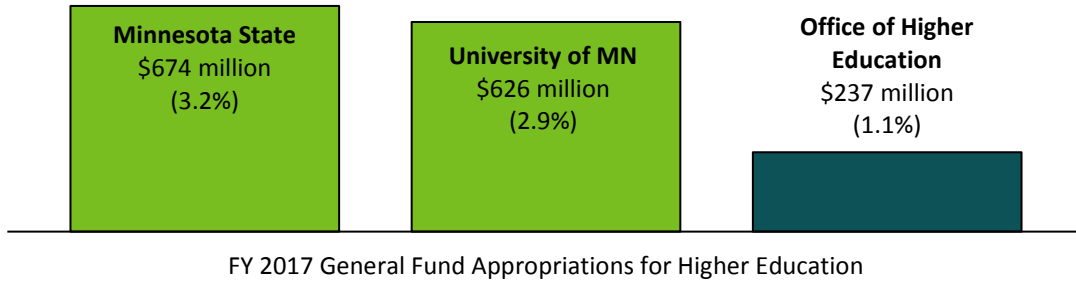
D. Governance and funding

State funding for higher education includes appropriations to the Minnesota Office of Higher Education, Minnesota State Colleges and Universities, and the University of Minnesota system which totaled \$1.5 billion in fiscal year 2017, as shown in Figure 15 (Minnesota Management and Budget, 2016). As a proportion of total general fund appropriations for 2017, higher education is the fourth largest spending category (7%), behind

²² The blue and green bars represent enrollment, split by undergraduate students and high school students. High school students enroll in undergraduate classes through dual credit programs. Starting in 2016, all higher education institutions reported fall enrollment at the end of term versus at the beginning of term. Previously, the University of Minnesota did not indicate which students were participating in dual enrollment when they reported fall enrollment. Starting in fall 2016, they reported high school students participating in dual enrollment to the Office of Higher Education. This change in enrollment reporting accounts for the large increase in high school students enrolled at the University of Minnesota in 2016. The purple data points in the below graph report the graduation rate collected from the NCES Graduation Rate Survey. NCES data reports graduation rates of full-time, first-time, degree-/certificate-seeking students who started and finished at the same institution. NCES estimates graduation rates by tracking a cohort of students for six years if they enrolled in a bachelor program, or for three years if they enrolled in an associate program.

education (42%), health and human services (29%), and property tax aids and credits (8%)(Minnesota Management and Budget, 2016).

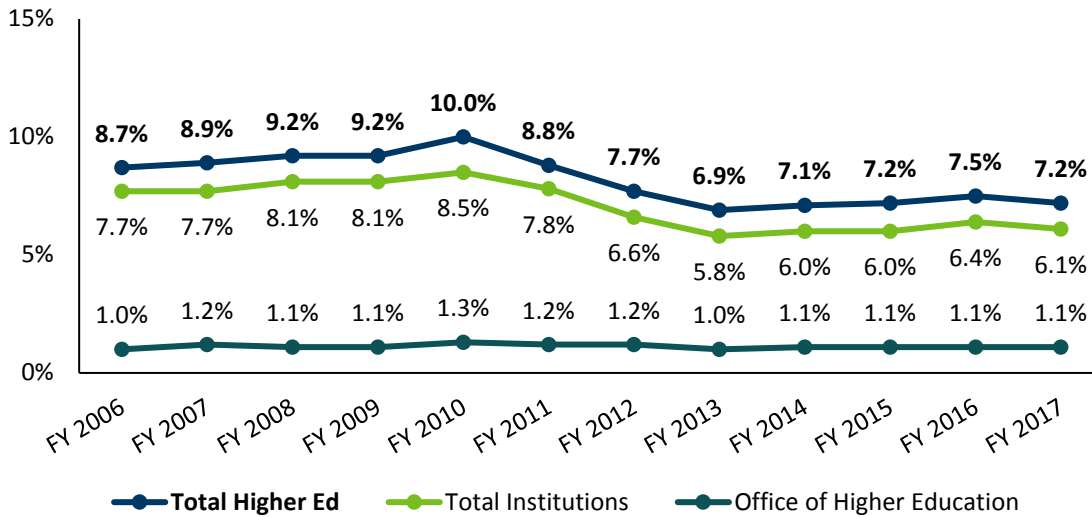
Figure 15: Fiscal Year 2017 General Fund Appropriations for Higher Education



Source: Minnesota Management and Budget

Since 2010, the percent of general fund spending allocated to higher education has decreased as shown in Figure 16. In FY 2010, it represented 10 percent of general fund appropriations (\$1.46 billion). In FY 2017 it was 7.2 percent (\$1.54 billion).

Figure 16: Percent of State General Fund Spending (FY 2010 – FY 2017)



Source: Minnesota Management and Budget

Note: Total Higher Ed includes funding to all institutions (Minnesota State and the University of Minnesota) plus all funding to the Office of Higher Education. Total institutions combine Minnesota State and University of Minnesota funding.

Office of Higher Education

The Minnesota Office of Higher Education (OHE) is a state agency with the following statutory responsibilities:²³

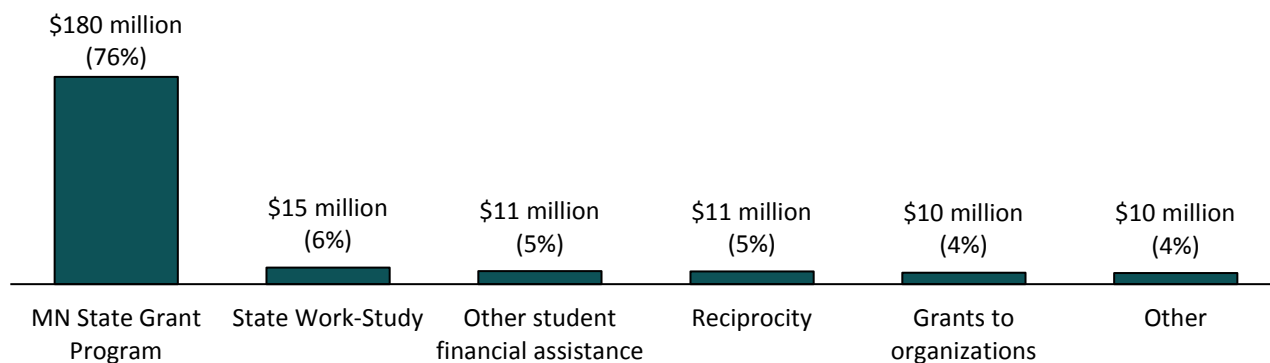
- administration of financial aid programs, including accounting, auditing, and disbursing state and federal financial aid funds, and reporting on financial aid programs to the governor and the legislature
- approval, registration, licensing, and financial aid eligibility of private collegiate and career schools,
- determining whether to enter into an interstate reciprocity agreement
- negotiating and administering reciprocity agreements
- publishing and distributing financial aid information and materials
- collecting and maintaining student enrollment and financial aid data and reporting data on students and postsecondary institutions
- administering the federal programs that affect students and institutions on a statewide basis
- prescribing policies, procedures, and rules to administer the programs under its supervision

The agency also serves as the state’s clearinghouse for higher education data, research, and analysis.

The Office of Higher Education operated with a total Fiscal Year 2017 budget of \$336 million. Of this, 73 percent came from state appropriations, 25 percent from SELF-Loan funds, and 2 percent from federal, special revenue and miscellaneous funds (Minnesota Office of Higher Education, 2017c). Of the budget coming from state general fund expenditures, 98 percent flows through OHE and directly into grants to students and institutions.

Besides administering grants to students and institutions, OHE oversees a student loan program (SELF Loan), Minnesota’s 529 College Savings Plan, state scholarship programs, tuition reciprocity programs, and the Minnesota State Grant Program. The Office of Higher Education received \$237 million from the General Fund Appropriation in fiscal year 2017.²⁴ Seventy-six percent went to the Minnesota State Grant Program.

Figure 17: Fiscal Year 2017 General Fund Appropriations for the Office of Higher Education (OHE)



Source: Minnesota Session Laws, [Chapter 69-S.F.No.5](#)

Note: Figures rounded to the nearest million. Other student financial assistance includes Child Care Grants, Safety Officer’s Survivors, Indian Scholarships, United Family Medicine Residency Program, Large Animal Veterinarian Loan Forgiveness Program, and Teacher Shortage Loan Forgiveness Program.

²³ Minnesota Statutes 2017, section 136A.01. Office of Higher Education.

²⁴ Minnesota Laws 2015, chapter 69-S.F.No.5

Minnesota State System

A fifteen-member Board of Trustees governs the Minnesota State Colleges and Universities system. The Board has policy responsibility for system planning, academic programs, fiscal management, personnel, admissions requirements, tuition and fees, and rules and regulations. Statute defines membership – all appointed by the governor – including three members who are students (one member from a community college, one member from a state university, and one member from a technical college).²⁵ The Minnesota legislature has statutory authority over Minnesota State, meaning they must adhere to legislative requirements.

Minnesota State's primary revenue sources are tuition and state appropriations (Minnesota Management and Budget, 2018a). General Fund appropriations support operations and maintenance, as well as tuition relief. Tuition relief, also called tuition freezes, are a funding strategy where institutional funding from the State increases, so colleges and universities can reduce or freeze tuition rates for students. For example, the 2017 Legislature appropriated \$91 million in tuition relief to Minnesota State ensuring tuition freezes for the 2018-19 academic school year (Office of Higher Education, 2017a).²⁶

University of Minnesota

A twelve-member Board of Regents governs the University of Minnesota system. A joint convention of the Minnesota legislature elects one Regent from each of Minnesota's eight congressional districts, and four from the state at large.²⁷ One of the at large Regents must be a University student at the time of election.²⁸

The University of Minnesota's budget is built on revenue support from tuition, state appropriations, sponsored research grants from the federal government and other sources, philanthropy and contracts, miscellaneous income from sales, fees, and auxiliary business operations (Minnesota Management and Budget, 2018b). Although the University of Minnesota receives state appropriations to support operations and maintenance, as well as tuition relief, it has statutory autonomy, meaning the State cannot require it to adhere to legislative requests (Office of Higher Education, 2017a).²⁹

Private institutions

Private institutions may differ from public institutions in that they do not receive any maintenance and operation funding from the state budget, but they can receive bonding dollars and other tax subsidies. The Minnesota Higher Education Facilities Authority (MNHEFA) issues revenue bonds to assist private colleges and universities fund projects for housing, parking, student centers, other buildings and equipment, or for academic and administrative purposes. Also, students who attend a private institution can still participate in statewide programs, such as the Minnesota State Grant.

²⁵ Minnesota Statutes 2017, section 136F.02. Board of Trustees.

²⁶ Note: Minnesota State Colleges and Universities are permitted to increase differential tuition charges to cover costs of programs facing increases due to unforeseen and extraordinary circumstances in both FY2018 and FY2019.

²⁷ Minnesota Statutes 2017, section 137.024 Congressional Districts Represented on Board of Regents; Minnesota Statutes 2017, section 137.0246. Regent Nomination and Election.

²⁸ Minnesota Statutes 2017, section 137.023 University Student on Board of Regents.

²⁹ The University of Minnesota has statutory autonomy because it was not created through a statute, it was created through the Constitution (Article 13, section 3). Legislature does not have authority to unilaterally change the constitution.

3. Findings

A. Higher education program inventory

The higher education system is complex and provides a wide array of programs for K-12 students, high school graduates, and college students. The inventory only includes programs that are funded fully or partially through the State of Minnesota and include increasing enrollment, persistence, or graduation as a central goal. Where evidence exists, the inventory shows the impact on other outcomes like high school graduation, GPA, and vocational certificates earned.

MMB worked with representatives from three higher education institutions – Minnesota State, University of Minnesota, and the Office of Higher Education – to identify 61 programs and practices available across the state. Next, MMB reviewed the evidence of effectiveness for each program, then rated each program as Proven Effective, Promising, No Effect, or Theory Based depending on the availability and findings from rigorous evaluation studies.

The Results First Initiative uses evaluation designs that include randomized controlled trials (RCTs) or quasi-experimental design methods and meta-analysis. RCT and quasi-experimental designs include a treatment and control group which allows the researcher to test the impact of the program or practice. RCTs measure a causal impact by randomly selecting individuals into the treatment and control group. See Appendix B for the complete inventory and Appendix A for an explanation of the rating methodology.

The matched programs found in research measured the following primary outcomes: enrollment, persistence, and graduation. If programs administered in Minnesota are implemented with fidelity, Minnesota can expect similar outcomes as those found in the research studies. Of the 61 programs and practices:

- **5** programs are **Proven Effective** (multiple qualifying studies show favorable impact)
- **5** programs are **Promising** (one qualifying study shows favorable impact)
- **1** program is **No Effect** (multiple qualifying studies show no impact)
- **50** programs are **Theory Based** (qualifying evidence is not currently available)
- No programs are Mixed Effects or Proven Harmful

Table 1: Summary of inventory findings by category

Category	Proven Effective	Promising	No Effect	Theory Based	Total (row)
Statewide	1	0	1	10	12
Campus specific	4	2	0	23	29
Target specific populations	0	3	0	17	20
Total	5	5	1	50	61

Source: Minnesota Management and Budget, 2018

Table 2: Proven Effective and Promising programs

Proven Effective	Promising
First Year Experience Courses (2-year) Scope: Campus specific – high prevalence	College in the Schools Scope: Campus specific – high prevalence
First Year Experience Courses (4-year) Scope: Campus specific – high prevalence	College Possible (high school program) Scope: Specific population
Need-Based Grants Scope: Statewide	Intrusive Advising (2-year) Scope: Campus specific – high prevalence
Postsecondary Enrollment Options Scope: Campus specific – high prevalence	TRIO Talent Search Scope: Specific population
Summer Bridge Programs Scope: Campus specific – high prevalence	TRIO Upward Bound Scope: Specific population
No Effect	
Summer Nudging Scope: Statewide	

Source: Minnesota Management and Budget, 2018

Evidence-based practices widely available

Table 1 shows the breadth of programs included in the inventory and their associated rating, and Table 2 provides additional detail on the specific programs with causal evidence. Of the ten Proven Effective or Promising programs, most are available either statewide or at most college and university campuses. As the evidence of effectiveness for a program increases, so too does the adoption and availability of that program across the state. However, Summer Nudging, which is rated No Effect is also available statewide. The evidence, recently published (2018), shows no effect on high school graduates enrolling in higher education, yet it does show promise for targeting different populations like students already enrolled in associate degree programs.

Practices target underrepresented students

Of the programs and practices identified, nearly half of them indicated the target populations is a historically underrepresented student group – including students of color, American Indian students, first generation students, and low income students. Of these 28 programs (46 percent), the majority are smaller scale programs rated Theory Based. Often these programs reflect innovations specific to a school or campus and may not yet have rigorous research to support their effectiveness. Nevertheless, several of the evidence-based programs like State Grants, TRIO Talent Search, and TRIO Upward Bound specifically support underrepresented students.

State spending on proven practices

General fund appropriations for higher education were \$1.5 billion fiscal year 2017, as shown in Figure 15. Approximately 85 percent of that is appropriated to the University of Minnesota and the Minnesota State system of colleges and universities for general operations, some of which funds Proven Effective and Promising practices.

The Office of Higher Education administers \$237 million to make higher education more accessible and affordable. In fiscal year 2018, nearly 80 percent of OHE's budget was appropriated for Proven Effective practices like need-based grants, which includes the Minnesota State Grant.

B. Cost of higher education

In preparation for conducting the benefit-cost analysis, MMB estimated the average annual educational cost of both associate and bachelor's degree programs in Minnesota. Additionally, this analysis breaks out the proportion of these costs paid by the student, private grants and scholarships, and taxpayers (state and federal taxpayers). The cost data comes from public and private colleges and universities in Minnesota that report to the U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). See Appendix C for a longer explanation of the cost methodology.

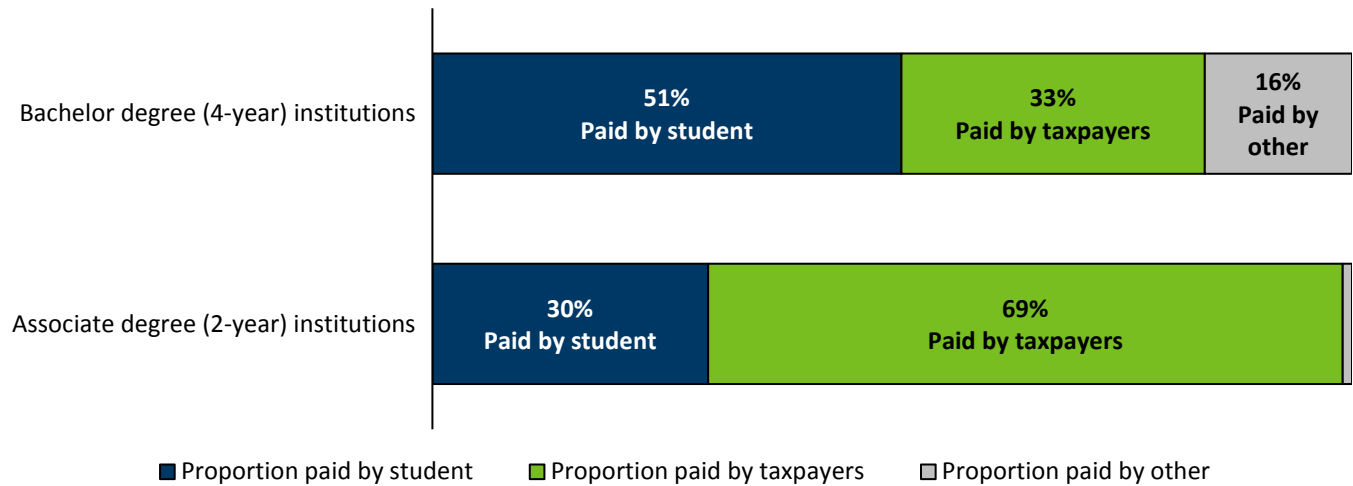
Costs include the educational costs collected by the school for instruction, academic support, student services, institutional support, and operational expenses. This definition of costs does not include the costs not paid to the institution, for example, the costs a student incurs while in school for living expenses and transportation.

Educational costs vary widely across Minnesota institutions. In the 2015-2016 academic year, the average annual educational costs at 2-year institutions – both public and private – were \$10,910 (standard deviation of \$2,250). At 4-year institutions – both public and private, the average annual educational costs were \$20,780 (standard deviation of \$13,590).

Additionally, who bears the costs of higher education varies by the type of institution. As shown in the figure below, students pay for about 30 percent of the educational costs at 2-year schools while state and federal taxpayers pay for nearly 70 percent of the costs through student aid and direct appropriations to schools. At 4-year, bachelor's degree granting schools, students typically pay for 51 percent of the educational costs, while state and federal taxpayers pay for 33 percent, and private grants and scholarships cover the remaining 16 percent. Of the proportion paid by taxpayers at both institutions, the federal government funds about one-third, while the state covers nearly two-thirds.

The figure below shows the proportion of educational costs at public and private institutions paid by the student, taxpayers, and other sources. Educational costs reflect only the costs of the degree and do not include expenses—such as room and board, books, transportation—not paid to the institution. Student includes the student's direct payments and loans to the institution. Taxpayers include government grants and other funding provided by the state and federal government. Other includes private grants and scholarships paid to the institution.

Figure 18: Proportion of educational costs paid by student, taxpayers, and other sources



Source: Minnesota Management and Budget (IPEDS data).

Rising cost of tuition

States do not cover all educational costs at public colleges and universities, so schools make up the difference with tuition increases, cuts to services, or both (Mitchell et al., 2017). Across the United States, tuition at 4-year public institutions rose 35 percent since the 2007-08 academic school year; in seven states, tuition rose more than 60 percent (Ma, Baum, Pender, & Welch, 2017). Even with legislative interventions to moderate tuition increases, between the 2007-08 and 2017-18 academic school years, tuition and fees at Minnesota institutions increased 22 percent at Minnesota State Colleges, 36 percent at Minnesota State Universities, and 39 percent at the University of Minnesota (Minnesota Office of Higher Education, 2018).

Federal aid has risen, but falls short of covering the tuition increases and other college expenses (Mitchell et al., 2017). The burden of increased tuition price falls on the student and their family if financial aid is not increased. By contrast, through increases to Pell grants and Minnesota State Grants, Minnesota students have seen net price stabilize over the most recent five years (Djurovich & Fergus, 2017). In addition, cumulative debt of graduates has declined as has the percent of students borrowing (Minnesota Office of Higher Education, 2018). These measures are signs of stabilized pricing within the higher education market in Minnesota and indicate that while students shoulder a higher proportion of costs, among lower-income students the proportion is not increasing.

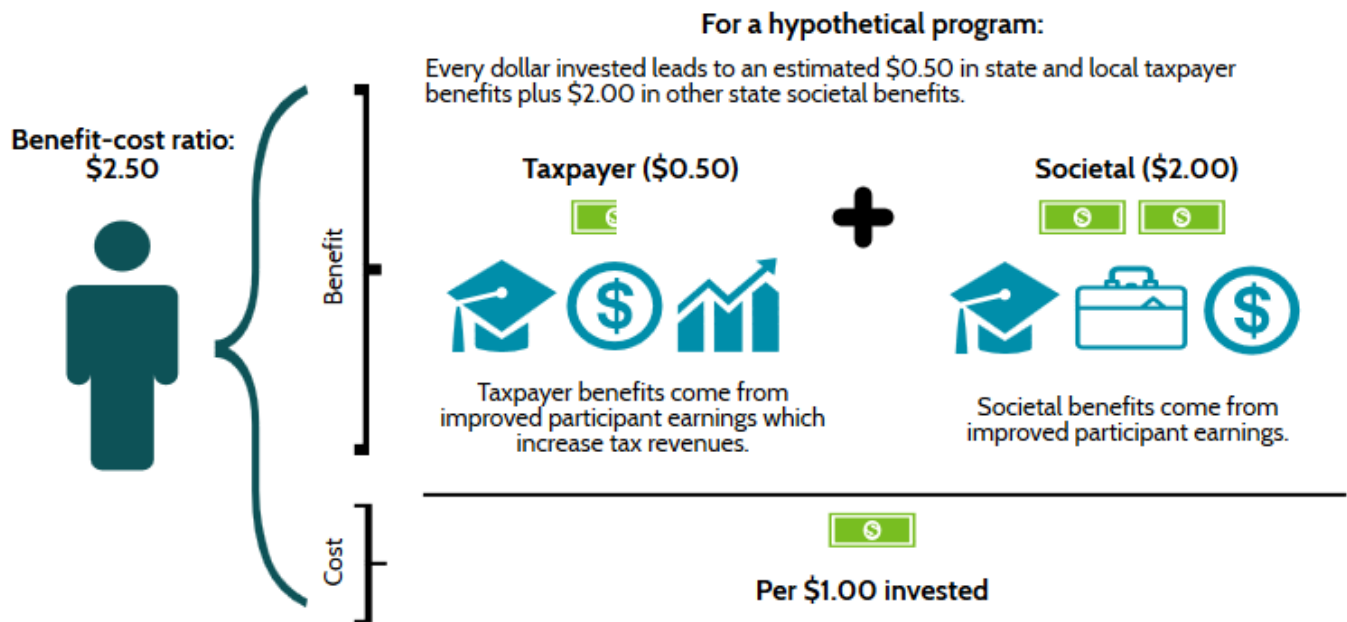
C. Benefit-cost ratios

This section presents findings from the benefit-cost analyses. Of the 61 services included in the program inventory, qualifying research allowed a full benefit-cost analysis on three (see Appendix C for methodology). For each of these three programs, the following pages present the estimated impact on outcomes, benefit-cost ratio, and a breakdown between benefits to taxpayers and other societal benefits.

All three program produce benefits, most of which accrue to participants through future labor market earnings. The higher education model also considers the cost of and time spent educating a student at an institution of higher education, and subtracts that from the estimated benefits (before dividing by the program cost). This consideration accounts for the fact that attending college is optional and has real and opportunity costs to the student.

Benefit-cost ratios range from \$0.40 and \$5.10 respectively for each \$1 invested.

Figure 19: Explanation of a benefit-cost ratio



Treatment versus control

These findings rely on studies that examine the difference between a treatment group that receives the studied treatment and a control group that receives standard services available to a general population (treatment as usual). Results compare the change in outcomes for the treatment group and the treatment as usual group. The analysis assumes Minnesota programs are implemented in the same way as the programs evaluated in the research used to estimate impacts.

Estimating the average cost of a program

The analysis uses Minnesota-specific data to calculate an average cost per participant for each higher education program. We base estimates on aggregate, statewide data or self-reported data from individual schools aggregated in a sample average estimate. Cost estimates reflect the experiences of these partners and may vary across the state. For a detailed explanation of methodology, see Appendix C.

First-Year Experience Courses/Student Success Courses at 2-year institutions

Description: Community and technical college courses that help students build knowledge and important nonacademic skills. The content of these courses can vary widely but generally include topics like study skills, time management, academic planning, college orientation, and personal wellness. We do not include not-for-credit courses with similar topics, bundled freshmen courses, and courses built into living and learning communities (where all students in the course lived on the same floor or in the same dorm).

Evidence

Rating	Enrollment	Persistence	Graduation	Source of evidence
Proven Effective	Not measured	Neutral	Favorable (2-year degree)	Washington Institute for Public Policy

Target population: College students

Scope: Campus specific – high prevalence

Benefit-cost analysis

For every dollar the state invests in First-Year Experience Courses/Student Success Courses at 2-year institutions, we estimate no net benefits to state/local taxpayers and \$5.10 in other Minnesota societal benefits which accrue in the form of increased labor market earnings by program participants. The total return on investment is therefore \$5.10.



■ Other Minnesota societal ratio (participants and society)

Type	Minnesota total	State and local taxpayer	Other Minnesota societal	Federal
Net present value of lifetime benefits ¹	\$560	\$0	\$560	\$30
Average per participant cost ²	\$110	\$110	\$110	\$0
Return on investment (benefit-cost ratio)	\$5.10	\$0.00	\$5.10	n/a

¹The sum of state and local taxpayer benefits and other Minnesota societal benefits equal Minnesota total.

²The average cost per participant is the same for each column, they do not sum together.

*The higher education model also considers the cost of and time spent educating a student at an institution of higher education, and subtracts that from the estimated benefits.

**All estimates are rounded to the nearest tenth.

Benefits

The benefit-cost model estimates the monetary value of higher education programs using a human capital approach. It examines how programs delivered to students graduating from high school and in college impact higher education achievement outcomes. It then monetizes how the changes to these outcomes affect lifetime earnings. The WSIPP meta-analysis included 3 studies for Student Success Courses at 2-year institutions (also called First-Year Experience Courses) finding favorable outcomes on graduation. The studies found no impact on college grade point average.

The total benefits to the participant, taxpayers, and society is \$590. We omit the benefits which accrue to federal taxpayers (\$30) when estimating the Minnesota share of total benefits. This estimate is the net present value of lifetime benefits.

Minnesota total benefits: \$560

Total years of benefits: Lifetime

The Results First benefit-cost model monetizes the following outcomes for First-Year Experience Courses/Student Success Courses at 2-year institutions:

Outcome category	Monetary value of outcome	Benefits accrue to which stakeholder?
Graduate with 2-year degree	Labor market earnings associated with higher education	Participants, Taxpayers, Society

Costs

We worked with Minnesota State Colleges and Universities (Minnesota State) to calculate an average cost of First-Year Experience Courses (FYE)/Student Success Courses at 2-year institutions. We worked with central administration to determine if FYE/Student Success Courses at Minnesota State colleges include first-year students seeking an associate degree, students receiving credit for the course, and have similar course topics as described in the evidence base. Overall, 21 campuses implement FYE/Student Success Courses for first-time students seeking an associate degree. Campuses offer 1-credit, 2-credit, and 3-credit FYE/Student Success Courses. Almost half offer 2-credit courses.

Minnesota State used administrative data to gather the direct instruction costs for these courses in the last fiscal year and added the average of the instruction costs to any additional program expenditures. The average cost to implement 2-credits of FYE/Student Success Courses is \$260.

If a student does not enroll in this course, they may take an additional class or they may opt to not take a class. We assumed that half of students would take a class in lieu of the FYE/Student Success Course and half would not. Therefore, the comparison cost to FYE/Student Success Courses is half the cost of 2-credits of another freshmen course. Using the same administrative data from Minnesota State, the average cost of 2-credits of other freshmen courses is \$300. Half of this cost is \$150.

Average net cost of FYE/Student Success Courses at 2-year institutions: $\$260 - \$150 = \$110$

Duration/intensity of service: One semester (typically fifteen weeks long)

Total years of costs: One year or less

Intrusive Advising with Case Management

Description: Action oriented advising that involves and motivates associate-degree seeking students to seek help when needed. Case management for academic advising includes the following: targeted outreach to specific student populations, creation of individualized student success plans, intentional referrals to other departments and services, maintenance of detailed advising notes and student records, advocacy for student-centered policies and procedures at all institutional levels, and continual evaluation of the advising process and its effectiveness.

Evidence

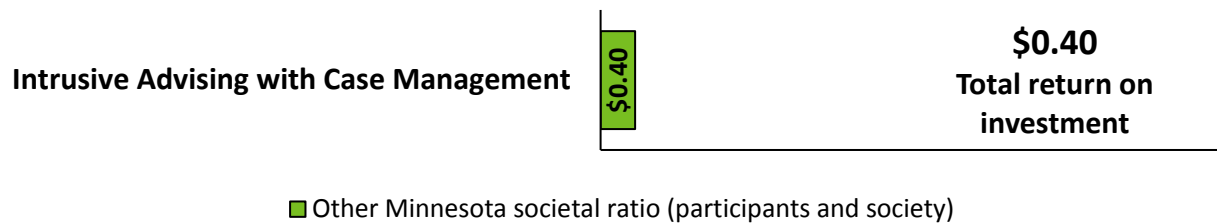
Rating	Enrollment	Persistence	Graduation	Source of evidence
Promising	Not measured	Favorable	Neutral (2-year degree)	Washington Institute for Public Policy

Target population: College students

Scope: Campus specific – low prevalence³⁰

Benefit-cost analysis

For every dollar the state invests in Intrusive Advising with Case Management, we estimate no net benefits to state and local taxpayers and \$0.40 in other Minnesota societal benefits which accrue in the form of increased labor market earnings by program participants. The total return on investment is therefore \$0.40.



Type	Minnesota total	State and local taxpayer	Other Minnesota societal	Federal
Net present value of lifetime benefits ¹	\$680	-\$20	\$700	\$20
Average per participant cost ²	\$1,640	\$1,640	\$1,640	\$0
Return on investment (benefit-cost ratio)	\$0.40	\$0.00	\$0.40	n/a

¹ The sum of state and local taxpayer benefits and other Minnesota societal benefits equal Minnesota total.

² The average cost per participant is the same for each column, they do not sum together.

*The higher education model also considers the cost of and time spent educating a student at an institution of higher education, and subtracts that from the estimated benefits.

**All estimates are rounded to the nearest tenth.

³⁰ A relatively small number of campuses report having programs that closely mirror the models that have been rigorously evaluated. Several additional campuses reported having programs similar to intrusive advising, but the program specifics were not as closely aligned.

Benefits

The benefit-cost model estimates the monetary value of higher education programs using a human capital approach. It examines how programs delivered to students graduating from high school and in college impact higher education achievement outcomes. It then monetizes how the changes to these outcomes affect lifetime earnings. The WSIPP meta-analysis included 2 studies for Intrusive Advising for 2-year college students finding favorable outcomes on persistence into the second year of college. The studies also measured persistence into the third year of college, graduating with an associate degree, and transferring to a bachelor's program. All had neutral impacts (not statistically significant), so we do not include them in the benefit-cost model. They also measured college grade point average, but the impact was not statistically significant.

The total benefits to the participant, taxpayers, and society \$700. We omit the benefits which accrue to federal taxpayers (\$20) when estimating the Minnesota share of total benefits. This estimate is the net present value of lifetime benefits.

Minnesota total benefits: \$680

Total years of benefits: Lifetime

The Results First benefit-cost model monetizes the following outcomes for Intrusive Advising with Case Management:

Outcome category	Monetary value of outcome	Benefits accrue to which stakeholder?
Persistence into 2 nd year	Labor market earnings associated with higher education	Participants, Taxpayers, Society

Costs

We worked with Minnesota State Colleges and Universities (Minnesota State) to calculate an average cost of Intrusive Advising with Case Management. First we built a two-part questionnaire which Minnesota State sent to all campuses. The first part asked questions about the program model; for example, if the program participants were first-year students seeking an associate degree, received intrusive advising for two semesters, and if the student-to-counselor ratio was around 200:1. If the campus responded yes to every question in Part 1, we concluded that they were implementing the the program as described in this benefit-cost analysis. Other schools responded that they were doing intrusive advising with case management, but could not answer yes to every question in Part 1. They did not respond to Part 2 of the questionnaire.

Overall, 3 campuses implement Intrusive Advising with Case Management as described in this benefit-cost analysis. Part 2 of the questionnaire asked campuses to estimate the average cost of administering the program.

Average net cost of Intrusive Advising with Case Management: \$1,640

Duration/intensity of service: Two semesters (typically 15 weeks per semester)

Total years of costs: One year or less

Need-based grants

Description: Need-based grant programs provide means-tested financial assistance to low-income students. There are many different forms of need-based grants and many different funding sources. In the higher education program inventory, we included need-based grants from federal or state funding sources; for example, the Minnesota State Grant (State Grant) and Minnesota Indian Scholarships (MIS). The State Grant program helps students from low- and moderate-income families pay for educational expenses at eligible colleges, universities, and career schools in Minnesota. Students apply by completing the Free Application for Federal Student Aid (FAFSA), a form which determines the student’s and family’s expected financial contribution. The MIS program provides postsecondary financial assistance to eligible Minnesota residents who are one-fourth or more American Indian ancestry and demonstrate financial need for an award.

Evidence

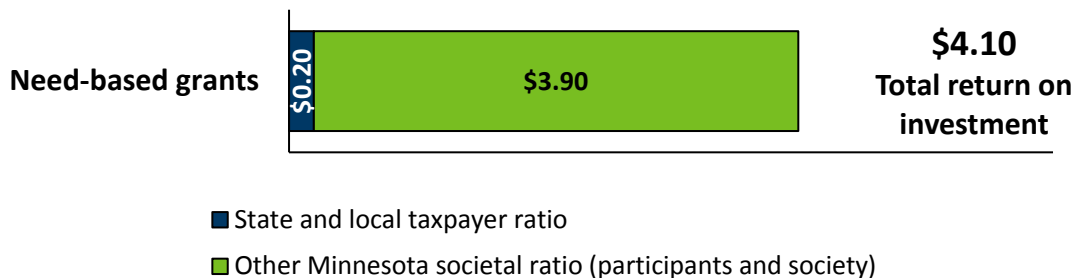
Rating	Enrollment	Persistence	Graduation	Source of evidence
Proven Effective	Not measured	Favorable	Favorable (4-year degree)	Washington Institute for Public Policy

Target population: Lower-income college students

Scope: Statewide

Benefit-cost analysis

We estimate that for each dollar the state invests in need-based grants, state and local taxpayers receive \$0.20 in benefits and there are \$3.90 in other Minnesota societal benefits which accrue in the form of increased labor market earnings by program participants. The total return on investment is therefore \$4.10.



Type	Minnesota total	State and local taxpayer	Other Minnesota societal	Federal
Net present value of lifetime benefits ¹	\$9,570	\$560	\$9,010	\$1,090
Average per participant cost ²	\$2,330	\$2,330	\$2,330	\$0
Return on investment (benefit-cost ratio)	\$4.10	\$0.20	\$3.90	n/a

¹ The sum of state and local taxpayer benefits and other Minnesota societal benefits equal Minnesota total.

² The average cost per participant is the same for each column, they do not sum together.

*The higher education model also considers the cost of and time spent educating a student at an institution of higher education, and subtracts that from the estimated benefits.

**All estimates are rounded to the nearest tenth.

Benefits

The benefit-cost model estimates the monetary value of higher education programs using a human capital approach. It examines how programs delivered to students graduating from high school and in college impact higher education achievement outcomes. It then monetizes how the changes to these outcomes affect lifetime earnings. The WSIPP meta-analysis included ten studies for need-based grants finding favorable outcomes on persistence within the first year of college and into the second year, and graduating with a bachelor's degree. The studies measured persistence into the third year of college, transferring from an associate to a bachelor's program, and graduating with an associate degree. None of these three outcomes were statistically significant; therefore, we do not include them in the benefit-cost model. They also found a neutral impact on college grade point average.

The total benefits to the participant, taxpayers, and society is \$10,660. We subtract the benefits which accrue to federal taxpayers (\$1,090) when estimating the Minnesota share of total benefits. This estimate is the net present value of lifetime benefits.

Minnesota total benefits: \$9,570

Total years of benefits: Lifetime

The Results First benefit-cost model monetizes the following outcomes for Need-based grants:

Outcome category	Monetary value of outcome	Benefits accrue to which stakeholder?
Earnings	Labor market earnings associated with higher education	Participants, Taxpayers, Society
Graduate with 4-year degree	Labor market earnings associated with higher education	Participants, Taxpayers, Society
Persistence into 2 nd year	Labor market earnings associated with higher education	Participants, Taxpayers, Society
Persistence within 1 st year	Labor market earnings associated with higher education	Participants, Taxpayers, Society

Costs

The State Grant award amount depends on the difference between the expected contribution from students and their families, and the actual price of attending a particular college or university. Calculations for State Grants also take into consideration the student's Federal Pell Grant award, which is a subsidy by the federal government, limited to students with financial need, who have not earned their first bachelor's degree. To receive the full amount of the State Grant, a student must be full-time (15 credits per term). Less than full-time students will have their price of attendance prorated based on their actual number of credits. Students eligible for the MIS award must also qualify for either a Pell or State Grant and be enrolled at least three-quarters time.

We sent a data request to the Minnesota Office of Higher Education (OHE) for the average award per recipient for State Grant and MIS as well as the average administrative cost to implement both programs. The average award for State Grant is \$2,289 (FY17 expenditure divided by 2018 number of recipients). The average award for MIS is \$3,254 (FY17 expenditure divided by 2018 number of MIS recipients). We used a weighted average for both need-based programs: \$2,305. The average administrative cost is \$25 per recipient.

Average net cost per recipient: \$2,305 + \$25= \$2,330

Duration/intensity of service: One year, but recipients can renew for additional years.

Total years of costs: One year or less

Appendix A: Program inventory methodology

Minnesota Management and Budget (MMB) compiled an inventory that provides information about programs currently offered in Minnesota that aim to increase enrollment, persistence, or graduation at 2-year and 4-year institutions. For this inventory, MMB collaborated with the Office of Higher Education (OHE), and two public postsecondary school systems: Minnesota State, and the University of Minnesota.

Each Results First program inventory contains information about the program, the organizations involved in funding or overseeing the program, program details, and the extent to which there is evidence that the programs are attaining desired outcomes. The evidence used for the inventory rating must meet a high level of rigor. The Results First Initiative rates programs using impact evaluations only. Impact evaluations use either a randomized controlled trial design or a quasi-experimental design. Both evaluation designs include a treatment and treatment as usual (control) group. This type of evaluation identifies a cause and effect relationship between the program and desired outcomes.

MMB looks for impact evaluations in the [What Works Clearinghouse](#) and the [Washington Institute of Public Policy](#). Both of these clearinghouses include impact evaluations which use a randomized controlled trial design or a quasi-experimental design. Many higher education programs in Minnesota do not have impact evaluations. These programs are not ineffective. It simply means there are not currently impact evaluations studying the program.

Programs delivered in Minnesota that closely resemble ones featured the What Works Clearinghouse or the Washington Institute for Public Policy (with respect to the nature, length, frequency, and target population) are categorized as “Proven Effective,” “Promising,” “Mixed Effects,” “No Effect”, or “Proven Harmful”. Programs that do not resemble any in these clearinghouses are categorized as “Theory-based”.

One program in the higher education inventory has an impact evaluation, but is not in either clearinghouse. MMB reviewed the evaluation and determined the design was a randomized controlled trial, and the population included high school juniors and seniors in Minneapolis and St. Paul. We included this as qualifying evidence.

A rating that includes the parenthetical Category of Services means the service represents groupings of settings, assessments, tools, and processes that a participant may receive, dependent on need. If the parent rating is Theory Based some of the services may have been studied and found to have favorable effects on participants, but the services have not been studied holistically. If the parent rating is something other than Theory Based, there is at least one qualifying study that assessed the effectiveness of the grouping holistically.

A rating that includes the parenthetical Culturally-informed intervention includes services built from communities, imbued with culturally-specific context.

Limitations

When we look for programs in the clearinghouses we match on similar treatment population, program structure, and adequately trained staff. MMB does not conduct fieldwork to ensure fidelity of implementation. Rather, MMB reviews the extent to which programs have attributes that are similar to those that have been rigorously evaluated. If Minnesota programs are not implemented effectively, Minnesota will not experience the anticipated benefits seen elsewhere.

Appendix B: Higher education program inventory

Rating	Description
Proven Effective	A Proven Effective service or practice offers a high level of research on effectiveness for at least one outcome of interest. This is determined through multiple qualifying evaluations outside of Minnesota or one or more qualifying local evaluation. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Promising	A Promising service or practice has some research demonstrating effectiveness for at least one outcome of interest. This may be a single qualifying evaluation that is not contradicted by other such studies but does not meet the full criteria for the Proven Effective designation. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Theory Based	A Theory Based service or practice has either no research on effectiveness or research designs that do not meet the above standards. These services and practices may have a well-constructed logic model or theory of change. This ranking is neutral. Services may move up to Promising or Proven Effective after research reveals their causal impact on measured outcomes.
Mixed Effects	A Mixed Effects service or practice offers a high level of research on the effectiveness of multiple outcomes. However, the outcomes have contradictory effects. This is determined through multiple qualifying studies outside of Minnesota or one or more qualifying local evaluation. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
No Effect	A service or practice rated No Effect has no impact on the measured outcome or outcomes of interest. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Proven Harmful	A Proven Harmful service or practice offers a high level of research that shows program participation adversely affects outcomes of interest. This is determined through multiple qualifying evaluations outside of Minnesota or one or more qualifying local evaluation. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
[Rating] (Category of Services)	These services represent groupings of settings, assessments, tools, and processes that a client may receive dependent on need. If the parent rating is Theory Based, some of the services within the category may be evidence-based, but the services have not been studied holistically. If the parent rating is something other than Theory Based, there is at least one qualifying study that assessed the effectiveness of the services holistically.
[Rating] (Culturally-informed intervention)	Research shows that evidence-based policies may not be equally effective for all communities. Moreover, many communities have built their own programs, imbued with culturally-specific context. These programs often have practice-based evidence on effectiveness, but that evidence does not yet use qualifying research designs. We have attempted to note these programs and their own evidence.

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
A Better Deal for Returning Adults	Description: Redesigned system for returning adults that offers accelerated courses, year-round enrollment and predictable schedules that fit their busy lives. This typically includes credit for prior learning and experience plus additional support to help students navigate the system. Target population: Non-traditional college students Scope: Campus specific - low prevalence	Course selection strategy	Theory Based	*	*	*	*		
Academic Goal Setting and Planning	Description: Assists students in defining specific goals and defining a clear path. Students also have opportunities to update their plan to respond to changing goals, interests, or circumstances. Target population: College students Scope: Campus specific - high prevalence	Advising	Theory Based	*	*	*	*		
Academy of Math and Science	Description: The Normandale Community College Foundation and Normandale Community College have established the Academy of Math and Science to support full-time students enrolled in science, technology, engineering and mathematics disciplines (STEM) and students in the Normandale Teacher Education program who intend to become a secondary STEM educator. Participants receive a scholarship based on financial need, an advisor, a cohort to participate in a learning community, and a student skills development course that includes modules on study skills development, test preparation, leadership development, time management, among others. Target population: Students of color, first generation students, immigrants, children of immigrants, women Scope: Campus specific - low prevalence	Financial support; Student support	Theory Based	*	*	*	*		More information is available at Normandale Community College.
Accelerate to Graduate	Description: Encouraging or incenting full-time enrollment in 15 credits for fall and spring semester or 12 credits for the fall and spring semester and 6 credits for summer (30 credits per year, including summers). Financial aid dollars, as well as institutional process and practice, support that standard. Target population: College students Scope: Campus specific - low prevalence	Advising	Theory Based	*	*	*	*		This campaign has not started in MN except for some initial similar pilots. Several states (e.g. Hawaii) and systems (Utah, Indiana) have implemented a similar campaign and shown positive increases in persistence and graduation rates, as well as reduced borrowing.
Accelerated or Fast-Track Developmental Education	Description: Focus on specific, targeted issues for remediation or movement through developmental education at a students' own pace to expedite entry into college-level work. This may also include accelerated/compressed course offerings (such as full-semester courses taught in 8 weeks). Target population: College students Scope: Campus specific - high prevalence	Course selection strategy	Theory Based	*	*	*	*		

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
American Indian Waiver Program - University of Minnesota, Morris	Description: The University of Minnesota, Morris will admit American Indian students qualified for admission free of charge for tuition, as mandated in federal law and state statute. Students with American Indian heritage are admitted to the University of Minnesota, Morris on the same basis as other students. Degree seeking and non-degree students are eligible to receive the waiver. Students receiving the tuition waiver are responsible for room, board, student fees, and all other charges to their student account. Target population: Minnesota Students of American Indian Ancestry Scope: Campus specific - low prevalence	Financial support	Theory Based (Culturally-informed intervention)	*	*	*	*		Washington State Institute for Public Policy (WSIPP) found changes in tuition price affects enrollment, persistence and graduation. For more information visit http://wsipp.wa.gov/BenefitCost/Program/792 .
Assessment and Placement	Description: Opportunities for students to participate in preparatory or brush-up experiences before placement tests and placement into developmental pathways. Target population: College students Scope: Campus specific - high prevalence	Course selection strategy	Theory Based	*	*	*	*		
Belongingness Intervention	Description: Intentional development of students' sense of being accepted, valued, included, and encouraged by others (teacher and peers) in and outside the academic classroom setting. The program intends to increase belonging through supportive peer relations; meaningful interaction between faculty, staff and students; developing knowledge, confidence and identity as successful learners, and experiences relevant to students' interests and future goals. Target population: College students Scope: Campus specific - medium prevalence	Student support	Theory Based	*	*	*	*		
Center for Academic Planning and Exploration (CAPE) Peer Coaching	Description: Coaches work directly with undecided students to provide high-touch, individualized services that guide them through the decision-making process. They also partner with colleges and academic units to enhance their services to work more effectively with major-exploring students. Target population: College students Scope: Campus specific - low prevalence	Advising	Theory Based	*	*	*	*		
College in the Schools (includes concurrent enrollment programs at Minnesota State and UMN)	Description: A college or university partners with a high school to offer postsecondary courses in high schools during the regular school day. Students continue their progress towards high school graduation, while also receiving college credit for courses taught by qualified high school teachers. Target population: High School Students Scope: Campus specific - high prevalence	Dual credit; College preparation	Promising	*	*	*	Favorable (High school graduation; GPA)	Washington State Institute for Public Policy	
College Possible - College Program	Description: AmeriCorps members provide support to college students at two year, four year, public and private institutions, helping students navigate the academic, social and financial aspects of college. Students receive support renewing the Free Application for Federal Student Aid (FAFSA), identifying scholarships, registering for classes, securing work study, building a network of support, and identifying resources on campus. Target population: College Students enrolled in College Possible - High School Program Scope: Specific population	Student support	Theory Based	*	*	*	*		

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
College Possible - High School Program	Description: AmeriCorps members serve as near-peer coaches to high school students in 11th and 12th grade. Students attend after-school sessions, participate in supportive programming, and attend campus visits. Curriculum in the first year focuses on ACT test prep, and the second year focuses on college application, FAFSA completion, financial literacy and scholarship applications. Students also receive "bridge" support as they transition to college. Target population: High School Students Scope: Specific population	Student support	Promising	Favorable (4-year colleges)	*	*	*	College Possible Evaluation	Currently 7 Saint Paul public schools, 4 Minneapolis public schools, and 15 suburban and public charter high schools participate.
College Possible - Online Program	Description: The College Possible high school program expanded from high schools in the Twin Cities to schools in greater Minnesota through an online-based program. Currently, 30 public schools participate. Students receive one hour conferences once a month plus weekly communication. Target population: High School Students Scope: Specific population	Student support	Theory Based	*	*	*	*		
Collegiate Recovery	Description: The collegiate recovery program is a multi-faceted approach to support students and allies of individuals who are in recovery from substance abuse. This program provides a licensed alcohol and drug counselor to meet with students twice a week. Additionally, student workers support a space on campus where these students can congregate informally and meet once a week. The college also provides academic advising support. Target population: College students Scope: Specific population	Student support	Theory Based	*	*	*	*		
Common Intellectual Experience	Description: A set of required common courses or a vertically organized general education program that includes advanced integrative studies. These programs often combine broad themes—e.g., technology and society, global interdependence—with a variety of curricular and co-curricular options for students. Target population: College students Scope: Campus specific - medium prevalence	Student support	Theory Based	*	*	*	*		
Co-Requisite Support	Description: Enrolls entering students into college-level math and English courses, providing those who need additional help a concurrent course or lab that offers just-in-time academic support. Target population: College students Scope: Campus specific - medium prevalence	Course selection strategy	Theory Based	*	*	*	*		
Dual Training Programs	Description: The goal of the program is to assist current employees (of all ages) to obtain additional formal training in industries like advanced manufacturing, agriculture, health care services, and information technology. Dual Training Grants are provided to employers and organizations of employers for related instruction costs. Target population: Employees in selected companies/industries Scope: Specific population	Financial support	Theory Based	*	*	*	*		Grants are made to employers for eligible employees. Similar programs exist in Utah and Ohio.

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
Early Alert and Intervention Advising Systems	Description: Early academic warning processes typically triggered when faculty members identify students who are struggling and notify others in the college who step in to support the students. Via e-mail, text, social media, or phone, students are encouraged to access services, such as tutoring, peer mentoring, study groups, and student success skills workshops. Target population: College students Scope: Campus specific - high prevalence	Advising	Theory Based	*	*	*	*		
Equity by Design (pilot)	Description: The Equity by Design Workgroup is a collaborative effort between the Minnesota State Office of Equity and Inclusion and Academic and Student Affairs. This work aims to address the following questions: 1) Will equity-focused policy translate into equitable outcomes for Black, Latino, and American Indian students? and 2) How can we bridge the gap between equity as a policy intent and institutional readiness for implementation? Campus teams identify programs within their college or university, navigate best practices to practitioners, and analyze success gaps among underserved and underrepresented student populations. Target population: Historically underrepresented college students Scope: Campus specific - medium prevalence	Institutional Support and Structure	Theory Based	*	*	*	*		Currently, there are 13 Minnesota State institutions participating in the work. Once the data analysis is completed, teams will formulate recommendations to address current practices, routines, and structures that act as barriers to educational equity.
Federal FAFSA Completion Initiative	Description: The FAFSA Completion Initiative is a national effort that allows states to provide participating high school districts, high schools, and other designated entities access to data which determines if individual students have submitted and completed the Free Application for Federal Student Aid (FAFSA). Students who have not completed the FAFSA may then be targeted for support in completing the application. Target population: Current High School Seniors Scope: Statewide	College Preparation; Financial Support	Theory Based	*	*	*	*		This is a new initiative beginning in 2015-2016. Minnesota's program began with the 2016-2017 school year.
First-Year Experience Courses/Student Success Courses at 2-year institutions	Description: Community and technical college courses that help students build knowledge and important skills, from study and time-management skills to awareness of campus facilities and support services. Target population: College students Scope: Campus specific - high prevalence	Student support	Proven Effective	*	Neutral	Favorable (2-year degree)	*	Washington State Institute for Public Policy	
First-Year Experience Courses/Student Success Courses at 4-year institutions	Description: College and university courses that teach first-time students nonacademic skills. The content of these courses can vary widely but generally include topics like study skills, time management, academic planning, college orientation, and personal wellness. Target population: College students Scope: Campus specific - high prevalence	Student support	Proven Effective	*	Favorable	*	*	Washington State Institute for Public Policy	Persistence outcomes include retention within the first year and into the second year.
GEAR UP - Get Ready	Description: Get Ready/GEAR UP Minnesota provides underrepresented students and their families with high-impact, equitable, and sustainable college and career readiness interventions in collaboration with its school and community partners. Students in grades 6-12 and during the first year of college receive curriculum-based lessons, personalized advising and counseling services, and access to a host of experiential learning activities designed to increase postsecondary participation and completion. Target population: Historically underrepresented and low-income high school students Scope: Specific population	Student support; College Preparation	Theory Based (Category of Services)	*	*	*	*		The Federal TRIO Programs (TRIO) serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to post-baccalaureate programs.

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
Guided Pathways to Success (GPS)	Description: Three Minnesota State schools implement a GPS program to provide historically underrepresented students with individualized academic and career planning, early alert warnings, and a first-year experience course and/or a summer bridge program component. Target population: Historically underrepresented students Scope: Campus specific - low prevalence	Advising; Student support	Theory Based						
HOPE Academy	Description: Winona State University hosts this 14-day summer program where 9th through 12th grade students participate in a number of academic activities: working on math skills, science skills, reading skills, and social and cultural development activities. Target population: African American and Latino high school students Scope: Campus specific - low prevalence	College Preparation	Theory Based	*	*	*	*		
ICAP Grant Programs high school students	Description: The Intervention for College Attendance Program (ICAP) is a program of competitive grants awarded to postsecondary institutions, professional organizations and community-based organizations to increase the access and success of groups traditionally underrepresented in higher education. Programs strengthen students' preparation and aptitude for postsecondary success. This group of programs targets high schools students and offers: career and college planning (financial aid, admission process, FAFSA), career development opportunities, ACT prep, Saturday/summer enrichment programs, college visits, academic support and tutoring. Three programs also support students after they graduate high school. Target population: Historically underrepresented high school students Scope: Specific population	Student support; College Preparation	Theory Based (Category of Services)	*	*	*	*		Includes the following programs (sponsoring organization): DREAM Project (College of St. Scholastica), BSU Upward Bound (Bemidji State University), Intensive ACT College Prep (Dakota County Technical College), Learning Connections: Developing College-Ready Writing (Learning Disabilities Association Inc.), Seed of Change/AAMI AVID (Concordia University, St. Paul), Enter University (Mankato State University). Three also support high school graduates: Navigate to Graduate (Riverland Community College), AGILE College Readiness Project (MN African Women's Association)

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
ICAP Grant Programs high school students (with dual credit support)	<p>Description: The Intervention for College Attendance Program (ICAP) is a program of competitive grants awarded to postsecondary institutions, professional organizations and community-based organizations to increase the access and success of groups traditionally underrepresented in higher education. Programs strengthen students' preparation and aptitude for postsecondary success. OHE awarded grants to twenty programs in FY 2017 that provide dual credit support to students. Programs offer support for high school students interested/pursuing PSEO, which is an evidence-based program.</p> <p>Target population: Historically underrepresented high school students</p> <p>Scope: Specific population</p>	Student support; College Preparation	Theory Based (Category of Services)	*	*	*	*		Includes the following programs (sponsoring organization): Tackling Obstacles and Raising College Hopes - TORCH (Northfield public schools), Maadaadizi - Start a Journey (Saint Paul Public Schools), Girls Getting Ahead in Leadership - GGAL (Women's Initiative for Self Empowerment, Inc.), Project Scholar (SouthWest Metro Educational Cooperative), Rice County College Access and Academic Outreach Program (Carleton College), Native Academy Connections (MIGIZI Communications, Inc.)
ICAP Grant Programs middle school and high school students	<p>Description: The Intervention for College Attendance Program (ICAP) is a program of competitive grants awarded to postsecondary institutions, professional organizations and community-based organizations to increase the access and success of groups traditionally underrepresented in higher education. Programs strengthen students' preparation and aptitude for postsecondary success. This group of programs fosters long-term relationships with students since they offer services from middle school through high school. Similar components across all programs: ACT prep, Saturday/Summer enrichment programs, college visits, academic support and tutoring. Some include financial literacy workshops, individualized college counseling, assistance with scholarship applications and FAFSA.</p> <p>Target population: Historically underrepresented high school students</p> <p>Scope: Specific population</p>	Student support; College Preparation	Theory Based (Category of Services)	*	*	*	*		Includes the following programs (sponsoring organization): Breakthrough Twin Cities (Breakthrough Twin Cities), Project ELY (Ely Community Resource, Inc.), Promoting Academic Success for Underrepresented Students (St. Cloud State University), ACT/SAT Course for At-Risk students (Regents of the University of Minnesota), FutureWork\$ (Minneapolis Urban League - MUL)
Intrusive Advising with Case Management	<p>Description: Action oriented advising that involves and motivates students to seek help when needed. Case management for academic advising includes the following: targeted outreach to specific student populations, creation of individualized student success plans, intentional referrals to other departments and services, maintenance of detailed advising notes and student records, advocacy for student-centered policies and procedures at all institutional levels, and continual evaluation of the advising process and its effectiveness.</p> <p>Target population: College students</p> <p>Scope: Campus specific - high prevalence</p>	Advising	Promising	*	Favorable (into 2nd year)	Neutral (2-year degree)	Neutral (GPA)	Washington State Institute for Public Policy	Includes academic maps with proactive advising.

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
Learning Communities (LC) and Living-Learning Communities (LLC)	Description: Colleges and universities co-enroll cohorts of students in two or more courses. There are varying levels of collaboration, curricular integration, and support. Programs may include specialized living environments that connect students to inside- and outside-the-classroom experiences. Target population: College students Scope: Campus specific - high prevalence	Student support	Theory Based (Category of Services)	*	*	*	*		Students that participate in LC/LLCs are more likely to report higher scores in critical thinking abilities, confidence in college success; are less likely to drop a class, skip classes, feel overwhelmed by coursework; and have lower reported instances of binge drinking. See https://bit.ly/2v8BjXD
Loan Forgiveness Programs	Description: Programs that forgive the remaining balance of specific loans or a specified amount after certain criteria are met. Examples include: Teacher Shortage Loan Repayment Program, Large Animal Veterinarian Loan Forgiveness Program, Federal John R. Justice Student Loan Repayment program Target population: College students; College graduates Scope: Statewide	Loan Forgiveness	Theory Based	*	*	*	*		There are studies measuring the impact of loan forgiveness programs on career choice, especially in low-income schools or public positions, but none met our criteria for inclusion.
Minnesota College Goal	Description: Statewide volunteer program that provides free information and assistance to students and families completing the FAFSA. Volunteer sites host events where students have the opportunity to complete their FAFSA with the support of trained financial aid professionals. Target population: High School Students Scope: Statewide	College Preparation; Financial Support	Theory Based	*	*	*	*		OHE helps coordinate over 80 events in nine months. Site coordinators volunteer to be part of this initiative. There are no incentives provided for school staff to take on additional work of coordinating an event, so many communities have low participation.
MN College Savings Program (529 Savings Plans)	Description: This is Minnesota's 529 college savings plan. This program allows post-tax contributions to an account which can be invested in various options ranging from conservative to aggressive. If the funds are used for qualified postsecondary education expenses, then all earnings and gains on the invested funds may be used free of federal and state income taxes. Target population: All Minnesota Residents Scope: Statewide	Financial support	Theory Based	*	*	*	*		
MN GI Bill	Description: The Minnesota GI Bill Program provides postsecondary financial assistance to eligible Minnesota veterans and service members and to the children and spouses of deceased or eligible Minnesota veterans with severe disabilities. Target population: Eligible Veterans and their families Scope: Specific population	Financial support	Theory Based	*	*	*	*		
MN Reconnect	Description: MN Reconnect aims to provide financial, academic and personal support to adult learners in order to incentivize them to complete a certificate or degree. Target population: College students age 25 or older, student parents, or other individuals who are not enrolling directly from high school Scope: Specific population	Financial support; Student support	Theory Based	*	*	*	*		This program will start in Fall 2018; however, OHE's authority to use existing financial aid funds for the program's scholarships was not approved during the 2018 Legislative Session.

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
Need-based grants	Description: Need-based grants provide means-tested financial assistance to low-income students with minimal participation requirements. Need-based grants can come from many sources and in various forms. Does not include institutional need-based aid or other grant programs that have conditions for aid receipt other than income (such as work study or merit-based aid). Target population: Lower-income college students Scope: Statewide	Financial support	Proven Effective	*	Favorable	Favorable (4-year degree)	*	Washington State Institute for Public Policy	Persistence outcomes include retention within the first year and into the second year. Includes the State Grant Program, American Indian Scholarship, and Minnesota Dream Act.
Non-Academic Student Support Services	Description: Support services programs or referrals provided for students who experience situational barriers that impact their ability to successfully complete an educational program such as: inaccessible transportation, housing and food insecurity, emergency/unexpected financial hardship, lack of affordable child care, and inadequate medical or mental health care. The service administrator may be the school or a state grant; for example, the Postsecondary Child Care Grant. Target population: College students Scope: Campus specific - high prevalence	Student support	Theory Based (Category of Services)	*	*	*	*		
Office of Higher Education (OHE) Outreach	Description: Aims to provide all students, especially those from underrepresented populations, with the tools to make an informed decision when choosing a path to postsecondary education. Providing access to information on postsecondary options and financial resources for postsecondary education through social media, presentations, publication, and community partnerships. Target population: High School Students Scope: Statewide	College Preparation; Financial Support	Theory Based	*	*	*	*		
Orientation	Description: Orientation programs welcome new first year, transfer and international students to campus. Program components include topics such as academic and community expectations on campus and nonacademic skills for transitioning to college life. Students also receive information on campus resources and meet with academic advisors to register for fall courses. Target population: College students Scope: Campus specific - high prevalence	Student support	Theory Based	*	*	*	*		
Peer Tutoring	Description: Peer support and academic intervention for students who traditionally struggle with specific content or the transition to college life. Target population: College students Scope: Campus specific - high prevalence	Student support	Theory Based	*	*	*	*		
Postsecondary Child Care Grant	Description: The Postsecondary Child Care Grant helps low income undergraduate and graduate students who have children pay for child care while the student attends class at an eligible institution. Target population: Lower-income college students with children Scope: Statewide	Financial support	Theory Based	*	*	*	*		Minnesota's postsecondary child care grant only provides funds to cover a portion of child care costs that students face.

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
Postsecondary Enrollment Options (PSEO)	Description: The Post-Secondary Enrollment Options Act, which passed in 1985, allows juniors and seniors in Minnesota public, private, home, and charter schools to register concurrently for high school and post-secondary course work that occurs at post-secondary institutions. PSEO staff provide services to participants, their parents, and high schools, through the entire PSEO experience, including admission, orientation, academic advising, registration, and career, major, and college exploration. Target population: High School Students Scope: Campus specific - high prevalence	Dual credit; College preparation	Proven Effective	Neutral (4-year colleges)	*	Favorable (4-year degree)	Favorable (GPA)	Washington State Institute for Public Policy	
Power of YOU	Description: For eligible high school students, the Power of YOU program covers the cost of tuition and fees for two years through state and federal grants, and private scholarships. This last-dollar financial aid supports as many students as possible based on need and funds available. Additionally, it provides support services that include: advising, student success seminars, community service, and civic engagement. Target population: Low Income High School Students from Minneapolis and Saint Paul Scope: Specific population	Financial support; Student support	Theory Based	*	*	*	*		Wilder Research has evaluated the program and shows positive results for Power of YOU participants. For more information visit: https://www.wilder.org/wilder-research/research-library/power-you#study-reports .
President's Emerging Scholars (PES) Scholarship and Program	Description: The University of Minnesota President's Emerging Scholars Program (PES) is a four-year opportunity for undergraduate students. Participants receive a number of benefits, including professional advising, peer mentoring, and opportunities for engagement. PES includes scholarships, programming, professional advising, and peer mentoring. There is also an optional five-day summer seminar prior to the freshman year. Target population: College Students Scope: Campus specific - low prevalence	Financial support; Student support	Theory Based	*	*	*	*		
Project Success Internship (pilot)	Description: The U.S. Dept. of Education's Office of Federal Student Aid started Project Success in 2016 at Minority Serving Institutions (MSIs). Through Great Lakes Higher Education Corporation and Affiliates, Fond du Lac Tribal and Community College is testing a pilot internship program which pays \$15 per hour to student participants. Target population: Students of color and American Indian students Scope: Campus specific - low prevalence	Student support	Theory Based (Culturally-informed intervention)	*	*	*	*		For more information see Great Lakes website.
Promise Scholarship (U Promise)	Description: University of Minnesota Promise Scholarship (U Promise) targets new Minnesota resident undergraduates with a family income under \$120,000, who enroll at any of the University's five campuses. First, students must complete a Free Application for Federal Student Aid (FAFSA) to be considered for this award. Eligible students will be guaranteed a U Promise Scholarship, which covers any last dollar amount on tuition and fees. Target population: Low and Middle Income College Students Scope: Specific population	Financial support	Theory Based	*	*	*	*		Washington State Institute for Public Policy (WSIPP) found changes in tuition price affects enrollment, persistence and graduation. For more information visit http://wsipp.wa.gov/BenefitCost/Program/792 .
Ramp-Up to Readiness	Description: Ramp-Up to Readiness™ is a school-wide advisory program from the University of Minnesota for students in grades 6-12 that features an engaging and interactive series of Activities designed to help all students graduate from high school ready for postsecondary success. Target population: High school students Scope: Campus specific - low prevalence	Student support; College Preparation	Theory Based	*	*	*	*		For more information see Ramp-Up to Readiness website.

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
SELF Loans	<p>Description: The SELF Loan is a student loan administered by the Office of Higher Education (OHE), and is unique to Minnesota since it is funded through bonds. The program is structured to incentivize repayment. Borrowers must have credit-worthy co-signers on their loans. They must also pay interest on their loans while in school, which allows SELF Loans to carry lower interest rates than many other private or state educational loans. Minnesota residents attending eligible schools and non-residents physically attending Minnesota eligible schools are eligible for the program.</p> <p>Target population: College Students</p> <p>Scope: Statewide</p>	Loan Repayment	Theory Based	*	*	*	*		OHE states that research indicates access to federal loans generally increases the likelihood of enrollment, persistence and completion. However results are mixed depending on the student's loan aversion and the cumulative debt they carry at the time the outcome is measured. SELF loan in particular has a cumulative default rate of 2%, much lower than federal loan programs. For more information see the OHE website on SELF Loans: https://www.selfloan.state.mn.us/index.cfm
SELF Refi	<p>Description: Student loan refinancing program for MN postsecondary institution graduates. SELF Refi could reduce the amount of interest you pay and/or provide a more manageable monthly payment amount.</p> <p>Target population: College graduates</p> <p>Scope: Statewide</p>	Loan Repayment	Theory Based	*	*	*	*		This program is only available to college graduates and has been in operation for only two years.
State Work Study	<p>Description: The State Work Study Program is designed to assist undergraduate and graduate students in meeting their financial need, and to provide students with work experiences</p> <p>Target population: College students</p> <p>Scope: Statewide</p>	Financial support	Theory Based	*	*	*	*		The work study award is set by the financial aid office. The actual amount depends on the student's financial need and the amount of money the school has available for the program.
Students of color and American Indian leadership development programs (Brother 2 Brother/SAAB etc.)	<p>Description: Leadership development programs designed to improve the educational experience and promote successful college completion among African American, Latino, and Native American students.</p> <p>Target population: Historically underrepresented college students</p> <p>Scope: Specific population</p>	Student support	Theory Based (Culturally-informed intervention)	*	*	*	*		
Summer Academic Enrichment Programs	<p>Description: Postsecondary educational institutions and nonprofits offer summer academic enrichment programs for students (grades 3-11). The Office of Higher Education approves programs and provides a stipend for low-income students. Many programs provide students exposure to the college environment.</p> <p>Target population: Low Income Elementary, Middle, High School Students</p> <p>Scope: Specific population</p>	Student support	Theory Based (Category of Services)	*	*	*	*		Stipend used for tuition, fees, and in some cases room and board.
Summer Bridge Programs	<p>Description: A summer bridge program is targeted and enables students who need developmental education courses to complete them in the summer before their first year, so they can move right into college-level courses in the fall.</p> <p>Target population: College students</p> <p>Scope: Campus specific - high prevalence</p>	Student support	Proven Effective	Neutral	*	Favorable (Any degree)	Favorable (Less remedial credits earned)	Washington State Institute for Public Policy	Includes Summer Scholars Academy at eight Minnesota State colleges.

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
Summer Nudging	<p>Description: Running January through December, text messages comprise anything from financial aid tips to possible bus routes to campus. The community it serves is primarily low-income, historically underrepresented, first-generation college students, but is available for any college intending high school graduate in Minnesota.</p> <p>Target population: High School Students</p> <p>Scope: Statewide</p>	Student support	No Effect	Neutral	*	*	*	Washington State Institute for Public Policy	Summer Nudging is based on research to prevent "summer melt". Neutral outcomes for enrollment include 2-year and 4-year colleges, though evidence of effectiveness does vary for different target populations (e.g. enrolled 2-year students). OHE notes that summer nudging programs tend to focus on students who have already applied to and been admitted to college; therefore, effects may be masked.
Supplemental Instruction	<p>Description: Regularly scheduled, supplemental class for a portion of students enrolled in a larger course section. Supplemental instruction may be taught by the class instructor or a trained assistant, often a former student who was successful in the class.</p> <p>Target population: Historically underrepresented college students</p> <p>Scope: Campus specific - medium prevalence</p>	Student support	Theory Based	*	*	*	*		
TRIO - Educational Opportunity Centers	<p>Description: Educational Opportunity Centers provide counseling and information on college admissions to qualified adults who want to enter or continue a program of postsecondary education. The program also provides services to improve the financial and economic literacy of participants.</p> <p>Target population: Adults</p> <p>Scope: Specific population</p>	Student support; College Preparation	Theory Based (Category of Services)	*	*	*	*		The Federal TRIO Programs (TRIO) serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to post baccalaureate programs.
TRIO - Student Support Services (SSS)	<p>Description: Through a federal grant competition, funds are awarded to institutions of higher education to provide opportunities for academic development, assist students with basic college requirements, and to motivate students toward the successful completion of their postsecondary education.</p> <p>Target population: Historically underrepresented and low-income high school students</p> <p>Scope: Specific population</p>	Student support; College Preparation	Theory Based (Category of Services)	*	*	*	*		The Federal TRIO Programs (TRIO) serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to post-baccalaureate programs. To access a national evaluation of SSS open the U.S. Dept. of Education report: https://bit.ly/2M6FG0H

Program	Description	Category	Rating	Enrollment	Persistence	Graduation	Other outcomes	Source of evidence	Other evidence or expert opinion
TRIO - Talent Search	<p>Description: The Talent Search program identifies and assists individuals from disadvantaged backgrounds who have the potential to succeed in higher education. The program provides academic, career, and financial counseling to its participants and encourages them to graduate from high school and continue on to and complete their postsecondary education.</p> <p>Target population: Historically underrepresented and low-income high school students</p> <p>Scope: Specific population</p>	Student support; College Preparation	Promising (Category of Services)	Favorable	*	*	*	Institute of Education Sciences: What Works Clearinghouse	The Federal TRIO Programs (TRIO) serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to post-baccalaureate programs.
TRIO - Upward Bound	<p>Description: The program serves high school students from low-income families and students from families in which neither parent holds a bachelor degree. Program components vary: academic instruction, tutoring, counseling, mentoring, cultural enrichment, work-study programs, financial and economic literacy skills, among others.</p> <p>Target population: Historically underrepresented and low-income high school students</p> <p>Scope: Specific population</p>	Student support; College Preparation	Promising (Category of Services)	Neutral	Neutral	Neutral	Favorable (Vocational certificate completion)	Institute of Education Sciences: What Works Clearinghouse	The Federal TRIO Programs (TRIO) serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to post-baccalaureate programs.
TRIO - Upward Bound Math-Science	<p>Description: Programs help students recognize and develop their potential to excel in math and science and to encourage them to pursue postsecondary degrees in math and science, ultimately careers in both disciplines.</p> <p>Target population: Historically underrepresented and low-income high school students</p> <p>Scope: Specific population</p>	Student support; College Preparation	Theory Based (Category of Services)	*	*	*	*		The Federal TRIO Programs (TRIO) serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to post-baccalaureate programs.
TRIO - Veterans Upward Bound	<p>Description: Veterans Upward Bound is designed to motivate and assist veterans in the development of academic and other requisite skills necessary for acceptance and success in a program of postsecondary education. The program provides assessment and enhancement of basic skills through counseling, mentoring, tutoring and academic instruction in the core subject areas.</p> <p>Target population: Veterans</p> <p>Scope: Specific population</p>	Student support; College Preparation	Theory Based (Category of Services)	*	*	*	*		The Federal TRIO Programs (TRIO) serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to post-baccalaureate programs.

Appendix C: Benefit-cost analysis research methods

Available for a benefit-cost analysis

After Minnesota Management and Budget (MMB) finished the program inventory, we determined which programs qualified for benefit-cost analysis. To qualify for the benefit-cost analysis, the program needed to meet three criteria:

- The program had a meta-analysis completed by the Washington State Institute for Public Policy.
- The program, as operated in Minnesota, had a similar treatment, duration, frequency, and participant profiles as the empirical research.
- MMB and our partners could estimate a statewide cost per participant.³¹

What is benefit-cost analysis?

Benefit-cost analysis is a tool for comparing policy alternatives based on net benefits generated over time for each dollar invested. The results provide important information about cost-effectiveness, but do not address other important factors, such as equity. An advantage of using benefit-cost analysis within the same policy area is the ability to measure costs and outcomes in the same way across different services.

The Results First model uses an integrated set of calculations in a statistical model to produce a benefit-cost ratio. This ratio indicates how many dollars in benefits to taxpayers and society the state can expect to occur over time, for every public dollar spent to fund the program. The model uses estimates of the impact of a program that have been calculated in a meta-analysis conducted by the Washington State Institute for Public Policy (WSIPP). As described in the following section, MMB applies this impact to Minnesota's baseline rate for the relevant metric. The difference between the baseline and the new estimated rate is monetized as benefits. The program's average cost, i.e., how much it costs to add one additional participant, is the denominator of the ratio. We report the resulting ratio as the monetary value of benefits for each \$1 invested to implement the program.

Limitations

Many public programs are composed of a combination of services provided in concert. This analysis, however, uses individual pieces of research on practices. Because of this, the model cannot estimate the impact of two separate programs provided together unless existing research has evaluated them in combination.

Further, MMB cannot break down results by demographic characteristics. Since the WSIPP benefit-cost model uses an aggregate measure of effect from multiple evaluations of the same program, MMB can only generalize results by the populations studied in those evaluations. To calculate results by demographic status, MMB would need to have studies which produced measures of impact for those groups. The model is flexible enough to allow for it, but at the time of publication, those specific evaluations did not exist.

There are limits to using a statewide benefit-cost ratio since Minnesota experiences many differences among regions, including differences in program availability an organization's capacity to follow evidence-based

³¹ Implementation costs can vary widely from one school to another. This affects the applicability of a benefit-cost ratio from organization to organization.

practices. A generalized state-level ratio averages the cost of a program across different situations and may not be an accurate representation of the cost experienced by a given organization.

Results First benefit-cost analysis terms

Term	Definition
Average net cost	The incremental cost of providing the program to one individual minus the cost of the likely alternative. For all higher education programs, there is no comparison cost; meaning the likely alternative is no other treatment. <i>Estimates are rounded to the nearest ten dollars.</i> Net costs are equal to highlight how the benefit-cost analysis is calculated.
Benefits	Programs shown to increase enrollment, persistence, and graduation produce benefits to taxpayers and society. Total benefits are the sum of taxpayer benefits, such as increased revenues from earnings, plus other benefits to society, such as increased labor market earnings. <i>Estimates are rounded to the nearest ten dollars.</i>
Benefit-cost analysis	An estimate of the cost effectiveness of alternative programs by comparing expected benefits to expected costs. Program profiles note which outcomes the model monetizes.
Benefit-cost ratio	The net present value of anticipated program benefits to state residents for every dollar in programmatic costs. <i>Ratios are rounded to the nearest ten cents.</i>
Evidence-based	A program whose effectiveness has been rigorously evaluated using studies with treatment and control group designs.
Negative benefits	The higher education model considers the cost of and time spent educating a student at an institution of higher education, and subtracts that from the estimated benefits (before dividing by the program cost). This consideration accounts for the fact that attending college is optional and has real and opportunity costs to the student. The model subtracts costs associated with attending college from the monetary benefits in the numerator of the benefit-cost ratio.
Net present value	The difference between the present value of cash inflows and outflows.
Other societal benefits	Benefits that accumulate to the program participant and society are increased labor market earnings. <i>Estimates are rounded to the nearest ten dollars.</i>
Program	An OHE- or postsecondary institution-implemented intervention to increase enrollment, persistence or graduation at two- or four-year postsecondary schools.
Rating	The rating reflects the degree to which there is evidence of effectiveness for a given program, as reflected in one or both of two national clearinghouses or literature review by Minnesota Management & Budget (see appendix A for definitions). The categories mirror the levels of evidence defined by The Pew Charitable Trusts and MacArthur Foundation .
Source of evidence	The source of evidence is the entity whose research synthesis was used to determine each program’s effectiveness. WSIPP is the source for all benefit-cost estimates.
Taxpayer benefits	Estimated taxpayer benefits accrue from increased tax revenues (from increased earnings) related to changes higher education enrollment, persistence, and graduation. <i>Estimates are rounded to the nearest ten dollars.</i>

Meta-analysis and effect sizes

In order to run the benefit-cost analysis on a given program, we need to know the average effect size of the program on desired outcomes. The Results First Initiative uses a benefit-cost model from Washington State Institute of Public Policy (WSIPP). In order to estimate the impact of each program, WSIPP first conducts a meta-analysis. We use the average effect sizes from their meta-analyses.

WSIPP meta-analysis

A meta-analysis collects all existing evaluations on the program and uses the findings from qualifying studies to calculate an average effect size on each relevant outcome. An effect size shows the direction and magnitude to which a program changes an outcome for participants relative to a comparison group (Lipsey & Wilson, 2001). Using graduation as an example outcome, if the effect size is positive, the program increases graduation. The size of the effect represents how much the service increases graduation. This analysis uses effect size and its associated standard error to determine how many units of enrollment, persistence, or graduation the program participant potentially increases after they participate in the program.

WSIPP uses three main steps to systematically review evaluation evidence for a given program³²: 1) define a topic or topics of interest (*e.g.*, increase enrollment, persistence, or graduation), 2) gather all the credible evaluations on the topic, and 3) use statistical procedures to draw a conclusion (Washington State Institute of Public Policy, 2017).

The quality of a meta-analysis depends on the breadth of study selection and coding criteria. WSIPP includes studies from peer-reviewed academic journals and reports obtained from government agencies or independent evaluations. WSIPP researchers use studies that include random assignment to assign subjects into a treatment and control group, as well as quasi-experimental studies which also uses a treatment and control group, but not necessarily random assignment. WSIPP only includes quasi-experimental studies if the study provided enough information to demonstrate comparability between the treatment and comparison groups. Each study must also provide an effect size and standard error for the meta-analysis. Chapter 2.2 of the [WSIPP Benefit-Cost Technical Documentation](#) describes the process and formulas used in the meta-analysis. The resulting effect size is a weighted mean effect size of a program on the specific outcome.

Using effect sizes for benefit-cost analysis

Application of the average effect size in the WSIPP benefit-cost model requires converting the average effect size to a unit change percentage and applying it to the baseline rate of an outcome. The baseline rates of each outcome (enrollment, persistence, and graduation) are from Minnesota-specific data. We worked the Office of Higher Education (OHE) to calculate baseline rates from a cohort of Minnesota high school graduates in 2010.³³

For example, if the meta-analysis shows a summer bridge program for high school graduates will increase enrollment by 3 percent, the benefit-cost model applies that increase to the baseline enrollment rate for Minnesota high school graduates. The model then estimates the monetary value of this 3 percent increase in enrollment.

³² In general, WSIPP follows the meta-analytic methods described in: Lipsey, M.W. & Wilson, D. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage Publications.

³³ Baseline rates for the model exclude students that went to college out-of-state.

Calculating benefits

The monetary value of a given change in outcomes is the benefits. The taxpayer and societal benefits of a program equal the total benefits, which are the numerator in a benefit-cost ratio.

For each program that we calculate benefits, we only monetize the outcomes that are statistically significant at the 90 percent confidence level for that program. There may be programs for which a change in a monetizable outcome is not statistically significant, and therefore, we do not include in our benefit calculation even though it could be statistically significant for a different program. Additionally, in WSIPP's statistical model, there must be existing research to link the change in outcome with a dollar value.

The Washington State Institute for Public Policy (WSIPP) benefit-cost model for higher education links college participation to increased earnings referencing a recent journal article by Heckman, Humphries, & Veramendi (2016). For more information see Chapter 4.8 of the [WSIPP Benefit-Cost Technical Documentation](#).

Taxpayer and other societal benefits for higher education

There is one benefit in the higher education model for the programs reviewed: the change in an individual's future earnings associated with changes in educational outcomes – i.e., enrollment, persistence, and degree completion. The taxpayer benefits come from the increased tax revenue from these future earnings. The societal benefits are the future earnings from the perspective of the student.

Additional considerations

Labor income, minus income tax, accrues to participants. For income tax from labor, we deviate from WSIPP, which assumes a total effective tax rate of 31 percent, and use an effective tax rate of 19.97 percent. WSIPP's figure reflects the median effective tax rate, which is likely too high for the population in this report. We used estimates from Minnesota's Department of Revenue's 2017 ([table 1-5](#)) tax incidence study for state (7.7%) and local taxes (4.3%).³⁴ For federal taxes, we use estimates from the [Peter G. Peterson Foundation](#) of total effective tax rates from income, payroll, corporate, and estate taxes combined for the second quintile (8.0%). This assumption may overstate or understate the proportion of the estimated benefits that would accrue to taxpayers versus society more broadly. However, this could be offset by other changes associated with additional earned income, including use of public programs such as health coverage and cash assistance that MMB did not assume had occurred for purpose of this analysis. Benefits also only consider the participant, not ramifications on friends or family.

If a recipient of a program leaves the state, Minnesota will not see those benefits. To account for this, MMB uses net migration rates by age to estimate the cumulative departure rate and deduct a proportional percentage of the total benefits.

Finally, the WSIPP benefit-cost model assumes that not all labor earnings are net new, because some portions of additional earnings by participants likely displace earnings from other Minnesotans. Bartik (2011) estimated that interventions in early education that create new workers displaces about thirty-four percent of wages for workers already in the workforce. Applying this to the higher education benefit-cost analysis, we assumed that 66 percent (i.e., 100% minus 34%) of additional earnings estimated to result from services are net new.

³⁴ Average of 4-6th decile for 2014 in table 1-5.

Negative benefits associated with attending college

The higher education model considers the cost of and time spent educating a student at an institution of higher education, and subtracts that from the estimated benefits (before dividing by the program cost). This consideration accounts for the fact that attending college is optional and has real and opportunity costs to the student and to taxpayers. The model subtracts costs associated with attending college from the monetary benefits in the numerator of the benefit-cost ratio.

Costs of higher education

Individuals in college accumulate costs related to tuition and fees. Institutions also incur costs to educate students: operational costs, instruction, and additional services. The model combines these educational costs (negative benefits) with any expected labor market benefits accrued from college participation. For each year or partial year that an individual spends in higher education, the model calculates the negative benefits by multiplying the percent of the year in school by the cost of that type of school.

The Pew Charitable Trust Results First Initiative created a tool that accesses the average annual educational cost at accredited schools in Minnesota. This tool uses data from the federal Department of Education’s Integrated Postsecondary Education Data System (IPEDS). IPEDS collects a wide variety of information from every college, university, and technical institution that participates in the federal student financial aid program.

The tool included 106 public and private institutions in Minnesota.³⁵ We used a weighted average to calculate the average annual educational cost of an associate degree and a bachelor’s degree. Educational costs include instruction, academic support, student services, institutional support, and operational expenses.³⁶

Type of institution	Annual cost (standard deviation)
Associate degree (2-year) institutions	\$10,910 (\$2,250)
Bachelor’s degree (4-year) institutions	\$20,780 (\$13,590)

Additionally, the model distributes the negative benefits among different payers for each type of institution. Using IPEDS data for each of the 106 institutions in Minnesota, we calculated the proportion of the annual cost which is paid by taxpayers, students, and other payers. Definitions are below.

Term used in below calculation	Definition
<i>Total Aid</i>	Appropriations and grants awarded at an institution
<i>Grants</i>	Includes state, federal, local, and other
<i>Tuition Revenue</i>	Reported to IPEDS by each institution
<i>Total Funding</i>	Tuition aid plus tuition revenue

Proportion paid by	Calculation
Taxpayers	<i>(Total Aid minus “other” grants) divided by Total Funding</i>
Students	<i>Tuition Revenue divided by Total Funding</i>
Other payers	<i>Other Grants divided by Total Funding</i>

³⁵ We reviewed the list of schools to decide which ones students in our cohort of 2010 Minnesota high school graduates most likely attended. The only two we excluded were Capella and Walden University for this reason. We include private schools because it is very likely that the 2010 cohort of students went to a mix of public and private schools.

³⁶ Does not include the costs not paid to the institution, for example, the costs a student incurs while in school for living expenses and transportation.

As shown in Figure 18 (Section 3.B), students pay for about 30 percent of the costs at 2-year schools while state and federal taxpayers pay for nearly 70 percent of the costs through student aid and direct appropriations to schools. At 4-year, bachelor's degree granting schools, students typically pay for 51 percent of the education costs, while state and federal taxpayers pay for 33 percent and private grants and scholarships cover the remaining 16 percent. Of the proportion paid by taxpayers at both institutions, the federal government funds about one-third, while the state covers nearly two-thirds.

The taxpayer and societal benefits for each ratio include the proportion of negative benefits paid by each payer. Because the state covers nearly two-thirds of both 2-year and 4-year degrees, the state taxpayer benefits may be negative.

Time spent in higher education

The model also uses length of time in higher education to indicate the opportunity cost of not earning money while in school. As such, it mitigates the amount of earnings benefits. For example, the earnings benefits for someone enrolling and graduating with a 4-year (bachelor's) degree are deferred by 4.07 years. WSIPP estimated these parameters from the [U.S. Department of Education's Educational Longitudinal Survey](#), which tracks 12th graders in 2004, their subsequent educational attainment, and the amount of time to reach that level.

Program Costs

Minnesota Management and Budget worked with the Office of Higher Education, Minnesota State, and the University of Minnesota to collect program-specific data to calculate an average cost per participant for each higher education program included in the benefit-cost analysis.

The average cost per participant is the denominator of the benefit-cost ratio. If several data collection partners administer the program, we combined each site's average cost per participant into a statewide estimate.

Average cost per participant = (a) Total variable program costs ÷ (b) Number of participants

(a) Total average variable program costs = total program expenditures - fixed costs

Total program expenditures include things like staff to administer the program, program-specific training, and program-specific materials.

Fixed costs do not change with the number of participants, such as rent, utilities, etc. They should be excluded from the total variable costs.

(b) Number of participants = the total number of participants who began the program/service/intervention

The cost is based on all participants admitted rather than only individuals who complete the program. MMB assumes the comparison cost is zero for all higher education programs in the benefit-cost analysis; meaning, there is no alternative program offered to the participant. The WSIPP model assumes all services last one year or less. If the service lasts more than one year, MMB used the actual duration period.

References

- Bartik, T. J. (2011). *Investing in Kids: Early Childhood Programs and Local Economic Development*. W.E. Upjohn Institute. <https://doi.org/10.17848/9780880994002>
- Brown, J., & Hoxby, C. (2014). Introduction to "How the Financial Crisis and Great Recession Affected Higher Education." In *How the Financial Crisis and Great Recession Affected Higher Education*. University of Chicago Press. Retrieved from <http://www.press.uchicago.edu/ucp/books/book/chicago/H/bo19198130.html>
- Desrochers, D. M., & Hurlburt, S. (2016). *Trends in College Spending: 2003-2013*. Washington, D.C.: American Institutes for Research.
- Djurovich, A., & Fergus, M. (2017). *Minnesota Measures: A 2017 Report on Higher Education Performance*. Saint Paul, MN: Minnesota Office of Higher Education. Retrieved from <http://www.ohe.state.mn.us/pdf/MinnesotaMeasures2017.pdf>
- Fergus, M., Williams-Wyche, S., Brower, S., & Egbert, A. (2016). Educating for the Future: Baseline Estimates of Minnesota's Educational Attainment. *Minnesota Office of Higher Education*. Retrieved from <https://eric.ed.gov/?id=ED572333>
- Fishman Dovey, T., Ludgate, A., & Tutak, J. (2017, March 16). Success by design: Improving outcomes in American higher education. Retrieved January 29, 2018, from <https://www2.deloitte.com/insights/us/en/industry/public-sector/improving-student-success-in-higher-education.html>
- Friedrich, A. (2013, December 17). Minnesota college enrollment back to pre-recession level. Retrieved January 3, 2018, from <https://blogs.mprnews.org/oncampus/2013/12/overall-minnesota-college-enrollment-back-to-pre-recession-level/>
- Friedrich, A. (2015, March 17). Drop in enrollment means financial trouble for MnSCU. Retrieved January 3, 2018, from <https://www.mprnews.org/story/2015/03/17/mnscu-enrollment-drop>
- Heckman, J., Humphries, J. E., & Veramendi, G. (2016). *Returns to Education: The Causal Effects of Education on Earnings, Health and Smoking* (No. w22291). Cambridge, MA: National Bureau of Economic Research. <https://doi.org/10.3386/w22291>
- Lewin, G., Sheff, N., & Sorenson, N. (2015). *Minnesota College Readiness Program Inventory*. Saint Paul, MN: Minnesota Office of Higher Education. Retrieved from <https://www.ohe.state.mn.us/pdf/MNCollegeReadinessInventoryReport.pdf>
- Lipsey, M. W., & Wilson, D. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage Publications.
- Lumina Foundation. (2017). A Stronger Nation 2017. Retrieved November 27, 2017, from <http://strongernation.luminafoundation.org>
- Ma, J., Baum, S., Pender, M., & Welch, M. (2017). *Trends in College Pricing*. New York, NY: The College Board.
- Minnesota Management and Budget. (2016). *Higher Education*. Powerpoint, Budget Division.
- Minnesota Management and Budget. (2018a). *FY2020-21 Minnesota State*. Saint Paul, MN: State of Minnesota. Retrieved from <https://mn.gov/mmb/budget/research-and-data/summary-of-agencies-programs-activities.jsp>
- Minnesota Management and Budget. (2018b). *FY2020-21 University of Minnesota*. Saint Paul, MN: State of Minnesota. Retrieved from <https://mn.gov/mmb/budget/research-and-data/summary-of-agencies-programs-activities.jsp>

- Minnesota Office of Higher Education. (2017a). Graduation Rates. Retrieved November 27, 2017, from <http://www.ohe.state.mn.us/mPg.cfm?pageID=754>
- Minnesota Office of Higher Education. (2017b). Student Enrollment Data. Retrieved November 28, 2017, from http://www.ohe.state.mn.us/sPages/student_enroll_data.cfm
- Minnesota Office of Higher Education. (2017c). Yearly Budgets. Retrieved March 5, 2018, from <http://www.ohe.state.mn.us/mPg.cfm?pageID=918>
- Minnesota Office of Higher Education. (2018). Graduate Debt. Retrieved November 8, 2018, from http://www.ohe.state.mn.us/sPages/grad_debt.cfm
- Minnesota State. (1996). History and Background. Retrieved December 11, 2017, from <http://www.mnscu.edu/board/summary/1996/december-history.html>
- Minnesota State. (2017a). About Minnesota State. Retrieved December 11, 2017, from <http://www.minnstate.edu/system/index.html>
- Minnesota State. (2017b). *Student Full Year Equivalent (FYE) FY2006-2019*. Retrieved from <http://www.minnstate.edu/system/finance/budget/enrollment/docs/fy2006-2019-master-fye-may-2017.pdf>
- Minnesota State Demographic Center. (2017). PopFinder For MN, Counties, & Regions. Retrieved December 27, 2017, from <https://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/pop-finder1.jsp>
- Mishkind, A. (2014). *Overview: State Definitions of College and Career Readiness*. American Institutes for Research: College & Career Readiness & Success Center.
- Mitchell, M., Leachman, M., & Masterson, K. (2017). *A Lost Decade in Higher Education Funding*. Washington, D.C.: Center on Budget and Policy Priorities.
- National Center for Education Statistics. (2017). IPEDS Trend Generator. Retrieved November 29, 2017, from <https://nces.ed.gov/ipeds/trendgenerator/>
- Office of Higher Education. (2016). Glossary. Retrieved December 11, 2017, from <http://www.ohe.state.mn.us/pdf/enrollmentGlossary.pdf>
- Office of Higher Education. (2017a). *2017 Legislative Session Summary-May 2017*. Saint Paul, MN: Office of Higher Education. Retrieved from <http://www.ohe.state.mn.us/pdf/HEBillSummary17.pdf>
- Office of Higher Education. (2017b). Educational Attainment Goal 2025. Retrieved December 11, 2017, from <http://www.ohe.state.mn.us/mPg.cfm?pageID=2187>
- Podolsky, A., & Kini, T. (n.d.). *Policy Brief: How Effective Are Loan Forgiveness and Service Scholarships for Recruiting Teachers?* (p. 8).
- Ross, T., Kena, G., Rathbun, A., KewalRamani, A., Zhang, J., Kristapovich, P., & Manning, E. (2012). Higher Education: Gaps in Access and Persistence Study. *National Center for Education Statistics*.
- University of Minnesota. (2014). History of the University of Minnesota [Text]. Retrieved December 11, 2017, from <https://r.umn.edu/node/511>
- U.S. Census Bureau. (2017). American FactFinder - Results. Retrieved November 7, 2017, from
- U.S. Department of Education, N. C. for E. S. (2001). Paving the Way to Postsecondary Education: K-12 Intervention Programs for Underrepresented Youth. In *prepared by Patricia Gandara with the assistance of Deborah Bial for the National Postsecondary Education Cooperative Access Working Group*. National Postsecondary Education Cooperative.

- Verges, J. (2018, January 24). Minnesota State schools cope with enrollment drop; most lose money. Retrieved January 25, 2018, from <https://www.twincities.com/2018/01/24/minnesota-state-schools-cope-with-enrollment-drop-most-lose-money/>
- Washington State Institute of Public Policy. (2017). *Benefit-Cost Technical Documentation*. Olympia, WA.
- Williams-Wyche, S., Fergus, M., & Djurovich, A. (2017). *Educating for the Future 2016: Update and Policy Guide*. Saint Paul, MN: Minnesota Office of Higher Education. Retrieved from <http://www.ohe.state.mn.us/pdf/EducatingForTheFuturePolicyGuide2017.pdf>
- WSIPP. (2018, January). Text message reminders (for high school students and graduates). Retrieved August 24, 2018, from <http://www.wsipp.wa.gov/BenefitCost/Program/691>

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