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Educating for the Future

Baseline Estimates of Minnesota's
Educational Attainment



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About the Minnesota Office of Higher Education

The Minnesota Office of Higher Education is a cabinet-level state agency providing students with financial aid programs and information to help them gain access to postsecondary education. The agency also serves as the state's clearinghouse for data, research and analysis on postsecondary enrollment, financial aid, finance and trends.

The Minnesota State Grant Program is the largest financial aid program administered by the Office of Higher Education, awarding up to \$180 million in need-based grants to Minnesota residents attending accredited institutions in Minnesota. The agency oversees tuition reciprocity programs, a student loan program, Minnesota's 529 College Savings Plan, licensing and early college awareness programs for youth.

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Executive Summary

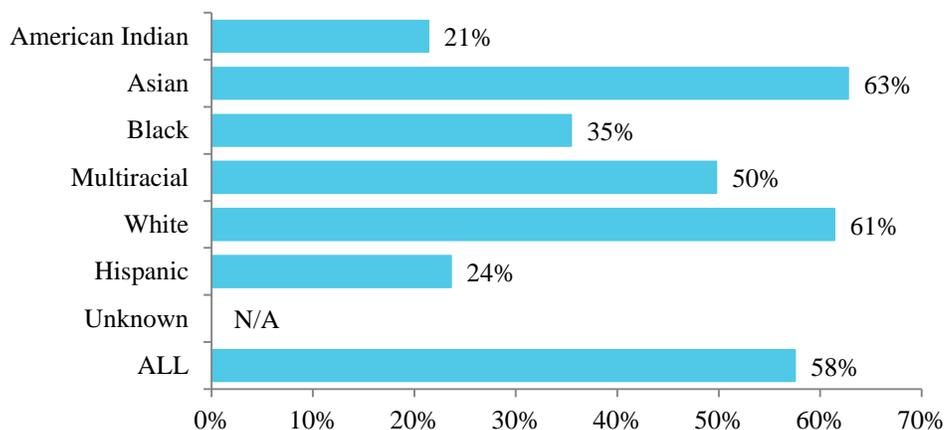
Note: This is a corrected version of the report issued May 2, 2016. Staff did not account for some rounding error in the original report which caused the count of new credentials needed to be underreported, therefore we have updated the report accordingly.

In 2015, the Minnesota Legislature enacted legislation setting a target that 70 percent of Minnesota adults age 25 to 44 will have attained a postsecondary certificate or degree by 2025, both for the general population and by racial/ethnic subgroups. This report fulfills the mandated reporting pursuant to Minnesota's educational attainment goal, specifically the techniques utilized to estimate certificate attainment for Minnesotans age 25 to 44 (*Minnesota Laws 2015 Chapter 69, Article 3, Section 25*). Information included in this report is the combined work of the Minnesota Office of Higher Education (OHE), Minnesota State Demographic Center, Minnesota State Colleges and Universities (MnSCU). This and subsequent reports, as required by the legislation, will include the updates to data and methodology used to establish educational attainment in Minnesota.

Minnesota is one of the most educated states in the country, across all age groups. Minnesota ranks second nationally among states. Our overall high ranking masks severe disparities between racial and ethnic groups, which is also consistent across age groups. The populations growing the fastest have historically not been adequately served within Minnesota's educational system. The state's changing demographic profile requires the state begin reducing these gaps or the state's future economic prosperity will be imperiled.

Fifty-eight (57.5) percent of Minnesotans age 25 to 44 in 2008-2012 (American Community Survey [ACS] estimates) have attained a postsecondary certificate or higher. Certificate and degree attainment rates vary by race and ethnicity from 21 percent for American Indian Minnesotans to 63 percent for Asian Minnesotans. As shown in Figure 1, no group in Minnesota is currently attaining a 70 percent educational attainment rate, though results vary by subgroup within race categories.

Figure 1. Population Age 25 to 44 with a Certificate or Higher Credential, Minnesota 2008 - 2012 by Basic Race and Ethnicity Categories



Sources: IPUMS microdata version of U.S. Census Bureau 2008-2012 American Community Survey for Associate or Higher Degree, with tabulations by the MN State Demographic Center; Holders of certificates as their highest post-secondary award were estimated using a cohort analysis method applied to administrative data on certificates awarded (supplied by the Minnesota State Colleges and Universities system and the Minnesota Office of Higher Education) and produced by the MN State Demographic Center.

Notes: All race categories above are non-Hispanic. Estimates have been rounded to the nearest whole percent. Users are cautioned that these estimates contain sampling and other sources of error, not shown here. Percentages were not calculated for individuals with "other" or unknown race due to differences across datasets.

Why it is Important to Address Disparities

Projections are that Minnesota’s minority population will grow from 14 percent to 25 percent of the total population by 2035, and within postsecondary education, students of color are becoming a larger share of undergraduate enrollment in the state.

- Fewer Minnesotans of color attain a degree.
- Students of color graduate from high school within four years at a rate lower than White students.
- Students of color enroll in college at a rate lower than White graduates.
- Students of color are concentrated at two-year institutions.
- Students of color and non-English speakers enroll in developmental education at higher rates.
- Students of color graduate from college at lower rates.

These significant disparities in postsecondary enrollment and completion for people of color threaten Minnesota’s economic future.

The analysis of disaggregated data by race and ethnicity is central to understanding educational attainment disparities in Minnesota. Even within subgroups of the same race there is evidence of wide disparities. As a result, aggregate estimates can mask significant disparities. Understanding the variation by subgroups will help stakeholders better determine strategies and investments to improve educational attainment rates. Data collected by school districts and colleges in the future should align at the local, state and national level in order to provide the most accurate and helpful information.

Associate Degree or Higher Estimates

Overall, 50.3 percent of Minnesotans have an associate’s degree or higher. Again, large disparities are noted between whites and people of color and within subgroups of a specific population. This is especially true of Asian subgroups. Overall, the Asian subgroup is at 63 percent postsecondary attainment. When you look closer, though, among Asian Lao, Cambodian and Hmong populations, the likelihood of holding an associate degree is closer to 30 percent.

Methodology for Estimating Certificate Attainment

Currently, the ACS does not include data on how many adults have sub-baccalaureate certificates as their highest form of education. The Census category “some college, no degree is a catch-all category that includes individuals who are currently enrolled in college and have not finished, individuals who attended college and did not complete their education, and individuals who earned a postsecondary credential below an associate degree. The inclusion of non-completers and currently enrolled students in this category make it an inadequate measure of certificate attainment.

“Certificates” for the purpose of the educational attainment goal refers to a postsecondary award, certificate, or diploma at a level less than a baccalaureate degree, which is not an associate degree. This includes “awards”, “certificates”, or “diplomas” depending on the naming convention used by a specific institution. It does *not* include awards conferred by an entity other than a postsecondary institution, such as an industry certificate awarded by a company.

To reach an estimate of the number of certificates awarded, we used student data provided by MnSCU and OHE between 1990 and 2010, broken down by the age of the certificate holders. The size of each cohort changes over time based on four factors:

- The *mortality* of the certificate holders
- The *migration* of certificate holders into and out of the state
- The *advancement of certificate holders to higher levels of educational attainment*, and
- The *progression of cohort into and out of the 25 to 44 age group* – the age group specified in Minnesota’s educational attainment goal.

Migration and educational advancement beyond a certificate have greater relative impacts on the number of certificate holders than mortality. Recent analysis by the Minnesota State Demographic Center indicates that Minnesota will experience a heightened need for migration to shore up its labor force needs (Minnesota State Demographic Center, 2015).

Recent years have shown a trend for more certificate completers to go on for further educational attainment. Approximately 10 percent of certificate completers in 1990 went on to earn an associate degree or higher by June 2015. In comparison, more than 20 percent of certificate completers in 2006 went on to earn an associate degree or higher by June 2015.

Final estimates show that *no group* in Minnesota age 25 – 44 is currently attaining a 70 percent educational attainment rate. Results vary between racial/ethnic groups and within racial/ethnic subgroups. The educational rates for the population age 25 – 44 with a credential or higher are:

- 21 percent for American Indian and 24 percent for Hispanic individuals. These rates are below the 30 percent benchmark established in law.
- 35 percent for Black individuals. This rate is below the 50 percent benchmark established in law.
- 63 percent for Asian, 50 percent for multiracial and 58 percent for White individuals. These rates are below the 70 percent goal established by law.

These differences mirror gaps in educational achievement in Minnesota found at the elementary, secondary and postsecondary levels.

Increases Needed to Meet the 70 Percent Goal

Minnesota needs 175,800¹ additional individuals age 25 to 44 to complete their first educational credential (certificate or degree). Table 4 on page 37 shows the number of additional persons within each race group who would need to earn a certificate or degree to raise that group’s attainment rate to 70 percent. By 2025, this number will grow as Minnesota’s population grows (assuming current rates of mortality, migration, and postsecondary completion).

The estimate of educational attainment provided by this report serves as a starting point for additional work in three areas:

1. Establish annual targets for growth in education attainment to identify strategies and investments required to meet the Minnesota Legislature’s 2025 goal.

¹ Corrected May 5, 2016

- a. Improve student enrollment, retention and completion at postsecondary institutions by using existing enrollment, retention and graduation rate data, by race and ethnicity
 - b. Use evidence-based strategies at institutions to address institution-specific goals
 - c. Involve stakeholder groups to identify strategies for implementation.
2. Collect better information about race/ethnicity in Minnesota.
 - a. Minnesota's diversity of subgroups (ie. within Asians, there are Japanese, Chinese, Indian, Hmong) highlights the need for better information about educational attainment by race/ethnicity. *Minnesota should consider adopting disaggregated race/ethnicity categories for reporting data.* Enhancements should specifically be made for reporting of Asian Pacific Islanders and African groups. Reporting categories should be adopted universally across areas of education, workforce, human services, health, corrections, and all other sectors.
 3. Identify certificates of economic value.
 - a. Certificates are an attractive option for many people, as they require the shortest time and are the most affordable. However, there is a considerable range in wages and salaries within each award level, depending on the program of study, prior work experience of the graduate and geography. This range of economic outcomes raises the policy question of enrolling in any program, or only programs with economic value, thus setting the stage for preparing workers for jobs needed to support the state's economic goals.

Conclusion

The state's changing demographic profile requires the state to eliminate gaps in educational attainment—or our future economic prosperity will be imperiled. Through targeted research based action and supported by appropriate resources and stakeholder involvement, Minnesotans have the opportunity and ability to reduce and eliminate racial/ethnic disparities, and improve the economic prospects for all.

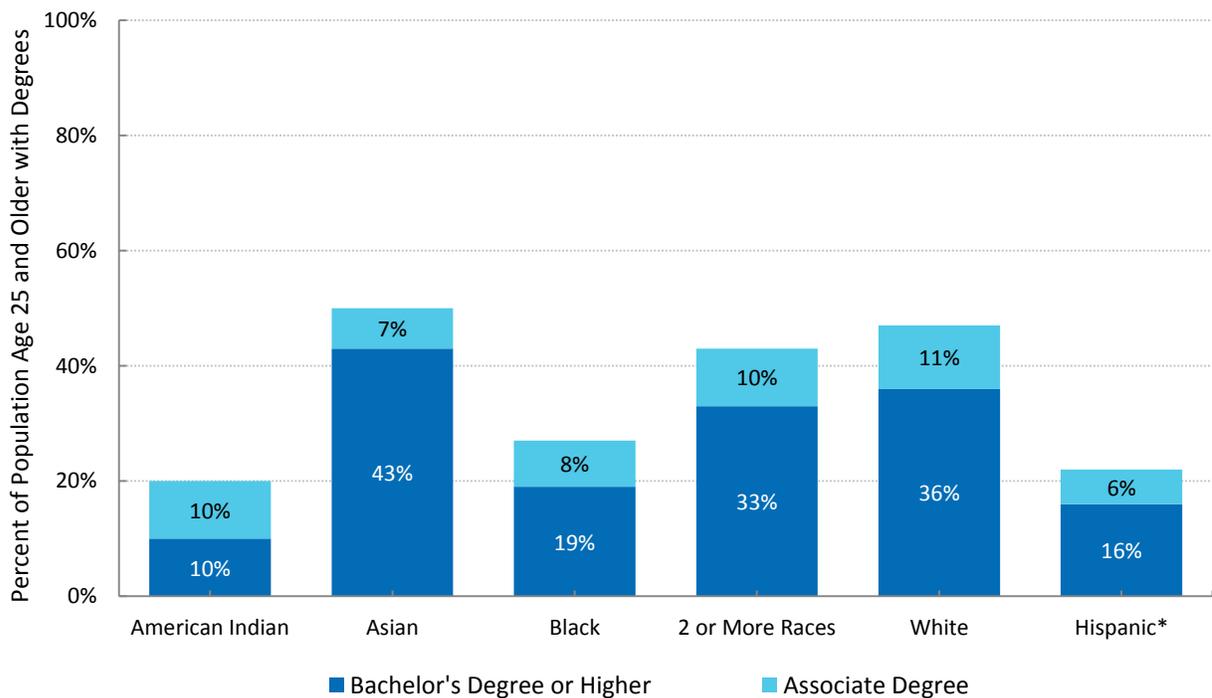
Background

Minnesota is one of the most educated states in the country, across all age groups. Minnesota ranked second nationally among all states in the percent of adults age 25 to 64 with at least an associate degree (49 percent, 2014). Minnesota's ranking is consistent across age groups. However, Minnesota faces significant gaps in educational attainment by race and ethnicity, which is also consistent across age groups. The populations growing the fastest have historically not been adequately served within Minnesota's educational system. The state's changing demographic profile requires the state begin reducing these gaps or economic prosperity will be imperiled.

It is important to understand the significant disparities existing in educational attainment by race and ethnicity and that gaps in educational attainment start before college.

Disparity 1: Fewer Minnesotans of color attain a degree.

Figure 2. Among all Minnesotans, Asian and White Populations have Highest Degree Attainment, 2014



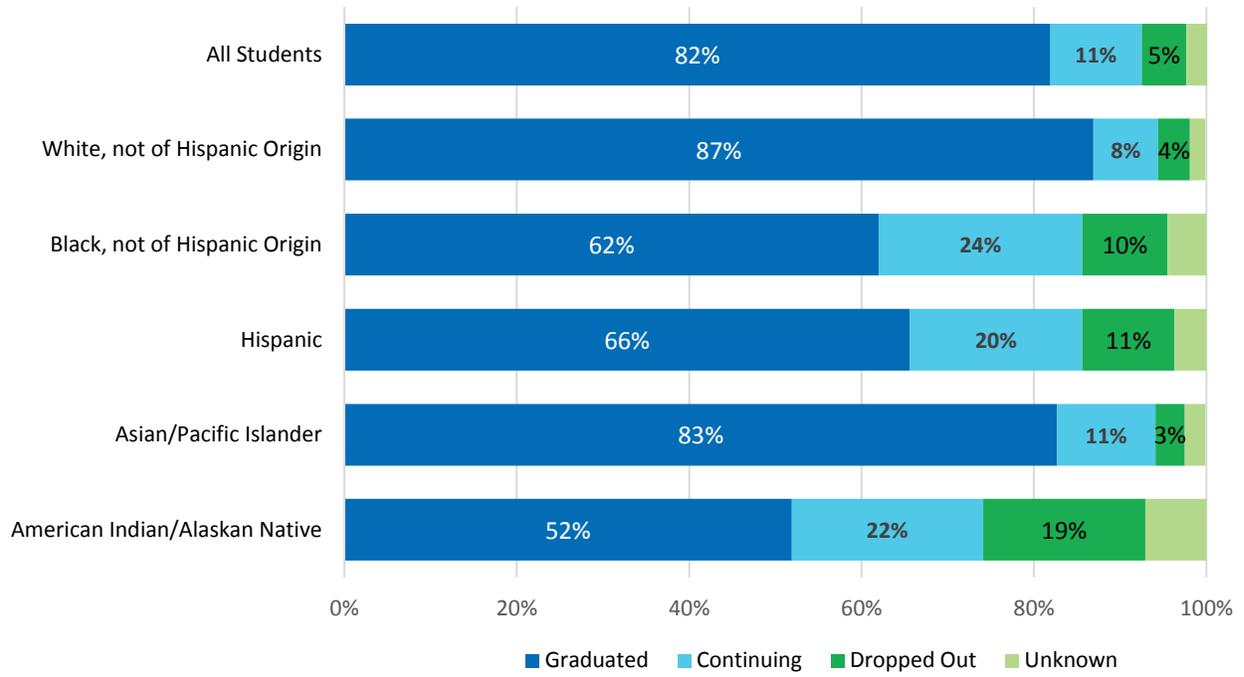
*Hispanics may be of any race. Data for Hispanics may overlap with data for other race groups.

Source: U.S. Census Bureau, 2014 American Community Survey 1-Year Estimates

- Only 27 percent of Black adults and 22 percent of Hispanic adults have obtained an associate degree or higher compared to 47 percent of White adults.
- Young Black and Hispanic adults (age 25 to 34) are less likely to obtain an associate degree than Black and Hispanic adults age 45 to 54. This indicates the state may be losing ground in educational attainment for communities of color.

Disparity 2: Students of color graduate from high school within four years at a rate lower than White students.

Figure 3. High School Students of Color Graduated in 4 Years at Lower Rates, 2015



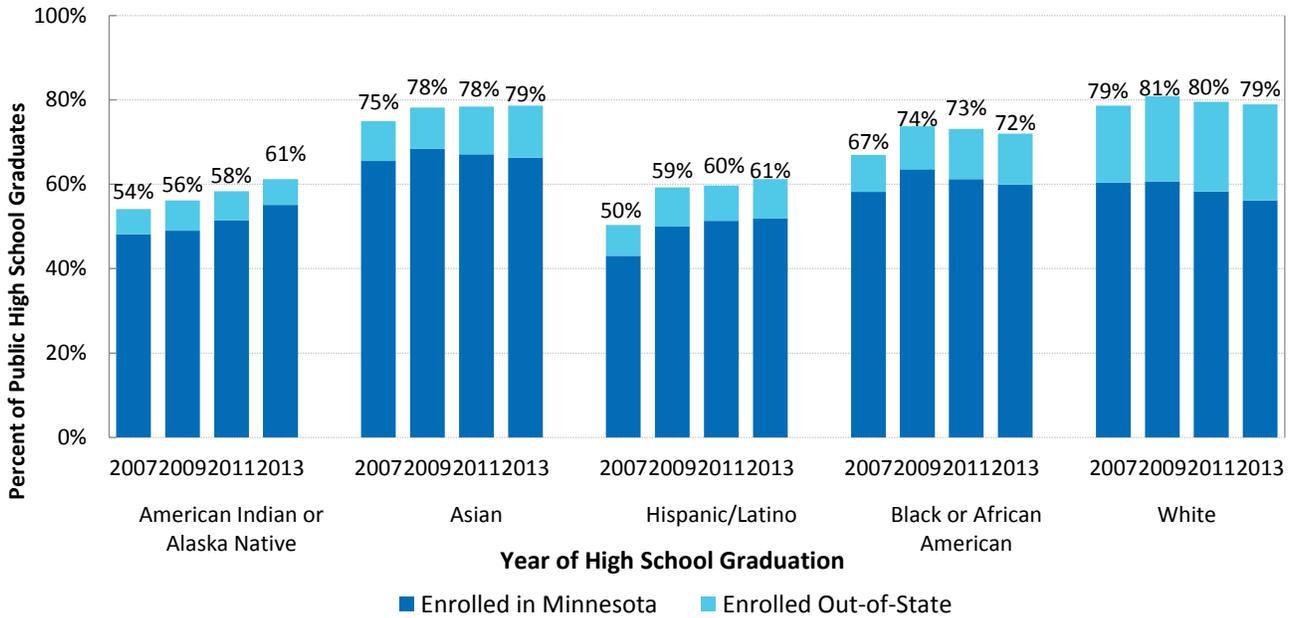
Source: Minnesota Department of Education

- The rate of public high school students graduating within four years in 2015 was 87 percent for White students, 83 percent for Asian students, 66 percent for Hispanic students, 62 percent for Black students, and 52 percent for American Indian students.

While Minnesota can be encouraged by an overall robust college participation rate, not all populations are participating equally.

Disparity 3: Students of color enroll in college at a rate lower than White graduates.

Figure 4. College Enrollment Has Increased over Time but Enrollment Gaps Exist



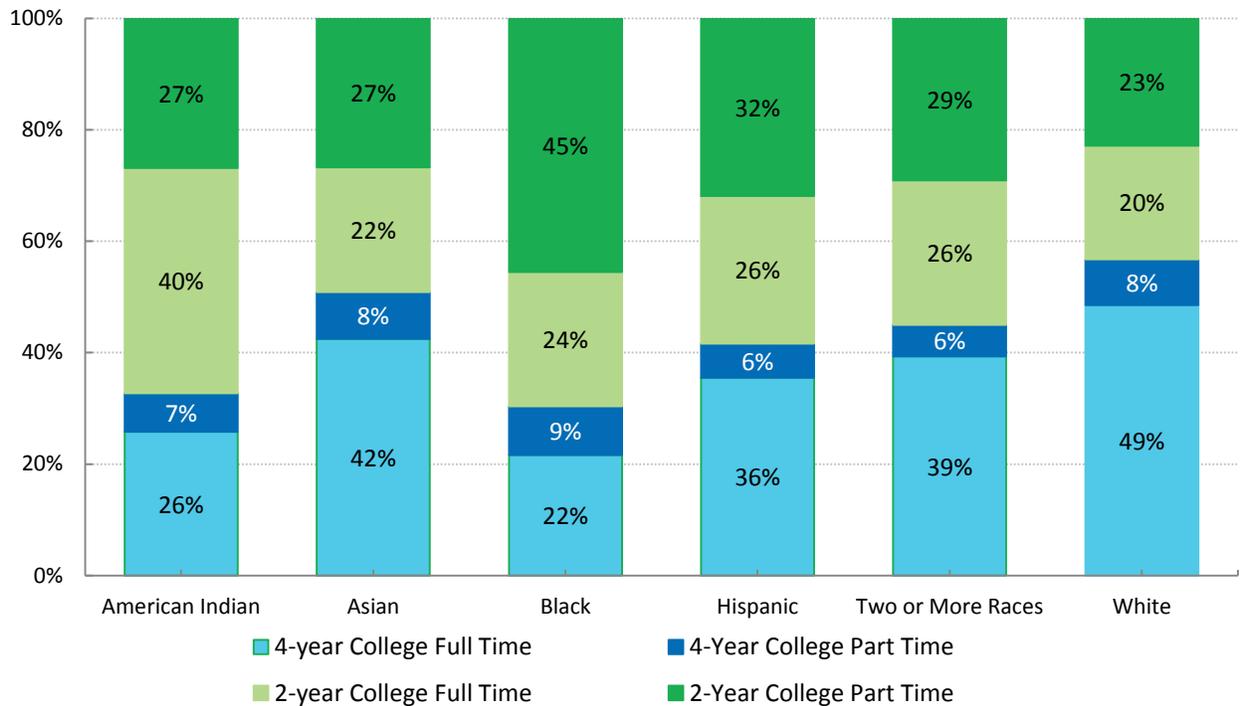
Source: Minnesota Office of Higher Education, SLEDS

- For the class of 2013, 79 percent of White students, 79 percent of Asian students, 72 percent of Blacks, 61 percent of Hispanic, and 61 percent of American Indian students enrolled in college within the two years of graduating from high school.

Even though aspirations to attend college in 8th grade are similar between whites and students of color, students of color are under-enrolled in four-year institutions. The small increase in numbers of students of color who enroll in college highlights an aspirational mismatch.

Disparity 4: Students of color are concentrated at two-year institutions.

Figure 5. Undergraduates of Color Mostly Enrolled at 2-Year Colleges, Fall 2014



2-year colleges include state colleges and private career schools

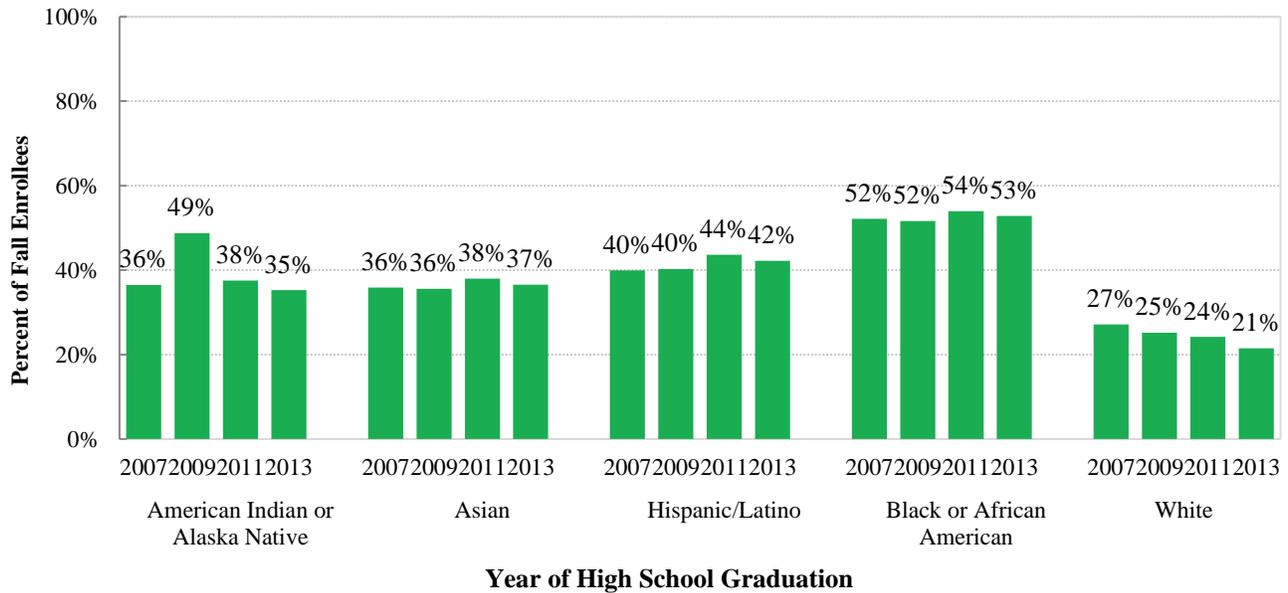
4-year colleges include state universities, University of Minnesota campuses and private colleges

Source: Minnesota Office of Higher Education

- In fall 2014, American Indian, Black, and Hispanic undergraduates attended two-year institutions at rates at least 15 percentage points higher than Whites.

Disparity 5: Students of color and non-English speakers enroll in developmental education at higher rates.

Figure 6. Developmental Education Enrollments in College Higher for Minnesota Public High School Graduates of Color



Source: Minnesota Office of Higher Education, SLEDS

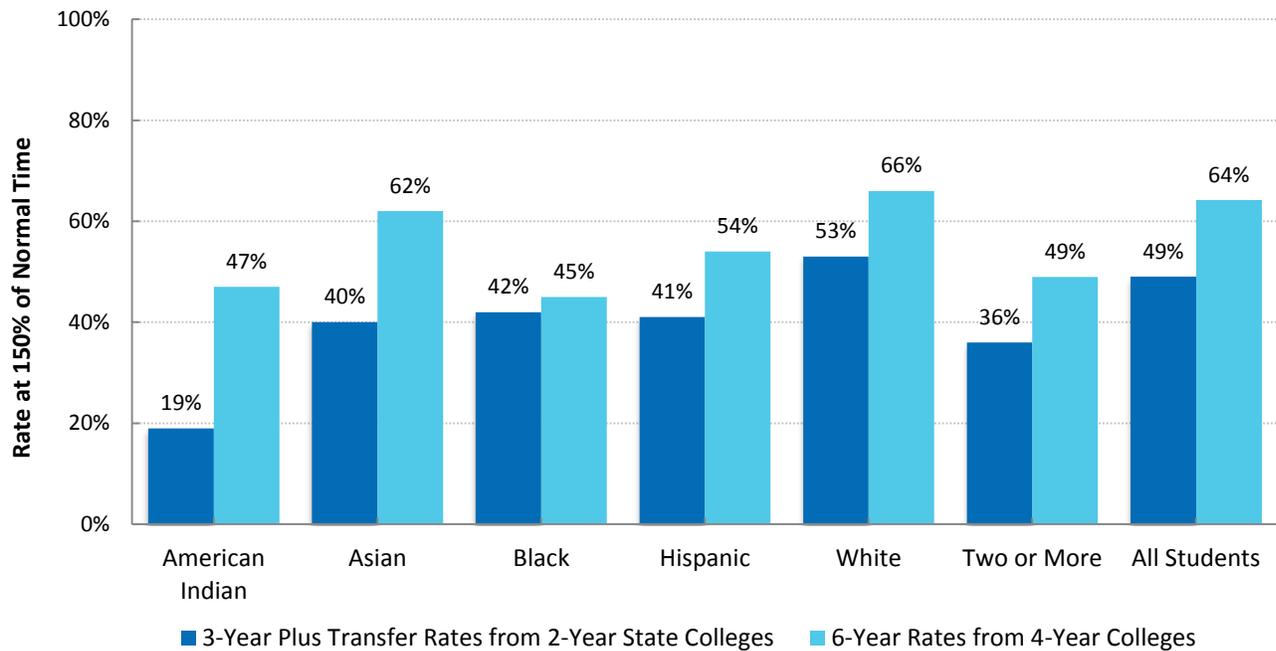
Students of color are often academically under-prepared for college. Developmental education refers to courses and programs offered by postsecondary institutions to help students develop the skills and knowledge that will be required in college level courses.

- Among 2013 public high school graduates, 53 percent of Black students were enrolled in developmental education, compared to 21 percent of their White peers. Forty-two percent of Hispanic students, 35 percent of American Indian students, and 37 percent of Asian students were enrolled in developmental education.
- Among graduates who come from households where English is not the primary language, a higher percent were enrolled in developmental courses, including 63 percent of students from Somali-speaking households, 47 percent from Hmong-speaking households, and 47 percent from Spanish-speaking households. Among students who spoke English at home, 24 percent were enrolled in development education.

Academic issues, as well as finances and non-academic responsibilities are the core reasons students of color may not persist in, or graduate from college.

Disparity 6: Students of color graduated from college at lower rates.

Figure 7. Minnesota's College Graduation Rates Varied by Race, 2014



First-time, full-time undergraduates entering college in 2008 at Minnesota 4-year institutions and 2011 at Minnesota 2-year institutions and graduating from the same institution, or transferring to another institution (2-year colleges only) by 2014.

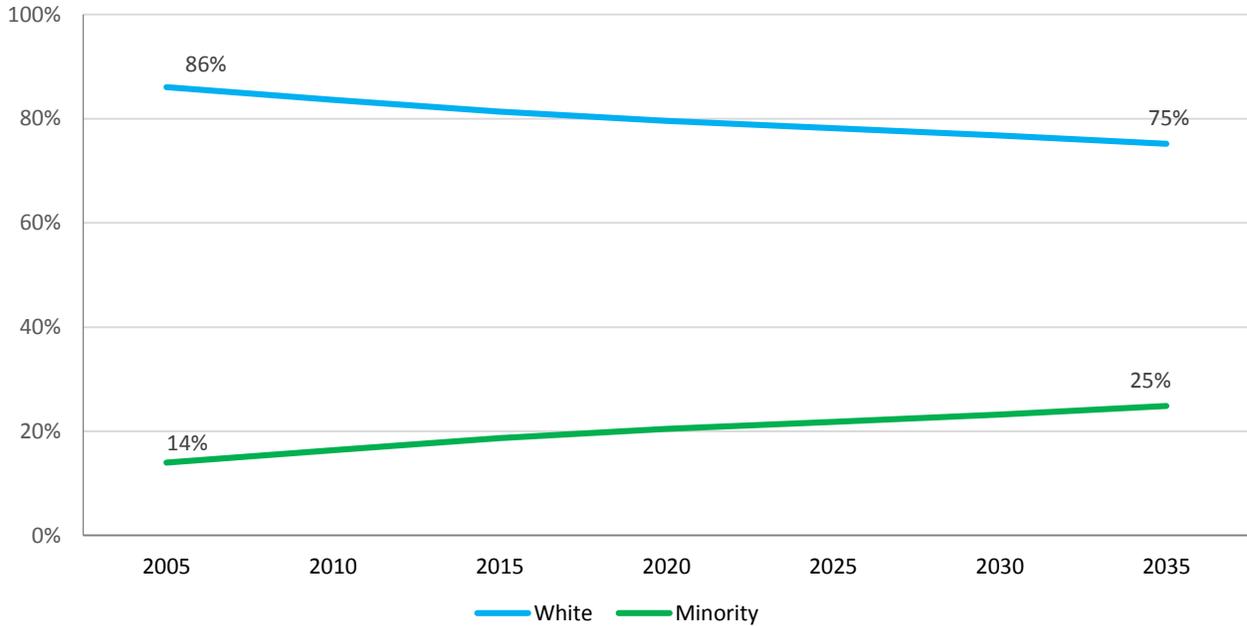
- In 2014, Whites had a six-year graduation rate of 66 percent from four-year institutions and a three-year graduation rate (including transfers) of 53 percent from two-year institutions. This is compared to 54 percent for Hispanic students from four-year institutions and 41 percent from two-year institutions. Black students' graduation rates were lower from both institution types (45 percent and 42 percent, respectively).

Challenges for Minnesota

Minnesota is in the midst of key demographic transitions and faces great challenges.

Challenge 1: Minnesota's minority population will grow from 14 percent to 25 percent of the total population by 2035.

Figure 8. Minnesota's Communities of Color Projected to Grow

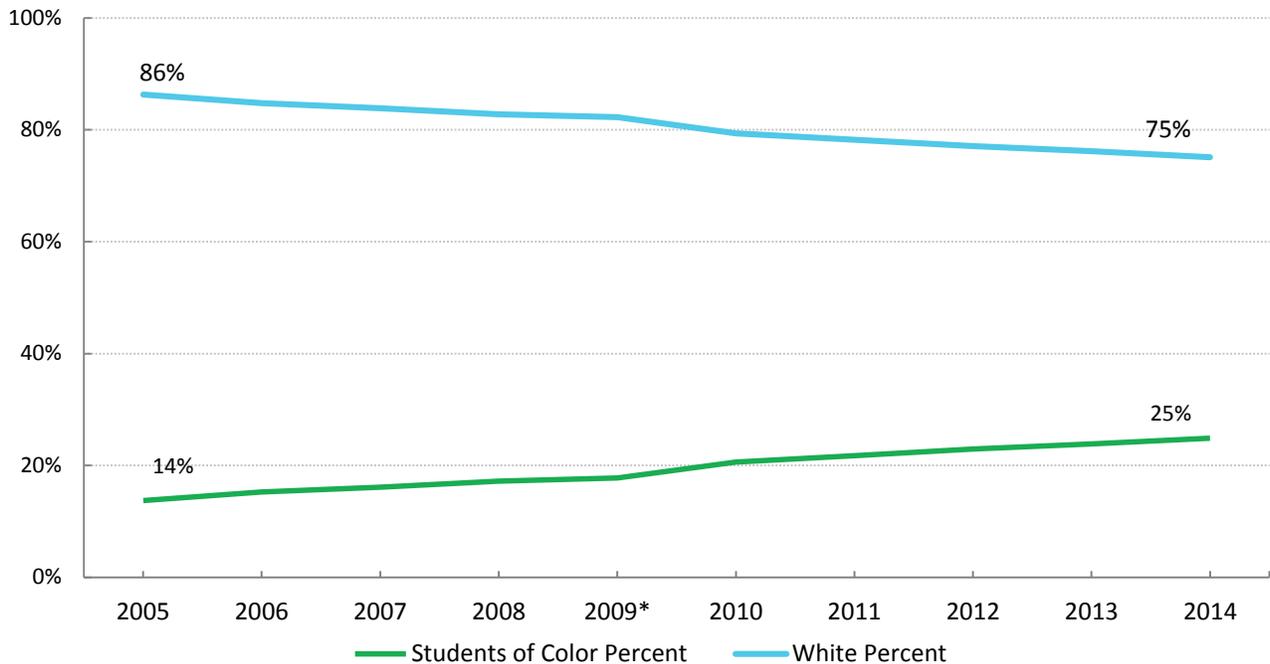


Source: Minnesota State Demographic Center

The percentage of Minnesotans represented by people of color is expected to almost double from 2005 to 2035. By 2035, one out of every four Minnesotans will be a person of color.

Challenge 2: Within higher education, students of color are becoming a larger share of undergraduate enrollment in the state.

Figure 9. Minnesota's Undergraduate Student Body Has Become More Diverse, 2014



*In 2009 new race classification categories were implemented.

Source: Minnesota Office of Higher Education

- Enrollments of students of color have nearly doubled from 14 percent of total students in 2005 to 25 percent in 2014 and will continue to grow.

Minnesota's higher education system must together identify, tailor, and implement effective strategies to increase postsecondary enrollment, retention and completion rates for communities of color. The next 10 years provides a critical opportunity to address these challenges early, ensuring that Minnesota remains a national education and economic leader.

Minnesota's New Educational Attainment Goal

The 2015 Minnesota Legislature enacted legislation setting a target that 70 percent of Minnesota adults age 25 to 44 will have attained a postsecondary certificate or degree by 2025.

Minn. Laws 2015 Chapter 69 Article 3 Sec. 6. [135A.012] HIGHER EDUCATION ATTAINMENT GOAL.

Subdivision 1. Purpose. This section sets a goal for postsecondary education attainment for Minnesota residents.

Subd. 2. Postsecondary credentials. The number of Minnesota residents ages 25 to 44 years, who hold postsecondary degrees or certificates, should be increased to at least 70 percent by 2025.

Subd. 3. Rights not created. The attainment goal in this section is not to the exclusion of any other goals and does not confer a right or create a claim for any person.

Subd. 4. Data development and analyses. The Office of Higher Education shall work with the state demographer's office to measure progress towards the attainment of the goal specified in subdivision 2. The United States Census Bureau data shall be used to calculate the number of individuals in the state who hold a postsecondary degree. The Office of Higher Education, demographer's office, and the Department of Employment and Economic Development shall develop a methodology to estimate the number of individuals that hold a certificate awarded by a postsecondary institution as their highest educational credential using data available at the time that the analysis is completed.

Subd. 5. Reporting. (a) Beginning in 2016 and every year thereafter, the Office of Higher Education, in collaboration with the state demographer's office, shall, by October 15, report to the chairs and ranking minority members of the legislative committees with primary jurisdiction over higher education policy and finance on the progress towards meeting or exceeding the goal of this section.

(b) Meeting and maintaining the goal of 70 percent of Minnesota residents ages 25 to 44 years, holding a postsecondary degree or certificate will likely be difficult without achieving attainment rates that are comparable across all race and ethnicity groups. The Office of Higher Education shall utilize benchmarks of 30 percent or higher and 50 percent or higher to report progress by race and ethnicity groups toward meeting the educational attainment rate goal of 70 percent.

To realize the goal, significant increases in higher educational attainment among populations of color, age 25 to 44 years old, must be made. In order to measure progress, interim benchmarks for each race and ethnic group of 30 to 50 percent with a postsecondary degree or certificate will be utilized. The rate of progress needed to meet these benchmarks will be contingent on each group's current educational attainment level.

The Minnesota Legislature charged the Minnesota Office of Higher Education (OHE), in collaboration with the State Demographic Center (the Center) and the Minnesota Department of Employment and Economic Development (DEED) to develop the following methodology. Additional assistance was provided by Minnesota State Colleges and Universities (MNSCU) system staff.

Disaggregating Data by Race and Ethnicity

The U.S. Office of Management and Budget (OMB) defines the race and ethnicity categories that federal agencies, including the U.S. Department of Education and the U.S. Census Bureau, must use to collect data. The U.S. Census Bureau may—and does—collect and publish more detailed data, as long as it can aggregate the results to fit the official categories. In the description of its current classification protocols, OMB notes that it developed standards for race and ethnicity data collection in the late 1970s, largely because of new government responsibilities to enforce civil rights laws².

Race and ethnicity are self-reported in the decennial census and the American Community Survey. Individuals may choose as many of the broad racial groups below as they wish to describe themselves, and also choose whether or not they identify as Hispanic/Latino or not. OMB requires the Census Bureau to measure five minimum racial categories:

- **White** - A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
- **Black** or **African American** - A person having origins in any of the Black racial groups of Africa.
- **Asian** - A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
- **American Indian** or **Alaskan Native** - A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.
- **Native Hawaiian** or **Pacific Islander** - A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

The Census Bureau also reports two additional racial groups:

- **Some other race** (2010 Census only)
- **Two or more races** (2000 and 2010 Census)

The sum of all racial groups equals the total population. In the current U.S. Census Bureau definition, being Hispanic or Latino is an ethnicity (a concept separate from race), which means the Hispanic group may be also represented by any race or combination of races.

An individual's response to the questions about race and ethnicity is based solely upon self-identification. People may choose to provide two or more races either by marking two or more race response boxes, by providing multiple write-in responses, or by some combination of marking boxes and writing in responses. Documentation from the 2013 ACS indicates more than 140 possible responses to the race question were provided.

In addition to data regarding the standard racial and ethnic categories, the State Demographic Center examined ACS responses regarding ancestry/ethnic origin to further refine subgroups (for example, comparing Somali ancestry with Black race respondents) within these broad categories. Data collected

² Standards for the Classification of Federal Data on Race and Ethnicity, http://www.whitehouse.gov/omb/fedreg_1997standards/ as reported by The Leadership Conference Education Fund (2014), *Race and Ethnicity in the 2020 Census: Improving Data to Capture a Multiethnic America* downloaded from <http://civilrightsdocs.info/pdf/reports/Census-Report-2014-WEB.pdf> on October 8, 2015.

by the U.S. Department of Education and many of Minnesota's schools, districts, and colleges does not include race and ethnicity reporting categories beyond the minimum requirements established by OMB.

Why Disaggregate Minnesota's Data?

A key component of Minnesota's educational attainment goal is the disaggregation of data by race and ethnicity. Race categories used by the Census include distinct ethnic or cultural subgroups that may have a specific set of needs or behaviors distinct from others of the same race. Based on prior analyses of education and Census data, OHE and the State Demographic Center expect to find significant variance in education attainment rates between subgroups within one race. As a result, aggregate estimates by race or ethnicity can mask significant disparities in educational attainment by subgroups. Understanding the variation by subgroups will help stakeholders better determine needed strategies and investments to move the educational attainment needle.

Limits to disaggregation

There are limits to the analysis that can be done when using ACS or education data.

Sample Size

The level of disaggregation possible by race and ethnicity for Minnesota ACS data is largely determined by the size of the subgroup samples available in the anonymous microdata sample made available to researchers. Detailed race subgroups are included among the populations of color if there were at least 30 respondents from that subgroup in the ACS survey data for Minnesotan's age 25 to 44. That is a very small number of people to draw conclusions from in the case of the smallest groups (Liberian, Japanese, Cambodian, or Lao). However, publishing as much data as possible within this report will help stakeholders understand Minnesota's diverse subpopulations. Analysis for this report did not include data for the White subgroups (Norwegians, Swedes, Germans, etc.) since they are not the focus of this goal-setting exercise and their cultural differences are less salient than newer immigrant groups.

Groups with small sample sizes also have data for which the resulting error margins are very large. Large error margins make it difficult to pinpoint educational attainment rates for these groups. In order to provide more robust estimates to measure both baseline educational attainment and progress in meeting the goal, analysis combined small groups where logical, and utilized data across multiple years to provide for larger samples of race and ethnic subgroups.

Data collection

Analysis is only possible if data are collected for the specific race and ethnic group of interest. Minnesota's educational data does not allow for measurement of completion or attainment beyond the basic race and ethnicity categories.

Future directions

Recently, there has been federal movement in this area. In 2012, the U.S. Department of Education announced that it was seeking to gather and share information about practices and policies regarding education data systems that disaggregate data on sub-groups within the Asian American/Pacific Islander category. The Department of Education plans to use this information to help state educational agencies, local school districts, schools, and postsecondary institutions identify, share, and implement best practices and policies for identifying and overcoming challenges to collecting and disaggregating data on Asian/Pacific Islander student populations. If implemented, this change will require Minnesota schools, districts, and colleges to collect data for more racial and ethnic subgroups within the Asian community.

Establishing Minnesota's Educational Attainment Baseline

The new law requires the establishment of an educational attainment baseline of the percentage of Minnesota adults age 25 to 44 who have obtained a postsecondary credential. This baseline includes estimates by race and ethnicity in Minnesota for the specified age groups. Establishing the state's baseline for educational attainment requires the following three calculations:

1. The percentage of the population with an associate degree or higher,
2. The percentage of the population with a postsecondary certificate, but not an associate degree or higher, and
3. The sum of the two prior calculations.

Adults with an associate degree or higher

Educational attainment in the United States is measured using data collected by the U.S. Census Bureau's American Community Survey (ACS). The ACS measures the highest level of education completed by individuals aged 18 years and over. The levels range from "first through fourth grade" to "doctoral degree." The postsecondary categories for attainment are: some college, no degree; associate degree; bachelor's degree; master's degree; professional degree; and doctoral degree. This data in combination with information on the individual's age allows us to calculate the percentage of adults age 25 to 44 who had completed an associate degree or higher by race and ethnicity.

Asians were most likely to hold an associate degree or higher (59 percent), followed by Whites (54 percent), among the population age 25 to 44 in Minnesota. American Indians (14 percent) and Hispanics (20 percent) were least likely to hold an associate degree or higher. Minnesota's overall associate degree or higher attainment rate is 50.3 percent.

Adults with a postsecondary certificate, but no degree

However, current data on educational attainment provided by the ACS does not include data on how many adults have sub-baccalaureate certificates as their highest form of education. The Census category "some college, no degree" is a catch-all category that includes individuals who are currently enrolled in college and have not finished, individuals who attended college and did not complete their education, and individuals who earned a postsecondary credential below a bachelor's degree (e.g., diploma or certificate). The inclusion of non-completers and currently enrolled students in this category make it an unreliable measure of certificate attainment.

However, certificate attainment can be estimated with administrative data using cohort analysis and life tables. Cohort analysis has been used in a number of social science fields, most extensively in the field of demography, primarily to analyze fertility patterns. Using this approach, the state can determine the number of certificates awarded in 1989 by the age of the certificate holders. Then certificate holders are "aged" forward in time from 1989 to the year of interest (i.e., 2010). The procedure is repeated for each age cohort of certificate holders between 1989 and 2010. The final number of individuals holding a certificate will change over time based on four factors:

1. mortality (death),
2. migration of certificate holders into and out of Minnesota,
3. certificate holders completing higher levels of education, and

4. the age progression of certificate holders into and out of the population age 25 to 44.

Using the methodology above, the Minnesota State Demographic Center estimated that 7.2 percent of Minnesotans age 25 to 44 hold a postsecondary certificate as their highest credential as shown in Figure 19. By race/ethnicity, the certificate estimate ranges from four to eight percent.

Combined estimates

The baseline data of the number of Minnesota adult's age 25 to 44 who had obtained a postsecondary credential is the sum of the percent of individuals with an associate degree or higher (50.3 percent) and the percent of individuals with a postsecondary certificate but not a degree (7.2 percent). Results were estimated by race and ethnicity for the specified age groups and compared to the full population to determine Minnesota's baseline educational attainment rate.

Associate Degree or Higher Attainment Estimates

Educational attainment in the United States is tracked through data collected by the U.S. Census Bureau's American Community Survey (ACS). The ACS reports data that was previously collected through the long-form portion of the decennial U.S. Census, which was discontinued after the 2000 Census.

The ACS data includes detailed socio-economic and demographic data regarding residents. The ACS is administered annually to over three million households. One- and five-year estimates are reported each year by the U.S. Census Bureau. Each estimate respectively has a larger sample size.

The educational attainment data in the ACS measure the highest level of education completed by those age 18 years and over. The levels range from "first through fourth grade" to "doctoral degree." The postsecondary categories for attainment are: some college, no degree; associate degree; bachelor's degree; master's degree; professional degree; and doctoral degree. This data in combination with information on the individual's age allows us to calculate the percent of adults age 25 to 44 who had completed an associate degree or higher by race and ethnicity.

Associate Degree or Higher Analysis

The Minnesota State Demographic Center (the Center) examined the educational attainment among the Minnesota population age 25 to 44 (inclusive), as detailed in the U.S. Census Bureau's American Community Survey (ACS) microdata for 2008-2012. The Center used the IPUMS-USA database.³

Five years of U.S. Census data were employed to maximize the survey sample size and create more reliable estimates with smaller error margins for subgroups by race. The Center calculated the percentage of the population age 25 to 44 holding an associate degree or higher as their highest educational award at the time of the survey. This percentage was calculated for basic race groups, as well as more detailed cultural groups (created using detailed race and ancestry responses) to identify differences among subgroups. All race groups shown are non-Hispanic. The Hispanic population, regardless of race indicated on the survey, is shown as a separate group so that all the groups sum to the total population.

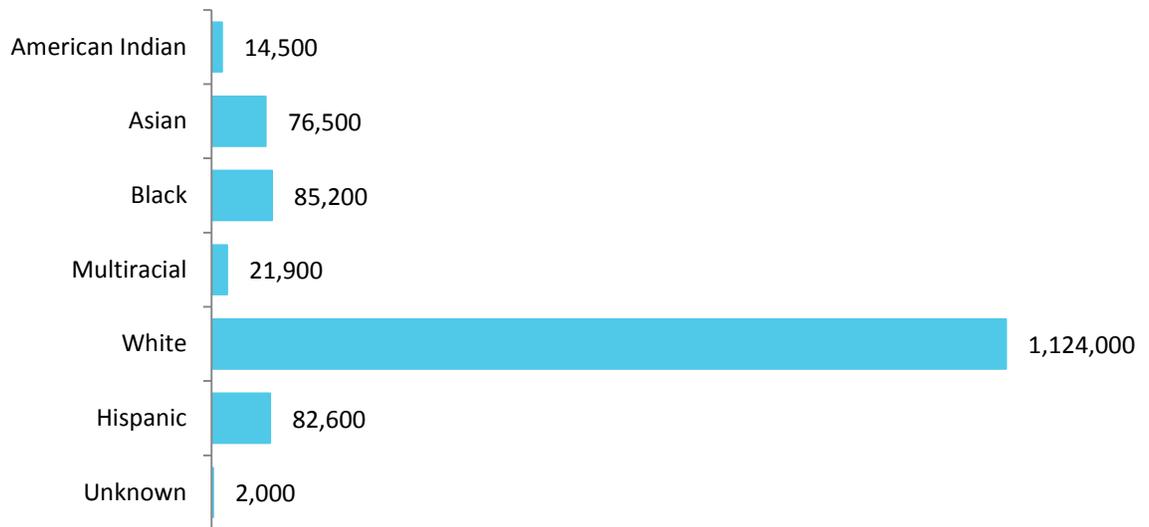
Data are presented for all subgroups with reasonably reliable data—meaning sufficient numbers of individuals from that subgroup responded to the survey.⁴ Margins of error were created for a 90 percent confidence interval around all of the estimates to show the range in which the true value is likely to fall with 90 percent confidence (not shown). Data for estimates were rounded to the nearest 100; percentages were rounded to the closest whole number.

³ Ruggles, S., Genadek, K., Goeken, R., Grover, J., and Sobek, M. (2015). *Integrated Public Use Microdata Series: Version 6.0 [Machine-readable database]*. Minneapolis: University of Minnesota.

⁴ At least 30 people (unweighted n) age 25-44 for any given subgroup had to reply to the survey for that subgroup's data to be presented uniquely.

Available Population Data by Race and Ethnicity

Figure 10. Population Age 25 to 44, Minnesota, by Basic Race Groups, 2008 - 2012

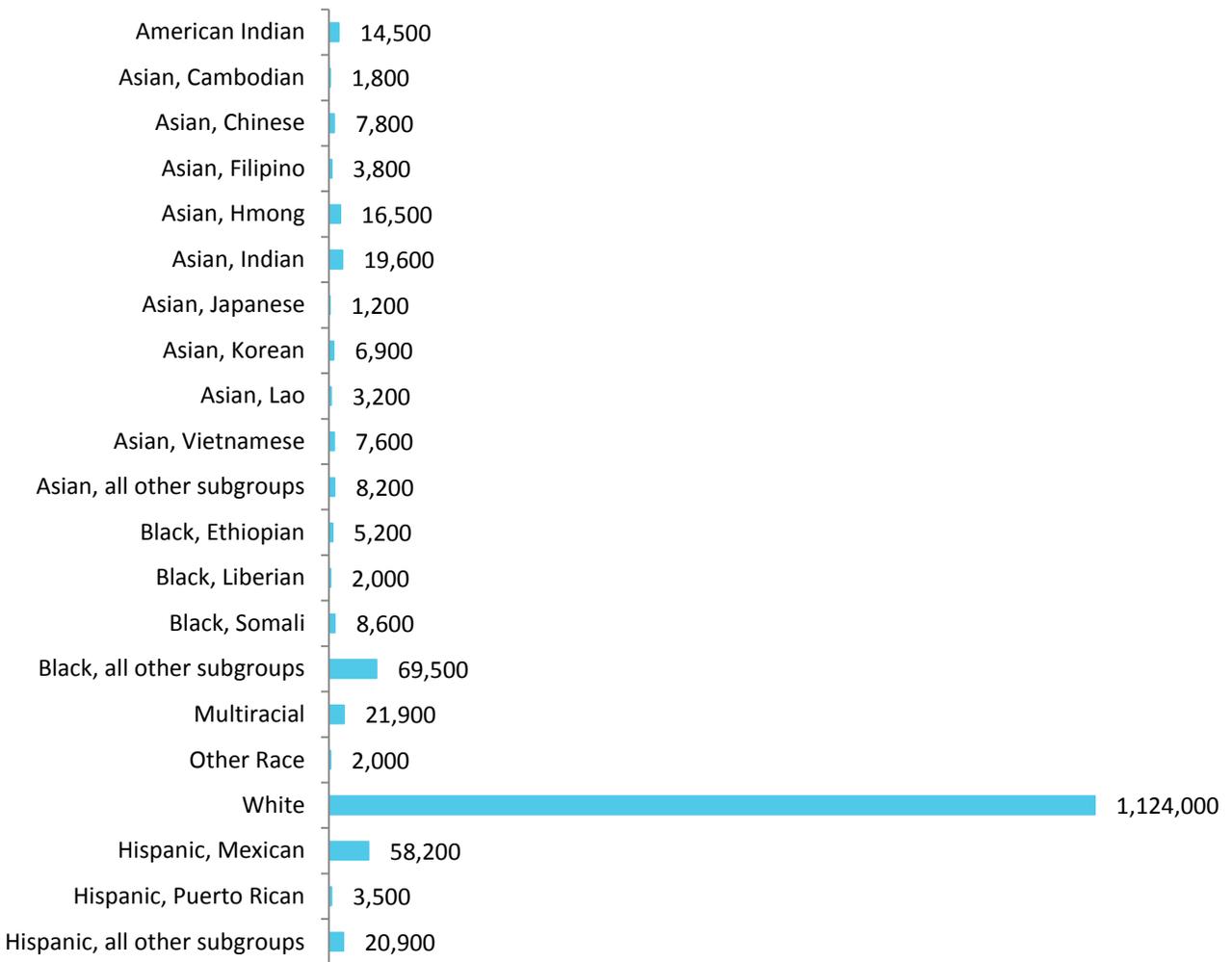


Source: IPUMS microdata version of U.S. Census Bureau 2008-2012 American Community Survey for Associate's or Higher Degree, with tabulations by the MN State Demographic Center.

Notes: Estimates have been rounded to the nearest 100 or whole percent. Parts may not add to total due to rounding. Users are cautioned that these estimates contain sampling and other sources of error, not shown here.

As shown in Figure 10, there are approximately 1,406,700 Minnesotan's age 25 to 44 (inclusive) in Minnesota. Figures 10 and 11 show the size of this age group, parsed by basic race groups and detailed cultural groups, to help readers appreciate the diverse backgrounds of Minnesotan's age 25 to 44. Non-Hispanic Whites represent about 80 percent of this age group. Figure 12 shows the same population estimates by detailed race and ethnicity, sorted by group size.

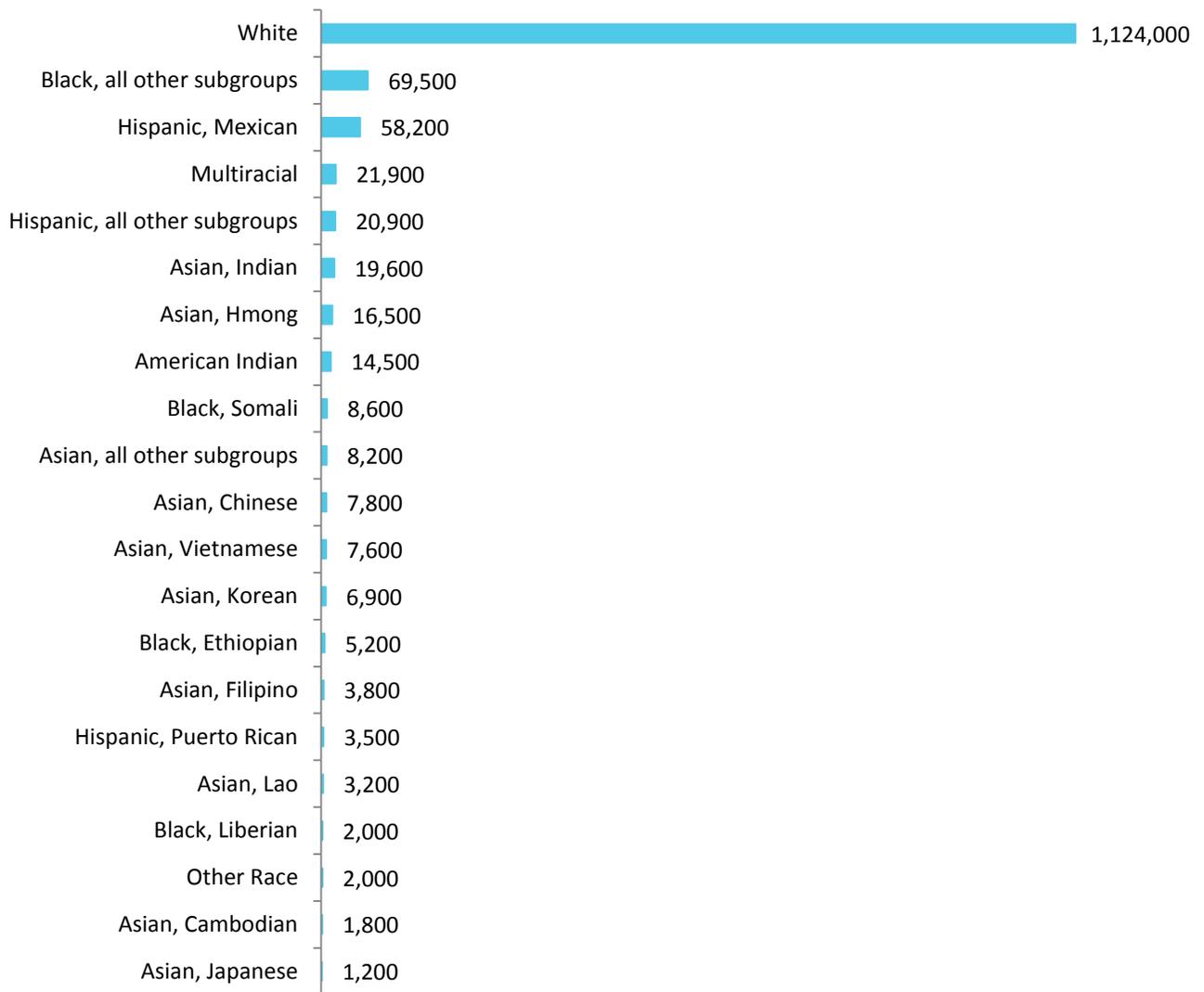
Figure 11. Population Age 25 to 44, Minnesota, by Detailed Race Groups, 2008 - 2012



Source: IPUMS microdata version of U.S. Census Bureau 2008-2012 American Community Survey for Associate's or Higher Degree, with tabulations by the MN State Demographic Center.

Notes: Estimates have been rounded to the nearest 100 or whole percent. Parts may not add to total due to rounding. Users are cautioned that these estimates contain sampling and other sources of error, not shown here.

Figure 12. Population Age 25 to 44, Minnesota, by Detailed Race Groups, Sorted by Population Size, 2008 - 2012



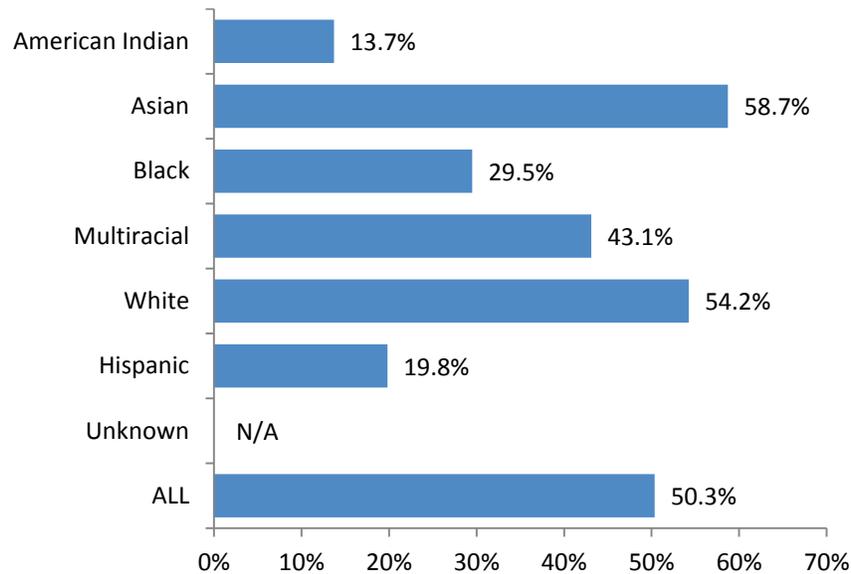
Source: IPUMS microdata version of U.S. Census Bureau 2008-2012 American Community Survey for Associate's or Higher Degree, with tabulations by the MN State Demographic Center.

Notes: Estimates have been rounded to the nearest 100 or whole percent. Parts may not add to total due to rounding. Users are cautioned that these estimates contain sampling and other sources of error, not shown here.

Population age 25 to 44 with an associate degree or higher

As shown in Figure 13, Minnesota's population age 25 to 44 who were Asians were most likely to hold an associate degree or higher (about 59 percent), followed by Whites (54 percent). American Indians (about 14 percent) and Hispanics (20 percent) were least likely to hold an associate degree or higher.

Figure 13. Percent of Population Age 25 to 44 with an Associate or Higher Degree by Basic Race Categories, Minnesota, 2008 - 2012

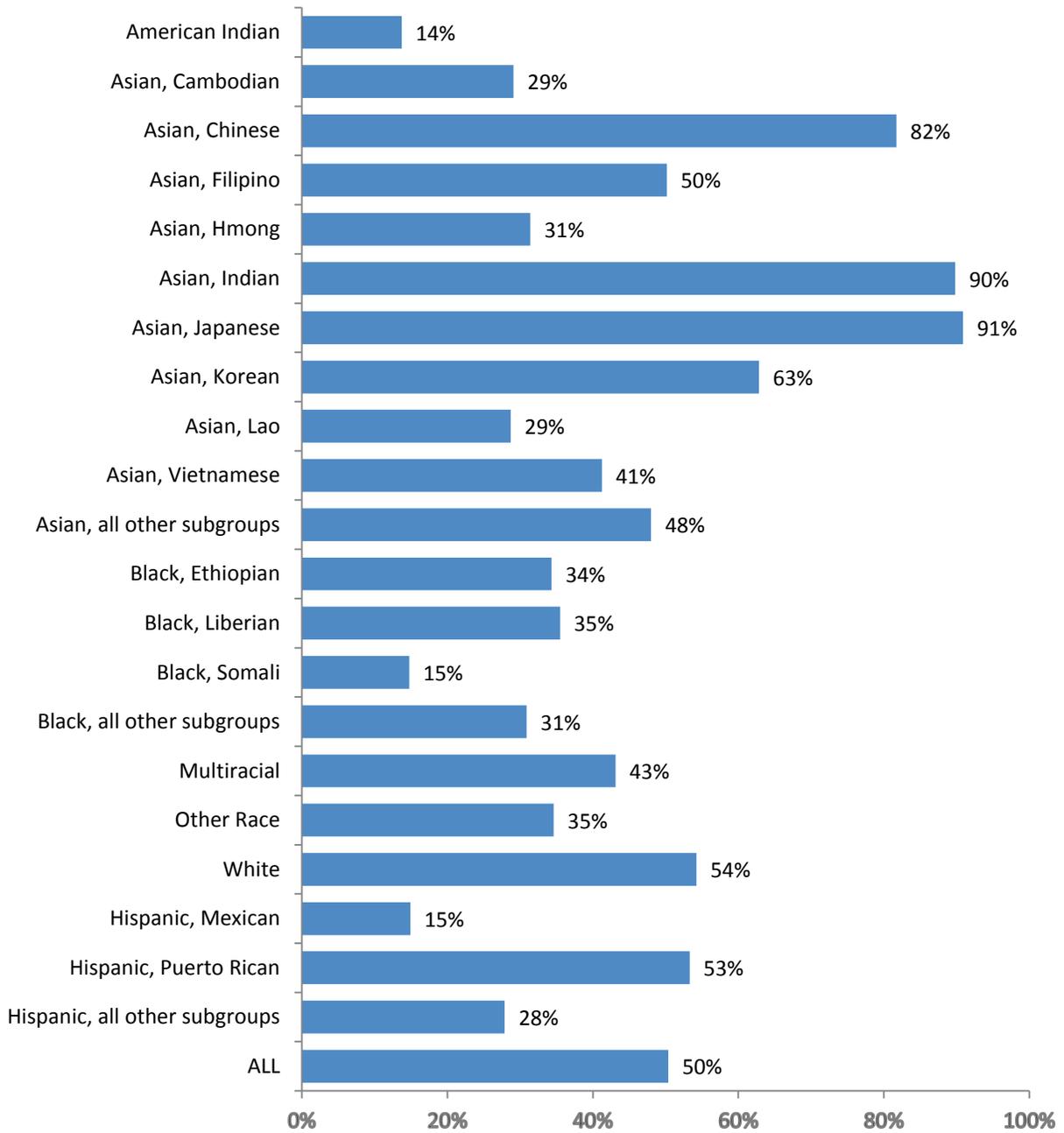


Source: IPUMS microdata version of U.S. Census Bureau 2008-2012 American Community Survey for Associate's or Higher Degree, with tabulations by the MN State Demographic Center.

Notes: Estimates have been rounded to the nearest 100 or whole percent. Parts may not add to total due to rounding. Users are cautioned that these estimates contain sampling and other sources of error, not shown here.

Disaggregating whenever possible yields important information. As shown in Figures 14 and 15, a finer examination of these broad groups shows significant variation, especially among Asian subgroups. Among detailed cultural groups, Asian Japanese (91 percent), Asian Indian (90 percent), and Asian Chinese (82 percent) showed the greatest likelihood of holding at least an associate degree—all have exceeded the goal of 70 percent postsecondary attainment by group. Among Asian Lao, Cambodian, and Hmong populations, the likelihood of holding an associate degree or higher was closer to 30 percent. American Indians (about 14 percent), Black Somalis (about 15 percent) and Hispanic Mexicans (about 15 percent) were least likely to hold at least an associate degree.

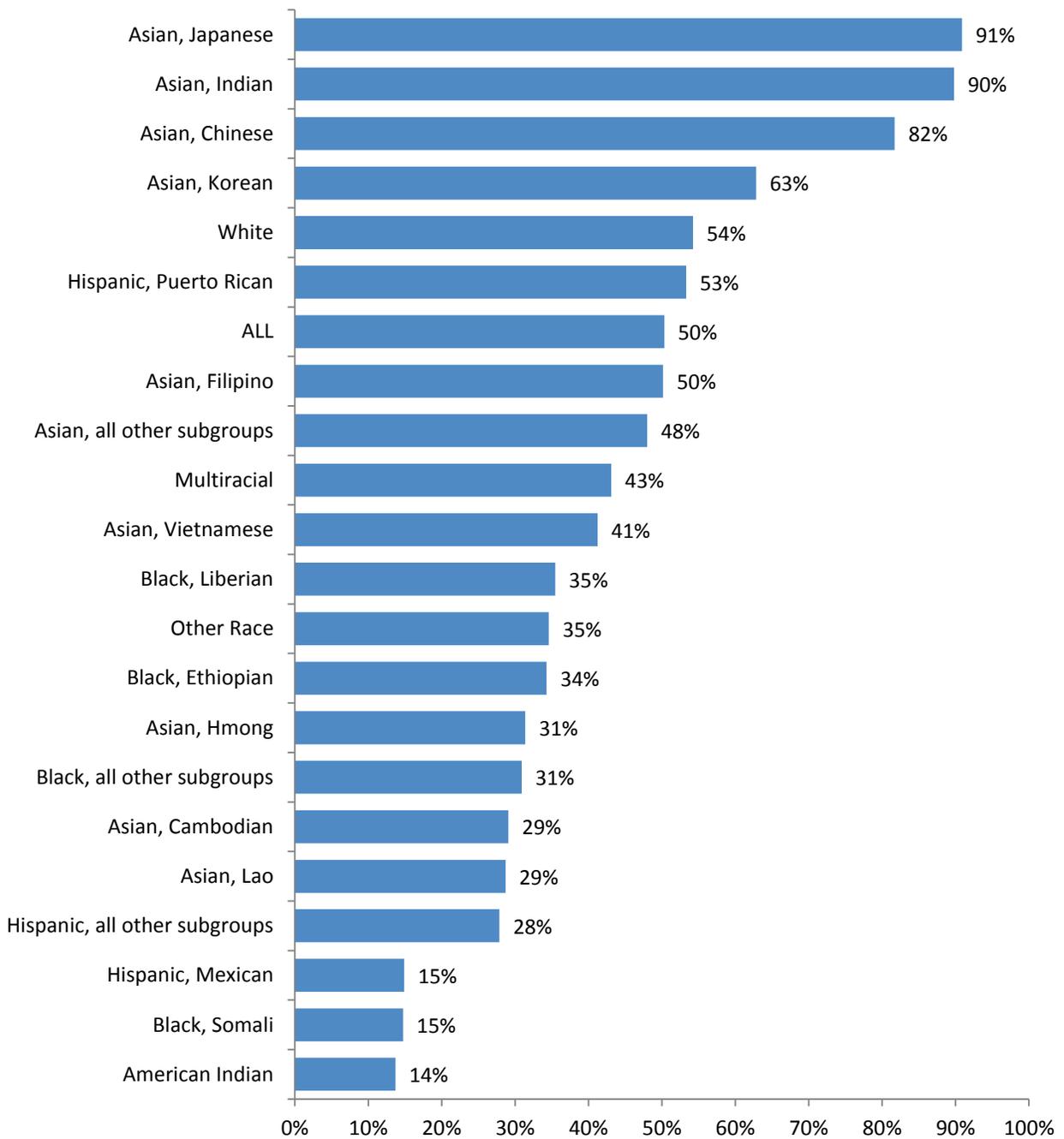
Figure 14. Population Age 25 to 44 with an Associate Degree or Higher, Minnesota, by Detailed Race Categories, 2008 - 2012



Source: IPUMS microdata version of U.S. Census Bureau 2008-2012 American Community Survey for Associate's or Higher Degree, with tabulations by the MN State Demographic Center.

Notes: Estimates have been rounded to the nearest 100 or whole percent. Parts may not add to total due to rounding. Users are cautioned that these estimates contain sampling and other sources of error, not shown here.

Figure 15. Population Age 25 to 44 with an Associate Degree or Higher, Minnesota, by Detailed Race Categories, Sorted by Attainment Rate, 2008 - 2012



Source: IPUMS microdata version of U.S. Census Bureau 2008-2012 American Community Survey for Associate's or Higher Degree, with tabulations by the MN State Demographic Center.

Notes: Estimates have been rounded to the nearest 100 or whole percent. Parts may not add to total due to rounding. Users are cautioned that these estimates contain sampling and other sources of error, not shown here.

Estimating Certificate Attainment

Current data provided on education attainment by the ACS does not include data on how many adults have sub-baccalaureate certificates as their highest form of education. The Census category “some college, no degree” is a catch-all category that includes individuals who are currently enrolled in college and have not finished, individuals who attended college and did not complete their education, and individuals who earned a postsecondary credential below an associate degree (e.g., diploma or certificate). The inclusion of non-completers and currently enrolled students in this category make it an inadequate measure of certificate attainment.

What is a Certificate?

Not all individuals attend a postsecondary institution with the goal of obtaining a degree. Many students, especially older adults, choose to enter a career where an occupationally specific non-degree credential is required for employment. Minnesota postsecondary institutions, mainly public two-year and private for-profit institutions, annually award a large number of occupationally specific credentials.

Earning a postsecondary non-degree certificate or diploma is often the highest education needed to enter several high-demand, high-wage careers, including many in health care, manufacturing and construction trades. Complete College America’s report *Certificates Count: An Analysis of Sub-baccalaureate Certificates* highlights the importance of certificates in an individual’s ability to enter a well-paying career:

... Certificate awards for completion of programs of study of at least one year have significant and consistent labor market value and should count toward national and state postsecondary attainment goals. They are particularly accessible to young high school graduates and working adults who may not now be attracted to more traditional degree programs.

(Bosworth, 2010, p. iii)

“Certificates” for the purpose of the educational attainment goal refers to a postsecondary award, certificate, or diploma at a level less than a baccalaureate degree, which is not an associate degree. This group may include “awards”, “certificates” or “diplomas” depending on the naming convention used by a specific institution.

Using the U.S. Department of Education standards, “certificates” will include the following three categories of credentials:

1. Postsecondary award, certificate, or diploma of less than 1 academic year

An award that requires completion of an organized program of study at the postsecondary level (below the baccalaureate degree) in less than 1 academic year (2 semesters or 3 quarters), or designed for completion in:

- Less than 900 contact or clock hours
- Less than 30 semester or trimester credit hours, or
- Less than 45 quarter credit hours

The shortest certificate program offered by the Minnesota State Colleges and Universities (MnSCU) is a Certified Nursing Assistant Program of 5 semester credits.

2. Postsecondary award, certificate, or diploma of at least 1, but less than 2 academic years

An award that requires completion of an organized program of study at the postsecondary level (below the baccalaureate degree) in at least 1 but less than 2 full-time equivalent academic years, or designed for completion in:

- At least 900, but less than 1800 contact or clock hours, or
- At least 30, but less than 60 semester or trimester credit hours
- At least 45, but less than 90 quarter credit hours

3. Postsecondary award, certificate, or diploma of at least 2, but less than 4 academic years

An award that requires completion of an organized program of study at the postsecondary level (below the baccalaureate degree) in at least 2 but less than 4 full-time equivalent academic years, or designed for completion in:

- 1800 or more contact or clock hours, or
- 60 or more semester or trimester credit hours, or
- 90 or more quarter credit hours

Excluded from the definition of certificates are awards conferred by an entity other than the postsecondary institution, informal awards such as certificates of merit, completion, attendance, or transfer, and awards earned as the result of an avocational, basic skills, residency, or other program not recognized by the U.S. Department of Education as academic or occupational/vocational. “Certificates” are also different from other types of labor market or industry-based certifications. The main difference is that certificates are granted by postsecondary institutions upon successful completion of a predetermined number of instructional hours at the institution, while industry-based certifications (excluded) are based on successful performance on a test or other assessment.

How Many Certificates do Minnesota Colleges Award?

Over 103,000 academic awards were conferred last year. Certificates accounted for 15 percent of the total awards. In 2013-2014 there were:

- 15,607 certificates and diplomas
- 21,213 associate degrees
- 36,451 bachelor’s degrees
- 2,764 graduate certificates
- 22,082 master’s degrees, and
- 5,291 doctoral degrees, both research and professional (such as in law, medicine, or theology).

The number of awards conferred will be higher than the number of individual earning an award as a small percent of students earn more than one award during an academic year.

Certificates by race/ethnicity of graduates

As shown in Table 1, graduates of color comprised 23 percent of all undergraduate certificate holders in 2013-2014. An additional 3.7 percent of certificates were awarded to students whose race/ethnicity is unknown or were non-resident aliens. The remaining 73.2 percent of certificates were awarded to White students.

Table 1. Undergraduate Certificates Conferred by Minnesota Institutions by Race/Ethnicity, 2013-2014

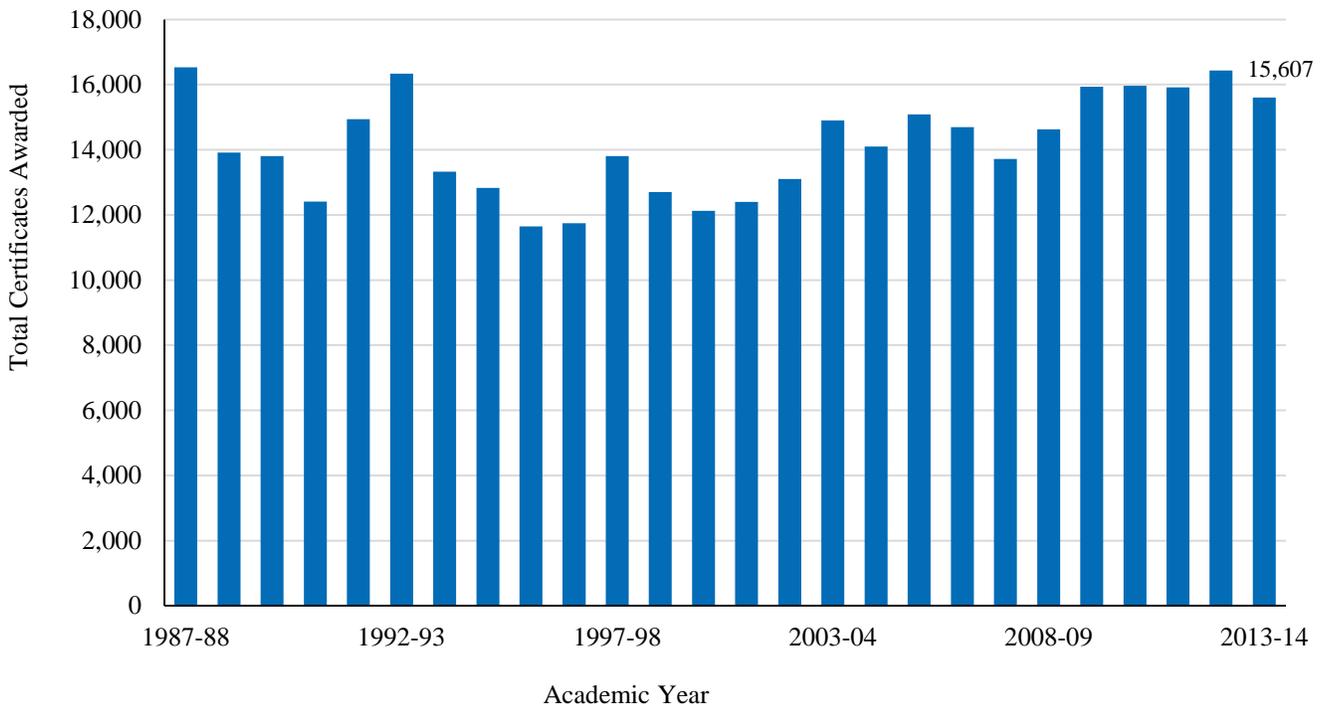
Race/Ethnicity	Certificates less than 1 Year	Certificates at least 1 but less than 2 Years	Certificates at least 2 but less than 4 Years	Total	Percent
American Indian or Alaska Native	108	72	8	188	1.2%
Asian	466	315	35	816	5.2%
Black or African American	825	547	30	1,402	9.0%
Hispanic or Latino	405	249	49	703	4.5%
Native Hawaiian or Other Pacific Islander	10	6	3	19	0.1%
Two or more races	271	153	40	464	3.0%
White	5,164	5,042	1,224	11,430	73.2%
Race /ethnicity unknown	185	297	6	488	3.1%
Non-resident alien	66	29	2	97	0.6%
Total	7,500	6,710	1,397	15,607	100%

Source: U.S. Department of Education, IPEDS Completion Survey

Certificates over time

Minnesota institutions have awarded between 12,000 and 16,000 undergraduate certificates each year since 1987. The number of certificates awarded will vary based on student demand or enrollment. In addition, some variance in awards conferred may be due to fluctuation in types of private career schools that report data from year to year, and the types of programs offered at these institutions.

Figure 16. Undergraduate Certificates Awarded by Minnesota Institutions, 1987-2014



Source: U.S. Department of Education, IPEDS Completion Survey

A Life Table Approach to Estimating Certificate Attainment

Survey data are not currently available to estimate the number of Minnesota residents whose highest level of educational attainment is a postsecondary certificate. However, certificate attainment can be estimated with administrative data, using cohort analysis, to produce an estimate of the current population of Minnesotans who have earned a postsecondary certificate.

Using this approach, we begin in 1990 with the number of certificates awarded (based upon student-level data collected by the Minnesota State Colleges and Universities (MnSCU) system and the Minnesota Office of Higher Education (OHE), broken down by the age of the certificate holders. We then “age” certificate holders forward in time from 1990 to the year of interest (2010). The procedure is repeated for each individual cohort between 1990 and 2010. The size of each cohort will change over time based on four factors:

1. the mortality of the certificate holders,
2. the migration of certificate holders into and out of the state,
3. the advancement of certificate holders to higher levels of educational attainment, and
4. the progression of cohorts into and out of the 25 to 44 age group—the age group specified in Minnesota’s educational attainment goal.

In short, we will account for changes in the size of multiple cohorts of certificate holders over time, from the time the credentials were first awarded, and then sum the cohorts between the ages of 25 to 44 in the reference year.

Cohort analysis has been used in a number of social science fields, but it is used most extensively in the field of demography, primarily to analyze fertility patterns. In general, it is the “quantitative description of data occurrences from the time the cohort is exposed to the risk of such occurrences” (Ryder, 1978). “Real cohort” methods examine historical data from a cohort of individuals as they age. When adequate data on cohort members over time are not available, demographers use “synthetic cohort” methods, which take data from several cohorts in a single year, and employ them as if they were the observed data for the cohort of interest (Shryock et al, 1975).

In the current analysis, we estimate the joint probability of remaining a certificate holder (as one’s highest educational attainment) in Minnesota using a series of multiple decrement life tables. Multiple decrement life tables summarize the experience of a cohort in which membership can be “terminated” by two or more attrition factors. These tables aide us in calculating the overall probability of “surviving” to the year of interest, based on the joint probabilities of death and further educational attainment. After these attrition factors are accounted for, the estimate is further adjusted to account for net migration of certificate holders into and out of the state.

Student data provide the starting point of our estimates, giving us the number of certificates earned each year, broken down by the age and race of the certificate earners. The data capture all of the certificates awarded by MnSCU between 1990 and 2014. Data from OHE for the years 2006 to 2014 provide additional data on the number certificates awarded by private non-profit and for-profit colleges for certificates requiring more than 15 semester credits/one semester of course work.

Assumptions

The probability of living in Minnesota and staying at the same level of highest educational attainment (a postsecondary certificate) from the time of receiving the certificate to the reference year rests on a series of assumptions about mortality, further educational attainment, and migration.

Table 2. Death Rates

Year	Death Rate For Minnesotans Aged 17-45 (Death per Year per Person)	Death Rate For Minnesotans Aged 17-45 (Death per Year per 1000 Persons)
1990	0.00110	1.10
1991	0.00107	1.07
1992	0.00108	1.08
1993	0.00110	1.10
1994	0.00115	1.15
1995	0.00118	1.18
1996	0.00110	1.10
1997	0.00098	0.98
1998	0.00102	1.02
1999	0.00104	1.04
2000	0.00102	1.02
2001	0.00098	0.98
2002	0.00100	1.00
2003	0.00103	1.03
2004	0.00094	0.94
2005	0.00097	0.97
2006	0.00099	0.99
2007	0.00090	0.90
2008	0.00093	0.93
2009	0.00091	0.91
2010	0.00089	0.89

Source: Minnesota Department of Health, U.S. Census Bureau

Mortality (death)

We use an annual series of age-specific mortality rates from Minnesota Department of Health death records and U.S. Census Bureau population data for the period 1990 to 2009. The mortality rates determine the probability of survival to 2010, which is then applied to the cohorts of interest. The overall impact of mortality on the estimate of certificate holders age 25 to 44 is quite low compared with the greater relative impacts of migration and educational advancement beyond a certificate.

Mortality rates were applied by single year of age and calendar year. For example, Table 2 displays the death rate for Minnesotans age 17 to 45 years between 1990 and 2010 which ranged from 1.10 deaths per 1,000 persons in 1990 to 0.89 deaths per 1,000 persons in 2010. When applied to the number of individuals completing a certificate in Minnesota, we can estimate that from 1990 to 1991, for those age 25 to 44, 2.8 certificate holders were estimated to have died. Between 2009 and 2010, an estimated 3.2 certificate holders died.

Table 3. Net Migration Rates, Minnesota

Age	1990-2000		2000-2010	
	Net Migration Rate per Person per Year	Net Migration Rate per 100 Persons per Decade	Net Migration Rate per Person per Year	Net Migration Rate per 100 Persons per Decade
15-19 years	0.004	4.0	0.001	1.0
20-24	0.004	4.0	-0.003	-3.0
25-29	0.010	10.0	0.002	2.0
30-34	0.012	12.0	0.008	8.0
35-39	0.007	7.0	0.004	4.0
40-44	0.004	4.0	0.000	0.0
45-49	0.002	2.0	-0.001	-1.0
50-54	0.000	0.0	-0.001	-1.0
55-59	-0.001	-1.0	-0.002	-2.0
60-64	-0.003	-3.0	-0.002	-2.0
65-69	-0.003	-3.0	-0.002	-2.0
70-74	-0.002	-2.0	0.000	0.0
75+	0.004	4.0	0.003	3.0

Source: Minnesota Department of Health, U.S. Census Bureau

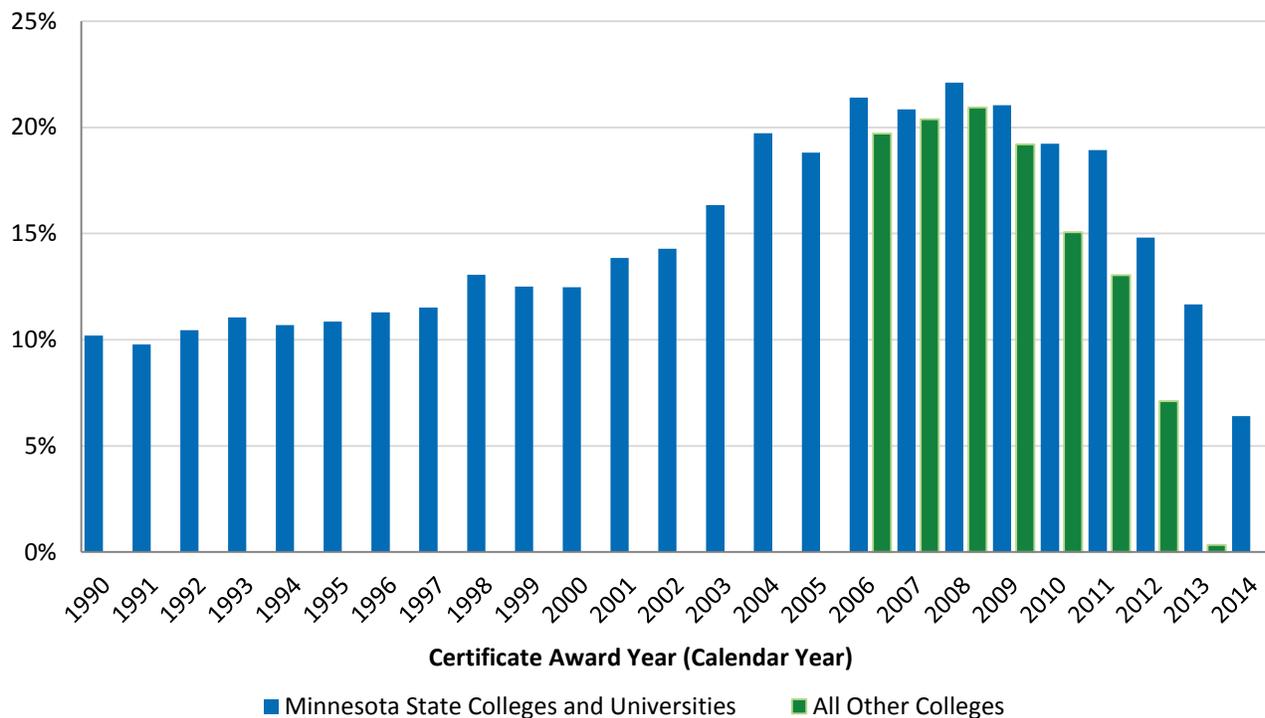
Migration

We use age- and race-specific net migration rates to account for the migration of certificate holders across state lines. Rates of net migration were calculated using the residual method by researchers at the University of Wisconsin’s Center for Demography and Ecology (Voss *et. al.*, 2004, and Winkler *et. al.*, 2013). Migration rates for 2000-2010 were adjusted downward to account for lower rates of net migration previously observed among those with this level of educational attainment specifically, compared with the age and race group overall. Based upon our analysis of decennial census data (1990 and 2000) and American Community Survey data (2008-2012), we determined that adjusting rates of migration by level of educational attainment was appropriate only for the latter part of the estimates window (2000 and later).

As shown in Table 3, the net migration rates per person per year for Minnesota ranged from -0.001 to 0.012 between 1990 and 2000 and from -0.003 to 0.008 between 2000 and 2010. For example, when applied to the number of individuals completing a certificate age 25 to 44, we can estimate that 25.5 certificate holders migrated to Minnesota between 1990 and 1991. Between 2009 and 2010, an estimated 0.9 certificate holders migrated to Minnesota.

Recent analysis by the Minnesota State Demographic Center indicates that Minnesota will experience a heightened need for migration to shore up its labor force needs (Minnesota State Demographic Center, 2015). Each year of the past two decades, Minnesota has gained more people than it has lost to other places. During the 1990s, migration to Minnesota added more than 15,000 persons on average each year. Since 2000, annual gains have fallen below 9,000 persons on average per year (Minnesota State Demographic Center, 2015). The likelihood of moving, both in and out of Minnesota, peaks during a person’s late teen years and early 20s coinciding with the years where young adults are most often seeking education and training after high school. (Minnesota State Demographic Center, 2015).

Figure 17. Percent of Certificate Completers Earning an Associate Degree (or Higher) by Initial Certificate Award Year, Minnesota 1990-2015



Source: Minnesota State Colleges and Universities, Minnesota Office of Higher Education

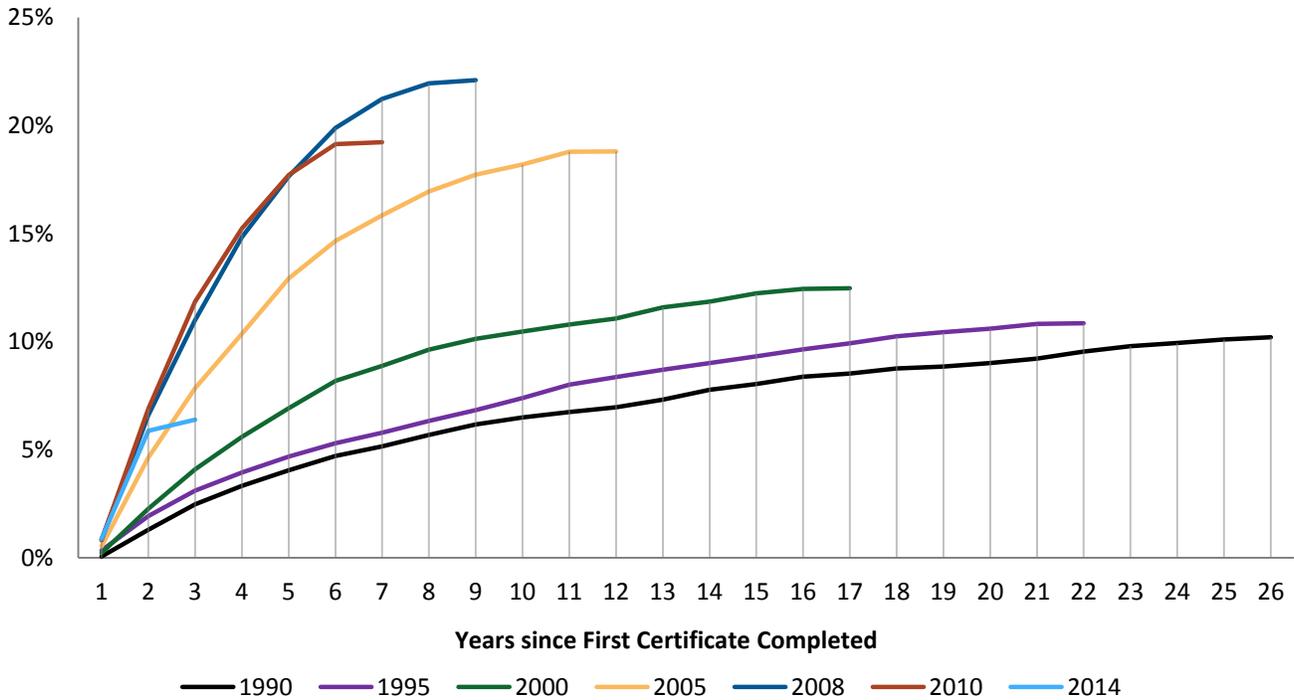
Further educational attainment

Using longitudinal administrative data provided by MnSCU and OHE, we modeled a series of probabilities of educational advancement to earning an associate degree for each year after the certificate is obtained. We then applied this set of year-specific probabilities to each cohort, each year, to 2010.

In estimating the year-specific probabilities, longitudinal administrative data on actual certificate recipients were used. We calculated the percent of certificate holders who went on to earn an associate degree or higher by year. As shown in Figure 17, approximately 10 percent of certificate completers in 1990 went on to earn an associate degree or higher by June 2015. In comparison, more than 20 percent of certificate completers in 2006 went on to earn an associate degree or higher by June 2015. Rates were comparable for completers at MnSCU and all other colleges between 2006 and 2009. The rate for completers at all other colleges was lower than the rate for MnSCU completers between 2010 and 2014. In addition to overall conversion rates, the data was analyzed to determine number of years between initial certificate completion and earning an associate degree or higher.

As shown in Figure 18, the rate at which initial certificates were converted to associate or bachelor’s degrees has increased over time. In 1990, approximately 2.5 percent of certificate holders had gone on to earn a degree within two years, 4.7 percent with five years, and 6.8 percent within 10 years. Using the most recent data available, the two-year conversion rate had increased to 6.4 percent (2014 completers). The five-year conversion rate had increased to 18.9 percent (2011 completers) and the 10-year conversion rate had increased to 21.4 percent (2006 completers). Conversion rates peaked for students completing a certificate during the most recent economic downturn (2008-2011 completers).

Figure 18. Percent of Certificate Completers Earning an Associate Degree or Higher by Years between Certificate and Subsequent Degree, Minnesota State Colleges and Universities, 1990-2014
(Lines represent calendar year initial certificate completed)



Source: Minnesota State Colleges and Universities, analysis by Office of Higher Education

Race and ethnicity of certificate holders

Student data from MnSCU and OHE provided base-year information on the age and race of certificate earners. Cohort changes by race were calculated in the manner described above by using age- and race-specific rates of further educational attainment and net migration. Mortality assumptions were specific to the age of the earner, but they were not race-specific. Since mortality exerts a relatively small impact on the final estimates, we do not expect that using race-specific mortality rates would greatly change the outcome of the model. However, additional analysis would be needed to determine whether race-specific mortality rates would significantly improve the model for some race groups.

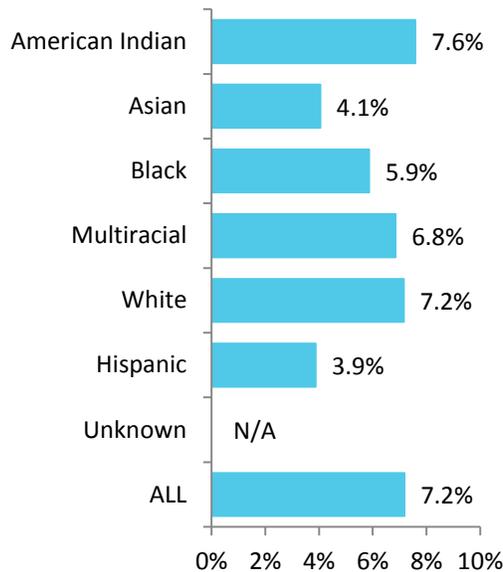
Limitations of the method/data

Our analysis assumes that certificate holders counted by administrative records are subjected to the above rates of mortality, migration and educational advancement. If the actual experience of this group was different than the assumptions used, the method will over- or under- estimate the number of certificate holders currently residing in Minnesota.

Certificate Estimates

Using the cohort analysis, the Minnesota State Demographic Center estimated that 7.2 percent of Minnesotan's age 25 to 44 hold a postsecondary certificate as their highest credential as shown in Figure 19. By race/ethnicity, the certificate estimate ranges from four to eight percent.

Figure 19. Population Age 25 to 44 with a Certificate as their Highest Postsecondary Award, Minnesota 2008 - 2012 by Basic Race and Ethnicity Categories



Source: Holders of certificates as their highest post-secondary award were estimated using a cohort analysis method applied to administrative data on certificates awarded (supplied by the Minnesota State Colleges and Universities system and the Minnesota Office of Higher Education) and produced by the MN State Demographic Center.

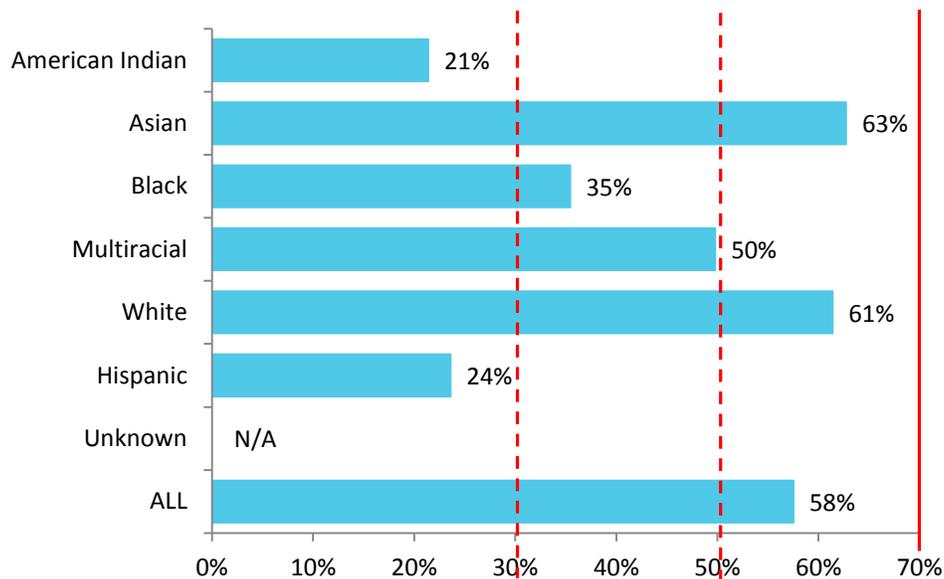
Notes: All race categories above are non-Hispanic. Estimates have been rounded to the nearest whole percent. Users are cautioned that these estimates contain sampling and other sources of error, not shown here. Percentages were not calculated for individuals with "other" or unknown race due to differences across datasets.

Final Estimates

In order to sustain its economic strength and quality of life, Minnesota must ensure an adequate supply of individuals with postsecondary education or training for the workforce. In response to this challenge, the Minnesota Legislature has set a 70 percent postsecondary attainment goal for the state to reach by 2025. In addition, the Legislature has set 70 percent goals for each racial group in Minnesota, which spotlights the existing gaps and demographic changes. Attainment levels for subgroups within each race vary substantially given the diversity of communities within Minnesota.

Fifty-eight percent of Minnesotans age 25 to 44 in 2008 – 2012 have attained a postsecondary certificate or higher. This is the starting point for measuring progress in increasing attainment rates. The estimates should be not be interpreted as actual values but the likely attainment rate for each group in the population and includes a margin of error (not shown).

Figure 20. Population Age 25 to 44 with a Certificate or Higher Credential, Minnesota 2008 - 2012 by Basic Race and Ethnicity Categories



Sources: IPUMS microdata version of U.S. Census Bureau 2008-2012 American Community Survey for Associate's or Higher Degree, with tabulations by the MN State Demographic Center; Holders of certificates as their highest post-secondary award were estimated using a cohort analysis method applied to administrative data on certificates awarded (supplied by the Minnesota State Colleges and Universities system and the Minnesota Office of Higher Education) and produced by the MN State Demographic Center.

Notes: All race categories above are non-Hispanic. Estimates have been rounded to the nearest whole percent. Users are cautioned that these estimates contain sampling and other sources of error, not shown here. Percentages were not calculated for individuals with "other" or unknown race due to differences across datasets.

As shown in Figure 20, no group in Minnesota age 25 to 44 is currently attaining a 70 percent educational attainment rate, though results vary by subgroup as discussed earlier and as shown in Figure 7 (Chinese, Indian, and Japanese Asian subgroups have attained educational attainment rates of 70+ percent).

The educational rates of the population age 25 to 44 with a credential or higher are:

- 21 percent for American Indian and 24 percent for Hispanic individuals. These rates are below the 30 percent benchmark established in law.
- 35 percent for Black individuals. This rate is below the 50 percent benchmark established in law.
- 63 percent for Asian, 50 percent for multiracial and 58 percent for White individuals. These rates are below the 70 percent goal established in law.

These differences mirror gaps in educational achievement in Minnesota found at the elementary, secondary, and postsecondary levels. Closing gaps in achievement and ensuring all students are performing at high levels are critical to the social and economic well-being of Minnesota.

Increases Needed to Meet the 70 Percent Goal

In order to meet the educational attainment goal of 70 percent for all racial and ethnic groups, Minnesota needs an estimated 175,800⁵ additional individuals age 25 to 44 to complete their first educational credential (certificate or degree). Table 4 shows the number of additional persons within each race group who would need to earn a certificate or degree to raise that group’s attainment rate to 70 percent.

By 2025, this number will grow as Minnesota’s population grows (assuming current rates of mortality, migration, and postsecondary completion).

Table 4. Increase in Certificate or Degree Holders Needed to Attain 70% Goal, Minnesota 2008 - 2012 by Basic Race Categories (Corrected May 5, 2016)

Group (age 25-44)	People Ages 25-44 (Figure 10)	Number Holding a Certificate or Higher Degree	Percent Holding a Certificate or Higher Degree (Figure 19)	Percentage Points to attain 70% goal	Additional population needed to attain 70% goal ⁶
American Indian	14,500	3,100	21%	49%	6,800
Asian	76,500	48,000	63%	7%	5,300
Black	85,200	30,200	35%	35%	28,600
Multiracial	21,900	10,900	50%	20%	4,300
White	1,124,000	690,100	61%	9%	93,700
Hispanic	82,600	19,500	24%	46%	37,100
Unknown	2,000	N/A	N/A	N/A	N/A
ALL	1,406,700	809,200	58%	12%	175,800

⁵ Corrected May 5, 2016

⁶ Corrected May 5, 2016

Next Steps

The estimate of educational attainment provided by this report serves as a starting point for further work. Additional work in three areas could add substantial value in meeting the intent of Minnesota's educational attainment goal:

1. Establishing annual targets for growth in education attainment to identify strategies and investments required to meet the Minnesota Legislature's 2025 goal.
2. Collecting better information about race/ethnicity in Minnesota.
3. Identifying certificates of economic value.

Establishing Targets and Strategies for Growth

In collaboration with stakeholders, available strategies for increasing the number of certificate holders and the probable increase in new certificate holders associated with each strategy will be determined. The primary levers for increasing education attainment are to improve student enrollment, retention and graduation rates at postsecondary institutions. Using existing enrollment, retention and graduation rate data by race and ethnicity, sector or institution-specific goals can be estimated. A number of evidence-based strategies exist that institutions can utilize to increase enrollment, retention and graduation rates contributing to meeting the 70 percent attainment goal.

In addition, a stakeholder group will be used to identify strategies for implementation. OHE is conducting regular meetings with stakeholders across the community to solicit their feedback. The stakeholders represent a variety of sectors, including government, business, community organizations, and higher education institutions. To maximize success, stakeholders must own the strategies utilized to reach the 70 percent attainment goal.

Collecting Better Information about Race/Ethnicity in Minnesota

Minnesota's diversity of subgroups highlights the need for better information about educational attainment by race/ethnicity. Minnesota should consider adopting disaggregated race/ethnicity categories for reporting data. Enhancements should specifically be made for reporting of Asian Pacific Islanders and African groups. Reporting categories should be adopted universally across areas of education, workforce, human services, health, corrections and all other sectors.

Two states, Hawaii and California in particular, have been innovators in collecting more detailed data about the racial and ethnic composition of their residents. Hawaii is home to the largest percentage minority population in the country. In addition, its central location in the Pacific Ocean has made it a location for many migrants from Asia. As a result, the state government has taken great care to capture the racial and ethnic diversity of the state. The Hawaii Department of Education uses 17 different racial and ethnic categories for collecting data on their students. California has the largest (and greatest as a proportion) Asian American/Pacific Islander population in the continental U.S. The California Department of Education uses 13 different categories for those who are Asian American/Pacific Islander (California's Government Code section 8310.5). This change was started by student-led grassroots action at college campuses. Also, K-12 schools and higher education institutions supported further disaggregation, as both entities wanted to better understand achievement gaps in college preparation.

Data collection by race and ethnicity is an area of concern for Minnesota's communities of color. In response to the U.S. Department of Education's efforts to increase data disaggregation, the Council on Asian-Pacific Minnesotans testified that better data disaggregation of Asian and Pacific Islander students is needed "to truly understand and create programs and opportunities to meet the needs of students who

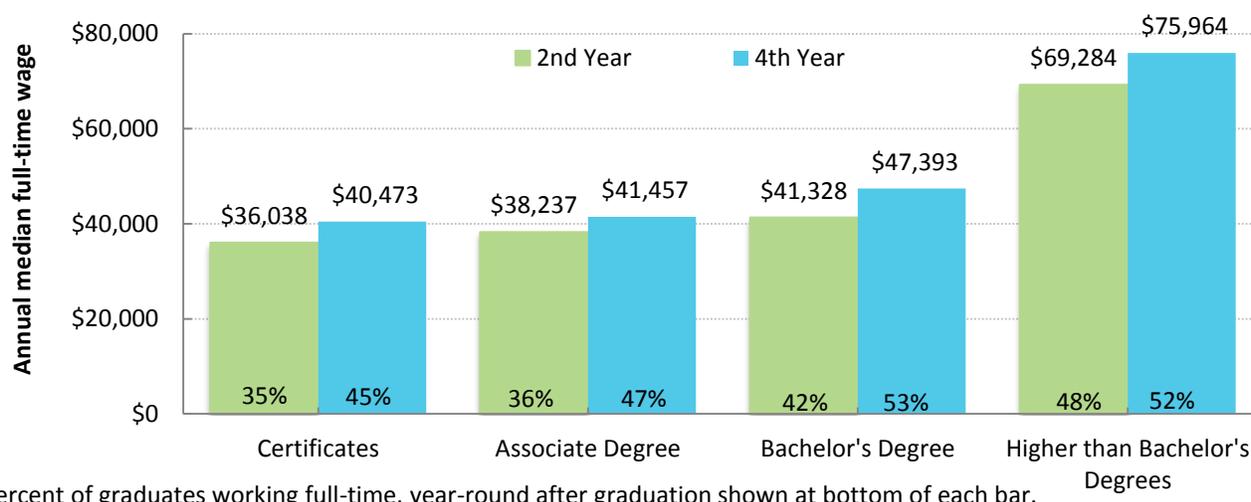
are in need of help and assistance” (Dinh, 2013). This recommendation comes with two reservations. First, local entities may need additional support and resources. Despite the challenges that come with developing new data systems, institutions have shown they are open to making changes if it means they can better serve their students (Dinh, 2013). Second, issues can potentially arise when sharing data across different levels, or organizations. To facilitate reporting, it is important that reporting for local and state purposes align with federal data requirements; otherwise local entities may have difficulty in implementing new collection standards.

Minnesota’s diversity of subgroups highlights the need for better information about educational attainment by race/ethnicity.

Identifying Certificates of Economic Value

Certificates are an attractive option for many people, as they require the shortest time and thus are the more affordable options for individuals seeking a postsecondary credential. As Figure 21 shows, median income varies by award level (certificate, associate degree, bachelor’s degree and graduate degree).

Figure 21. Annual Median Wages of College Graduates Increases with Education, 2008 - 2012 College Graduates Employed Full-Time, Year-Round in Minnesota, 2nd and 4th Year after Graduation



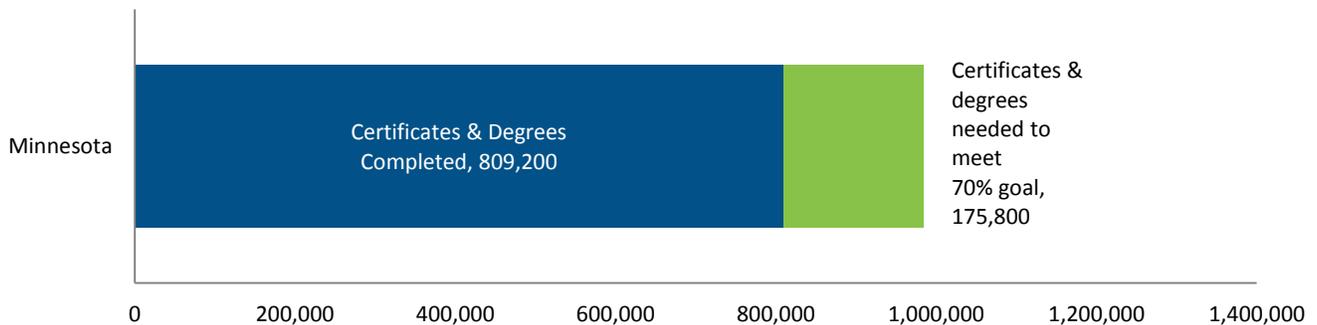
It is important to note that there is a considerable range in wages and salaries within each award level. Wages vary by the program of study, the prior work experience of the graduate, and geography. This range of economic outcomes has led policymakers to question if states should be encouraging students to enroll in any program or only programs with economic value, specifically certificates of economic value. Research shows that certificates of one year or more in length have greater economic value over short-term certificates^{7,8}. As wages largely reflect labor force supply and demand, the question of economic value highlights the desire to ensure states are preparing workers for jobs needed in support of the state’s larger economic goals.

⁷ Dadgar, M. and Trimble, M. (2014). Labor Market Returns to Sub-Baccalaureate Credentials: How Much Does a Community College Degree or Certificate Pay? *Educational Evaluation and Policy Analysis*.

⁸ Carnevale, A., Rose, S., and Hanson, A. (2012) Certificates: *Gateway to Gainful Employment and College Degrees*. Georgetown University Center on Education and the Workforce.

Conclusion

Figure 22. Increase in Certificate or Degree Holders Needed to Attain 70% Goal, Minnesota⁹



Minnesota is one of the most educated states in the country, across all age groups. Currently 58 percent of Minnesotans, age 25 to 44 have completed a postsecondary certificate or degree. Figure 22 above shows that an additional 175,800¹⁰ postsecondary credentials are needed to meet the 2025 goal of 70 percent.

However, Minnesota faces significant gaps in educational attainment by race and ethnicity. The populations growing the fastest have historically not been adequately served within Minnesota’s educational system. The educational rates of the population age 25 to 44 with a credential or higher are:

- 21 percent for American Indian and 24 percent for Hispanic individuals. These rates are below the 30 percent benchmark established in law.
- 35 percent for Black individuals. This rate is below the 50 percent benchmark established in law.
- 63 percent for Asian, 50 percent for multiracial and 58 percent for White individuals. These rates are below the 70 percent goal established in law.

These differences mirror gaps in educational achievement in Minnesota found at the elementary, secondary and postsecondary levels. Closing gaps in achievement and attainment and ensuring all students are performing at high levels is critical to the social and economic well-being of Minnesota.

The state’s changing demographic profile requires the state to eliminate gaps in educational attainment—or our future economic prosperity will be imperiled. Through targeted research based action and supported by appropriate resources and stakeholder involvement, Minnesotans have the opportunity and ability to reduce and eliminate racial/ethnic disparities, and improve the economic prospects for all.

⁹ Corrected May 5, 2016

¹⁰ Corrected May 5, 2016

References

Bosworth, B. (2010). *Certificates Count: An Analysis of Sub-Baccalaureate Certificates*. Complete College America.

Carnevale, A., Rose, S., and Hanson, A. (2012) *Certificates: Gateway to Gainful Employment and College Degrees*. Georgetown University Center on Education and the Workforce.

Dadgar, M. and Trimble, M. (2014). *Labor Market Returns to Sub-Baccalaureate Credentials: How Much Does a Community College Degree or Certificate Pay?* Educational Evaluation and Policy Analysis.

Dinh, Q. (2013). *Moving Beyond the "Asian" Check Box*. Washington, DC: Southeast Asia Resource Action Center.

Minnesota State Demographic Center. 2015. *Minnesota on the Move: Migration Patterns & Implications*. St. Paul, MN: Minnesota State Demographic Center.

Ryder, Norman B. 1978. "Cohort Analysis." Pp. 2 v. in *International encyclopedia of statistics*, edited by William H. Kruskal and Judith M. Tanur. New York: Free Press.

Shryock, Henry S., Jacob S. Siegel, Elizabeth A. Larmon, and States United. 1975. *The methods and materials of demography*. Washington: U.S. Bureau of the Census .

Voss, P. R., S. McNiven, R. B. Hammer, K. M. Johnson, G. V. Fuguitt. 2004. *County-specific net migration by five-year age groups, Hispanic origin, race and sex 1990-2000*. CDE Working Paper No. 2004-24. Center for Demography and Ecology, University of Wisconsin-Madison. Madison, WI.

Winkler, R.L., K. M. Johnson, C. Cheng, P.R. Voss, and K.J. Curtis. 2013. *County-specific net migration by five-year age groups, Hispanic origin, race and sex 2000-2010*. CDE Working Paper No. 2013-04. Center for Demography and Ecology, University of Wisconsin-Madison. Madison, WI.