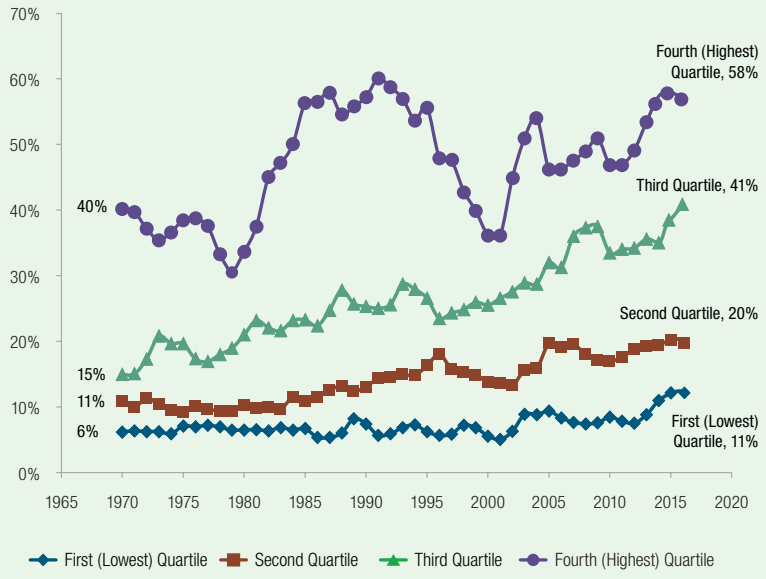
INDICATORS

OF HIGHER EDUCATION EQUITY IN THE UNITED STATES

2018 HISTORICAL TREND REPORT

When will the U.S. close the gap in higher education attainment by family income?

Estimates of Bachelor's Degree Attainment by Age 24 for Dependent Family Members by Family Income Quartile: 1970 to 2016



THE PELL INSTITUTE
for the Study of Opportunity in Higher Education

PennAHEAD
Alliance for Higher Education and Democracy

The Pell Institute for the Study of Opportunity in Higher Education

conducts and disseminates research and policy analysis to encourage policymakers, educators, and the public to improve educational opportunities and outcomes of low-income, first-generation students, and students with disabilities. The Pell Institute is sponsored by the Council for Opportunity in Education (COE). The Pell Institute shares the mission of the Council to advance and defend the ideal of equal opportunity in postsecondary education. As such, the focus of the Council is to ensure that the least advantaged segments of the American population have a realistic chance to enter and graduate from a postsecondary institution.

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is dedicated to advancing higher education policy and practices that foster open, equitable, and democratic societies. Drawing on the intellectual resources of the University of Pennsylvania and a global alliance of higher education and academic leaders, Penn AHEAD achieves its mission by creating knowledge, improving practice, and building capacity. Through engagement with policymakers, institutional leaders, scholars, and practitioners, AHEAD produces research and applies research-based knowledge to address the most pressing issues pertaining to the public purposes of higher education in the U.S. and across the globe.

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DEDICATION & SPONSORS

SPECIAL DEDICATION
ARNOLD MITCHEM & TOM MORTENSON

The *2018 Indicators of Higher Education Equity in the United States* report is dedicated to Arnold Mitchem and Tom Mortenson. Without the work of these two individuals, the report would not have been possible. Both have dedicated their careers to creating greater equity in educational opportunity. By producing this 2018 volume and continuing the Equity of Postsecondary Opportunity Shared Dialogues, we honor the legacy of their work and the seeds they have sown for increasing equity of higher education opportunity in the United States.

SPECIAL THANKS FOR SUPPORT FROM:

The Pell Institute and PennAHEAD thank the Travelers Foundation and Lumina Foundation for their financial support of the *2018 Indicators of Higher Education Equity in the United States Historical Trend Report* and the accompanying Search for Solutions Shared Dialogues. While we heartily acknowledge their support, any errors of omission or interpretation and the opinions expressed in the report are the sole responsibility of the authors.

ACKNOWLEDGEMENTS

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A number of persons at COE and Penn contributed to various aspects of this 2018 report. We especially thank Maureen Hoyler, President of COE, and Holly Hexter and Jodi Koehn-Pike of COE for their assistance, feedback, and production support. This report series owes much to Colleen O'Brien, former Director of the Pell Institute and author of the 2004 and 2005 *Indicators* reports. Much of the trend data presented in this and earlier reports was originally compiled by Tom Mortenson, Senior Scholar at the Pell Institute, with the assistance of Nicole Brunt, for inclusion in the Postsecondary Education Opportunity Newsletter. We also appreciate the helpful critiques received from Susan Dynarski, Sandra Baum, and David Mundel concerning the use of CPS data and other aspects of the 2015 *Indicators* report.

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FOREWORD

In 2004 and 2005, the Pell Institute for the Study of Opportunity in Higher Education (Pell Institute), sponsored by the Council for Opportunity in Education (COE), published two editions of *Indicators of Opportunity in Higher Education*. In 2015, we renewed the commitment to documenting trends in higher education equity by publishing an expanded annual trend report and initiating the Search for Solutions Shared Dialogues. The *2018 Indicators of Higher Education Equity in the United States: Historical Trend Report* directly follows on these earlier efforts. This publication brings together again in partnership the Pell Institute with the Alliance for Higher Education and Democracy of the University of Pennsylvania (PennAHEAD). Both organizations have a core mission to promote a more open, equitable, and democratic system of higher education within the United States. The Pell Institute, with its historical and ongoing ties to the federal TRIO programs, has a special mission to promote more equitable opportunity for low-income and first-generation students, and students with disabilities. These reports draw from multiple sources of existing data to provide, in one place, indicators that describe trends in equity in postsecondary enrollment, choice, and degree attainment, as well as indicators of college affordability.

Purposes of the Report. The purposes of this equity indicators project are to:

- Report the status of higher education equity in the United States and identify changes over time in measures of equity;
- Identify policies and practices that promote and hinder progress; and
- Illustrate the need for increased support of policies, programs, and practices that not only improve overall attainment in higher education but also create greater equity in higher education opportunity and outcomes.

Focus on Inequities by Family Income. The 2015 *Indicators* report focused on equity in higher education based on measures of family income. Family income remains the primary focus of the 2018 report. Recognizing the need to also address inequity based on other interrelated demographic characteristics, reports since 2016 also include selected indicators that highlight differences by race/ethnicity and socioeconomic status (SES). In these reports, SES is measured by an index comprised of family income, parents' education, and parents' occupation developed by the National Center for Education Statistics (NCES).

Inclusion of State Data. For the first time, the 2018 *Indicators* report includes data describing higher education equity by U.S. state. Considering indicators of equity by state is essential given the many differences across the 50 states in historical, demographic, economic, and political characteristics, as well as the characteristics of their K-12 and higher education systems.

Online Data Tool. To download the data files used to produce the figures in this report, find links to earlier reports, and access to the Search for Solutions Shared Dialogues Essays that periodically accompany the *Indicators* reports, please visit the Equity Indicators Website hosted by the Pell Institute: http://pellinstitute.org/indicators/

Methodological Issues. This *Indicators* report presents data as far back as comparable data warrant, often beginning with 1970. Methodological Appendix A provides additional notes, tables, and figures.

The Search for Solutions Shared Dialogues Essays and Blog. In addition to providing longitudinal indicators of equity, the *Indicators* project is also intended to advance productive conversation about effective policies and practices for improving equity in higher education opportunity and outcomes. To this end, the 2015 to 2017 *Indicators* reports include essays intended to connect the indicators to current policy debates. In 2018, the *Indicators* project is launching the *Improving Equity in Higher Education Search for Solutions Blog* hosted by PennAHEAD (http://www.ahead-penn.org/) intended to further advance discussion of how to create meaningful improvements in higher education equity.

Introduction

The original stated mission of the U.S. Department of Education, as adopted under President Jimmy Carter in the late 1970s, reflected a civil rights focus. Simply stated the mission of the Department was to "ensure equal access to education."[1] This historical trend report series and the associated essays have drawn inspiration from this original mission statement and from a number of other historical statements concerning equal access to education. In this introduction to the 2018 report, we briefly review some of these articulations to highlight the current challenges pertaining to equity in higher education.

The Dangers of a Higher Educational System that Functions to Sort Students. The forward to President Truman's 1947 Commission on Higher Education called attention to the dangers of a higher education system that functioned not to provide opportunity but to sort students:

> *If the ladder of educational opportunity rises high at the doors of some youth and scarcely rises at the doors of others, while at the same time formal education is made a prerequisite to occupational and social advance, then education may become the means, not of eliminating race and class distinctions, but of deepening and solidifying them.*[2]

The data in this, as well as previous *Indicators* reports, show the persisting stratification of our nation's higher education system. More progress is needed to achieve the goal of "equal access to education" within the higher education context.

https://www.nytimes.com/2018/03/25/opinion/college-graduation-gap.html

Higher Education as an International Human Right. Article 13 of the International Covenant on Economic, Social, and Cultural Rights of the United Nations declares:

> *Higher education shall be made equally accessible to all, on the basis of capacity, by every appropriate means, and in particular by the progressive introduction of free education.*[3]

---

1 The current U.S. Department of Education's mission statement, adopted in 2005 under President Bush, is to "promote student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access." It can be found at: https://www2.ed.gov/about/overview/mission/mission.html.

2 Truman, H.S. "Statement by the President making public a report of the Commission on Higher Education," December 15, 1947. Retrieved from http://www.presidency.ucsb.edu/ws/?pid=12802.

3 Tomaševski, K. (2001). S*pecial Rapporteur Report on the Right to Education Mission to the United States of America*, United Nations Commission on Human Rights, Economic, Social, and Cultural Rights. Retrieved from https://www.nesri.org/sites/default/files/Special_Rapporteur_Education_USA.pdf. President Carter signed the U.N. Covenant in 1977, but thus far no President, Democrat or Republican, has presented the Covenant for ratification by the U.S. Senate. The U.N. Covenant has been ratified by 166 countries worldwide but the United States in one of a handful of counties worldwide that has not become a binding party to the Covenant.

In the wake of growing student debt and a renewed focus on the rise of economic inequity in the United States, in recent years a number of proposals have been advanced for "free" higher education. Scholars and politicians have begun again to speak of extending the right to quality higher education as a human right.[4] With a stated goal of improving college affordability, several states (including Tennessee, Oregon, and New York) have adopted some type of "free tuition" programs. "Free community college" programs are also being created in local communities across the U.S. (For a database of current programs see: http://www.ahead-penn.org/creating-knowledge/college-promise).

If postsecondary education is necessary to obtain work that pays a living wage, then all individuals, regardless of family income, parents' education, socioeconomic status, or other demographic characteristics, should have equal opportunity to participate, complete, and benefit.

The U.S. has a core constitutional and founding commitment to equality of opportunity for all citizens. The U.S. Supreme Court has made rulings barring discrimination based on race/ethnicity within the United States and has ruled in favor of increasing diversity for the good of the institution in college admissions decisions in *Fisher v. Texas*. Thus far, the courts have not ruled on inequities in access to higher education based on family income, parents' education, or socioeconomic status. But, if postsecondary education is necessary to obtain work that pays a living wage, then all individuals, regardless of family income, parents' education, socioeconomic status, or other demographic characteristics, should have equal opportunity to participate, complete, and benefit.[5]

A Question of Will. In 1967, in *Where do we go from here?*, Reverend Martin Luther King, Jr. addressing and calling for a "war on poverty" argued that: *"There is no deficit in human resources, the deficit is in human will."*[6] Fifty years later, these words could be applied to many current social problems, including persisting inequality in higher education opportunity and outcomes.

This 2018 report and the dialogue questions we pose seek to place the *Indicators* within the wider discussion of equity and in the context of the role that higher education is playing in a society under conflict and stress. Whether or not we believe that higher education is a civil right, an essential element of a full democratic society or a fundamental requirement for achieving the American dream, the 2018 *Indicators* report, like previous reports, shows that higher education opportunity and outcomes remain highly inequitable across family income groups. Moreover, on many indicators, gaps are larger now than in the past. The disinvestment of state funds for public colleges and universities since the 1980s and the declining value of federal student grant aid have aided in the creation of a higher education system that is stained with inequality. Once known for wide accessibility to and excellence within its higher education system, the U.S. now has an educational system that sorts students in ways that have profound implications for later life chances. More work is required to ensure that all youth have the

4 As Professor Diane Ravitch has noted, reformers and advocates from both the right and the left in the U.S. have identified issues around education as: "the civil rights issue of our times" http://dianeravitch.net/2015/06/01/the-civil-rights-issue-of-our-time-2/. Conversation about education as a civil right has been increasingly focused on higher education with such questions being included in the 2016 presidential debates. For example, when asked about the topic in a Democratic primary debate Presidential candidate B. Sanders stated, "I think what we need to do is say yes, higher education should be a right."

5 Guinier, L. (2015). *The Tyranny of the Meritocracy, Democratizing Higher Education in America*, Beacon Press, Boston The insights of the Truman Commission foreshadow the more recent arguments that question the validity, justice, and utility for a democracy of our education system's focus on measuring merit and ranking at every level. Guinier argues in the *Tyranny of the Meritocracy*, "The merit systems that dictate and justify the college admissions are functioning to select and privilege elite individuals" and exclude others rather than "creating learning communities geared to advance democratic societies."

6 Especially in the final years of his life Dr. King increasingly spoke of the interrelationships between civil rights including education and the economic system, poverty, militarism, and racism. https://kairoscenter.org/wp-content/uploads/2014/11/King-quotes-2-page.pdf.

opportunity to use their creative potential to realize the many benefits of higher education and advance the well-being and progress of the nation.[7]

The Equity Indicators

Defining Equity of Higher Education Opportunity. We operationalize "equity" in terms of deviation from a distribution that would indicate "equal access to education." For example, we observe differences across quartiles or quintiles of family income in the percentages of students entering college and receiving bachelor's degrees. We also observe the extent to which the racial/ethnic distribution of the composition of the U.S. population differs from the racial/ethnic distribution of degree recipients.

The equity indicators tracked in this report address the following fundamental questions:

1. ***Equity Indicator 1: Who enrolls in postsecondary education?***
   - How do college continuation rates of high school leavers vary by family income?
   - How do college continuation rates of high school graduates vary by family income?
   - How do rates of postsecondary enrollment differ by race/ethnicity?
   - How do rates of postsecondary enrollment differ by race/ethnicity and family income?
   - How do the percentages of young adults that have not enrolled in postsecondary education within 8 to 10 years of expected high school graduation vary by parents' socioeconomic status (SES)?
   - How do the rates of enrollment vary by first generation status?
   - What are the differences by state in estimated participation of low-income students in college?
   - How do rates of postsecondary enrollment differ by state?
2. ***Equity Indicator 2: What type of postsecondary educational institution do students attend?***
   - How does the level of institution attended vary by family income?
   - How does the control of institution attended vary by family income?
   - How does the representation of low-income students vary by institutional level and control?
   - How does the selectivity of institution attended vary by family income?
   - How does the representation of low-income students vary by institutional selectivity?
3. ***Equity Indicator 3: Does financial aid eliminate the financial barriers to paying college costs?***
   - What are the trends in cost of attendance nationally and by state?
   - What is the maximum Pell Grant relative to average college costs?
   - What level of Pell Grant would be necessary to meet college costs?
   - What is the unmet need by family income?
4. ***Equity Indicator 4: How do students in the United States pay for college?***
   - What share of higher education costs is paid by students and their families?
   - What is the net price of attendance by family income?

7 As U.S. state and international comparisons show, it is not only the absolute level of income that reduces well-being, but also the degree of income inequity that is manifest in the state or nation. See Kerry, B., Pickett, K.E. & Wilkinson, R. (2010, August). The spirit level: Why greater equality makes societies stronger. *Child Poverty Insights*, Social and Economic Policy, UNICEF Policy and Practice. http://www.unicef.org/social policy/files/Insights_August2010_ ENG%281%29.pdf.

- What is the percentage of family income needed to pay for college?
- What percent of students borrow and how much do they borrow nationally and by state?

5. ***Equity Indicator 5: How do educational attainment rates and early outcomes vary by family characteristics?***
   - How does dependent individuals' bachelor's degree attainment by age 24 vary by family income?
   - How does dependent students' bachelor's degree attainment within six years of entering college vary by family income?
   - How does the distribution of associate's, bachelor's, master's and doctoral degrees relative to the population differ by race/ethnicity?
   - Are there differences in post-baccalaureate enrollment and average income for recent graduates by family income?
   - How do degree attainment rates vary by state?
6. ***Equity Indicator 6: How does educational attainment in the U.S. compare with other countries?***
   - What percentage of 25- to 34-year olds has completed a tertiary-type A degree (bachelor's or higher)?
   - What percentage of 25- to 34-year olds has completed a tertiary-type A (bachelor's or higher) or tertiary-type B degree (associate's or higher)?

Setting the Stage

Before presenting the equity indicators, in this Setting the Stage (STS) chapter, we first present key data on the structure and context of postsecondary education in the United States.[8] We review the number and percentage distribution of institutions and enrollment by institution level (2-year and 4-year), control (public, private non-profit, and private for-profit), and selectivity. We also report the increase in the percentage of youth that is poor as measured by eligibility for the Federal Free or Reduced Price Lunch program and receipt of Pell or other Federal Grants. We also observe changes in the percent of students that are potentially first-generation to attend college. In this 2018 edition, we also describe trends in the distribution of income and wealth within the United States, and, throughout, we include attention to some differences by state.

Institutional Type and Control. In 2015-16, there were 4,583 2-year and 4-year undergraduate degree-granting institutions in the United States; 34 percent were 2-year institutions and 66 percent were 4-year. There were also 2,524 non-degree granting institutions, of which 90 percent (n = 2,026) were private for-profit.[9]

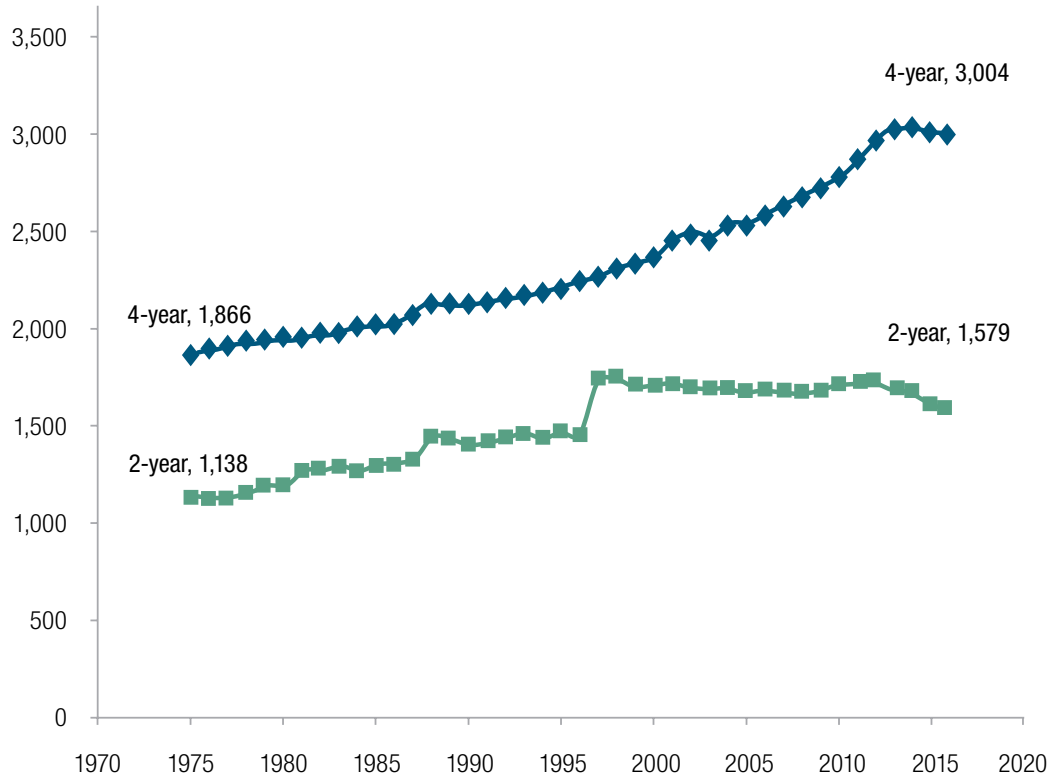
STS Figure 1 illustrates trends in the numbers of 2- and 4-year degree-granting institutions in the United States from 1974-75 to 2015-16.[10] The total number of 2- and 4-year degree-granting institutions declined from a peak of 4,726 in 2012-13 to 4,583 in 2015-16. Taking a longer view, the total number of degree-granting institutions (including branch campuses) increased from 3,004 in 1974-75 to 4,583 in 2015-16, an increase of 53 percent. The increases from 1974-75 to 2015-16 were 39 percent for 2-year institutions and 61 percent for 4-year institutions.

8 To distinguish the Setting the Stage (STS) figures from those of the Equity Indicators Figures, we use STS in front of each of the figures in this section.

9 This total excludes about 530 institutions that are not undergraduate degree-granting institutions but are specialized and graduate schools. U.S. Department of Education, National Center for Education Statistics, *Education Directory, Colleges and Universities, 1949-50 through 1965-66*; Higher Education General Information Survey (HEGIS), "Institutional Characteristics of Colleges and Universities" surveys, 1966-67 through 1985-86; Integrated Postsecondary Education Data System (IPEDS), "Institutional Characteristics Survey" (IPEDS-IC:86-99); and IPEDS Fall 2000 through Fall 2013, "Institutional Characteristics" component. *Digest of Education Statistics 2016* [Table 317.10.]. https://nces.ed.gov/programs/digest/d16/tables/dt16_317.10.asp?current=yes.

10 Before 1995-96, NCES counted "institutions of higher education." Beginning in 1995-96, the numbers reflect "degree-granting institutions," defined by NCES as "institutions that grant associate's or higher degrees and participate in Title IV federal financial aid programs." *Digest of Education Statistics 2016* [Table 317.10.]. https://nces.ed.gov/programs/digest/d16/tables/dt16_317.10.asp?current=yes.

STS Figure 1: Number of degree-granting Title IV institutions in the United States by level: 1974-75 to 2015-16

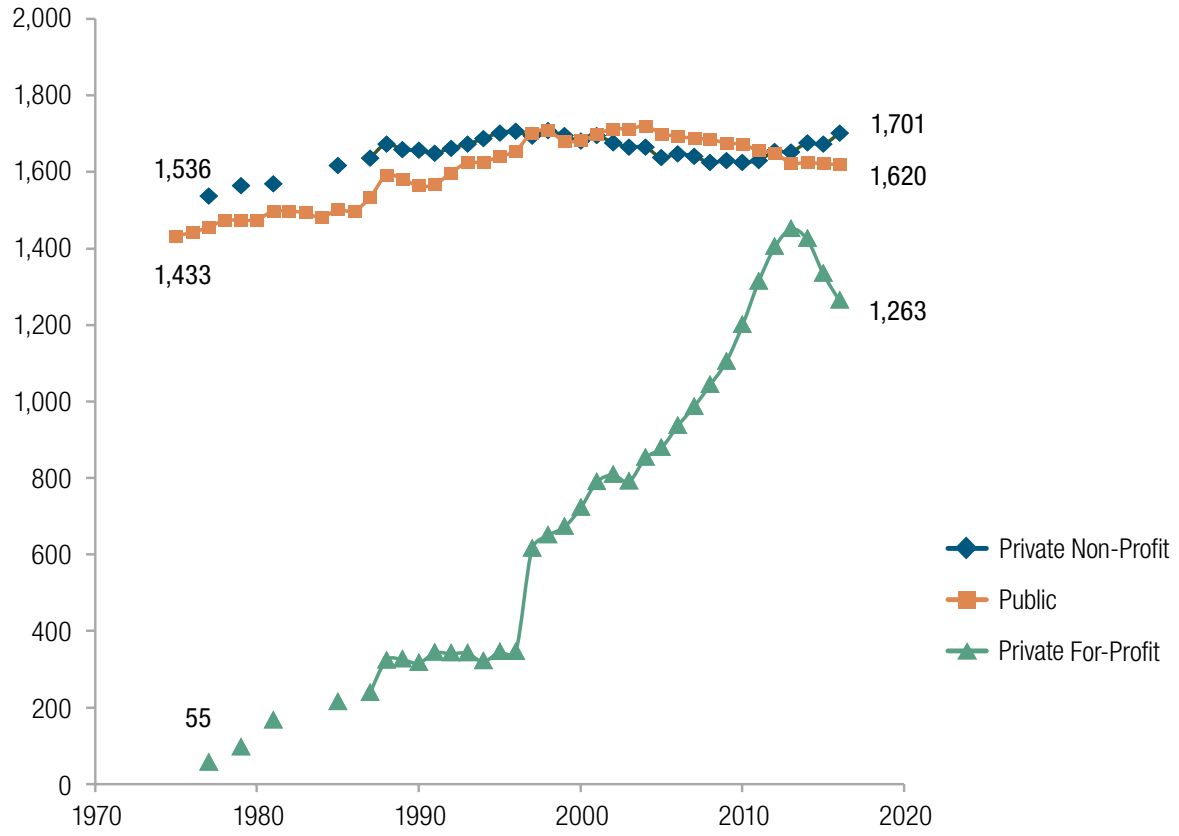


NOTE: Data represent 1974-75 to 2015-16 academic years. Data begin with 1975 due to lack of reporting prior to 1975. Data through 1995-96 are for institutions of higher education, while later data are for degree-granting institutions. This change accounts for the increase in 2-year institutions in that year. Degree-granting institutions grant associate's or higher degrees and participate in Title IV federal financial aid programs. Changes in counts of institutions over time are also affected by the numbers of institutions submitting separate data for branch campuses.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Education Directory, Colleges and Universities, 1949-50 through 1965-66*; Higher Education General Information Survey (HEGIS), "Institutional Characteristics of Colleges and Universities" surveys, 1966-67 through 1985-86; Integrated Postsecondary Education Data System (IPEDS), "Institutional Characteristics Survey"(IPEDS-IC:86-99); and IPEDS Fall 2000 through Fall 2013, "Institutional Characteristics" component. *Digest of Education Statistics 2016* [Table 317.10]. https://nces.ed.gov/programs/digest/d16/tables/dt16_317.10.asp?current=yes.

STS Figure 2 shows trends in the number of institutions by control. Data in the Integrated Postsecondary Education Data System (IPEDS) prior to 1984-85 are not comprehensive, particularly for private for-profit institutions. For this reason, we take 1985 as a starting point. Between 1984-85 and 2015-16, the number of public institutions increased by 8 percent and the number of private non-profit institutions increased by 5 percent. Starting from a much lower reported base, the number of private for-profit institutions increased by 490 percent, rising from 214 in 1984-85 to 1,263 by 2015-16.[11]

STS Figure 2: Number of degree-granting Title IV institutions in the United States by control: 1974-75 to 2015-16



NOTE: Data begin with 1975 due to reporting consistency issues prior to 1975. Data for private for-profit institutions are subject to coverage issues, especially prior to 1985. Data through 1995-96 are for institutions of higher education, while later data are for degree-granting institutions. This change accounts for the increase in private for-profit institutions between 1995 and 1996. Changes in counts of institutions over time are also affected by changes in the numbers of institutions submitting separate data for branch campuses.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Education Directory, Colleges and Universities, 1949-50 through 1965-66*; Higher Education General Information Survey (HEGIS), "Institutional Characteristics of Colleges and Universities" surveys, 1966-67 through 1985-86; Integrated Postsecondary Education Data System (IPEDS), "Institutional Characteristics Survey"(IPEDS-IC:86-99); and IPEDS Fall 2000 through Fall 2013, "Institutional Characteristics" component, as included in *Digest of Education Statistics 2016* [Table 317.10].

11 It is unknown how much of the increase is related to increased reporting and participation in Title IV aid programs on the part of private for-profit institutions and how much reflects actual growth. Title IV institutions are eligible to participate in Title IV federal student financial assistance programs.

Between 1995 and 2005, the number of for-profit institutions more than doubled, rising from 345 in 1994-95 to 879 in 2004-05, and then increased again to a peak of 1,451 in 2012-13. Since then, the number of for-profit institutions has fallen to 1,263 by 2015-16. The recent decline is attributable to the closing or consolidation of for-profit institutions, as well as the conversion of some for-profit institutions to non-profit status.

The impact of the Great Recession is shown in the sharp increases in enrollment between 2008 and 2010, followed by declines in enrollment after 2011 through 2015. The rate of increase in enrollment has been relatively small since 2016.

Enrollment Trends. In fall 2017, an estimated 17.5 million undergraduates were enrolled in U.S. degree-granting higher education institutions (STS Figure 3). Enrollment since the 1970s shows an overall upward trend over time, with some periods of declines or no growth.[12] Trends in enrollment are linked, at least in part, to trends in employment opportunities (e.g., the Great Recession between 2008 and 2010). In periods of fewer job opportunities and higher unemployment, college enrollment generally increases. Undergraduate enrollment increased sharply during the Great Recession, rising from 15.6 million in fall 2007 to a peak of 18.1 million in fall 2010, and then declined by 2 percent between fall 2011 and fall 2012 and by 1 percent between fall 2012 and fall 2014. Enrollment declined again between 2014 and 2015, reaching 17.04 million. Estimated undergraduate enrollment increased by about 200,000 between 2015 and 2016 and by 200,000 more between 2016 and 2017. In 2017 total undergraduate enrollment returned to about the level of 2009.[13]

The private for-profit share of degree-seeking enrollment (2-year and 4-year) increased from 2 percent in 1975 to 10 percent by 2010 but declined to 6 percent by 2015.

Enrollment by Institutional Control and Level. In fall 2015, public institutions accounted for 77 percent of undergraduate enrollments, private non-profit institutions accounted for 17 percent, and private for-profit institutions accounted for 6 percent (STS Figures 3 and 4).[14] Because public institutions, on average, enroll larger numbers of students than private non-profit and private for-profit institutions, the distribution of enrollment by control is different than the distribution of institutions. In 2015-16, 35 percent of institutions were public, 37 percent were private non-profit, and 28 percent were private for-profit (tabulated from STS Figure 2).

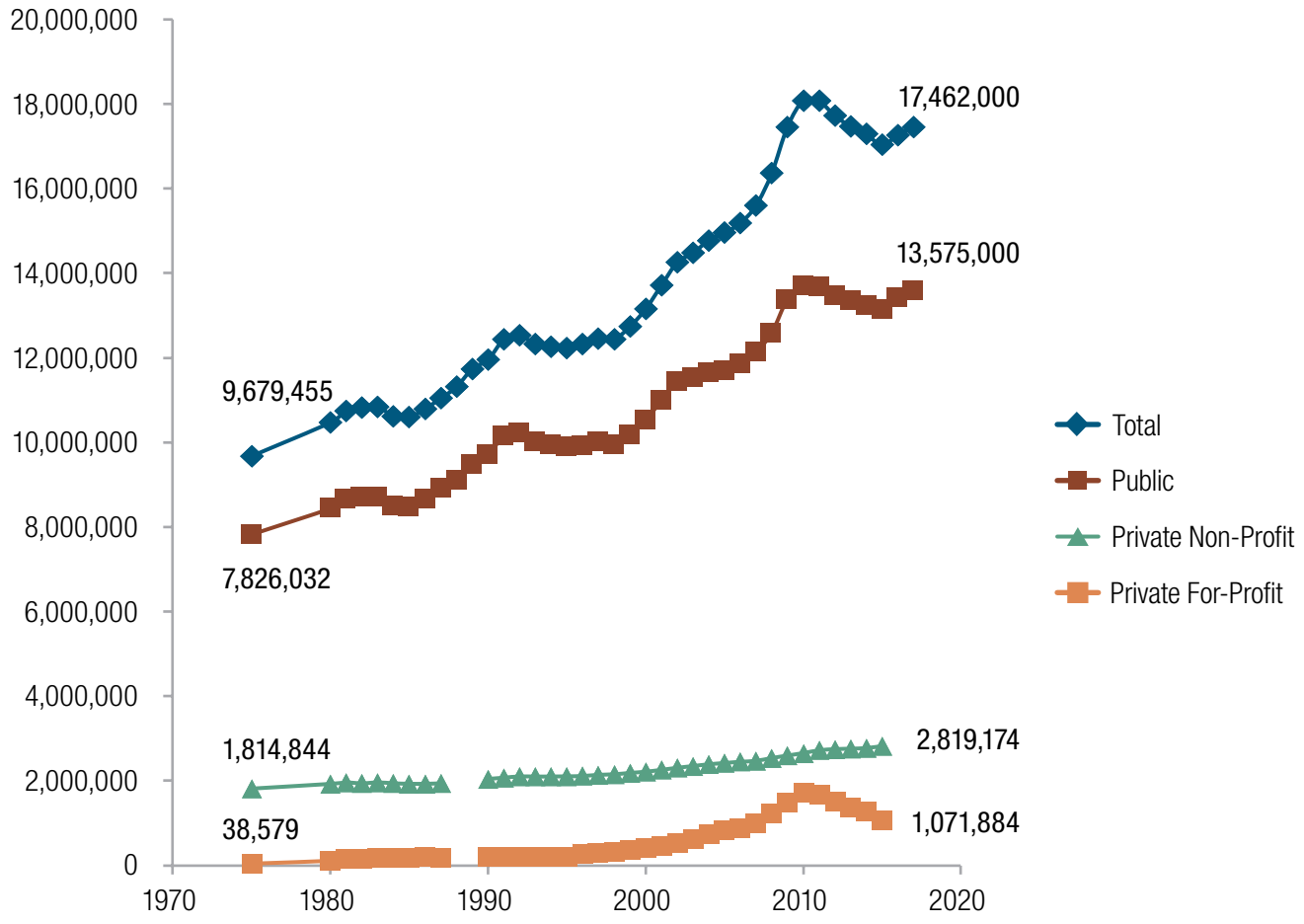
While there have been some declines in the share of enrollments in public institutions since 1975, public institutions have consistently enrolled at least 70 percent of undergraduates. In 1975, 81 percent of undergraduates were enrolled in public institutions. The public share declined to 76 percent by fall 2010 and was 77 percent in 2014 and 2015. The share of undergraduates enrolled in private non-profit institutions fluctuated between 19 percent in 1975 and 15 percent in 2008. In 2014, about 17 percent of undergraduates were enrolled in private non-profit institutions (16.3 percent in 4-year and 0.3 percent in 2-year private non-profits).

12 Before 1995-96, NCES counted "institutions of higher education." Beginning in 1995-96, the numbers reflect "degree-granting institutions," defined by NCES as "institutions that grant associate's or higher degrees and participate in Title IV federal financial aid programs." NCES (2016). *Digest of Education Statistics 2016* [Table 317.10].

13 NCES projects undergraduate enrollment to reach the level of 2010 (18,082,427) by 2019 and to continue to increase up to 19,349,000 by 2026. NCES (2016). *Digest of Education Statistics 2016* [Table 303.70].

14 2015 is the most recent year for which enrollment data are available disaggregated by institutional control. Total enrollment for 2016 and 2017 are NCES estimates.

STS Figure 3: Total undergraduate fall enrollment in degree-granting institutions by institutional control: Fall 1975 to Fall 2017

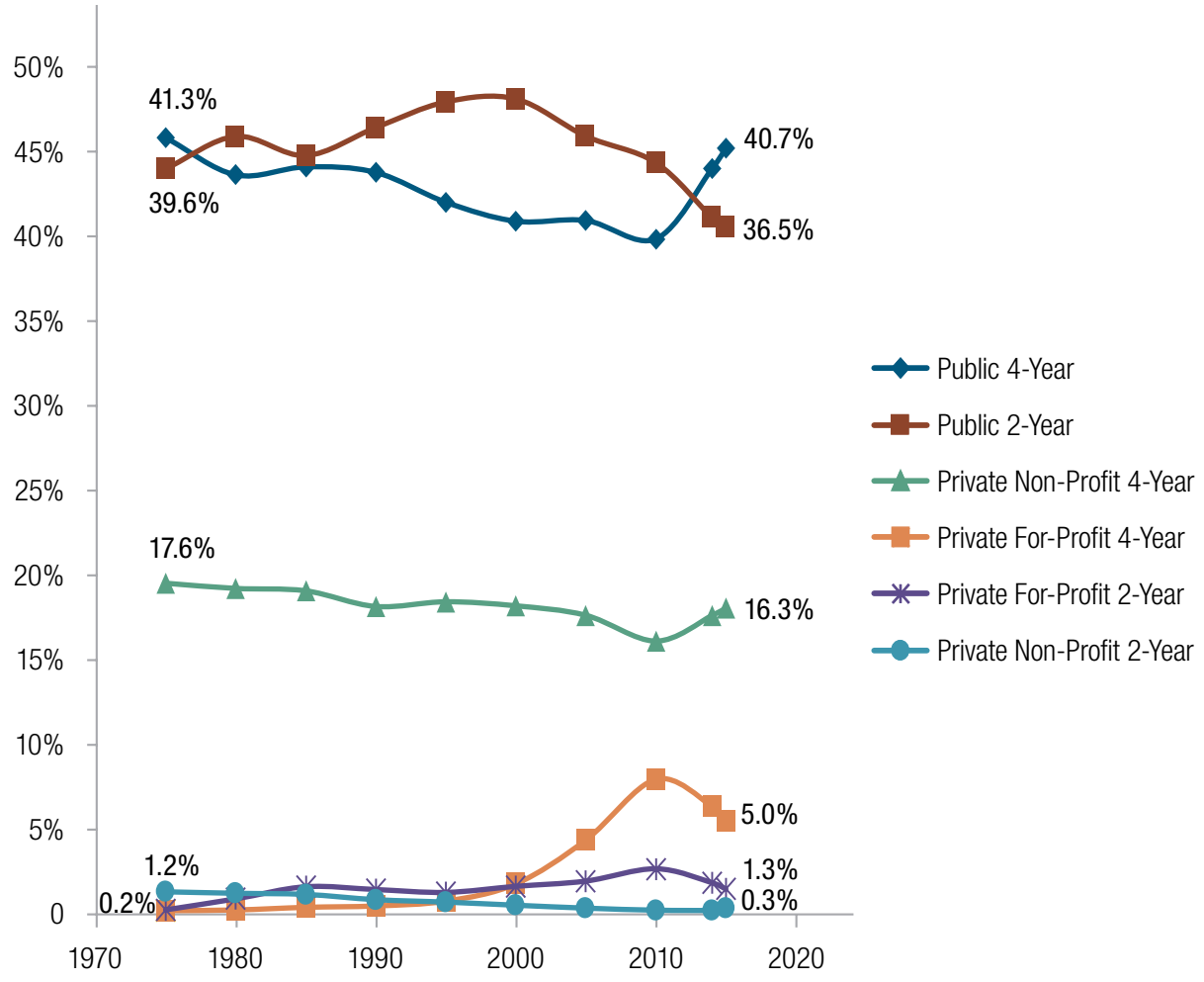


NOTE: Total and public enrollment data for 2016 and 2017 are estimates. Estimates for 2016 and 2017 are not available for private non-profit or private for-profit institutions. For these groups, the last years displayed are 2015. Data include unclassified undergraduate students. Data through 1995 are for institutions of higher education, while later data are for degree-granting institutions. Degree-granting institutions grant associate's or higher degrees and participate in Title IV federal financial aid programs. The degree-granting classification is very similar to the earlier higher education classification, but includes more 2-year colleges and excludes a few higher education institutions that did not grant degrees. Some data have been revised from previously published figures.

SOURCE: U.S. Department of Education, National Center for Education Statistics (2016). *Digest of Education Statistics 2016* [Table 303.70]; Higher Education General Information Survey (HEGIS), "Fall Enrollment in Colleges and Universities" surveys, 1970 through 1985; Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment Survey" (IPEDS-EF:86-99); IPEDS Spring 2001 through Spring 2014, Enrollment component; and Enrollment in Degree-Granting Institutions Projection Model, 1980 through 2024. Retrieved from https://nces.ed.gov/programs/digest/d16/tables/dt16_303.70.asp?current=yes.

During the 1990s, only about 2 percent of undergraduates were enrolled in private for-profit 2-year and 4-year institutions. The private for-profit share of 2-year and 4-year undergraduate enrollment increased during the 2000s, reaching a high of 10 percent in 2010 and then declining to 6 percent in fall 2015.

STS Figure 4: Percentage distribution of undergraduate fall enrollment in degree-granting institutions by institution control and level: 1975 to 2015

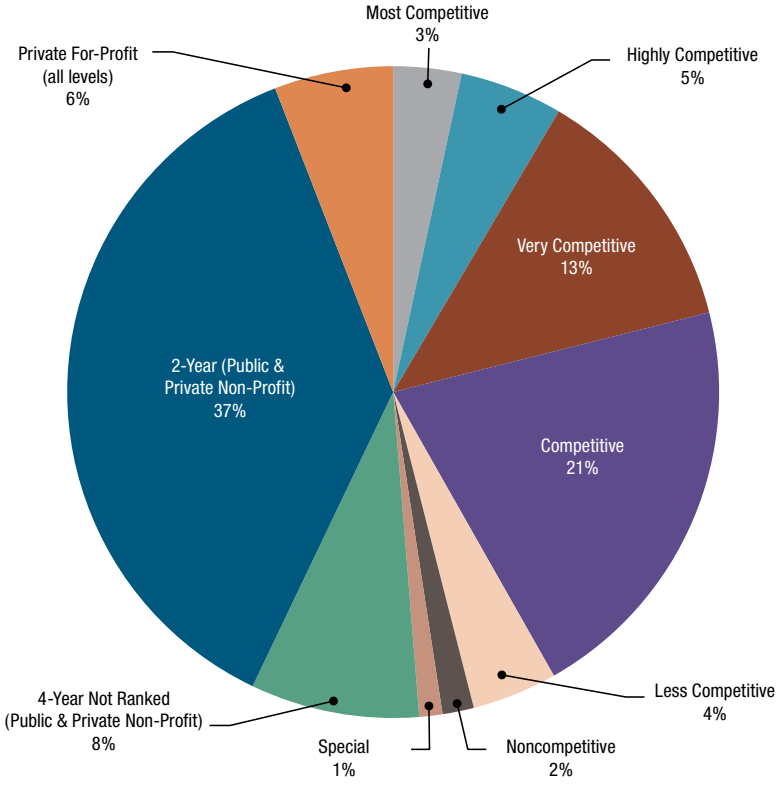


NOTE: See notes for STS Figure 3.

SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES), Integrated Postsecondary Data System (IPEDS) (2016), *Digest of Education Statistics 2016* [Table 303.70]. https://nces.ed.gov/programs/digest/d16/tables/dt16_303.70.asp?current=yes.

Enrollment by Institutional Competitiveness Index. STS Figure 5a presents the distribution of undergraduates enrolled (both full-time and part-time) at degree-granting institutions by institutional competitiveness and STS Figure 5b presents the distribution of degree-granting institutions by institutional competitiveness. Selectivity is defined using Barron's Admissions Competitiveness Index for 2016. In fall 2015, 42 percent of undergraduate students were enrolled in 4-year institutions classified as "Competitive" or higher. Only 3 percent of students were enrolled in the nation's "Most Competitive" institutions. More than a third of students (37 percent) were attending 2-year institutions. The remaining students attended for-profit institutions (6 percent) or non-ranked 4-year public and non-profits (8 percent), or institutions designated by Barron's as "Special" (1 percent), "Noncompetitive" (2 percent), or "Less Competitive" (4 percent) 4-year institutions.

STS Figure 5a: Percentage distribution of total undergraduate enrollment by institutional competitiveness index: 2015



NOTE: This figure uses Barron's Admissions Competiveness Index for 2016 and IPEDS fall 2015 enrollment data (full-and part-time enrollment captured by the "EFTOTLT" variable). Students attending institutions not ranked by Barron's are classified by institutional level and control. We include only public and private not-for-profit institutions in the categories of Barron's rankings. A small number of for-profit institutions are ranked by Barron's, but we include these institutions in the for-profit sector.

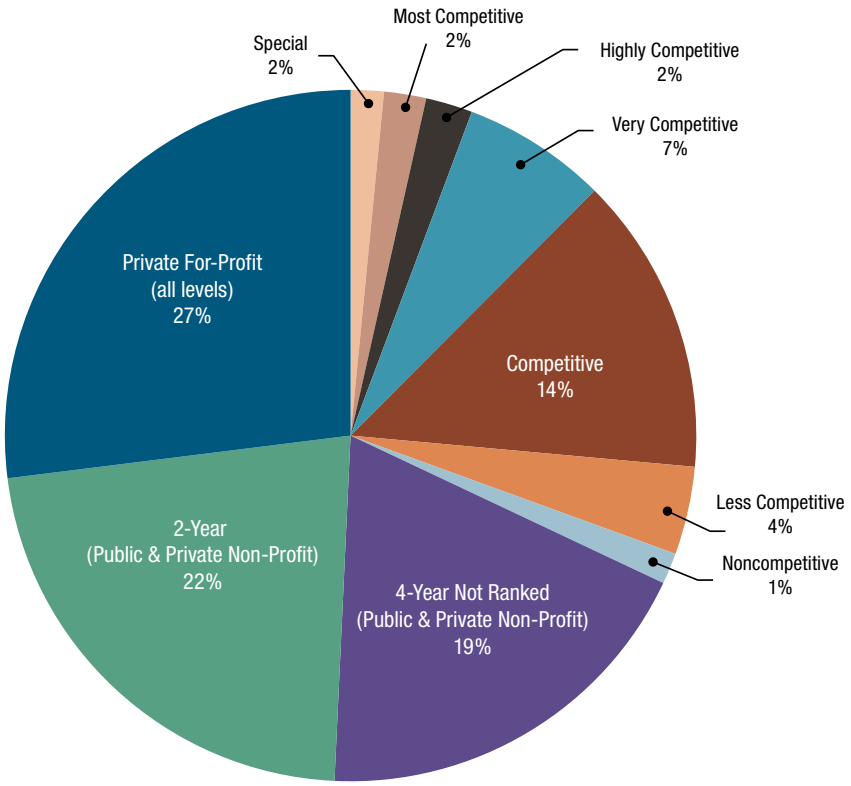
SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES), Integrated Postsecondary Data System (IPEDS), and *Barron's Profiles of American Colleges* 32nd Edition (2016).

Number of Institutions by Competitiveness Index. STS Figure 5b, also using Barron's 2016 competitiveness index, shows the percentage distribution of degree-granting institutions in each category. The differences in the distributions in STS Figures 5a and 5b reflect differences in enrollment size among institutions of different competitiveness. For example, 2-year public and private non-profit institutions enroll 37 percent of undergraduate students (see STS Figure 5a) but comprise only 22 percent of all degree-granting institutions (STS Figure 5b). Non-ranked 4-year institutions enroll 8 percent of students but comprise 19 percent of institutions.

Growth of Students Classified as Eligible for Free or Reduced Price Lunch and Growth of Federal Grants (Pell and Other Grants). STS Figure 6a shows trends in the percentages of youth that are approved as eligible for free or reduced price lunches from 1989 to 2016 and the percent of full-time, first-time degree/certificate seeking undergraduate students enrolled in degree-granting postsecondary institutions who have Federal Grants from 2000-01 to 2014-15.

Both measures show an increase in the share of students enrolled in our nation's educational systems who are from low-income families. The percent of K-12 students eligible for free or reduced price lunches increased from 31 percent in 1989 to 55 percent in 2015, and to 57 percent in 2016.

STS Figure 5b: Distribution of institutions by institutional competitiveness index: 2015



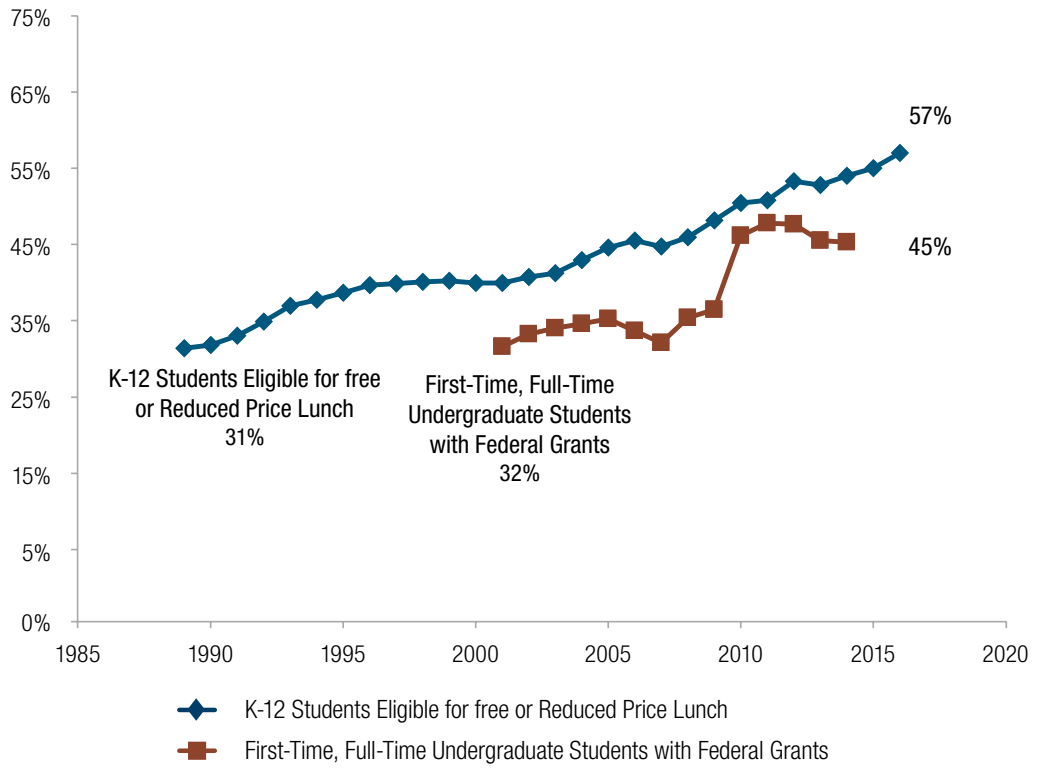
NOTE: This figure uses Barron's Competitiveness index for 2016 and IPEDS. We include only public and private not-for-profit institutions in the categories of Barron's rankings. A small number of for-profit institutions are ranked by Barron's, but we include these institutions in the for-profit sector.

SOURCE: U.S. Department of Education, National Center for Education Statistics (NCES), Integrated Postsecondary Data System (IPEDS) (2015) and *Barron's Profiles of American Colleges*, 32nd Edition (2016).

The percent of first-time, full-time undergraduates enrolled at public and private non-profit institutions who received Pell or other Federal Grants was 32 percent in 2001. This percentage fluctuated between 32 percent in 2001 and 35 percent in 2005.[15] After 2007 (with the Great Recession), the share of first-time, full-time undergraduates receiving Federal Grants increased to a peak of 48 percent in 2011. This percentage declined to 45 percent in 2012-13 and was also at 45 percent in 2014-15. Changes over time in participation in Federal Grants (most of which are awarded on the basis of financial need) reflect changes in the economic cycle, income eligibility levels, and the stagnation of family incomes in the United States.

Growth of Students Classified as Eligible for Free or Reduced Price Lunch by State. STS Figure 6b compares the percent of students approved as eligible for the Federal Free or Reduced Price Lunch program by state. The figure shows the increase in the percent of students approved as eligible since 1990 as well as the variation by state.

STS Figure 6a: Percentage of K-12 students approved for free or reduced price lunch (1989 to 2016) and percentage of first-time full-time degree-seeking undergraduates with Pell or other Federal Grants (2001 to 2015)



NOTE: Federal Grants include Pell Grants and other aid that does not have to be repaid. Totals for approved free or reduced price lunch include the 50 states, District of Columbia, Guam, Virgin Islands, Puerto Rico, and Department of Defense schools.

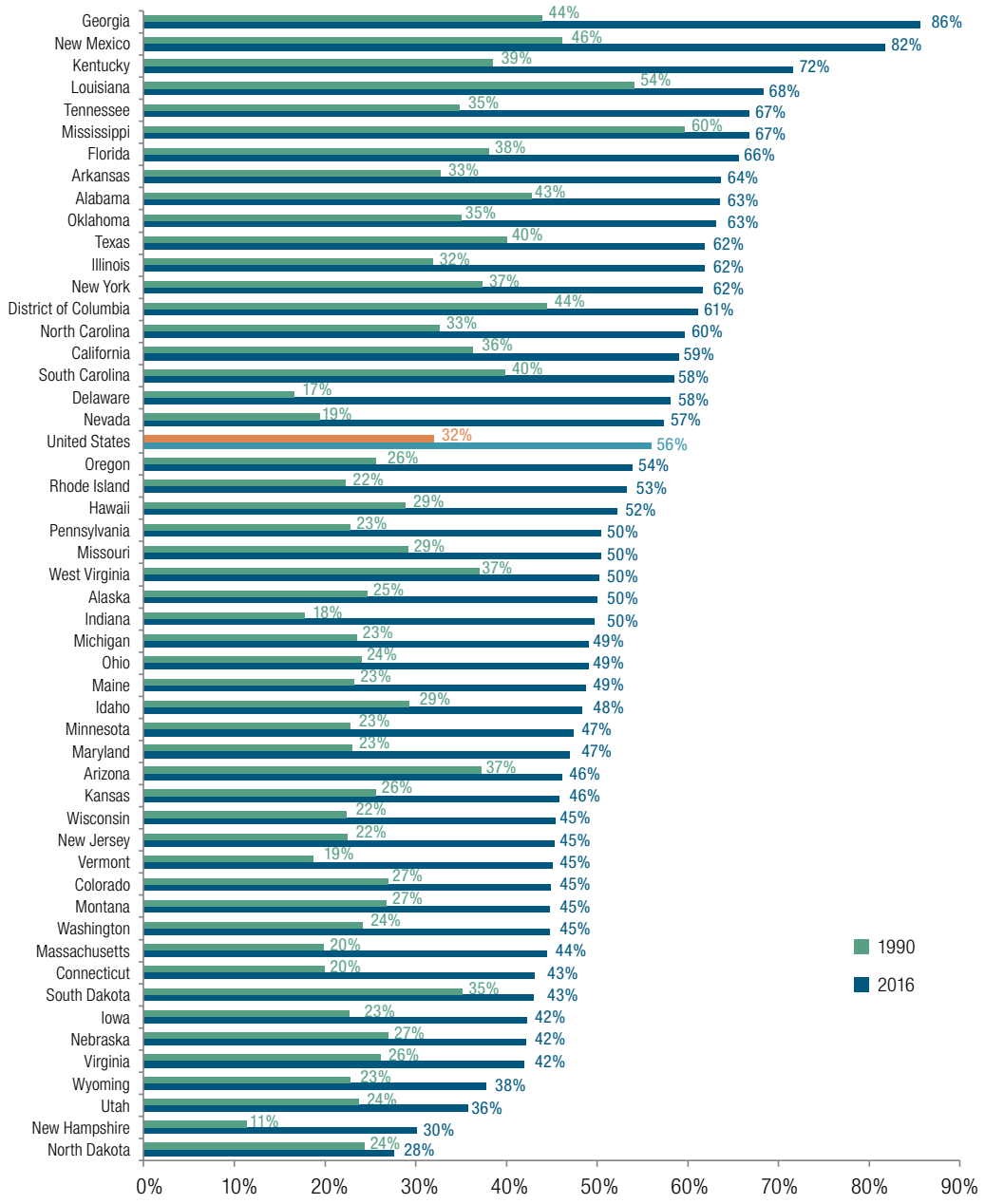
SOURCE: U.S. Department of Education, National Center for Education Statistics (2016). *Digest of Education Statistics 2016* [Table 331.20]. https://nces.ed.gov/programs/digest/d16/tables/dt16_331.20.asp?current=yes. U.S. Department of Agriculture, Food and Nutrition Services, Free and Reduced Price Lunch data various years 1989 to 2016.

15 The percentage of undergraduates with Pell Grants rose from 13 percent in 1975 at the start of the Pell Grant program to 32 percent by 1992. The rates shown in STS Figure 6(i) for 2000 to 2014 are for full-time, first-time undergraduates. Estimates for all undergraduates are generally higher, at around 50 percent.

In 2016, the percentages of K-12 students approved as eligible for free or reduced price lunch ranged from 28 percent in North Dakota and 30 percent in New Hampshire to 82 percent in New Mexico and 86 percent in Georgia.

Some caution is needed in the use of this data as 100 percent of students in schools with large percentages of low-income students are now approved for free or reduced prince lunch.

STS Figure 6b: Percentage of K-12 students approved for free or reduced price lunch by state: 1990 and 2016



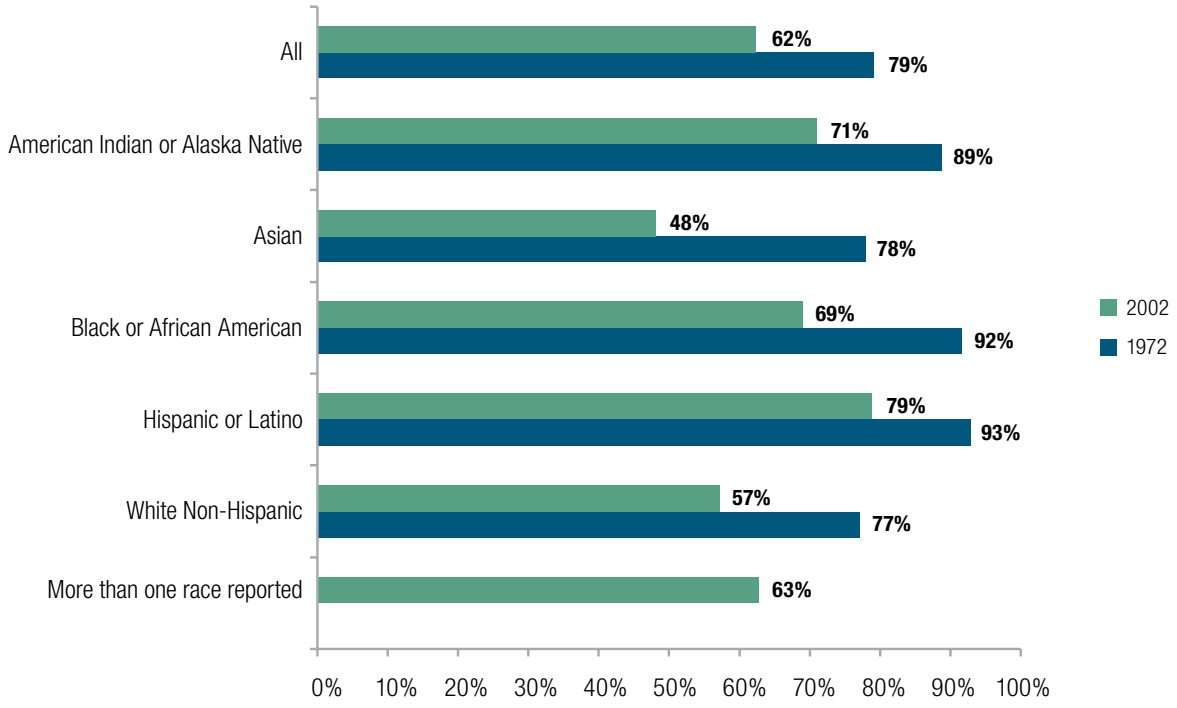
NOTE: Totals for approved free or reduced price lunch include the 50 states, District of Columbia, Guam, Virgin Islands, Puerto Rico, and Department of Defense schools.

SOURCE: U.S. Department of Agriculture, Food and Nutrition Services, Free and Reduced Price Lunch data various years 1989 to 2016.

Percentage of Youth Who Are First Generation to College. Measures of educational achievement (e.g., test scores, college entrance rates, and college degree attainment) are highly correlated with parental education. STS Figure 7a uses data from the National Longitudinal Study of the High School Class of 1972 (NLS-72) and the Educational Longitudinal Study (ELS) of students who were 10th graders in 2002 and were scheduled to graduate in 2004.

Comparing the classes of 1972 and 2004 shows large declines in the percentages of high school students who would be first generation to college (defined as no parent has a bachelor's degree). In 1972, 93 percent of Hispanic students, 92 percent of Black students, 89 percent of American Indian or Alaska Native students, 77 percent of White students, and 78 percent of Asian students had the potential to be first generation to college. About 30 years later, by the high school class of 2004 (as measured by ELS), the percentages of high school students who had the potential to be first generation to college had declined to 79 percent for Hispanics, 71 percent for American Indian and Alaska Native, 69 percent for Blacks, 57 percent for Whites, and 48 percent for Asian students.

STS Figure 7a: Percentage of high school students who had the potential to be first-generation college by race/ethnicity: 1972 (National Longitudinal Study of High School Class of 1972) and 2004 (Educational Longitudinal Study: ELS:2002/2004)



NOTE: First generation is defined as no parent or guardian has a bachelor's degree. The National Longitudinal Study (NLS) of High School Class of 1972 sampled high school seniors and the Educational Longitudinal Study (ELS:2002) sampled high school sophomores. This difference may impact the comparison between the two estimates, as the NLS is limited to individuals who persisted to the senior year of high school while the ELS includes students who may leave high school between the sophomore and senior years.

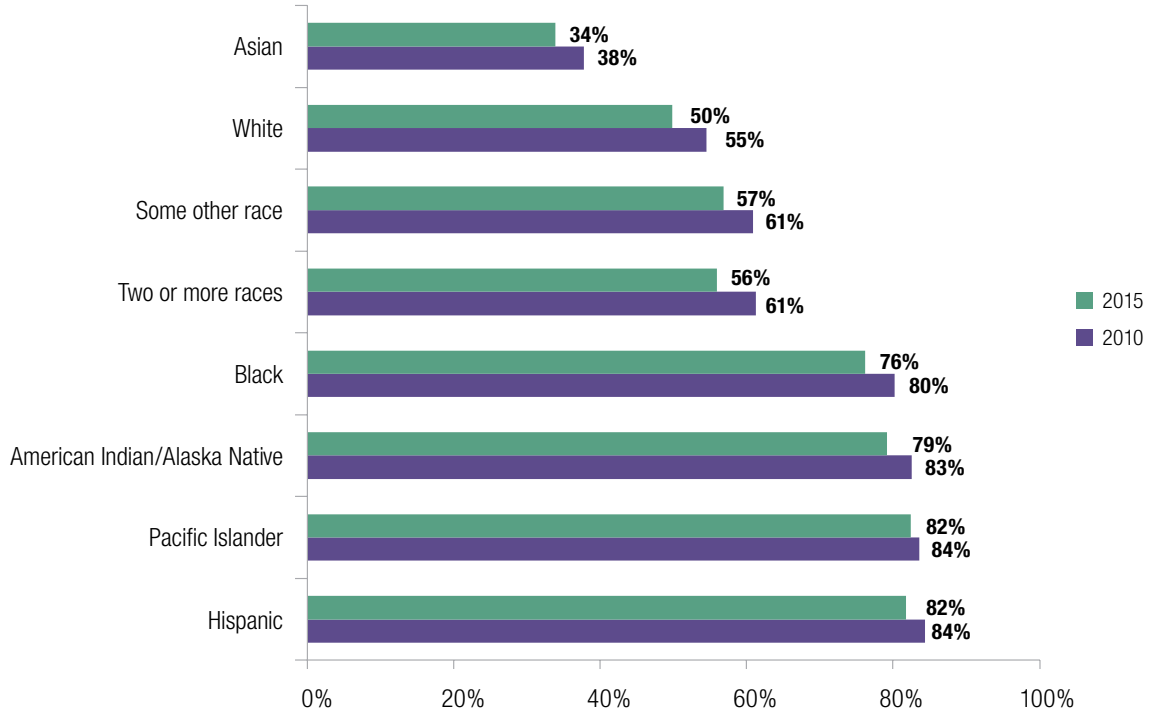
SOURCE: Cahalan M. & Curtin T. (2004). *A Profile of the Upward Bound Program 2000-2001*. US Department of Education, Office of Federal Trio Programs. https://www2.ed.gov/programs/trioupbound/ubprofile-00-01.pdf [Figure 9], Tabulated from the National Longitudinal Study of 1972 (NLS-72) and Educational Longitudinal Study of Youth (ELS:2002/2004).

Data from the American Community Survey (ACS), as displayed in STS Figure 7b, give estimates for the percentages of parents of children under 18 who had not completed a bachelor's degree in 2010 and 2015. While also showing declines in the share of students who had the potential to be first generation to college, the estimates are not directly comparable to those discussed above (which use data from the NCES high school longitudinal studies). The ACS is a household survey, and the estimates are for percentage of all children under 18 years old living in the household sampled. In addition, the ACS classifications reflect newer, more complex race/ethnicity categories.

While the percentages continue to decline, the ACS data show that considerable shares of children, especially among racial/ethnic minority groups, continue to be potential first generation to college. By 2015, 82 percent of Hispanic and Pacific Islander children, 79 percent of American Indian/Alaska Native children, and 76 percent of Black children had the potential to be first generation to college, compared with 56 percent of children of two or more races, 57 percent of children of some other race, 50 percent of White children, and 34 percent of Asian children. These data may overestimate potential first-generation status, as some of the parents may complete a bachelor's degree or higher by the time their children are college age.

Differences in Educational Attainment of States. Educational attainment of the adult population is a strong positive predictor of educational achievement of youth, as measured by such indicators as NAEP scores, high

STS Figure 7b: Percentage of children under 18 with the potential to be first-generation college by race/ethnicity: 2010 and 2015



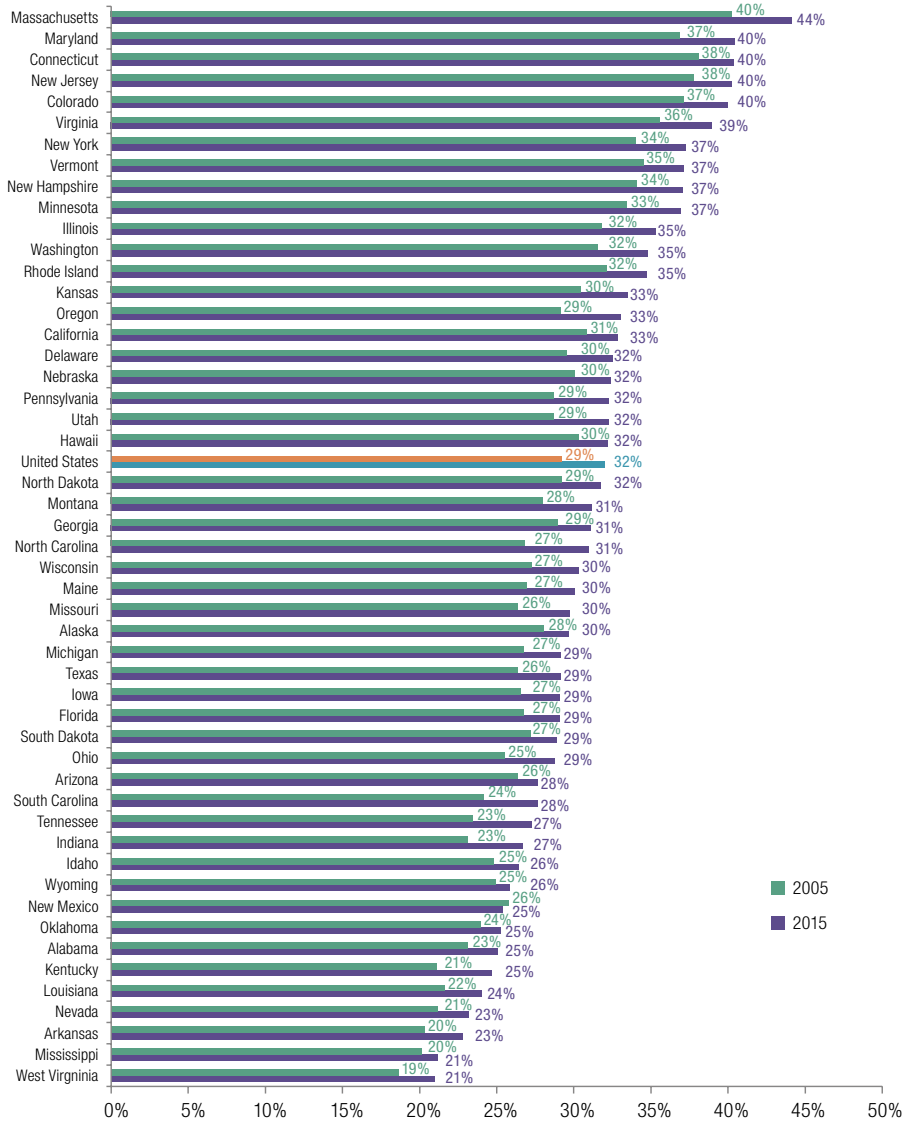
NOTE: First generation is defined as no parent or guardian has a bachelor's degree. These estimates are not directly comparable to estimates in STS Figure 7a as they reflect multiple children per household and are estimates based on parents of children under age 18 from the Census household survey.

SOURCE: U.S. Census Bureau, American Community Survey (2010 and 2015) as included in *Digest of Education Statistics 2016* [Table 10.70]. https://nces.ed.gov/programs/digest/d16/tables/dt16_104.70.asp?current=yes.

school completion, and college entrance and completion.[16] Using 2005 and 2015 data from the Census Bureau, American Community Survey, STS Figure 7c displays the percent of the population age 25 to 64 that has attained a bachelor's degree or higher.

In 2015, the percentage of adults age 25 to 64 with at least a bachelor's degree ranged from less than 25 percent in West Virginia (21 percent), Mississippi (21 percent), Arkansas (23 percent), and Nevada (23 percent), to 40 percent in Maryland, Connecticut, New Jersey, and Colorado and 44 percent in Massachusetts.

STS Figure 7c: Percentage of adults age 25 to 64 with a bachelor's degree or higher: 2005 and 2015



SOURCE: U.S. Census Bureau, *American Community Survey 2005 and 2015* as included in NCHEMS Information Center http://www.higheredinfo.org/dbrowser/?level=nation&mode=data&state=0&submeasure=250.

16 Cahalan, M., & Maxwell, J. (2007). *Exploring demographic and selected state policy correlates of state level educational attainment and achievement indicators*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL. Retrieved from https://www.slideshare.net/chearsdotorg/exploring-demographic-and-selected-state-policy-correlates-of-state-level-educational-attainment-and-achievement-indicators-aera2007-cahalan.

The states with the largest percent increases in educational attainment between 2005 and 2015 were Kentucky (17 percent), Tennessee (16 percent), Indiana (15 percent), North Carolina (15 percent), and South Carolina (15 percent).

Income and Wealth Inequality in the United States. Past editions of the *Indicators* reports document differences in college enrollment, completion, and attainment by income levels and other demographic characteristics. In this 2018 edition, we begin to look more closely at the association of equity distribution levels and educational attainment. STS Figures 8a to 8e present information on the distribution of income and wealth in the United States.[17] The data come from the Census Bureau's household Current Population Survey (CPS),[18] the Internal Revenue Services' (IRS) Statistics of Income (SOI) data compiled from a large sample of individual income tax returns,[19] and the Federal Reserve's triennial Survey of Consumer Finance.[20] The Congressional Budget Office (CBO) has developed a model that combines CPS and SOI data to estimate household income both before and after taxes, as well as average taxes paid by income group back to 1979.[21]

The Rise in the Gini Index. STS Figure 8a displays trends in the Gini index from 1979 to 2013. The Gini index is a measure of income inequality that ranges from zero (the most equal distribution) to 1.0 (the least equal distribution). Gini indexes are calculated using income measures adjusted for household size. The larger the Gini index, the higher the inequality. Market income consists of labor income, business income, capital gains (profits realized from the sale of assets), capital income excluding capital gains, income received in retirement for past services, and other sources of income. Before-tax income is market income plus government transfers. Government transfers are cash payments and in-kind benefits from social insurance and other government assistance programs, such as Social Security benefits. Transfers include payments and benefits from federal, state, and local governments. After-tax income is before-tax income minus federal taxes. Federal taxes include individual income taxes, payroll taxes, corporate income taxes, and excise taxes.

17 Much of the data presented in this section are taken from government reports cited in *A Guide to Statistics on Historical Trends in Income Inequity* authored by Chad Stone, Danilo Trisi, Arlo Shermand and Emily Horton (2017) published by the Center on Budget and Policy Priorities. https://www.cbpp.org/research/poverty-and-inequality/a-guide-to-statistics-on-historical-trends-in-income-inequality.

18 The Census Bureau publishes annual reports on income, poverty, and health insurance coverage in the U.S. based on the CPS data. http://www.census.gov/topics/income-poverty/income.html.

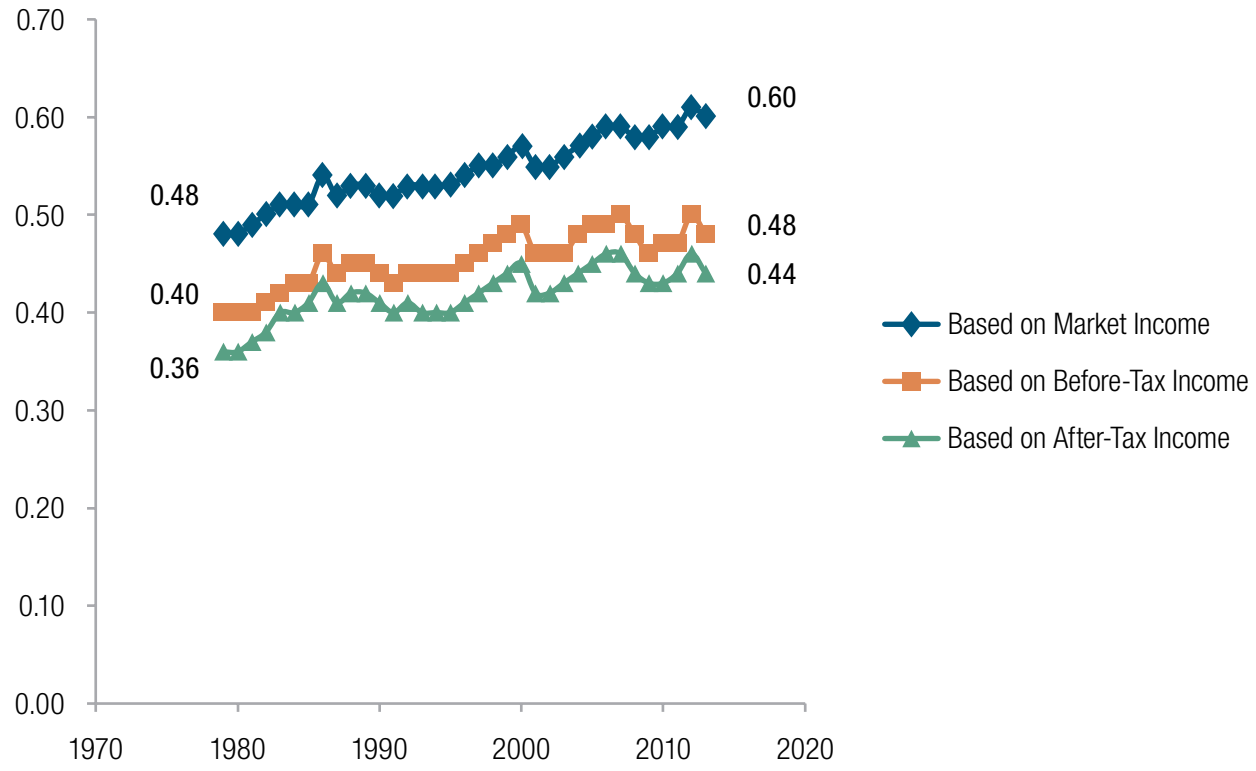
19 IRS publishes an annual report on individual income tax returns based on the SOI Internal Revenue Service, "SOI Tax Stats — Individual Income Tax Returns Publication 1304," multiple years available, https://www.irs.gov/uac/soi-tax-stats-individual-income-tax-returns-publication-1304-complete-report.

20 The Federal Reserve collects income and wealth data in its triennial sample Survey of Consumer Finances (SCF). The last SCF was conducted in 2017 and covered information for 2016. Jesse Bricker *et al*. (2017, September). Changes in U.S. Family Finances from 2013 to 2016: Evidence from the Survey of Consumer Finances, Federal Reserve Bulletin, vol. 103, no. 3. https://www.federalreserve.gov/publications/files/scf17.pdf.

21 Congressional Budget Office (2016, June). *The Distribution of Household Income and Federal Taxes 2013*. https://www.cbo.gov/publication/5136.

STS Figure 8a shows that, for all three measures of income, the Gini coefficient increased from 1979 to 2013. The Market Income Gini Index was 0.60 in 2013, up from 0.48 in 1979. The After-Tax Income Gini Index increased from 0.36 in 1979 to 0.44 in 2013.

STS Figure 8a: Gini index based on market, before-tax, and after-tax income, 1979 to 2013



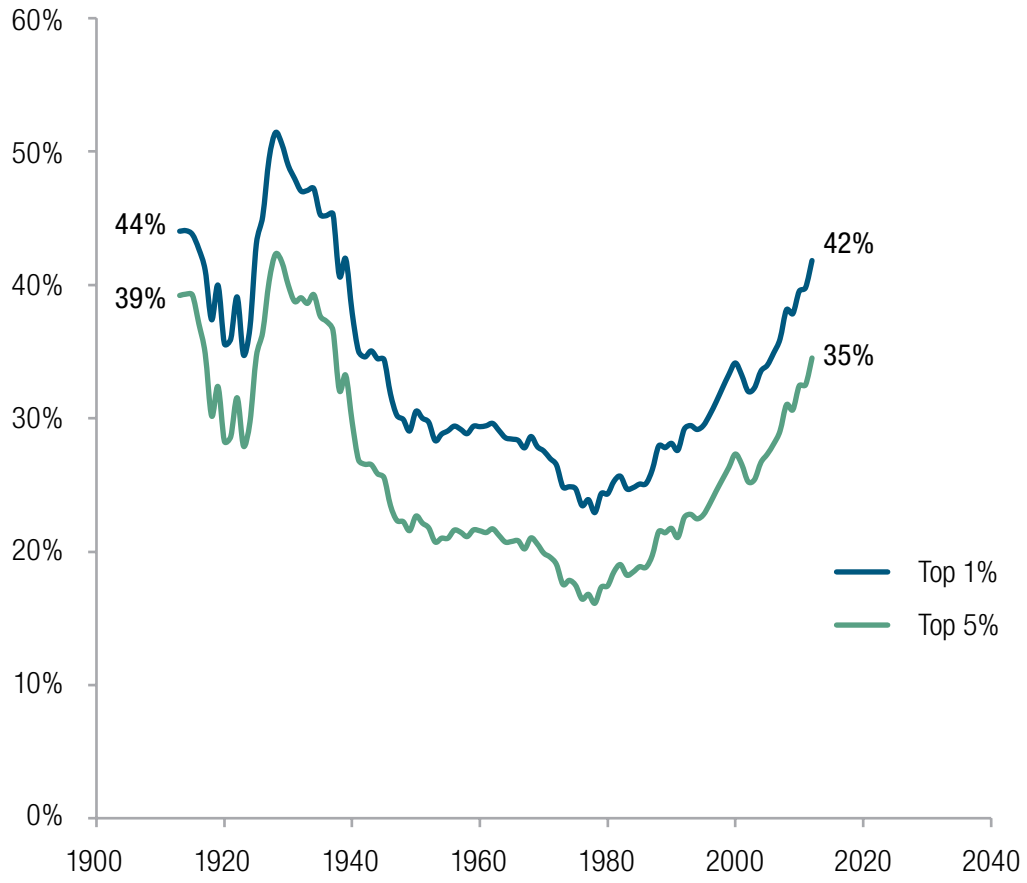
NOTE: The Gini index is a measure of income inequality that ranges from zero (the most equal distribution) to one (the least equal distribution). Gini indexes are calculated using income measures adjusted for household size. The larger the Gini index the higher the inequality level. **Market income** consists of labor income, business income, capital gains (profits realized from the sale of assets), capital income excluding capital gains, income received in retirement for past services, and other sources of income. **Before-tax income** is market income plus government transfers. Government transfers are cash payments and in-kind benefits from social insurance and other government assistance programs. Transfers include payments and benefits from federal, state, and local governments. **After-tax income** is before-tax income minus federal taxes. Federal taxes include individual income taxes, payroll taxes, corporate income taxes, and excise taxes

SOURCE: Congressional Budget Office (June 2016). *The Distribution of Household Income and Federal Taxes, 2013*. Figure 14. www.cbo.gov/publication/51361.

Rise in Share of Wealth Held by Top 1 Percent. STS Figure 8b, based on IRS reports compiled by Emmanuel Saez and Gabriel Zucman (2016),[22] displays the share of wealth held by the top 1 percent and the top 0.5 percent of families in the U.S. from 1913 to 2012. The concentration of wealth is now approaching the high rates observed during the Great Depression in the late 1920s. After World War II until the late 1970s, the concentration of wealth declined. During the 1980s this trend reversed and has accelerated in the last two decades.

In 2012, the top 1 percent held 42 percent of the wealth, up from 34 percent in 2000 and 24 percent in 1979.

STS Figure 8b: Share of total wealth held by the wealthiest families: 1913 to 2012



NOTE: This chart is based on IRS data.

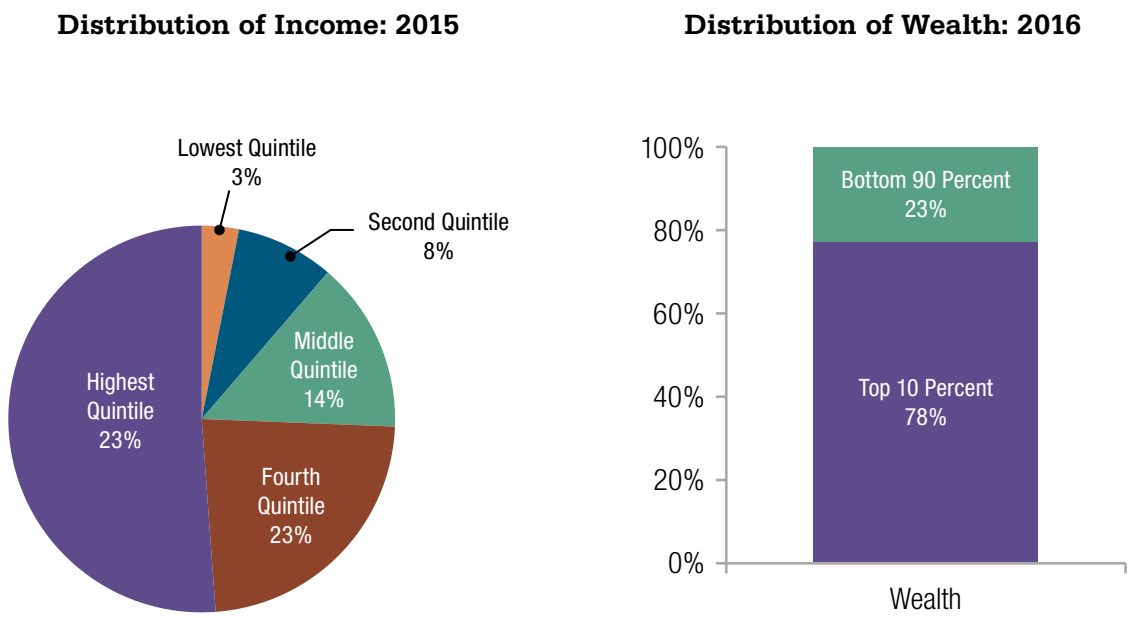
SOURCE: Saez, E., & Zucman, G. (2016). Wealth inequality in the United States since 1913: Evidence from capitalized income tax data. *Quarterly Journal of Economics*, 131(2), 519-578. http://eml.berkeley.edu/~saez/SaezZucman2016QJE.pdf.

22 Saez, E., & Zucman, G. (2016). Wealth inequality in the United States since 1913: Evidence from capitalized income tax data. *Quarterly Journal of Economics*, 131(2), 519-578. http://eml.berkeley.edu/~saez/SaezZucman2016QJE.pdf.

STS Figure 8c considers the income and wealth available to different income groups. Using data from the CPS,[23] STS Figure 8c(i) shows that, in 2015, the lowest household quintile had just 3 percent of total money income, the second quintile had 8 percent, the middle quintile had 14 percent, and the fourth quintile had 23 percent, while the highest quintile had 51 percent of the money income.

Wealth is even more unevenly distributed than income. Using 2016 data from the Survey of Consumer Finance (SCF), STS Figure 8c(ii) shows that those in the top 10 percent in wealth held over 78 percent of the nation's total wealth while the bottom 90 percent held 23 percent of the total wealth.[24]

STS Figure 8c(i) and 8c(ii): Distributions of money income (2015) and wealth (2016) in the United States



NOTE: Data on income are from the yearly household Current Population Survey. Data on wealth are from the Federal Reserve's triennial Survey of Consumer Finances (SCF).

SOURCE: *(8c(i)-Income data)* Proctor, B.D., Semega, J.L., & Kollar, M.A. (2016). U. S. Census Bureau, Current Population Survey, 2015 and 2016, Annual Social and Economic Supplements, *Income and Poverty in the United States: 2015*. https://www.census.gov/library/publications/2016/demo/p60-256.html; *(8c(ii)- Wealth data)* Bricker, J., et al. (2017). Changes in U.S. Family Finances from 2013 to 2016: Evidence from the Survey of Consumer Finances, *Survey of Consumer Finances 2017, Federal Reserve Bulletin*, vol. 103, no. 3, September. https://www.federalreserve.gov/publications/files/scf17.pdf. Stone, C., Trisi, D., Shermand, A., & Horton, E. (2017). A Guide to Statistics on Historical Trends in Income Inequity published by the Center on Budget and Policy Priorities. https://www.cbpp.org/research/poverty-and-inequality/a-guide-to-statistics-on-historical-trends-in-income-inequality.

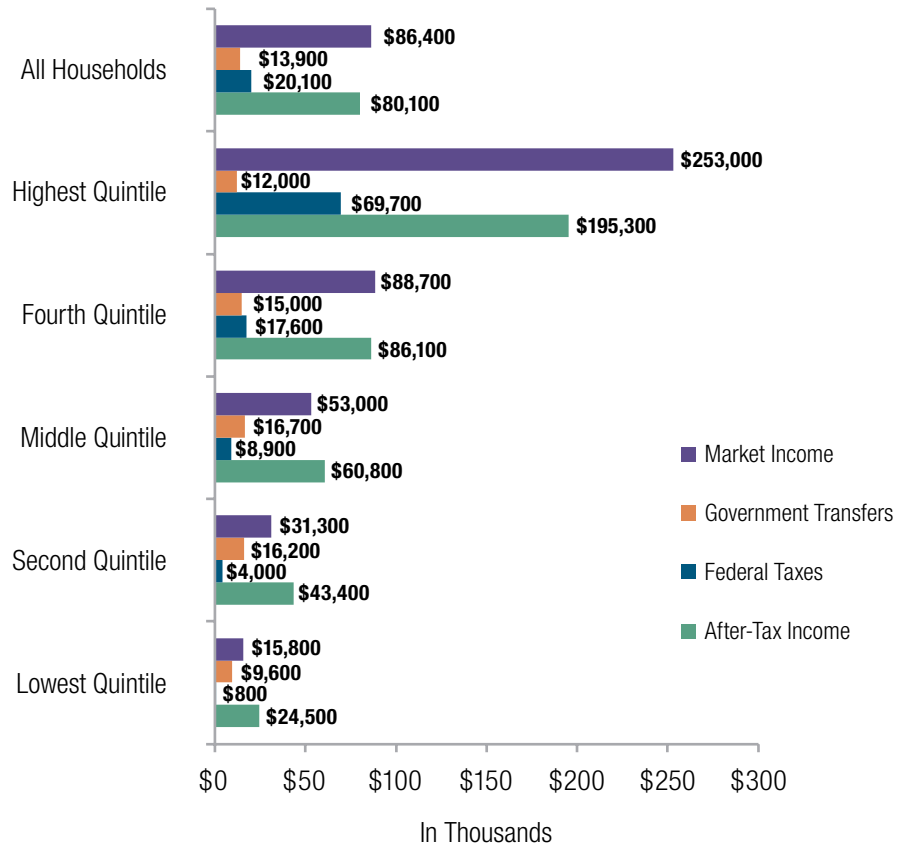
23 Proctor, B.D., Semega, J.L., & Kollar, M.A. (2016). U. S. Census Bureau, Current Population Survey, 2015 and 2016, Annual Social and Economic Supplements, *Income and Poverty in the United States: 2015*. https://www.census.gov/library/publications/2016/demo/p60-256.html.

24 Data are from Bricker, J., et al. (2017). Changes in U.S. family finances from 2013 to 2016: Evidence from the Survey of Consumer Finances, *Survey of Consumer Finances 2017, Federal Reserve Bulletin*, 103(3). https://www.federalreserve.gov/publications/files/scf17.pdf.

Range of Income. STS Figure 8d displays the average household income, government transfers, and taxes paid by income quintile. The quintile groups rank households by before-tax income, adjusted for household size.

In 2013, the highest 20 percent of households had, on average, 8 times the yearly income as the lowest 20 percent. After-tax income ranged from an average of $24,500 for the lowest quintile to an average of $195,300 for the highest quintile. This disparity represents among the largest reported income inequality in the world.[25]

STS Figure 8d: Average household income, transfers, and taxes by before-tax income quintiles: 2013



NOTE: Market income consists of labor income, business income, capital gains (profits realized from the sale of assets), capital income excluding capital gains, income received in retirement for past services, and other sources of income. **Government transfers** are cash payments and in-kind benefits from social insurance and other government assistance programs. Those transfers include payments and benefits from federal, state, and local governments. **Federal taxes** include individual income taxes, payroll taxes, corporate income taxes, and excise taxes. **After-tax income** is before-tax income minus federal taxes. Income groups are created by ranking households by before-tax income, adjusted for household size. Quintiles (fifths) contain equal numbers of people.

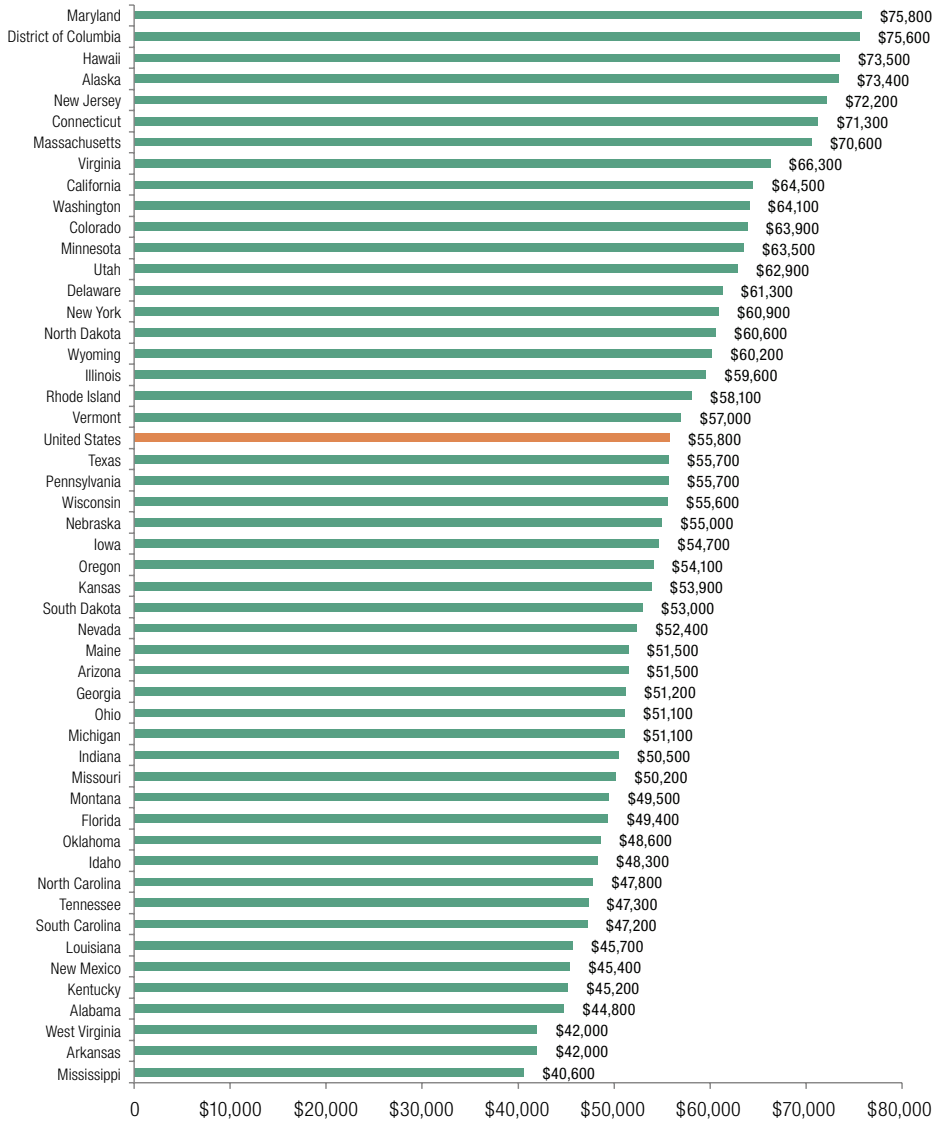
SOURCE: Congressional Budget Office (2016, June). T*he Distribution of Household Income and Federal Taxes 2013*. Table 1. www.cbo.gov/publication/51361.

25 Pickett, K.E. & Wilkinson, R.G. (2015). Income inequality and health: A causal review. *Social Science & Medicine*, 128, 316-326; Wilkinson, R.G. & Pickett, K.E. (2006). Income inequality and population health: A review and explanation of the evidence. *Social Science & Medicine*, 62 (7), 1768-1784. Dorling, D. (2014). *Inequality and the 1%*. Verso, London.

Differences in Income and Gini Coefficients by State. STS Figure 8e displays median household income by state and STS Figure 8f displays the Gini index by state. The data on median income by state are from the Census and are for all households in 2015.[26]

Median household income varies across states, and in 2015 ranged from less than $45,000 in Mississippi ($40,600), Arkansas ($42,000), and West Virginia ($42,000), to more than $70,000 in Massachusetts ($70,600), Connecticut ($71,300), New Jersey ($72,200), Alaska ($73,400), Hawaii ($73,500), the District of Columbia ($75,600), and Maryland ($75,800).

STS Figure 8e: Median household income by state: 2015



NOTE: The 2015 data includes householders of all ages. The data in Appendix Figure A-1 include only householders with a householder age 25 or older and hence the median is considerably higher: $72,135 compare with $55,800.

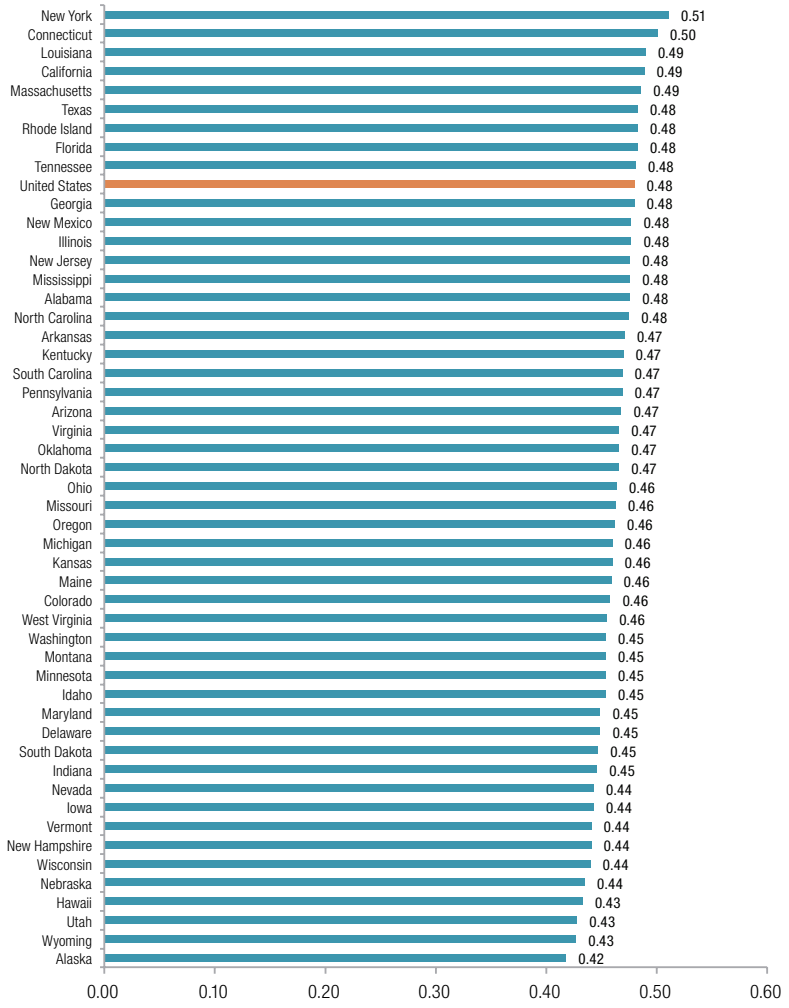
SOURCE: U.S. Department of Commerce, Census Bureau, American Community Survey (ACS), selected years, 2005 through 2015, retrieved January 24, 2017, from https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t.

26 The historical national data from 1956 to 2016 in Appendix Figure A-1 are for householders over age 25, a group that has a higher median income.

The Before-Tax Income Gini Index for the United States was 0.48 in 2015 (STS Figure 8a). STS Figure 8f shows variation across states, with relatively greater inequality in Connecticut (0.50) and New York (0.51) than in Alaska (0.42), Wyoming (0.43), Utah (0.43), and Hawaii (0.43).

According to the Organisation for Economic Co-operation and Development (OECD), most developed European nations and Canada have Gini indices between 0.22 and 0.38. In contrast, the United States Gini index has been between about 0.45 and 0.48 since the mid-1990s.[27]

STS Figure 8f: Gini index by state: 2015



NOTE: The Gini index is a measure of income inequality ranging from 0 to 1.0, with 0 indicating complete equality (all households having an equal share of income) and one indicating complete inequality (one household having all the income and the rest having none). The 2016 Gini index for the U.S was 0.481.

SOURCE: America's Health Rankings analysis of U.S. Census Bureau, 2015 American Community Survey, United Health Foundation, AmericasHealthRankings.org (accessed 2018).

27 Pickett, K.E., et al. (2015). Income inequality and health: A causal review. *Social Science & Medicine*, 128, 316-326. United Health Federation website (accessed 2018) https://www.americashealthrankings.org/explore/2016-annual-report/measure/gini/state/ALL. The United Health Federation website cites research that investing in education is an effective strategy to reduce income disparity. Standard and Poor's Rating Services estimates a 2.4 percent increase in GDP (equivalent to $525 billion) if the American workforce completed one more year of school over the next five years. Additional evidence-based policies for reducing income inequality recommended by Haas Institute for a Fair and Inclusive Society at UC Berkeley include increasing the minimum wage, building assets for working families and eliminating residential segregation.

EQUITY INDICATOR 1:

WHO ENROLLS IN POSTSECONDARY EDUCATION?

In 2016, an estimated 78 percent of 18- to 24-year olds from the highest family income quartile enrolled in postsecondary education the fall after scheduled high school graduation, compared with 46 percent of those in the lowest quartile.

Equity Indicators 1 (a-i): Definitions

Indicator 1 examines participation in postsecondary education by family income, race/ethnicity, parents' socioeconomic status, and state. The data are from three major sources. The first is the cross-sectional annual data from the U.S. Census Bureau's Current Population Survey (CPS) series, which provides household-based national estimates and includes data on enrollment in any type of postsecondary institution. The second is the series of national high school longitudinal studies that have been conducted by the National Center for Education Statistics (NCES) at approximately 10-year intervals over the last 40 years. These studies include the High School Longitudinal Study (HSLS) of 9th graders in 2009; Education Longitudinal Study (ELS: 2002) of 10th graders in 2002; National Education Longitudinal Study of 8th graders in 1988 (NELS:88); and High School and Beyond (HS&B:1980) study of 1980 10th graders. For those studies for which sufficient time has elapsed, we report data from the follow-ups 8 or 10 years after expected high school graduation (2012, 2000, and 1992, respectively).[28] The High School Longitudinal Study of 9th graders began in 2009 and had an 11th grade follow-up in 2012. An update in 2013 collected information on high school completion and college enrollment in the fall after the expected on-time high school graduation. Data for the 2016 HSLS follow-up have been collected, but were not released in time for this report.[29] We include data from the 2013 follow-up on the early college enrollment for the HSLS sample of 9th graders from 2009. The third source is data describing free and reduced price lunch estimates from the U.S. Department of Agriculture combined with Pell award data to estimate low-income student enrollment by state.[30]

28 NCES also sponsored a study of the High School Class of 1972. Because this study started with the senior class and had follow-up limitations, we do not include data from this study for college continuation rates. We use information from this study to observe trends in parents' education in the Setting the Stage section and Indicator 2d describing selectivity of intended institutions among high school seniors.

29 The HSLS Second Follow-up was conducted in 2016. The data files and documentation are in preparation. NCES reports new data will be released in 2018.

30 Mortenson, T. (2017). College participation rates for students from low income families by state and sector: 1998 to 2016, *Postsecondary Education Opportunity*, 295.

Definitions of the indicators and information about classifications are noted below.

- **Cohort College Participation Rate**[31] is defined as the percent of recent high school leavers continuing on to any type of postsecondary education, as measured by the Current Population Survey (CPS) and published by the Bureau of Labor Statistics (BLS).
- **High School Graduates College Continuation Rate** is defined as the percent of high school graduates continuing on to any type of postsecondary education, as measured by the CPS and published by the BLS. The High School Graduates College Continuation Rate is higher than the Cohort College Participation Rate because it is contingent on high school completion.
- **Enrolled in postsecondary education within 8 or 10 years of expected high school graduation** is defined as the percent of students who, in nationally representative school-based longitudinal studies, self-reported having ever enrolled in any type of postsecondary educational institution, regardless of degree-granting status of the institution or the student's degree or certificate attainment status.
- **Income** is most frequently reported in this report in quartiles (4 equal-sized groups). Reflecting the approaches of a given data source, we also report divisions of family income in three categories (high, medium, or low) and five groups (quintiles). Using income quartiles or quintiles facilitates comparisons of changes over time, as they reflect a distribution based on data for a given year. In 2016, family income quartiles for dependent 18- to 24-year olds identified by the distribution of family income data in the CPS were:
    - *Lowest quartile*: Less than $37,564
    - *Second quartile*: $37,564 to $71,723
    - *Third quartile*: $71,723 to $124,019
    - *Highest quartile*: $124,019 and above

  In 2016, the maximum income for the lowest quartile ($37,564) was less than one-third (30 percent) of the **minimum** income level of the highest quartile ($124,019). Reflecting growing income inequality in the United States, the difference between the highest and lowest family income quartiles has increased since 1970.[32]
- **Race/Ethnicity.** We use the race and ethnicity categories and titles (for example, "Black," "Black or African American") in the charts and text as reported by each data source. As race/ethnicity categories have changed over time and vary by study, race/ethnicity categories and titles used in this report also vary based on the original data sources. The more recent studies use race and ethnicity variables that reflect federal requirements for collecting race separately from ethnicity and allow respondents to mark more than one choice for race. When the labeling for race/ethnicity has changed over time for the same data source, we report the current labels. See the notes to the figures for more detail.
- **Socioeconomic Status (SES)** is measured using the socioeconomic status (SES) composite included in the NCES longitudinal studies. NCES created the SES composite based on data from the parent questionnaires or data imputed from the student questionnaires. For the five NCES longitudinal studies, SES was derived using five equally-weighted, standardized components: father's/guardian's

31 In the 2015 to 2017 editions of the *Indicators* report, we used the term Cohort College Continuation Rate. In the 2018 edition, we use Cohort College Participation Rate to avoid confusion with the High School Graduates College Continuation Rate. The former includes all members of a given age cohort whereas the latter includes only high school graduates.

32 See Appendix A for data on the upper limits of the lowest, second, and third quartiles based on the CPS data from 1970 to present.

education, mother's/guardian's education, family income, father's/guardian's occupational prestige score, and mother's/guardian's occupational prestige score.[33]

Cautions and Limitations. This report relies on data compiled over long periods of time in an effort to observe trends. As noted throughout, data from sample surveys such as the CPS and NCES longitudinal studies are subject to sampling error and changes in definitions and study designs. For example, the income and race/ethnicity data in the CPS suffer from small sample sizes and larger sampling errors than the estimates for the whole population. To address this limitation, we use three-year moving averages. As noted above, definitions of race/ethnicity have also changed over time. The NCES high school longitudinal studies have complex multi-level school and student sample designs and have cohorts starting in different grade levels, ranging from 8th to 12th grade. Caution is needed in interpreting the trend data in this report, especially with regard to conclusions that may be drawn from small changes.

Equity Indicator 1a: How Do Cohort College Participation Rates for High School Leavers Vary by Family Income?

Equity Indicator 1a shows the cohort college participation rate for recent school leavers (including individuals who did and did not complete high school) by family income quartile from 1970 to 2016.[34] For all income groups, the cohort college participation rate has generally increased since 1980. The college participation rate for the lowest income quartile was relatively stable from 1970 to 1990 but has generally increased since 1990.

In 2016, 78 percent of high school leavers from the highest family income quartile enrolled in college soon after leaving high school, compared with 46 percent of those in the lowest quartile. College participation rates for high school leavers from the lowest quartile increased from 32 percent in 1990 to 46 percent in 2016. Over the same period, the share of high school leavers from the highest income quartile who enrolled in college increased modestly from 75 percent in 1990 to 78 percent in 2016. Because of differential rates of increase over this period, the gap in postsecondary education enrollment between those in the lowest and highest family income quartiles is smaller in 2016 (32 percentage points) than in 1970 (46 percentage points) and in 1990 (43 percentage points).

Since 1990, college participation rates have shown higher rates of increase for students from the lowest income quartile than for the three higher income quartiles which show little change. Nonetheless, college participation rates remained 32 percentage points lower for students from the lowest income quartile than those from the highest quartile in 2016.

Equity Indicator 1b: How Do High School Graduates College Continuation Rates Vary by Family Income?

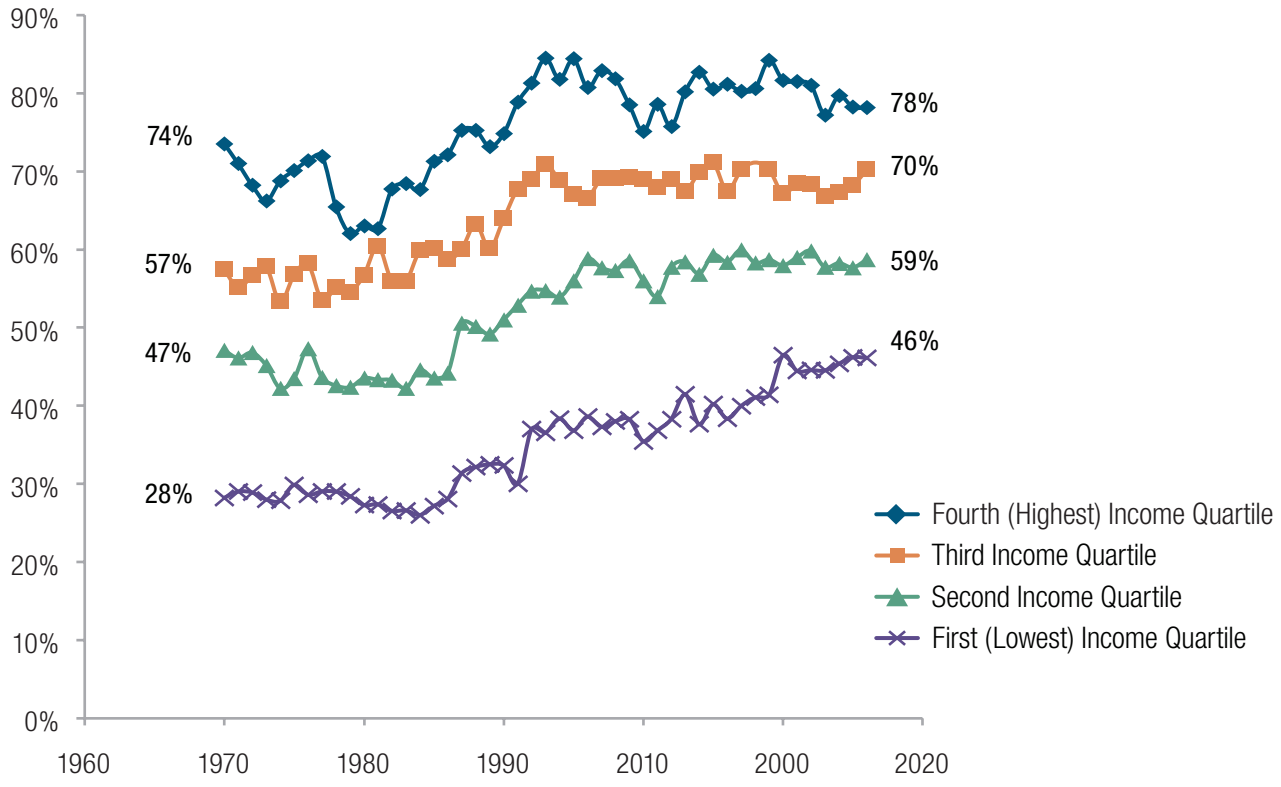
Equity Indicator 1b shows similar trends in high school graduates college continuation rates by family income quartile. For high school graduates in the highest family income quartile, the college continuation rate was 87 percent in 2016, up from 79 percent in 1990 (and 79 percent in 1970). For high school graduates in the lowest

33 Cahalan, M., Ingles, S., Burns, L., & Planty, M. (2006). *United States High School Sophomores: A Twenty-Two Year Comparison, 1980-2002*, Statistical Analysis Report (NCES 2006-327). Washington, DC: U.S. Department of Education.

34 In the 2015 to 2017 editions of the *Indicators* report, we used the term Cohort College Continuation Rate. In the 2018 edition we use Cohort College Participation Rate to avoid confusion with the High School Graduates College Continuation Rate. The former includes all members of a given age cohort, whereas the latter includes only high school graduates.

quartile, the college continuation rate was 61 percent in 2016, up from 48 percent in 1990 (and 46 percent in 1970). The gap in college continuation rates for high school graduates in the highest and lowest income quartiles was 26 percentage points in 2016, down from 31 percentage points in 1990 (and 33 percentage points in 1970).

Equity Indicator 1a: Cohort College Participation Rates by family income quartile for recent school leavers: 1970 to 2016



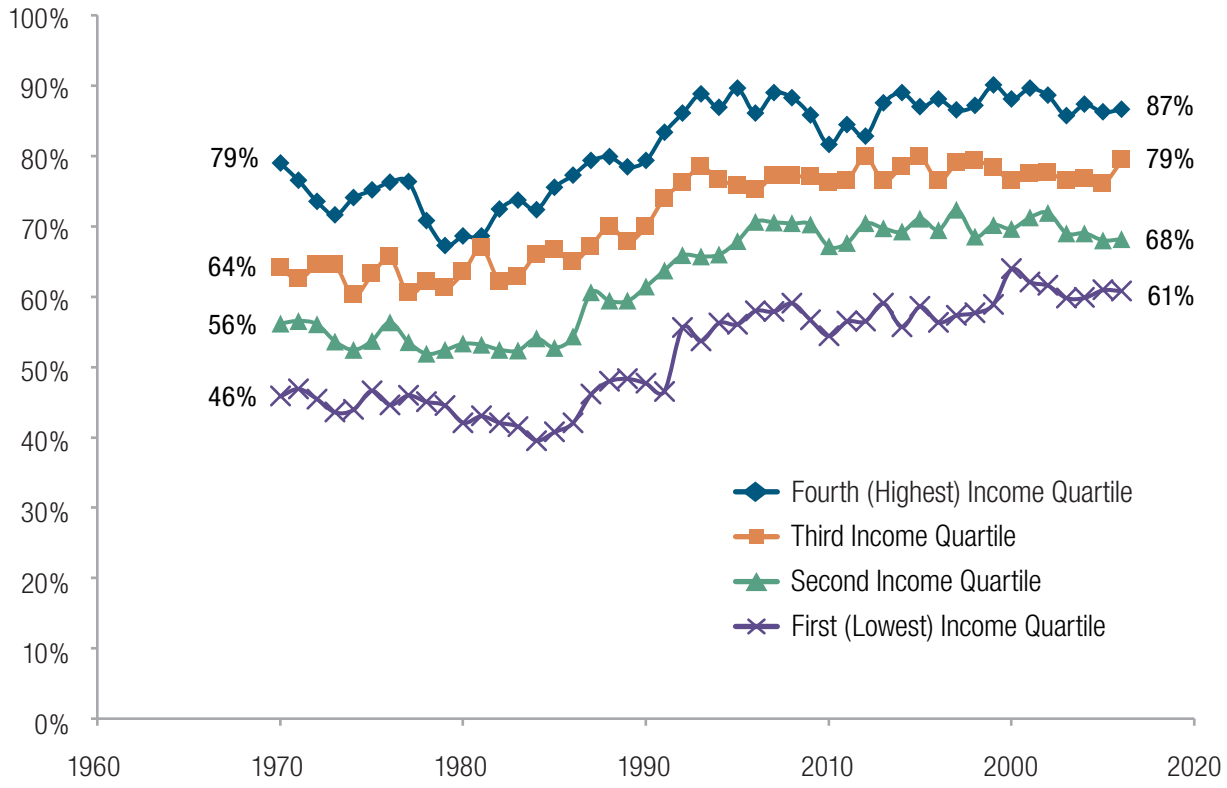
Indicator Status: High Inequality but Narrowing Gap

There was a 32 percentage-point gap in college enrollment between high school leavers in the highest and lowest income quartiles in 2016, compared with a 43 percentage-point gap in 1990 and a 46 percentage-point gap in 1970.

NOTE: The Cohort College Participation Rate is tabulated based on the total number in the cohort year and includes those who have not completed high school. Information on school enrollment and work activity is collected monthly in the Current Population Survey (CPS), a nationwide survey of about 60,000 households, which provides information on employment and unemployment. Each October, a supplement to the CPS gathers information about school enrollment.

SOURCE: Calculated from October Current Population Survey File (formerly Table 14 in Census Bureau's School Enrollment Report), U.S. Census Bureau; School Enrollment Data, 1970-2016, compiled by Tom Mortenson.

Equity Indicator 1b: High School Graduates College Continuation Rates by family income quartile: 1970 to 2016



Indicator Status: High Inequality but Narrowing Gap

There was a 26 percentage-point gap in college continuation rates between high school graduates in the highest and lowest income quartiles in 2016, compared with a 31 percentage-point gap in 1990 and a 33 percentage-point gap in 1970.

NOTE: The High School Graduates College Continuation Rate is the percent of 16- to 24-year-old high school graduates who entered a postsecondary educational institution of any type.

SOURCE: Calculated from October Current Population Survey File (Formerly Table 14 in Census Bureau's School Enrollment Report), U.S. Census Bureau; School Enrollment Data, 1970-2016, as reported by the U.S. Bureau of Labor Statistics (BLS), compiled by Tom Mortenson.

Equity Indicator 1c(i): How Do Cohort College Participation Rates of High School Leavers Vary by Race/Ethnicity?

Equity Indicator 1c(i) uses Current Population Survey (CPS) data to examine Cohort College Participation Rates for high school leavers (graduates and non-graduates) by race/ethnicity from 1976 to 2016. Categories used for race/ethnicity in government statistics have changed over time. Data for Asians are not available until 1998. For Indicator 1c(i), the race categories (White, Black, Asian) exclude those reported to be of Hispanic ethnic origin. Estimates by race/ethnicity also have relatively larger sampling errors than estimates for the total population due to smaller population and sample sizes. Estimates are also are impacted by changes in the age composition of the group and income distribution by race/ethnicity.[35] The year to year fluctuations may be related to sampling error or differences in how respondents chose to classify themselves. Readers are cautioned against using the point estimates to indicate small changes within the data.

Indicator 1c(i) shows that, in 2016, 78 percent of Asian and 66 percent of White high school leavers enrolled in college immediately after high school, compared with 59 percent of Hispanics and 51 percent of Blacks. In 1976, about 41 percent of White high school leavers continued onto college, compared with 33 percent of Blacks and 34 percent of Hispanics. Between 1976 and 2016, college participation rates were consistently higher for Asian and White high school leavers than for Black and Hispanic high school leavers. Since 1976, the gap in college participation between Whites and Blacks has not only persisted but widened.

Equity Indicator 1c(ii): How Do Cohort College Participation Rates of High School Leavers by Race/Ethnicity Vary by Family Income Quartiles?

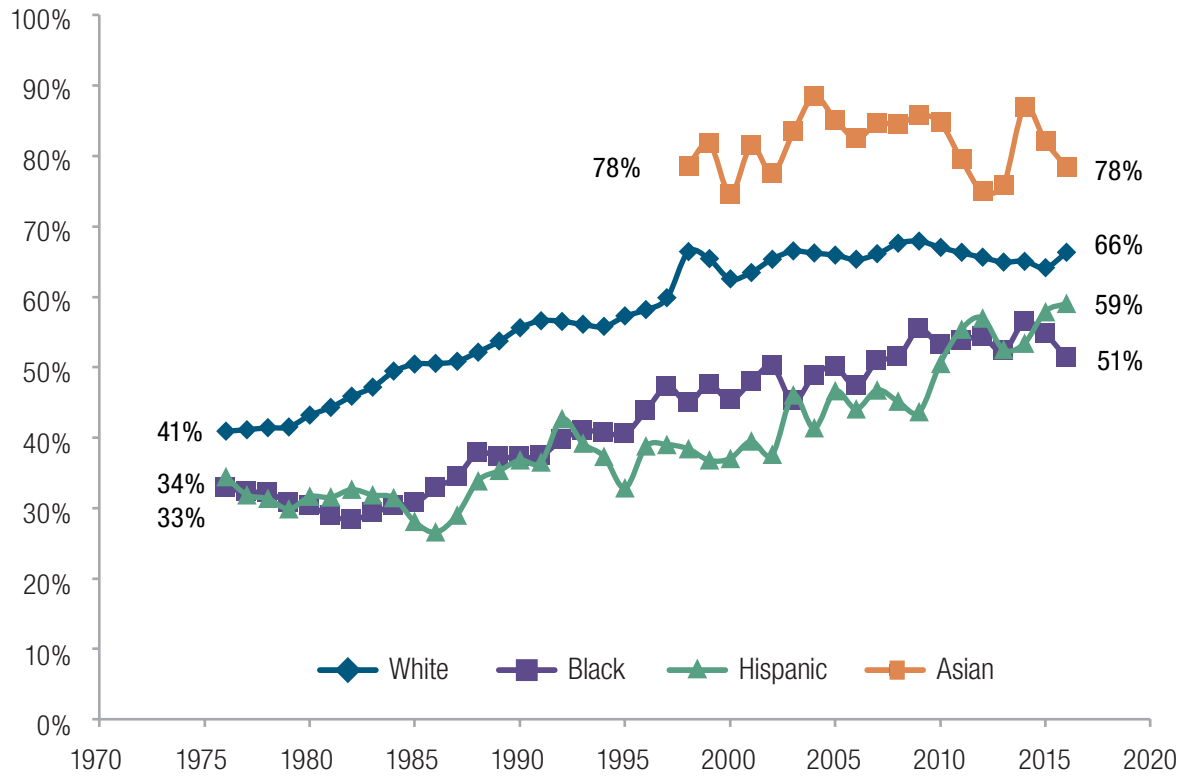
Equity Indicator 1c(ii) displays data for 2016 by race/ethnicity, disaggregated by family income quartile. Because the data are disaggregated by both income quartile and race/ethnicity, the cautions noted above are even more important. The income quartiles are computed separately for the race/ethnicity groups and reflect the actual distribution among the various race/ethnicity groups.

Indicator 1c(ii) shows that disaggregating by family income quartile reduces the differences by race/ethnicity observed in Indicator 1c(i). Asians (as a group, ignoring differences within this aggregated category) have less variation in cohort college participation rates by family income quartiles than other racial/ethnic groups. For Blacks, Hispanics, and Whites in the same income quartile, cohort participation rates are similar.[36] For example, for those in the first (lowest) income quartile, cohort college participation rates were 42 percent for Blacks, 43 percent for Hispanics, and 46 percent for Whites. For those in the highest income quartile, the 2016 cohort college participation rate was 85 percent for Blacks, 81 percent for Hispanics and 79 percent for Whites.

35 Pfeffer, F. T. , Danziger, S., & Schoeni, R. (2013). Wealth disparities before and after the Great Recession. *Annals of the American Academy of Political and Social Science, 650*(1), 98–123. This paper reports that between 2007 and 2011, one-fourth of American families lost at least 75 percent of their wealth and more than half of all families lost at least 25 percent of their wealth. The analysis also shows that the large relative losses were disproportionally concentrated among lower income, less educated, and minority households.

36 Given sampling error due to smaller sample sizes, caution is needed in interpreting these results.

Equity Indicator 1c(i): Cohort College Participation Rates of recent high school leavers by race/ethnicity: 1976 to 2016



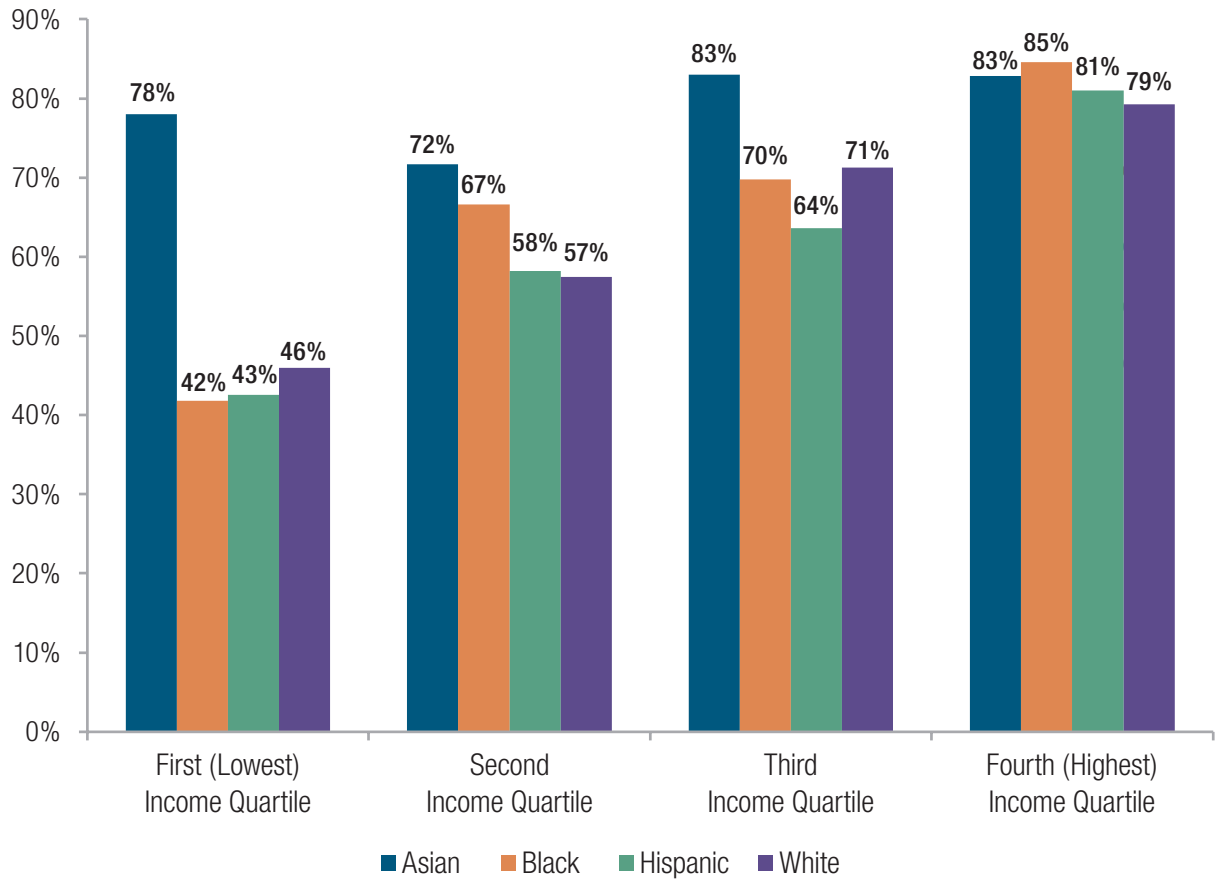
Indicator Status: Gaps Persist by Race/Ethnicity

Among high school leavers, Cohort College Participation Rates in 2016 were 15 percentage points higher for Whites than for Blacks, and 7 percentage points higher for Whites than for Hispanics. In 1976, college participation rates were 8 percentage points higher for White high school leavers than for Blacks and 7 percentage points higher than for Hispanics. Since 1976, the gap in college participation between Whites and Blacks has not only persisted but widened.

NOTE: Race categories exclude persons of Hispanic ethnicity except where otherwise noted. The Cohort College Participation Rate is tabulated based on the total number in the cohort year and includes those who have not completed high school. Data for Asian students were reported beginning in 1998. Annual data collected by Census and reported by BLS are from the October supplement to the Current Population Survey (CPS), a nationwide survey of about 60,000 households. Numbers are revised slightly from those reported previously.

SOURCE: Bureau of Labor Statistics (BLS) and U.S. Census Bureau, 1976-2016, as adapted by Tom Mortenson, *Postsecondary Educational Opportunity (PEO) Newsletters* and data base, *College Entrance Rates by Race/Ethnicity for Recent High School Graduates 1960 to 2016*.

Equity Indicator 1c(ii): Cohort College Participation Rates of recent high school leavers by race/ethnicity and family income quartile: 2016



Indicator Status:

Observed differences in college participation rates by race/ethnicity are reduced when race/ethnicity is disaggregated by family income quartile.

NOTE: Race categories exclude persons of Hispanic ethnicity. The Cohort College Participation Rate is tabulated based on the total number in the age group and includes those who have not completed high school. Annual data collected by Census and reported by BLS are from the October supplement to the Current Population Survey (CPS), a nationwide survey of about 60,000 households. Caution is needed in using these data and comparing small differences in estimates across race/ethnicity categories. Due to small sample sizes, estimates for disaggregated data have larger sampling errors than estimates for the total.

SOURCE: Bureau of Labor Statistics (BLS) and U.S. Census Bureau, 1976-2016, as adapted by Tom Mortenson, *Postsecondary Educational Opportunity (PEO)* data base, *College Entrance Rates by Race/Ethnicity for Recent High School Graduates 1960 to 2016*.

Equity Indicator 1d(i): How Do High School Graduates College Continuation Rates Vary by Race/Ethnicity?

Indicator 1d(i) uses CPS data to show variations by race/ethnicity in college continuation rates for recent high school graduates. This Indicator differs from Indicator 1c(i) in that high school completers with a regular diploma or a GED are the denominator rather than the entire age cohort of students. Therefore, high school graduates college continuation rates are higher than the cohort college participation rates displayed in Indicators 1c(i) and 1c(ii).[37] As with Indicators 1c(i) and 1c(ii) caution is needed in interpreting Indicator 1d due to larger sampling errors with disaggregated data, and changes in the race/ethnicity definitions and inclusions. Race categories exclude persons of Hispanic ethnicity. Prior to 2003, Asian data include Pacific Islanders and after 2002, White, Black, and Asian data exclude persons of Two or More Races. Because of sampling error concerns due to relatively smaller sample sizes, we report a 3-year moving average for the results. These rates, as with the rates reported for Indicator 1c(i), are also likely influenced by economic and political events and immigration patterns and policies.

From 1976 to 2016, college continuation rates for high school graduates increased for all groups. These rates increased by 40 percent for Whites (from 50 percent to 71 percent), 32 percent for Hispanics (from 54 percent to 71 percent), 25 percent for Blacks (from 45 percent to 56 percent), and 7 percent for Asians (from 81 percent to 87 percent).

While caution is needed in interpreting this data, Indicator 1d(i) illustrates the gains that Hispanic recent high school graduates have made in college enrollment since 1990, and especially since 2007.[38] The estimated rates of college enrollment are statistically equivalent for Hispanic and White high school graduates in 2016. College enrollment rates for Black high school graduates have also generally increased over time. As noted, the estimates by race/ethnicity are subject to higher levels of sampling error.

Equity Indicator 1d(ii): How Do the High School Graduates College Continuation Rates Vary by Race/Ethnicity and Family Income Quartile?

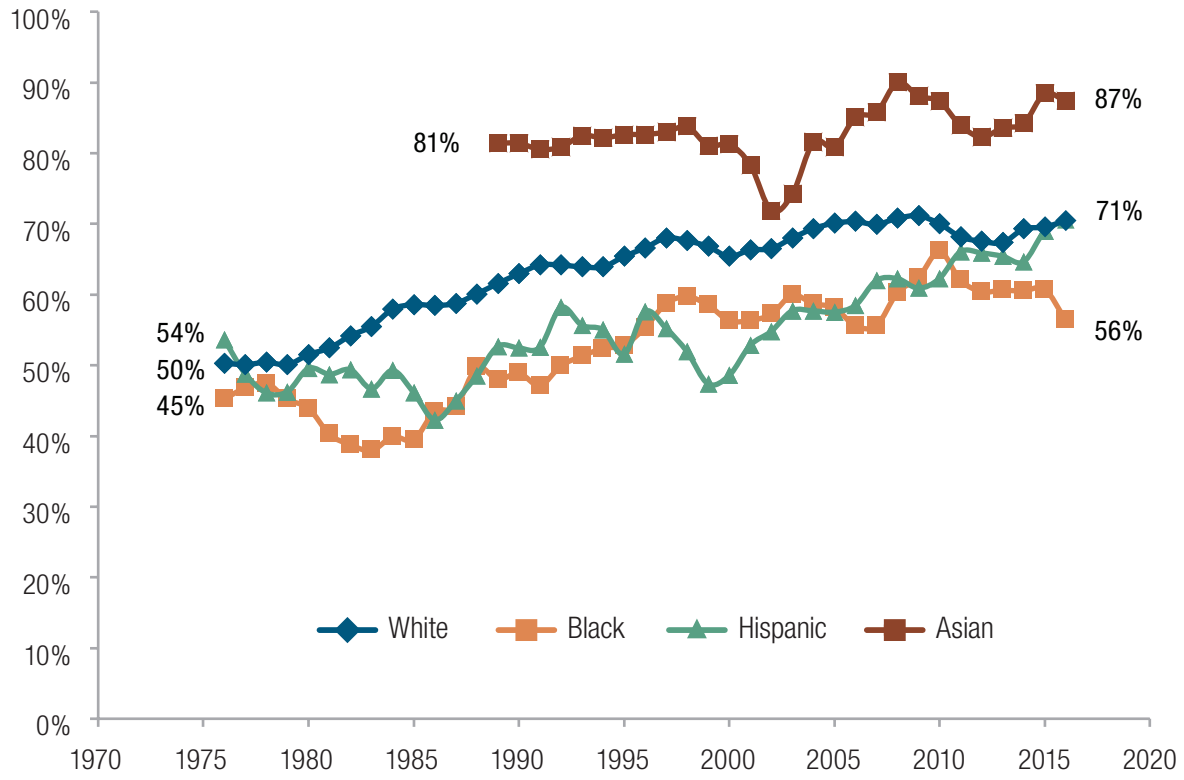
Equity Indicator 1d(ii) displays the high school graduates college continuation rate in 2016 by race/ethnicity disaggregated by family income quartile. As noted in discussion of Indicator 1c(ii), the income quartiles are computed separately for the race/ethnicity groups and reflect the actual distribution among the various race/ethnicity groups.

As with Indicator 1c(ii), this figure shows that observed differences by race/ethnicity in college continuation rates of high school graduates are reduced when taking into account family income quartiles. Among Black high school graduates, college enrollment rates ranged from 61 percent for those in the lowest family income quartile to 91 percent for those in the highest income quartile. Among White high school graduates, college entrance rates ranged from 59 percent for those in the lowest quartile to 87 percent in the highest quartile.

37 Increases in the percent of high school completers may in the short run depress the percentages of high school graduates who enter college.

38 Musu-Gillette, L., Robinson, J., McFarland, J., KewalRamani, A., Zhang, A., & Wilkinson-Flicker, S. (2016). *Status and Trends in the Education of Racial and Ethnic Groups 2016* (NCES 2016-007). U.S. Department of Education, National Center for Education Statistics. Retrieved from https://nces.ed.gov/pubs2016/2016007.pdf; Ramos, D., & Taylor, M. (2017). Aligning demographic shifts and college participation: Increasing Latino degree attainment. Retrieved from https://www.higheredtoday.org/2017/01/25/aligning-demographic-shifts-college-participation-increasing-latino-degree-attainment/.

Equity Indicator 1d(i): High School Graduates College Continuation Rates by race/ethnicity: 1976 to 2016



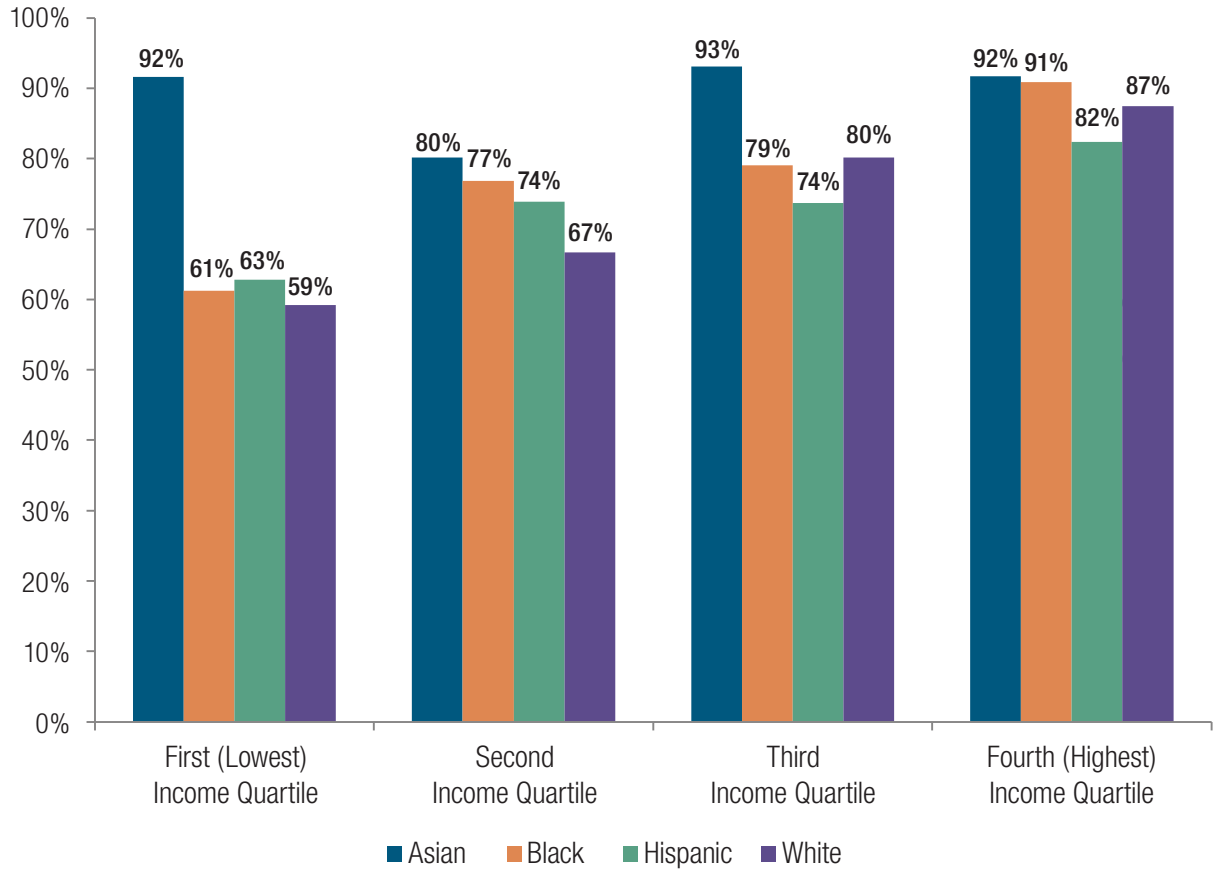
Indicator Status: Some Closing and Some Widening of the Gaps by Race/Ethnicity

Asians have the highest rates of college entrance among recent high school graduates. In 2016 White and Hispanic recent high school graduates had statistically equivalent rates of college enrollment. College enrollment rates for Black recent high school graduates were 15 percentage points lower than for Whites and Hispanics in 2016.

NOTE: Caution is needed in interpreting this data due to sampling error and changes in race/ethnicity definitions and inclusions. Prior to 2003, Asian data include Pacific Islanders. After 2002, White, Black, and Asian data exclude persons of Two or More Races. Race categories exclude persons of Hispanic ethnicity. The High School Completers College Continuation Rate is the percent of 16- to 24-year-old high school graduates who entered a postsecondary educational institution of any type. Annual data collected by Census and reported by BLS are from the October supplement to the Current Population Survey (CPS), a nationwide survey of about 60,000 households. Each October, a supplement to the CPS gathers information about school enrollment. A three-year moving average is used because of higher levels of sampling error for disaggregated data. The three-year average was calculated by averaging three years. For example, the percentage for 1977 was calculated by adding percentages for 1976, 1977 and 1978 and dividing by 3. The end point years (i.e., 1975 and 2015) were based on a two-year average. Some data have been revised from previously published figures.

SOURCE: U.S. Department of Commerce, Census Bureau, Current Population Survey (CPS), October, 1970 through 2016. *Race/Ethnicity for Recent High School Graduates 1960 to 2016*. https://nces.ed.gov/programs/digest/d17/tables/dt17_302.20.asp?current=yes.

Equity Indicator 1d(ii): High School Graduates College Continuation Rates by race/ethnicity and family income quartiles: 2016



Indicator Status:

Observed differences in college enrollment by race/ethnicity are reduced when the data are disaggregated by family income quartile.

NOTE: Caution is needed in interpreting this data, as CPS sample survey data disaggregated by income quartile and race/ethnicity are subject to large sampling errors. Race categories exclude persons of Hispanic ethnicity. High School Graduates College Continuation Rate is the percent of 16- to 24-year-old high school graduates who entered a postsecondary educational institution of any type. Annual data collected by Census and reported by BLS yearly are from the October supplement to the Current Population Survey (CPS), a nationwide survey of about 60,000 households. Each October, a supplement to the CPS gathers information about school enrollment. Due to small sample sizes, estimates for disaggregated data have larger sampling errors than estimates for the total.

SOURCE: Bureau of Labor Statistics (BLS) and U.S. Census Bureau, Current Population Survey 2016, as adapted by Tom Mortenson, *Postsecondary Educational Opportunity (PEO) Newsletters* and data base, *College Entrance Rates by Race/Ethnicity for Recent High School Graduates 1960 to 2016*.

Equity Indicator 1e: How Do Rates of Enrolling in College Within 8 or 10 Years of Scheduled High School Graduation Vary by Race/Ethnicity?

The high school longitudinal studies conducted by the National Center for Education Statistics (NCES) approximately every 10 years shed light on longitudinal trends in college enrollment within 8 or 10 years of expected high school graduation. Because college enrollment is measured within 8 or 10 years of expected high school graduation, the high school longitudinal studies report higher rates of college enrollment than the CPS/BLS data for recent school leavers.

Some caution is needed when using these three studies to observe trends over time. The High School and Beyond (HS&B:1980) and Educational Longitudinal Study (ELS:2002) sampled high school 10th graders, while the National Educational Longitudinal Study (NELS:88) sampled 8th graders. Unlike the NELS, the HS&B and ELS do not account for youth who left high school prior to the spring of the sophomore year.[39]

Considering data across the three national high school longitudinal studies shows a narrowing of the racial/ethnic gap in college entrance. Among 1980 high school 10th graders (HS&B:1980/1992), 61 percent of Black youth and 53 percent of Hispanic youth reported attending a postsecondary educational institution within 10 years of scheduled high school completion, compared with 69 percent of White youth. Twenty-two years later, among 2002 10th graders (ELS:2002), 82 percent of Black youth and 79 percent of Hispanic youth postsecondary education within 8 years of expected high school graduation, compared with 87 percent of White youth.

Equity Indicator 1f: How Do Rates of Not Enrolling in Postsecondary Education within 8 or 10 Years of Expected High School Graduation Vary by Parents' Socioeconomic Status (SES)?

Indicator 1f documents the percent of young adults who reported that they had not enrolled in postsecondary education within 8 or 10 years of their scheduled high school graduation by parents' socioeconomic status (SES), using data from the three NCES-sponsored high school longitudinal studies. SES is a composite that reflects parents' and guardians' highest level of education, occupation, and income. This composite is measured consistently across the three NCES longitudinal studies.[40]

Across the three longitudinal studies, the percent of youth who reported no participation in postsecondary education declined for all levels of SES, including those in the lowest SES quartile. Despite this progress, considerable differences in rates of non-enrollment based on SES persist. The percentage of youth in the lowest SES quartile reporting no postsecondary educational enrollment within 8 or 10 years of scheduled high school graduation declined from 52 percent of 1980 10th graders (HS&B), to 48 percent of 1988 8th graders (NELS), to 28 percent of 2002 10th graders (ELS).

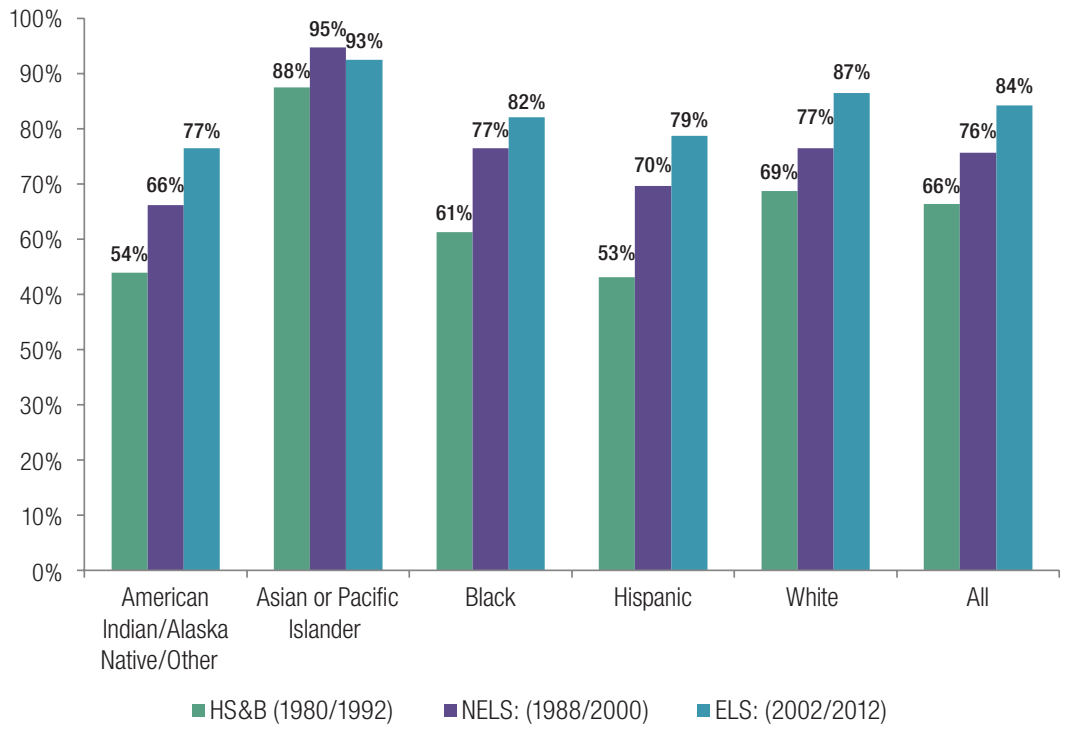
Nonetheless, in all three studies, young adults from the highest SES quartile average considerably lower rates of non-enrollment than those in the lowest SES quartile. Only 4 percent of those in the highest SES quartile in both

39 Because the National Longitudinal Study (NLS) of the class of 1972 began with high school seniors, we do not include these data in the trend analyses for Indicator 1.

40 SES is a composite measure that NCES derived in a comparable manner for the three high school longitudinal studies. NCES imputed SES for all sample members, including those with missing data for the parent income variable. We use the SES composite rather than family income for this indicator, as SES is considered more reliable than a single measure of family income. The latter tends to have a high rate of missing data and is subject to reporting error.

ELS:2002 (sampled as 10th graders) and NELS:88 (sampled as 8th graders) reported no postsecondary enrollment within 8 or 10 years of high school graduation, down from 12 percent of 1980 10th graders (HS&B).

Equity Indicator 1e: Percentage of young adults who reported enrolling in postsecondary education within 8 or 10 years of expected high school graduation by race/ethnicity: High School Longitudinal Studies (HS&B:1980/1992; NELS:1988/2000; ELS:2002/2012)



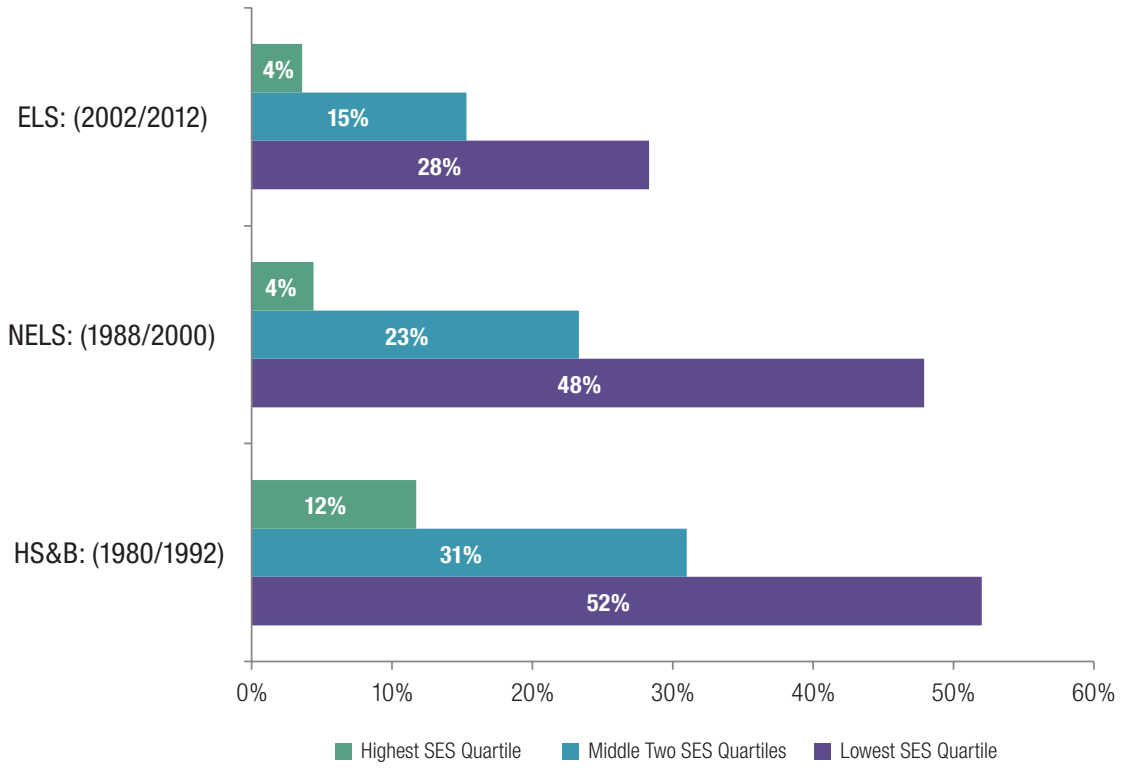
Indicator Status: Persisting but Narrowing Gap

The gap in postsecondary enrollment between Black and White youth narrowed from 8 percentage points for 1980 10th graders to 5 percentage points for 2002 10th graders. Over the same period the gap in postsecondary enrollment between Hispanic and White youth declined from 16 to 8 percentage points.

NOTE: Race categories exclude persons of Hispanic ethnicity. For ELS, the "American Indian/Alaska Native/Other" category includes college enrollment rates for students of "other" racial/ethnic groups, including American Indians/Alaska Natives, as the sample size for American Indian/Alaska Natives alone was too small for reliable estimates. ELS and HS&B began tracking students when they were in the 10th grade in high school. NELS:88 began with 8th grade.

SOURCE: Lauff, E. & Ingels, S. J. (2014). *Education Longitudinal Study of 2002 (ELS:2002): A First Look at 2002 High School Sophomores 10 Years Later* (NCES 2014-363). U.S. Department of Education; Ingels, S. J., Kaufman, P., Curtin, T. R., Alt, M. N. & Chen, X. (2002). *Initial Results from the Fourth Follow-up to the National Education Longitudinal Study of 1988: Coming of Age in the 1990s: The Eighth-Grade Class of 1988 12 Years Later* (NCES 2002-321). U.S. Department of Education, Office of Educational Research and Improvement; Tuma, J. , Geis, S., & Carroll (1995). *High School and Beyond Educational Attainment of 1980 High School Sophomores by 1992: 1992 Descriptive Summary of 1980 High School Sophomores 12 Years Later* (NCES 95-304). U.S. Department of Education, National Center for Education Statistics.

Equity Indicator 1f: Percentage of young adults who reported no postsecondary enrollment within 8 or 10 years of expected high school graduation by parents' socioeconomic status (SES): High School Longitudinal Studies (HS&B:1980/1992; NELS:1988/2000; ELS:2002/2012)



Indicator Status: High Inequality but Narrowing Gap

The gap in the percentage of youth in the highest and lowest SES quartiles who reported no postsecondary enrollment within 8 or 10 years of scheduled high school graduation was 24 percentage points for 10th graders in 2002, down from 44 percentage points for 1988 8th graders and 40 percentage points for 1980 10th graders.

NOTE: ELS and HS&B sampled students when they were in the 10th grade (high school sophomores). NELS:88 sampled 8th graders. Some differences in findings across longitudinal studies are expected due to the longer time period for dropping out of high school for students sampled in 8th grade rather than 10th grade.

SOURCE: Lauff, E. & Ingels, S. J. (2014). Education Longitudinal Study of 2002 (ELS:2002): *A First Look at 2002 High School Sophomores 10 Years Later* (NCES 2014-363). U.S. Department of Education; Ingels, S. J., Kaufman, P., Curtin, T. R., Alt, M. N., & Chen, X. (2002). *Initial Results from the Fourth Follow-up to the National Education Longitudinal Study of 1988: Coming of Age in the 1990s: The Eighth-Grade Class of 1988 12 Years Later* (NCES 2002-321). U.S. Department of Education, Office of Educational Research and Improvement; Tuma, J. , Geis, S., & Carroll (1995). *High School and Beyond Educational Attainment of 1980 High School Sophomores by 1992: 1992 Descriptive Summary of 1980 High School Sophomores 12 Years Later* (NCES 95-304). U.S. Department of Education, National Center for Education Statistics.

Indicator 1g: Have Differences in College Enrollment by SES Persisted in the Most Recent NCES High School Longitudinal Study?

Indicator 1g examines data from the most recently released NCES longitudinal study, the High School Longitudinal Study (HSLS:2009). HSLS:2009 began with a nationally representative sample of 9th graders in 2009 and followed up with the cohort in 2012 (when most were in 11th grade) and 2013, the fall after scheduled high school graduation. Indicator 1g uses SES quintiles (five equal-sized groups) and shows 2-year and 4-year enrollment and non-enrollment.

The findings from these most recent data are consistent with the previous NCES high school studies and with Census data reported earlier in this report, despite the methodological differences between the studies. Half (51 percent) of 2009 9th graders from the lowest SES quintile were not enrolled in college the fall after their 2013 scheduled high school graduation, compared with 9 percent of 2009 9th graders in the highest SES quintile. Youth in the highest SES quintile were more than 3 times as likely as those in the lowest quintile to be enrolled in a 4-year institution (73 percent for the highest quintile and 21 percent for the lowest). A higher share of 2009 9th graders in the lowest SES quintile than in the highest SES quintile was enrolled in 2-year colleges (28 percent versus 18 percent). Half (51 percent) of 2009 9th graders from the lowest SES quintile were not in college in the fall after their scheduled high school graduation, compared with 9 percent of those from the highest SES quintile.

Indicator 1h: What Are the Differences by First-Generation College Status in High School Completion and College Entrance?

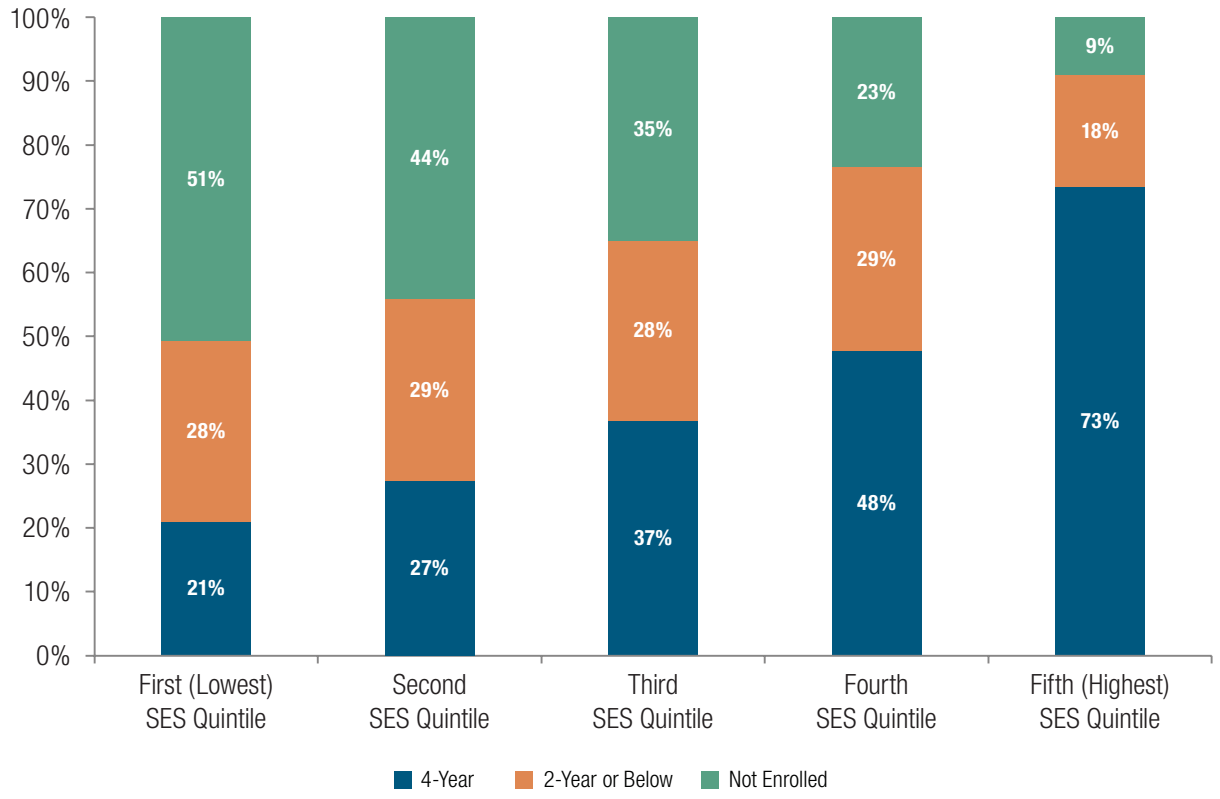
Indicator 1h uses the ELS:2002/2012 data to examine differences in high school completion and college entrance by First-Generation College Status. First-Generation College Status can be defined in different ways. Eligibility for many Federal Programs (including the TRIO programs), as authorized in the Higher Education Opportunity Act (HEOA), defines First-Generation as neither parent having a bachelor's degree. Alternatively, First-Generation College may be defined as neither parent has gone to college. A recently published analysis by NCES in 2018 examines college outcomes for students who meet the latter definition.[41]

Indicator 1h shows that, by 8 years after scheduled high school graduation, virtually all youth whose parents had a bachelor's degree (98 percent) or some college (97 percent), and 92 percent of those whose parents had "no college," had completed a high school degree.

Rates of enrolling in college within 8 years after high school graduation increased with parents' education. Indicator 1h shows that 72 percent of youth whose parents had not attended college had enrolled in college, compared with 84 percent of youth whose parents attended some college, and 93 percent of youth whose parents had attained a bachelor's degree.

41 Cataldi, E. F., Bennett, C.T., & Chen X. (2018). *First-Generation Students College Access, Persistence, and Postbachelor's Outcomes* (NCES 2018-421). U.S. Department of Education.

Equity Indicator 1g: Percentage distribution of 2009 9th graders by enrollment status in the fall after scheduled high school graduation by parents' socioeconomic status (SES): High School Longitudinal Study (HSLS:2009/2013)



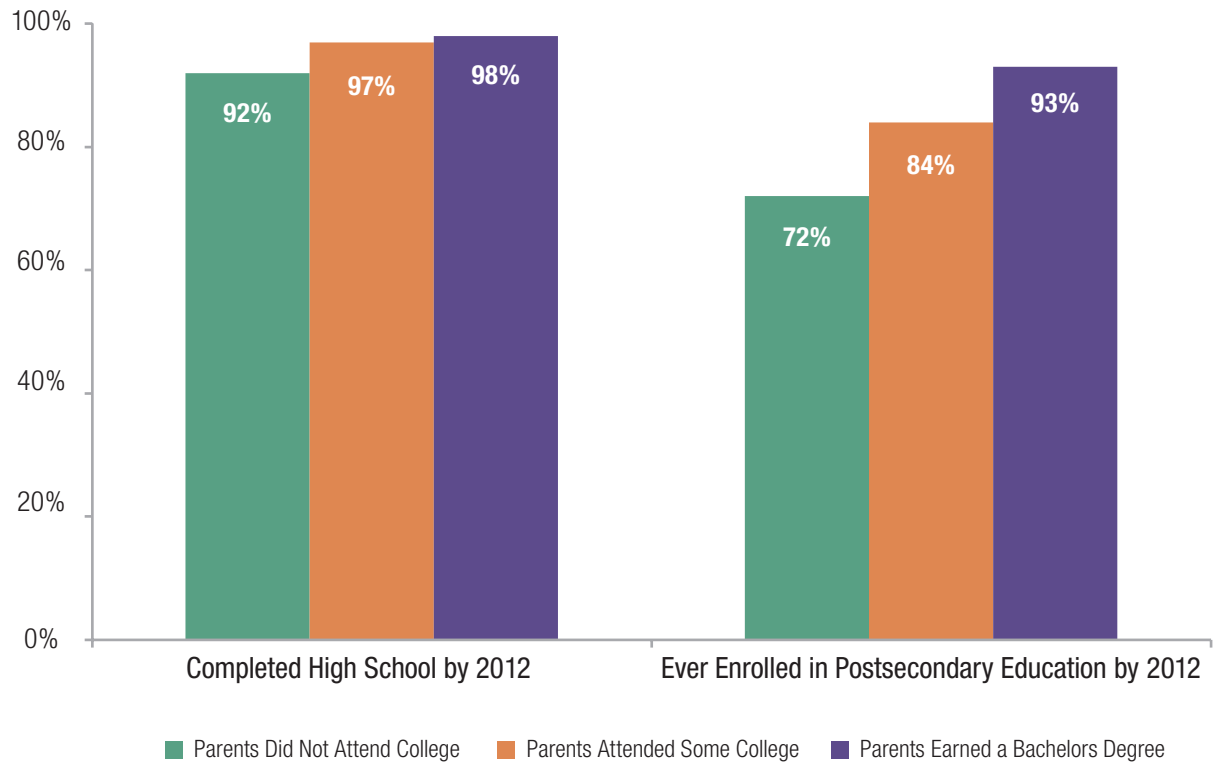
Indicator Status: High Inequality

Half (51 percent) of 2009 9th graders from the lowest SES quintile were not in college in the fall after their scheduled high school graduation, compared with 9 percent of those from the highest SES quintile.

NOTE: The High School Longitudinal Study (HSLS:2009) began with a nationally representative sample of 9th graders in 2009 and included follow-ups in 2012 (typically the 11th grade) and 2013, the fall after scheduled high school graduation.

SOURCE: Tabulated with NCES PowerStats, using data from the High School Longitudinal Study (HSLS:2009/2013).

Equity Indicator 1h: Percentages of 10th grade students who had completed high school and enrolled in postsecondary education within 8 years of their scheduled high school graduation by parents' highest level of education (ELS:2002/2012)



Indicator Status: High Inequality

There is a 21 percentage-point gap in the rate of enrolling in college within eight years of scheduled high school graduation between those students whose parents have bachelor's degrees and those students whose parents have not attended college.

NOTE: The "Completed High School by 2012" group includes students who earned a regular high school diploma, a General Education Development (GED) certificate, or other high school equivalency such as a certificate of attendance.

SOURCE: Table C-2a and C-4a in Chen, X., Lauff, E., Arbeit, C., Henke, R., Skomsvold, P., and Hufford, J. (2017). *Early Millennials: The Sophomore Class of 2002 a Decade Later* (NCES 2017-437), U.S. Department of Education. Washington, DC: National Center for Education Statistics, as included in Cataldi, E. F., Bennett, C.T., & Chen, X. (2018). *First-Generation Students College Access, Persistence, and Postbachelor's Outcomes* (NCES 2018-421). U.S. Department of Education, Figure 2.

Indicator 1i: What Are the Estimated Participation Rates of Low-Income Students in College by State?

The Office of Postsecondary Education (OPE) reports the numbers and amount of Pell Grants awarded each year for dependent and independent students by state.[42] However, this information does not provide direct estimates of the percent of low-income youth within the state that are enrolled in college.[43] These participation rates may be estimated using annual data on public school enrollment by state from the U.S. Department of Education and annual data on the percent of enrollment approved for free or reduced price lunches in the applicable time period by state from the U.S. Department of Agriculture. Tom Mortenson has used these three sources (Pell Grants awarded, school enrollment, and free and reduced price lunch enrollment) to gain a relative indicator of this percentage for the years 1989 to 2016. While these comparisons are limited due to differential use of free and reduced lunch among the states and also due to different rates of migrations into and out of the states among Pell recipients, with caution, we adopt this strategy to calculate this Indicator.[44] Indicator 1i(i) presents the estimates by state for 2016 and Indicator 1i(ii) displays a plot of the state data from 1989 to 2016.

Using this approach, the national estimated college participation rate for low-income students was 34.2 percent in 2016. This rate ranged from 10 percent in Alaska, 21 percent in Oklahoma and Wyoming, 29 percent in Montana and South Dakota to 50 percent in New Hampshire, 53 percent in New York, and 56 percent in New Jersey. States with the highest estimated rates tended to be located in the Northeast (NJ, NY, NH, MA, CT, and RI). States with the lowest rates were observed by Mortenson to have strong energy-producing industries (AK, OK, WY, NM, WV, KY, LA, TX) where higher paying jobs might be available without a college degree.[45]

Indicator 1i(ii) shows considerable variation over time in college participation rates by state. For virtually all states, college participation rates increased with the Great Recession and then declined somewhat in the recovery period. The national average college participation rate for low-income students was 26 percent in 2008, rose to 39 percent in 2011 and 2012, and has since declined to 34 percent. Changes in college participation rates over time may also be impacted by the availability of Year Round Pell from 2008 to 2011.

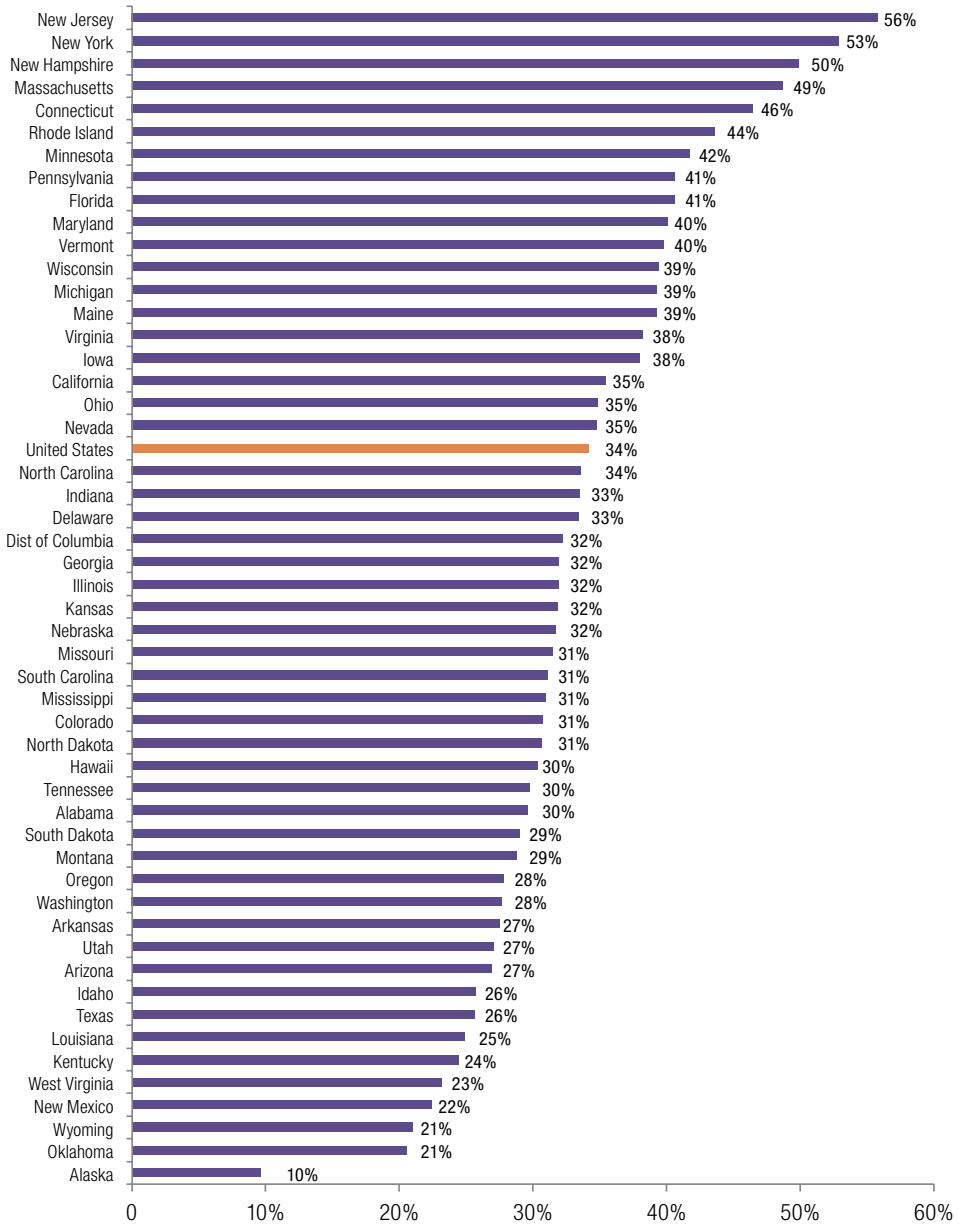
42 U.S. Department of Education, Office of Postsecondary Education, Office of Student Financial Aid, Federal Pell Grant Program Annual Data Reports, https://www2.ed.gov/finaid/prof/resources/data/pell-data.html.

43 Mortenson T. (2017). College participation rates for students from low-income families by state and sector: 1998 to 2016, *Postsecondary Education Opportunity*, 290.

44 As indicated in Figure 6, the percent of students approved for free and reduced lunch and the percent of students receiving Pell Grants have increased over recent decades. While caution is needed due to variation in state use of the Federal school lunch program, estimates tabulated in the same manner over time provide a consistent indicator of change and some indication of differences by state.

45 Mortenson, T. (2017). College participation rates for students from low income families by state and sector: 1998 to 2016, *Postsecondary Education Opportunity*, 290.

Equity Indicator 1i(i): Estimated college participation rates for students from low-income families by state: 2016



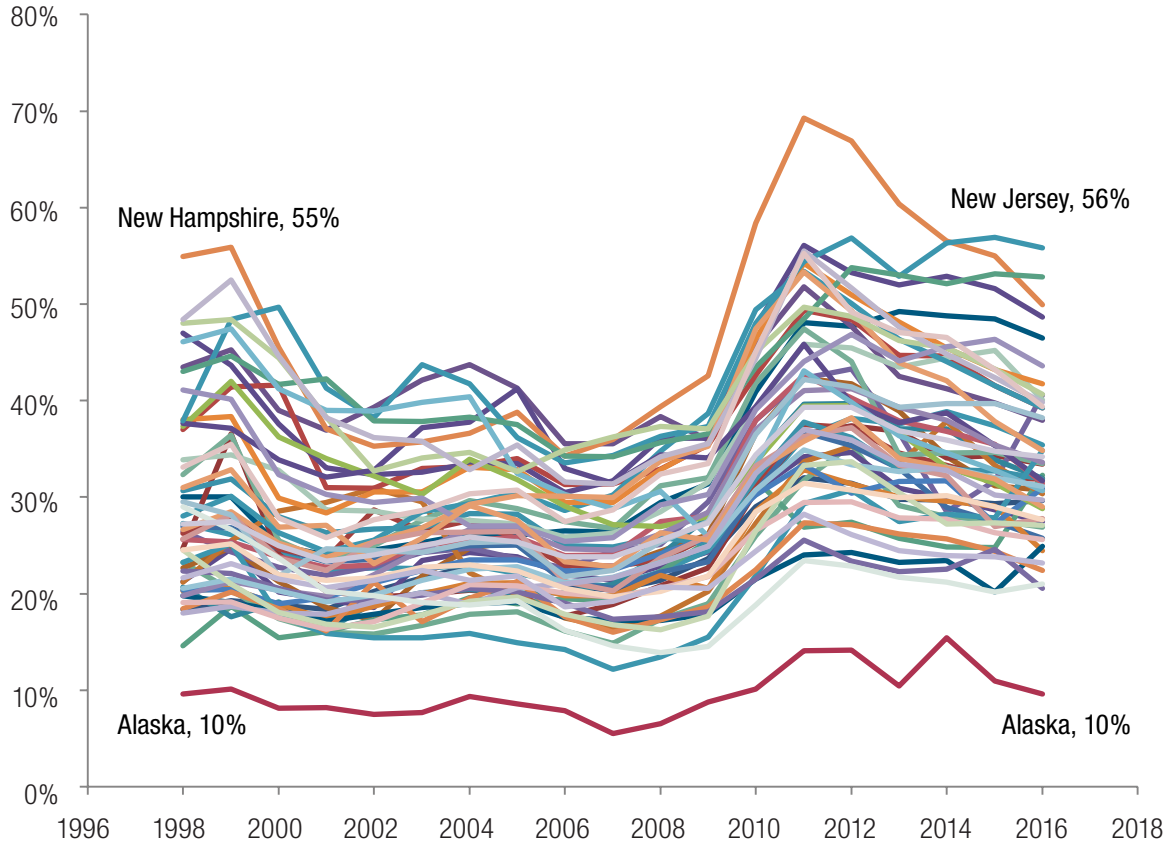
Indicator Status:

College participation rates vary by state and region, with higher rates in the northeastern states and region than in other parts of the U.S.

NOTE: Caution is needed in reviewing this data to differential use of free and reduced lunch and also due to migrations in and out of states among Pell recipients. Participation rates for low-income students are estimated based on: 1) public school enrollment; 2) numbers and percent of 4th to 9th graders that were approved for a free or reduced price lunch 9 years earlier; and 3) numbers of dependent Pell Grant recipients from each state in a given year.

SOURCE: Mortenson, T. (2017). College participation rates for students from low-income families by state and sector: 1998 to 2016, *Postsecondary Education Opportunity*, 290.

Equity Indicator 1i(ii): Trends in estimated college participation rates for students from low-income families by state: 1989 to 2016



Indicator Status:

While the 50 trend lines show considerable variation by state, virtually all states show the uptake in enrollment with the Great Recession followed by some decline in the recovery period.

NOTE: Participation rates for low-income students are estimated based on: 1) public school enrollment figures; 2) percent of 4th to 9th graders nine years earlier that were approved for a free or reduced price 9 years earlier; and 3) number of dependent Pell Grant recipients from each state in a given year.

SOURCE: Mortenson, T. (2017). College participation rates for students from low-income families by state and sector: 1998 to 2016, *Postsecondary Education Opportunity*, 290.

Indicator 1j: What Are the Enrollment Rates of 18- to 24-Year Olds by Race/Ethnicity by State?

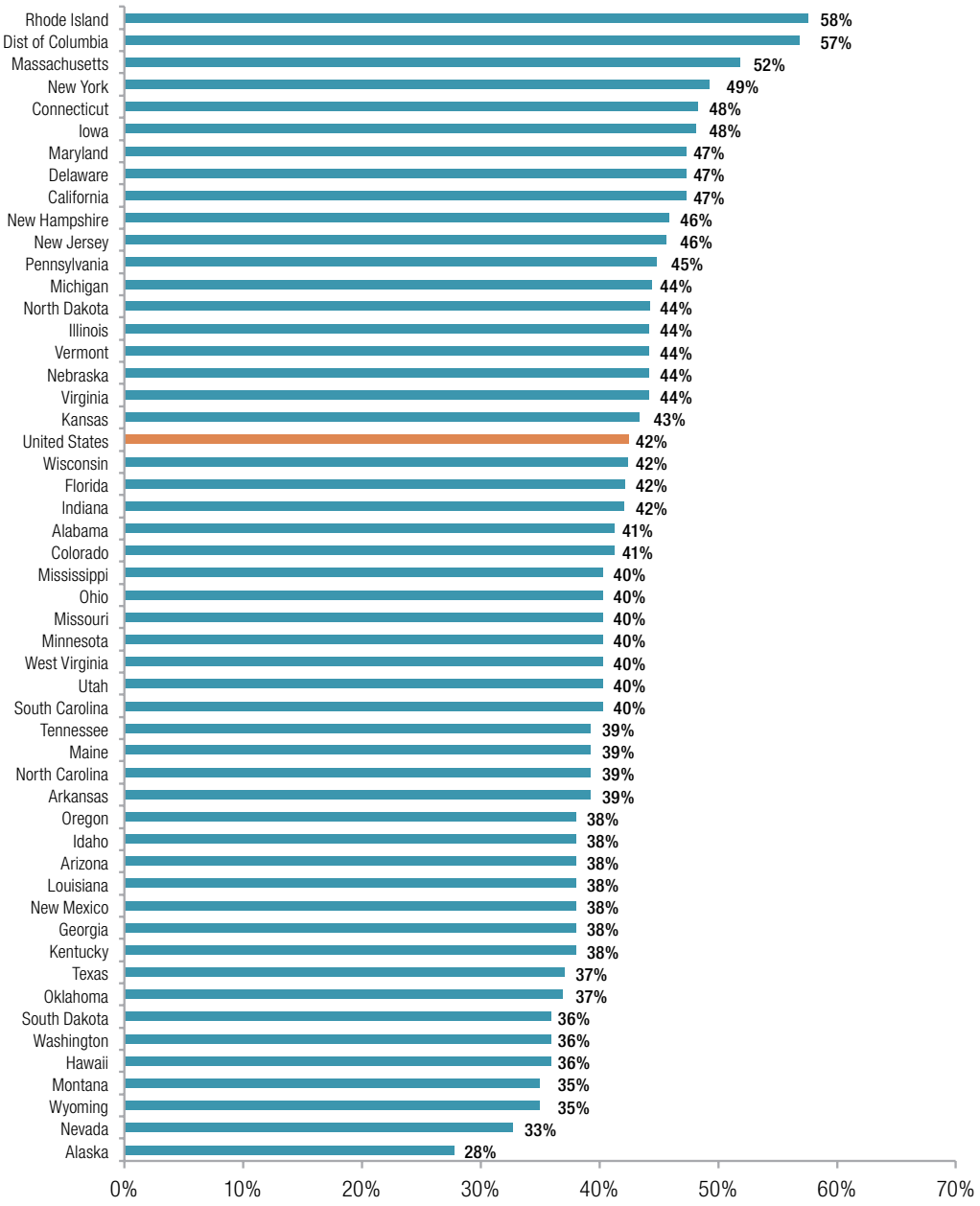
The American Community Survey collects postsecondary enrollment data for 18- to 24- year-olds, with sample sizes sufficient to estimate data by state and by some race/ethnicity categories. Equity Indicator 1j(i) shows this data for the total state population for 2015 and Equity Indicators 1j(ii) and 1j (iii) show data for the two largest minority groups (Hispanics and Blacks, respectively) compared to Whites. Data are based on sample surveys of the entire population 18- to 24- year olds residing within the United States, including both noninstitutionalized persons (e.g., those living in households, college housing, or military housing located within the United States) and institutionalized persons (e.g., those living in prisons, nursing facilities, or other healthcare facilities). Race categories exclude persons of Hispanic ethnicity.

The overall United States enrollment rate of 18- to 24-year olds is 42 percent. Rhode Island (58 percent), District of Columbia (57 percent), and Massachusetts (52 percent) each has enrollment rate of 18- to 24-year olds of 50 percent or more. The lowest enrollment rates among the states are Alaska (28 percent), Nevada (33 percent), and Wyoming and Montana each with 35 percent.

As the data in Indicator 1j(ii) and 1j(iii) show, for most states the percentage of Hispanic and Black 18- to 24-year olds who are enrolled is less than that of Whites. Overall in the United States the percentage of White 18- to 24-year olds who are enrolled is 44 percent; the percentage of Hispanics is 36 percent; the percentage of Blacks is 36 percent; the percentage of Asians is 67 percent; the percentage of American Indian/Alaska Native is 26 percent; and the percentage enrollment of two or more races is 44 percent.[46]

46 U.S. Department of Education, *Digest of Education Statistics 2016* [Table 302.65.]. Percentage of 18- to 24-year olds enrolled in degree-granting postsecondary institutions, by race/ethnicity and state:2015.

Equity Indicator 1j(i): Percentage of 18- to 24- year olds enrolled in degree-granting postsecondary institutions by state: 2015



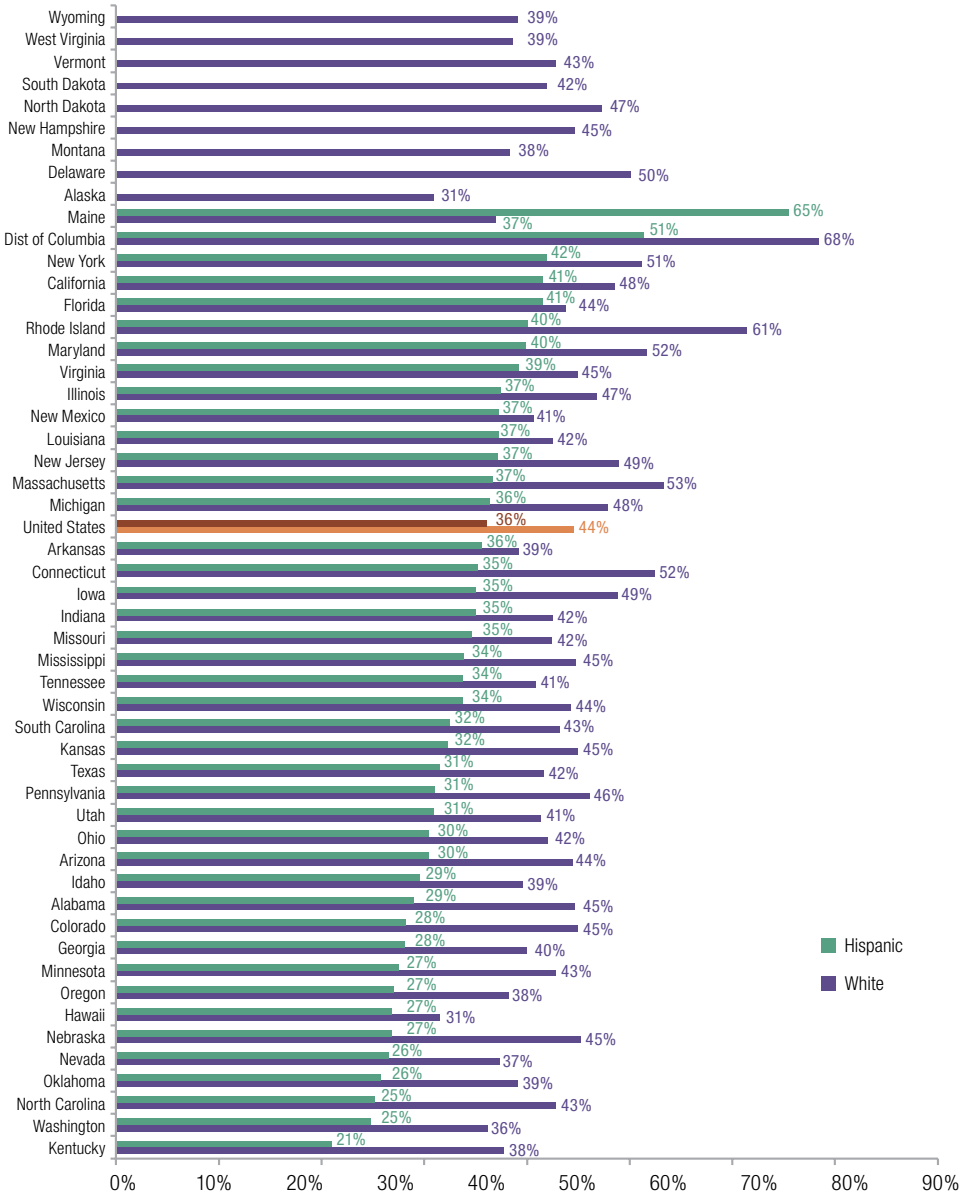
Indicator Status:

College participation rates vary by state and region, with higher rates in the northeastern states and region than in other parts of the U.S.

NOTE: Data are based on sample surveys of the entire population 18- to 24-year olds residing within the United States, including both noninstitutionalized persons (e.g., those living in households, college housing, or military housing located within the United States) and institutionalized persons (e.g., those living in prisons, nursing facilities, or other healthcare facilities).

SOURCE: U.S Department of Commerce, Census Bureau, American Community Survey (ACS), 2015. *Digest of Education Statistics 2016* [Table 302.65].

Equity Indicator 1j(ii): Percentage of Hispanic and White 18- to 24 –year olds enrolled in degree-granting postsecondary institutions by state: 2015



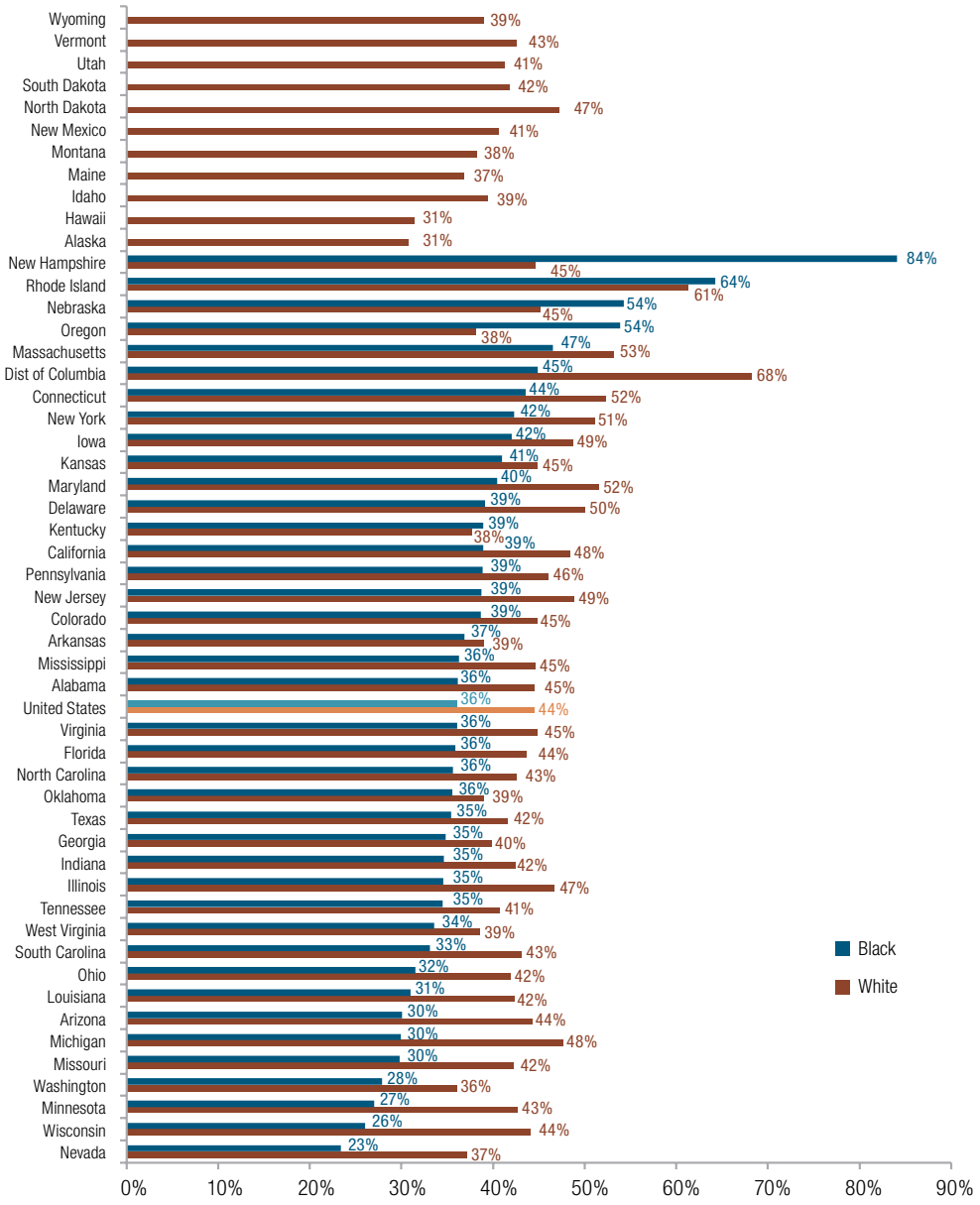
Indicator Status:

College participation rates vary by state and region, with higher rates in the northeastern states and region than in other parts of the U.S.

NOTE: States with no entry for Hispanic are those with two few sample members for estimation. Reporting standards not met. Either there are too few cases for a reliable estimate or the coefficient of variation (CV) is 50 percent or greater. Data are based on sample surveys of the entire population 18- to 24- year olds residing within the United States, including both noninstitutionalized persons (e.g., those living in households, college housing, or military housing located within the United States) and institutionalized persons (e.g., those living in prisons, nursing facilities, or other healthcare facilities). Race categories exclude persons of Hispanic ethnicity.

SOURCE: U.S Department of Commerce, Census Bureau, American Community Survey (ACS), 2015. *Digest of Education Statistics 2016* [Table 302.65].

Equity Indicator 1j(iii): Percentage of Black and White 18- to 24- year olds enrolled in degree-granting postsecondary institutions by state: 2015



Indicator Status:

College participation rates vary by state and region, with higher rates in the northeastern states and region than in other parts of the U.S.

NOTE: States with no entry for Black are those with two few sample members for estimation. Reporting standards not met. Either there are too few cases for a reliable estimate or the coefficient of variation (CV) is 50 percent or greater. Data are based on sample surveys of the entire population 18- to 24- year olds residing within the United States, including both noninstitutionalized persons (e.g., those living in households, college housing, or military housing located within the United States) and institutionalized persons (e.g., those living in prisons, nursing facilities, or other healthcare facilities). Race categories exclude persons of Hispanic ethnicity.

SOURCE: U.S Department of Commerce, Census Bureau, American Community Survey (ACS), 2015. *Digest of Education Statistics 2016* [Table 302.65].

EQUITY INDICATOR 2:

WHAT TYPE OF POSTSECONDARY EDUCATIONAL INSTITUTION DO STUDENTS ATTEND?

In 2015, among degree-seeking undergraduates who received a Federal Pell or other grants, 58 percent attended a 4-year institution and 42 percent attended a 2-year institution. Among undergraduates who did not receive a Federal grant, 76 percent attended a 4-year institution and 24 percent attended a 2-year institution.

Among 2009 9th graders, those from the highest SES quintile were 8 times as likely to go to a "most" or "highly" selective college as students from the lowest SES quintile (33 percent and 4 percent, respectively).

Equity Indicator 2(a-f): Definitions

The sources of data for Equity Indicator 2 are: 1) Integrated Postsecondary Education Data System (IPEDS), which has collected institutional-level data on U.S. postsecondary educational institutions since 1986; 2) five NCES high school longitudinal studies, and 3) 2016 Barron's Admissions Competitiveness Index.

- **IPEDS Federal Grant Aid.** IPEDS does not collect data on students' family income, but does collect aggregate data on institutional characteristics that provide reasonable proxies.[47] In Indicator 2, we report students receiving "Federal Grants." Federal Grant aid is comprised primarily of Pell Grants but also includes Federal Supplemental Educational Opportunity Grants (FSEOG) and grants from federal agencies other than the U.S. Department of Education such as the Department of Veterans Affairs and the Department of Labor.[48] We report Federal Grant aid because separate Pell Grant data are not reported in IPEDS before 2009 and because receipt of Federal Grant aid is a reasonable proxy for Pell-specific measures.[49] In this report Federal Grant aid is also referred to as "Pell or other Federal Grants."

47 Current IPEDS measures include the percent of undergraduates receiving Pell Grants, the percent of full-time, first-time (FTFT) undergraduates receiving Pell Grants, and the percent of full-time, first-time (FTFT) undergraduates receiving Federal Grant aid.

48 National Center for Education Statistics, IPEDS Data Center https://nces.ed.gov/ipeds/datacenter/selectVariables.aspx.

49 Others also use Federal Grant aid as a proxy for receiving Federal Pell Grants. See Giancola, J. & Kahlenberg, R. (2016). *True merit: Ensuring our brightest students have access to our best colleges and universities*. Lansdowne: Jack Kent Cooke Foundation. Retrieved from http://www.jkcf.org/assets/1/7/JKCF_True_Merit_Report.pdf.
Pell Grants represented 66 percent of total federal aid in 2014-15, down from 75 percent in 2008-09. Over this period, the share of federal grant aid from veterans and military aid increased from 20 percent to 33 percent. College Board, *Trends in Student Aid 2015*, Figure 4 http://trends.collegeboard.org/sites/default/files/trends-student-aid-web-final-508-2.pdf.

- **Federal Pell Grant Receipt.** Eligibility for Pell Grants for both dependent and independent students is based on family income, family size, number of family members attending college, and other factors. Pell Grants are targeted to students from low-income families and independent students with low-incomes. In the 2016-17 award year, 7.1 million students received a Pell Grant at a total cost of $26.6 billion. This figure was down from a peak of 9.4 million in 2011-12 during the Great Recession.[50] In 2018-19, the maximum Pell Grant award was $5,920.
- **Level and Control of Postsecondary Institutions.** Indicator 2 reports differences in enrollment by Federal Grant receipt by institutional level (2-year versus 4-year institution) and control (public, private non-profit, and private for-profit).
- **High School Longitudinal Studies Data by Family Socioeconomic Status and Institutional Selectivity.** The five NCES high school longitudinal studies include the National Longitudinal Study, representing the scheduled high school graduating class of 1972 (NLS); High School and Beyond Study, representing the scheduled high school graduating class of 1982 (HS&B); National Education Longitudinal Study, representing the scheduled high school graduating class of 1992 (NELS); Education Longitudinal Study, representing the scheduled high school graduating class of 2004 (ELS), and High School Longitudinal Study (HSLS) representing the scheduled high school graduating class of 2013. As discussed in Indicator 1, a socioeconomic status (SES) composite is included in each of the NCES high school longitudinal studies. The SES composite is based on data from the parent questionnaires or imputed from the student questionnaires and, for the five NCES longitudinal studies, are based on five equally weighted, standardized components. These components are: father's/guardian's education, mother's/guardian's education, family income, father's/guardian's occupational prestige score, and mother's/guardian's occupational prestige score. This Indicator uses data from a published study by Michael Bastedo and Ozan Jaquette and an analytic dataset constructed by merging the high school longitudinal data with the Barron's Admissions Competitiveness Index.[51] The *Indicators* report also includes data from the High School Longitudinal Study (HSLS) on selectivity of institutions attended for the 2013 graduating class. Due to differences in survey design and study methodology, we present this data in a separate chart rather than with the earlier four NCES studies.[52]
- **Institutional Selectivity.** Selectivity is measured using the Barron's Admissions Competitiveness Index, which is based on such measures as percent of applicants admitted, students' high school class rank, and students' college entrance exam scores.[53] NCES publishes Barron's datasets corresponding to years in which students in the longitudinal studies typically first enrolled in a postsecondary institution. The competitiveness indices include "most competitive," "highly competitive," "very competitive," "competitive," and "less competitive." We coded institutions not

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50 U.S. Department of Education, *Federal Pell Grant Program End-of-Year Report, 1981-82 through 2015-16*; Federal Student Aid Data Center, *Title IV Program Volume Reports and Aid Recipients Summary*.

51 Figures are adapted from Bastedo, M. & Jaquette, O. (2011). Running in place: Low-income students and the dynamics of higher education stratification. *Educational Evaluation and Policy Analysis*, 33, 318-339, Appendix 6. Retrieved from http://www-personal.umich.edu/~bastedo/papers/EEPA-Appendix.pdf.

52 The High School Longitudinal Study (HSLS:2009) sampled 9th graders and completed follow-ups in 2012 (11th grade) and 2013 (the fall after expected high school graduation date). For these reasons HSLS:2009 is not directly comparable to the earlier four studies which started in 10th or 8th grade and had follow-ups in 12th grade. The 12th grade data on anticipated college were used in the Bastedo and Jaquette (2011) analyses on selectivity for the four earlier NCES longitudinal studies. The HSLS used quintiles for the SES classification rather than quartiles.

53 For more information on Barron's Admissions Competitiveness Index as it pertains to Indicators 2d and 2e, see Bastedo and Jaquette (2011), including their online Appendix Table 2 http://www-personal.umich.edu/~bastedo/papers/EEPA-Appendix.pdf.

included in Barron's Admissions Competitiveness Index based on level and control using IPEDS data.[54] We used the Barron's indices for all years in Indicator 2e. Reflecting high consistency in Barron's methodology across years, only a small share of institutions change competitiveness classification over time.[55]

Equity Indicator 2a: How Does the Level of Institution Attended Vary by Pell or Other Federal Grant Receipt?

Indicator 2a shows that, among full-time, first-time (FTFT) degree-seeking undergraduates, those who received Pell and other Federal Grants are consistently less likely than those who do not receive Federal Grants to attend 4-year institutions rather than 2-year institutions (58 percent of Federal Grant recipients versus 76 percent of non-recipients in 2015).[56] The shares of recipients and non-recipients enrolled at 4-year rather than 2-year institutions decreased somewhat during the Great Recession but have since slowly increased. The percentage of FTFT undergraduates attending 4-year rather than 2-year institutions increased among Federal Grant recipients from 53 percent in 2010 to 58 percent in 2015 and increased among non-recipients from 69 percent in 2010 to 76 percent in 2015. Part of the increases in 4-year enrollment vs. 2-year enrollment is due to the increase in large former 2-year institutions that now award bachelor's degrees and hence changed classification category.[57]

Equity Indicator 2b: How Does the Control of Institution Attended Vary by Receipt of Pell or Other Federal Grants?

Most students attend public institutions rather than private non-profit or private for-profit institutions. Indicator 2b shows that, in 2015, 70 percent of Pell and other Federal Grant recipients and 71 percent of non-recipients were attending public institutions.

The distribution of FTFT undergraduates who did not receive Pell or Federal Grants across public, private non-profit, and private for-profit institutions remained relatively stable over the past decade. About 70 percent of non-recipients were enrolled at public institutions, 25 percent were enrolled at private non-profit institutions, and 4 percent were enrolled in private for-profit institutions.

In contrast, Indicator 2b shows that the distribution of FTFT undergraduates who received Pell and other Federal Grants shifted across these three sectors over the past decade. The proportion of FTFT undergraduates receiving Pell and other Federal Grants enrolled at for-profit institutions increased from 18 percent in 2004 to 23 percent in 2006, reached a peak of 31 percent in 2010 (in the Great Recession), and then declined to 20 percent by 2011 and 13 percent in 2015.

Federal Grant recipients were 3 times as likely as those who did not receive Federal Grants to be enrolled at for-profit institutions rather than public or private non-profit institutions in 2015 (13 percent versus 4 percent), up from 2 times as likely in 2004.

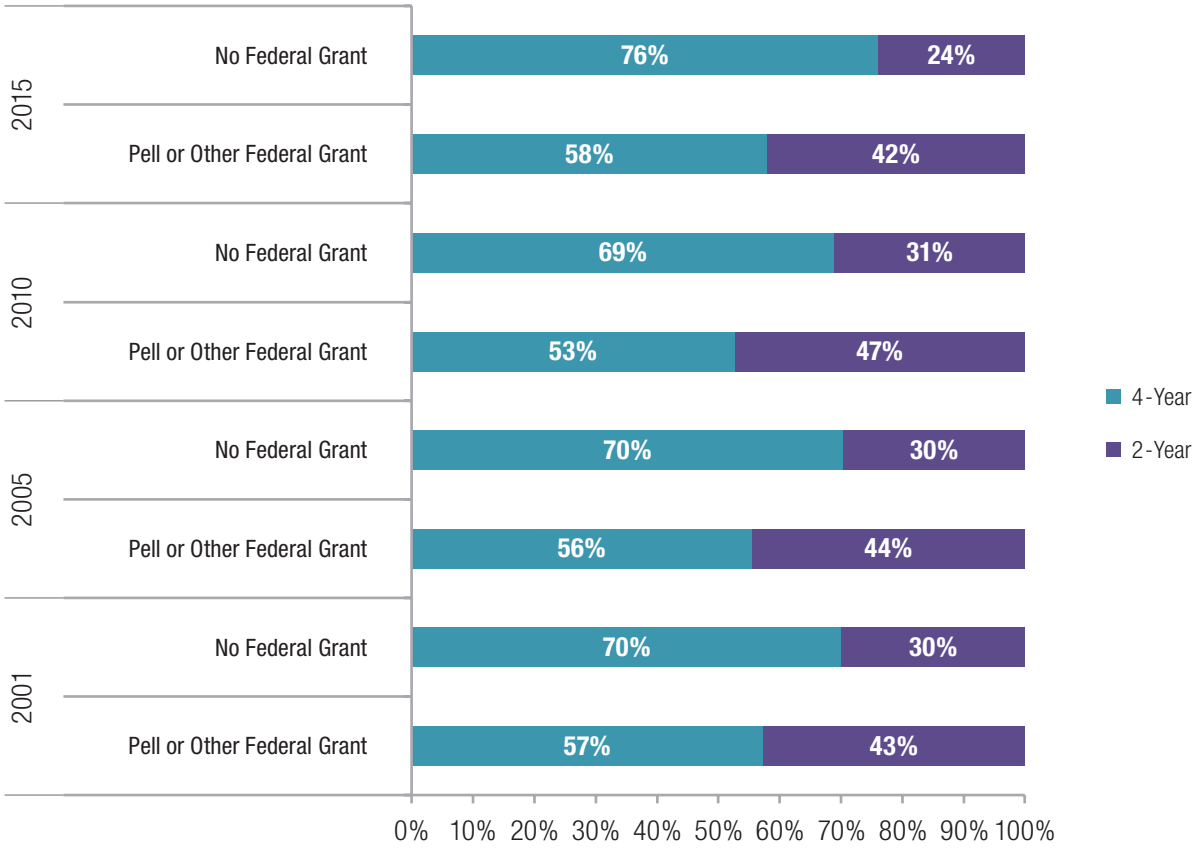
54 National Center for Education Statistics, Barron's Admissions Competitiveness Index https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2016332.

55 Bastedo and Jaquette (2011) also used one year of the Barron's selectivity index in their study (cited above).

56 This analysis excludes enrollment at less-than-2-year institutions.

57 For example, in July 2017, Ohio became the 24th state to authorize community colleges to develop 4-year programs and offer bachelor's degrees https://www.daytondailynews.com/news/community-colleges-can-now-offer-bachelor-degrees/lxJFj5sk4SizXfVIY4cADI/.

Equity Indicator 2a: Percentage distribution of full-time, first-time degree-seeking undergraduate students who did and did not receive Pell or other Federal Grants by level of institution attended: 2001, 2005, 2010, and 2015



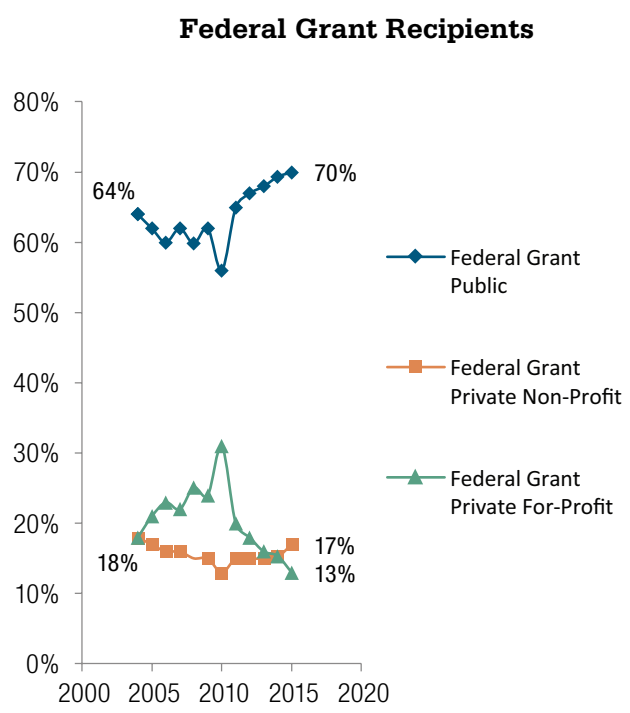
Indicator Status: High Inequality and Widening Gap

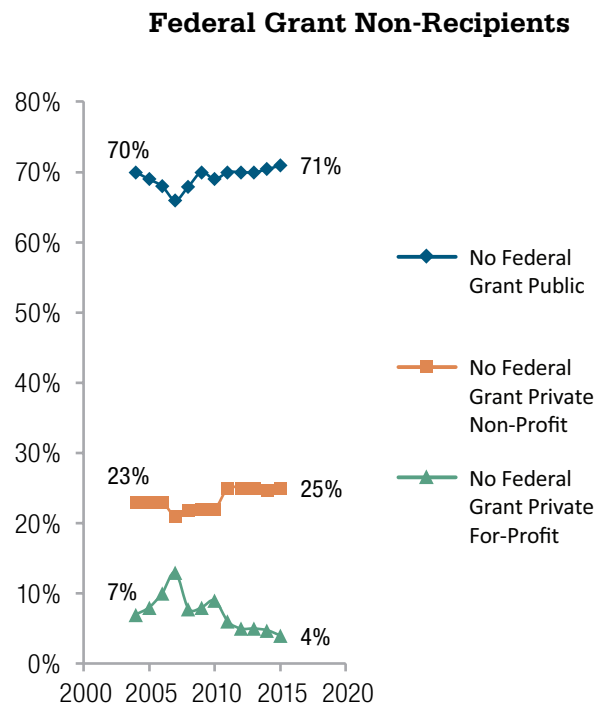
The difference in the percentages of Federal Grant recipients and non-recipients attending 4-year rather than 2-year colleges widened from 13 percentage points in 2001 to 18 percentage points in 2015

NOTE: Federal Grant aid is composed primarily of Pell Grants but also includes Federal Supplemental Educational Opportunity Grants (FSEOG) and grants from federal agencies other than the U.S. Department of Education such as the Department of Veterans Affairs and the Department of Labor.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). (2017). *Digest of Education Statistics 2017* [Table 331.20].

Equity Indicator 2b: Percentage Distribution of full-time, first-time degree-seeking undergraduate students by control of institution attended by receipt of federal grant status: 2004 to 2015





Indicator Status: High Inequality and Persisting Gaps

Pell and other Federal Grant recipients were 3 times as likely as Federal Grant non-recipients to attend a private for-profit institution in 2015, up from 2 times as likely in 2004.

NOTE: Federal Grant aid is composed primarily of Pell Grants but also includes Federal Supplemental Educational Opportunity Grants (FSEOG) and grants from federal agencies other than the U.S. Department of Education such as the Department of Veterans Affairs and the Department of Labor.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). (2017). *Digest of Education Statistics 2017* [Table 331.20].

Equity Indicator 2c: How Does the Percent of Students Receiving Federal Grants Vary by Institutional Level and Control?

Receiving Pell and other Federal Grants is more common among full-time, first-time (FTFT) undergraduates attending for-profit institutions than among FTFT undergraduates attending public institutions. About a third of FTFT undergraduates attending public 4-year (38 percent) and private non-profit 4-year (33 percent) institutions received Pell or other Federal Grants in 2015, compared with 72 percent of those attending private for-profit 4-year institutions. About half (56 percent) of FTFT undergraduates attending public 2-year institutions, but three-fourths of those attending private non-profit 2-year (74 percent) and private for-profit 2-year (74 percent) institutions received Federal Grants.

Indicator 2c shows that the share of FTFT undergraduate students receiving Pell or other Federal Grants was higher in 2015 than in 2009 in all institutional sectors. Since the end of the Great Recession, the percentage of FTFT undergraduates receiving Pell and other Federal Grants has fluctuated by a few percentage points each year in all sectors.

Equity Indicator 2d: How Does the Percentage Distribution of Students by Socioeconomic Status Vary by the Selectivity of the Institution?

Equity Indicator 2d presents the distribution of students by socioeconomic status (SES) in each selectivity category of the postsecondary institutional destinations of seniors in the high school graduating classes of 1972, 1982, 1992, and 2004.[58] As institutional selectivity increases, the share of students who come from the lowest SES quartile declines substantially. This pattern is consistent over time.

Using data from the Educational Longitudinal Study (ELS) for the high school class of 2004, of the approximately 2 percent of students overall (See Appendix Figure A-4) who planned to attend the "most competitive" institutions, 69 percent were from the highest SES quartile, 19 percent were from the third SES quartile, 8 percent were from the second SES quartile, and 4 percent were from the lowest SES quartile.[59] The representation of students in the third SES quartile who had institutional destinations in "most competitive" institutions increased from 10 percent in 1972 to 19 percent in 2004. The representation of students from the lowest SES quartile having institutional destinations at the "most competitive" institutions, however, remained virtually unchanged (5 percent in 1972 and 4 percent in 2004).

In both 1972 and 2004, among the students whose institutional destination was the "most competitive" colleges and universities, 88 percent came from the two highest family income quartiles, and 12 percent came from the bottom half of the SES distribution.

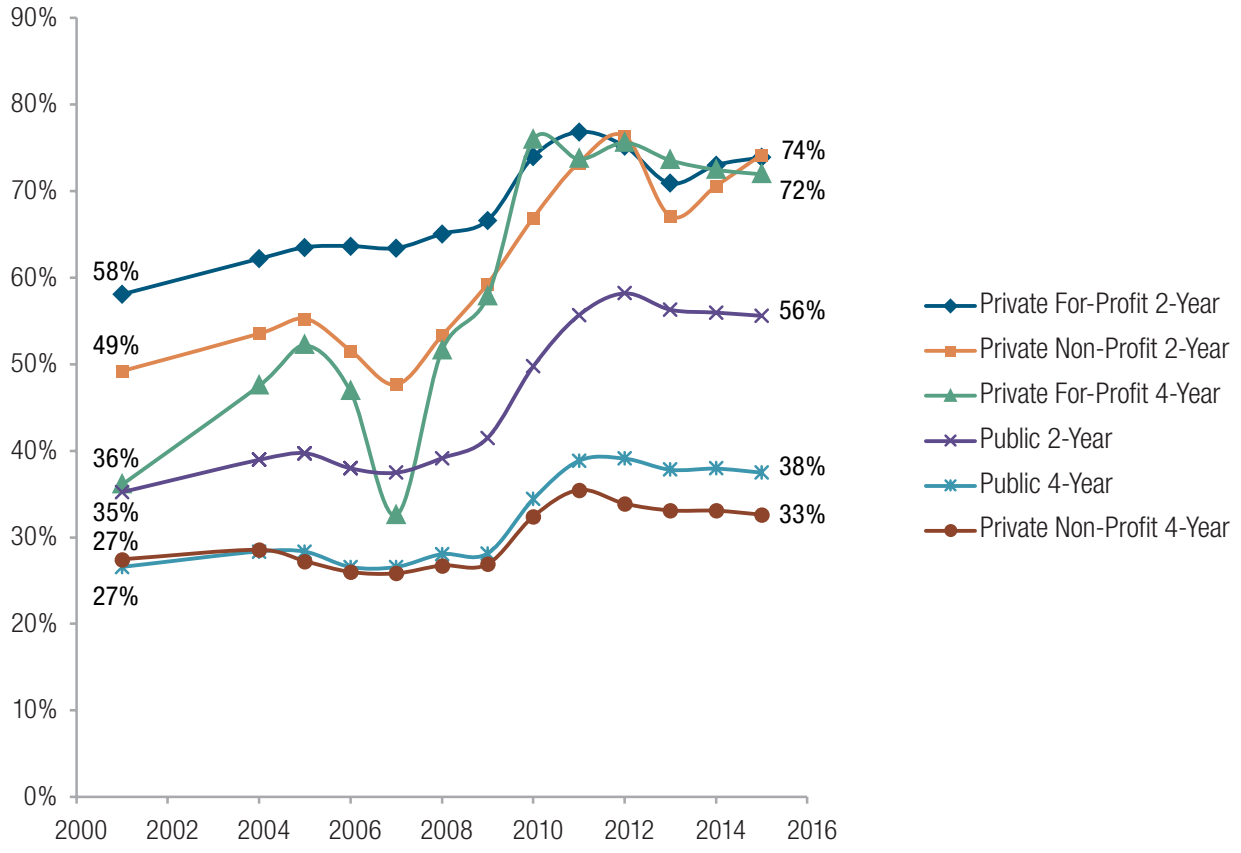
On the other hand, the likelihood that youth from the lowest SES quartile would be represented among those high school seniors having institutional destinations at public 2-year or less institutions increased (from 21 percent in 1972 to 25 percent in 2004) and also increased for private 2-year or less-than-2-year institutions (from 23

58 See Appendix A (Tables A-3 and A-4) for the data on which Indicator 2d is based. The data are adapted from the analysis of Bastedo and Jaquette (2011). Running in place: Low-income students and the dynamics of higher education stratification, *Educational Evaluation and Policy Analysis*, 33(3), 318-339, Appendix Table 6.
Retrieved from http://wwwpersonal.umich.edu/~bastedo/papers/EEPA-Appendix.pdf.

59 Across the four studies, the overall percent of graduating high school students who had institutional destinations among the "most competitive" colleges was 1.9 percent in 1972, 2.0 percent in 1982, 3.6 percent in 1992, and 2.4 percent in 2004. See Appendix A of this report for the distribution of institutional destinations by SES quartile as published by Bastedo and Jaquette (2011) as cited above.

percent to 31 percent). The representation of the lowest SES quartile among those seniors with no postsecondary education plans also increased over the period of 1972 to 2004 (from 38 percent to 42 percent).

Equity Indicator 2c: Percentage of full-time, first-time degree/certificate-seeking undergraduate students receiving Pell or other Federal Grants by institutional type and control: 2001 to 2015



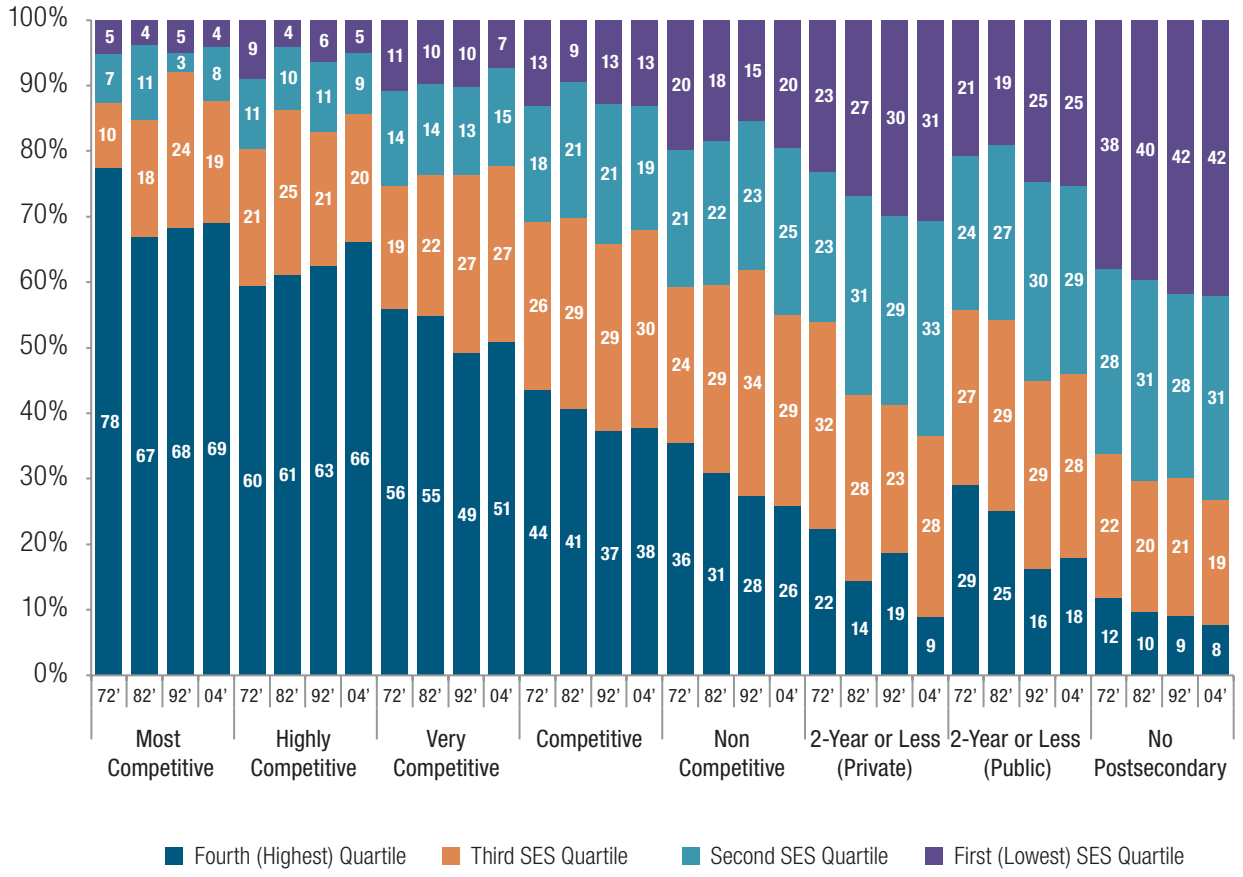
Indicator Status: High Inequality and Widening Gaps

In 2015, just over 70 percent of FTFT undergraduates attending private for-profit 4-year institutions, private for-profit 2-year institutions, and private non-profit 2-year institutions received Federal Grants, compared with just over half (56 percent) of students attending public 2-year institutions and about a third (38 percent) of students attending public 4-year institutions and private non-profit 4-year institutions (33 percent). The gap in the share of enrolled students at public 4-year institutions and private for-profit 4-year institutions receiving Federal Grants was 9 percentage points in 2001 (27 percent versus 36 percent) and 34 percentage points in 2015 (38 percent versus 72 percent).

NOTE: Federal Grant aid for undergraduates is comprised primarily of Pell Grants but also includes Federal Supplemental Educational Opportunity Grants (FSEOG) and grants from federal agencies other than the U.S. Department of Education such as the Department of Veterans Affairs and Department of Labor.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) (2017). *Digest of Education Statistics, 2017* [Table 331.20].

Equity Indicator 2d: Percentage distribution of each selectivity category of institutional destinations by parents' socioeconomic status (SES) for high school class cohorts: 1972, 1982, 1992, and 2004



Indicator Status: High Inequality and Persisting Gaps

Across the four high school longitudinal studies, among those graduating seniors planning to enroll in the "most competitive" institutions, 4 percent to 5 percent were from the lowest SES quartile and 67 percent to 78 percent were from the highest SES quartile.

NOTE: This Indicator draws from high school longitudinal studies survey data of institutional destination of high school seniors. Among the students from the class of 2004 who reported planning to enroll in a "Most Competitive" institution, 4 percent were from the lowest SES quartile and 69 percent were from the highest SES quartile. As the data in Appendix A (Figure A-4) reveal, in 2004 the percentage of students planning to attend the "Most Competitive" institutions ranged from 0.5 percent among the first (lowest SES quartile) to 6.2 percent among the fourth (highest SES quartile). Only 2 percent of all students planned to attend a "Most Competitive" institution in 2004.

SOURCE: U.S. Department of Education, NCES, NLS; HS&B, NELS, and ELS; Adapted from Bastedo, M. N., & Jaquette, O. (2011). Running in place: Low-income students and the dynamics of higher education stratification, *Educational Evaluation and Policy Analysis*, 33(3), 318-339. Retrieved from http://www-personal.umich.edu/~bastedo/papers/EEPA-Appendix.pdf Used with permission. See Appendix A.

Equity Indicator 2e: How Does the Average Percentage of Students Receiving Pell or Other Federal Grants Vary by Institutional Competitiveness?

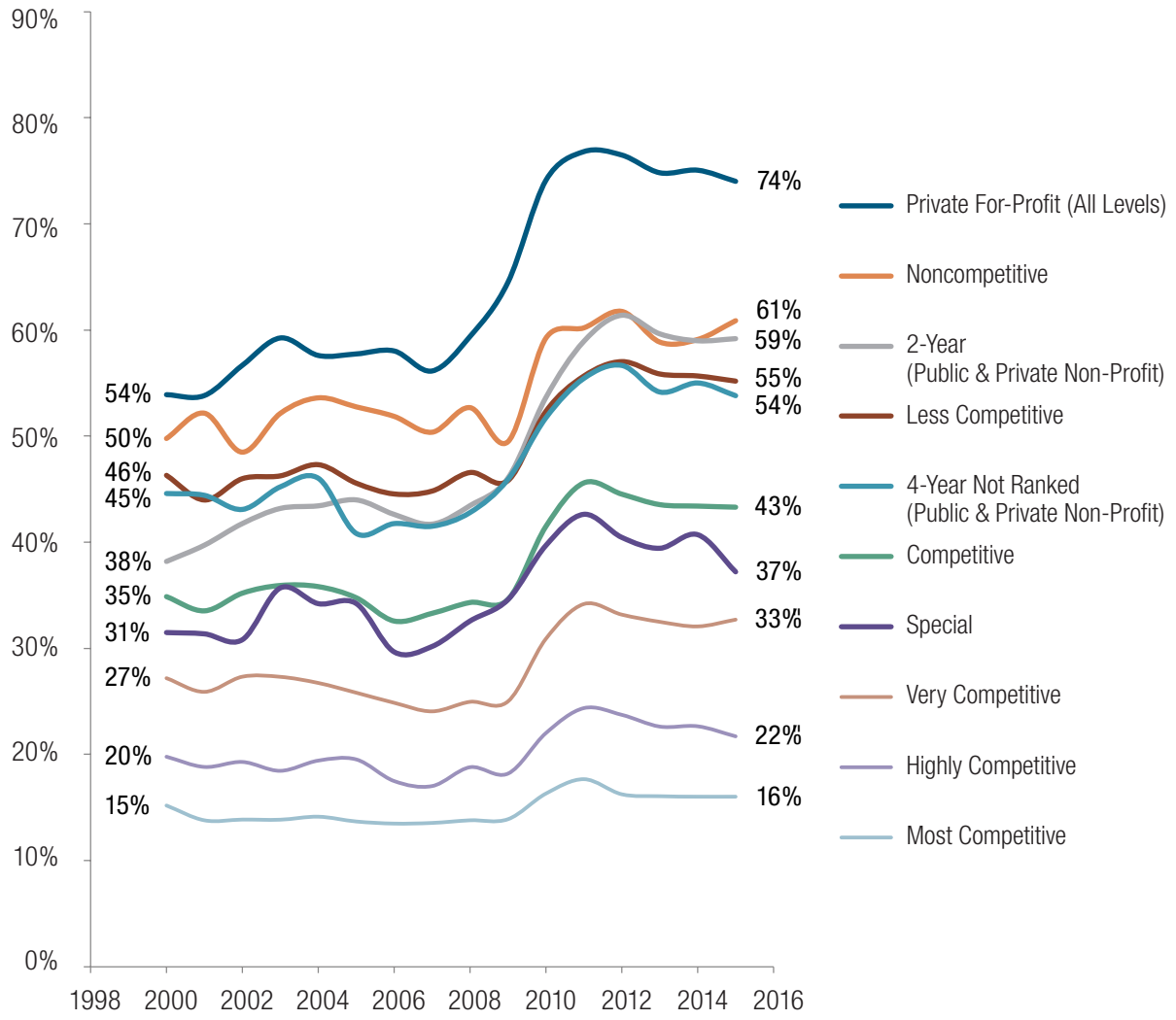
Using IPEDS data combined with the 2016 Barron's Admissions Competitiveness Index, Indicator 2e shows the average percent of first-time (FTFT) undergraduates who received Pell or other Federal Grants from academic years 1999-2000 to 2014-2015 by institutional admissions competitiveness.

Indicator 2e shows a consistent negative association between the average percent of students who receive Pell or other Federal Grants and the selectivity of the institution. As institutional competitiveness increases, the institutional average percentage of students receiving Federal Grants decreases. In 2014-2015, only 16 percent of students enrolled at the "Most Competitive" institutions received Pell or other Federal Grants, compared with 61 percent of students enrolled at "Noncompetitive" institutions.

Although the representation of students receiving Federal Grants has increased across all institutional categories, particularly between 2008 and 2011, differences in average rates of Federal Grant recipients by institutional selectivity have also increased over time. The average percentage of students receiving Federal Grants at the "Most Competitive" institutions increased by just one percentage point between 1999-2000 and 2014-15 (from 15 percent to 16 percent). Larger percentage point increases occurred over this period at 2-year public and private, not-for-profit institutions (from 38 percent to 59 percent) and "Noncompetitive" institutions (from 50 percent to 61 percent). The average percent of students who were Federal Grant recipients at 2-year and 4-year institutions in the For-Profit Sector[60] increased from 54 percent in 1999-2000 to 74 percent.

60 We include only public and private not-for-profit institutions in the categories of Barron's rankings. A small number of for-profit institutions are ranked by Barron's (24 institutions in 2014-15), but we include these institutions in the for-profit sector.

Equity Indicator 2e: Average percentage of full-time, first-time degree/certificate seeking undergraduate students who were awarded Pell or other Federal Grants by institutional selectivity: 1999-2000 to 2014-2015



Indicator Status: High Inequality and Widening Gaps

The representation of low-income students declines, on average, as institutional selectivity increases. The gap in the average share of undergraduates receiving Pell or other Federal Grants at the "most competitive" and "less competitive" institutions widened from 31 percentage points (15 percent versus 46 percent) in 2000 to 39 percentage points (16 percent versus 55 percent) in 2015.

NOTE: Federal Grant aid is comprised primarily of Pell Grants, but also includes Federal Supplemental Educational Opportunity Grants (FSEOG) and grants from federal agencies other than the U.S. Department of Education such as the Department of Veterans Affairs and Department of Labor. Data represent institutional averages in each category.

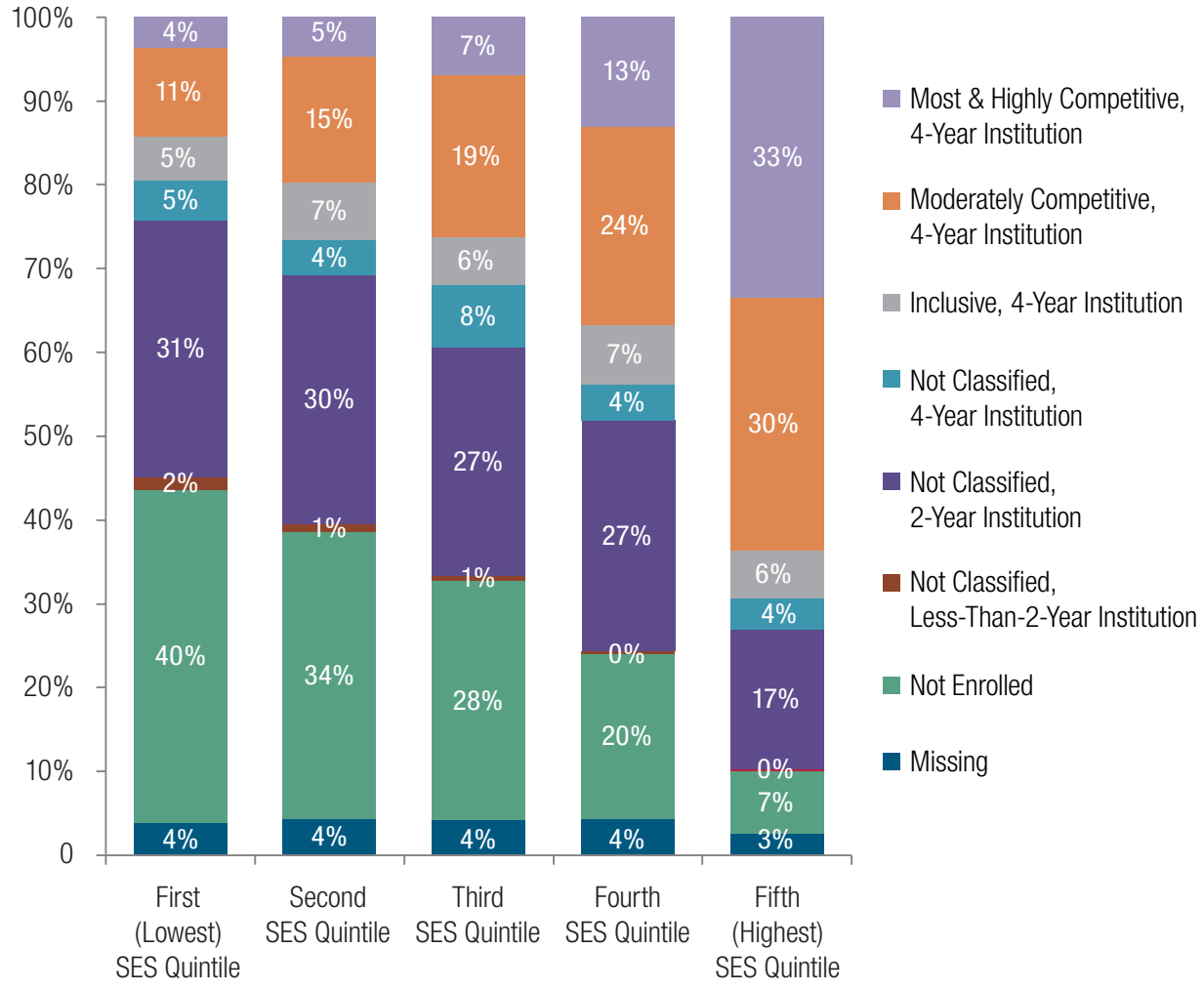
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2017, and Barron's Admissions Competitiveness Index, 2016.

Equity Indicator 2f: How Does Immediate College Enrollment by Competitiveness of the Institution Vary by Socioeconomic Status (SES)?

The NCES High School Longitudinal Study, combined with the Barron's Admissions Competitiveness Index, provides information on the competitiveness of the institutions attended by the 2013 high school graduation class. While the NCES classifications report institutional competitiveness somewhat differently than reported in Indicators 2d and 2e, Indicator 2f tells a similar story.

Among 9th graders in 2009, those from the highest SES quintile were 8 times as likely to go to a "most" or "highly" competitive institution as students from the lowest SES quintile (33 percent and 4 percent, respectively). Almost two-thirds (63 percent) of students from the highest SES quintile attended "most," "highly," or "moderately" competitive institutions, compared with 15 percent of those in the lowest SES quintile. About 7 percent of students from the highest quintile were not enrolled the fall after the scheduled high school graduation, compared with 40 percent of students in the lowest SES quintile.

Equity Indicator 2f: Percentage distribution of high school graduates by institutional selectivity of enrollment in the fall after scheduled high school graduation by SES quintile: 2013 graduates



Indicator Status: High Inequality

Four percent of students from the lowest SES quintile were enrolled in a "most" or "highly" competitive institution, compared with 33 percent of students from the highest SES quintile.

NOTE: This chart is based on those who graduated from high school in 2013 and excludes 9th graders in 2009 who had not yet completed a regular high school diploma or GED by 2013. Sample members were surveyed in summer or fall of 2013.

SOURCE: Tabulated using NCES PowerStats with data from the High School Longitudinal Study (HSLS:2009).

EQUITY INDICATOR 3:

DOES FINANCIAL AID ELIMINATE THE FINANCIAL BARRIERS TO PAYING COLLEGE COSTS?

In constant dollars in 1980 the maximum Federal Pell Grant covered 68 percent of average college costs. In 2016-17, the maximum Federal Pell Grant covered 25 percent of average college costs. If it had covered two-thirds of average college costs in 2016-17, the maximum Federal Pell Grant would have been $15,471 rather than $5,815.

Equity Indicator 3(a-c): Definitions

Indicator 3 tracks statistics related to college cost and the amount of cost covered by Federal Grant aid. We use the standard definitions developed by researchers and the federal government for federal student financial aid programs.

- **College Cost** is reported annually by institutions to the U.S. Department of Education through IPEDS and includes tuition, fees, and room and board. Average costs in this report are weighted by undergraduate full-time enrollment but do not take into account residency status. For public institutions, in-state tuition and required fees are used.
- **Cost of Attendance (COA)** is the total cost, on average, to attend college each year. The COA includes tuition and fees; on-campus room and board (or a housing and food allowance for off-campus students); and allowances for books, supplies, transportation, loan fees, and, if applicable, dependent care. It can also include other expenses like an allowance for the rental or purchase of a personal computer, costs related to a disability, and costs for eligible study-abroad programs. The COA is institutionally derived and used by the federal government in determining a student's financial need.
- **Total Federal Aid vs. Federal Grant Aid.** Total Federal Aid as defined by the U.S. Department of Education includes grants, loans, and work-study to help students pay for college. We use the term

Federal Grant Aid to include federal financial assistance for college that does not have to be repaid (e.g., federal loans) and does not have a work requirement (e.g., federal work-study).

- **Maximum Pell Grant** is the largest Pell Grant award allowed by federal law. The average Pell Grant award is lower than the maximum. The maximum Pell award for the AY2017–18 award year (July 1, 2017 to June 30, 2018) was $5,920, $105 more than the $5,815 maximum for the 2016-2017.
- **Expected Family Contribution (EFC)** is calculated by the federal government from information submitted on the Free Application for Federal Student Aid (FAFSA) and determines a student's eligibility for federal student aid. The EFC is determined using formulas mandated by Congress in the Higher Education Act of 1965, as amended, which take into account indicators of financial strength such as income, assets, and family size. The EFC is combined with the cost of attendance (COA) and the student's enrollment intensity (e.g., full-time, part-time) to determine the amount of the Federal Pell Grant award. Tuition may be used to calculate the amount of the Pell Grant award for students enrolled at low-tuition schools (if tuition is less than the current maximum Pell Grant). The lower the EFC, the greater a student's demonstrated financial need. The amount of the Federal Pell Grant award generally increases as the EFC decreases. An applicant with the minimum EFC of zero will generally receive the maximum Pell award up to the applicant's COA for the year. Proportionally smaller awards are made to part-time students.
- **Unmet Need** is the financial need remaining after the Expected Family Contribution (EFC) and all grants and other discounts (but not loans) are subtracted from the cost of attendance (COA).

Equity Indicator 3a(i to iv): What Are the Trends in Average College Costs?

Average college costs, weighted by full-time undergraduate enrollment, were 2.5 times higher (in constant 2016-17 dollars) in 2016-17 than in 1974-75. Indicator 3a(i) shows that the cost increases have largely occurred since 1980. In 1980 average costs were lower in constant dollars ($8,780) than in 1974-75 ($9,291). After 1980, average costs rose steadily to $23,091 in 2016-17.[61]

By comparison, U.S. median family income increased only 1.3 times (30 percent) between 1975 and 2016 (rising from $55,665 to $72,707 in constant 2016 dollars), with most of the increase occurring prior to 1999.[62] Median family income (in constant dollars) remained relatively flat from 1999 to 2007, when it was $71,024, and then declined during the Great Recession to a low of $65,051 in 2011. Since then, median family income has risen slowly, surpassing the 2007 level only in 2015 (median family income was $67,552 in 2014 and $72,707 in 2016).

Average college costs do not reflect student financial aid. Nonetheless, high college costs relative to family income levels contributes to observed differences by family income in whether individuals enter college (Indicator 1) and where individuals attend college (Indicator 2).[63]

Average costs were about twice as high at 4-year private non-profit and for-profit institutions than 4-year public institutions in both 1974-75 and 2016-17 ($15,949 vs. $7,715 and $41,468 vs. $23,091, respectively, in 2016-17 dollars). Costs were about twice as high at 2-year private institutions than at 2-year public institutions in 1974-75 and 2.5 times higher in 2016-17 ($12,139 vs. $6,274 and $24,882 vs. $10,091, respectively, in 2016-17 dollars).[64]

The difference in costs between 2-year and 4-year public colleges has increased substantially since 1974-75, with most of the increase occurring after 1980. In constant 2016-17 dollars, average costs at 4-year public institutions were 23 percent higher than 2-year public costs in 1974-75 ($7,715 vs. $6,274, respectively). By 2016-17, average costs were 93 percent higher for 4-year public institutions than 2-year public colleges ($19,488 vs. $10,091, respectively).

61 U.S. Department of Education, National Center for Education Statistics. (2017). *Digest of Education Statistics 2017* [Table 330 10].

62 See Appendix A, Figure A-1. In this report we refer to median family income for households in which at least one householder is over 25 as "median income." Median family income data are in 2016 CPI-U-RS (Consumer Price Index research series using current methods) dollars. The median income for householders over 25 is higher than that for "all households."

63 For Census historical data on income see: https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html.

64 U.S. Department of Education, National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 330.10]. https://nces.ed.gov/programs/digest/d17/tables/dt17_330.10.asp.
"Private" includes private non-profit and private for-profit institutions. Most of the 4-year private enrollment is in the non-profit sector, and most of the 2-year private enrollment is in the for-profit sector. Data are for the entire academic year and represent average total charges for full-time attendance. Tuition and fees are weighted by the number of full-time equivalent undergraduates, but are not adjusted to reflect student residency status.

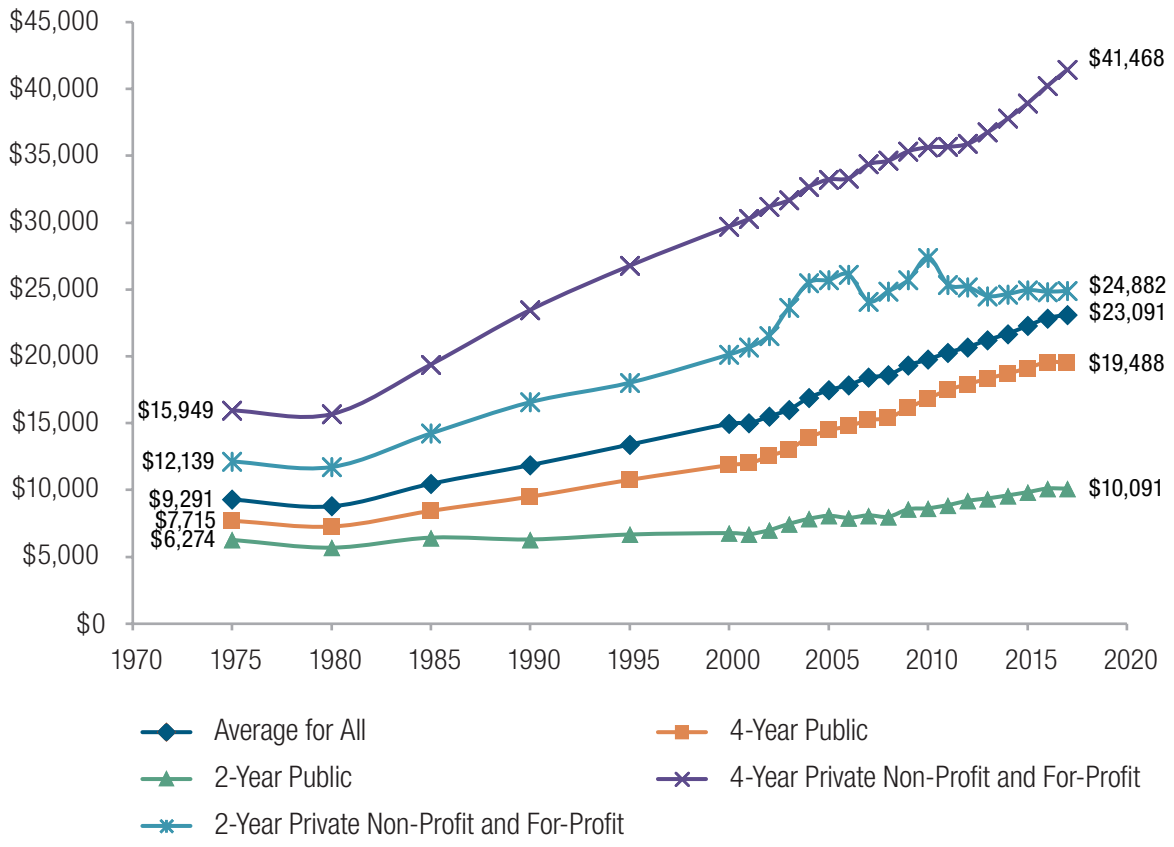
Between 1974-75 and 2015-16, average costs for 4-year public postsecondary institutions increased 2.5 times in constant dollars while average costs for 2-year public institutions increased 1.6 times. Over the same period, average costs for 4-year private institutions rose 2.6 times and average private 2-year costs rose 2 times.

Average College Costs Vary by State. States differ in the organization and structure of higher education, particularly with regard to the availability of public and private 2-year and 4-year institutions, degree of state support for higher education, and in the amount and characteristics of financial aid for students. Indicators 3a(ii) to 3a(iv) show average college costs for full-time undergraduates, weighted by enrollment, by state as reported by NCES.[65]

Indicator 3a(ii) shows that average in-state tuition and fees and room and board costs at 4-year public institutions in 2016-17 ranged from less than $15,000 in Utah, Wyoming, Idaho, and Florida to more than $25,000 in Pennsylvania, New Jersey, Vermont, and New Hampshire. Indicator 3a(iii) shows that, at 4-year private institutions, average costs (tuition and fees, room and board) varied from $13,010 in Idaho and $15,212 in Utah to more than $55,000 in the District of Columbia and Massachusetts. For 2-year public institutions, Indicator 3a(iv) shows that average tuition and fees (not including room and board costs) were $1,262 in California and $1,590 in New Mexico, compared with $7,002 in New Hampshire.

65 Additional breakouts by level and control and in-state and out of state are available at the following NCES website: https://nces.ed.gov/programs/digest/d17/tables/dt17_330.20.asp?current=yes.

Equity Indicator 3a(i): Average college costs (undergraduate tuition, fees, and room and board) charged for full-time students in degree-granting postsecondary institutions by institutional level and control: 1974-75 to 2016-17 (constant 2016-17 dollars)



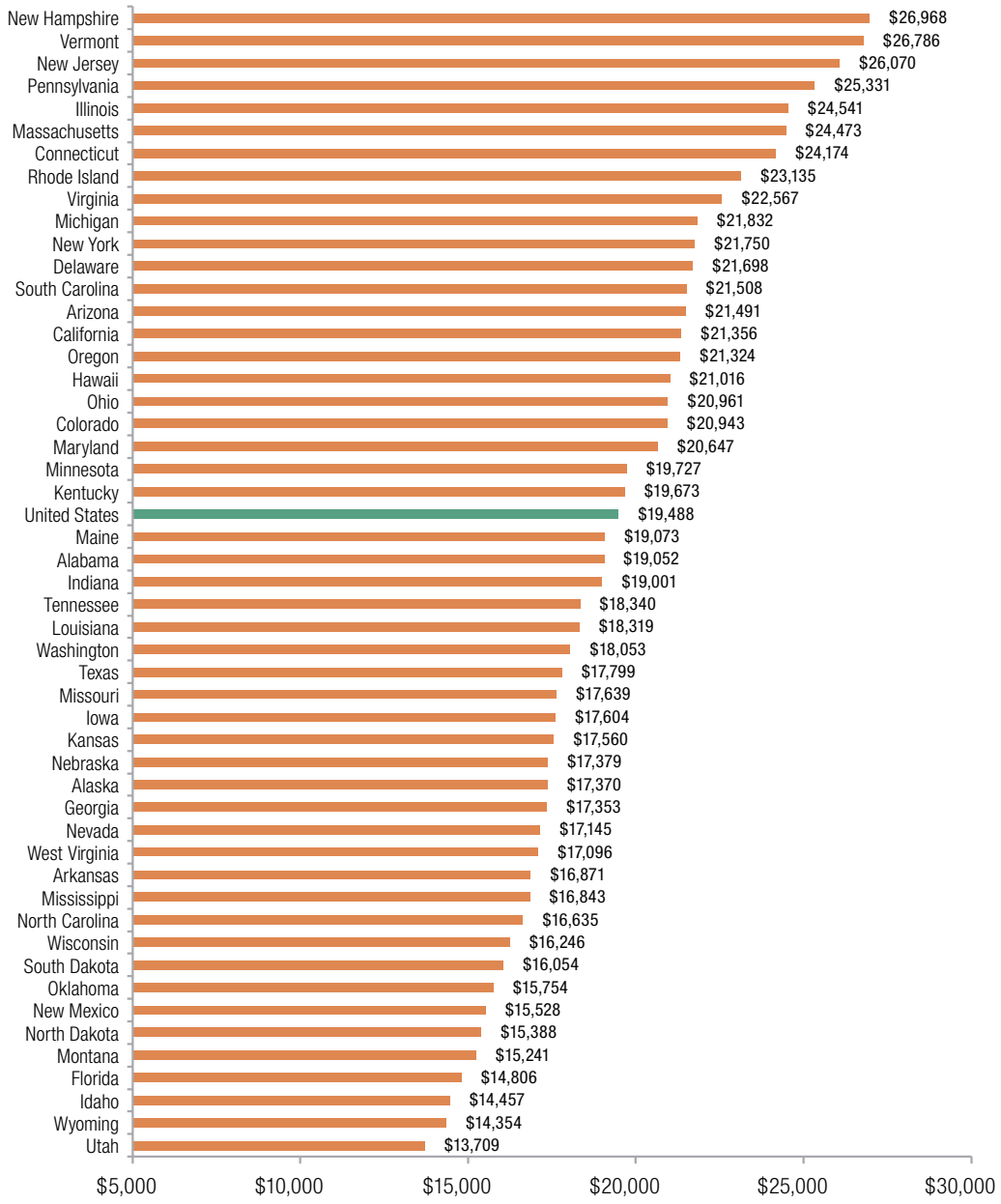
Indicator Status: Large Increases in College Costs and Growing Difference in Costs between Institution Sectors.

In constant dollars, between 1974-75 and 2015-16, average costs for 4-year public postsecondary institutions increased 2.5 times while average costs for 2-year public institutions increased 1.6 times.

NOTE: Data are for the entire academic year and are average charges for full-time students. Tuition and fees were weighted by the number of full-time-equivalent undergraduates, but not adjusted to reflect student residency. Room and board are based on full-time students. Data through 1995-96 are for institutions of higher education, while later data are for degree-granting institutions. Degree-granting institutions grant associate's degrees or higher and participate in Title IV federal financial aid programs. The degree-granting classification is very similar to the earlier higher education classification, but includes more 2-year colleges and excludes a few higher education institutions that did not grant degrees. Because of the small number of institutions, data for private 2-year colleges must be interpreted with caution. Some data have been revised from previously published figures. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 330. 10]. https://nces.ed.gov/programs/digest/d17/tables/dt17_330.10.asp?current=yes.

Equity Indicator 3a(ii): Average 4-year public college costs (undergraduate tuition, fees, and room and board) charged for full-time in-state students by state: 2016-17



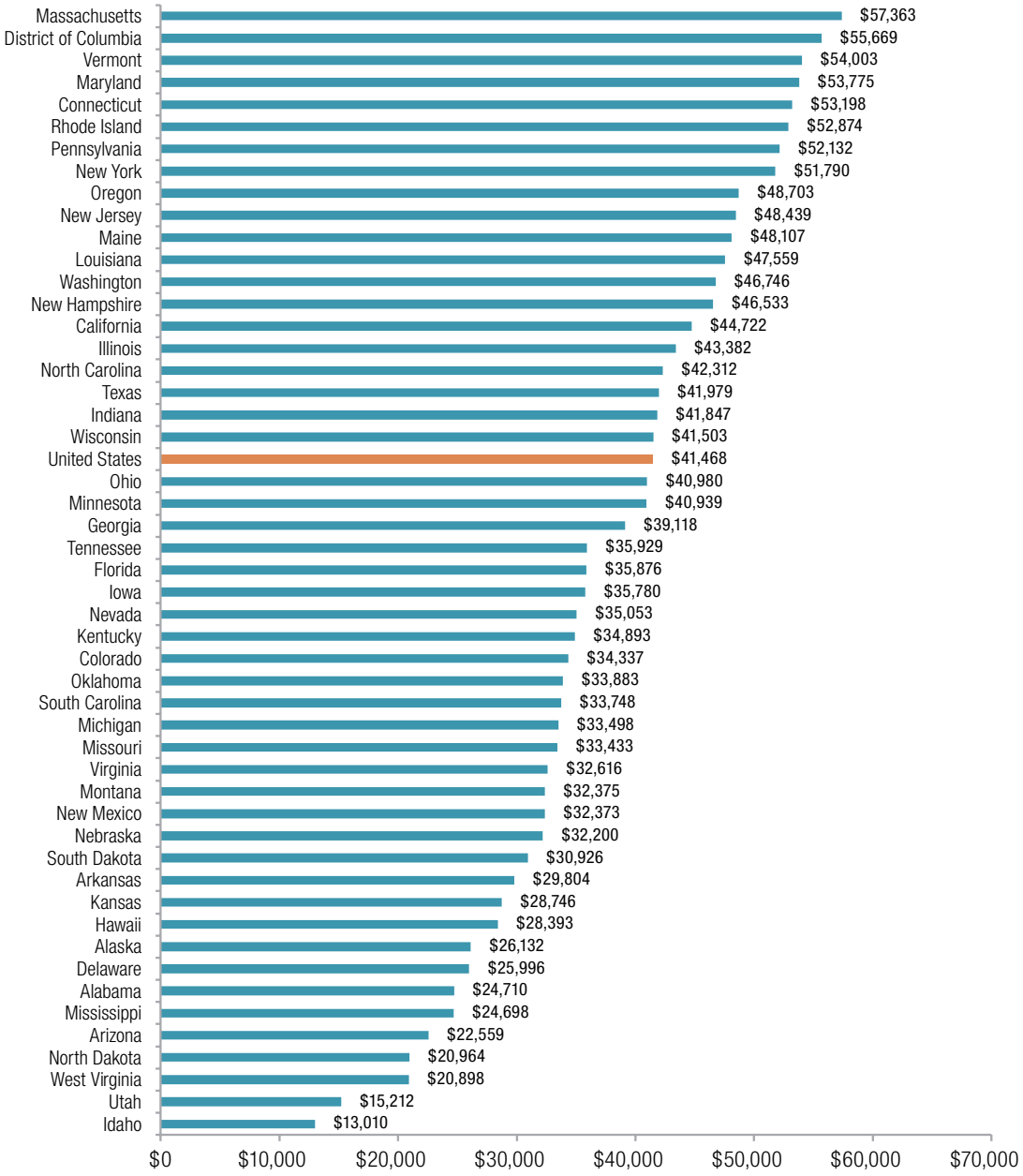
Indicator Status:

Wide variation in average costs across states.

NOTE: Data are for the entire academic year and are average charges for full-time students. Tuition and fees are weighted by the number of full-time-equivalent undergraduates, but not adjusted to reflect student residency. Room and board are based on full-time students.

SOURCE: U.S. Department of Education, National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 330.20]. https://nces.ed.gov/programs/digest/d17/tables/dt17_330.20.asp?current=yes.

Equity Indicator 3a(iii): Average 4-year private college costs (undergraduate tuition, fees, and room and board) charged for full-time students by state: 2016-17



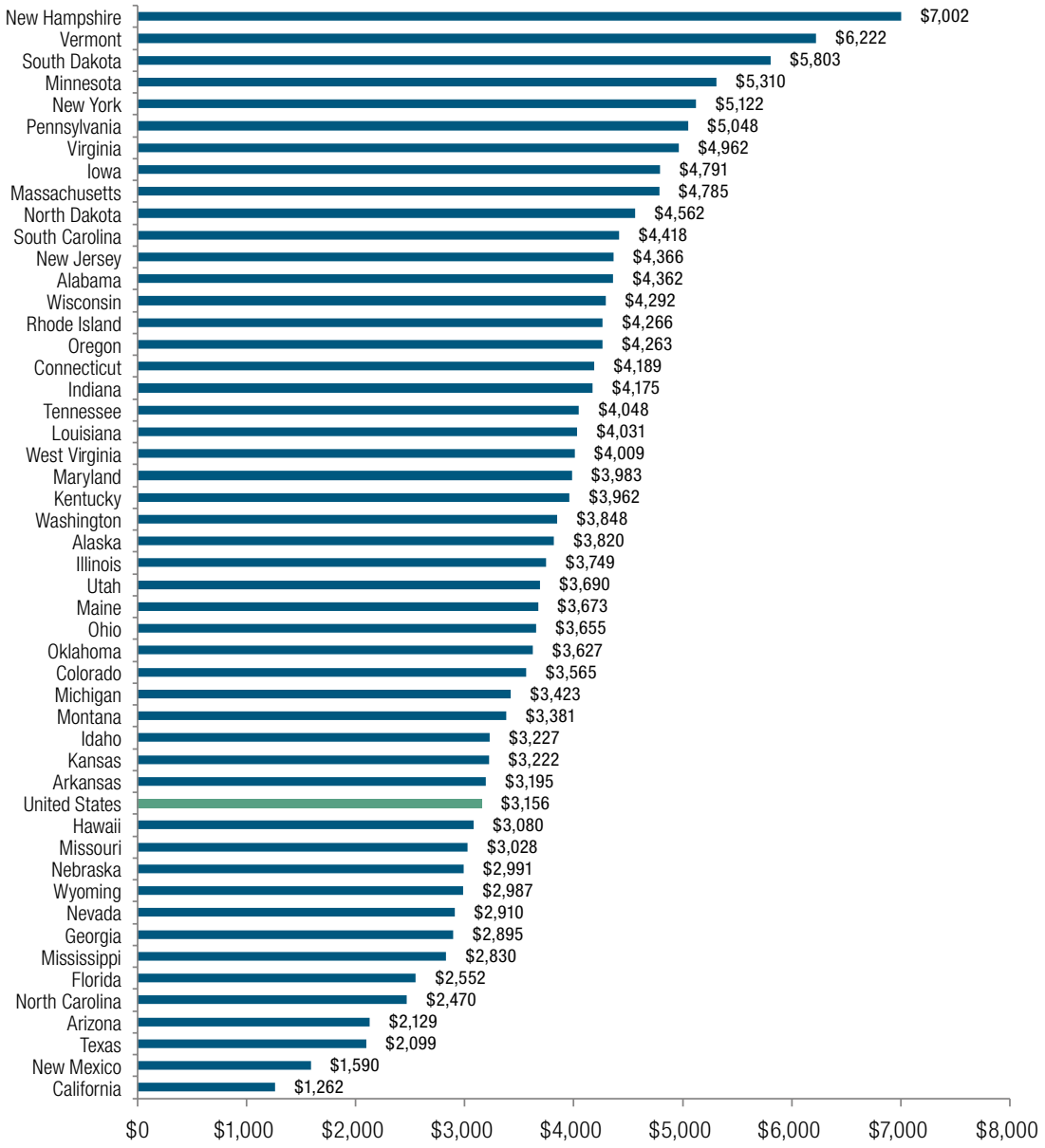
Indicator Status:

Wide variation in average costs across states.

NOTE: Data are for the entire academic year and are average charges for full-time students. Tuition and fees are weighted by the number of full-time-equivalent undergraduates, but not adjusted to reflect student residency. Room and board are based on full-time students. Figure excludes Wyoming as 4-year private costs are not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 330.20]. https://nces.ed.gov/programs/digest/d17/tables/dt17_330.20.asp?current=yes.

Equity Indicator 3a(iv): Average 2-year public college costs (undergraduate tuition and fees) charged for full-time in-state students by state: 2016-17



Indicator Status:

Wide variation in average costs across states.

NOTE: Data are for the entire academic year and are average charges for full-time students. Tuition and fees are weighted by the number of full-time-equivalent undergraduates, but not adjusted to reflect student residency. Figure excludes Delaware and District of Columbia as these costs are not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 330.20]. https://nces.ed.gov/programs/digest/d17/tables/dt17_330.20.asp?current=yes.

Equity Indicator 3b(i to iii): What are the Maximum and Average Pell Grant Awards Relative to Average College Costs?

The maximum Federal Pell Grant is set by Congress and in recent years has been linked to the Consumer Price Index (CPI).[66] The average Pell Grant award is lower than the maximum Pell Grant. The actual Pell award is based on tuition and fees and intensity of enrollment, as well as a student's Expected Family Contribution (EFC). In 2015-16, 27 percent of recipients received the maximum award.[67]

Indicator 3b(i) shows trends in average college costs, maximum Pell Grant award, and average Pell Grant award, in constant 2016-17 dollars, from 1974-75 to 2016-17. Since 1975, average college costs have increased in 2016-17 constant dollars from $9,291 to $23,091. Over the same period, the maximum Pell award increased from $4,831 to $5,815 and the average Pell award increased from $3,200 to $3,740 (all in constant dollars).

Indicator 3b(ii) shows trends in the percentage of average costs covered by the maximum Pell Grant. In constant 2016-17 dollars, the percent of average college costs covered by the maximum Pell Grant has declined over time, falling from a high of 65 percent in 1975-76 and 68 percent in 1980, to 41 percent by 1987. Since then the percentage of average costs covered by the maximum Pell Grant has fluctuated, but declined from 39 percent in 1988 to 26 percent in 2007, and was at 25 percent in 2016-17. The downward trend over time has occurred because increases in the maximum Pell Grant between 1974-75 and 2016-2017 (20 percent in constant dollars) have not kept pace with increases in average college costs (148 percent in constant 2016-17 dollars).

Early Congressional committee supporters expressed hope that the Pell Grant would be funded at a level to cover close to three-fourths of the average yearly costs at public colleges.[68] This goal was never reached, but the maximum Pell awards came closer to this goal in the early years of the program than in recent years.

Indicator 3b(iii) shows the actual maximum Pell Grant award compared with what the maximum would be if it were to cover two-thirds of average costs. If it had covered two-thirds of average college costs in 2016-17, the maximum Pell would have been $15,471 rather than $5,815.

The average costs considered in Indicator 3b include tuition and required fees, and room and board charges, but not transportation or other costs. The College Board reports student budgets for full-time students based on their Annual Survey of College Costs.[69] The student budgets for 2017-18 including tuition and fees, room and board, books and supplies transportation and other expenses as published by the College Board were:

- $17,580 at 2-year public institutions for commuter students within district;
- $25,290 at 4-year public institutions for in-state students living on campus;
- $40,940 at 4-year public institutions for out-of-state students living on campus, and
- $50,900 at 4-year private non-profit institutions for students living on campus.

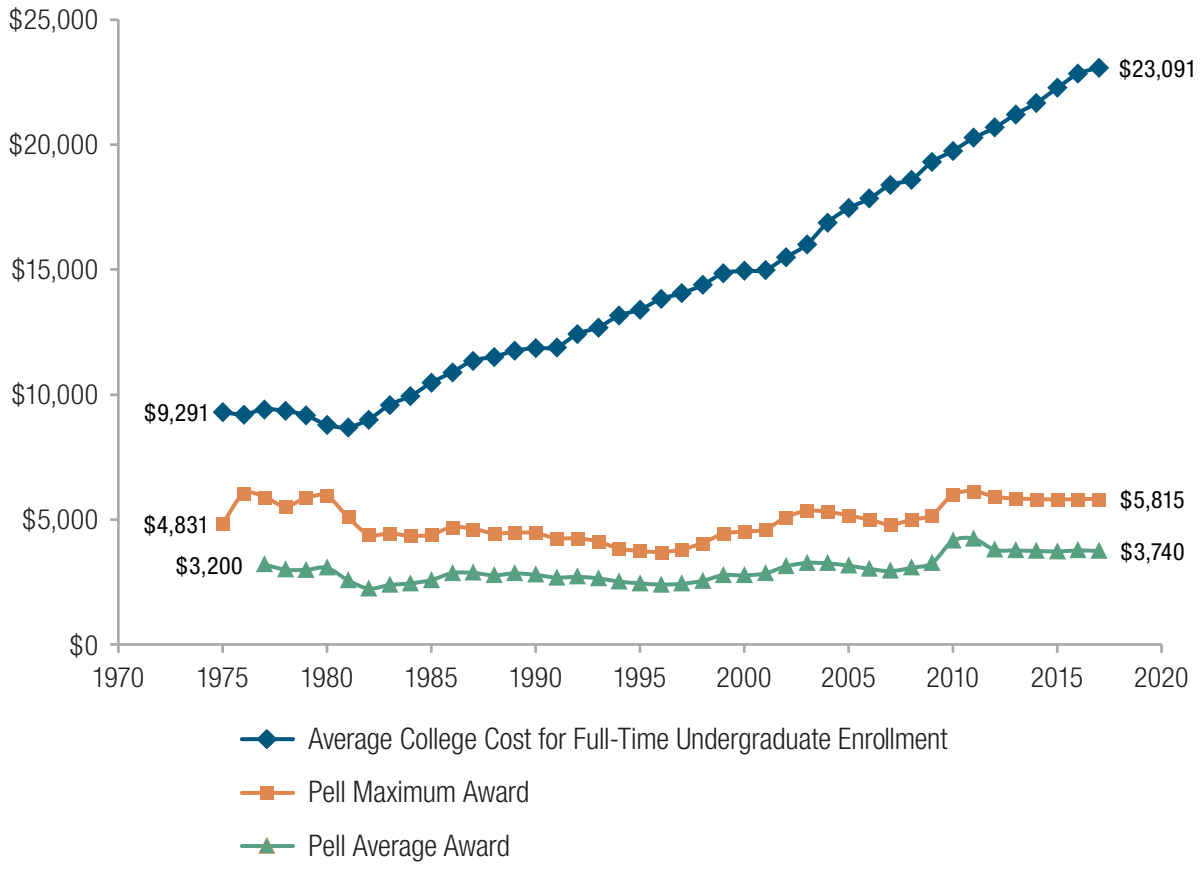
66 For the 2017-2018 Award Year, the Higher Education Act of 1965, as amended (HEA), provides for an automatic annual increase of the maximum Pell Grant award based on estimated changes in the Consumer Price Index (CPI). This increase results in a 2017-2018 maximum Pell Grant award amount of $5,920, $105 more than the $5,815 maximum for the 2016-2017 Award Year.

67 College Board (2017). *Trends in student aid*. https://trends.collegeboard.org/student-aid/figures-tables/maximum-and-average-pell-grants-over-time.

68 Mensel, F. (2013). Birth of the Pell Grant: the community college role, *Reflections on Pell, 5-55*, Council for Opportunity in Education, Pell Institute for the Study of Opportunity in Education. http://www.pellinstitute.org/downloads/publications-Reflections_on_Pell_June_2013.pdf.

69 College Board (2017). Annual Survey of Colleges, Figure 1 Average Estimated Full-Time Undergraduate Budgets (Enrollment Weighted) by Sector, 2017-2018. Obtained from https://www.trends.collegeboard.org.

Equity Indicator 3b(i): Average college costs for full-time undergraduate enrollment and maximum and average Pell Grant awards: 1974-75 to 2016-17 (constant 2016-17 dollars)



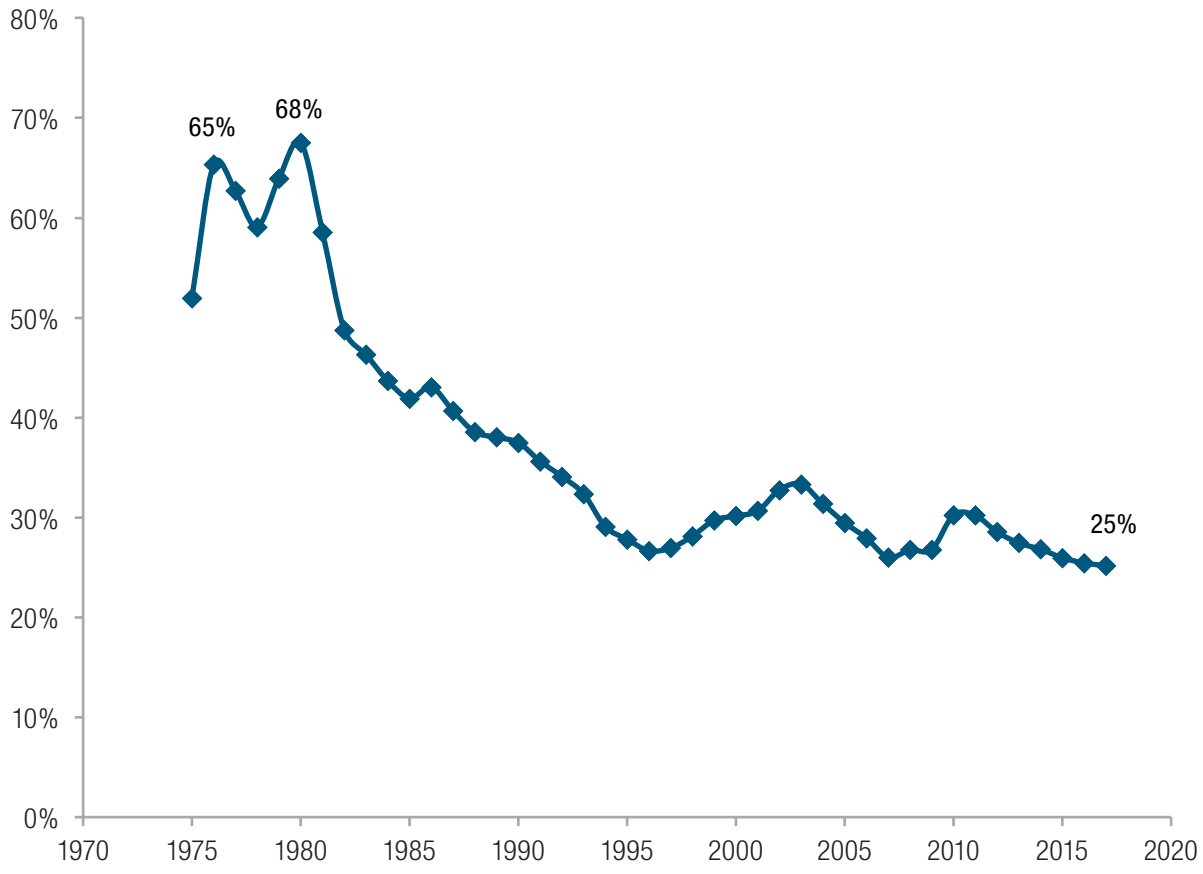
Indicator Status: Widening Gap between Average College Costs and Pell Awards

From 1974-75 to 2016-2017, average college costs increased by 148 percent, while the maximum Pell Grant increased by 20 percent (in constant dollars).

NOTE: College costs are weighted by undergraduate total full-time enrollment at all types of institutions, as reported by NCES. https://nces.ed.gov/programs/digest/d17/tables/dt17_330.10.asp?current=yes.
College costs are reported in Equity Indicator 3a and represent the average for all types of institutions. College costs include tuition, fees, and room and board. The maximum Pell Grant is the highest amount allowed by law. The average Pell Grant awarded each year is lower than the maximum, as most students do not receive the maximum. In 2015-16, 27 percent of recipients received the maximum Pell Grant award.

SOURCE: U.S. Department of Education (2017). *Summary Pell Grant Statistics for Cross-Year Comparison, Pell End of Year Report*, various years https://www2.ed.gov/finaid/prof/resources/data/pell-data.html College Board, https://www. trends.collegeboard.org/student-aid/figures-tables/maximum-and-average-pell-grants-over-time; National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 330.10].

Equity Indicator 3b(ii): Percentage of average college costs covered by the maximum Pell Grant: 1974-75 to 2016-17 (constant 2016-17 dollars)



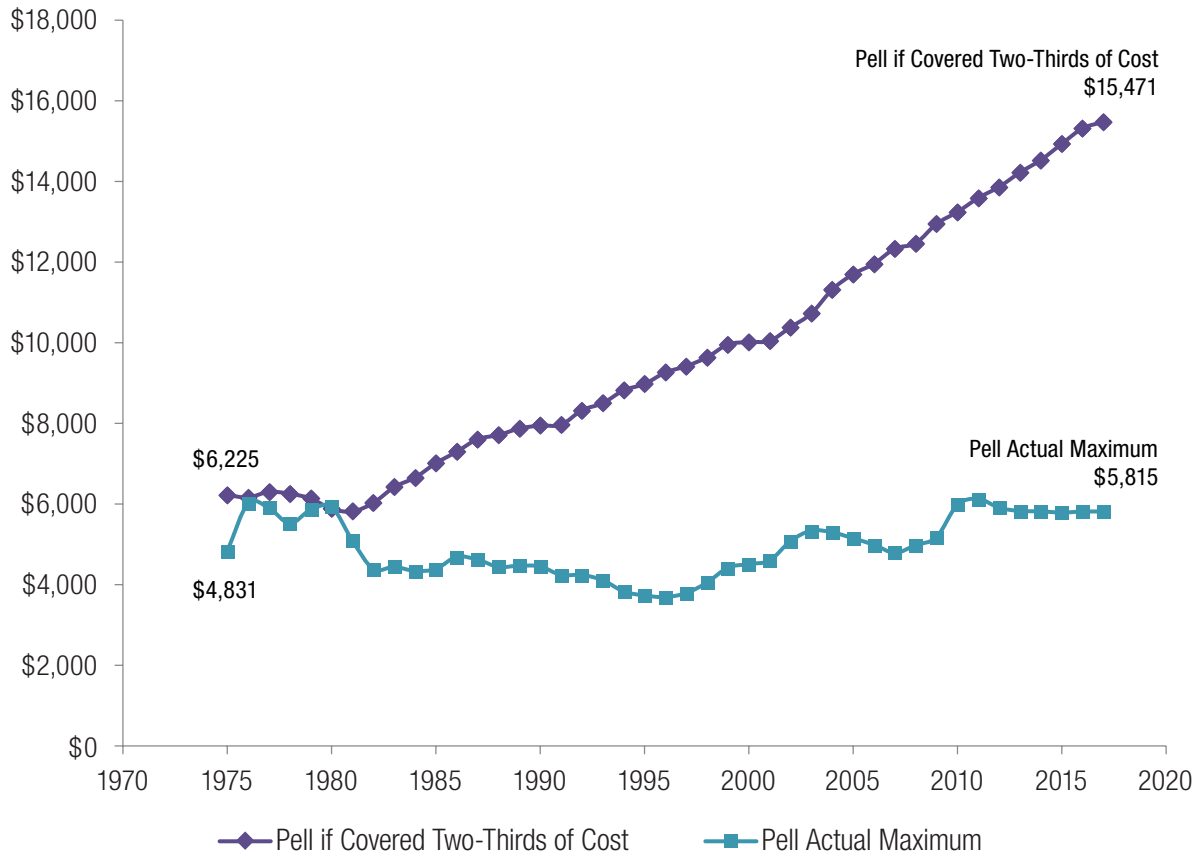
Indicator Status: Declining Opportunity

In constant 2016-17 dollars, the percentage of average college costs covered by the maximum Pell Grant declined from 65 percent in 1975-76 to 27 percent in 1995-96. In 2016-17, the maximum Pell Grant covered 25 percent of college costs.

NOTE: Figure 3b(ii) shows the maximum Pell Grant as a percent of average college cost weighted by full-time undergraduate enrollment, among all types of institutions.

SOURCE: U.S. Department of Education (2017). *Summary Pell Grant Statistics for Cross-Year Comparison, Pell End of Year Report*, various years https://www2.ed.gov/finaid/prof/resources/data/pell-data.html. College Board, https://www.trends.collegeboard.org/student-aid/figures-tables/maximum-and-average-pell-grants-over-time. National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 330.10].

Equity Indicator 3b(iii): Maximum Pell Grant if the Pell Grant maximum covered two-thirds of average cost of attendance: 1974-75 to 2016-17 (constant 2016-17 dollars)



Indicator Status: Reduced Opportunity

The maximum Pell Grant in 2016 would be $15,471 (in constant 2016-17 dollars) rather than $5,815 if it covered about two-thirds of college costs as in 1976 and 1980.

NOTE: Figure 3b(iii) shows what the maximum Pell Grant would need to be to cover two-thirds of the average college costs for a given year. College Cost is reported annually by institutions to the U.S. Department of Education through IPEDS and includes tuition, fees, and room and board. Average costs in this report are weighted by undergraduate full-time enrollment but do not take into account residency status. For public institutions, in-state tuition and required fees are used.

SOURCE: U.S. Department of Education (2017). *Summary Pell Grant Statistics for Cross-Year Comparison, Pell End of Year Report*, various years https://www2.ed.gov/finaid/prof/resources/data/pell-data.html. College Board, https://trends.collegeboard.org/student-aid/figures-tables/maximum-and-average-pell-grants-over-time; National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 330.10].

Indicator 3c: What is the Unmet Financial Need for Dependent Undergraduates by Family Income Quartile?

Indicator 3c (Indicator 3d in 2017 *Indicators* report) displays trends in "unmet need" for dependent full-time undergraduates by family income quartile. We define unmet need as the cost of attendance (COA) remaining after subtracting Expected Family Contribution (EFC) and all grants and other discounts that do not have to be repaid. Discounts, as measured here, do not include loans. The data in Indicator 3c are from the National Postsecondary Student Aid Study (NPSAS) in years 1990, 1993, 1996, 2000, 2004, 2008, 2012 and reflect the family income quartiles of the nationally representative samples of the study in the data collection year.[70]

Although more likely to attend community colleges and other institutions with lower average COA, dependent full-time undergraduates in the lowest family income quartile had an average unmet need of $8,221 in 2012. Students in the second-lowest family income quartile averaged $6,514 in unmet need, while students in the third quartile averaged $1,047 in unmet need. By comparison, students in the highest-income quartile had an average surplus of $13,950 after Expected Family Contribution (EFC) and grants were deducted from average cost of attendance.[71] Average unmet financial need was more than twice as high in 2012 than in 1990 (in constant 2012 dollars) for full-time dependent undergraduates in the lowest family income quartile ($8,221 vs. $3,495, respectively).

70 The data files for the 2015-16 NPSAS were unavailable at the time this Indicator was prepared.

71 Over this period, the percent of students with an Expected Family Contribution (EFC) of zero also increased. According to NPSAS:2012, 23 percent of dependent students had an EFC of zero, up from 10 percent in 2000. The percent of families with an EFC greater than the cost of attendance decreased from 28 percent in 2000 to 17 percent in 2012 (NPSAS:2000 and NPSAS:2012).

Equity Indicator 3c: Unmet financial need of dependent full-time undergraduates by family income quartile: 1990 to 2012

Indicator Status: High Inequality

For dependent full-time undergraduates in the lowest family-income quartile, average unmet financial need more than doubled between 1990 and 2012 (in constant 2012 dollars).

NOTE: Data points are for years when NPSAS was conducted: 1990, 1993, 1996, 2000, 2004, 2008, and 2012. Unmet need is defined as what remains after Expected Family Contribution (EFC) and all discounts and grants that do not have to be repaid are subtracted from average COA. Loans are not considered in this calculation.

SOURCE: U.S. Department of Education, National Postsecondary Student Aid Study (NPSAS), 1990, 1993, 1996, 2000, 2004, 2008, and 2012.

EQUITY INDICATOR 4:

HOW DO STUDENTS IN THE UNITED STATES PAY FOR COLLEGE?

Since 1980, the percent of college costs paid by state and local public funds has decreased and the percent of costs paid by students and their families has increased. Although low-income students, on average, attend lower-priced colleges, the average price of attendance represented 84 percent of average family income for those in the lowest family income quartile in 2012 after all grant aid is subtracted.

Equity Indicator 4(a-e): Definitions

Indicator 4 reports how students and families pay college costs. The major sources of data are the Bureau of Economic Analysis (BEA) National Income and Product Accounts (NIPA) and the National Postsecondary Student Aid Studies (NPSAS) that have been conducted at approximately 4-year intervals from 1990 to 2016.[72]

- **Data on Sources for Financing Public and Private Higher Education** are from the BEA's National Income and Product Accounts (NIPA). Available since 1952, these data identify the percent of total funding from State and Local Government Expenditures, Federal Government Expenditures, and Personal Consumption Expenditures. Personal Consumption Expenditures represent costs that are borne by students and their families.
- **Net Price** is cost of attendance (COA) minus all grant aid. The Higher Education Act of 1965 (HEA), as amended, requires the U.S. Department of Education to make publicly available information about the average net price of each postsecondary institution that participates in Title IV federal student aid programs. The HEA defines institutional net price as "the average yearly price actually charged to first-time, full-time undergraduate students receiving student aid at an institution of higher education after deducting aid." Essentially, net price moves beyond an institution's "sticker price" and provides students and families with an idea of how much a first-time, full-time undergraduate student who was awarded aid pays to attend a particular institution after grant or scholarship aid, but not loan aid, is subtracted from the published cost of attendance (COA).

72 Data files from NPSAS 2016 were not released in time for this publication.

- **Net Price of Attendance as a Percent of Average Family Income** uses data from the various NPSAS 1990-2012 surveys. Average family income for a quartile reflects the distribution of the NPSAS sample in the study year for dependent undergraduate students. For the 2012 NPSAS average family incomes for each quartile were as follows: First (lowest), $16,311; Second, $49,837; Third, $89,119; Fourth (highest), $172,729.
- **Dependent Student** status has a particular definition for financial aid eligibility and is defined as a student who is an undergraduate, unmarried, not a veteran, and younger than 24 years of age. For dependent students, parents' income and assets are used to determine the Expected Family Contribution (EFC) even if the parents have no intention of helping pay students' college expenses. In exceptional cases (e.g., parental child abuse, parental communication with the child prohibited by a court), the institution's financial aid office may change a student's status from dependent to independent.
- **Debt Burden** is the average cumulative debt for those graduating with a bachelor's degree in a given year. Data are from the NPSAS surveys administered between 1990 and 2012 and the TICAS Project on Student Debt annual survey. We report debt burden among those who have any debt.

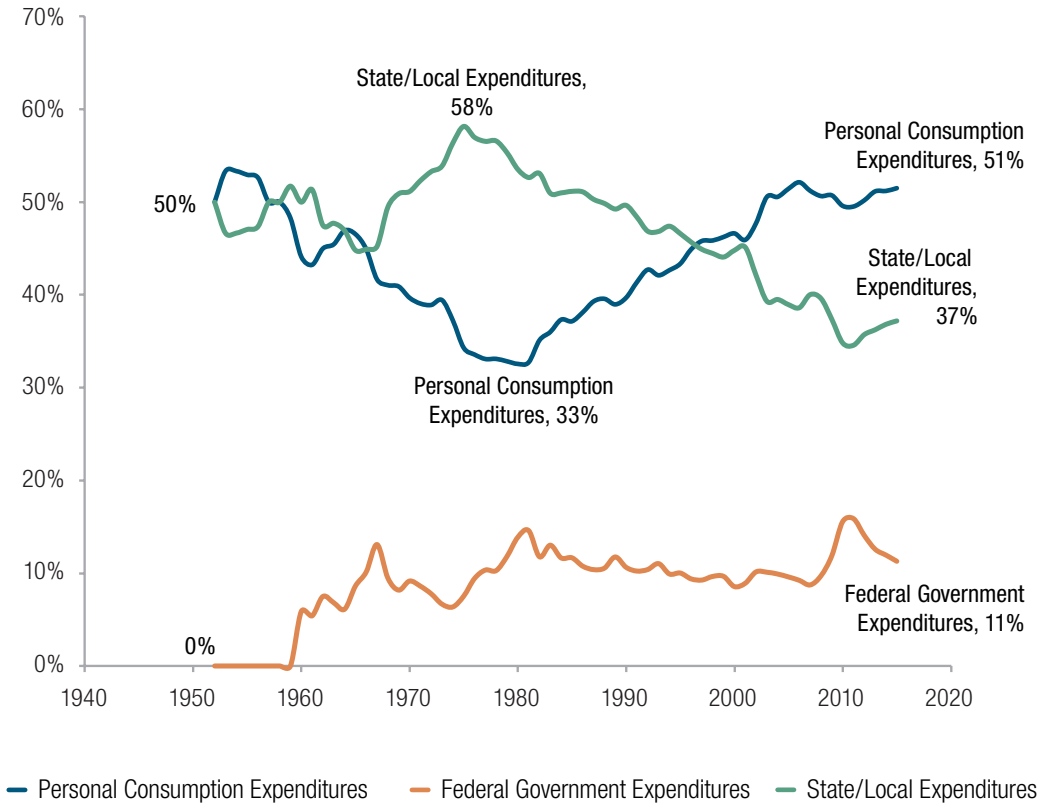
Equity Indicator 4a: What Share of Higher Education Costs Is Paid by Students and their Families?

Equity Indicator 4a describes the responsibilities for funding the costs of attending U.S. public and private higher education institutions, as reported in the National Income and Product Accounts (NIPA) from 1952 to 2015. Since 1975, the percent of higher education costs covered by state and local governments has declined, shifting the responsibility for paying for college costs to students and parents.

Students and families now bear the majority of college costs. State and local sources accounted for 58 percent of higher education expenditures in 1975, but just 37 percent in 2015. The percent of total costs borne by parents and students fluctuated around 33 percent from 1975 to 1981, but was 51 percent in 2015.

The share of higher education costs provided by the federal government was about the same in 2015 as in 1980 (11 percent). During the Great Recession, the federal government provided additional funding through the American Recovery and Reinvestment Act of 2009, which temporarily raised the share of costs covered by the federal government to a high of 16 percent in 2011.

Equity Indicator 4a: Percentage distribution of higher education funding responsibilities: 1952 to 2015



Indicator Status:

The share of higher education costs paid by students and families has grown from one-third (33 percent in the late 1970s) to one-half (51 percent in 2015).

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis (2016). National Income and Product Accounts (NIPA). *Higher Education's Share of Gross Domestic Product and Distribution of Higher Education Funding Responsibilities: 1952 to 2015*. https://www.bea.gov/index.html.

Equity Indicator 4b(i): What Is the Net Price of Attendance by Family Income?

Using NPSAS data from 1990 to 2012,[73] Indicator 4b(i) tracks the net price of attendance. The net price of attendance is the cost of attendance (COA) minus all grant aid.[74] Net price does not include loans. Indicator 4b(i) shows that, when grant aid and discounts are taken into account, average net price increased in constant dollars for all quartiles, but increased at a greater rate for those in the top two income quartiles than the bottom two quartiles.

Equity Indicator 4b(i) also shows that the difference in average net price of attendance between dependent full-time students in the highest and lowest family income quartiles increased between 1990 and 2012. In 1990 average net price ranged from $10,881 for those in the lowest income quartile to $18,123 for those in the highest income quartile (in constant 2012 dollars). In 2012, average net price ranged from $13,699 for those in the lowest income quartile to $26,580 for those in the highest income quartile.

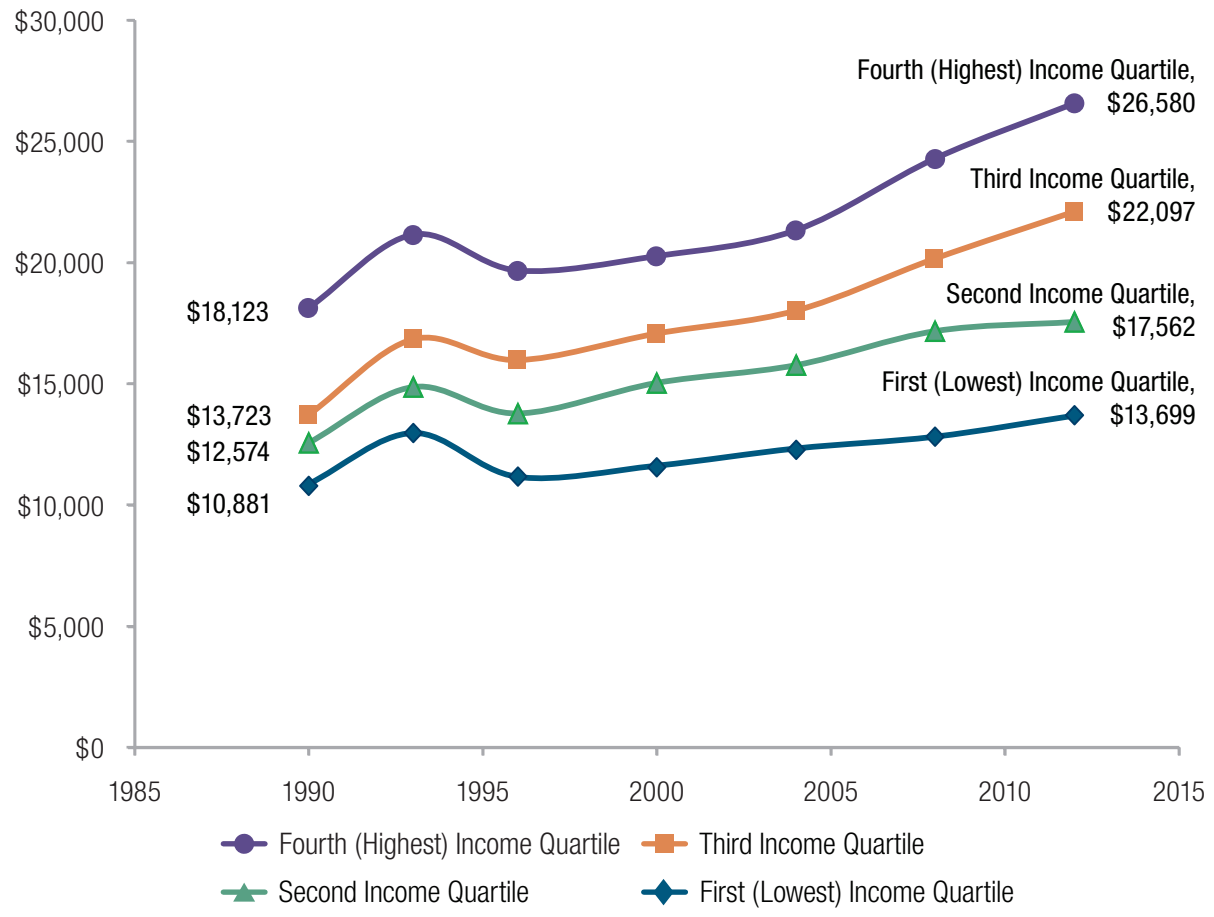
The meaning for equity of the widening gap in average net price by family income is ambiguous. On the one hand, a widening gap may signify that institutions have allocated available financial aid to students with the greatest financial need. On the other hand, the widening gap may indicate that net price has not risen as rapidly at the colleges most frequently attended by low-income students as the colleges attended by more affluent students. The latter explanation may also suggest that colleges in the United States have over time become more segregated by family income and that students are increasingly sorted by family income into colleges they can afford to attend.

If low-income students are receiving a higher education of equivalent quality as other students in terms of the learning experience and market value upon completion, then this net price differential would signal an increase in equity. In so far as differences in net price reflect differences in educational quality and market rewards, then the increasing difference in average net price for students in the upper- and lower-family income quartiles may reflect growing inequity and increased stratification of the nation's higher education system.

73 NPSAS data are collected approximately every 4 years. Indicator 4b(i) used 1990, 1993, 1996, 2000, 2004, 2008 and 2012 waves of this cross-sectional survey. NPSAS:16 data on net price were not yet available at the time of preparation of the *2018 Indicators* report.

74 The Higher Education Act of 1965 (HEA), as amended, requires the U.S. Department of Education to make publicly available information about the average net price of each postsecondary institution that participates in Title IV federal student aid programs.

Equity Indicator 4b(i): Average net price of attendance for dependent full-time undergraduate students by family income quartile: 1990 to 2012 (constant 2012 dollars)



Indicator Status: More Differentiation in Net Price by Family Income Quartile

Average net price of attendance was 94 percent lower for students in the lowest family income quartile than for students in the highest family income quartile in 2012. In 1990, average net price of attendance was 67 percent lower.

NOTE: Net price of attendance is defined as cost of attendance (COA) minus all grant aid.

SOURCE: U.S. Department of Education, National Postsecondary Student Aid Study (NPSAS), 1990, 1993, 1996, 2000, 2004, 2008, 2012; Mortenson, T. (2014). Financial barriers to higher education by parental income and institutional level/control, 1990 to 2012. *Postsecondary Educational Opportunity, 263*; Mortenson, T. (2014). Deteriorating abilities of families to pay costs of college attendance. *Postsecondary Educational Opportunity, 261*.

Equity Indicator 4b(ii): What Percentage of Family Income Is Necessary to Pay the Average Net Price of Attendance?

Indicator 4b(ii) tracks average net price of attendance as a percentage of average family income by NPSAS family income quartiles for dependent students.[75] The Indicator displays the average net price for all students by family income quartile regardless of the type of college or university attended.

In 2012, average net price as a percent of average family income was 84 percent for students in the lowest family income quartile, compared with 35 percent for students in the second lowest family income quartile, 25 percent for students in the third income quartile, and 15 percent for students in the highest income quartile.

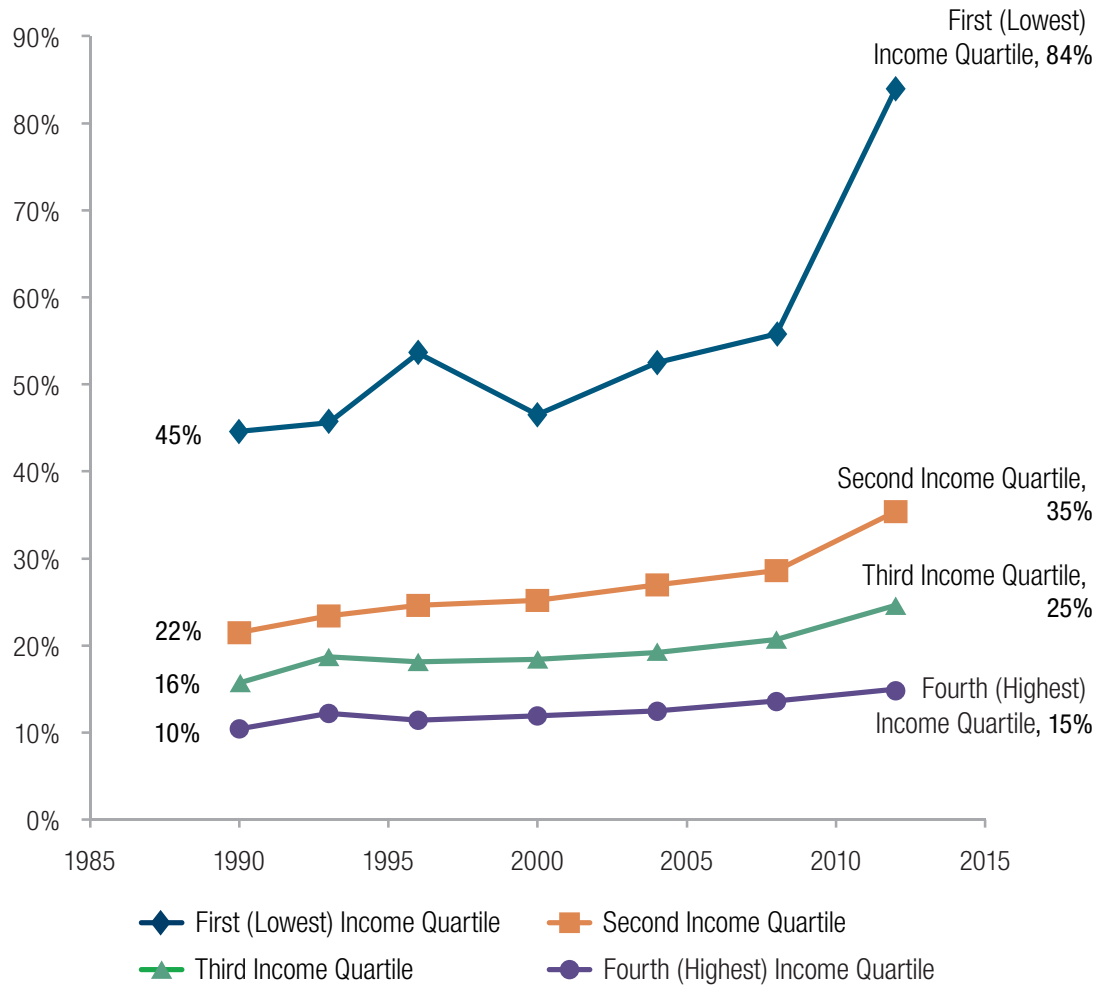
Between 1990 and 2008, average net price as a percentage of family income increased for students in all four family income quartiles. For students in the lowest family income quartile, the percentage increased from 45 percent in 1990 to 56 percent in 2008.

Between 2008 and 2012, in the wake of the Great Recession, average net price as a percentage of family income increased for all income quartiles, but increased more dramatically for students in the lowest income quartile. For these students, average net price as a percentage of average family income increased from 56 percent in 2008 to 84 percent in 2012.[76]

75 Net price is different from "out–of-pocket price," as the latter accounts for both grants and loans. See Horn, L. & Paslov, J. (2014). *Out-of-Pocket Net Price for College*. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, NCES 2014-902.

76 Choitz, V., & Reimherr, P. (2013). *Mind the Gap: High Unmet Financial Need Threatens Persistence and Completion for Low-Income Community College Students*. Washington, D.C.: Center for Postsecondary and Economic Success at CLASP.

Equity Indicator 4b(ii): Average net price of attendance as a percentage of average family income by income quartile for dependent full-time undergraduate students: 1990 to 2012



Indicator Status: High Inequality: Widening Differences in College Cost Burden

In 2012, average net price represented 84 percent of average family income for dependent students in the lowest quartile, compared with 15 percent of average family income for students in the highest quartile. In 1990, average net price was 45 percent of family income for dependent students in the lowest quartile and 10 percent for the highest quartile.

NOTE: Family income quartiles are based on the distribution of family income in each NPSAS survey. In 2012, average family incomes by quartile were: First (Lowest), $16,311; Second, $49,837; Third, $89,119; Fourth (Highest), $172,729.

SOURCE: U.S. Department of Education, National Postsecondary Student Aid Study (NPSAS), 1990, 1993, 1996, 2000, 2004, 2008, 2012. Mortenson, T. (2014). Financial barriers to higher education by parental income and institutional level/control, 1990 to 2012. *Postsecondary Educational Opportunity, 263*.

Equity Indicator 4c: What Percentage of Students Borrow? How Do Rates of Borrowing Vary by the Type of Institution Students Attend and Students' Race/Ethnicity?

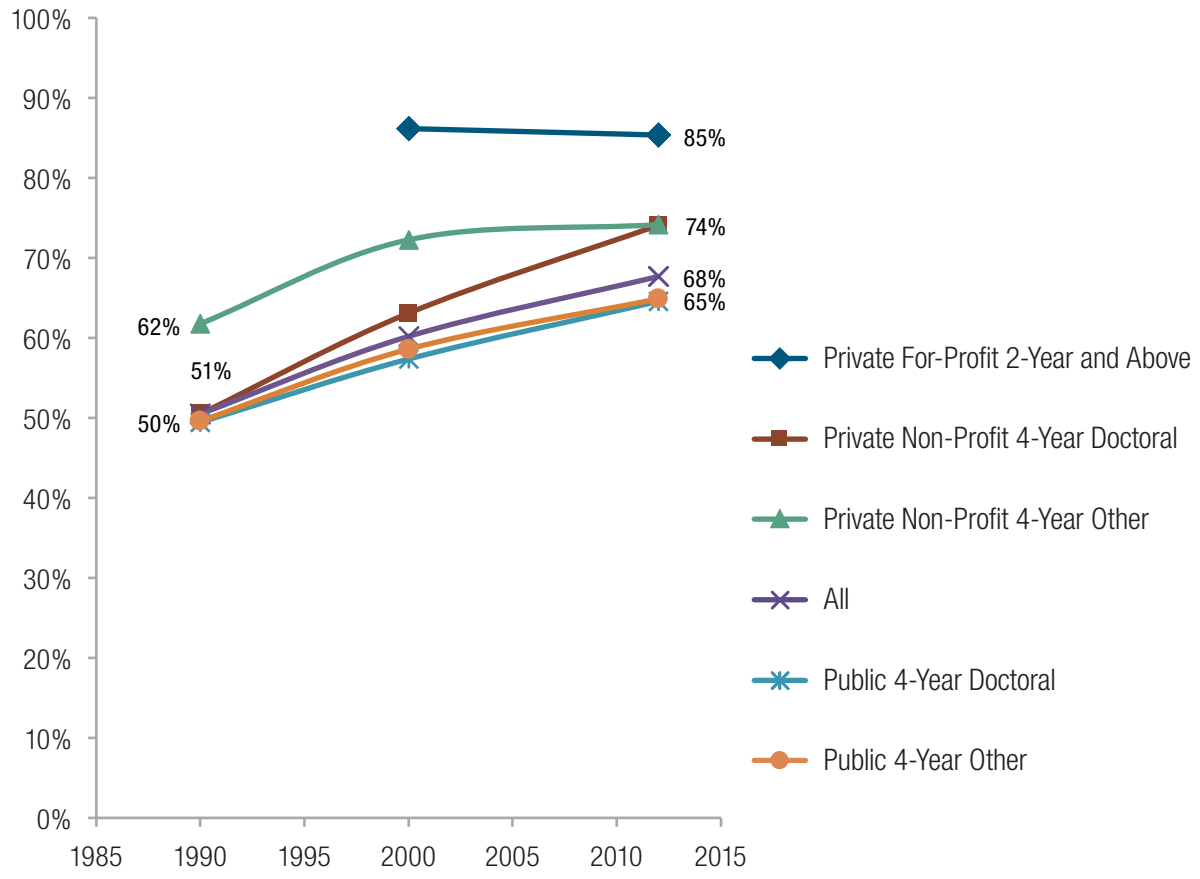
Using NPSAS data, Indicators 4c(i) and 4c(ii) show the percentage of undergraduate students, age 18 to 24, in their 4th (senior) year or above who ever received loans by race/ethnicity and institutional control.

Indicator 4c(i) shows that, since 1990, the percentage of college seniors who had ever borrowed rose from about half (51 percent) in 1990 to about two-thirds (68 percent) in 2012. Borrowing rates in 2012 were highest among private for-profit 2-year and four-year institutions (85 percent) and private non-profit four-year institutions (74 percent) than public four-year institutions (65 percent).

Likely reflecting differences in income and wealth distributions by race/ethnicity, Indicator 4c(ii) shows that Black and Hispanic graduating seniors are more likely to borrow to finance their postsecondary education than Asian seniors.[77] In 1990, Blacks had the highest rate of borrowing among the race/ethnicity groups (69 percent). Perhaps reflecting the impact of the Great Recession, the rate of borrowing by Black graduating seniors had risen to 90 percent by 2012. The percentage of Hispanic seniors who borrowed increased from 57 percent in 1990 to 72 percent in 2012. Rates of borrowing remained lower among Asian seniors, at 41 percent in 1990 and 45 percent in 2012.

77 Differences in income and wealth distribution by race/ethnicity are discussed in the recent Urban Institute Report: *Nine Charts about Wealth Inequality in America (2017)*. Based on current and past Federal Reserve data, the report concludes: "White family wealth was seven times greater than black family wealth and five times greater than Hispanic family wealth in 2016. Despite some fluctuations over the past five decades, this disparity is as high or higher than it was in 1963."
Retrieved from http://apps.urban.org/features/wealth-inequality-charts/.

Equity Indicator 4c(i): Percentage of undergraduate students, age 18 to 24, in their 4th (senior) year or above, who ever received student loans by institutional control and level: 1990, 2000, and 2012



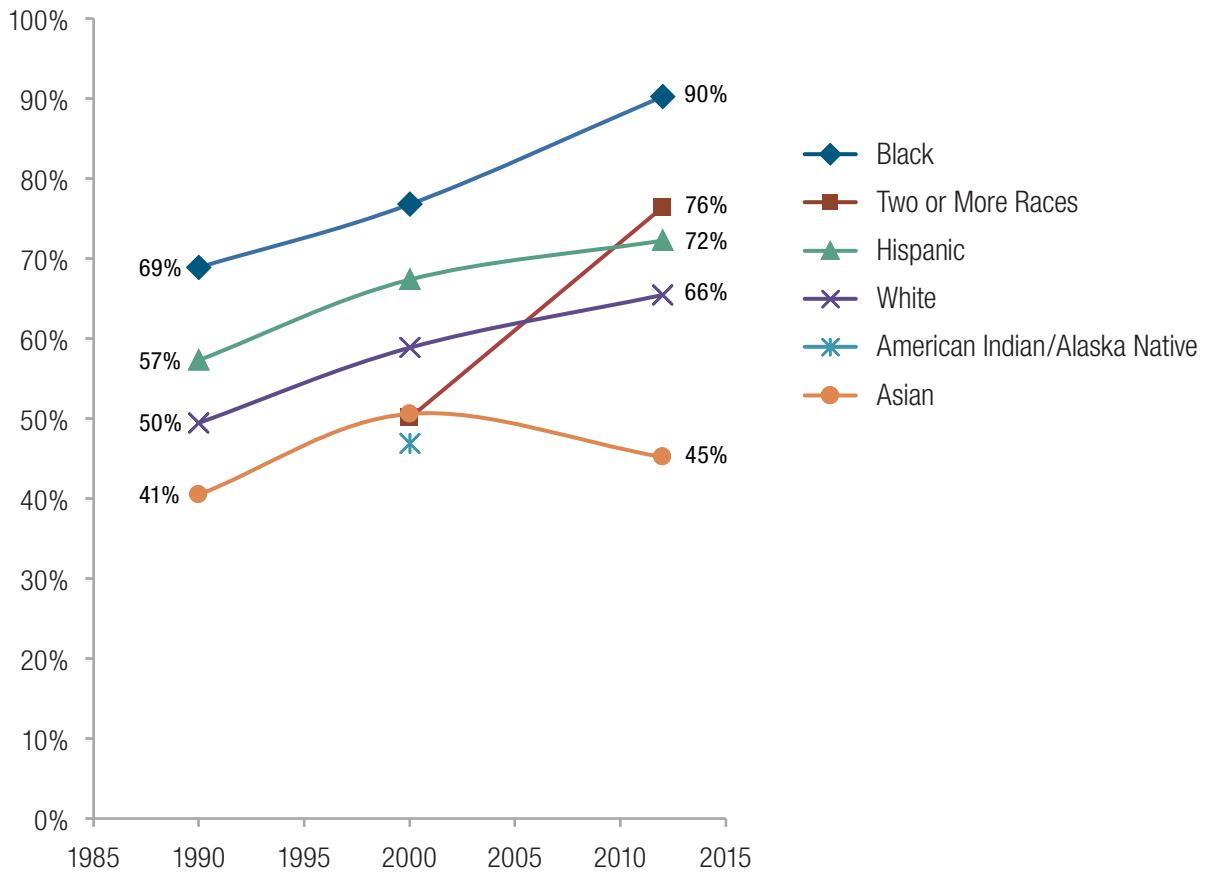
Indicator Status: Increasing Percentages of Students Borrow

Regardless of institutional control, the percentage of students who borrow to pay college costs has increased over time, so that now more than two-thirds of undergraduate seniors are borrowers. The percentage has increased from 51 percent in 1990 to 68 percent in 2012.

NOTE: Data are from NPSAS :90, NPSAS:2000, and NPSAS:2012 and represent the percentages of undergraduate students, age 18 to 24, in their 4th (senior) year or above who ever received student loans by institutional control: 1990, 2000, and 2012. Numbers may differ slightly from estimates made for graduating seniors as published in the 2017 Indicators report.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989-90, 1999-2000, and 2011-12 National Postsecondary Student Aid Study (NPSAS:90, NPSAS:2000, and NPSAS:12). U.S. Department of Education, National Center for Education Statistics (2016). *Digest of Education Statistics 2016* Table [331.95]. https://nces.ed.gov/programs/digest/d16/tables/dt16_331.95.asp?current=yes.

Equity Indicator 4c(ii): Percentage of undergraduate students, age 18 to 24, in their 4th (senior) year or above, who ever received student loans by race/ethnicity: 1990, 2000, and 2012



Indicator Status:

Rates of borrowing remain consistently higher for Black and Hispanic college seniors than for Asians.

NOTE: Data are from NPSAS :90, NPSAS:2000, and NPSAS:2012 and represent the percentages of undergraduate students, age 18 to 24, in their 4th (senior) year or above, who ever received student loans by race/ethnicity: 1990, 2000, and 2012. Estimates for American Indian/Alaska Native were not possible in NPSAS:90 or NPSAS:2012 due to small sample sizes. The category Two or More Races was introduced in 2000, and some of the change observed may reflect changes in composition of those choosing this category, or sampling error issues due to increasing numbers choosing this category.

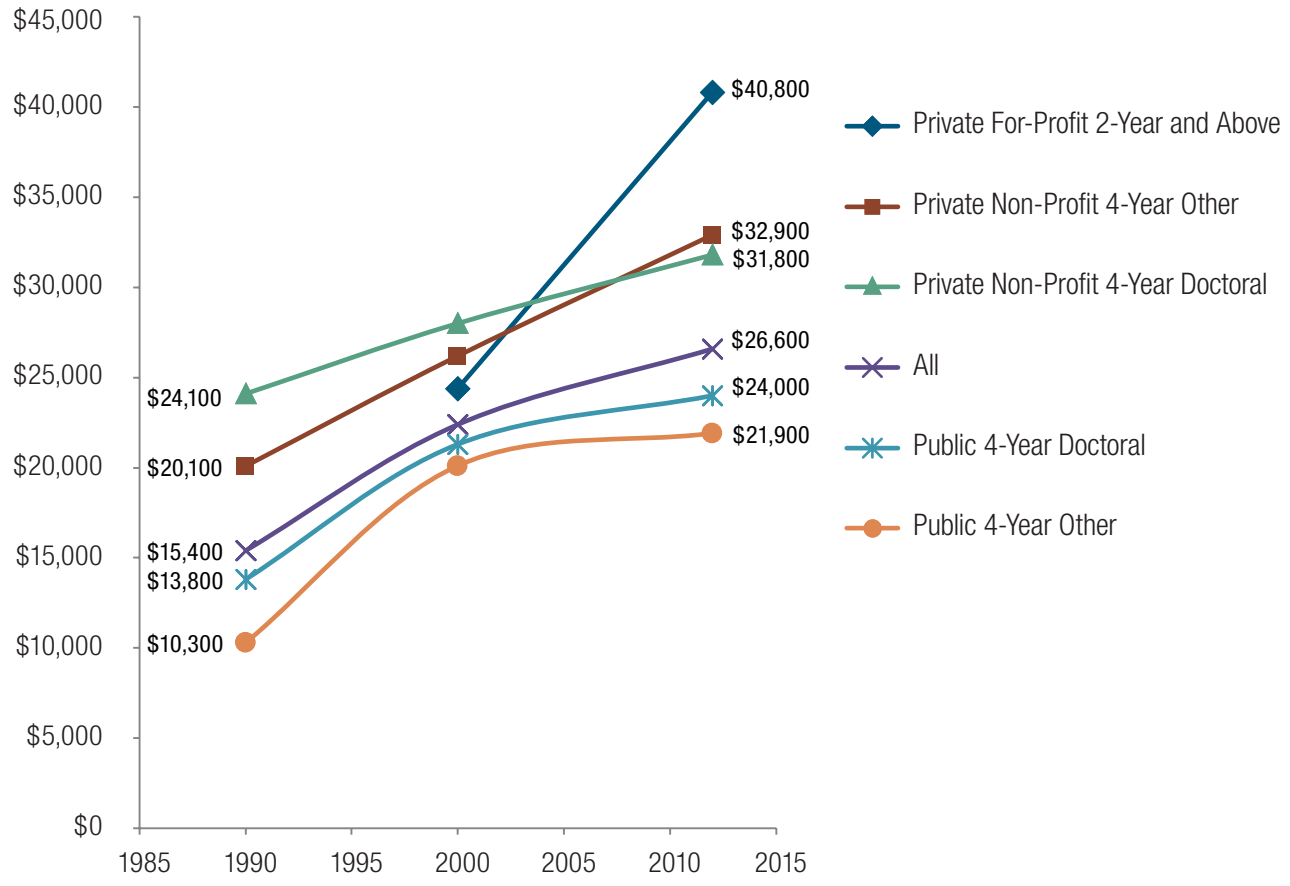
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989-90, 1999-2000, and 2011-12 National Postsecondary Student Aid Study (NPSAS:90, NPSAS:2000, and NPSAS:12). U.S. Department of Education, National Center for Education Statistics (2016). *Digest of Education Statistics 2016* Table [331.95]. https://nces.ed.gov/programs/digest/d16/tables/dt16_331.95.asp?current=yes.

Indicator 4d: How Much Do Students Borrow? How Does the Amount Students Borrow Vary by Types of Institution Students Attend and Students' Race/Ethnicity?

Indicators 4d(i) and 4d(ii) present the average amounts borrowed in 2015-16 constant dollars among those who borrowed. In constant 2016 dollars, the average amount borrowed increased by 73 percent overall, from $15,400 in 1990 to $26,600 by 2012. In 2012, average amounts borrowed ranged from $40,800 for borrowers attending private for-profit institutions, to $31,800 for borrowers at private 4-year non-profit doctoral institutions, and $32,900 for borrowers at other private non-profit 4-year institutions. Average amount borrowed was lower at public 4-year doctoral institutions ($24,000) and other public 4-year institutions ($21,900).

Although White students, on average, borrowed higher amounts in 1990 ($16,100), by 2012 Blacks averaged the highest amount borrowed ($31,300). Between 1990 and 2012, the amount borrowed by Black seniors rose (in constant 2015-16 dollars) from $12,200 to $31,300, an increase of 157 percent.

Equity Indicator 4d(i): Average cumulative loan amounts for undergraduate students, age 18 to 24, in their 4th year or above, who ever received student loans by institution control: 1990, 2000, 2012 (constant 2015-16 dollars)



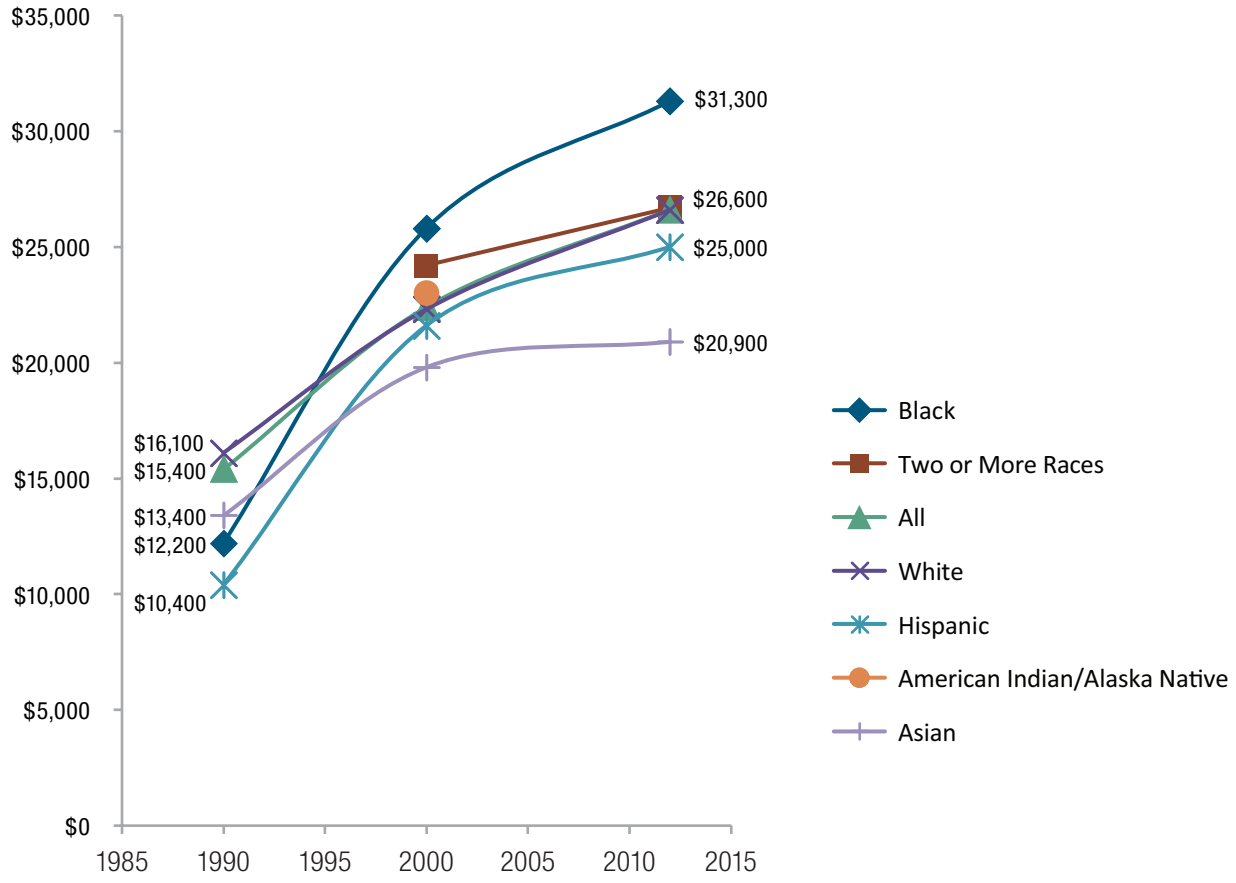
Indicator Status: Large increases in amount borrowed.

The average amount borrowed increased by 73 percent from 1990 to 2012 in 2016 constant dollars and averaged $26,600 in 2012.

NOTE: Data are from NPSAS :90, NPSAS:2000, and NPSAS:2012 and represent the average amount borrowed among undergraduate students, age 18 to 24, in their 4th (senior) year or above, who ever received student loans by institutional control in 1990, 2000, and 2012. Numbers may differ slightly from estimates made for graduating seniors as published in the 2017 Indicators report as different groups are represented.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989-90, 1999-2000, and 2011-12 National Postsecondary Student Aid Study (NPSAS:90, NPSAS:2000, and NPSAS:12). U.S. Department of Education, National Center for Education Statistics (2016). *Digest of Education Statistics 2016* Table[331.95]. https://nces.ed.gov/programs/digest/d16/tables/dt16_331.95.asp?current=yes.

Equity Indicator 4d(ii): Average cumulative loan amounts for undergraduate students, age 18 to 24, in their 4th year or above, who ever received student loans by race/ethnicity: 1990, 2000, 2012 (constant 2015-16 dollars)



Indicator Status:

Large increases in average loan amount among all race/ethnicity groups, with disproportionate increases among Blacks. Among Black college seniors, the average amount borrowed increased by 157 percent in constant dollars.

NOTE: Data are from NPSAS:90, NPSAS:2000, and NPSAS:2012 and represent the average amount borrowed among undergraduate students, age 18 to 24, in their 4th (senior) year or above, who ever received student loans by race/ethnicity in 1990, 2000, and 2012. Estimates for American Indian/Alaska Native were not possible in NPSAS:90 or NPSAS:2012 due to small sample sizes. The category Two or More Races was introduced in 2000, and some of the change observed may reflect changes in composition of those choosing this category, or sampling error issues due to small numbers choosing this category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1989-90, 1999-2000, and 2011-12 National Postsecondary Student Aid Study (NPSAS:90, NPSAS:2000, and NPSAS:12) ; U.S. Department of Education, National Center for Education Statistics(2016). *Digest of Education Statistics 2016 Table* [331.95]. https://nces.ed.gov/programs/digest/d16/tables/dt16_331.95.asp?current=yes.

Equity Indicator 4e: What Are Rates of Borrowing and Average Amount Borrowed by State?

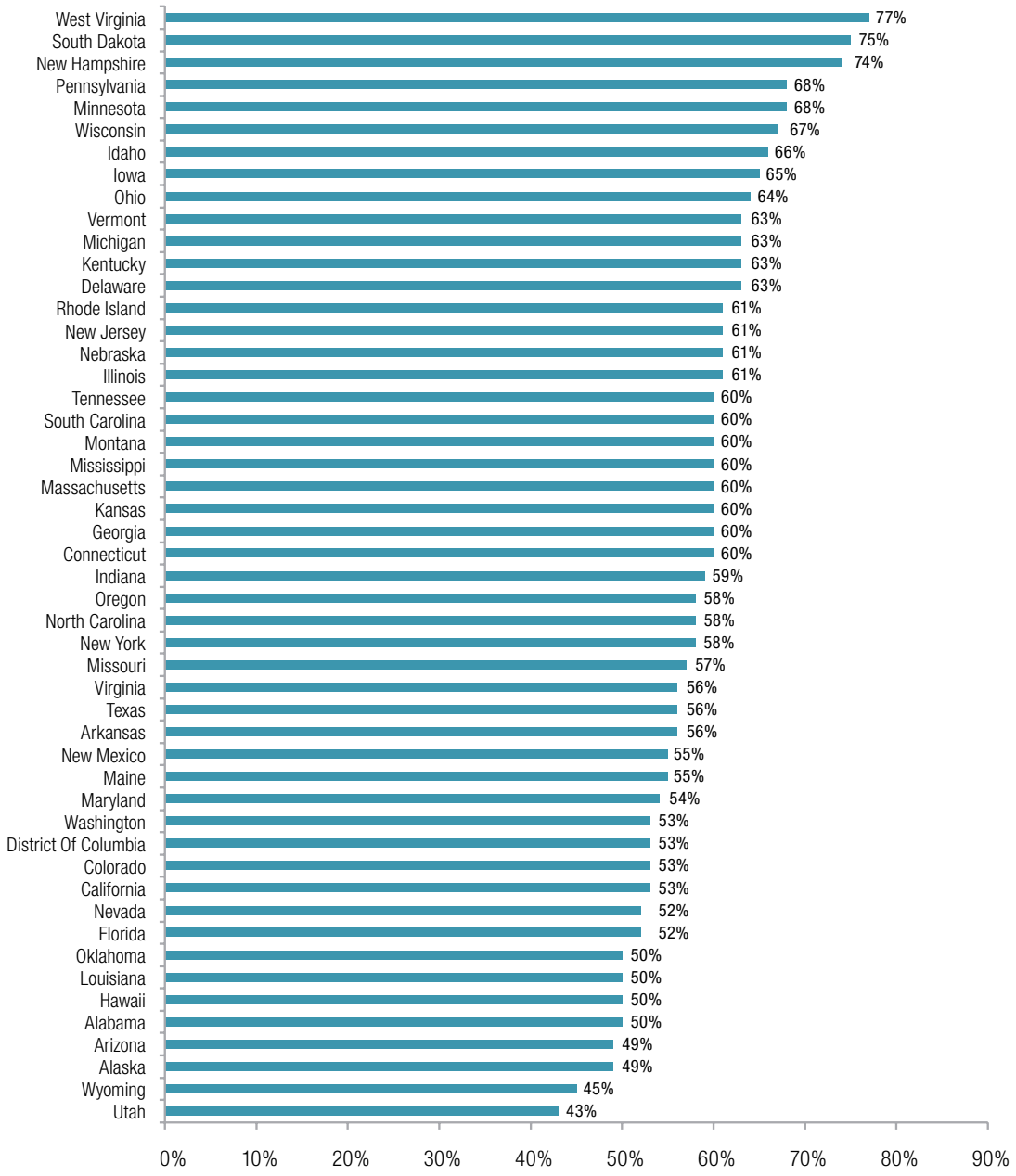
Indicators 4e(i) and 4e(ii) show the estimated percentages of 2016 bachelor's degree recipients who borrowed and the average amounts borrowed by state. The federal government does not collect cumulative student debt. As such, this indicator relies on voluntarily-reported data. The data are from the *Annual Survey of College Debt* by TICAS, a voluntary data collection from over 1,000 4-year institutions. To estimate state level student loan debt, TICAS used the most recent available figures, which were provided voluntarily by more than half of all public and nonprofit bachelor's degree-granting 4-year colleges. TICAS warns that some caution is warranted when using their data. To estimate state averages, TICAS estimates the percent of students borrowing and the average debt amount borrowed for states that have sufficient usable data from which to calculate state estimates.[78] The limitations of relying on voluntarily-reported data underscore the need for federal collection of cumulative student debt data for all institutions.

Indicator 4e(i) shows that more than 70 percent of bachelor's degree recipients graduated with debt in 2016 in New Hampshire (74 percent), South Dakota (75 percent), and West Virginia (77 percent). By comparison, fewer than 50 percent of bachelor's degree recipients graduated with debt in Utah (43 percent), Wyoming (45 percent), Alaska (49 percent), and Arizona (49 percent).

Indicator 4e(ii) shows that the average amount borrowed by those who borrowed ranged from a low of $19,975 in Utah, $21,373 in New Mexico, and $22,744 in California to a high of $35,494 in Connecticut, $35,759 in Pennsylvania, and $36,367 in New Hampshire.

78 TICAS does not tabulate average rates of borrowing for states in which less than 30 percent of bachelor's degree recipients are represented. The state-level report by TICAS covers 78 percent of all bachelor's degree recipients at public and non-profit 4-year colleges in 2015-16. The Institute of College Access and Success (2017). *Student Debt and the Class of 2016: 12th Annual Report*. https://ticas.org/sites/default/files/pub_files/classof2016.pdf.

Equity Indicator 4e(i) Percentage of bachelor's degree recipients with debt by state: 2016



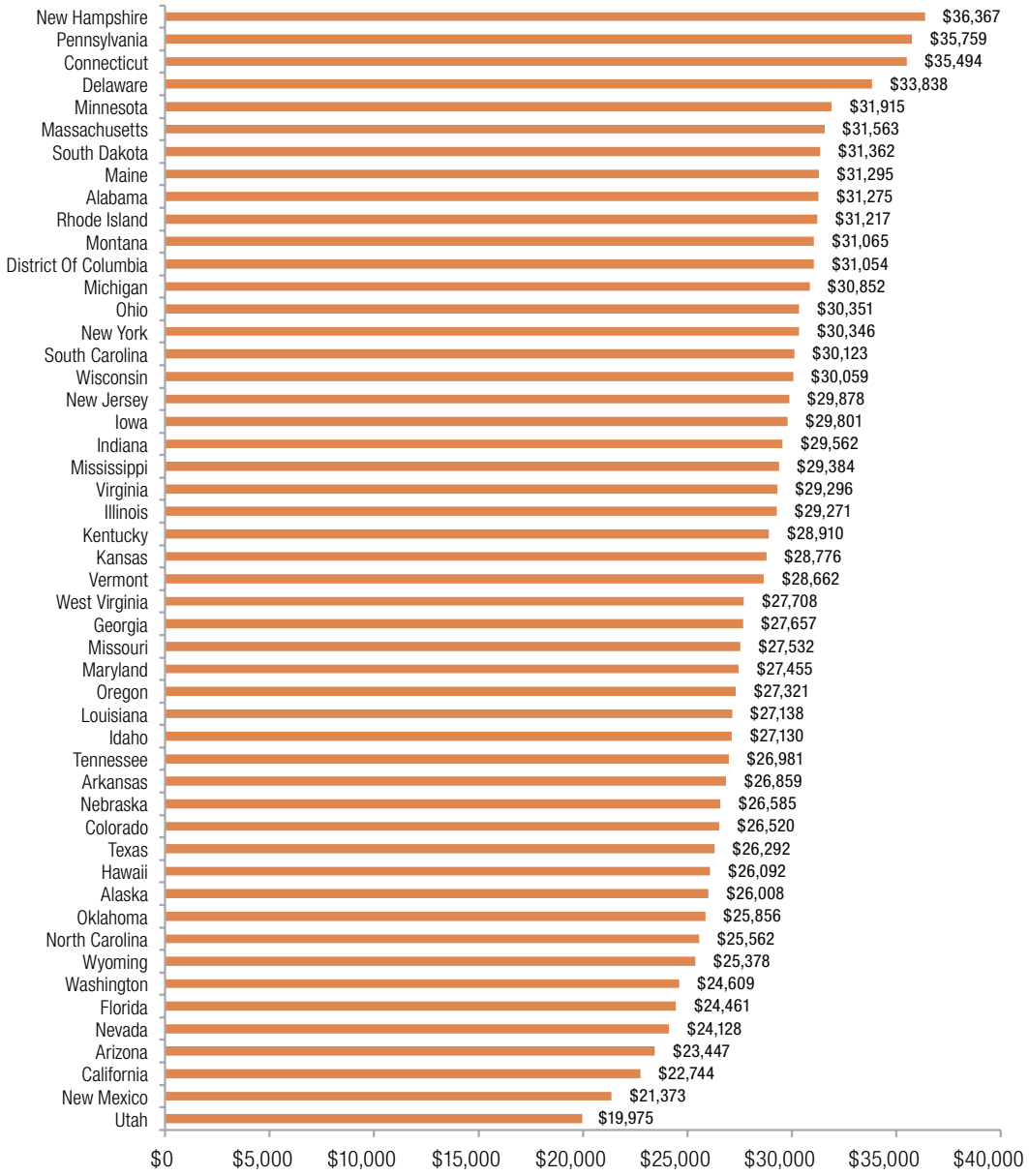
Indicator Status:

The percentage of 2016 bachelor's degree recipients who borrowed ranged from a low of 43 percent in Utah to a high of 77 percent in West Virginia.

NOTE: To estimate state averages, TICAS used the most recent available figures, which were provided voluntarily by more than half of all public and nonprofit bachelor's degree-granting 4-year colleges.

SOURCE: Cheng, D., Cochrane, D., & Gonzalez, V. (2017). *Student Debt and the Class of 2016, 12th Annual Report*. Oakland: The Institute for College Access & Success (TICAS). https://ticas.org/sites/default/files/pub_files/classof2016.pdf. https://ticas.org/print/posd/state-summary/2017#overlay-context=posd/map-state-data.

Equity Indicator 4e(ii) Average amount of debt among bachelor's degree recipients who borrowed by state: 2016



Indicator Status:

The average amount borrowed among 2016 bachelor's degree recipients who borrowed varied from a low of $19,975 to a high of $36,367.

NOTE: To estimate state averages, TICAS used the most recent available figures, which were provided voluntarily by more than half of all public and nonprofit bachelor's degree-granting 4-year colleges.

SOURCE: Cheng, D., Cochrane, D., & Gonzalez, V. (2017). *Student Debt and the Class of 2016, 12th Annual Report*. Oakland: The Institute for College Access & Success (TICAS). https://ticas.org/sites/default/files/pub_files/classof2016.pdf. https://ticas.org/print/posd/state-summary/2017#overlay-context=posd/map-state-data.

EQUITY INDICATOR 5:

HOW DO EDUCATIONAL ATTAINMENT RATES AND EARLY OUTCOMES VARY BY FAMILY CHARACTERISTICS?

In 2016, estimated bachelor's degree attainment rates by age 24 were 5 times greater for those from the highest family income quartile than for those from the lowest family income quartile (58 percent vs. 11 percent). In 1970, those in the highest income quartile were 6.6 times as likely as those in the lowest quartile to attain a bachelor's degree by age 24 (40 percent vs. 6 percent).

Equity Indicator 5 (a-f): Definitions

Equity Indicator 5 draws on multiple sources of data to describe educational attainment and early graduation outcomes by sociodemographic characteristics. The sources of data are: 1) Current Population Survey (CPS) data from 1970 to 2016 on estimated dependent family members' bachelor's degree attainment rates by family income; 2) NCES high school longitudinal studies tracing high school students' bachelor's degree attainment 8 or 10 years after expected high school graduation year; 3) Beginning Postsecondary Students (BPS) longitudinal studies following first-time college entrants through 5 or 6 years after college entrance; 4) IPEDS Completions Surveys' data on degrees awarded by race/ethnicity in 1980 and 2016; 5) Baccalaureate and Beyond Longitudinal Study (B&B) data for 2008 graduates at the 4-year (2012) follow-up; 6) Census Bureau data on educational attainment rates by state for various age groupings; and 7) IPEDS Graduation Rate data by state. We utilize multiple data sources for Indicator 5 because of the limitations of each source, as described below. Indicator 5 focuses primarily on bachelor's degree attainment, with some attention to associate's, master's, and doctoral degree attainment by race/ethnicity. Definitions of terms not already provided in the report are presented below.

- **Estimated rates of bachelor's degree attainment by age 24 for primary dependent family members.** This Indicator reports 3-year average estimated rates of bachelor's degree attainment by age 24 by family income quartile for primary dependent family members using data from the October supplement to the Current Population Survey (CPS). CPS is the only available national annual data source that measures attainment, but the data have important limitations and caution is warranted when interpreting the results. The CPS household survey data are reported in

aggregate for cross-sectional groupings and include only individuals who were considered "primary dependent family members" at the time of the CPS survey. Recent years have seen differential changes across income groupings in dependency patterns and length of time for bachelor's degree completion. We use data from the NCES longitudinal studies to improve the calibration of the CPS estimates.[79]

- **Percentage of first-time beginning postsecondary dependent students earning bachelor's degrees within 5 or 6 years of initial enrollment by family income quartile and TRIO eligibility.** These measures use data from the Beginning Postsecondary Students (BPS) Longitudinal Study. BPS tracked students first enrolling in a postsecondary educational institution in academic years 1989-90, 1996-97, and 2003-04 from the NPSAS studies. Bachelor's degree attainment rates are shown by parent income quartile for dependent students. We also use BPS data to examine differences in attainment by TRIO eligibility criteria (i.e., low-income and first-generation college status).[80]
- **Distributions of associate's, bachelor's, master's, and doctoral degrees conferred by race/ethnicity compared to population distributions.** These measures use the annual IPEDS Completion Surveys to report the distributions of degrees conferred and U.S. population by race/ethnicity in 1980 and 2016.
- **Further education, early career earnings, and unemployment for recent bachelor's degree recipients.** Using data from NCES's Baccalaureate and Beyond Longitudinal Study (B&B), this Indicator reports 2008 graduates' post-baccalaureate enrollment, annual income, and unemployment. Data are from the 4-year follow up in 2012 by parents' income quartile.
- **Educational Attainment by State** uses data from the decennial census and the American Community Survey from 1940 to 2015 for the total population age 25 and older and for those between the ages of 24 and 35 years in 2000 and 2015.
- **IPEDS Graduation Rates by State** provides cohort data on first-time, full-time bachelor's degree-seeking students earning any formal award (certificate, associate's, or bachelor's degree) within 6 years by state of institution 2000 and 2015.

79 Because of the relationships among family income, dependency status, and degree attainment, CPS data published in the 2015 *Indicators* report overestimated bachelor's degree attainment for the highest income quartile. In 2016, we reported the 100 percent distribution of bachelor's degrees in the text and attainment estimates in the methodological appendix. For the 2017 and 2018 *Indicators* reports, we returned the CPS attainment rate indicator to the main body of the report. The 2016 methodological appendix and 2017 and 2018 *Indicator* 5a have updated CPS attainment rate estimates with improved calibration from NCES longitudinal survey data from the appropriate time periods. Caution is warranted when interpreting the updated adjusted CPS estimates given the many underlying assumptions.

80 TRIO is a set of federal competitive grant programs first authorized under the HEA of 1965, as amended most recently in 2008. TRIO programs are designed to increase college access and degree completion for low-income students, first-generation college students, and students with disabilities. The first three TRIO programs began in 1964, 1965, and 1968, respectively. TRIO now consists of eight programs that collectively provide services from middle school through graduate school. The eight TRIO programs are: Upward Bound (UB), Upward Bound Math Science (UBMS), Veterans Upward Bound (VUB), Talent Search, Student Support Services (SSS), Educational Opportunity Centers (EOC), Ronald E. McNair Post-Baccalaureate Achievement Program (McNair), and a training program for TRIO project staff. In 2017, over 2,900 TRIO projects were housed at colleges and universities and community organizations, with projects in all 50 states, Washington, D.C., and U.S. territories. Federal TRIO program services are estimated to reach less than 5 percent of the eligible population in any given year.

Equity Indicator 5a: How Do Estimates of Dependent Family Members' Bachelor's Degree Attainment Rates by Age 24 Vary by Family Income Quartile?

Equity Indicator 5a reports a 3-year moving average of the estimated rates of bachelor's degree attainment by age 24 for dependent family members using data from the annual Current Population Survey (CPS).[81] Estimates are derived using aggregate cross-sectional CPS data with calibration from the NCES longitudinal studies from similar time frames.

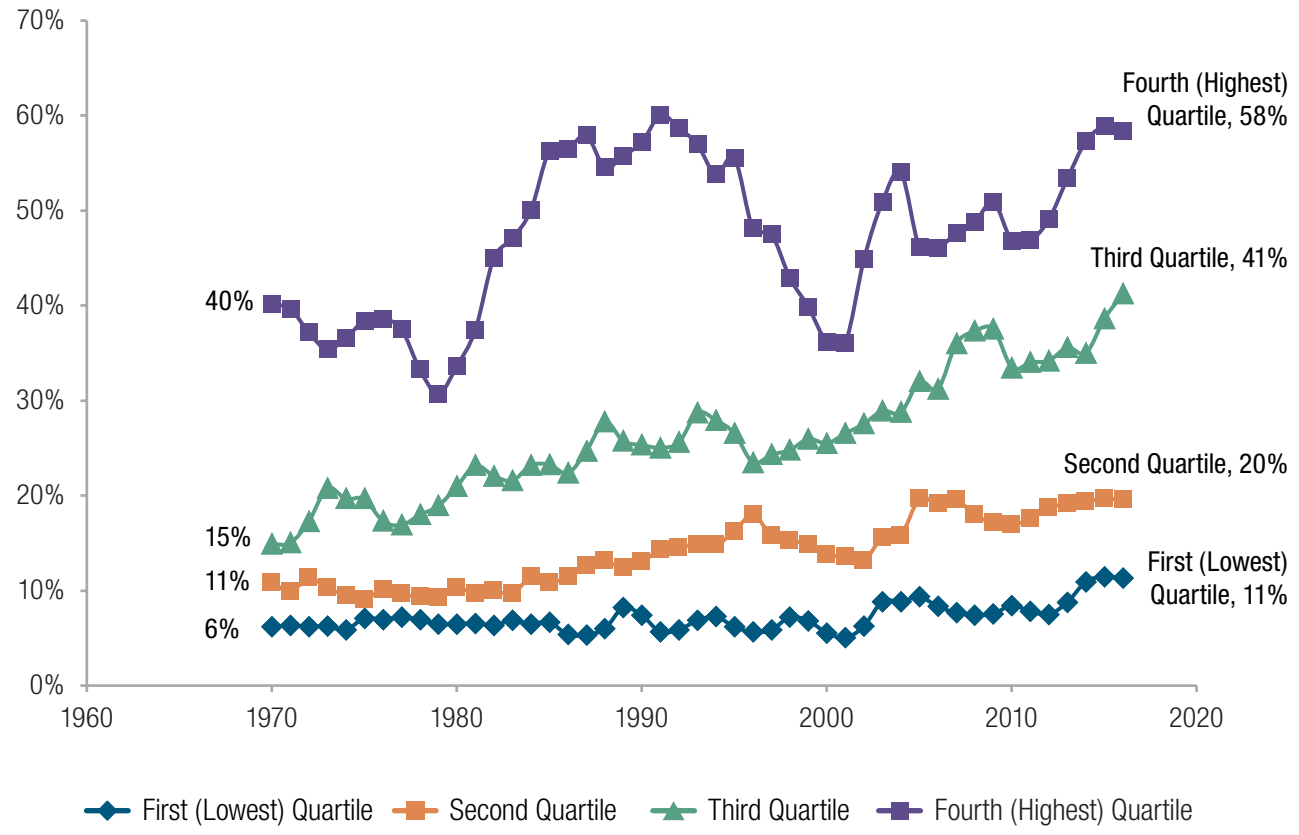
Indicator 5a shows that bachelor's degree attainment rates increased in each family income quartile over the period but remain highly unequal. In 2016, an estimated 11 percent of dependent family members in the lowest family income quartile had attained a bachelor's degree by age 24, compared with 20 percent of those in the second quartile, 41 percent of those in the third quartile, and 58 percent of those in the highest quartile.

The gap in bachelor's degree attainment rates between those in the highest and lowest quartiles was 47 percentage points in 2016. Estimated bachelor's degree attainment rates by age 24 were 5 times higher for those in the highest income quartile than for the lowest income quartile (58 percent vs. 11 percent) in 2016. In 1970, those in the highest income quartile were 6.6 times as likely as than those in the lowest quartile to attain a bachelor's degree by age 24 (40 percent vs. 6 percent).

Between 1970 and 2000, bachelor's degree attainment rates for those in the lowest family income quartile remained relatively unchanged (approximately 6 percent to 7 percent). Between 2000 and 2016, bachelor's degree attainment rates for this group increased to reach 11 percent in 2016. For those in the second quartile, bachelor's degree attainment fluctuated between 10 and 13 percent from 1970 to 1990, and then increased to 20 percent by 2016. For those in the third quartile, bachelor's degree attainments rose more steadily over time, rising from 15 percent in 1970 to 41 percent in 2016. For those in the highest family income quartile, the bachelor's degree attainment rate fluctuated over the period but was 58 percent in 2016, compared with 40 percent in 1970.

81 Indicator 5a reports a 3-year moving average of the estimated bachelor's degree attainment rate by age 24 for dependent family members. The 2016 Indicator 5a presented the percentage distribution of all bachelor's degree holders across the four quartiles rather than attainment rates. As a result, Indicator 5a in the 2017 and 2018 reports is not comparable to Indicator 5a in the 2016 report.

Equity Indicator 5a: Estimated bachelor's degree attainment rate by age 24 for dependent family members by family income quartile: 1970 to 2016



Indicator Status: High Persisting Inequality

Estimated bachelor's degree attainment rates by age 24 are 5 times higher for those in the highest income quartile than for those in the lowest income quartile (58 percent vs. 11 percent). In 1970, those in the highest income quartile were 6.6 times as likely as those in the lowest quartile to attain a bachelor's degree by age 24 (40 percent vs. 6 percent).

NOTE: This figure reports a 3-year moving average of the estimated bachelor's degree attainment rate by age 24 for dependent family members using the CPS data with calibrations from the NCES high school longitudinal studies. Due to estimation assumptions and sampling error, caution is warranted when interpreting changes over time, especially large single year fluctuations. See Appendix A for further discussion of the methodology and limitations.

SOURCE: U.S. Census Bureau, Current Population Survey, October Education Supplement, 1970-2016. Data from 1970 to 1986 consider unmarried 18- to 24-year olds and data from 1987 to 2016 are based on dependent 18- to 24-year-olds. These data were previously published in Table 14 in Census Bureau P20 report on School Enrollment. After 2006, the Census Bureau no longer published Table 14. Data were tabulated using the Census Bureau table production tool (2006-2016). See Mortenson, T. (2018). Estimated baccalaureate degree attainment by age 24 by family income quartiles: 1970 to 2016, *Postsecondary Educational Opportunity, 295*.

Equity Indicator 5b: What Percentage of Youth Attain a Bachelor's Degree or Higher in 8 or 10 Years of Expected High School Graduation by Socioeconomic Status (SES)?

Equity Indicator 5b uses data from the three most recently released NCES high school longitudinal studies that report bachelor's degree attainment rates for students 8 or 10 years after their expected high school graduation.[82] For this Indicator we use socioeconomic status (SES), a composite measure based on parental income, education, and occupation, rather than a single measure of self-reported income.[83]

As noted in the discussions of other indicators in this report, comparisons of bachelor's degree attainment across the three longitudinal studies are limited by differences in the starting dates. High School and Beyond (HS&B:1980) sampled 1980 high school 10th graders and followed the cohort until 1992, 10 years after expected high school graduation in 1982. The National Education Longitudinal Study of 1988 (NELS:88) sampled 8th graders in 1988 and followed students until 2000, 8 years after their expected high school graduation in 1992. The Educational Longitudinal Study of 2002 (ELS:2002) sampled 2002 10th graders and followed them until 2012, 8 years after their expected high school graduation in 2004. Because NELS:88 began with 8th graders rather than students in high school, data from NELS:88 might be expected to report a higher percentage of students who did not complete high school than the HS&B and ELS studies that began in 10th grade. Other observed differences in bachelor's degree attainment over time may reflect differences in the willingness of high-poverty schools to participate in the three studies,[84] thereby altering the composition of schools and students (despite non-response adjustments by NCES) in the three samples.[85]

With these cautions in mind, Indicator 5b shows that the share of youth attaining a bachelor's degree within 8 or 10 years of their expected high school graduation varies substantially by parents' socioeconomic status (SES) in all three studies. In the most recent study (ELS:2002), 10th graders from the highest SES quartile were 4 times as likely to attain a bachelor's degree in 8 years as 10th graders from the lowest SES quartile. Indicator 5b shows that 60 percent of 2002 10th graders from the highest SES quartile attained a bachelor's degree within 8 years, compared with 15 percent of those from the first (lowest) quartile, 22 percent of those from the second quartile, and 37 percent of those from the third SES quartile.

The percentage of individuals from the lowest SES quartile who attained at least a bachelor's degree within 8 or 10 years of their expected high school graduation was virtually the same for the HS&B:80 cohort (7 percent) as

82 In 2009, NCES began another nationally representative survey of high school students: the High School Longitudinal Study of 2009 (HSLS). This study began with 9th graders in 2009. Data for bachelor's degree attainment within 8 or 10 years of expected high school graduation are not yet available from this source, as this latest longitudinal study sampled 9th graders who had an expected high school graduation of 2013.

83 SES is a composite measure that NCES derived in a comparable manner for the three studies. We use the SES measure rather than family income, as SES is a more robust measure than the single measure of self-reported family income. The latter tends to have a high rate of missing data and is subject to reporting error in the high school studies.

84 While NCES adjusted for non-response and has engaged in increased follow-up efforts, over time there has been growing reluctance of high-poverty schools to participate in the NCES-sponsored (voluntary) sample surveys. This unwillingness to participate was especially pronounced in ELS:2002.

85 See methodological appendices: Lauff, E., & Ingels, S. J. (2014). *A First Look at 2002 High School Sophomores 10 Years Later, Education Longitudinal Study of 2002 (ELS:2002)* (NCES 2014-363). U.S. Department of Education; Ingels, S. J., Kaufman, P., Curtin, T. R., Alt, M. N., & Chen, X. (2002). *Coming of Age in the 1990s: The Eighth Grade Class of 1988 12 Years Later. Initial Results from the Fourth Follow-up to the National Education Longitudinal Study of 1988* (NCES 2002–321). U.S. Department of Education Office of Educational Research and Improvement; Tuma, J., Geis, S., & Carroll, C. D. (1995). *High School and Beyond Educational Attainment of 1980 High School Sophomores by 1992. 1992 Descriptive Summary of 1980 High School Sophomores 12 Years Later*. U.S. Department of Education, National Center for Education Statistics.

for the NELS:88 cohort (8 percent). But the percentage of individuals from the lowest SES quartile who attained at least a bachelor's degree nearly doubled to 15 percent for the 2002 10th graders in ELS. As noted above, some of the increase in educational attainment between 1988 8th graders and 2002 10th graders may be related to the fact that the NELS:88 sampled cohort was younger than the ELS:02, allowing students two additional years to potentially drop out of high school. This difference would downward bias bachelor's degree completion rates compared with a study (like ELS:02) that had an older entering cohort. Census Bureau data show that high school non-completion rates are higher for those with lower incomes than for those with higher incomes (see Appendix A). Thus, this caution may be more applicable for understanding trends over time in completion rates for the lowest than the highest quartile.[86]

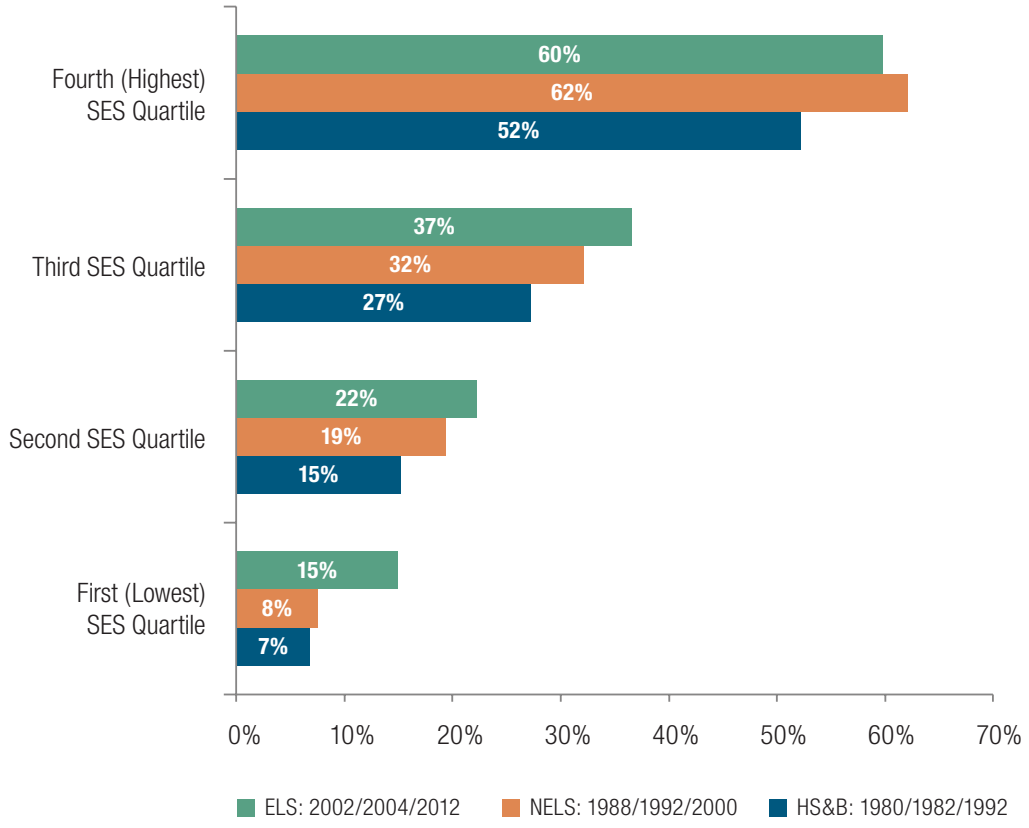
Over the three study periods, the highest SES quartile has shown less variability in high school dropout rates and less gain in both high school and bachelor's degree completion rates than the bottom three SES quartiles. For youth in the highest SES quartile, the percentages attaining at least a bachelor's degree within 8 or 10 years of expected high school graduation were similar in the two most recent studies (62 percent for NELS and 60 percent for ELS), but higher than the earlier study (52 percent for HS&B).

Bachelor's degree attainment rates also increased across the three cohorts for youth in the middle SES quartiles. Attainment rates for youth in the second SES quartile increased from 15 percent in the HS&B:1980 cohort, to 19 percent in the NELS:88 cohort, to 22 percent in the ELS:2002 cohort. For those in the third SES quartile, bachelor's degree attainment rates increased from 27 percent, to 32 percent, to 37 percent.

Bachelor's degree attainment rates within 8 or 10 years of expected high school graduation were 45 percentage points lower for youth in the lowest than the highest SES quartile in ELS:2002 (60 percent versus 15 percent). This gap is smaller than the 54 percentage point difference found for the longitudinal study of 1988 8th graders (NELS:88; 62 percent versus 8 percent) but the same as for the longitudinal study of 1980 10th graders (HS&B, 52 percent versus 7 percent).

86 Although SES and income are different measures, family income is one component of the SES-derived variable from the NCES high school longitudinal studies (the other components are parents' education and occupation). In the high school longitudinal studies there is a high degree of overlap between the distributions for SES and income within the samples. Parental education has generally been found to be more highly associated with educational attainment than parental income. See Cahalan, M., & Maxwell, J. (2007). *Exploring demographic and selected state policy correlates of state level educational attainment and achievement indicators*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL. https://www.slideshare.net/chearsdotorg/exploring-demographic-and-selected-state-policy-correlates-of-state-level-educational-attainment-and-achievement-indicators-aera2007-cahalan.

Equity Indicator 5b: Percentage of youth attaining a bachelor's degree or higher within 8 or 10 years of expected high school graduation by parents' socioeconomic status (SES) quartile: 10th grade cohort from HS&B 1980; 8th grade cohort from NELS 1988; 10th grade cohort from ELS 2002



Indicator Status: High Inequality and Persisting Gap

For the ELS:2002 cohort, 10th graders from the highest SES quartile were 4 times as likely to attain a bachelor's degree within 8 years of expected high school graduation as 10th graders from the lowest SES quartile (60 percent vs. 15 percent). The magnitude of the gap in attainment between the highest and lowest SES quartiles for the 2002 10th grade cohort (45 percentage points) was the same as for the HS&B 1980 10th grade cohort (45 percentage points).

NOTE: Comparisons across surveys are limited due to differences in survey methods, as described in the text.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond (HS&B:1980-class of 1982-1992 follow-up), National Education Longitudinal Study, (NELS:1988-class of 1992-2000 follow-up), and Educational Longitudinal Study (ELS:2002-class of 2004-2012 follow-up). Data tabulated using NCES Data Analysis System (DAS).

Equity Indicator 5c(i): What Percentage of Beginning First-Time Dependent Postsecondary Students Obtain a Bachelor's Degree by Parents' Income Quartile?

Whether first enrolling in a 4-year or 2-year-or-less postsecondary institution, most students report aspiring to obtain a bachelor's degree.[87] Indicator 5c(i) describes the percent of dependent students who first enrolled in any type of postsecondary education institution who earned a bachelor's degree within 5 or 6 years of initial enrollment.[88] Data for this Indicator come from three waves of NCES's longitudinal Beginning Postsecondary Students (BPS) studies. These surveys track students who first enrolled in academic years 1989-90, 1995-96, and 2003-04 through the follow-up studies conducted in 1994, 2001, and 2009, respectively.

The share of dependent students who earned a bachelor's degree within 5 or 6 years of initial enrollment increases with family income quartile. Among dependent students who first enrolled in the 2003-04 academic year, the percentage obtaining a bachelor's degree within 6 years increased from 26 percent for those in the lowest income quartile, to 36 percent for those in the second quartile, to 46 percent for those in the third quartile, to 59 percent for those in the highest quartile.

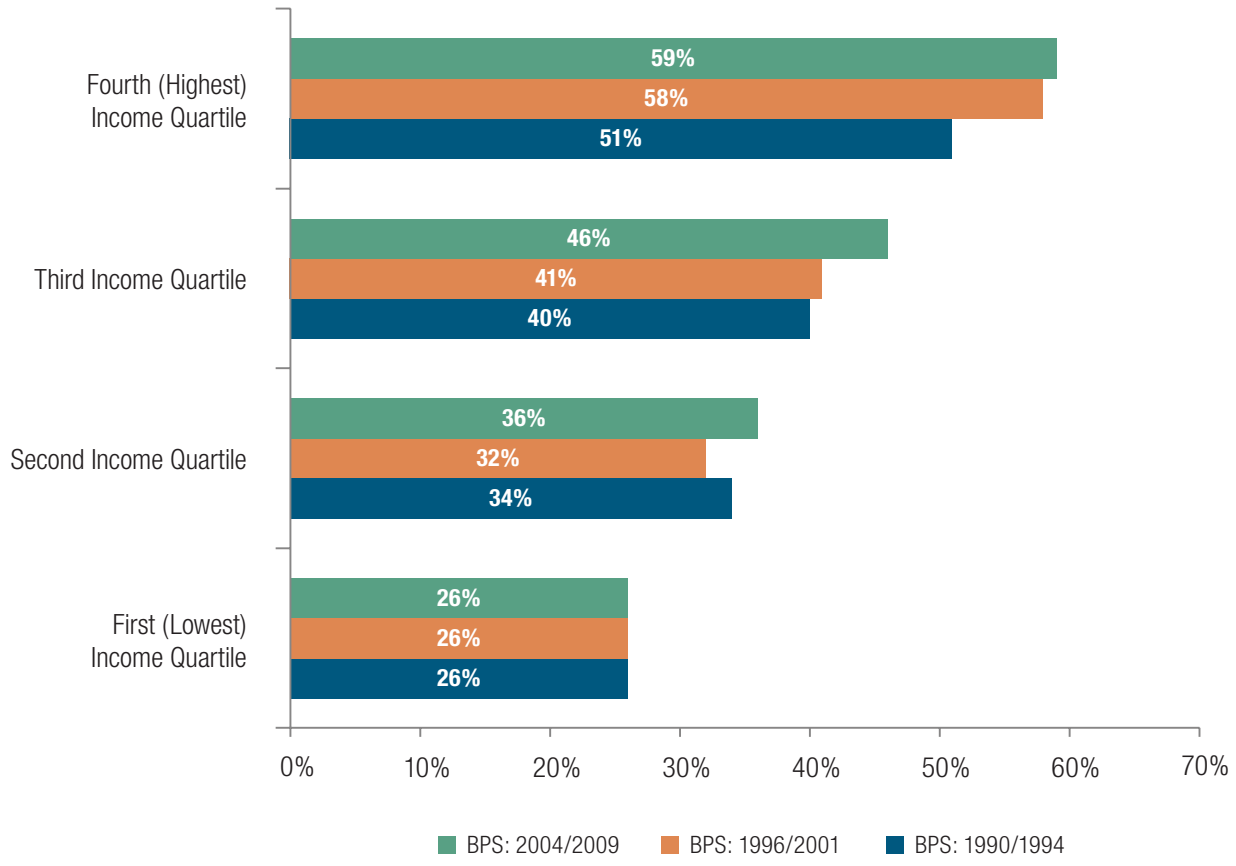
The percentage of dependent students from the lowest income quartile who obtained a bachelor's degree or higher within 5 or 6 years of initial enrollment remained unchanged at 26 percent for all three cohorts. For those in the highest income quartile, the percentage of dependent students obtaining a bachelor's degree increased from 51 percent for those who entered in 1989-90, to 58 percent for those who entered in 1995-96, and was 59 percent for those who entered in 2003-04.

The 5- or 6-year bachelor's degree completion rate also showed little change for those in the second quartile (34 percent for those who enrolled in 1989-90; 32 percent for those who enrolled in 1995-96; and 36 percent for those who enrolled in 2003-04). For dependent students in the third income quartile, the percentages obtaining a bachelor's degree were 40 percent for those who entered in 1989-90, 41 percent for those who first entered in 1995-96, and 46 percent for those who first entered in 2003-04. Consistent with these relatively stable rates, the gap in bachelor's degree completion rates between those in the highest and lowest family income quartiles remained virtually unchanged for those first entering in 1995-96 and 2003-04 (at approximately 33 percentage points).

87 For example, data from ELS:2002 show that 80 percent of all high school students, and 60 percent of those in the lowest SES quartile, hoped to obtain a bachelor's degree or higher. See Cahalan, M., Ingels, S., Burns, L., & Planty, M. (2006). *United States High School Sophomores: A Twenty-Two Year Comparison, 1980–2002 Statistical Analysis Report* (NCES 2006–327). U.S. Department of Education, http://files.eric.ed.gov/fulltext/ED493609.pdf. Similarly, data from the *Condition of College and Career Readiness 2014* indicate that 80 percent of first-generation college students expect to obtain a bachelor's degree or higher. https://www.act.org/content/dam/act/unsecured/documents/CCCR14-NationalReadinessRpt.pdf.

88 BPS includes first-time enrollees in 4-year, 2-year, and less-than-2-year institutions.

Equity Indicator 5c(i): Percentage of dependent first-time students who obtained a bachelor's degree or higher within 5 or 6 years of first enrolling in a 4-year or 2-year-or-less postsecondary education institution by parents' family income quartile: BPS:1989-90 (1994 follow-up), BPS:1995-96 (2001 follow-up), and BPS:2003-04 (2009 follow-up)



Indicator Status: High and Persistent Inequality

The percentage of dependent first-time postsecondary education students in the lowest family income quartile who obtained a bachelor's degree within 5 or 6 years of first enrolling remained unchanged over the BPS survey waves at 26 percent. Bachelor's degree completion rates were 33 percentage points lower for those in the lowest than highest income quartile for those who first enrolled in 1995-96 and 2003-04, up from a gap of 25 percentage points for those who first enrolled in 1989-90

NOTE: Income quartiles are based on applicable BPS sample parents' income at the start of the study. For example, dependent BPS:2004 parent income levels by quartile were as follows: Lowest, less than $32,000; Second, $32,000- $59,999; Third, $60,000-$91,999; Highest, $92,000 or more. The BPS:2004 quartiles reflect 2002 parent family incomes for the first-time, college-going population entering in 2003-04, whereas the CPS reflects the income distribution of families of 18- to 24-year-olds for the entire nation for the year specified and thus is not directly comparable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Longitudinal Studies (BPS:1989-90/1996; BPS:1996/2001; BPS:2003-2004/2009). Data tabulated using NCES Data Analysis System (DAS). See also Radford, A., Berkner, L., Wheeless, S., & Shepherd, B. (2010). *Persistence and Attainment of 2003-04 Beginning Postsecondary Students: After 6 Years.* U.S. Department of Education, National Center for Education Statistics.

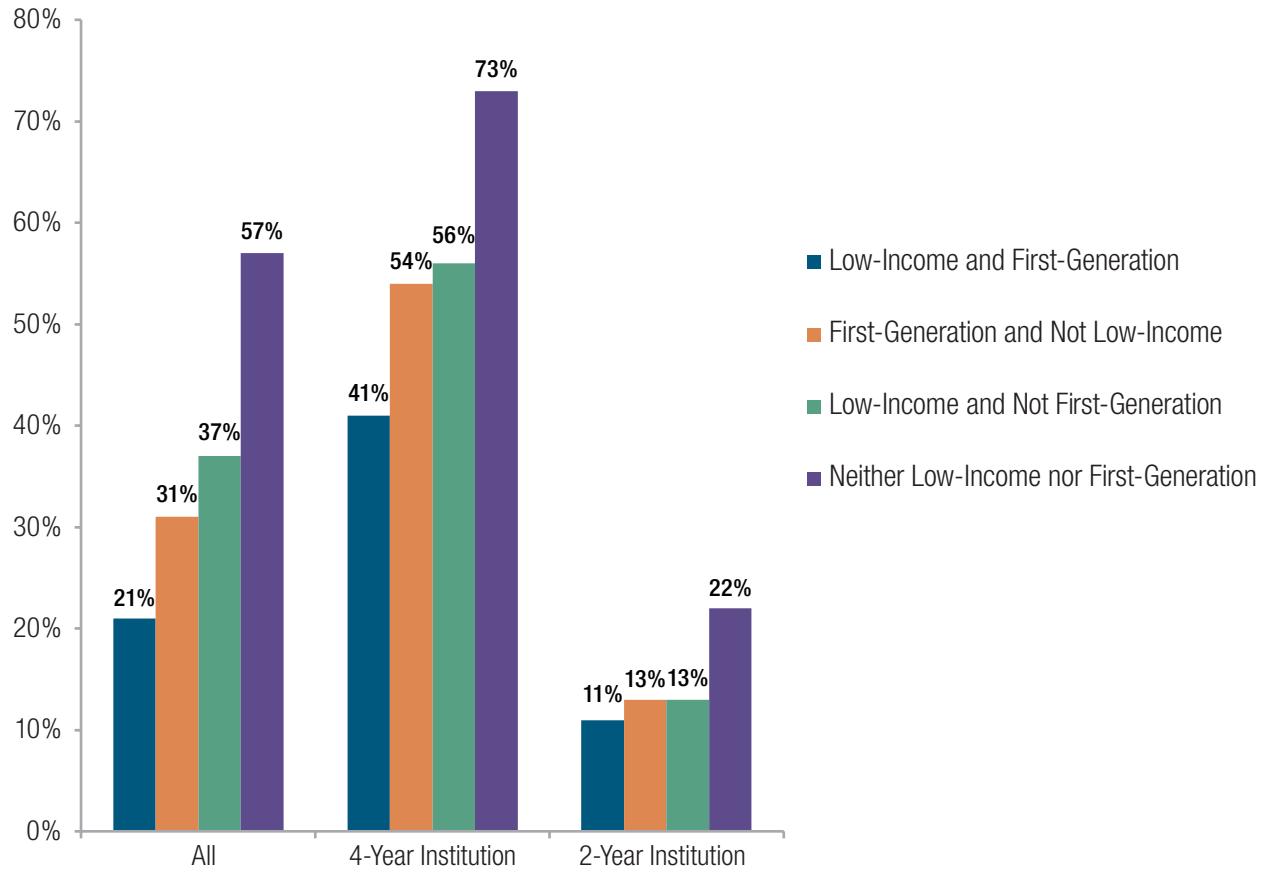
Equity Indicator 5c(ii): What Percentage of Beginning First-Time TRIO Eligible and Non-TRIO-Eligible Students Complete Bachelor's Degrees within 6 Years?

Using data from the 2009 follow-up of the 2003-04 Beginning Postsecondary Students (BPS:2004/2009) survey, Indicator 5c(ii) shows rates of completing a bachelor's degree within 6 years of first enrolling for all students and for students beginning at 4-year and 2-year colleges, respectively. Students are classified as to whether they would qualify for the Federal TRIO programs based on their parents' income and first-generation college status. Family-income thresholds for TRIO eligibility are established by law and reflect an adjusted income that is at or below 150 percent of the federal poverty level. First-generation is defined as neither parent nor guardian having attained a bachelor's degree. Eligibility requirements vary by TRIO program, but for most TRIO programs, two-thirds of participants must be both low-income and first-generation, or students with disabilities, and the other one-third must be either low-income or first-generation.

Indicator 5c(ii) shows that 6-year bachelor's degree completion rates for the BPS 2009 follow-up for all students ranged from 21 percent for beginning postsecondary students who are both low-income and first-generation to 57 percent among students who are neither low-income nor first-generation. Students who are first-generation but not low-income had a bachelor's degree completion rate of 31 percent, while students who are low-income and not first-generation had a bachelor's degree completion rate of 37 percent.

Indicator 5c(ii) also presents completion rates for students beginning at 4-year and 2-year colleges. Students who first enrolled at 2-year institutions were much less likely to obtain a bachelor's degree in 6 years than students who first enrolled in 4-year institutions among all family income and first-generation status groupings. Nonetheless, for both groups, students who are neither low-income nor first-generation college had considerably higher rates of obtaining a bachelor's degree in 6 years than students who were both low-income and first-generation (73 versus 41 percent at 4-year institutions; 22 percent versus 11 percent at 2-year institutions).

Equity Indicator 5c(ii): Percentage of dependent first-year students who first enrolled in a postsecondary education institution in academic year 2003-04 who completed a bachelor's degree or higher within 6 years, by low-income and first-generation status and by institutional level of initial enrollment



Indicator Status: High and Persisting Inequality

Among dependent students who first enrolled in 2003-04, the gap in bachelor's degree completion rates between those who were low-income and first-generation and those who were neither low-income nor first-generation was 36 percentage points for (BPS:2004/2009). This pattern holds for students who first entered 2-year and 4-year institutions.

NOTE: For this classification, TRIO eligibility criteria were used. TRIO income thresholds are established by law and are set at an adjusted income at or below 150 percent of the federal poverty line. First-generation is defined as neither parent nor guardian having attained a bachelor's degree. In any given year, TRIO programs are able to serve less than 5 percent of eligible low-income and first-generation students.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Longitudinal Studies (BPS:1996/2001; BPS:2004/2009). Data were tabulated using NCES PowerStats.

Equity Indicator 5d(i) and 5d(ii): What is the Distribution of Degrees Awarded to U.S. Citizens by Race and Ethnicity?

Indicator 5d uses data from the Integrated Postsecondary Education Data System (IPEDS) on degrees conferred to U.S. citizens by race/ethnicity in 1980 and 2016. We compare the distribution of the total civilian population and the 18- to 24-year-old population in the same years. Indicator 5d(i) examines associate's and bachelor's degrees conferred, and Indicator 5d(ii) examines master's and doctoral degrees conferred. Race and ethnicity are dynamic classifications, and changes in racial/ethnic classification over time should be considered when interpreting these data, especially for relatively small population categories such as American Indian/Alaska Natives and Asian and Pacific Islanders. The statistics are also impacted by the introduction of the "Two or More Races" category, a category that was not present in the 1980 classifications. Race/ethnicity classifications are self-reported using varying categories in the data collection instruments, and some change in distribution of degrees by race/ethnicity over time may be attributable to differences in population self-identifications as well as changes in the categories used in data collection instruments.

As Indicators 5d(i) and 5d(ii) indicate, the U.S. population distribution has undergone considerable demographic change since 1980. Younger individuals represent a higher share of the Black and Hispanic populations than of the White population. In 1980 Whites were 80 percent of the total population (and 77 percent of 18 to 24 year olds). Blacks were 12 percent of the total (and 13 percent of 18 to 24 year olds). Hispanics were 6 percent of the total (and 8 percent of 18 to 24 year olds). Asian/Pacific Islanders were 2 percent of the total (and 2 percent of 18 to 24 year olds) and American Indian/Alaska Native were about .6 percent of the total (and .6 percent of 18 to 24 year olds). By 2016, Whites were 61 percent of the total population and 54 percent of those ages 18 to 24. Blacks were 12 percent of the total population, but 15 percent of those ages 18 to 24. Hispanics had increased to 18 percent of the total population and 22 percent of those ages 18 to 24. The Asian category increased from 2 percent to 6 percent of both the civilian population and the population age 18 to 24. American Indian/Alaska Natives did not register measured change over the period of 1980 to 2016.[89]

Bearing in mind cautions associated with changes in classifications, Indicator 5d suggests some progress as well as the need for more progress in aligning the racial/ethnic representation of degree recipients to that of the total population and the population age 18 to 24.[90] Among Blacks, the largest increases in parity have been among associate's degrees and master's degrees awarded. In 1980, Blacks were about 12 percent of the total U.S. civilian population and 13 percent of the 18 to 24 year-old population, yet attained only 9 percent of associate's degrees, 7 percent of bachelor's degrees, 6 percent of master's degrees, and 4 percent of doctoral degrees. Thus, Blacks were 69 percent as likely to have parity with the population age 18 to 24 among associate's degree recipients, just over half (53 percent) as likely to be represented among bachelor's degree recipients, just under half (46 percent) as likely to have obtained a master's degree, and just under a third (31 percent) as likely to have obtained a doctoral degree relative to their representation in the U.S. population age 18 to 24.

By 2016, Blacks had come closer than in 1980 to parity in the percentage of degrees earned, but continued to be underrepresented relative to their representation in the total civilian population and the 18 to 24 year-old population. In 2016 Blacks were 15 percent of the population age 18 to 24, but earned 14 percent of associate's

89 In 2016, but not 1980, Native Hawaiian and Other Pacific Islanders were classified separately from the Asian population by the Census Bureau and were 0.2 percent of the U.S. population.

90 Caution is needed in these comparisons, due to changes in the race and ethnicity classifications over time, such as the separation of Hispanics from race/ethnicity classifications and the introduction of the "Two or More Races" category. NCES has data on degrees conferred from to 1976. However, data identifying those of Hispanic origin were not available until 1980. The category "Two or More Races" was not used until 2010 following new OMB regulations.

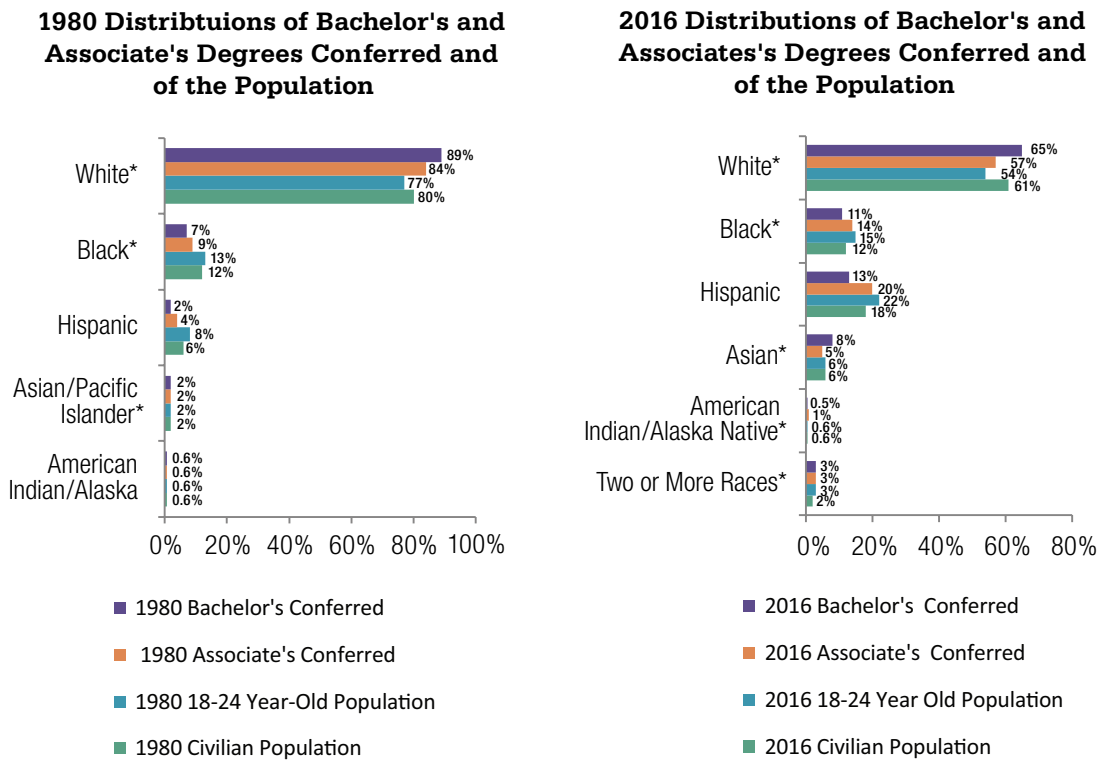
degrees (93 percent parity), 11 percent of bachelor's degrees (73 percent of parity), 14 percent of master's degrees (93 percent parity), and 9 percent of doctoral degrees (60 percent of parity).

In 1980, those of Hispanic origin represented 6 percent of the total civilian population and 8 percent of the population age 18 to 24, yet earned 4 percent of associate's degrees and 2 percent of bachelor's, master's and doctoral degrees conferred. By 2016, Hispanics were about 18 percent of the civilian population and 22 percent of those age 18 to 24, but earned 20 percent of associate's degrees (90 percent of parity relative to the population age 18 to 24); 13 percent of bachelor's degrees (59 percent of parity), 10 percent of master's degrees (45 percent of parity), and 8 percent of doctoral degrees (36 percent of parity).

In 1980, those of Asian/Pacific Islander origin represented 2 percent of the total civilian population and 2 percent of persons age 18 to 24. In 1980 Asians earned 2 percent of the associate's, bachelor's, master's, and doctoral degrees conferred. By 2016, Asians represented 6 percent of the civilian population and the population age 18 to 24, and earned 5 percent of the associate's degrees (83 percent of parity), 8 percent of bachelor's degrees (133 percent of parity), 7 percent of master's degrees (116 percent of parity), and 13 percent of doctoral degrees (216 percent of parity).

In 2016, Whites remained overrepresented in degrees conferred relative to their representation in the total population (61 percent) and population age 18 to 24 (54 percent). Whites were awarded 57 percent of associate's degrees (105 percent of parity relative to population age 18 to 24), 65 percent of bachelor's degrees (120 percent of parity), 67 percent of master's degrees (124 percent of parity), and 69 percent of doctoral degrees (127 percent of parity).

Equity Indicator 5d(i): Percentage distributions of bachelor's and associate's degrees conferred to U.S. citizens and the population by race/ethnicity: 1980 and 2016



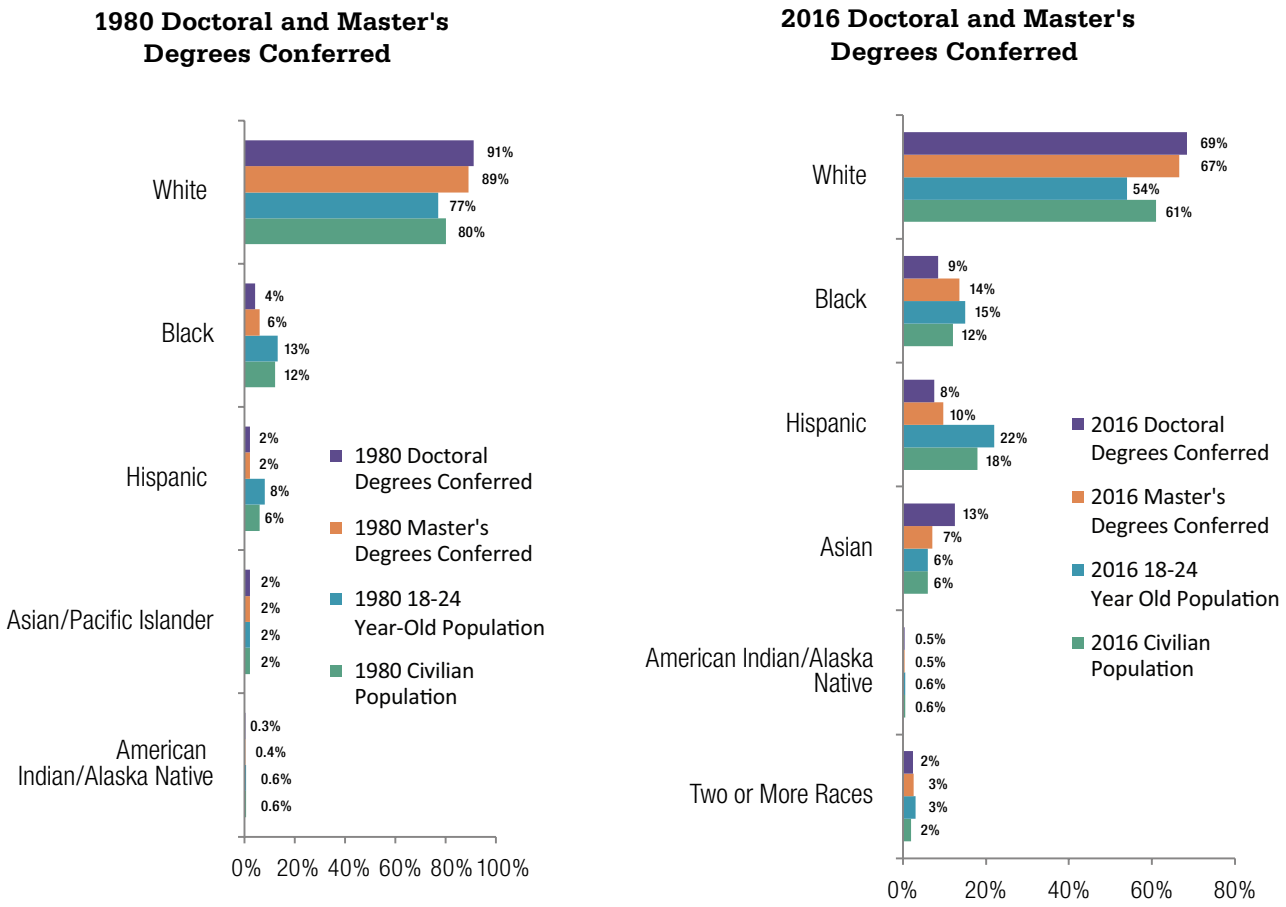
Indicator Status: Gains in Equity Over the Period Since 1980

The representation of Blacks and Hispanics among degree recipients has increased since 1980, but, in 2016, Blacks and Hispanics continued to be underrepresented among degree recipients relative to their representation in the population.

NOTE: *The categories (White, Black, Asian/Pacific Islanders, American Indian/Alaska Native and Two or More Races) exclude Hispanics. Race/ethnicity categories reflect the titles used at the time of reporting. Caution is warranted in interpreting this Indicator as categories for race and ethnicity classifications have changed over time. The category "Two or More Races" was not included in 1980. In 2016, in the population figures by the Census Bureau, Native Hawaiian and Other Pacific Islanders were classified separately from Asians and were 0.2 percent of the U.S. population. The inclusion of the "Two or More Races" category likely reduced the percent of persons who classified themselves as Black, American Indian/Alaska Native or Asian.

SOURCE: U.S. Department of Education, National Center for Education Statistics (2016). *Digest of Education Statistics 2016* [Table 101.20]; U.S. Department of Education, National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 321.20][Table 322.20] [Table 323.20][Table 324.20]; Hobbs, F., & Stoops, N. (2002). *Demographic trends in the 20th century*, U.S. Census Bureau, Washington DC. https://www.census.gov/prod/2002pubs/censr-4.pdf; Quick Facts, U.S. Census Bureau 2017, https://www.census.gov/quickfacts/table/PST045216/00.

Equity Indicator 5d(ii): Percentage distributions of doctoral and master's degrees conferred to U.S. citizens and the population by race/ethnicity: 1980 and 2016



Indicator Status:

The representation of Blacks and Hispanics among degree recipients has increased since 1980, but, in 2016, Blacks and Hispanics continued to be underrepresented among degree recipients relative to their representation in the population.

NOTE: The categories (White, Black, Asian/Pacific Islanders, American Indian/Alaska Native and Two or More Races) exclude Hispanics. Race/ethnicity categories reflect the titles used at the time of reporting. Caution is warranted in interpreting this Indicator as categories for race and ethnicity classifications have changed over time. The category "Two or More Races" was not included in 1980. In 2016, in the population figures by the Census Bureau, Native Hawaiian and Other Pacific Islanders were classified separately from Asians and were 0.2 percent of the U.S. population. The inclusion of the "Two or More Races" category likely reduced the percent of persons who classified themselves as Black, American Indian/Alaska Native or Asian.

SOURCE: U.S. Department of Education, National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 101.20]; U.S. Department of Education, National Center for Education Statistics (2017). *Digest of Education Statistics 2017* [Table 321.20][Table 322.20][Table 323.20][Table 324.20] https://nces.ed.gov/programs/digest/d17/tables/dt17_323.20.asp?current=yes, https://nces.ed.gov/programs/digest/d17/tables/dt17_324.20.asp?current=yes; Hobbs, F., & Stoops, N. (2002). *Demographic Trends in the 20th Century*: Census 2000 Special Reports. Washington, D.C.: U.S. Census Bureau. https://www.census.gov/prod/2002pubs/censr-4.pdf; Quick Facts, U.S. Census Bureau 2017, https://www.census.gov/quickfacts/table/PST045216/00.

Equity Indicator 5e: What are the Differences in After Graduation Outcomes by Parent Income Quartiles?

Using data from the NCES Baccalaureate and Beyond Longitudinal Study (B&B) for the 2008 cohort of graduating bachelor's degree recipients, Indicators 5e(i), 5e(ii), and 5e(iii) report selected outcomes 4 years after graduation (in 2012) by parents' income quartiles. The data describe students who were classified as dependent students for financial aid purposes when they were first surveyed in NPSAS:2008. Data are displayed according to the parents' income quartiles as derived from NPSAS:2008. While the B&B is a stratified nationally representative sample of graduating seniors, caution is warranted when interpreting the data displayed in the indicators. Disaggregating the sample by multiple categories, (such as dependent students' parents' income, post-baccalaureate degree program enrollment, and employment status), increases sampling errors, especially for categories that have a small number of graduates.

Enrollment of 2008 Bachelor's Degree Recipients in Further Schooling by 2012. Indicator 5e(i) presents the percent of graduates who had enrolled in further schooling and the highest post-baccalaureate degree program in which 2008 bachelor's degree graduates had enrolled 4 years after graduation (in 2012) by parents' income quartile.[91] Overall, 47 percent of 2008 bachelor's degree recipients had enrolled in some form of further schooling within 4 years of their graduation. Indicator 5e(i) shows that enrollment in graduate school or other further schooling was more frequent among those from the highest family income quartile (51 percent), but did not vary substantially among the other 3 quartiles, ranging from 44 to 46 percent. The difference in post-bachelor's degree enrollment is related to the higher rate of enrollment in doctoral degree programs among bachelor's degree recipients in the highest family income quartile. About 14 percent of bachelor's degree recipients in the highest family income quartile had enrolled in a doctoral degree program within 4 years of graduation, compared with 8 to 9 percent of those in the lowest three income quartiles. Enrollment in master's degree programs as the highest enrollment did not vary by parents' income quartile (26 percent to 29 percent).

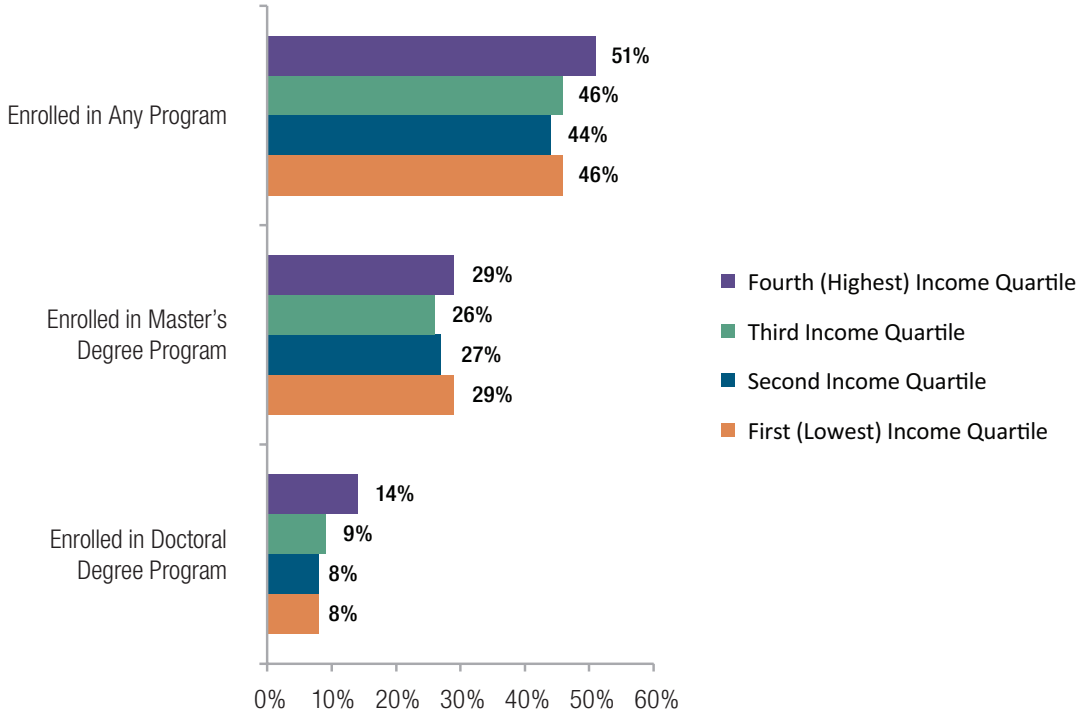
Annualized Income by the 4-Year Follow-Up. Indicator 5e(ii) displays average annualized income in 2012 for bachelor's degree recipients who were dependent students by parents' income quartile. The average annualized income reported in Indicator 5e(ii) excludes those who were enrolled in education at any level and includes those who were employed full-time or part-time having one job or more jobs in 2012, 4 years after graduation.[92]

Indicator 5e(ii) shows that average annualized income for bachelor's degree recipients who were not enrolled in educational programs 4 years after graduation was higher for those whose parents' income was in the highest quartile than for other graduates. There is little difference in average annualized income for bachelor's degree recipients from the first through third family income quartiles. The mean annualized income of dependent bachelor's degree recipients whose parents' income was in the top quartile was about $51000, while the average annualized income for bachelor's degree recipients in the other three family income quartiles was about $43,000.

91 In addition to master's and doctoral degrees percentages, approximately 0.8 percent reported enrollment in a post-master's certificate and 2.8 percent reported enrollment in a post-baccalaureate certificate program.

92 The mean incomes reported in the 2017 Equity Indicators 5e(i) and 5e(ii) did not exclude those who were enrolled in further schooling and thus are lower than those reported in the 2018 Equity Indicator 5e(ii).

Equity Indicator 5e(i): Percentage of dependent students who received bachelor's degrees in 2008 who had enrolled in graduate school or other further schooling programs by parents' family income quartile: 2012 (4-year follow-up)



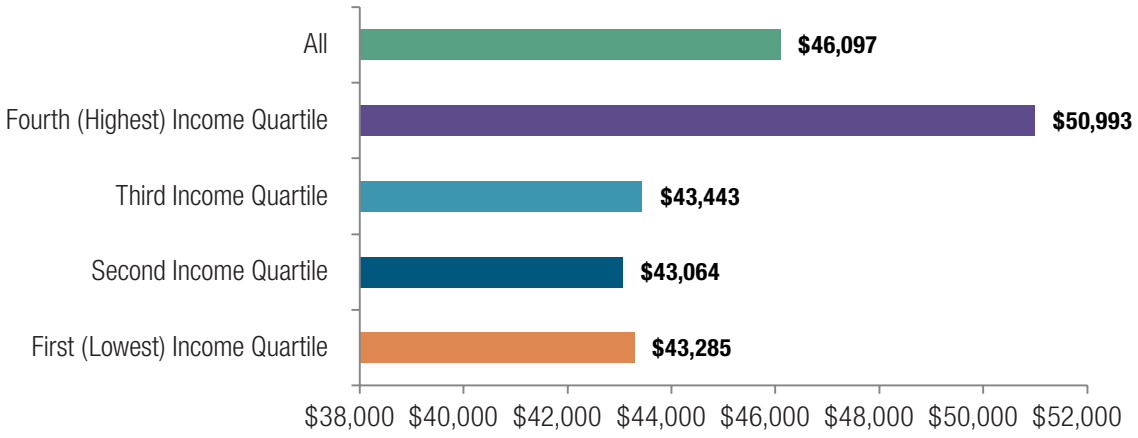
Indicator Status:

A higher share of bachelor's degree recipients in the highest family income quartile than of degree recipients in the lower family income quartiles enrolled in a doctoral degree program within 4 years of graduation (14 percent versus 8 percent to 9 percent).

NOTE: In addition to master's and doctoral degree programs, the percentage "Enrolled in Any Program" also includes small percentages of individuals enrolled in other programs (e.g., post-baccalaureate certificates, post-master's degree certificates, undergraduate certificates, associate's degrees, and additional bachelor's degrees).

SOURCE: U.S. Department of Education, National Center for Education Statistics. Baccalaureate and Beyond Longitudinal Study (B&B 2008/2012). Data were tabulated using NCES PowerStats.

Equity Indicator 5e(ii): Average annualized income for dependent students who received bachelor's degrees in 2008 who were not enrolled in education and who were employed at the 4-year follow-up in 2012 by parents' income quartile



Indicator Status:

Average annualized income of bachelor's degree recipients who are not enrolled in education and who are employed is higher for those from the highest income quartile than for those from lower income quartiles.

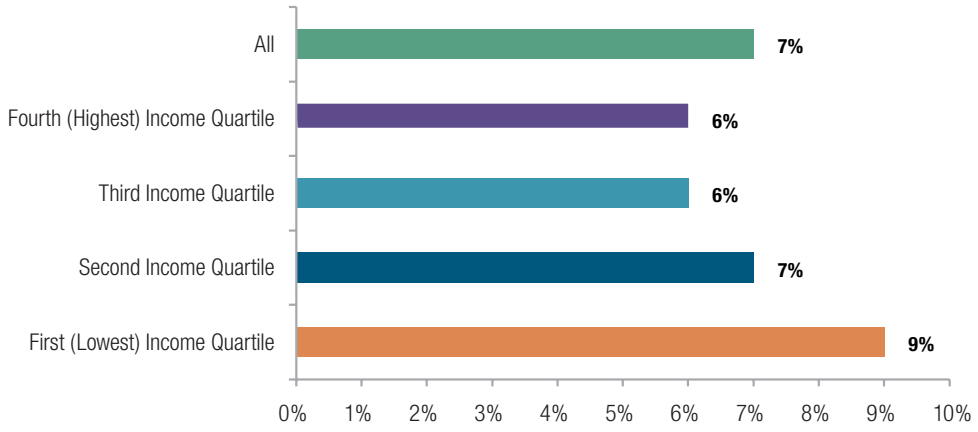
NOTE: Mean annualized incomes are for dependent 2008 bachelor's degree recipients who were not enrolled in any level of education at the time of the 2012 follow-up and who were employed full-time or part-time with one job or more jobs. The mean incomes reported in the 2017 Equity Indicators 5e(i) and 5e(ii) did not exclude those who were enrolled in further schooling and thus are lower than those reported in the 2018 Equity Indicator 5e(ii).

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study (B&B 2008/2012). Data were tabulated using NCES PowerStats.

Unemployment among Bachelor's Degree Recipients at the Time of the 4-Year Follow Up. Indicator 5e(iii) shows the percentage of dependent bachelor's degree recipients who, when they were surveyed 4 years after graduation (in 2012), were not employed, not enrolled in further education, and did not report they were out of the labor force for family or other reasons.[93]

Indicator 5e(iii) shows that bachelor's degree recipients from the lowest family income quartile had an "unemployment rate" that was 50 percent higher than that of the two highest family income quartiles (9 percent versus 6 percent). In 2012, during the Great Recession, the unemployment rate reported by BLS based on CPS data was 8.3 percent overall and 4.3 percent for college graduates over age 25. Recent college graduates typically have higher unemployment rates than older graduates. For younger college graduates, the national unemployment rate was 10.4 percent in 2010 and 9.4 percent in 2012.[94]

Equity Indicator 5e(iii): Percentage of dependent students who received bachelor's degrees in 2008 who were "unemployed" (not enrolled in further schooling, not employed, and in the labor force) at the time of the 4-year follow-up in 2012



Indicator Status:

Bachelor's degree recipients who were in the lowest family income quartile were "unemployed" at a rate 50 percent higher than that of the highest two income quartiles (9 percent versus 6 percent).

NOTE: "Unemployed" bachelor's degree recipients were not employed and not enrolled in education programs, and did not report that they were out of the labor force.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Longitudinal Study (B&B 2008/2012). Data were tabulated using NCES PowerStats.

93 This indicator represents the percentage of non-employed graduates who were not enrolled in further schooling in 2012. It excludes those who indicated that they were "out of the labor force" for any reason.

94 Discussion of college graduates' employment has also focused on underemployment defined as those working in jobs that did not require a college degree. For 2012, the U.S. Census Bureau Current Population Survey estimated that 44 percent of recent college graduates age 22 to 27 were "underemployed" by this definition https://www.theatlantic.com/business/archive/2013/06/44-of-young-college-grads-are-underemployed-and-thats-good-news/277325. For discussion of employment and underemployment trends see: Wething, H. Sabadish, N., and Shierholz, H.(2012). *Labor Market for Young Graduates*. Economic Policy Institute. https://www.epi.org/publication/bp340-labor-market-young-graduates/ and https://fredblog.stlouisfed.org/2014/03/unemployment-rates-by-educational-attainment/?utm_source=series_page&utm_medium=related_content&utm_term=related_resources&utm_campaign=fredblog.

Equity Indicator 5f: What are the Differences in Educational Attainment by State?

Equity Indicator 5f describes educational attainment by state. The Indicator draws on data from the Census Bureau's decennial censuses and the American Community Survey, and institutional data on 6-year graduation rates as reported to NCES through IPEDS. To provide context to current differences by state, we first use Census data to look at historical differences in attainment of the population 25 years of age and older from 1940 to 2015. Given the relationship between high school graduation and college entrance, this historical review includes both high school and college attainment rates. We then use data from IPEDS to show 6-year graduation rates from 2000 to 2015. Finally, we observe differences in attainment of bachelor's degrees by state for 24 to 35 year olds in the same period using the data from American Community Survey.

Interpreting state by state comparisons is complex. State educational attainment rates are influenced by historical events, geographic patterns of differences, age distributions of a state's population, and demographic migrations into and out of the state, as well as by the characteristics and structures of a state's higher education system and state policies that influence educational attainment.

State Variation in High School and College Attainment Rates: 1940 to 2015. Indicators 5f(i) to (iii) use Census Bureau data to show the percent of the population 25 years of age and older that has attained high school credentials and a bachelor's degree or higher by state. The data from 1940 to 2000 are from the decennial census and the 2010 and 2015 data are from the American Community Survey.[95] We provide data from 1940 to give historical context to recent observed differences by state. To display the range of variation by state, and changes in that variation over time, Indicator 5f(i) plots high school and bachelor's degree attainment rates at 10 year intervals without identifying individual states. Indicators 5f(ii) and 5f(iii) present the same information in bar charts displaying high school and bachelor's degree attainment rates for individual states for 1940 and 2015.

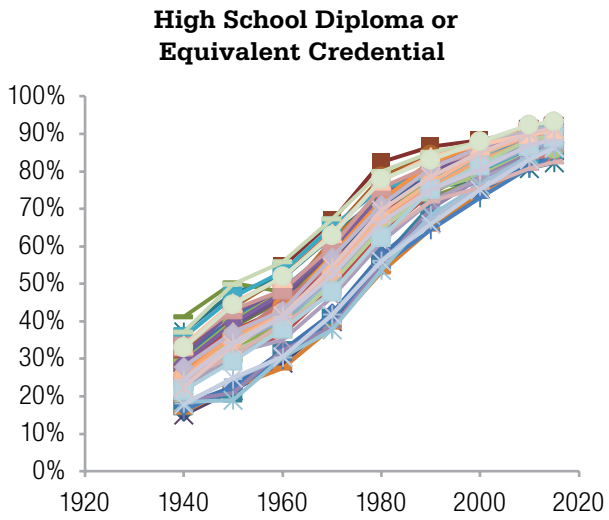
Over the 75 years from 1940 to 2015, there has been a convergence across states in the percent of the population 25 years of age and older with a high school diploma or other credential. At the same time, there has been increased divergence by state in the percentage that has attained at least a bachelor's degree.

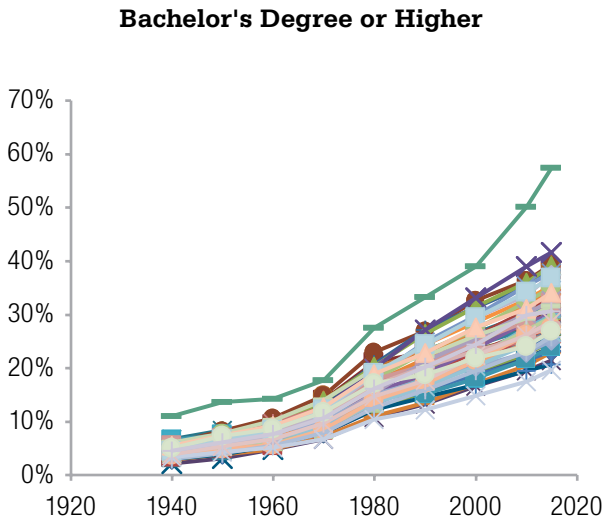
High School Attainment of Population 25 and older: 1940 and 2015. As displayed in Indicator 5f(ii), the percent of the population 25 years of age and older that had attained a high school diploma or the equivalent in 1940 averaged 24 percent for the United States as a whole and ranged from 15 percent to 41 percent across states. The states with the lowest high school attainment rates in 1940 were: Arkansas (15 percent), Kentucky, Alabama, and Mississippi (16 percent), Georgia (17 percent), and Louisiana, West Virginia, Tennessee and South Carolina (18 percent). The states with the highest high school completion rates were: District of Columbia (41 percent), California (37 percent), Utah (37 percent) and Nevada (36 percent).

By 2015, 88 percent of the U.S. population age 25 and older had attained at least a high school credential. High school attainment continued to vary across states, ranging from 82 percent in California and Texas to over 90 percent in just over half (n = 26) of the states. Montana, New Hampshire, Wyoming, North Dakota, and Minnesota had the highest high school attainment rates in 2015 (93 percent).

95 The sample design for American Community Survey is representative at the state level. However, all sample surveys are subject to sampling error. The Census Bureau publishes tables for download with sampling errors for these statistics at the following site: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_S1501&src=pt. Data is also available from the NCHEMS Information System; http://www.higheredinfo.org/.
The data from the decennial census conducted every 10 years are not subject to sampling error, but are subject to coverage error.

Equity Indicator 5f(i): Scatter plots of the percent of the population 25 years of age and older who has attained a high school diploma or equivalent credential and who has attained a bachelor's degree or higher by state: 1940-2015





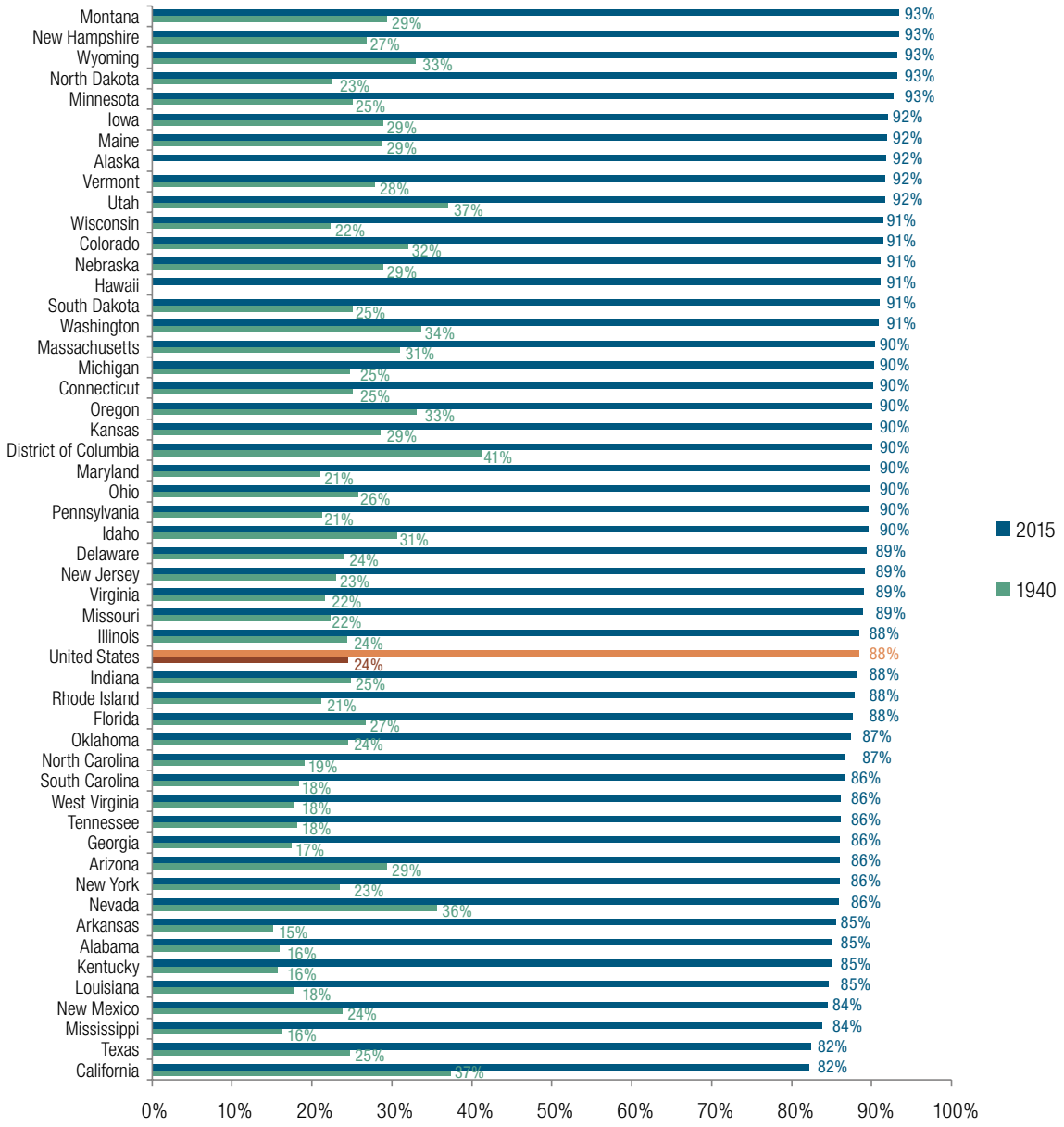
Indicator Status:

Differences in high school attainment rates by state lessened over the 75 year period from 1940 to 2015. Over the same period, differences by state in bachelor's degree attainment rates increased.

NOTE: Data from 1940 to 2000 are from the decennial census. Data from 2010 and 2015 are from the American Community Survey.

SOURCE: U.S. Census Population Division Census 2000 PHC-T-41. (2015). *A Half-Century of Learning: Historical Statistics on Educational Attainment in the United States, 1940 to 2000*. https://www.census.gov/data/tables/time-series/demo/educational-attainment/educational-attainment-1940-2000.html; U.S. Census Bureau, American Community Survey, 2005, 2010, 2015 1-Year Estimates, Table S. 1501.

Equity Indicator 5f(ii): Percent of the population 25 years of age and older that had attained a high school diploma or equivalent credential by state: 1940 and 2015



Indicator Status:

By 2015, 26 states had high school attainment rates above 90 percent.

NOTE: Data from 1940 are from the decennial census. Data from 2015 are from the American Community Survey and subject to sampling error.

SOURCE: U.S. Census Population Division Census 2000 PHC-T-41. *A Half-Century of Learning: Historical Statistics on Educational Attainment in the United States, 1940 to 2000*. https://www.census.gov/data/tables/time-series/demo/educational-attainment/educational-attainment-1940-2000.html; U.S. Census Bureau, American Community Survey, 2015.

Percent of Population that Attained a Bachelor's Degree or Higher: 1940 and 2015. In 1940, 5 percent of the U.S. population age 25 and older had attained at least a bachelor's degree. While 11 percent of the population age 25 and older had attained at least a bachelor's degree in the District of Columbia, in the 50 states bachelor's degree attainment rates ranged from 2 percent to 7 percent. Bachelor's degree attainment rates were lowest in Arkansas (at 2 percent) and highest in California and Nevada (at 7 percent).

In 2015, 31 percent of the U.S. population age 25 and older had attained at least a bachelor's degree. Bachelor's degree attainment rates continued to be highest in the District of Columbia (57 percent). Among the 50 states, bachelor's degree attainment rates ranged from less than 25 percent in 7 states (Alabama, Nevada, Louisiana, Kentucky, Arkansas, Mississippi, and West Virginia) to 42 percent in Massachusetts.

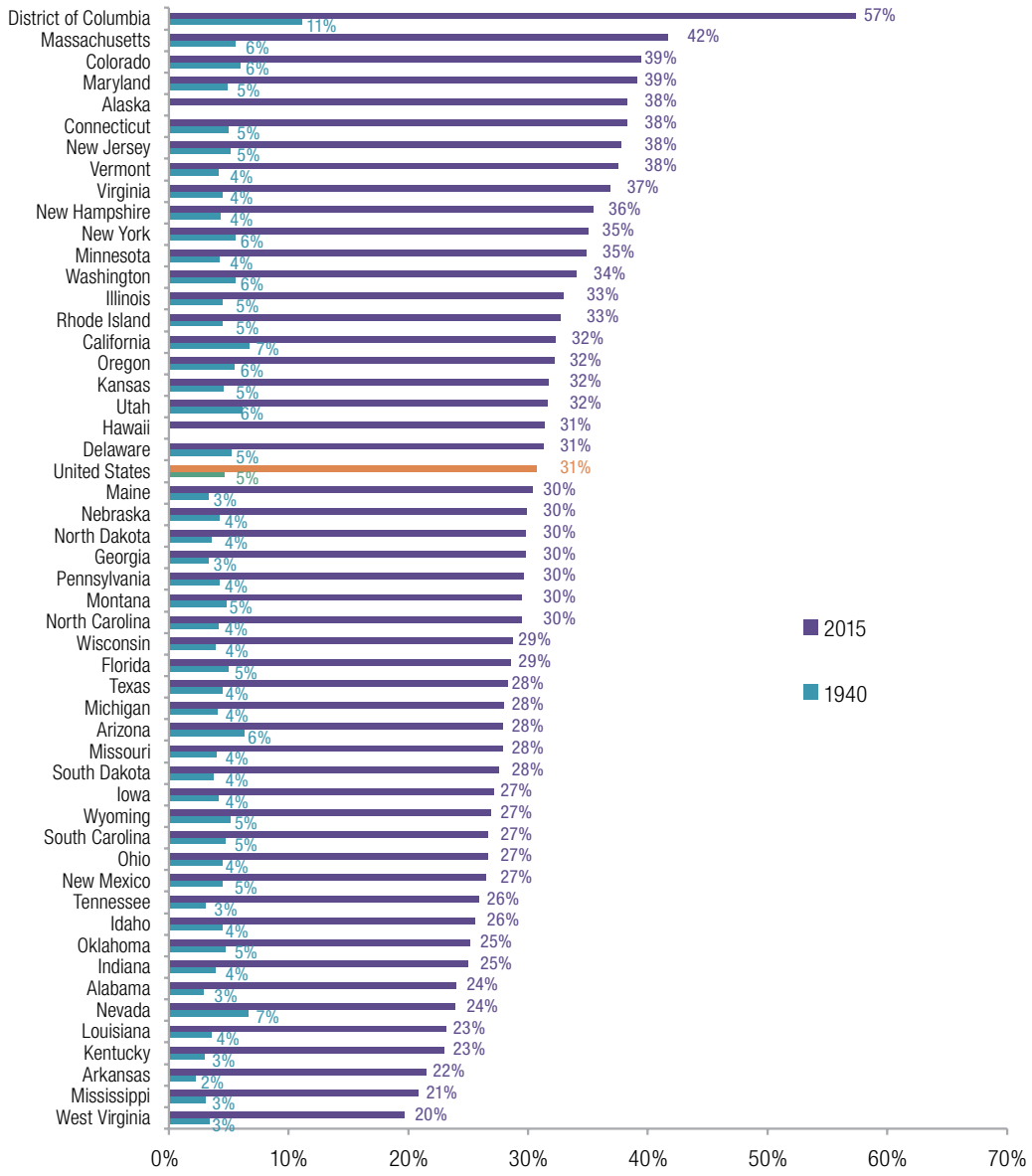
Differences in Completion Rates of Bachelor's Degree Seeking Students by State. In 1997, as mandated by Congress, NCES began collecting graduation rates from institutions participating in the federal financial aid system (Title IV). Since 1997, the number of students upon which the calculations are based has increased from 958,000 in the 1991/1997 cohort to 1.79 million students in the 2009/2015 cohort. The national 6-year completion rate has varied between 52 percent and 56 percent and was 54 percent in 2015.

Indicator 5f(iv) reports the percentage of first-time full-time bachelor's degree-seeking students earning any formal award (certificate, associate's degree, or bachelor's degree) within 6 years by state of institution in 2000 and 2015. In most states, completion rates were higher in 2015 than in 2000. In 2015, completion rates ranged from 32 percent in Alaska, 33 percent in Nevada, and 39 percent in Georgia to 68 percent in Rhode Island and Connecticut and 71 percent in Massachusetts. Completion rates do not take into account transfers among institutions.[96]

Bachelor's Degree Attainment Rates for the 25- to 34-Year-Old Population by State. Indicator 5f(v) uses data from the American Community Survey to show bachelor's degree attainment for the younger (25- to 34-year-old) population in 2005 and 2015. Nationwide, the percentage of 25- to 34-year olds with at least a bachelor's degree increased from 30 percent in 2010 to 34 percent in 2015. Bachelor's degree attainment rates were less than 25 percent in Nevada (22 percent), New Mexico (22 percent), Mississippi (23 percent), Arkansas (24 percent) and more than 40 percent in Minnesota (41 percent), New Hampshire (41 percent), Connecticut (44 percent), New Jersey (44 percent), New York (44 percent), and Massachusetts (51 percent).

96 Transfer students are excluded from the data reported in Indicator 5f(iv).

Equity Indicator 5f(iii): Percentage of the population 25 years of age and older that had attained a bachelor's degree or higher by state: 1940 and 2015



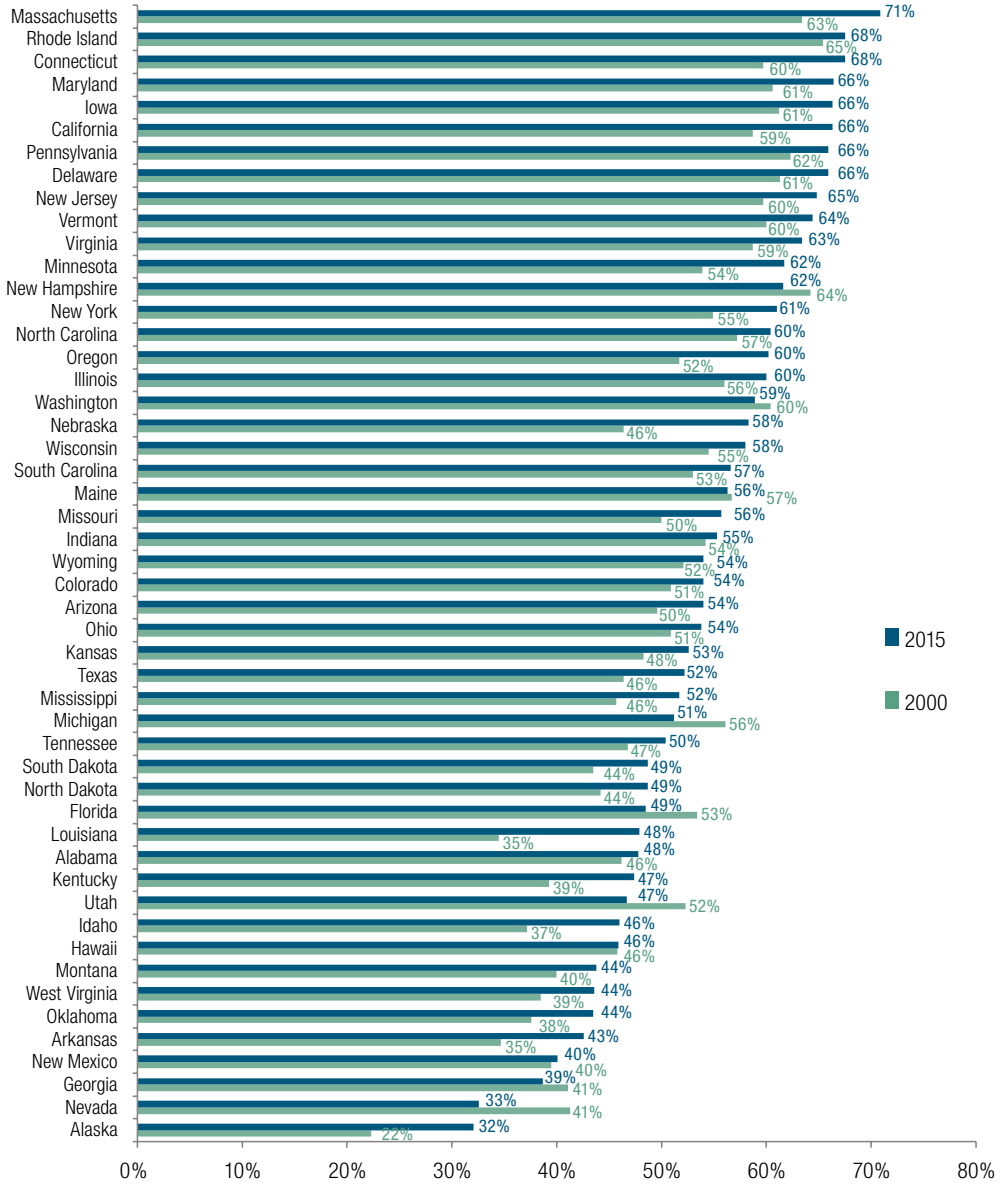
Indicator Status:

Excluding the District of Columbia, bachelor's degree attainment rates ranged across states from 2 percent to 7 percent in 1940 (a 5 percentage point difference). In 2015, attainment rates ranged across states from 20 percent to 42 percent (a 22 percentage point difference).

NOTE: Data from 1940 are from the decennial census. Data from 2015 are from the American Community Survey (ACS) and are subject to sampling error.

SOURCE: U.S. Census Population Division Census 2000 PHC-T-41. *A Half-Century of Learning: Historical Statistics on Educational Attainment in the United States, 1940 to 2000*. https://www.census.gov/data/tables/time-series/demo/educational-attainment/educational-attainment-1940-2000.html; U.S. Census Bureau, American Community Survey, 2015.

Equity Indicator 5f(iv): Percentage of first-time full-time bachelor's degree-seeking students earning any formal award (certificate, associate's degree, or bachelor's degree) within six years by state of institution: 2000 and 2015



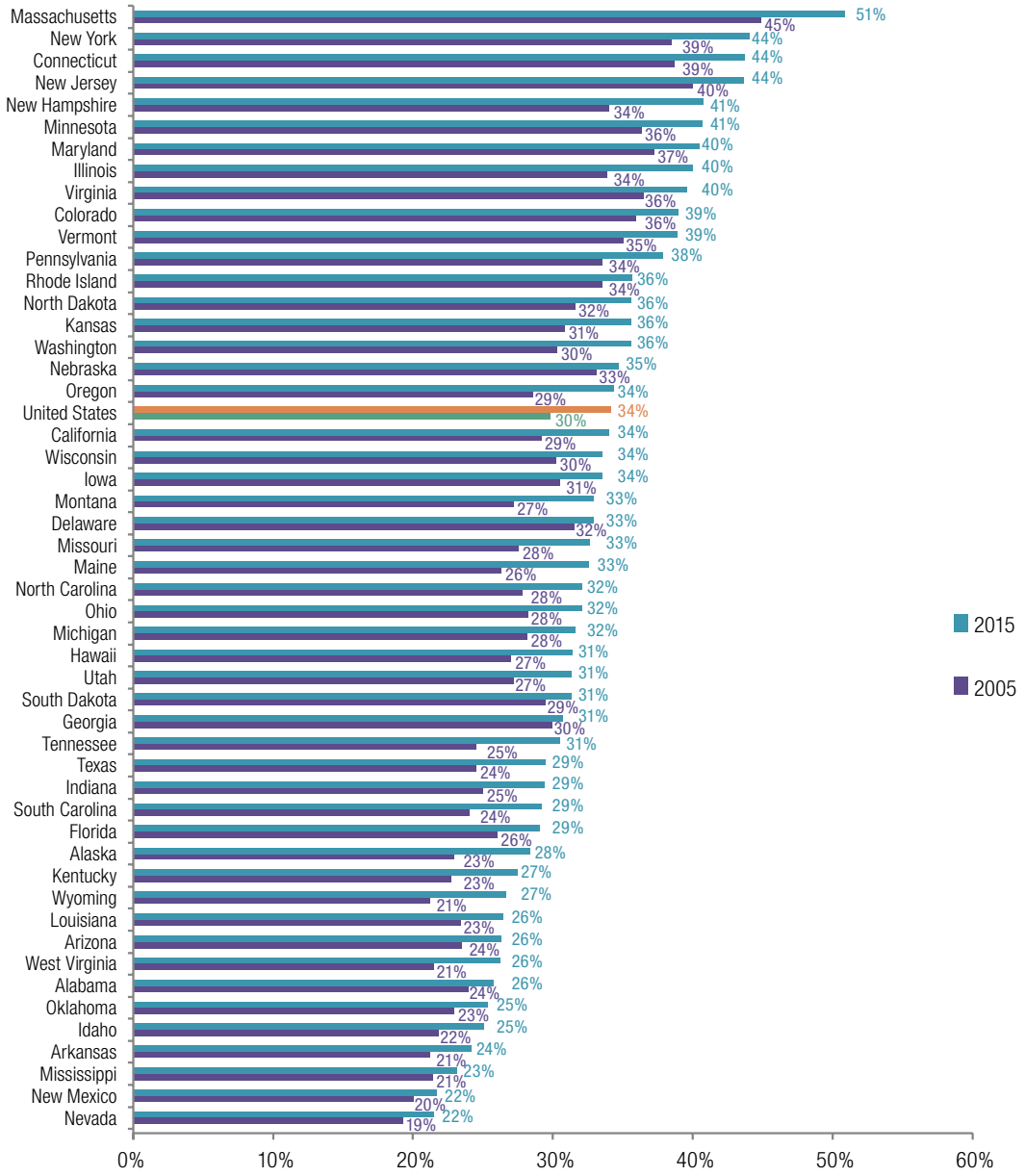
Indicator Status:

Six-year completion rates for bachelor's degree-seeking students ranged from a low of 32 percent in Alaska to a high of 71 percent in Massachusetts.

NOTE: The completion rate is the percentage of first-time full-time bachelor's degree-seeking students earning any formal award (certificate, associate's degree, or bachelor's degree) within 6 years at institutions participating in the federal financial aid system (Title IV). Completion rates are calculated based on the total number of students in a state in a given cohort who began 6 years before the expected 6-year graduation date. The calculation does not account for transfers across institutions.

SOURCE: U.S. Department of Education, National Center for Educational Statistics. IPEDS Graduation Rate Survey, Washington, D.C.: U.S. Department of Education.

Equity Indicator 5f(v): Percentage of population age 25 to 34 that had attained a bachelor's degree by state: 2005 and 2015



Indicator Status:

By 2015, 6 states had bachelor's degree attainment rates of more than 40 percent (Massachusetts, New York, Connecticut, New Jersey, New Hampshire, and Minnesota), while 4 states had bachelor's degree attainment rates below 25 percent (Nevada, New Mexico, Mississippi, Arkansas).

NOTE: The American Community Survey data are based on sample surveys; thus they contain statistical errors that are associated with any sample survey.

SOURCE: U.S. Census Bureau, 2005 and 2015 American Community Survey. https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t; NCHEMS Information System. http://www.higheredinfo.org/.

EQUITY INDICATOR 6:

HOW DOES EDUCATIONAL ATTAINMENT IN THE U.S. COMPARE WITH OTHER COUNTRIES?

The U.S. has fallen from 2nd in tertiary-type A (bachelor's) degree attainment in 2000 to 18th in 2016 among countries reporting bachelor's degree information.

The final Equity Indicator compares educational attainment in the United States with other countries. The current stated mission of the U.S. Department of Education reflects interest in international comparison as it seeks "to promote student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access."[97] Indicator 6 uses data from the Organisation for Economic Co-operation and Development (OECD) to compare educational attainment in the United States with other countries. Since 1991, OECD has reported educational attainment by country in its annual report, *Education at a Glance*. Differences across countries in educational systems and degree classifications as well as reporting issues from year to year limit international comparisons. However, OECD strives to apply common definitions across countries and collect and report data in a consistent manner over time.[98]

Equity Indicator 6(a-b): Definitions

Indicator 6 tracks the percentage of the population that has attained tertiary degrees in different countries. Indicator 6a reports tertiary-type A degree attainment and Indicator 6b combines attainment of tertiary-type A (bachelor's or above) with tertiary-type B (associate's) degrees. For both Indicators, we present attainment for the population age 25 to 34 in the years 2000 and 2016.

As defined in the OECD's glossary of statistical terms:[99]

- **Tertiary-type A programs** are largely theory-based and are designed to provide sufficient qualifications for entry to advanced research programs and professions with high skill requirements. Tertiary-type A programs have a minimum cumulative theoretical duration of three years full-time equivalent at the tertiary level, although they typically last four or more years. These programs are not

97 For a detailed comparison of widening participation policies in six countries (Australia, Ireland, Netherlands, Norway, South Africa, United States), see http://www.hefce.ac.uk/pubs/rereports/year/2013/wpeffectiveness/.

98 For more information on the methods used and limitations of international comparisons, see http://www.oecd-ilibrary.org/content/book/eag-2017-en.

99 OECD (2008). *OECD glossary of statistical terms*. Paris: OECD Publishing. Retrieved from http://www.oecd-ilibrary.org/economics/oecd-glossary-of-statistical-terms_9789264055087-en.

exclusively offered at universities. This classification is comparable to the BA or BS or above in the U.S. system. Starting in May 2014, OECD began to use a more detailed new classification of levels of education to align with the International Standard Classification of Education (i.e., ISCED 2011).[100] These are the ISCED 2011 level 5 (short-cycle tertiary education), level 6 (bachelor's or equivalent level), level 7 (master's or equivalent level), and level 8 (doctoral or equivalent level). In this report, we combine levels 6 through 8 into the category of bachelor's degree or above and refer to this category as tertiary-type A.

- **Tertiary-type B programs** are typically shorter than tertiary-type A degrees and focus on practical, technical, or occupational skills for direct entry into the labor market, although some theoretical foundations may be covered in the programs. These programs have a minimum duration of two years full-time equivalent at the tertiary level. For reporting 2016 data, we present data on ISCED 2011 level 5 (short-cycle tertiary education) as equivalent to tertiary-type B programs in 2000. For Indicator 6, we use the terms tertiary-type B programs, short-cycle tertiary education, and associate's degree interchangeably.

Additional Caution Needed in International Comparisons. Due to differences in higher education systems and reporting differences across countries, caution is needed in interpreting these results. Some countries do not separate reporting by the categories as defined above and reporting varies from year to year. For example, in 2016, six countries (Lithuania, Switzerland, Portugal, Colombia, Saudi Arabia, and Brazil) did not separate short-cycle degree (type B) from bachelor's (type A) and other degree categories; hence, these nations have the same reported percentages in Indicator 6a and 6b. The reporting year is 2015 for South Africa, Chile, and the Russian Federation, 2010 for China, and 2016 for all other countries.

100 OECD (2013). *Education at a Glance 2017: OECD Indicators*, OECD Publishing.

Equity Indicator 6a: What Percentage of 25- to 34-Year Olds Has Completed a Type A (Bachelor's or above) Tertiary Degree?

Using the OECD classifications described above, and excluding those countries that did not report bachelor's degrees separately, in 2016 Luxembourg (48 percent) and Korea (48 percent) had the highest rates of bachelor's degree attainment among the 25 to 34 year old population. These percentages exceed the rate of 37 percent for the U.S. The U.S. ranked 2nd out of 30 countries on this indicator in 2000 (with a 30 percent attainment rate), but 18th out of the 37 countries reporting bachelor's degree attainment in 2016.

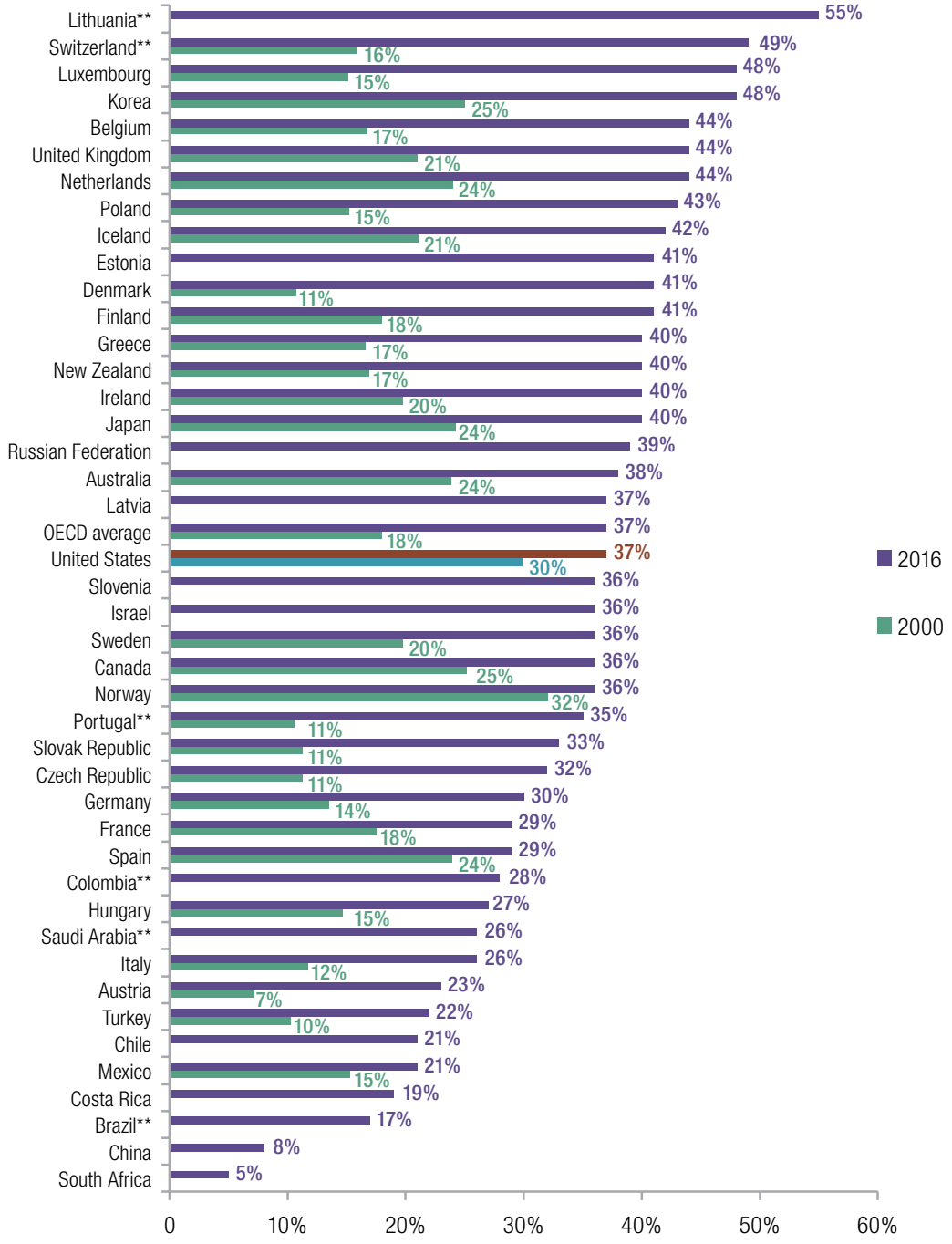
Equity Indicator 6a shows that each of the countries that ranked above the U.S. in 2016 (and reported data in both 2000 and 2016) had attainment rates for 25 to 34 year olds below that of the U.S. in 2000 (30 percent). The countries with attainment rates higher than the U.S. in 2016 that were below the U.S. in 2000 were Australia, Japan, Ireland, New Zealand, Greece, Finland, Denmark, Iceland, Poland, Netherlands, United Kingdom, Belgium, Korea, and Luxembourg.

In the U.S., the percentage of the 25- to 34-year-old population with at least a bachelor's degree increased by 24 percent between 2000 and 2016. However, the rate of increase in attainment for the U.S. population was far below the average rate of increase among countries that are now ranked above the U.S. For countries that ranked ahead of the U.S. in 2016, the average rate of increase in bachelor's degree attainment between 2000 and 2016 was 120 percent.

State Variation within the United States and International Variation. Indicator 5f(v), in the previous section, displays rates of attaining at least a bachelor's degree among the 25- to 34-year-old population in 2000 and 2015 for each of the 50 U.S. states. The share of the population with at least a bachelor's degree ranges from 22 percent in Nevada and New Mexico to 51 percent in Massachusetts. Indicator 6a shows that, across nations, attainment rates range from 5 percent in South Africa to 48 percent in Luxembourg and Korea.[101] Only one state, Massachusetts (at 51 percent) had a bachelor's degree attainment rate in 2015 that was higher than the 2016 rates of the highest-ranked nations of Luxembourg (48 percent) and Korea (48 percent). Three states (New York, Connecticut, New Jersey) had degree attainment rates that were similar to the rates of the third- to fifth-ranked Belgium, United Kingdom, and Netherlands (44 percent).

101 Although displayed in Indicator 6a, the six countries that did not separate type A or type B degrees are not included in the comparisons noted in the text for Indicator 6a.

Equity Indicator 6a: Percentage of 25- to 34-year olds with a type A (bachelor's equivalent or above) tertiary degree: 2000 and 2016



NOTE: Caution is needed in making international comparisons given differences in educational degree classifications among countries and reporting differences across years.
**Lithuania, Switzerland, Portugal, Colombia, Saudi Arabia, and Brazil did not separate short-cycle degree (type B) from Bachelor's (type A) and other degree categories. We report the same attainment rates for type A (Indicator 6a) and type A and B combined (Indicator 6b) for these countries.

SOURCE: Organisation for Economic Co-operation and Development (OECD, 2016). *OECD.Stat Educational attainment and labour market outcomes by skills: Fields of education and labour market outcomes.* http://stats.oecd.org/.

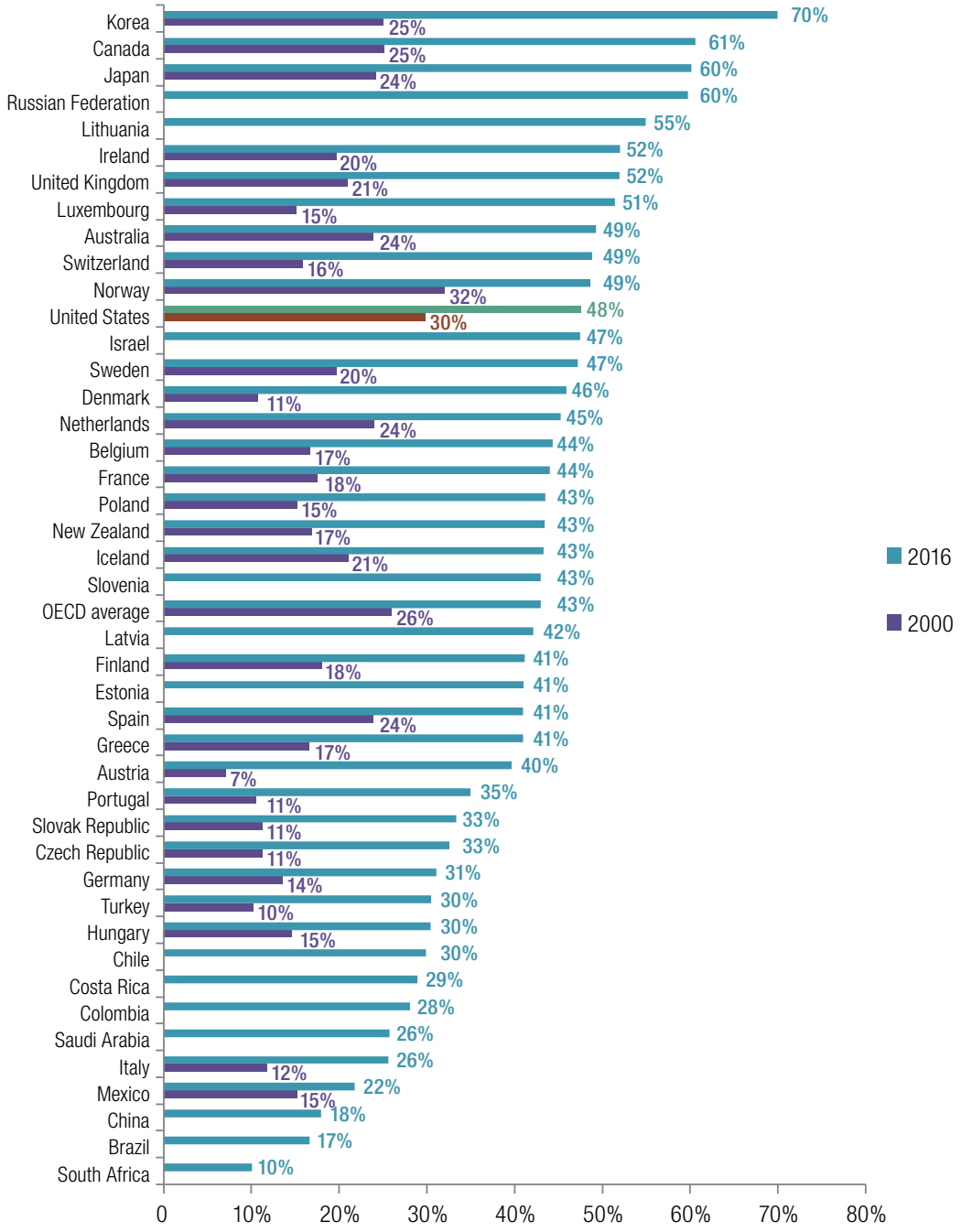
Equity Indicator 6b: What Percentage of 25- to 34-Year Olds has Completed a Type A (Bachelor's or above) or a Type B (Short-Cycle or Associate's) Tertiary Degree?

In 2016, 48 percent of adults age 25 to 34 in the U.S. had attained the equivalent of at least a 2-year (type B) or 4-year or above (type A) tertiary degree. The U.S. ranked 12th of 43 countries on this indicator in 2016, down from 2nd of 30 countries in 2000.

By 2016, at least half of the 25- to 34–year-old population had attained a type A or type B tertiary degree in 8 countries: Korea (70 percent), Canada (61 percent), Japan (60 percent), Russian Federation (60 percent), Lithuania (55 percent) Ireland (52 percent), United Kingdom (52 percent), and Luxembourg (51 percent).

Between 2000 and 2016, the share of the U.S. population age 25 to 34 that had attained a type A or type B tertiary degree increased by 60 percent, rising from 30 percent in 2000 to 48 percent in 2016. The average rate of type A or type B attainment for 25-to 34-year olds among OECD nations rose from 26 percent in 2000 to 43 percent in 2016, a 65 percent increase.

Equity Indicator 6b: Percentage of 25- to 34-year olds with a type A (bachelor's or above) or type B (short-cycle or associate's) tertiary degree: 2000 and 2016



NOTE: Caution is needed in making international comparisons given differences in educational degree classifications among countries and reporting differences across years.

SOURCE: Organisation for Economic Co-operation and Development (OECD, 2017). *Education at a Glance 2017*. Retrieved from: https://read.oecd-ilibrary.org/education/education-at-a-glance-2017_eag-2017-en#page1.

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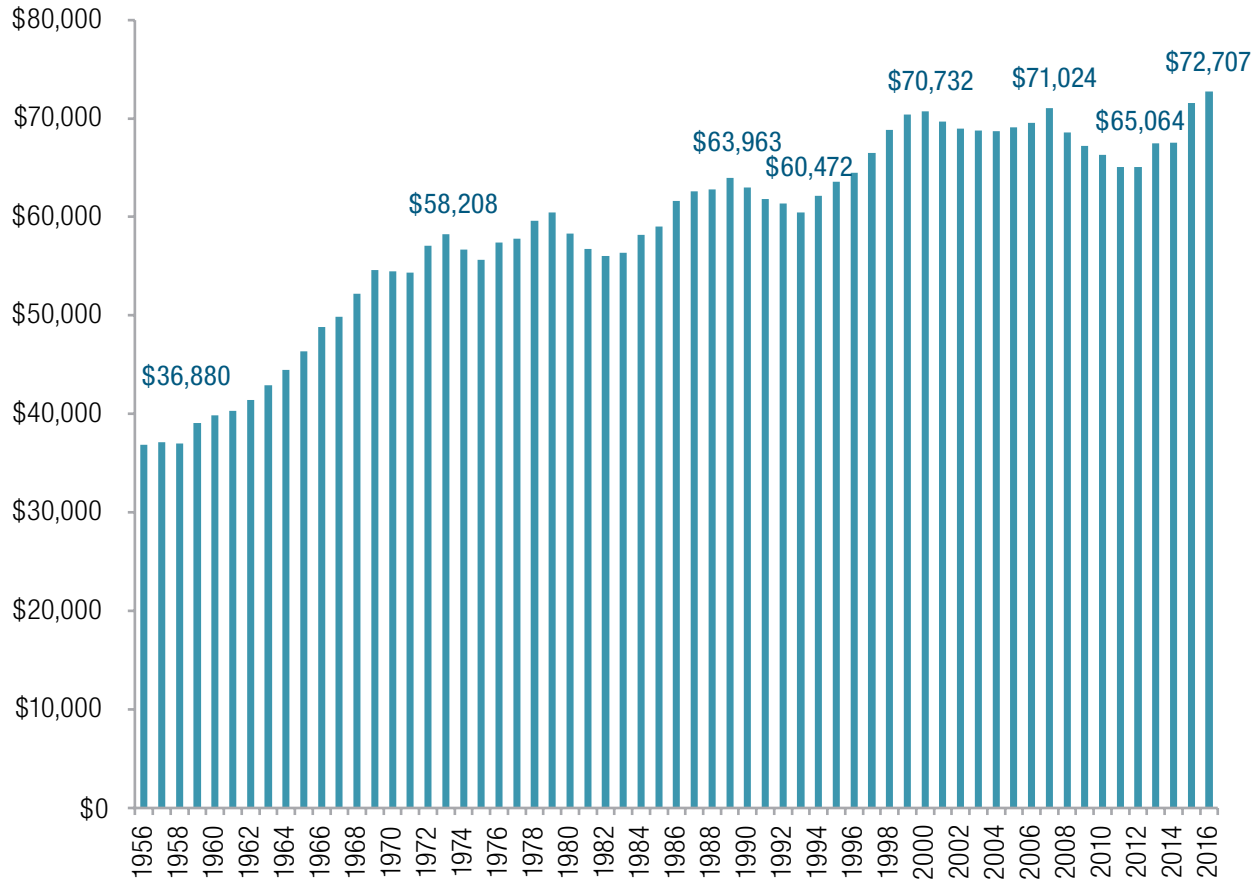
Appendix A: Additional Methodological Notes and Figures

This Appendix includes additional methodological notes and figures and tables not included in the report body. Notes and Figures are ordered under the headings of the sections in which the notes and figures are first referenced.

Setting the Stage (STS)

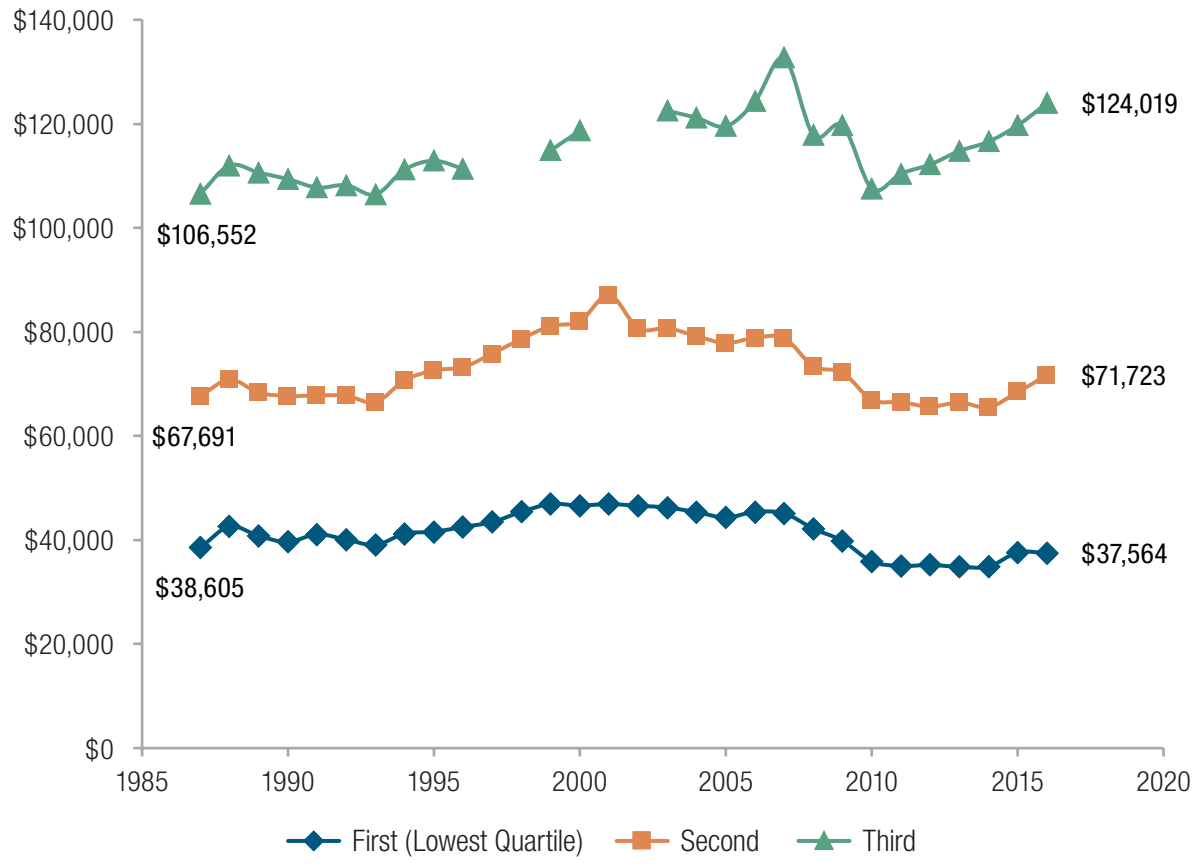
- **STS Figures 5a and 5b:** The data sources for STS Figure 5 are IPEDS and Barron's *Profiles of American Colleges* (2016). The latter provides a competitiveness index of 4-year colleges and universities. The following notes provide details on the coding of institutions by competitiveness and the assigning of codes to institutions not ranked by Barron's. The competitiveness index categories from Barron's were matched (by name and state) to institutional enrollment data found in IPEDS. For those institutions that appeared in IPEDS but were not ranked by Barron's, the institutional sector was used to develop the remaining categories (e.g., "4-Year Not Ranked" and "Private For-Profit"). All for-profit institutions were classified as "private for-profit" institutions even if ranked by Barron's. All institutions that were administrative units or had zero undergraduate enrollment (e.g., medical schools) were omitted from the analyses as these schools do not enroll undergraduates (the variable we're counting for this indicator). To determine enrollment share by competitiveness category, we first added total fall enrollment (IPEDS variable "DRVEF2015_RV" defined as "Total undergraduate men and women enrolled for credit in the fall of the academic year"). For each category, we then divided the number of students in each selectivity category by total undergraduates. Enrollment includes both part-time and full-time students.
- **Additional Referenced Figures:** Appendix Figure A-1 shows the median family income for households in which the householder is over 25 from 1956 to 2016 in 2016 constant dollars. Appendix Figure A-2 shows the upper limits of each family income quartile from 1987 to 2016 in constant 2016 dollars.

Appendix Figure A-1: Median family income with householder 25 years old and over in constant 2016 dollars: 1956 to 2016



SOURCE: U.S. Census Bureau, Current Population Survey. Retrieved from: http://www2.census.gov/programs-surveys/cps/tables/time-series/historical-income-families/f18.xls.

Appendix Figure A-2: Upper limits for the first (lowest), second, and third family income quartiles for dependent 18- to 24-year olds in constant 2016 dollars: 1987 to 2016



NOTE: Upper family income limits of the quartiles in constant 2016 dollars using CPI-U-RS. The upper limit of the third quartile is the **minimum** for the fourth (highest) quartile. The fourth (highest) quartile minimum is thus $124,019. The maximum for the fourth (highest) quartile is not known.

SOURCE: U.S. Census Bureau, CPS data. Calculated from the October Current Population Survey File (Formerly Table 14 in the Census Bureau's School Enrollment Report) and compiled by Tom Mortenson.

Equity Indicator 2: What Type of Postsecondary Educational Institution Do Students Attend?

- **Indicator 2d:** This Indicator uses a data table in the online appendix (http://www-personal.umich.edu/~bastedo/papers/EEPA-Appendix.pdf) to the 2011 article, "Running in place: Low-income students and the dynamics of higher education stratification," by Michael Bastedo and Ozan Jaquette, published in *Educational Evaluation and Policy Analysis*. To develop the data table, Bastedo and Jaquette constructed an analytic dataset using four federal longitudinal surveys: National Longitudinal Study of 1972 (NLS); High School and Beyond Study of 1980 (HS&B); National Education Longitudinal Study of 1988 (NELS), and Education Longitudinal Study of 2002 (ELS). In their analyses of the four surveys, the authors examined only students who were seniors in the specified year and who had graduated within 1.5 years of their scheduled high school graduation year. For more detailed explanation of dataset construction and analytic methodology, see Bastedo and Jaquette (2011). Appendix Figure A-3 shows Table 6 from the article's online appendix, which presents the SES representation in each category of institutional destinations (row percentages). We used these data to construct Indicator 2d. Appendix Figure A-4 shows Table 3 from the body of the article and presents the distribution of students in each SES quartile across different categories of institutions (column percentages).
- **Indicator 2e:** The values reported in Indicator 2e represent the average of the percentage of undergraduates within an institution who receive Federal Grants by institutional selectivity and sector. The Integrated Postsecondary Education Data System (IPEDS) and Barron's *Profiles of American Colleges* (2016) are the primary data sources for this Indicator. This Indicator is constructed by merging the Institutional Characteristics (IC) and Student Financial Aid (SFA) IPEDS survey components on Federal Grant (Pell and other Federal Grants) receipt with the information from the Barron's 2016 publication. The IPEDS variable used was the "FGRNT_P," which NCES defines as: "Percentage of full-time, first-time degree/certificate-seeking undergraduate students who were awarded federal grants." This Indicator tracks the percentage of undergraduate students who receive any Federal Grant by institution each academic year from 1999-2000 to 2014-2015, the most current year of available Student Financial Aid (SFA) data. As in Figures 5a and 5b in Setting the Stage, institutional selectivity is measured using Barron's Admissions Competitive Index (2016) and institutional sector as reported in IPEDS.

Appendix Figure A-3: SES representation in each institutional destination (row percentages) by cohort

Appendix Table 6. SES representation of each institutional destination (row percentages), by cohort

	1972				1982			
SES Quartile	**SES Q1**	**SES Q2**	**SES Q3**	**SES Q4**	**SES Q1**	**SES Q2**	**SES Q3**	**SES Q4**
No PSE	38.1%	28.1%	22.0%	11.9%	39.6%	30.6% **	20.0% *	9.7% ***
2yr/ LT 2yr (pub)	20.7%	23.5%	26.8%	29.1%	19.0%	26.7% **	29.2% *	25.0% ***
2yr/ LT 2yr (priv)	23.2%	22.7%	31.8%	22.3%	26.8%	30.5% ***	28.3%	14.4% ***
Non Competitive	19.9%	20.8%	23.9%	35.5%	18.4%	22.0%	28.8% **	30.8% **
Competitive	13.1%	17.7%	25.6%	43.6%	9.4% ***	20.8% **	29.0% *	40.8%
Very Competitive	10.8%	14.4%	18.9%	55.9%	9.8%	13.8%	21.6%	54.8%
Highly Competitive	8.9%	10.8%	20.8%	59.6%	4.0% **	9.7%	25.1%	61.2%
Most Competitive	5.2%	7.4%	9.9%	77.5%	3.8%	11.4%	17.8% **	67.0% **

	1992				2004			
SES Quartile	**SES Q1**	**SES Q2**	**SES Q3**	**SES Q4**	**SES Q1**	**SES Q2**	**SES Q3**	**SES Q4**
No PSE	41.8%	27.9% **	21.1%	9.1%	42.0%	31.2% **	19.1%	7.7%
2yr/ LT 2yr (pub)	24.6% ***	30.4% ***	28.7%	16.3% ***	25.2%	28.7%	28.2%	17.9%
2yr/ LT 2yr (priv)	29.8%	28.9%	22.5% *	18.8%	30.7%	32.8%	27.6%	9.0% ***
Non Competitive	15.4% *	22.7%	34.3% **	27.5%	19.6% **	25.4%	29.1 % ***	25.9%
Competitive	12.7% ***	21.4%	28.6%	37.3% **	13.0%	19.1%	30.2%	37.8%
Very Competitive	10.2%	13.4%	27.2% ***	49.2% **	7.3% **	15.0%	26.8%	50.9%
Highly Competitive	6.4%	10.6%	20.5%	62.6%	5.0%	9.3%	19.5%	66.2%
Most Competitive	5.0%	2.9% ***	23.9% *	68.3%	4.1%	8.1% ***	18.7% *	69.0%

NOTE: Difference in proportion for SES quartile=i and cohort=t compared to proportion for SES quartile=i and cohort=t-1, significant at the 1% (***), 5%(**), or 10% (*) level, two tailed test.

SOURCE: Analyses of data from U.S. Department of Education, NCES, High School Longitudinal Studies (NLS, HS&B, NELS, ELS). Published as online Appendix Table 6 in Bastedo, M. N., & Jaquette, O. (2011). "Running in place: Low-income students and the dynamics of higher education stratification". *Educational Evaluation and Policy Analysis, 33(3)*, 318-339.
Retrieved from http://www-personal.umich.edu/~bastedo/papers/EEPA-Appendix.pdf. Reprinted by permission from Sage Publishing Copyright Clearance Center.

Appendix Figure A-4: Distribution of students in each SES quartile across institutional destinations by cohort (column percentages)

TABLE 3

Institutional Destination by Cohort (Column Percentages), by SES Quartile, "Weighted SES" Sample

	SES Quartile 1				SES Quartile 2			
	1972 (%)	1982 (%)	1992 (%)	2004 (%)	1972 (%)	1982 (%)	1992 (%)	2004 (%)
No PSE	63.2	57.6***	48.2***	37.6***	52.3	41.9***	31.8***	25.8***
2yr/LT 2yr (pub)	14.2	19.9***	25.8***	31.5***	18.1	26.2***	31.5***	33.1
2yr/LT 2yr (priv)	4.7	6.2**	3.8***	3.9	5.2	6.7**	3.7***	3.8
Noncompetitive	6.9	6.8	6.9	11.2***	8.1	7.7	10.1***	13.5***
Competitive	6.5	5.5	9.0***	11.1**	9.8	11.3*	15.0***	15.2
Very competitive	3.1	3.1	4.3**	3.3*	4.6	4.1	5.6**	6.3
Highly competitive	0.9	0.5	1.1**	1.0	1.3	1.2	1.9*	1.7
Most competitive	0.4	0.3	0.8**	0.5	0.6	0.9	0.4*	0.8

	SES Quartile 3				SES Quartile 4			
	1972 (%)	1982 (%)	1992 (%)	2004 (%)	1972 (%)	1982 (%)	1992 (%)	2004 (%)
No PSE	40.3	27.6***	21.8***	14.7***	18.6	12.9***	9.5***	5.7***
2yr/LT 2yr (pub)	20.3	28.9***	26.9	30.3**	18.8	23.7***	15.3***	18.5***
2yr/LT 2yr (priv)	7.2	6.2	2.6***	3.0	4.3	3.0**	2.2*	0.9***
Competitive	9.2	10.2	13.8***	14.4	11.7	10.4	11.1	12.3
Very competitive	14.0	15.9*	18.1*	22.3***	20.4	21.5	23.7*	26.8**
Very competitive	6.0	6.6	10.3***	10.4	15.1	15.9	18.8***	18.9
Highly competitive	2.4	3.2	3.3	3.3	5.9	7.4**	10.0***	10.6
Most competitive	0.8	1.4**	3.3***	1.7***	5.2	5.2	9.5***	6.2***

NOTE: SES = socioeconomic status.
Difference in proportions for current and previous year is significant at the 1% (***), 5%(**), or 10% (*) level, two-tailed test.

SOURCE: Analyses of data from U.S. Department of Education, NCES, High School Longitudinal Studies (NLS, HS&B, NELS, ELS). Published as Table 3 in Bastedo, M. N., & Jaquette, O. (2011). Running in place: Low-income students and the dynamics of higher education stratification. *Educational Evaluation and Policy Analysis, 33(3)*, 318-339.

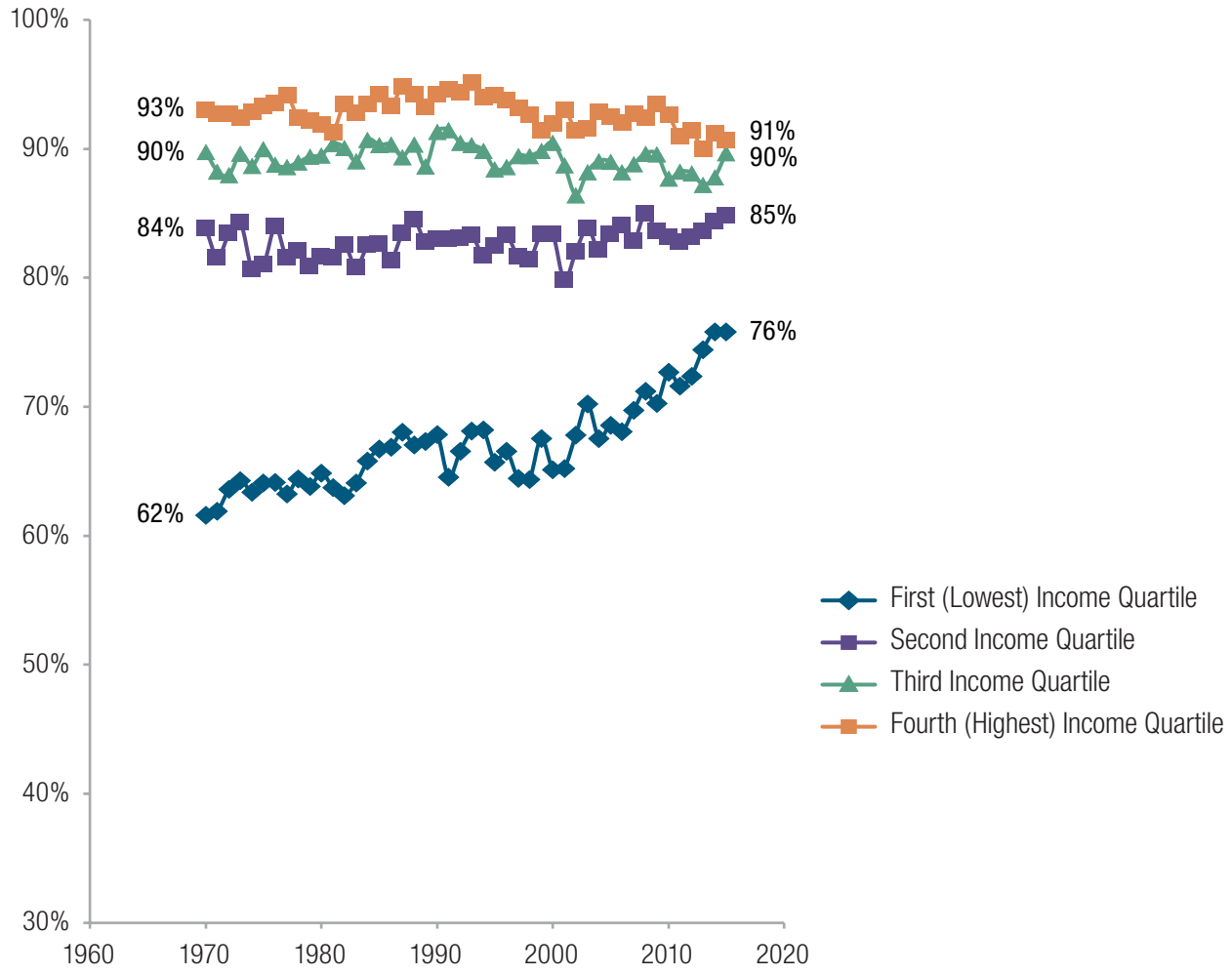
Equity Indicator 4: How Do Students in the United States Pay for College?

- **Indicator 4a:** Data for this Indicator come from National Income and Product Accounts (NIPA) (https://www.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey). Table 2.4.5 provides personal consumption expenditures on higher education, and Table 3.16 provides federal and state higher education expenditures. NIPA data are continually updated and revised by the Bureau of Economic Analysis. Indicator 4a reflects data reported in December 2016.

Equity Indicator 5: How Do Educational Attainment Rates and Early Outcomes Vary by Family Characteristics?

- **High School Graduation Rates:** Bachelor's degree attainment is possible only for those who graduate from high school. Using data from the CPS, Appendix Figure A-5 shows the high school graduation rates by family income quartile from 1970 to 2016. These data show that, despite the rise in high school graduation rates for those in the first (lowest) income quartile, especially over the past decade, high school graduation rates continue to vary by family income.
- **Equity Indicator 5a-5e:** We report multiple measures of bachelor's degree attainment and completion for Indicator 5, given concerns about the limitations of each of the data sets, but particularly the annual CPS. The CPS is the only available annual source of data on bachelor's degree completion, but the data have important limitations. As a result, caution is needed in interpreting results using these data. The CPS data are based on household surveys and are reported in aggregate. The data are cross-sectional and include only individuals who were considered "primary dependent family members of the household" at the time of the CPS survey. Recent years have seen differential changes across income groups in dependency patterns and length of time for bachelor's degree completion. For these reasons, the 2016, 2017, and 2018 *Indicators* reports also present estimates of bachelor's degree completion using the NCES High School Longitudinal Studies and the Beginning Postsecondary Students (BPS). We also use IPEDS completions data to report associate's, bachelor's, master's and doctoral degrees awarded by race/ethnicity.
- **Recalibration of Bachelor's Degree Attainment by Age 24:** In the 2015 edition of the *Indicators* report, we included data on attainment rates by age 24 for the cohort (Indicator 5a) and for those who had entered college (Indicator 5b). The 2015 *Indicators* report used the HS&B longitudinal study of 1980 10th graders to calibrate the aggregate CPS data to arrive at an estimate of bachelor's degree attainment by age 24. These estimates were criticized as overestimating degree attainment rates for the highest quartiles, given changes in dependency patterns that have occurred over time. Because of the strong positive relationships among family income, dependency status, and degree attainment, data published in the 2015 Report using CPS data overestimated bachelor's degree attainment rates for the top income quartile. Since then, Tom Mortenson, who has analyzed these data for over 20 years, has updated these estimates using calibrations from the more recent NCES longitudinal studies corresponding with the time frames to be estimated. In addition to continuing to use the HS&B (1980 10th graders) to calibrate estimates for the earlier periods, he also used estimates

Appendix Figure A-5: High school graduation rates by family income quartile for dependent 18- to 24-year olds: 1970 to 2016



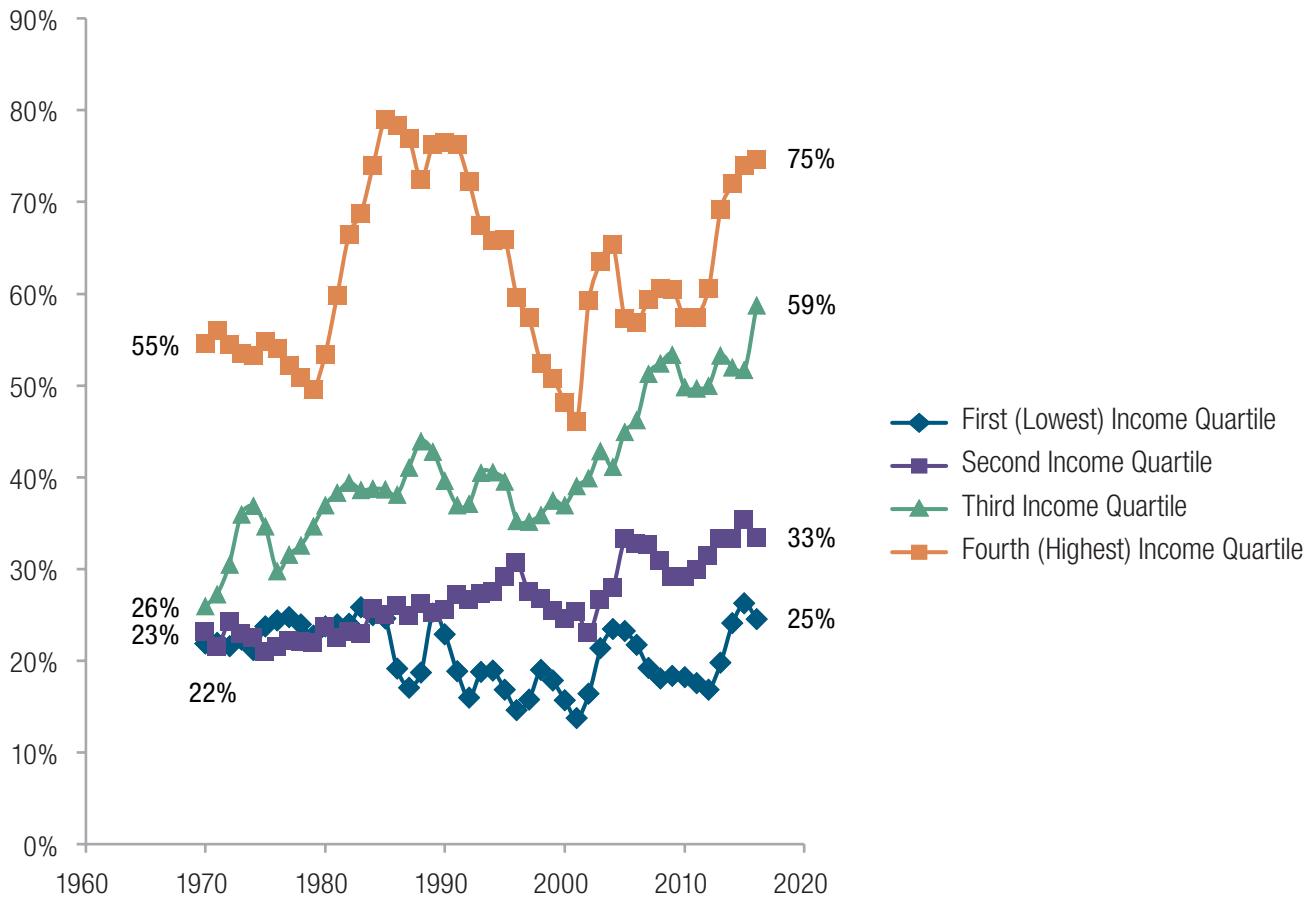
SOURCE: U.S. Census Bureau, CPS data as reported by BLS. Compiled by Tom Mortenson.

from the more recent high school longitudinal studies, NELS (1988 8th graders) and ELS (2002 10th graders), to improve the estimates for the corresponding periods. Using data from these additional longitudinal surveys resulted in little change from the 2015 CPS-based estimates of bachelor's degree attainment rates for the first (lowest), second, and third income quartiles but reduced the CPS-based estimates of bachelor's degree attainment for the fourth (highest) quartile considerably.

Caution is still needed in using these adjusted CPS estimates in the 2016, 2017, and 2018 *Indicators* reports, given the many underlying assumptions. For the 2016 *Indicators* report, this calibration work was still in progress and we reported only on the distribution of bachelor's degrees between the quartiles in Indicator 5a. In 2016, we presented a preliminary revision of estimates of attainment by age 24 in the Appendix of the 2016 *Indicators* report (Appendix Table A-6). For the 2017 *Indicators* report, the body of the report presented these revised estimates for Equity Indicator 5a using three-year moving averages of bachelor's degree attainment by age 24 for 1970 to 2015 from the CPS data. For 2018, using the same methods, we updated the data to represent 1970 to 2016. In the body of the report, Equity Indicator 5a shows estimates of bachelor's degree attainment by age 24 by family income quartile for cohort for 1970-2016. Appendix Figure A-6 shows these estimates using the same methods for attainment by age 24 among those who have enrolled in college.

- **Historical Data on Educational Attainment of the Population 25 and older by race/ethnicity.** Equity Indicators 5f(i), 5f(ii), and 5f(iii) in the body of this 2018 *Indicators* report include data from 1940 to 2015 from the Decennial Census and the American Community Survey (ACS) on differences in educational attainment of the population 25 years of age and older by state. Appendix Figures A-7 and A-8 use these same data sources to present data by race/ethnicity on high school and bachelor's degree attainment from 1940 to 2015. As discussed in the body of this report, classifications used for race/ethnicity have changed over the 75 year period, and caution must be used in interpreting this data over time.

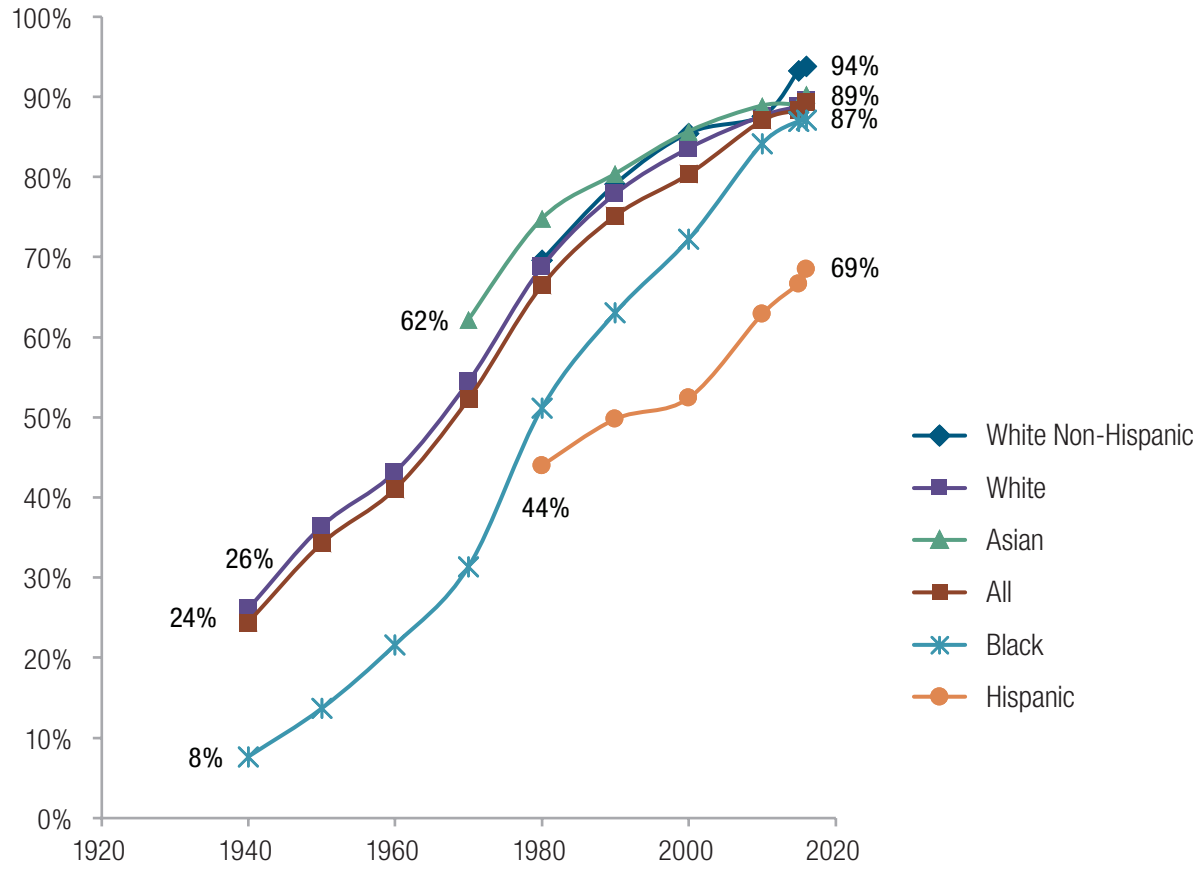
Appendix Figure A-6: Estimates of bachelor's degree attainment by age 24 for dependent family members who entered college by family income quartile: 1970 to 2016



NOTE: Based on three-year average using constant factors derived from HS&B, NELS, and ELS combined with the CPS data.

SOURCE: U.S. Census Bureau, CPS data as reported by BLS. Estimated and compiled by Tom Mortenson.

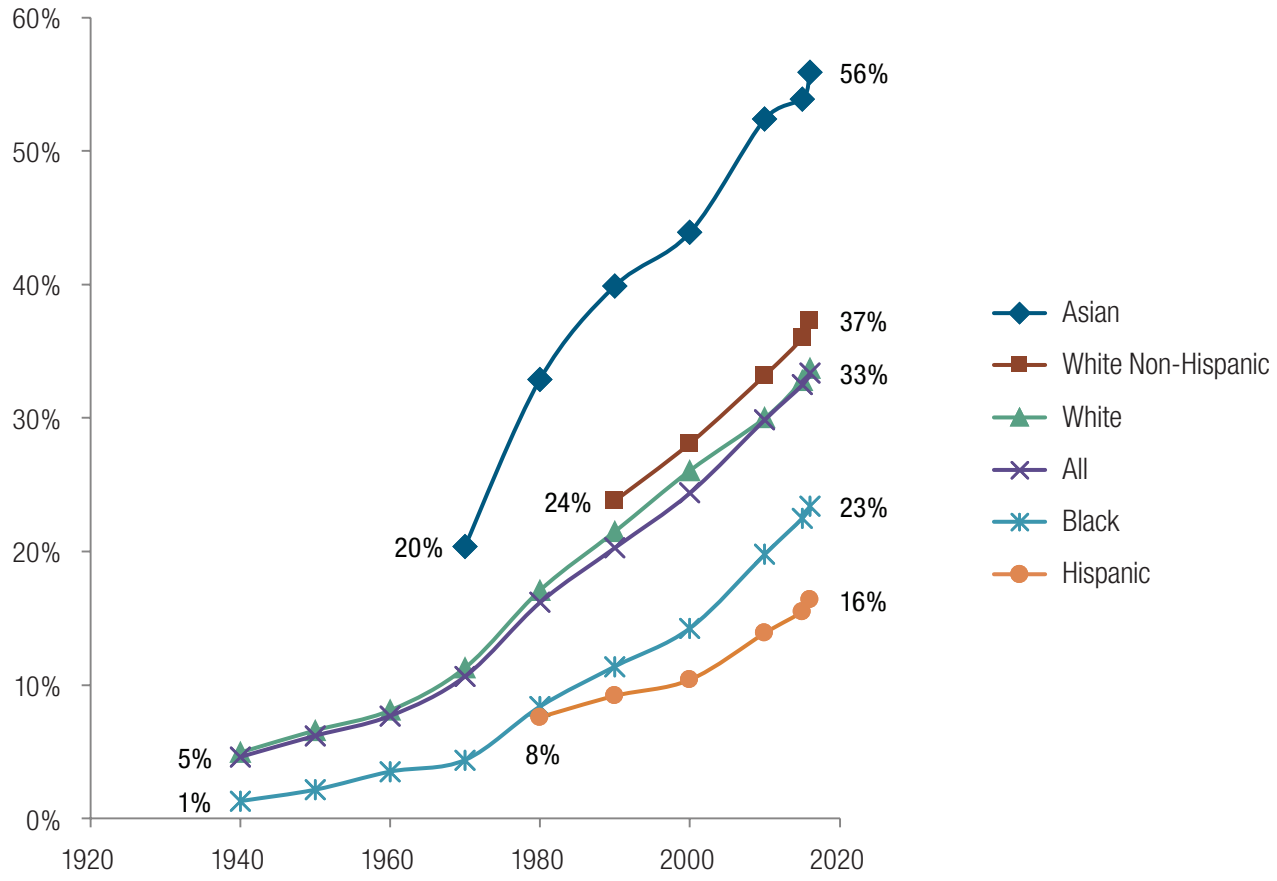
Appendix Figure A-7: Percentage of the population 25 years of age and older who has attained a high school diploma or equivalent by race/ethnicty: selected years 1940-2016



NOTE: Data classifications have changed over time providing for separate Hispanic ethnicity identification in 1980 and also choice of more than one race after 2003. For detailed decriptions of changes and also more detail on race/ethnicity percentages see Table A-2. Percent of People 25 Years and Over Who Have Completed High School or College, by Race, Hispanic Origin and Sex: Selected Years 1940 to 2016. Data from 1940 to 2010 are from the decennial census. Data from 2010 to 2016 are from the Current Population Survey and American Community Survey.

SOURCE: U.S. Census Population Division Census 2000 PHC-T-41. (2015). *A Half-Century of Learning: Historical Statistics on Educational Attainment in the United States, 1940 to 2000,* and https://www.census.gov/data/tables/2016/demo/education-attainment/cps-detailed-tables.html.

Appendix Figure A-8: Percentage of the population 25 years of age and older who has attained a bachelor's degree or higher by race/ethnicty: selected years 1940-2016



NOTE: Data classifications have changed over time providing for separate Asian category in 1970, and Hispanic ethnicity identification in 1980 and also choice of more than one race after 2003. For detailed decriptions of changes and also more detail on race/ethnicity percentages see Table A-2. Percent of People 25 Years and Over Who Have Completed High School or College, by Race, Hispanic Origin and Sex: Selected Years 1940 to 2016. Data from 1940 to 2010 are from the decennial census. Data from 2010 to 2016 are from the Current Population Survey and American Community Survey.

SOURCE: U.S. Census Population Division Census 2000 PHC-T-41. (2015). *A Half-Century of Learning: Historical Statistics on Educational Attainment in the United States, 1940 to 2000*, and https://www.census.gov/data/tables/2016/demo/education-attainment/cps-detailed-tables.html.

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