

# Educational Attainment: Understanding the Data

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**April 2015**

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## Executive Summary

Clear and reliable data are a prerequisite for defining meaningful goals for levels of postsecondary educational attainment and assessing progress toward those goals. Determining whether the number of Americans with college credentials is sufficient to meet the needs of the labor market, understanding gaps in attainment across demographic groups, and evaluating the success of people with different characteristics and in different circumstances in meeting their educational goals all depend on gathering and interpreting appropriate information.

Numerous data sources—most but not all from the federal government—provide valuable information on educational attainment. However, differences in the populations included, the methodologies for collecting the data, and the definitions underlying the categories reported frequently lead to inconsistent findings. This report synthesizes data from multiple sources, clarifies ambiguities, and uses the data to answer key questions about the levels of education among Americans. The questions addressed here are examples of the many that could be answered more accurately with easier access to and better understanding of the available data.

This report focuses on the following five questions:

- Do national figures about educational attainment provide a good picture of what is happening across the United States or are there large state-by-state differences?
- What percentage of students who enroll in four-year colleges and universities complete bachelor's degrees?
- How do educational attainment rates differ across racial and ethnic groups?
- How does the educational attainment of younger adults compare with that of older adults?
- How large is the gender gap in degree attainment in science, technology, engineering, and mathematics (STEM) fields?

In developing answers to these questions, this report highlights some of the common pitfalls in using data to understand educational attainment. For example, some important issues to consider include defining what college is and distinguishing between completion and attainment. These issues are specific to postsecondary inquiries. Differentiating between percentage changes and percentage point changes and clarifying the important distinction between correlation and causation, among other issues, are common to most data analyses.

The data included in this report elucidate contrasts in educational attainment across the states and focus on the importance of defining the types of credentials being measured and the differences between degrees awarded and degrees held. The discussion of completion rates emphasizes the impact of the time period viewed and the incorporation of transfer patterns.

Differences in attainment among racial and ethnic groups are affected by how those groups are defined, with notable differences hidden by combining people from different backgrounds into large categories. Differing definitions and approaches also can lead to multiple answers to questions about long-term changes in attainment levels. Comparisons of the educational levels of

people of different ages at a single point in time do not yield the same results as comparisons of people of a certain age today with people at that age in the past.

The widespread attention to education in STEM fields sometimes also relies on problematic data interpretation. This report addresses the impact of alternative definitions of STEM fields in gaining perspective on the gender gap in STEM degree recipients overall and by the type of degree earned.

The information in this report provides a useful view of a subset of questions about educational attainment in the United States. The primary goal of this report and the data presented, however, is to highlight the importance of clarifying exactly what is being measured by the various data sources and bringing multiple sources of information to bear in developing a more nuanced understanding of the problems the United States faces, the progress the nation is making, and constructive strategies for achieving our educational attainment goals.

# I. Introduction

The level of educational attainment in the United States is a central focus of public policy. The Obama administration, large national foundations, and other organizations have set near-term goals to increase the number of Americans with college degrees. Achieving these goals is likely to involve a combination of increasing participation in higher education and increasing the percentage of those enrolling who succeed in earning postsecondary degrees and certificates. Both setting goals and assessing progress require clear and readily available data.

This report describes data from a variety of sources that can inform assessments of the levels of educational attainment, changes over time in educational attainment, and gaps across demographic groups. The data are often difficult to interpret and sometimes yield inconsistent results. Understanding the strengths and the weaknesses of the data and the differences in the information from multiple sources is a prerequisite for analyzing the issues and developing policy approaches to modify patterns of educational attainment.

The discussion that follows includes important information about educational attainment in the United States. But its central focus is on selecting and interpreting the data to answer questions of interest. In addition to integrating data from a variety of sources, this report highlights differences across data sources and identifies inconsistencies and ambiguities in the data. It also shows how defining populations, categories of students, or fields of study differently can affect reporting and interpretations of educational attainment data.

For example, the choice of population and the definition of racial and ethnic categories can change the gaps observed across groups; comparisons of college enrollment rates across states may look very different depending on whether they include only high school graduates or all college-aged individuals; measurements of college completion rates differ depending on whether the data follow students who transfer from one institution to another; and gender differences in STEM degree attainment differ depending on which fields of study are included in the STEM definition and the types of degrees included.

This report is illustrative of the contributions a comprehensive guide to data from a variety of sources could make to understanding and meaningfully reporting postsecondary educational patterns. Five central questions about educational attainment, both long term and across demographic groups, frame the discussion and the presentation of data that follow. These questions are representative of the many questions that could be asked of the data and how different data sources could provide the answers.

- Do national figures about educational attainment provide a good picture of what is happening across the United States or are there large state-by-state differences?
- What percentage of students who enroll in four-year colleges and universities complete bachelor's degrees?
- How do educational attainment rates differ across racial and ethnic groups?
- How does the educational attainment of younger adults compare with that of older adults?
- How large is the gender gap in degree attainment in STEM fields?

The goal of this report is not to provide a comprehensive view of educational attainment or identify one source of data as the “best” source. Rather the aim is to highlight some of the complexities involved in evaluating and reporting the available data and to demonstrate the potential value of a more comprehensive analysis. The discussion focuses on factors to consider in using the data to analyze educational attainment, both long term and across demographic groups.

## II. Interpreting Data

Although it may be tempting to take numbers at face value, generating reliable answers to the questions posed above about educational attainment requires a clear understanding of the data sources, what is being measured, and what inferences reasonably can be drawn. As the cautions raised in each of the following data sections indicate, some hazards of data interpretation are common to any descriptive data, while others are a function of the particular data sources.

To answer the research questions, this report relies on the eight data sources described in the box on page 4. Some of the differences in these data sets lead to systematic differences in the results they generate. The discussion that follows reviews some of these differences and highlights issues that apply broadly to descriptive data and—in particular—to data on educational attainment.

### Data Sources

*The American Community Survey (ACS)* is an ongoing survey from the U.S. Census Bureau that provides annual data on demographics, income and benefits, health insurance, education, disabilities, veteran status, and other life circumstances. Each year, it collects data from approximately 3.5 million households and includes people in the military, correctional facilities, college dormitories, and other group quarters. It is representative at the state level and some metro areas. It replaced the Bureau’s long form in 2000 and was fully implemented in 2005.

*The Beginning Postsecondary Students Longitudinal Study (BPS)* surveys cohorts of first-time, beginning students at three points in time: at the end of their first year and then three and six years after starting postsecondary education. The survey collects data on a variety of topics, including student demographic characteristics, school and work experiences, persistence, transfer, and degree attainment.

*The Current Population Survey (CPS)*, which is sponsored jointly by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics, is the primary source of labor force statistics for the United States. It also collects extensive demographic data. Educational attainment data in CPS are reported annually in the Annual Social and Economic Supplement (formerly called the March Supplement). These data provide national estimates of educational attainment from 1947 to the present, with limited detail for states and some metropolitan areas. CPS includes the civilian, non-institutionalized population but excludes military personnel in group quarters (barracks) and people living in institutions.

*The Digest of Education Statistics* is a compilation of statistical information that addresses the broad field of American education from prekindergarten through graduate school. It includes a selection of data from many sources, both government and private, and draws especially on the results of surveys and activities carried out by the U.S. Department of Education’s National Center for Education Statistics (NCES). Many of the tables in the Digest describing postsecondary education are based on



data from the Integrated Postsecondary Education Data System (IPEDS). Accessing these tables is reliable and easier than going directly to the IPEDS data.

*The Integrated Postsecondary Education Data System (IPEDS)* is a system of interrelated surveys conducted annually by NCES. IPEDS gathers aggregate information from every college, university, and technical and vocational institution participating in federal student financial aid programs. Institutions are required to report data on enrollments, program completions, graduation rates, faculty and staff, finances, institutional prices, and student financial aid.

*The National Postsecondary Student Aid Study (NPSAS)*, which is conducted every four years by NCES, provides student-level data on a nationally representative sample of undergraduate and graduate students. It is the primary source of information on student aid from the federal government and other sources. NPSAS data come from multiple sources, including institutional records, government databases, and student interviews.

*The National Student Clearinghouse (Clearinghouse)* is a private, nonprofit organization that collects data from more than 3,600 colleges and universities, covering approximately 90 percent of the postsecondary students in the United States, including 98 percent of those enrolled in public and private nonprofit institutions. Clearinghouse data follow students as they move from institution to institution and provide information on degree completion at institutions to which students transfer.

*The Survey of Income and Program Participation (SIPP)* is a household-based survey conducted by the U.S. Census Bureau that is designed as a continuous series of national panels. Each panel features a nationally representative sample interviewed across a multiyear period that lasts approximately four years. SIPP collects data on both enrollment and educational attainment. It also allows exploration of variations in educational attainment across demographic groups.

## Postsecondary Education Issues

### Defining Attainment and Completion

One core confusion in discussions of educational attainment involves distinguishing between completion rates and attainment rates. These terms are not interchangeable. Attainment is a measure of the highest level of education that individuals have completed, describing, for example, what percentage of adults between 35 and 44 years old have completed a bachelor's degree or higher. Completion is a measure of how many people finish the programs they begin, describing, for example, what percentage of students who enroll in four-year colleges and universities complete bachelor's degrees.

The goal of increasing the percentage of Americans who hold postsecondary degrees could be accomplished by increasing enrollment rates while maintaining the percentage of enrollees who complete degrees. Alternatively, this goal can be accomplished by maintaining enrollment rates but increasing the number of students beginning programs who make it through to the end and receive degrees. A combination of these two strategies also could achieve the goal.

## Defining What College Is

People sometimes refer to college graduates, meaning people who have completed at least a bachelor's degree. But only 43 percent of the undergraduate credentials awarded in 2011–12 were bachelor's degrees. Of the 3.8 million undergraduate completions, 24 percent were short-term certificates, and 33 percent were associate's degrees (National Center for Education Statistics 2013c). College enrollment rates, generally based on U.S. Census data, include students enrolling in two-year institutions, many of which do not even offer bachelor's degrees. In assessing postsecondary completion and attainment, it is critical to define the outcome of interest—any postsecondary award or a specific degree level.

## The Population and the Unit of Analysis

### Individuals Versus Institutions

Although most of the data sources used in this report provide information about individuals, IPEDS collects data from institutions. Each college or university reports, for example, what percentage of students who began their studies full time at a postsecondary institution completed a degree within a specified length of time. Although IPEDS reports completion rates by race and ethnicity, it does not provide information about individual students.

### Population Studied

The BPS tracks cohorts of individual college students at three points of time after they initially enrolled. Clearinghouse data include only those students who are enrolled.

In contrast, ACS, CPS, and SIPP provide data on nationally representative samples of the population as a whole, including individuals who have enrolled in college and those who have not. Even so, across these three data sources, the population is not defined in exactly the same way. For example, CPS and SIPP cover the non-institutionalized population, excluding members of the military residing in barracks, prison inmates, and residents of old age homes and residential treatment centers, whereas ACS includes people living in these quarters. Information about college students may differ in the two surveys because ACS counts them as residents of their dormitories, but CPS considers them residents of their families' permanent homes.

### Populations Versus Samples

IPEDS surveys the universe of postsecondary institutions that participate in federal student aid programs, but only the decennial Census, which is conducted every 10 years, attempts to collect information about every individual in the country. Most surveys rely on a randomly selected sample of the targeted population. Estimates from these surveys involve a margin of error—a range within which it is 95 percent certain that the true population percentage lies. If a different random sample is drawn, the data might look slightly different. Because of this, it is important to be cautious about drawing conclusions about very small changes across time or small differences across subgroups.

## Cross-Sectional Versus Longitudinal Data

CPS and ACS are cross-sectional surveys. They repeatedly take random samples of the population, so the same people are not in every year's survey. The BPS takes one sample of students and follows these individuals across time. Neither method is more accurate than the other, but the BPS provides insight into where people end up at a time point after first enrolling in college. The other surveys allow the analysis of individuals with certain characteristics at any point in time and how circumstances differ for people with similar characteristics from one year to the next.

## Basic Concepts for Understanding Data

### Stocks Versus Flows

It is possible to view educational attainment in the United States as either a stock or a flow. To understand the difference, a non-education illustration may be helpful. Wealth is a stock variable. It refers to the level of someone's assets at a single point in time. Income, in contrast, is a flow variable. It refers to how much money comes in during a specified period of time. This flow of income can add to the stock of someone's wealth. Although higher incomes are correlated with higher wealth, high income does not always lead to high wealth and wealth may come from other sources. Some people with high incomes spend everything and do not accumulate wealth; some individuals inherit considerable wealth.

With respect to educational attainment, the percentage of the population holding degrees is a stock variable. The number of degrees granted is a flow variable. Granting degrees to a large number of people relative to the size of a state's population may or may not equate to high attainment levels. Many graduates could move out of the state, many people without college degrees could move into the state, or the high degree production rate might be a recent development.

### Level of Aggregation

To make sense of data about individuals, the data must be aggregated. Knowing what percentage of people who enrolled in four-year colleges and universities in a given year earned degrees is much more useful than having a list of all the individuals surveyed and their outcomes. But a number representing the overall completion rate contains much less information than the completion rates for subsets of the population. It is helpful, for example, to know if a higher percentage of students enrolled in private, nonprofit institutions than of those enrolled in for-profit institutions complete their degrees. This information is important despite the fact it will not indicate that the sector is the cause of the difference. It is possible that the different characteristics of the students enrolling in each sector explain the differences in completion rates.

More insight would come from breaking the sample down into socioeconomic, age, gender, or racial and ethnic groups within each sector. But when working with a sample as opposed to an entire population, problems are likely to emerge related to the small numbers of individuals in each group. Describing a very small sample of low-income female students between the ages of

20 and 22 will not provide any information about the overall population with these characteristics.

### **Self-Reported Survey Data**

Data about individuals are frequently self-reported. The U.S. Census Bureau asks individuals how old they are and how much they earn. BPS collects some of its data from colleges and universities, but surveys students after they leave school. As a result, there are reporting errors in the data. People are either uncertain about the correct answer or hesitate to report the correct answer.

### **Percentage Changes Versus Percentage Point Changes**

Suppose the percentage of 20-year-olds with a college degree increased from 1 percent to 2 percent across five years and the percentage of 30-year-olds with a college degree increased from 20 percent to 30 percent during the same five years. The attainment rate of the 19-year-olds doubled, whereas the attainment rate of the 30-year-olds increased by only 50 percent. On the other hand, the attainment rate of the 19-year-olds increased by only 1 percentage point, whereas the increase for the 30-year-olds was 10 percentage points. The gap between the two groups increased from 19 percentage points to 28 percentage points. But in the first period, the 30-year-olds were 20 times as likely as the 19-year-olds to have a college degree; five years later, they were only 15 times as likely to have a degree. As the starting points of the groups being compared become farther apart, this ambiguity about interpreting results that report percentage changes or percentage point changes becomes more of an issue.

### **Causation Versus Correlation**

A common weakness in the use of data to shed light on important issues is the confusion between causation and correlation. People frequently conclude that because two variables move in the same direction, one causes the other. Suppose you see that students who take more mathematics classes in high school are more likely than others to go to college. Can you conclude that the mathematics classes were the cause of going to college and infer that getting more students to take more mathematics classes will increase the college-going rate? Or should you consider the reality that students who aspire to a college education are more likely to take mathematics classes to prepare for college?

Correlations might reflect causation, but it is possible that a third factor influences both variables. In the previous example, the third factor might be motivation or expectations. Moreover, it is sometimes difficult to determine the direction of causation or whether feedback effects exist in both directions.

The best way to determine causation is to randomly assign people to different paths, but this approach is frequently infeasible. Students cannot, for example, be randomly assigned to enroll in college full time. Other research strategies can contribute to the knowledge of causation, but simple descriptive statistics of the type included in this report are not in that category.

### III. Understanding Postsecondary Educational Attainment in the United States

This section of the report presents data relevant to the five questions posed earlier. Each section includes tables and graphs, cautions to keep in mind when interpreting the data, and a summary of the key findings. Although much more data would be required to paint a complete picture, the information reported here sheds considerable light on the state of postsecondary educational attainment in the United States.

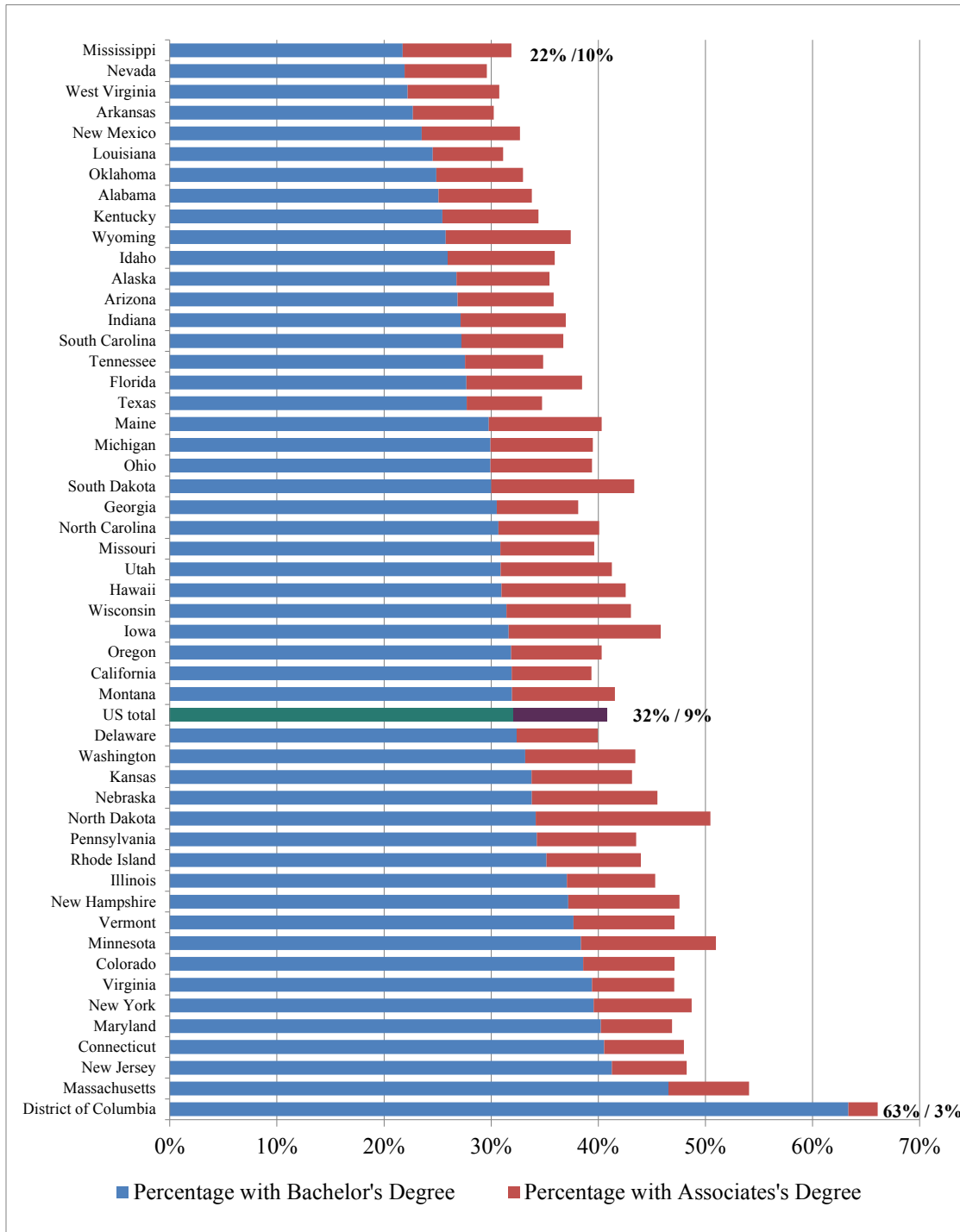
#### **Question 1: Do national figures about educational attainment provide a good picture of what is happening across the United States or are there large state-by-state differences?**

There is considerable variation across the states on most measures of educational attainment. States at the top or the bottom of the list according to one measure may rank very differently according to another measure. Achieving national goals for levels of attainment or changes in those levels requires understanding student demographics, the distribution of income, the types of postsecondary institutions, and other circumstances prevailing in different areas of the United States.

*Educational attainment patterns vary considerably across the states. State rankings based on the percentage of residents with bachelor's degrees differ from rankings based on the percentage of residents with any postsecondary degree.*

- According to ACS data, from 2009 through 2013, 32 percent of adults between 25 and 44 years old had a bachelor's degree or higher (see Figure 1 and Appendix Table A.1).
  - The states with the lowest levels of educational attainment were Mississippi, Nevada, and West Virginia (22 percent each). In Arkansas, 23 percent had bachelor's degrees.
  - The state with the highest level of educational attainment was Massachusetts (47 percent), followed by Connecticut and New Jersey (41 percent each). In the District of Columbia, 63 percent had bachelor's degrees.
- According to the same ACS data, from 2009 through 2013, 41 percent of adults between 25 and 44 years old had some type of postsecondary degree (see Figure 1 and Appendix Table A.1).
  - The states with the lowest levels of educational attainment were Arkansas and Nevada (30 percent each), followed by Louisiana and West Virginia (31 percent each).
  - In addition to Massachusetts (54 percent), the states with the highest levels of educational attainment were Minnesota (51 percent), and North Dakota (50 percent). In the District of Columbia, 66 percent of adults had a postsecondary degree.

**Figure 1. Percentage of Adults Between 25 and 44 Years Old With a Bachelor's Degree or Higher and With Any Postsecondary Degree by State, 2009–13**



*Note.* The blue segments of the bars represent bachelor's degrees. The red segments represent associate's degrees. The combination of the two segments represents all postsecondary degrees. These totals do not include postsecondary certificates. Source: 2009-2013 5-Year American Community Survey (U.S. Census Bureau 2014a).

- As illustrated by these findings, some states rank differently in postsecondary degree attainment depending on the level of degree that is used as the metric. Individuals with associate’s degrees are included in the count of any postsecondary degree but excluded when the metric is a bachelor’s degree or higher. For example:
  - North Dakota, with the highest percentage of adults between 25 and 44 years old with associate’s degrees as their highest credential (16 percent), ranks 15th in terms of bachelor’s degrees but fourth in terms of any postsecondary degree.
  - California, where an associate’s degree is the highest degree held by only 7 percent of adults between 25 and 44 years old, ranks 21st in terms of bachelor’s degrees but 32nd in terms of any postsecondary degree.

### Cautions

- Five-year ACS estimates consist of data collected continuously across five years. They can be thought of as the average prevailing during the entire period.
- Differences in the types of degrees held by the population do not necessarily correspond to the distribution of degrees awarded. People who earn degrees in one state may move to another state, and people who migrate into a state may have different levels of education from those who grew up there or went to college there.
- Differences in attainment levels among those between 25 and 44 years old reported here do not necessarily correspond to differences among all adults because state rankings may differ across age groups.
- SIPP data reveal that the number of postsecondary certificates is growing rapidly, but these credentials are not included in the metrics of postsecondary degree attainment based on data from the Census Bureau and reported here.

### Summary

Massachusetts and the District of Columbia top the rankings for educational attainment, whether the measure is the percentage of residents holding a bachelor’s degree or the percentage of residents holding any postsecondary degree. But other states stand out as ranking quite differently based on the measure used. States such as California, with relatively few associate’s degree holders, rank higher on bachelor’s degree attainment, whereas states such as North Dakota, where associate’s degrees are prevalent, rank higher on the overall postsecondary degree list.

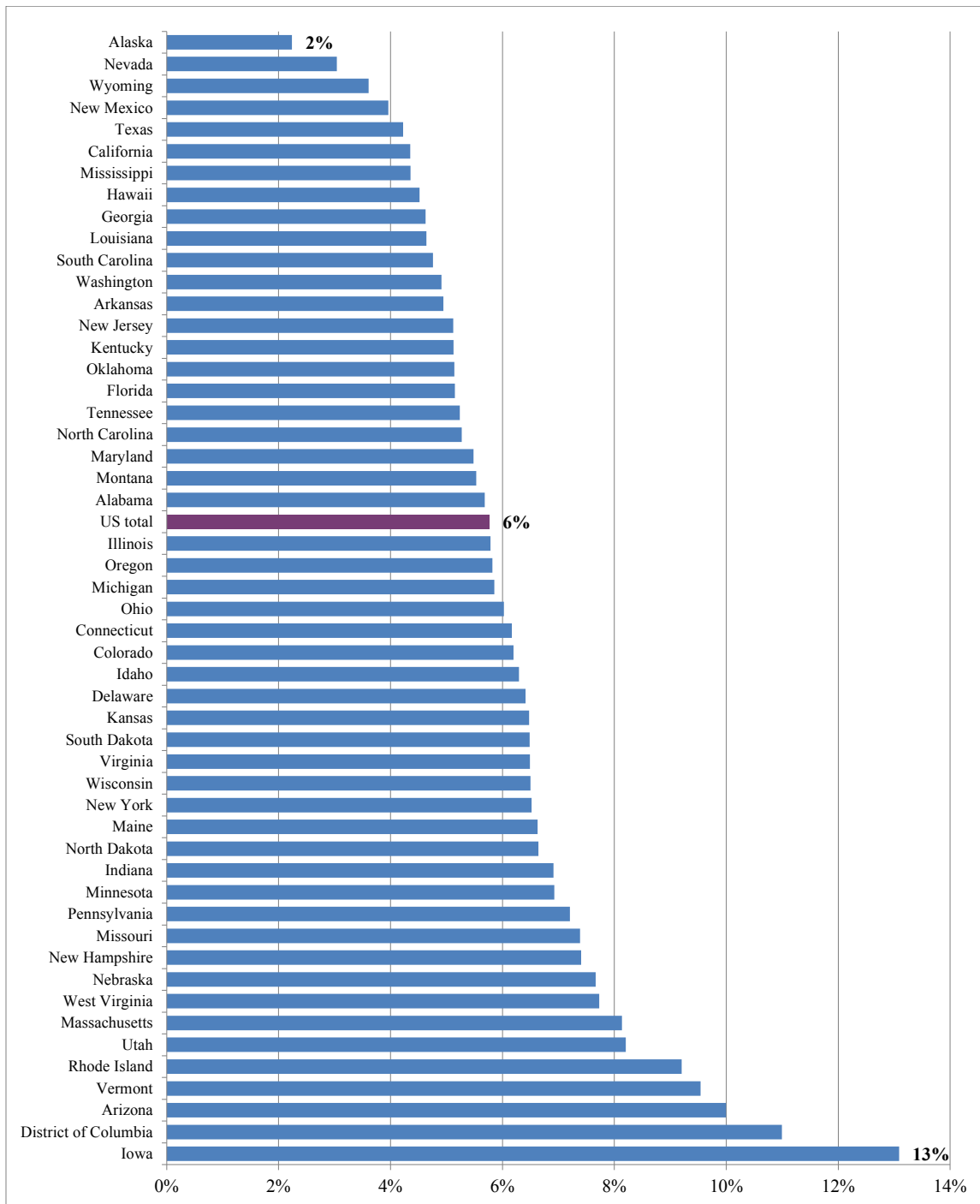
***In addition to differences in the stock of degrees in each state, the flow variable—the number of degrees awarded annually relative to the population between 18 and 24 years old—varies considerably across states.***

- According to ACS, between 2009 and 2013, an average of 6 percent of the individuals in the United States between 18 and 24 years old were awarded bachelor’s degrees each year (see Figure 2 and Appendix Table A.2).
  - The states with the lowest levels of bachelor’s degrees awarded were Alaska (2 percent) and Nevada (3 percent).

- The state with the highest level of bachelor's degrees awarded was Iowa (13 percent), followed by Arizona and Vermont (10 percent each). The number of bachelor's degrees awarded in the District of Columbia was 11 percent of the 18 to 24 year-old population.
- The degrees awarded in a state are not necessarily awarded to state residents. For example, although 90 percent of the beginning college students in California are state residents, only 61 percent of those in Iowa are in-state students (National Center for Education Statistics 2013b).
- The ranking of states by the number of bachelor's degrees awarded annually does not necessarily correspond to the percentage of a state's population with a bachelor's degree or higher (see Figures 1 and 2 and Appendix Tables A.1 and A.2):
  - California ranks 21st in the percentage of adults between 25 and 44 years old with at least a bachelor's degree (32 percent) but 46th in the number of bachelor's degrees awarded in 2009–13 relative to the number of 18- to 24-year-olds (4 percent).
  - New Jersey ranks third in the percentage of adults with at least a bachelor's degree (41 percent) but 38th in the number of bachelor's degrees awarded in 2009–13 relative to the number of 18- to 24-year-olds (5 percent).
  - West Virginia ranks 49th in the percentage of adults with at least a bachelor's degree (22 percent) but eighth in the number of bachelor's degrees awarded in 2009–13 relative to the number of 18- to 24-year-olds (8 percent).
  - Iowa ranks 23rd in the percentage of adults with at least a bachelor's degree (32 percent) but first in the number of bachelor's degrees awarded in 2009–13 relative to the number of 18- to 24-year-olds (13 percent).



**Figure 2. Bachelor's Degrees Conferred as a Percentage of Individuals Between 18 and 24 Years Old by State, 2009-13**



*Note.* Data are for postsecondary institutions participating in Title IV federal financial aid programs. Sources: IPEDS Completions Component 2011-12 (NCES 2013d); 2009-2013 5-Year American Community Survey (U.S. Census Bureau 2014a).

## Cautions

- The percentage of adults with bachelor's degrees is a stock variable that includes individuals who earned their degrees during the course of many years. The ratio of bachelor's degrees awarded to the population of those between 18 and 24 year old is a flow variable that represents the total number of new degrees in one year. (Some people with degrees may have left a state or may no longer be alive, so this does not represent a net increase.)
- Institutions awarding large numbers of online degrees can make the state-level figures on degrees awarded misleading because many of the recipients reside in other states. For example, in fall 2012, the University of Phoenix–Online Campus enrolled 14,275 first-time undergraduate students, which is 17 percent of the total number of first-time undergraduate students enrolled in the state (College Board, 2014).
- Many people move from state to state after earning their degrees. For example, jobs in the District of Columbia attract many college-educated individuals who did not graduate from colleges and universities in the District of Columbia.

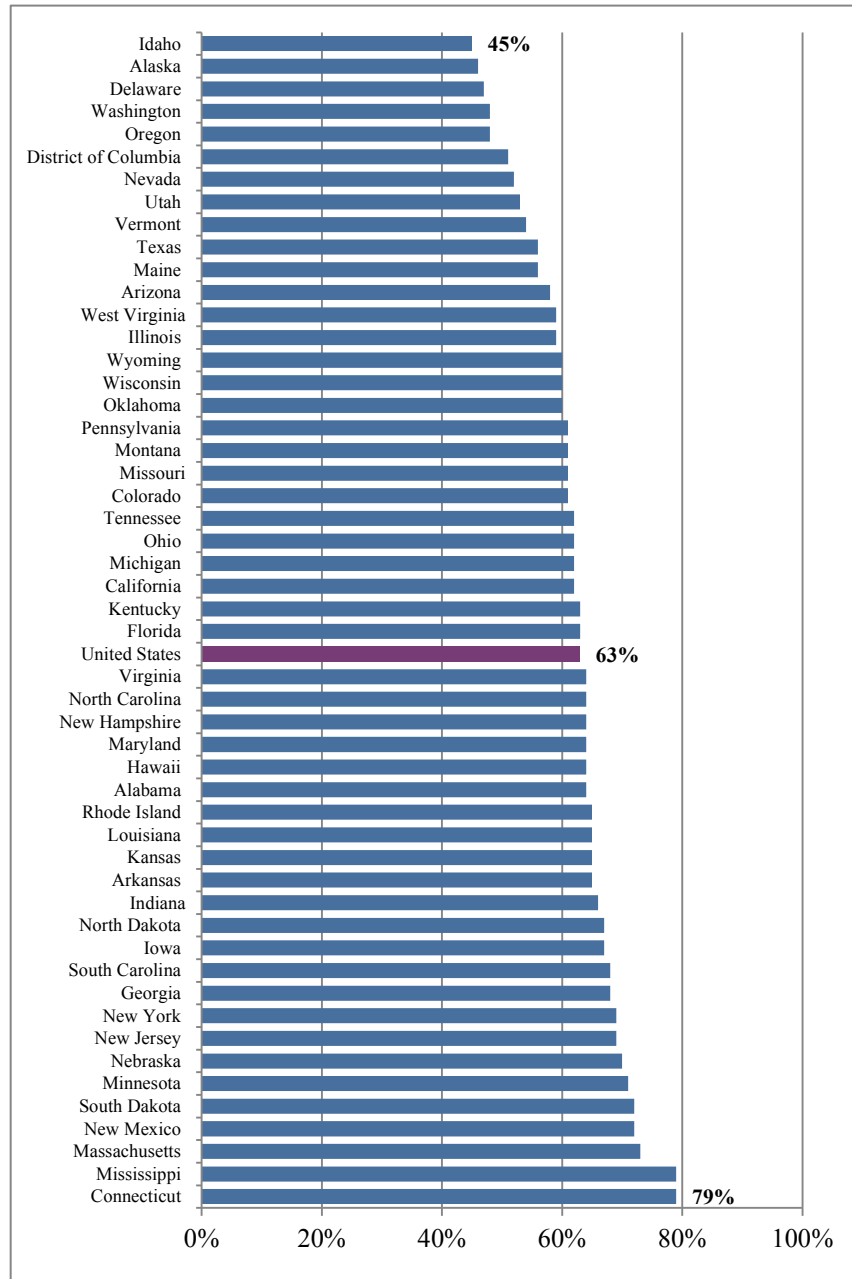
## Summary

In some states with low annual rates of bachelor's degree awards, a relatively small percentage of adults have bachelor's degrees. This is the case for Alaska, Nevada, and Wyoming. Vermont has high levels of both bachelor's degree awards and attainment. But Iowa, which tops the list for the percentage of adults receiving bachelor's degrees, is about average on the percentage holding degrees. California and New Jersey rank much lower in terms of degrees awarded than degrees held.

***High college enrollment rates among a state's high school graduates do not necessarily correspond to high levels of educational attainment among the population.***

- According to the *Digest of Education Statistics*, in 2009–10, 63 percent of high school graduates in the United States enrolled in degree-granting postsecondary institutions within the next year. The lowest college continuation rates were in Idaho (45 percent), Alaska (46 percent), and Delaware (47 percent; see Figure 1.3 and Appendix Table A.3).
- The highest college continuation rates were in Massachusetts (73 percent), Connecticut (79 percent), and Mississippi (79 percent; see Figure 1.3 and Appendix Table A.3).
- Mississippi matches the highest college continuation rate in the United States (79 percent), but a very small percentage of its population has college degrees (28 percent; see Figures 1 and 3 and Appendix Tables A.1 and A.3).
  - This apparent anomaly is explained by a low high school graduation rate. Mississippi's high school graduation rate for fall 2005–06 ninth graders was 72 percent, compared with 88 percent for the United States as a whole (NCHEMS [National Center for Higher Education Management Systems], 2015).
  - Only Nevada, South Carolina, and Georgia had lower high school graduation rates (NCHEMS, 2015).

**Figure 3. Percentage of 2009–10 High School Graduates Enrolling in Degree-Granting Institutions in 2010 by State**



*Note.* Data include institutions that grant associate’s degrees or higher and participate in Title IV federal financial aid programs. Includes all U.S. resident students living in a particular state when admitted to an institution in any state, not just in their home state. Total includes public high school graduates for 2009–10 and private high school graduates for 2008–09. *Sources:* *Digest of Education Statistics* 2012 (National Center for Education Statistics 2013a). Original data derived from NCES Common Core of Data State Dropout and Completion Data File 2009-10 (NCES 2010a); Private School Universe Survey (PSS) 2009-10 (NCES 2010b); and the Integrated Postsecondary Education Data System (IPEDS) Spring 2011 Enrollment Component (NCES 2011).

## Caution

Many students enroll in college more than one year after completing high school. Among 2011–12 undergraduates, 66 percent enrolled in college immediately after high school, 18 percent delayed enrollment for one year, and 10 percent delayed enrollment for six or more years (National Center for Education Statistics, 2013f).

## Summary

How states rank in terms of college enrollment rates depends on whether the base is all high school graduates or all individuals within an age group. Moreover, high college enrollment rates do not necessarily correspond to high levels of postsecondary educational attainment.

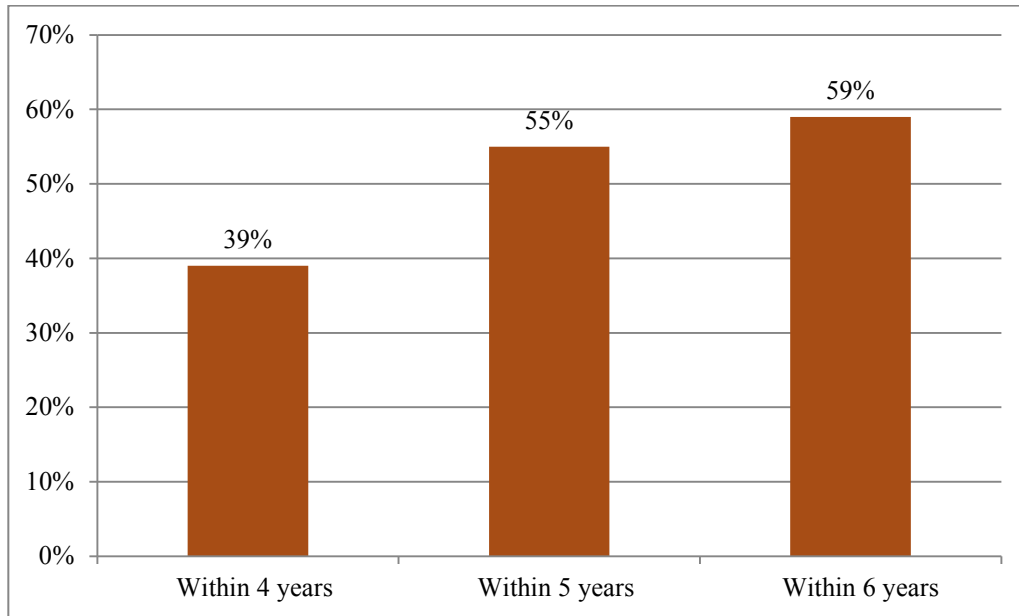
## Question 2: What percentage of students who enroll in four-year colleges and universities complete bachelor's degrees?

The percentage of enrolling students who complete degrees differs depending on which students are included, the time frame considered, whether completions by transfer students are counted, and whether students enroll full time.

***The completion rate increases when the time horizon is longer and when the measure includes degrees earned at institutions to which students transfer.***

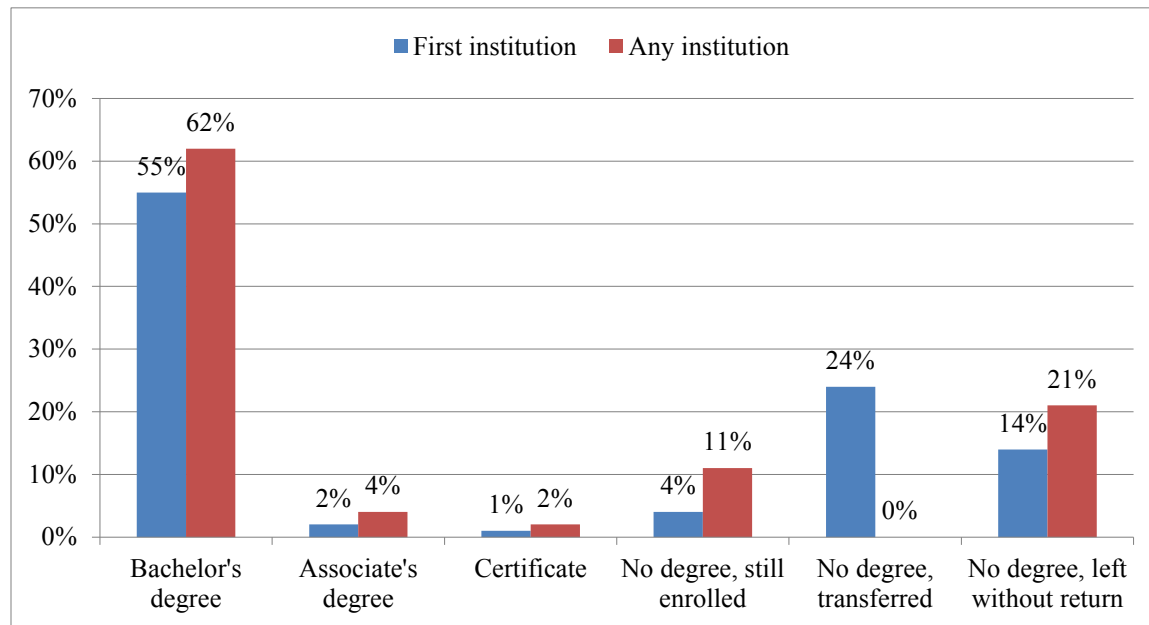
- IPEDS data indicate that among students who first enrolled in college in 2006 and started full time at a four-year institution, 39 percent earned a bachelor's degree at the institution at which they first enrolled within four years. After five years, the completion rate was 55 percent; after six years, it was 59 percent (see Figure 4 and Appendix Table A.4).
- BPS data indicate that among students who first enrolled in college in 2003–04 and started full time at a four-year institution, 55 percent had earned a bachelor's degree at their first institution after six years; however, including those who completed after transferring to a different institution, the completion rate increased to 62 percent (see Figure 5 and Appendix Table A.5).

**Figure 4. Completion Rates at Initial Institution of First-Time, Full-Time Students Enrolling at Four-Year Institutions in 2006**



*Note.* Data are for four-year, degree-granting postsecondary institutions participating in Title IV federal financial aid programs. Graduation rates refer to students receiving bachelor’s degrees from their initial institutions of attendance only. Source: IPEDS Graduation Rate Component (National Center for Education Statistics 2013e).

**Figure 5. Adding Students Who Transfer: Beginning 2003–04 Students Who First Enrolled in a Four-Year Institution Full Time, 2009 Completion Status**



*Note.* Students may complete their degrees in either two-year or four-year institutions. Full time is defined as in the fall of the first entrance, consistent with the definition in the IPEDS graduation rates. Source: Beginning Postsecondary Students Longitudinal Study (BPS) 2004/09 (National Center for Education Statistics 2009).

## Cautions

- Some students complete bachelor's degrees more than six years after they first enroll. To address this issue, IPEDS is now collecting data on the number of students graduating within 200 percent of the prescribed time.
- The IPEDS data reported in this section include all students who began their studies by enrolling full time, even if some of their later enrollment was part time.
- Average completion rates mask differences in completion rates among institution types, by student demographic characteristics, and by levels of academic preparation.

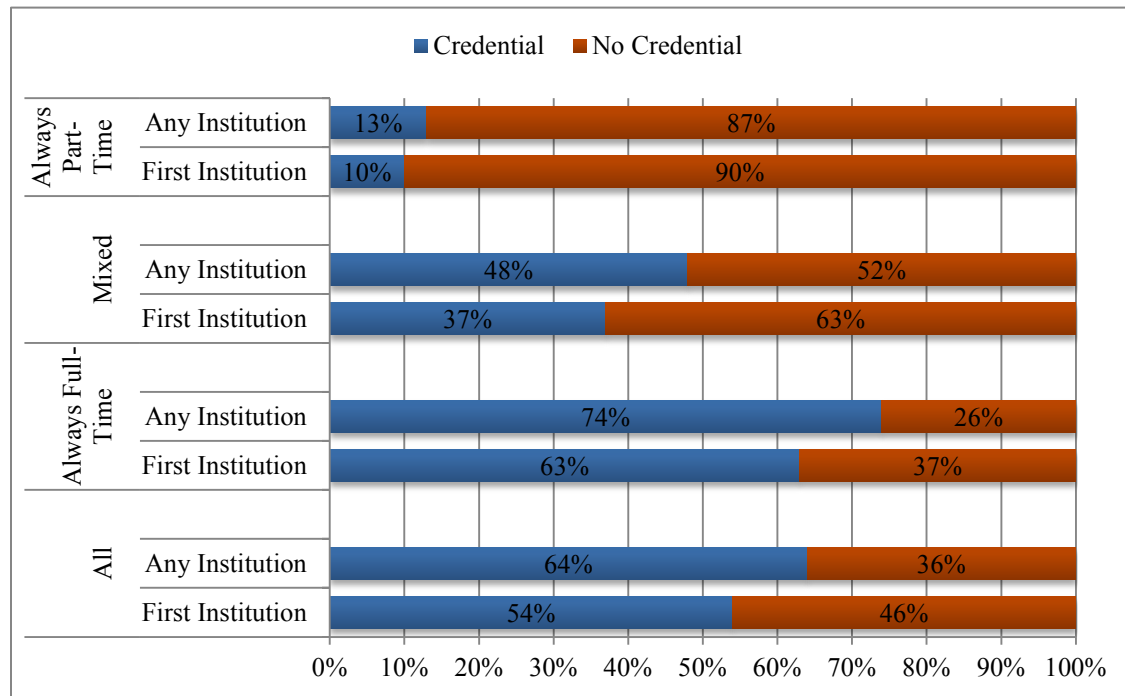
## Summary

The selection of a time frame for examining degree completion has a significant impact on the outcome measures. In addition, official college completion rates, which are based on IPEDS data and include only those students who begin their studies full time and graduate from the institution at which they first enrolled, understate the percentage of students who earn degrees.

### ***Students who enroll full time have higher completion rates than those who enroll part time.***

- BPS data demonstrate that among the 2003–04 beginning students at four-year institutions who were always enrolled full time, 69 percent had completed a bachelor's degree within six years, and 74 percent had completed a postsecondary credential at any institution (see Figure 6 and Appendix Table A.6).
- Including those who enrolled sometimes part time and sometimes full time lowers the bachelor's degree completion rate to 40 percent; only 5 percent of those who enrolled exclusively part time completed a bachelor's degree within six years (see Figure 6 and Appendix Table A.6).

**Figure 6. Completion Rates by 2009 of 2003–04 Beginning Students Who First Enrolled in a Four-Year Institution, by Attendance Intensity**



*Note.* Students may complete their degrees in either two-year or four-year institutions. Full time is defined as exclusively full time through 2009. As a result, data may differ from Figure 5. Source: Beginning Postsecondary Students Longitudinal Study (BPS) 2004/09 (National Center for Education Statistics 2009).

### Cautions

- Students who enroll part time differ systematically from those who enroll full time, and the correlation between part-time enrollment and low completion rates cannot be interpreted as causation.
  - For example, among 2011–12 full-time undergraduates at four-year institutions, 66 percent were dependent students, 16 percent were independent students without dependents, and 18 percent were independent students with dependents. These dependency categories included 25 percent, 35 percent, and 40 percent, respectively, of the undergraduates who were enrolled part time (National Center for Education Statistics, 2013f).
  - Among 2011–12 full-time undergraduates at four-year institutions, 19 percent had high school grade point averages (GPAs) lower than 3.0, and 47 percent had GPAs of 3.5 or higher. Comparable figures for those enrolled part time were 26 percent and 35 percent, respectively (National Center for Education Statistics, 2013f).
- BPS data are from a nationally representative sample of students beginning college in 2003–04 and show completion rates by 2006 and 2009 for students who first enrolled either full time or part time, as well as whether they completed at their first institution or transferred to another institution. In contrast, IPEDS completion rates include only first-time students who began full time and only completions at the first institution.

## Summary

Overall completion rates are significantly lower than completion rates for students who enroll in college on a full-time basis. Completion rates also are lower if only those students who complete at their first institution are included in the analysis.

***Even when the population is defined similarly, different data sources yield somewhat different results.***

- Selecting first-time, full-time students from BPS to match the population included in IPEDS data yields slightly lower completion rates than those reported by IPEDS (Table 1).
- IPEDS data are reported at the institution level, with all institutions receiving federal student aid reporting. BPS is a student-level survey of a nationally representative sample of beginning students (Table 1).
- Clearinghouse data, which track individual students and include most but not all degree-granting institutions, yield completion rates similar to BPS data (see Figure 7 and Appendix Table A.7).

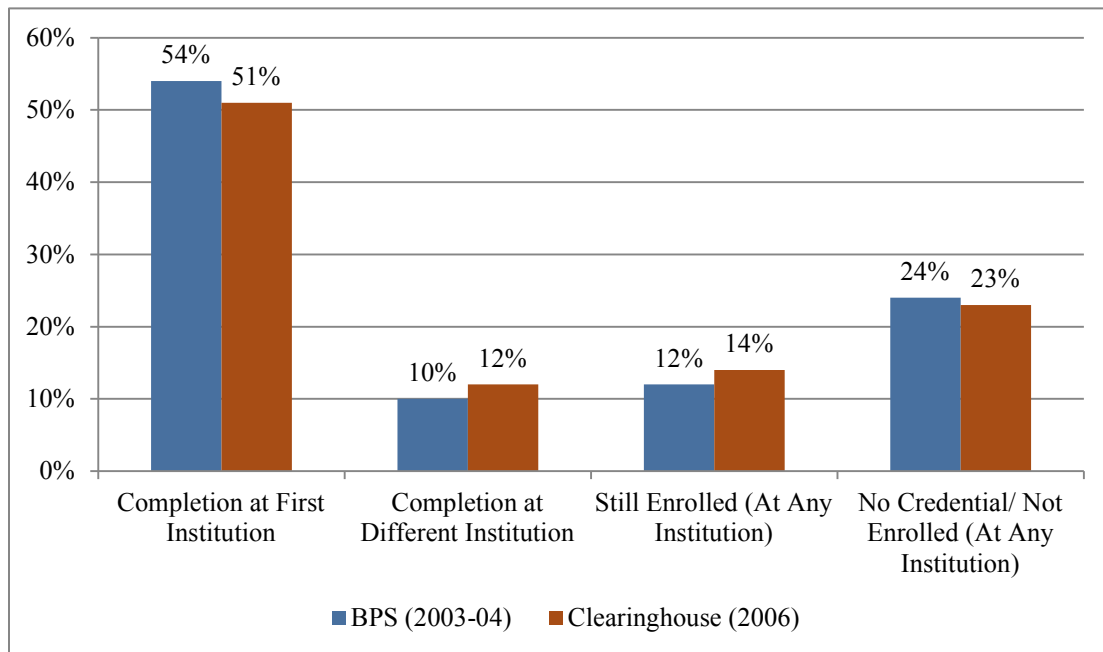
**Table 1. Completion Within Six Years at First Four-Year Institution, 2003 Beginning Full-Time Students: IPEDS and BPS**

Data Source	Six-Year Completion Rate at First Four-Year Institution
IPEDS	57%
BPS	55%

*Note.* Data are for four-year, degree-granting postsecondary institutions participating in Title IV federal financial aid programs. Full time is defined as in the fall of the first term, consistent with the definition in the IPEDS graduation rates, and completion refers to bachelor's degrees. Sources: Beginning Postsecondary Students Longitudinal Study (BPS) 2004/09 (National Center for Education Statistics 2009); IPEDS Graduation Rate Component (National Center for Education Statistics 2013e).



**Figure 7. Tracking Students Who Began at Four-Year Institutions: Six-Year Completion Rates from Beginning Postsecondary Students Longitudinal Study and the National Student Clearinghouse**



*Note.* The BPS data report the 2009 status of first-time students who began in 2003–04, the most recent cohort available. The Clearinghouse data report the 2012 status of the fall 2006 cohort, the earliest available through their reports. Data for all four-year institutions were calculated using the unweighted numbers of students in each institutional type. Completion rates refer to any credential. Sources: Beginning Postsecondary Students Longitudinal Study (BPS) 2004/09 (National Center for Education Statistics 2009); Shapiro et al. (2012).

### Summary

Student-level data and institution-level data yield somewhat different results. Data on the percentage of students completing the degrees they begin should be treated as estimates, not precise measures.

### Question 3: How do educational attainment rates differ across racial and ethnic groups?

By any measure, some racial and ethnic groups have much higher levels of educational attainment than others. However, how the categories are divided and how the population from which they are drawn is defined can have a measurable impact on the size of the gaps observed.

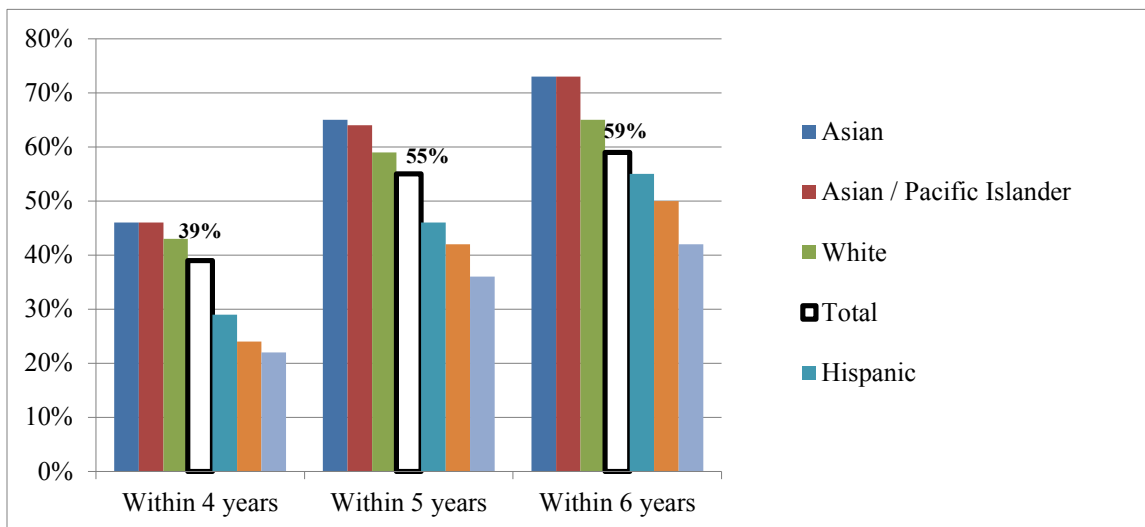
***Multiple options exist for defining racial and ethnic groups, and these options can have a noticeable impact on the measurement of attainment rates.***

- The U.S. Census Bureau follows the guidelines set by the Office of Management and Budget (OMB) for defining racial categories. OMB specifies that there be at least the following five categories: White, Black or African American, Asian, Native Hawaiian or

Other Pacific Islander, and American Indian or Alaska Native. The only ethnicity category is Hispanic, Latino, or Spanish. People identifying with this category can be of any race.

- Since 2000, the U.S. Census Bureau has allowed people to identify with more than one race. Beginning in 2008, IPEDS adopted the same race and ethnicity categories as the U.S. Census Bureau.
- IPEDS data show that the 59 percent overall six-year bachelor’s degree completion rate for first-time students beginning full time at four-year institutions reflects completion rates among racial and ethnic groups ranging from 42 percent for American Indian and Alaska Native students and 44 percent for Blacks to 73 percent for Asian and Pacific Islanders (see Figure 8 and Appendix Table A.8).

**Figure 8. Completion Rates of 2006 First-Time, Full-Time Bachelor’s Degree-Seeking Students at Four-Year Institutions by Race and Ethnicity**

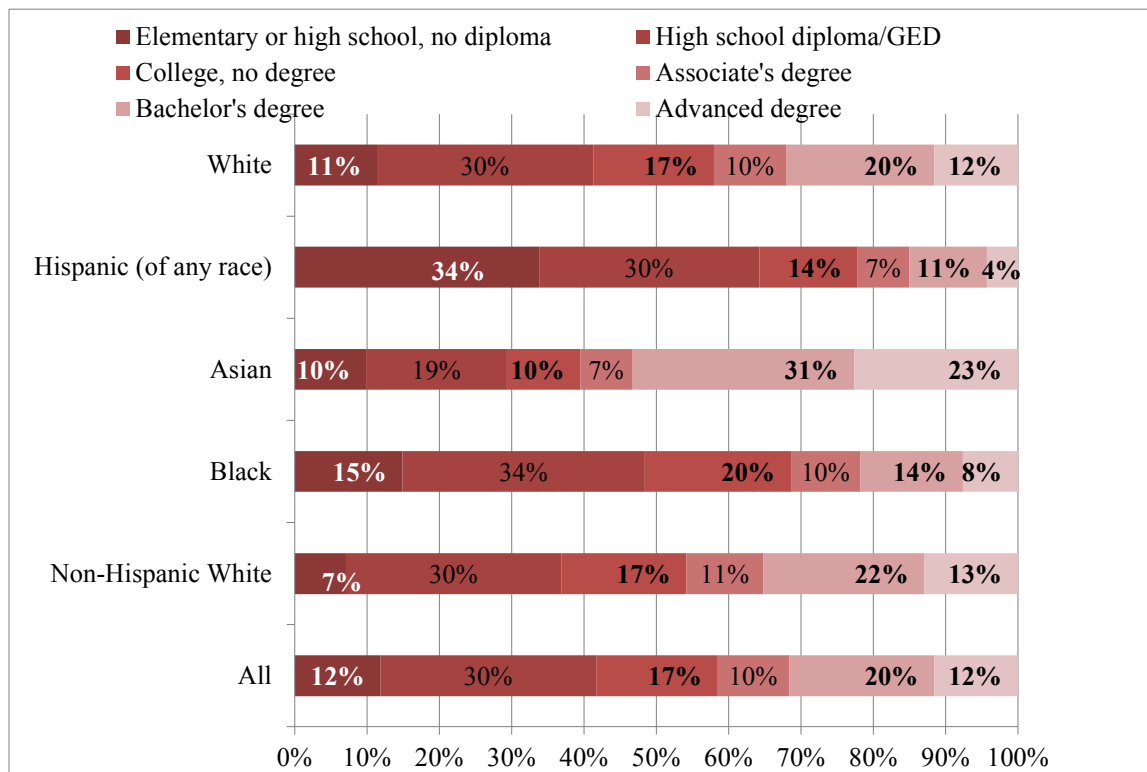


*Note.* Data are for four-year, degree-granting postsecondary institutions participating in Title IV federal financial aid programs. Graduation rates refer to students receiving bachelor’s degrees from their initial institutions of attendance only. The “Total” category includes data for persons whose race or ethnicity was not reported. Race categories exclude persons of Hispanic ethnicity. Source: IPEDS Graduation Rates Component (National Center for Education Statistics 2013e).

- Asians and Pacific Islanders are often combined into one category, but separating the groups reveals a 50 percent completion rate for Pacific Islanders compared to 73 percent for Asians.
- Increasing the time period for measuring completion from four years to six years raises the overall bachelor’s degree completion rate from 39 percent to 59 percent. It more than doubles the completion rate for Black students from 21 percent to 44 percent and for Pacific Islanders from 24 percent to 50 percent.
- The educational attainment of people classified as White changes significantly if Hispanics are excluded. For example, 11 percent of all Whites (i.e., including Hispanic Whites) and 7 percent of non-Hispanic Whites have not completed high school. The

percentage of all Whites with a bachelor’s degree or higher is 32 percent, compared to 35 percent for non-Hispanic Whites (see Figure 9 and Appendix Table A.9).

**Figure 9. Percentage Distribution of Highest Education Level of Adults Ages 25 and Older by Race and Ethnicity in 2013**



*Note.* Data include the civilian, non-institutionalized population. Percentage values in each bar may not add to 100 because of rounding. Source: Current Population Survey (U.S. Census Bureau 2013a).

### Cautions

- The Census asks one question about whether respondents are of Hispanic, Latino, or Spanish origin and then asks respondents to identify to which racial category they belong.
- Some sources allow broad racial and ethnic groups to be broken down, but others do not. When differences between subgroups that are often combined, such as Asians and Pacific Islanders, are notable the combined subgroup may mask attainment gaps.

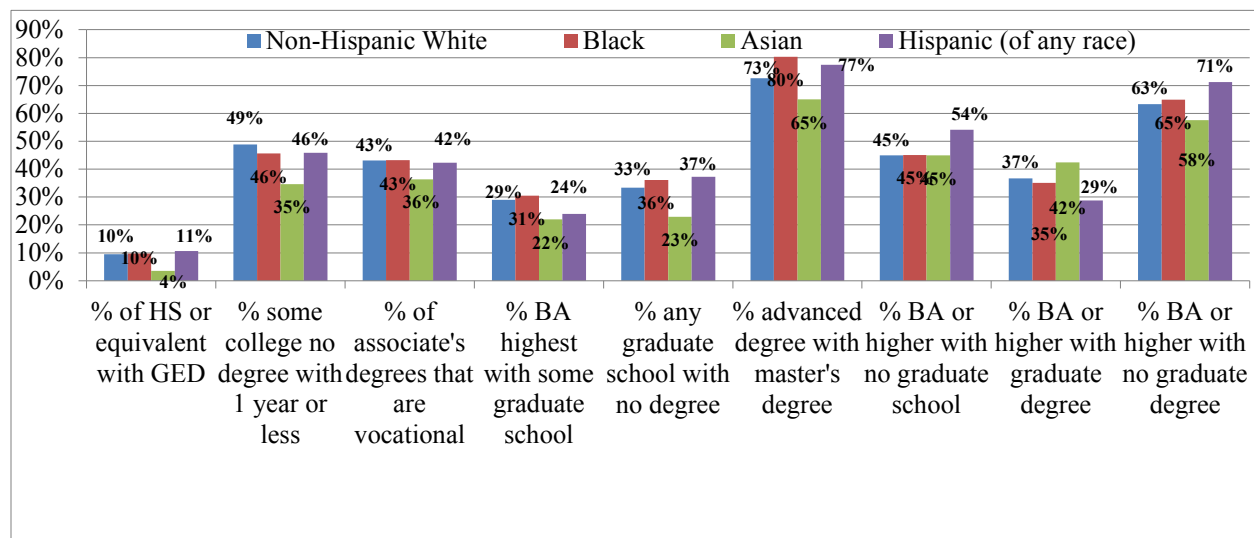
### Summary

National averages and broad racial and ethnic subgroups include populations with very different patterns of educational attainment. The ways these groups are defined may affect the findings about gaps across groups.

***The standard categories for measuring educational attainment contain a range of experiences that differ systematically across racial and ethnic groups.***

- According to CPS data, although 10 percent of all adults with a high school diploma or equivalency hold GEDs, only 4 percent of Asians are in this category (see Figure 10 and Appendix Table A.10).
- Among those with some college but no degree, the percentage with one year of college or less ranges from 35 percent for Asians to 49 percent for non-Hispanic Whites (see Figure 10 and Appendix Table A.10).
- Among those who started graduate school, the percentage who did not earn a degree ranges from 23 percent for Asians to 37 percent for Hispanics (see Figure 10 and Appendix Table A.10).
- In the bachelor's degree or higher educational attainment category, the percentage of people with graduate degrees ranges from 35 percent for Blacks to 42 percent for Asians (see Figure 10 and Appendix Table A.10).

**Figure 10. Composition of Attainment Categories by Race and Ethnicity in 2013**



*Note.* Data include civilian, non-institutionalized population. Source: Current Population Survey (U.S. Census Bureau 2013a).

### Cautions

- The categories White and Black sometimes include people of Hispanic origin and sometimes exclude them. Asians and Pacific Islanders may either be combined or separated into distinct racial groups.
- About one half of Hispanics ages 18 and older are foreign born, and about one half were born in the United States (Krogstad & Lopez, 2014). In 2009, 16 percent of native-born Hispanics ages 25 and older held bachelor's degrees, compared to 10 percent of foreign-born Hispanics (Ryan & Siebens, 2012).
- Educational attainment also varies by nationality among people of Hispanic origin, with bachelor's degree attainment ranging from 8 percent among Salvadorans and 9 percent among both Guatemalans and Mexicans to 39 percent among Argentinians and

50 percent among Venezuelans (Ogunwole, Drewery Jr., & Rios-Vargas, 2012). There are also large differences among Asians from different countries.

## Summary

There are significant differences in educational attainment across racial and ethnic groups, but standard racial and ethnic categories conceal real differences among subgroups, making the gaps difficult to pinpoint.

***The gaps across demographic groups differ depending on the data source, at least in part because of the different populations included.***

- According to CPS, which excludes individuals living in group housing such as military barracks, correctional facilities, and nursing homes, the percentage of Blacks ages 25 and older who have not completed high school is 3.5 percentage points higher than the percentage of Whites who have not completed high school. Relying on ACS data, which includes individuals living in group housing, increases the gap between Blacks and Whites ages 25 and older to 5.2 percentage points (Table 2).
- According to CPS, the percentage of Blacks ages 25 and older with any postsecondary degree is 10.6 percentage points lower than the percentage of Whites with any postsecondary degree. Relying on ACS data increases this gap to 12.2 percentage points (Table 2).

**Table 2. Comparing ACS and CPS Data, Adults 25 and Older by Race**

	All		White		Black		Difference between Black and White	
	ACS	CPS	ACS	CPS	ACS	CPS	ACS	CPS
Less than high school	14%	12%	12%	11%	17%	15%	5.2	3.5
High school or equivalent	28%	30%	28%	30%	31%	34%	2.8	3.6
Any college degree	37%	42%	39%	42%	27%	31%	-12.2	-10.6
Bachelor's degree or higher	29%	32%	31%	32%	19%	22%	-11.8	-10.2

*Note.* White and Black racial categories include all ethnicities, including Hispanics. CPS data do not include individuals living in group quarters, whereas ACS data do include this population. Sources: American Community Survey 2012 (U.S. Census Bureau 2012); Current Population Survey 2013 U.S. Census Bureau 2013b).

## Summary

The precise gaps across racial and ethnic groups are affected by the characteristics of any individuals not included in the population. For example, excluding individuals who live in military barracks or are incarcerated eliminates a disproportionate number of African Americans with no postsecondary education.

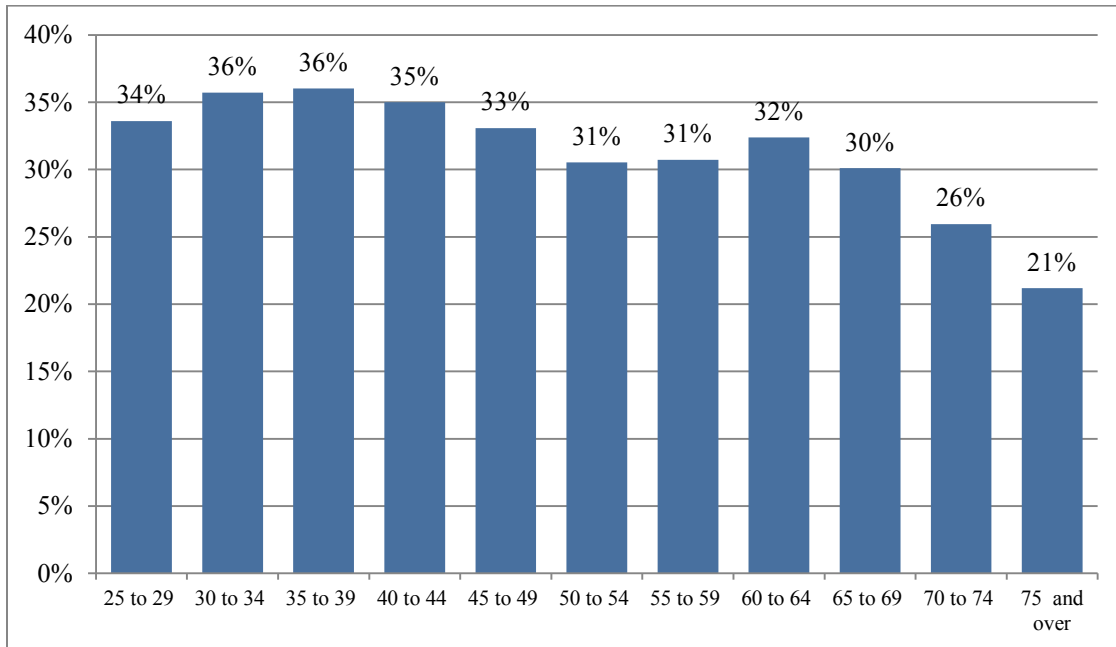
## Question 4: How does the educational attainment of young adults compare with that of older adults?

Long-term comparisons of educational attainment require comparing an age group today with a group of the same age in the past. Comparing attainment levels across younger and older age groups at a single point in time can be misleading because some people earn degrees later in life.

***The attainment levels of 25- to 29-year-olds today can be compared with the attainment levels of older people today or with the attainment levels of 25- to 29-year-olds in the past.***

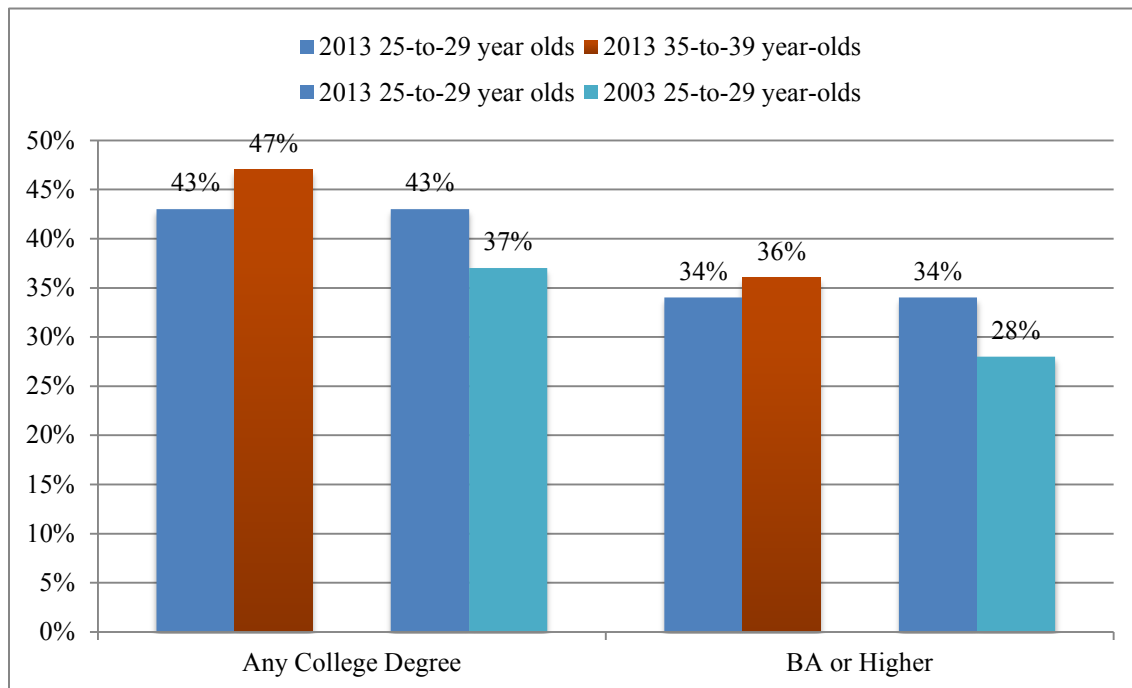
- According to CPS data, in 2013, 43 percent of the 25- to 29-year-olds, 47 percent of the 35-to 39-year-olds, and 44 percent of the 45- to 49-year-olds had postsecondary degrees (see Figure 11 and Appendix Table A.11).
  - The percentage of individuals with a bachelor's degree as the highest credential was higher for the 25- to 29-year-olds than for any other age group, but relatively few people under 30 years of age had completed advanced degrees.
  - In all age groups between 25 and 44 years old, 37 percent of adults had a high school diploma or less in 2013. This percentage was higher among all older age groups, ranging from 39 percent for those 60 to 64 years old to 59 percent for those ages 75 or older.
- In 2013, fewer 25- to 29-year-olds (43 percent) than 35- to 39-year olds (47 percent) had postsecondary degrees. Ten years earlier, when those who are now 35 to 39 years old were 25 to 29 years old, only 37 percent had postsecondary degrees (see Figure 12 and Appendix Table A.12).
  - In 2003, when 35- to 39-year-olds in 2013 were 25 to 29 years old, 28 percent of them had a bachelor's degree or higher. In 2013, 34 percent of 25- to 29-year-olds had a bachelor's degree or higher.
- Tracking adults who were 35 to 39 years old in 2013 back 10 years shows the growth in their educational attainment across time (see Figure 13 and Appendix Table A.13).
  - In 2003, 37 percent of 25- to 29-year-olds had postsecondary degrees. Five years later, when these individuals were 30 to 34 years old, 44 percent of them had postsecondary degrees; in 2013, when they were 35 to 39 years old, 47 percent had postsecondary degrees.
  - In 2003, 28 percent of 25- to 29-year-olds had a bachelor's degree or higher. Five years later, when these individuals were 30 to 34 years old, 34 percent of them had a bachelor's degree or higher; in 2013, when they were 35 to 39 years old, 36 percent had a bachelor's degree or higher.

**Figure 11. Percentage of Adults Ages 25 and Older With a Bachelor’s Degree or Higher by Age in 2013**



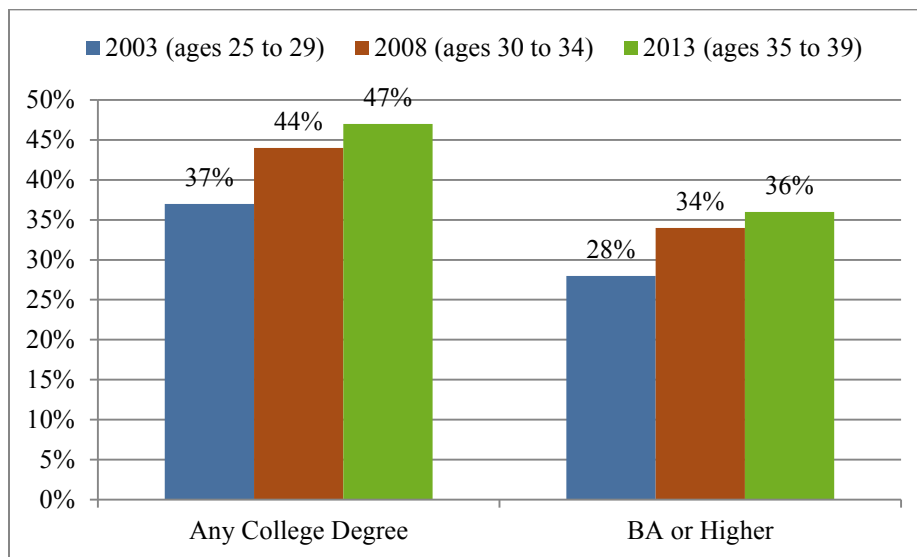
*Note.* Data include civilian, non-institutionalized population. Source: Current Population Survey (U.S. Census Bureau 2013c).

**Figure 12. Percentage With Any Degree and With a Bachelor’s Degree: Comparing 25- to 29-Year-Olds in 2013 With 35- to 39-Year-Olds in 2013 and 25- to 29-Year-Olds in 2003**



*Note.* Data include civilian non-institutionalized population. Source: Current Population Survey (U.S. Census Bureau 2013c).

**Figure 13. Percentage With Any Degree and With a Bachelor’s Degree: Educational Attainment of Adults Who Were Between 35 and 39 Years Old in 2013: 2003, 2008, and 2013**



*Note.* Data include civilian, non-institutionalized population. Source: Current Population Survey (U.S. Census Bureau 2013c).

### Cautions

- Comparisons of the educational attainment levels of different age groups at a single point in time can be misleading because a significant number of people earn degrees when they are older compared with traditional college age.
- Among 2011–12 degree completers, 34 percent of those earning associate’s degrees and 20 percent of those earning bachelor’s degrees were age 30 or older (National Center for Education Statistics, 2013f).

### Summary

Lower attainment rates for younger age groups do not necessarily represent long-term declines in educational attainment. Many people earn degrees in their 30s or later.

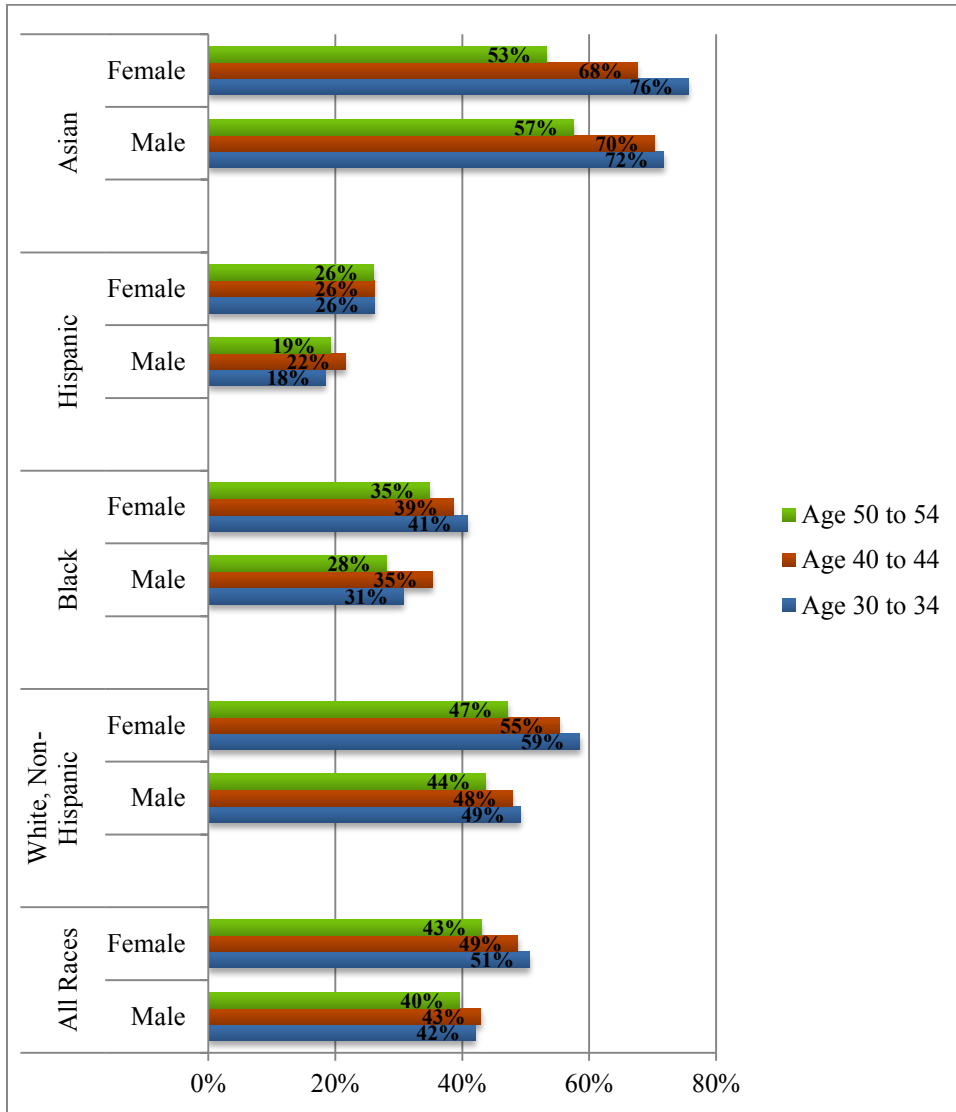
### ***Patterns of educational attainment across age groups differ among demographic groups.***

- According to CPS data, postsecondary educational attainment levels are higher among younger women than among older women, but similar percentages of men between 30 and 34 years old, 40 and 44 years old, and 50 and 54 years old have postsecondary degrees (see Figure 14 and Appendix Table A.14).
  - Among Asian men, 72 percent of those between 30 and 34 years old have postsecondary degrees compared to only 57 percent of those between 50 and 54 years old. These percentages are 66 percent and 51 percent, respectively, for a bachelor’s degree or higher.



- Among women, the largest differences across age groups are for Asians, with higher educational attainment levels among younger than older women.
- Among Hispanics, postsecondary attainment levels are similar among these age groups for women as well as for men.

**Figure 14. Percentage of Adults Between 30 and 34, 40 and 44, and 50 and 54 Years Old With a Postsecondary Degree in 2013, by Gender, Race, and Ethnicity**



*Note.* Data include civilian, non-institutionalized population. Current Population Survey (U.S. Census Bureau 2013c).

### Summary

Overall educational attainment patterns across age groups hide different patterns among demographic groups. In particular, younger women are more likely than older women to have postsecondary degrees. Educational attainment levels among younger Asians are much higher

than those among older Asians, but all Hispanics between 30 and 54 years old have similar attainment levels.

***The proportion of students earning postsecondary degrees at older ages varies by gender, race, and ethnicity.***

- NPSAS data show that in 2011–12, the percentage of undergraduate degree recipients who were 40 years old or older ranged from 5 percent among Asians to 18 percent among Blacks (Table 3).
  - Among certificate recipients, 21 percent of Whites were age 40 or older compared with 12 percent of Asians.
  - Among associate’s degree recipients, 20 percent of Blacks were age 40 or older compared with 8 percent of Asians.
  - Among bachelor’s degree recipients, 18 percent of Blacks were age 40 or older compared with 2 percent of Asians.
  - Higher percentages of women than of men and of Blacks than of other racial and ethnic groups were age 40 or older when they earned graduate degrees (Table 3).

**Table 3. Age Distribution of 2011–12 Degree Completers by Gender, Race, and Ethnicity**

	Age			
	23 or Younger	24–29	30–39	40 or Older
<b>All Undergraduate Degrees and Certificates</b>				
Male (41%)	52%	23%	14%	11%
Female (59%)	50%	21%	16%	13%
White (61%)	53%	20%	14%	13%
Black (14%)	37%	23%	22%	18%
Hispanic (15%)	50%	24%	16%	9%
Asian (5%)	59%	23%	13%	5%
<b>Certificate</b>				
Male (39%)	33%	25%	23%	19%
Female (61%)	42%	21%	20%	17%
White (53%)	38%	21%	19%	21%
Black (19%)	33%	26%	28%	14%
Hispanic (21%)	49%	19%	18%	14%
Asian (3%)	22% <sup>a</sup>	35%	31% <sup>a</sup>	12% <sup>a</sup>

	Age			
	23 or Younger	24–29	30–39	40 or Older
<b>Associate's Degree</b>				
Male (41%)	46%	24%	16%	13%
Female (59%)	41%	23%	20%	16%
White (59%)	43%	22%	18%	17%
Black (13%)	33%	22%	25%	20%
Hispanic (18%)	47%	28%	17%	9%
Asian (4%)	54%	23%	15%	8% <sup>a</sup>
<b>Bachelor's Degree</b>				
Male (44%)	60%	22%	10%	8%
Female (56%)	60%	19%	12%	10%
White (65%)	64%	18%	10%	8%
Black (21%)	44%	22%	17%	18%
Hispanic (12%)	53%	24%	14%	8%
Asian (6%)	68%	21%	8%	2%
<b>Advanced Degree</b>				
Male (39%)	9%	44%	31%	15%
Female (61%)	9%	45%	28%	19%
White (62%)	9%	45%	28%	18%
Black (11%)	5%	38%	31%	27%
Hispanic (7%)	7% <sup>a</sup>	43%	34%	16%
Asian (8%)	8%	43%	39%	10%

<sup>a</sup> Interpret with caution; standard error is more than 30 percent of the estimate.

*Note.* Data do not include foreign students. Figures in parentheses in the first column denote the percentages within racial, ethnic, and gender groups. Source: National Postsecondary Student Aid Study (NPSAS) 2011-12 (National Center for Education Statistics 2013f).

### Cautions:

- Judgments about the trends over time in educational attainment, particularly those that examine trends for the traditional college-age population, should incorporate the reality that many people earn college degrees later in life.
- Generalizations about attainment patterns conceal significant differences across demographic groups.

## Summary

Data on educational attainment by age indicate that young Americans today are more likely to hold postsecondary degrees than were young Americans in the past. Patterns of educational attainment by age differ across demographic groups, with relatively fewer Asians and more Blacks earning their degrees at older ages.

### Question 5: How large are the gender gaps in degree attainment in STEM fields?

There is gender imbalance in many fields of study and overall, males dominate the basic sciences and engineering. However, reasonable alternative STEM definitions lead to very different pictures of the fields pursued and degrees attained by both men and women. In addition, the gender balance differs significantly across types of credentials.

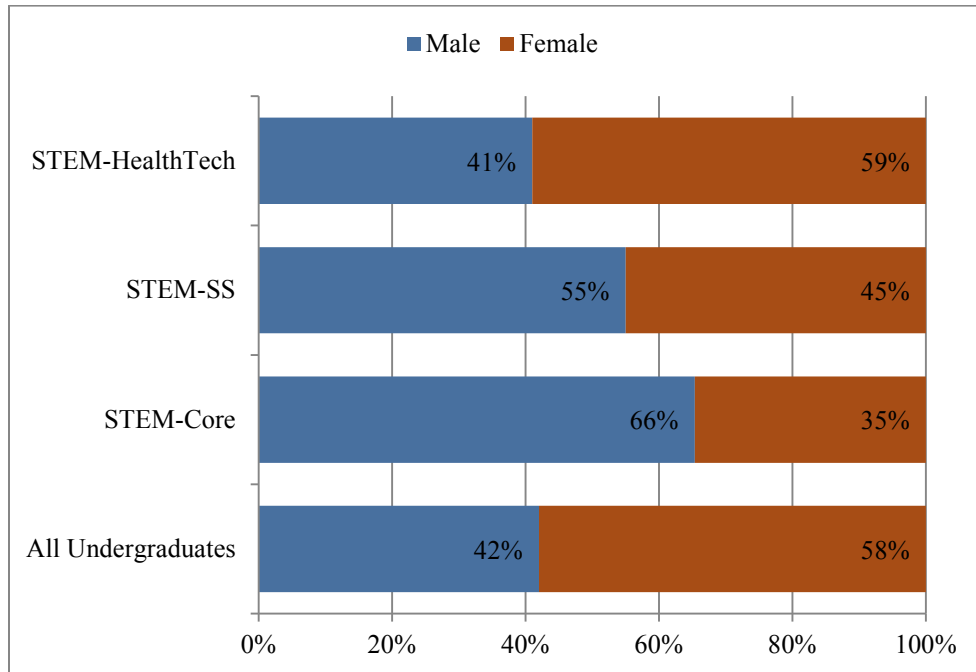
There is more than one way to define which fields should be included in STEM. Three feasible definitions of STEM are as follows:

- **STEM-Core.** Physical sciences, biology/biomedical sciences, computer/information science, agriculture/conservation science, mathematics, and engineering
- **STEM-SS.** All the STEM-Core fields plus psychology and the social sciences, following the definition commonly used by the National Science Foundation
- **STEM-HealthTech.** All the STEM-Core fields plus the health professions and science and engineering technologies.

***Women are less likely than men to enroll and earn degrees in basic science and engineering fields. Including the social sciences in the STEM definition diminishes this imbalance, and the imbalance does not exist when STEM fields include the health professions and science and engineering technology.***

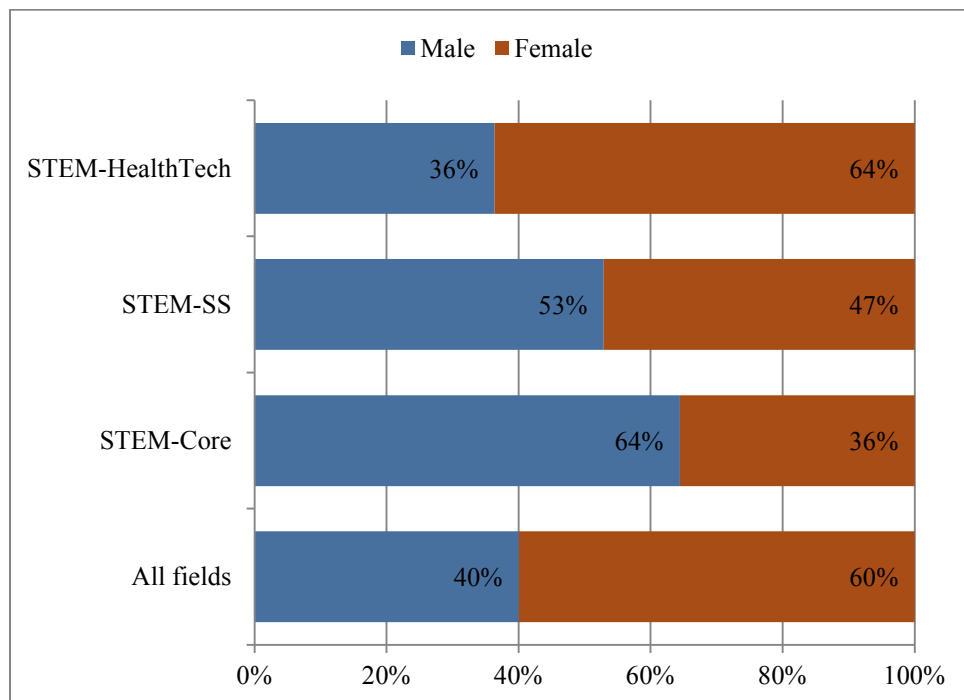
- According to BPS data, about two thirds of undergraduate STEM-Core majors are male, but adding the social sciences to the definition increases the percentage of STEM-Core majors who are female from 35 percent to 45 percent. Adding the health professions and the science and engineering technology fields to the STEM-Core fields leads to the STEM fields being female dominated, in about the same proportion as all undergraduates (see Figure 15 and Appendix Table A.15).
- IPEDS data on degrees awarded show a similar pattern. In 2011–12, 60 percent of all degrees awarded were to women, but only 36 percent of STEM-Core degrees went to women. However, 47 percent of STEM-SS and 64 percent of STEM-HealthTech degrees went to women (see Figure 16 and Appendix Table A.16).

**Figure 15. Beginning 2003–04 Undergraduate Students by Major at Last Enrollment and Gender**



*Note.* Data exclude nonresident aliens. Source: Beginning Postsecondary Students Longitudinal Study (BPS) 2004/09 (National Center for Education Statistics 2009).

**Figure 16. Total Degrees Awarded in 2011–12 by STEM Definition and Gender**



*Note.* Data exclude nonresident aliens. Source: IPEDS Completions Component 2011-12 (National Center for Education Statistics 2012).

## Cautions

- The term “STEM” does not have one widely accepted definition.
- Comparisons of degrees awarded to men and women by field, broadly defined as “STEM” and “non-STEM,” can mask important differences across specific fields of study.

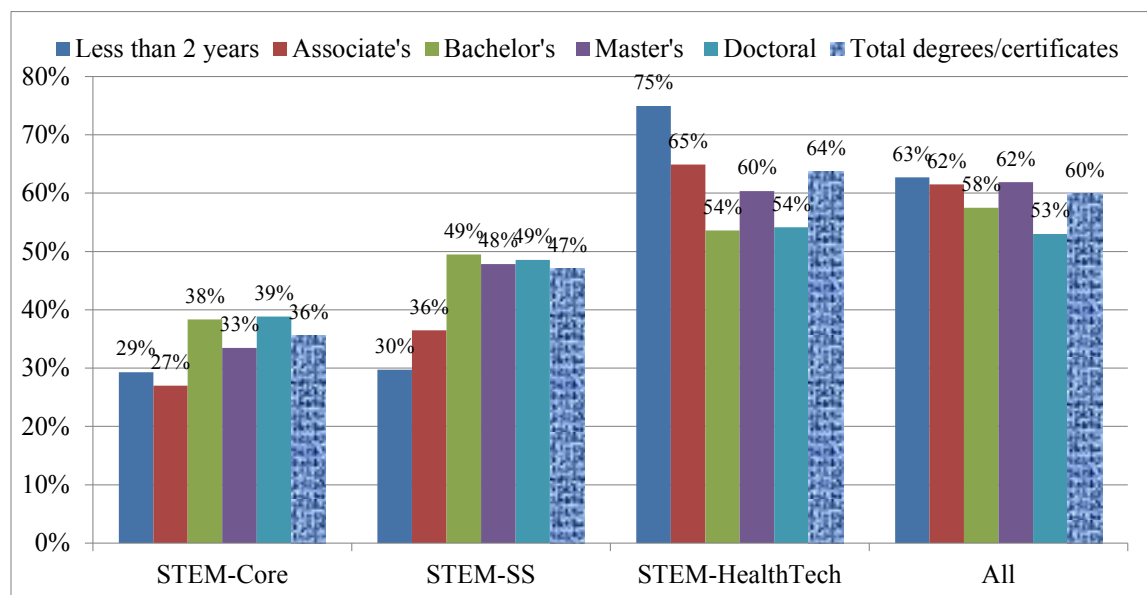
## Summary

Although the STEM-Core fields are disproportionately male, following the definition typically used by the National Science Foundation and including psychology and the social sciences reduces the gender gap. Adding the health professions and the information technology fields to the core fields eliminates the gender gap.

***Within the STEM definitions, the gender breakdown of postsecondary credentials differs across types of degrees.***

- According to IPEDS data, in 2012, women earned 27 percent of the associate’s degrees and 38 percent of the bachelor’s degrees in the STEM-Core fields (see Figure 17 and Appendix Table A.17).
- Adding social sciences to the STEM definition has little impact on the gender breakdown of less-than-two-year certificates but increases the percentage of bachelor’s degrees going to women in 2012 by 11 percentage points and the percentage of master’s degrees by 15 percentage points (see Figure 17 and Appendix Table A.17).
- In 2012, women earned more of the STEM-HealthTech less-than-two-year certificates and associate’s degrees than of these credentials in all fields. Women earned 53 percent of the doctoral degrees overall and 54 percent of STEM-HealthTech doctoral degrees (see Figure 17 and Appendix Table A.17).

**Figure 17. Percentage of Degrees and Certificates Awarded to Women by STEM Definition and Type of Credential in 2012**



*Note.* Data exclude nonresident aliens. The total degrees/certificates count includes credentials such as postbaccalaureate certificates that are not in the listed categories, Source: IPEDS Completions Component 2011-12 (National Center for Education Statistics (2012)).

### Cautions

- Definitions of exactly which fields constitute STEM differ across data sources.
- Measuring the progress of students in STEM fields requires choosing between categorizing students by their first major or their final major.
- In 2012, when 22 percent of postsecondary degrees awarded were associate’s degrees, the breakdown of associate’s degrees was 13 percent STEM-Core, 10 percent STEM-SS, and 21 percent STEM-HealthTech degrees (National Center for Education Statistics, 2012).

### Summary

Under both the STEM-Core and STEM-SS definitions, women earn higher percentages of upper-level than of lower-level STEM degrees.

## IV. Conclusion

The role of postsecondary education in creating opportunities for individuals and preparing a productive and flexible workforce makes understanding the levels of educational attainment of different demographic groups, the effectiveness of different types of postsecondary institutions, and long-term changes in the credentials held by the U.S. population critical. Descriptive data on who goes to college, who completes degrees, and how far people have progressed through the educational system cannot explain why these outcomes exist. But the data can provide an understanding of where the successes lie and where problems need to be addressed.

This report provides a window into the data available for answering key questions about educational attainment in the United States. The main focus, however, is on the nuances and ambiguities inherent in the available data. The information provided in response to five representative questions highlights the importance of understanding the sources of the data, the population included in the data, and the definitions being used to categorize subgroups within the data. The evidence is clear that significant differences exist in levels of educational attainment across the states; gender, racial, and ethnic groups; age groups; and fields of study. But exactly how large these differences are depends on how attainment is defined and measured and which data are used. Both rates of completion of postsecondary credentials and levels of education completed matter, but the concepts are not interchangeable. Comparisons across age groups require following cohorts across time, not just comparing age groups at a single point in time. The perceptions of gender differences in STEM educational attainment depend on which fields are included and the type of degree considered.

There are many additional questions about educational attainment on which available data can shed light. For example, this report discusses completion rates at four-year colleges and universities but not two-year institutions. It discusses associate's and bachelor's degree attainment but does not report on postsecondary certificates. The data included do not reveal the differences in outcomes across institutional sectors or the changing patterns of educational attainment by gender.

All these questions and more can, however, be answered more reliably if the concepts, the pitfalls in interpreting data, and the differences across data sources discussed here are taken seriously and applied to other questions and potential data sources.

## **Future Work**

This report is the first stage in a planned larger project on postsecondary educational attainment data. The goal is to develop an accessible Web-based repository of data that will be a detailed and reliable source of up-to-date information on postsecondary educational attainment overall and disaggregated by demographic groups, geographical location, STEM and non-STEM fields, and different types of institutions and credentials.

In addition to providing data, the website envisioned would provide guidance on selecting, interpreting, and using data. Its goal is to be a comprehensive and integrated source of unbiased information about attainment that will enrich understanding of historical trends and current realities and allow for more coherent and credible monitoring and reporting of progress.



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## Appendix A. Data Tables

**Table A.1. Percentage of Adults Between 25 to 44 Years Old With a Bachelor's Degree or Higher and Any Postsecondary Degree by State, 2009–13**

State	Percentage With a Bachelor's Degree or Higher	Percentage With Any Postsecondary Degree	State	Percentage With a Bachelor's Degree or Higher	Percentage With Any Postsecondary Degree
U.S. total	32%	41%	Missouri	31%	40%
Alabama	25%	34%	Montana	32%	42%
Alaska	27%	35%	Nebraska	34%	46%
Arizona	27%	36%	Nevada	22%	30%
Arkansas	23%	30%	New Hampshire	37%	48%
California	32%	39%	New Jersey	41%	48%
Colorado	39%	47%	New Mexico	24%	33%
Connecticut	41%	48%	New York	40%	49%
Delaware	32%	40%	North Carolina	31%	40%
District of Columbia	63%	66%	North Dakota	34%	50%
Florida	28%	39%	Ohio	30%	39%
Georgia	31%	38%	Oklahoma	25%	33%
Hawaii	31%	43%	Oregon	32%	40%
Idaho	26%	36%	Pennsylvania	34%	44%
Illinois	37%	45%	Rhode Island	35%	44%
Indiana	27%	37%	South Carolina	27%	37%
Iowa	32%	46%	South Dakota	30%	43%
Kansas	34%	43%	Tennessee	28%	35%
Kentucky	25%	34%	Texas	28%	35%
Louisiana	25%	31%	Utah	31%	41%
Maine	30%	40%	Vermont	38%	47%
Maryland	40%	47%	Virginia	39%	47%
Massachusetts	47%	54%	Washington	33%	43%
Michigan	30%	39%	West Virginia	22%	31%
Minnesota	38%	51%	Wisconsin	31%	43%
Mississippi	22%	32%	Wyoming	26%	37%

Source: 2009-2013 5-Year American Community Survey (U.S. Census Bureau 2014a).

**Table A.2. Bachelor’s Degrees Conferred as a Percentage of Individuals Between 18 to 24 Years Old by State**

State	Percentage	State	Percentage
U.S. total	6%	Missouri	7%
Alabama	6%	Montana	6%
Alaska	2%	Nebraska	8%
Arizona	10%	Nevada	3%
Arkansas	5%	New Hampshire	7%
California	4%	New Jersey	5%
Colorado	6%	New Mexico	4%
Connecticut	6%	New York	7%
Delaware	6%	North Carolina	5%
District of Columbia	11%	North Dakota	7%
Florida	5%	Ohio	6%
Georgia	5%	Oklahoma	5%
Hawaii	5%	Oregon	6%
Idaho	6%	Pennsylvania	7%
Illinois	6%	Rhode Island	9%
Indiana	7%	South Carolina	5%
Iowa	13%	South Dakota	6%
Kansas	6%	Tennessee	5%
Kentucky	5%	Texas	4%
Louisiana	5%	Utah	8%
Maine	7%	Vermont	10%
Maryland	5%	Virginia	6%
Massachusetts	8%	Washington	5%
Michigan	6%	West Virginia	8%
Minnesota	7%	Wisconsin	6%
Mississippi	4%	Wyoming	4%

*Note.* Data are for postsecondary institutions participating in Title IV federal financial aid programs. Sources: IPEDS Completions Component 2011-12 (NCES 2013d); 2009-2013 5-Year American Community Survey (U.S. Census Bureau 2014a).

**Table A.3. Percentage of 2009–10 High School Graduates Enrolling in Degree-Granting Institutions in 2010 by State**

State	Percentage	State	Percentage
U.S. Total	63%	Missouri	61%
Alabama	64%	Montana	61%
Alaska	46%	Nebraska	70%
Arizona	58%	Nevada	52%
Arkansas	65%	New Hampshire	64%
California	62%	New Jersey	69%
Colorado	61%	New Mexico	72%
Connecticut	79%	New York	69%
Delaware	47%	North Carolina	64%
District of Columbia	51%	North Dakota	67%
Florida	63%	Ohio	62%
Georgia	68%	Oklahoma	60%
Hawaii	64%	Oregon	48%
Idaho	45%	Pennsylvania	61%
Illinois	59%	Rhode Island	65%
Indiana	66%	South Carolina	68%
Iowa	67%	South Dakota	72%
Kansas	65%	Tennessee	62%
Kentucky	63%	Texas	56%
Louisiana	65%	Utah	53%
Maine	56%	Vermont	54%
Maryland	64%	Virginia	64%
Massachusetts	73%	Washington	48%
Michigan	62%	West Virginia	59%
Minnesota	71%	Wisconsin	60%
Mississippi	79%	Wyoming	60%

*Note.* Data include institutions granting associate’s degree or higher and participating in Title IV federal financial aid programs. Includes all U.S. resident students living in a particular state when admitted to an institution in any state, not just in their home state. Data include public high school graduates for 2009–10 and private high school graduates for 2008–09. Sources: *Digest of Education Statistics* 2012 (National Center for Education Statistics 2013a). Original data derived from NCES Common Core of Data State Dropout and Completion Data File 2009-10 (NCES 2010a); Private School Universe Survey (PSS) 2009-10 (NCES 2010b); and the Integrated Postsecondary Education Data System (IPEDS) Spring 2011 Enrollment Component (NCES 2011).

**Table A.4. Completion Rates at Initial Institution of First-Time, Full-Time Students Enrolling at Four-Year Institutions**

Four-Year Institutions	First Enrollment Year		
	2003	2006	2009
Within 4 years	37%	39%	NA
Within 5 years	53%	55%	NA
Within 6 years	57%	59%	NA

*Note.* Data are for four-year, degree-granting postsecondary institutions participating in Title IV federal financial aid programs. Graduation rates refer to students receiving bachelor’s degrees from their initial institutions of attendance only. Source: IPEDS Graduation Rate Component (National Center for Education Statistics 2013e).

**Table A.5. Adding Students Who Transfer: Beginning 2003–04 Students Who First Enrolled in a Four-Year Institution Full Time, 2009 Completion Status**

Institution	Bachelor’s Degree	Associate’s Degree	Certificate	No Degree—Still Enrolled	No Degree—Transferred	No Degree—Left Without Return	Credential	No Credential
First institution	55%	2%	1%	4%	24%	14%	58%	42%
Any institution	62%	4%	2%	11%	NA	21%	68%	32%

*Note.* Students may complete their degrees in either two-year or four-year institutions. Full time is defined as in the fall of the first entrance, consistent with the definition in the IPEDS graduation rates. Source: Beginning Postsecondary Students Longitudinal Study (BPS) 2004/09 (National Center for Education Statistics 2009).

**Table A.6. Completion Rates by 2009 of 2003–04 Beginning Students Who First Enrolled in a Four-Year Institution, 2009 Status, by Attendance Intensity**

	Bachelor's Degree	Associate's Degree	Certificate	No Degree—Still Enrolled	No Degree—Transferred	No Degree—Left Without Return	Credential	No Credential
<b>All</b>								
First institution	51%	3%	1%	5%	25%	17%	54%	46%
Any institution	58%	5%	2%	12%	NA	24%	64%	36%
<b>Always full time</b>								
First institution	61%	2%	0%	3%	19%	15%	63%	37%
Any institution	69%	4%	1%	7%	NA	20%	74%	26%
<b>Mixed</b>								
First institution	33%	3%	1%	8%	38%	17%	37%	63%
Any institution	40%	6%	3%	23%	NA	28%	48%	52%
<b>Always part time</b>								
First institution	5%	3%	2%	10%	15%	65%	10%	90%
Any institution	5%	5%	3%	14%	NA	74%	13%	87%

*Note.* Students may complete their degrees in either two-year or four-year institutions. Full time is defined as exclusively full time through 2009. Source: Beginning Postsecondary Students (BPS) 2004/09 (National Center for Education Statistics 2009).

**Table A.7. Tracking Students Who Began at Four-Year Institutions: Beginning Postsecondary Students and the National Student Clearinghouse**

	Completion at First Institution	Completion at Different Institution	Still Enrolled (at Any Institution)	No Credential/Not Enrolled (at Any Institution)
BPS (2003–04)	54%	10%	12%	24%
Clearinghouse (2006)	51%	12%	14%	23%

*Note.* The BPS data report 2009 status for students who began in 2003–04; this is the most recent cohort for which data are available. The Clearinghouse data are for the fall 2006 cohort, the earliest available through their reports. Data for all four-year institutions were calculated using the unweighted numbers of students in each institutional type. Completion rates refer to any credential. Sources: Beginning Postsecondary Students (BPS) 2004/09 (National Center for Education Statistics 2009); Shapiro et al. (2012).



**Table A.8. Completion Rates of 2006 First-Time, Full-Time Bachelor’s Degree-Seeking Students at Four-Year Institutions by Race, Ethnicity, and Gender**

	Total	White	Black	Hispanic	Asian and Pacific Islander	Asian	Pacific Islander	American Indian or Alaska Native
Within 4 years	39%	43%	21%	29%	46%	46%	24%	22%
Within 5 years	55%	59%	35%	46%	64%	65%	42%	36%
Within 6 years	59%	65%	44%	55%	73%	73%	50%	42%
Male	57%	60%	35%	48%	67%	68%	47%	37%
Female	61%	65%	44%	55%	73%	73%	50%	42%

*Note.* Data are for four-year, degree-granting postsecondary institutions participating in Title IV federal financial aid programs. Graduation rates refer to students receiving bachelor’s degrees from their initial institutions of attendance only. Percentages include data for persons whose race or ethnicity was not reported. Race categories exclude persons of Hispanic ethnicity. Source: IPEDS Graduation Rates Component (National Center for Education Statistics 2013e).

**Table A.9. Percentage Distribution of Highest Education Level of Adults Ages 25 and Older by Race and Ethnicity in 2013**

	All	Non-Hispanic White	Black	Asian	Hispanic (of any race)	White
Elementary or high school, no diploma	12	7	15	10	34	11
High school diploma or GED	30	30	34	19	30	30
College, no degree	17	17	20	10	14	17
Associate’s degree	10	11	10	7	7	10
Bachelor’s degree (highest)	20	22	14	31	11	20
Advanced degree	12	13	8	23	4	12

*Note.* Data include the civilian, non-institutionalized population. Numbers in each bar may not add to 100 because of rounding. Source: Current Population Survey (U.S. Census Bureau 2013a).

**Table A.10. Composition of Attainment Categories by Race and Ethnicity in 2013**

	All	Non-Hispanic White	Black	Asian	Hispanic (of any race)
High school or equivalent with GED	10%	10%	10%	4%	11%
Some college, no degree, with 1 year or less	48%	49%	46%	35%	46%
Associate's degrees that are vocational	43%	43%	43%	36%	42%
Bachelor's degree highest with some graduate school	28%	29%	31%	22%	24%
Any graduate school with no degree	33%	33%	36%	23%	37%
Advanced degree with master's degree	73%	73%	80%	65%	77%
Bachelor's degree or higher with no graduate school	46%	45%	45%	45%	54%
Bachelor's degree or higher with graduate degree	37%	37%	35%	42%	29%
Bachelor's degree or higher with no graduate degree	63%	63%	65%	58%	71%

*Note.* Data include civilian, non-institutionalized population. Source: Current Population Survey (U.S. Census Bureau 2013a).

**Table A.11. Percentage of Adults 25 Years and Older With a Bachelor's Degree or Higher by Age in 2013**

	High School or Less	Some College but No Degree	Associate's Degree	Bachelor's Degree	Advanced Degree
<i>Total 25 and older</i>	42%	17%	10%	20%	12%
25 to 29 years	37%	20%	10%	26%	7%
30 to 34 years	37%	17%	11%	23%	12%
35 to 39 years	37%	17%	11%	23%	14%
40 to 44 years	37%	17%	11%	22%	13%
45 to 49 years	40%	16%	11%	22%	11%
50 to 54 years	42%	16%	11%	19%	11%
55 to 59 years	42%	17%	10%	19%	12%
60 to 64 years	39%	18%	10%	19%	13%
65 to 69 years	45%	17%	8%	17%	14%
70 to 74 years	51%	16%	7%	14%	12%
75 years and older	59%	14%	6%	13%	9%

*Note.* Data include civilian, non-institutionalized population. Source: Current Population Survey (U.S. Census Bureau 2013c).

**Table A.12. Percentage With Any Degree and With a Bachelor’s Degree: Comparing 25- to 29-Year-Olds in 2013 with 35- to 39-Year-Olds in 2013 and 25- to 29-Year-Olds in 2003**

	25- to 29-Year-Olds in 2013	35- to 39-Year-Olds in 2013	25- to 29-Year-Olds in 2013	25- to 29-Year-Olds in 2003
Any college degree	43%	47%	43%	37%
Bachelor’s degree or higher	34%	36%	34%	28%

*Note.* Data include civilian non-institutionalized population. Source: Current Population Survey (U.S. Census Bureau 2013c).

**Table A.13. Percentage With Any Degree and With a Bachelor’s Degree: Educational Attainment of Adults Who Were Between 35 and 39 Years Old in 2013: 2003, 2008, and 2013**

	2003 (ages 25 to 29)	2008 (ages 30 to 34)	2013 (ages 35 to 39)
Any college degree	37%	44%	47%
Bachelor’s degree or higher	28%	34%	36%

*Note.* Data include civilian, non-institutionalized population. Source: Current Population Survey (U.S. Census Bureau 2013c).

**Table A.14. Percentage of Adults Between 30 and 34, 40 and 44, and 50 and 54 Years Old With a Postsecondary Degree in 2013, by Gender, Race, and Ethnicity**

	Any Postsecondary Degree			Bachelor's Degree or Higher		
	30–34 Years Old	40–44 Years Old	50–54 Years Old	30–34 Years Old	40–44 Years Old	50–54 Years Old
<b>All Races</b>						
Male	42%	43%	40%	32%	33%	30%
Female	51%	49%	43%	39%	37%	31%
<b>White, Non-Hispanic</b>						
Male	49%	48%	44%	38%	37%	33%
Female	59%	55%	47%	45%	42%	34%
<b>Black</b>						
Male	31%	35%	28%	23%	23%	20%
Female	41%	39%	35%	28%	29%	24%
<b>Hispanic</b>						
Male	18%	22%	19%	13%	15%	14%
Female	26%	26%	26%	17%	18%	16%
<b>Asian</b>						
Male	72%	70%	57%	66%	64%	51%
Female	76%	68%	53%	69%	58%	43%

*Note.* Data do not include foreign students. Source: National Postsecondary Student Aid Study (NPSAS) 2011-12 (National Center for Education Statistics 2013f).

**Table A.15. Beginning 2003–04 Undergraduate Students by Major at Last Enrollment and Gender**

	Male	Female
All Undergraduates	42%	58%
STEM-Core	66%	35%
STEM-SS	55%	45%
STEM-HealthTech	41%	59%

*Note.* Data exclude nonresident aliens. Source: Beginning Postsecondary Students Longitudinal Study (BPS) 2004/09 (National Center for Education Statistics 2009).

**Table A.16. Total Degrees Awarded in 2011–12 by STEM Definition and Gender**

	Male	Female
All fields	40%	60%
STEM-Core	64%	36%
STEM-SS	53%	47%
STEM-HealthTech	36%	64%

*Note.* Data exclude nonresident aliens. Source: IPEDS Completions Component 2011-12 (National Center for Education Statistics (2012)).

**Table A.17. Percentage of Degrees and Certificates Awarded to Women by STEM Definition and Type of Credential in 2012**

	STEM-Core	STEM-SS	STEM-HealthTech	All
Less than 2 years	29%	30%	75%	63%
Associate's	27%	36%	65%	62%
Bachelor's	38%	49%	54%	58%
Master's	33%	48%	60%	62%
Doctoral	39%	49%	54%	53%
Total degrees/certificates	36%	47%	64%	60%

*Note.* Data exclude nonresident aliens. The total includes credentials that are not in the listed categories, such as postbaccalaureate certificates. Source: IPEDS Completions Component 2011-12 (National Center for Education Statistics (2012)).

## Appendix B. STEM Definitions

### Beginning Postsecondary Students Longitudinal Study (as coded in Power Stats)

#### STEM-Core

1	agricultural/natural resource science
5	biology/biomedical science
8	computer/information science
11	engineering
18	mathematics/statistics
25	physical science

#### STEM-SS STEM-Core, plus:

26	psychology
30	social science/history

#### STEM-HealthTech

	STEM-Core, plus:
15	health professions
28	science technology/technician
34	engineering technology/related fields

### Integrated Postsecondary Education Data System (based on CIP codes)

#### STEM-Core

1, 2	agricultural science and operations
3	natural resources/conservation
11	computer/information science
14	engineering
26	biology/biomedical
27	mathematics
40	physical sciences

#### STEM-SS

	STEM-Core, plus:
42	psychology
45	social sciences

#### STEM-HealthTech

	STEM-Core, plus:
51	health professions
41	science technologies
15	engineering technologies

## Appendix C. Advisory Group Participants

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