

# How Liberal Arts and Sciences Majors Fare in Employment

A REPORT ON EARNINGS AND  
LONG-TERM CAREER PATHS

*By Debra Humphreys and Patrick Kelly*



Association  
of American  
Colleges and  
Universities



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*By Debra Humphreys and Patrick Kelly*

*With a foreword by  
Carol Geary Schneider and Peter Ewell*





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# Foreword

In recent years, a variety of forces have converged to generate an intense focus among policy makers and members of the general public alike on the employment outcomes of college graduates. One question probed repeatedly is whether college is “still worth it” in an economy that has been jarred by a deep recession and hindered by a painfully slow recovery. It is both understandable and appropriate that this question is being raised, and it is important that policy makers and members of the general public have as full a picture as possible of the relevant evidence in order to answer it. The Association of American Colleges and Universities (AAC&U) and the National Center for Higher Education Management Systems are grateful to the National Endowment for the Humanities, the Spencer Foundation, and the Teagle Foundation for the funding support that makes it possible to provide this analysis of data on the economic returns of earning a college degree.

## The Liberal Arts and Career Opportunity

A second question being raised with new urgency is whether *specific college majors* are a good investment for individuals seeking long-term career success and for policy makers seeking to shepherd scarce resources as wisely as possible. In this context, majors in the humanities and social sciences—the so-called “liberal arts”—have become targets for special scrutiny and potential budget cuts. Governors, policy leaders, and legislators at both the federal and state levels have singled out specific humanities and social science fields, identifying them as poor choices for undergraduate majors and decrying as wasteful the investment of public money in associated academic departments. Perhaps reflecting that judgment, and in an effort to reduce spending, some institutions of higher education have moved recently to eliminate departments in humanities and social science fields such as philosophy, history, sociology, and foreign languages.

*Majors in the humanities and social sciences—the so-called “liberal arts”—have become targets for special scrutiny and potential budget cuts*

In *How Liberal Arts and Sciences Majors Fare in Employment: A Report on Earnings and Long-Term Career Paths*, Debra Humphreys and Patrick Kelly address the concerns about whether college is still worth it and whether “liberal arts” majors provide a solid foundation for long-term employment and career success. Responding directly to the recent assaults on the humanities and social sciences, this report compares earnings trajectories and career pathways for liberal arts majors with the earnings trajectories and career pathways for those majoring in science and mathematics, engineering, and professional or preprofessional fields such as business or education. Readers who value the liberal arts will, we believe, find the results reassuring.

There is a much larger case—beyond the purely vocational or economic case—to be made for study in the humanities and social sciences, of course. These fields build the capacity to understand our collective histories, ideals, aspirations, and social systems. They are indispensable to the vitality

of our democracy and to the future of global understanding, engagement, and community. The American Academy's Commission on the Humanities and Social Sciences makes that larger case succinctly and persuasively in its recent report, *The Heart of the Matter* (2013). AAC&U, too, has focused on the learning students need both for democracy and for global community, publishing reports such as Ashley Finley's *Making Progress? What We Know about the Achievement of Liberal Education Outcomes* (2012), the National Task Force on Civic Learning and Democratic Engagement's *A Crucible Moment: College Learning and Democracy's Future* (2012), and the National Leadership Council for Liberal Education and America's Promise's *College Learning for the New Global Century* (2007). These reports foreground the centrality of the humanities and social sciences to societal vitality and also provide extensive evidence to show that far too many graduates leave college knowing much less about democracy and global cultures than they need to know.

Here, however, Humphreys and Kelly focus more narrowly on the economic concerns and debates of our time. They seek to enlarge the debate about earnings, which frequently focuses too selectively on salaries achieved in the first few years out of college—information based on incomplete data and that is, therefore, frequently misleading.

Using data from a statistically significant weighted sample of more than three million respondents to the US Census Bureau's American Community Survey, *How Liberal Arts and Sciences Majors Fare in Employment* provides evidence that, in strictly economic terms, college is, indeed, still a reliable pathway to a solid income and to career progression. Even in today's difficult economic environment, most college graduates are employed and are earning significantly higher salaries than those who completed high school only.

The findings presented in this report speak directly to alarmist concerns that graduates who majored in humanities or social science fields are unemployed and unemployable. Those concerns are unfounded and should be put to rest.

The report also shows the extent to which degree holders in the humanities and social sciences are flocking to a family of social services and education professions that may pay less well than some other fields (e.g., engineering or business management), but that are necessary to the health of our communities and to the quality of our educational systems. In a public statement issued in November 2013 in response to President Obama's proposed college ratings system, AAC&U raised concerns about schemes designed to rate institutions by graduates' median salary levels, pointing out that, if enacted, they would have the effect of "rewarding" institutions with many engineering and technology graduates and "punishing" institutions whose graduates pursue jobs in public service, teaching, and social services—fields our society has chosen to compensate less well.

This report helps us see which fields would be left depleted—at high cost to our communities—were the United States, in fact, to defund humanities and social science departments and turn away from liberal arts studies at the college level.



### **It Takes More Than a Major**

Finally, consistent with its focus on wages, employability, and career trajectories, the report also includes recent findings about employers' views on the kinds of learning that make a graduate employable and promotable. Employers themselves are reminding higher education that "it takes more than a major" to both contribute to and prosper in an economy that is constantly adapting to new challenges, new technologies, and new forms of competition. Employers seek graduates who are ready to help them innovate. In this context, they privilege broad learning over narrow learning, and they seek the capacity to engage cultural diversity as one of their top three requirements for new hires. They also seek graduates with "cross-functional" proficiencies, meaning that these learners are not limited to one particular disciplinary frame of reference, but rather can work adaptively and integrate across disparate fields of expertise and enterprise.

*We do students a significant disservice if we convey the message that selecting the "right" major is the primary key to career opportunity and success*

In other words, whatever a student's undergraduate major, employers overwhelmingly agree that all college graduates need broad knowledge, a portfolio of intellectual and practical skills, and hands-on experience in order to be well prepared for successful careers. We do students a significant disservice if we convey the message that selecting the "right" major is the primary key to career opportunity and success. In that sense, the current debate about majors and career opportunity has been too narrowly framed from the outset.

Still, in a season of mounting anxiety about how to maximize the benefits of college study for individuals and for our society, it is important to address the economic questions and the anxieties about college and major fields of study directly. Policy makers and members of the general public alike deserve the opportunity to examine the data on the economic returns from college study in as full a context as possible.

In this spirit, we thank both Debra Humphreys and Patrick Kelly for the time and care they have given to this research and to the preparation of this report.

*Carol Geary Schneider*  
*President, Association of American Colleges and Universities*

*Peter Ewell*  
*Vice President, National Center for Higher Education Management Systems*

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Finally, we acknowledge with deep gratitude the National Endowment for the Humanities, the Spencer Foundation, and the Teagle Foundation for providing the financial support that enabled us to produce this report. We also thank the leadership and staff members of these foundations for their continued advocacy for the value of the liberal arts and sciences to individuals and our society.

# Introduction

This report is designed to complement other analyses of the employment status of college graduates by presenting data on long-term employment trajectories, with a particular focus on comparisons between graduates with baccalaureate degrees in humanities and social science fields, on the one hand, and graduates with degrees in professional and preprofessional, science and mathematics, and engineering fields, on the other. Using data from the US Census Bureau’s American Community Survey, we seek to present a more accurate portrait of the employment outcomes of college graduates—not just their outcomes in the first year after attaining an undergraduate degree, but throughout their working lives.

## Some Notes on Methodology

For this study, we analyzed the public use files from the US Census Bureau’s American Community Surveys for 2010 and 2011. These files include information related to the education and occupation of about three million US residents between the ages of twenty-one and sixty-five who hold bachelor’s degrees and work in a wide array of professions.

For purposes of comparison, we grouped together college graduates with a four-year degree in a humanities or social science field (e.g., philosophy, history, or sociology) and compared the employment trajectories of this group of graduates with the trajectories of three other groups of graduates: those with a degree in a professional or preprofessional field (e.g., nursing or business), those with a degree in science or mathematics (e.g., chemistry or biology), and those with a degree in engineering. (A complete list of the fields included in each category for the purposes of this study is provided in the appendix.) The earnings and professions for baccalaureate graduates were tracked by age-group in increments of five years from twenty-one through sixty-five. In addition, we

noted whether these four-year degree holders also earned graduate or professional degrees. Unless otherwise noted below in the tables and figures that present data from the American Community Survey, we included in our analysis *all* degree holders, including those with a baccalaureate degree only and those with a baccalaureate degree who also subsequently earned a graduate or professional degree. The American Community Survey does not identify specific fields of graduate study.

## Some Notes on Terminology

In this report, we draw an important distinction between the wage and employment trajectories of graduates who majored in specific liberal arts and sciences fields (e.g., history, philosophy, and biology) and the continuing importance of providing the broad outcomes of a liberal education to *all* college graduates, regardless of their chosen field of study.

When we use the term “liberal arts and sciences,” we are referring to the humanities, the arts, the social sciences, mathematics, and the physical and natural sciences. When we use the term “liberal arts,” we are referring to the humanities, the arts, and the social sciences only. Throughout this report, the term “the humanities” is understood to include the full range of academic disciplines in both the arts (visual, fine, and performing) and the humanities. (See the appendix for the complete list of fields classified as “humanities and social sciences” for the purposes of the analysis presented below.) Finally, when we use the term “liberal education,” we are referring to the broad approach to education that should be available to all students, regardless of their chosen field of study.

## Setting the Data in Context

In addition to making distinctions between these key terms, we also recognize that professional success is not the only important outcome of

a college education. Higher education in the United States has always been designed to prepare students not only for success in the workplace, but also for flourishing, including in their lives as citizens and community members. Moreover, many factors influence whether a college graduate succeeds in his or her chosen profession. Some of these factors (e.g., personal interest, job “fit,” motivation, drive, life circumstances, geographic region, macroeconomic trends, and global economic forces) have little or nothing to do with the student’s choice of undergraduate major or the institution from which he or she obtained a degree.

Current economic conditions and the supply and demand of workers with particular degrees and skill sets are especially important factors that influence employment trajectories. Articles in mainstream media outlets are filled with anecdotal stories about recent humanities and social science graduates working in low-level service positions. Readers may draw the conclusion that there is a vast oversupply of such graduates relative to the number of jobs that require the skills and capacities students develop through study in those fields. Our analysis of data from the American Community Survey reveals, however, that the majority of humanities and social science majors do find employment in the initial years beyond college and settle into an array of professions over the long term.

In fact, other evidence indicates that, with very few exceptions, jobs across a wide array of professions are available to graduates with a baccalaureate degree in a humanities or social science field (Burning Glass and NCHEMS 2013). Currently, demand in the labor market for graduates in engineering and some professional fields, including health-related fields, dramatically exceeds supply, while demand for most graduates in liberal arts and sciences fields is roughly even with supply. In only a few fields (e.g., foreign

## LIBERAL AND LIBERAL ARTS EDUCATION: A GUIDE TO TERMINOLOGY

**Liberal Education:** An approach to college learning that empowers individuals and prepares them to deal with complexity, diversity, and change. This approach emphasizes broad knowledge of the wider world (e.g., science, culture, and society) as well as in-depth achievement in a specific field of interest. It helps students develop a sense of social responsibility; strong intellectual and practical skills that span all major fields of study, such as communication, analytical, and problem-solving skills; and the demonstrated ability to apply knowledge and skills in real-world settings. This approach to education can apply to the full range of majors, including not only humanities and social sciences, but also sciences, engineering, and professional fields.

**Liberal Arts and Sciences:** Disciplines spanning the humanities, arts, sciences, and social sciences. For example, humanities disciplines include such fields as philosophy and literature; social sciences include such fields as political science and sociology; sciences include such fields as biology and physics.

**Liberal Arts:** While this term is sometimes used to describe all the arts and sciences disciplines, in this report, the term refers only to disciplines in the humanities, arts, and social sciences.

**General Education:** The part of a liberal education curriculum that is shared by all students. General education provides broad exposure to multiple disciplines and forms the basis for developing essential intellectual, civic, and practical capacities. It can take many forms, and increasingly includes introductory, advanced, and integrative forms of learning.

*Adapted from Association of American Colleges and Universities (AAC&U), Greater Expectations: A New Vision for Learning as a Nation Goes to College (Washington, DC: AAC&U, 2002), 25.*

languages and linguistics, visual and performing arts, theology, and biological sciences) is there a pronounced *oversupply* of college graduates relative to appropriate job openings.

### Seeking a Broader and More Long-Term Perspective

Looking only at employment and earnings data for *recent* graduates can be misleading. Higher education provides a wide array of benefits beyond just immediate gainful employment. Moreover, for data about employment outcomes to be useful to students, parents, and policy makers, they should accurately reflect what happens to graduates over the long term, and they should be placed in a context that properly reflects the most important contributing factors of professional success—many of which extend far beyond the choice of undergraduate major.

Policy makers interested in the “public good” produced by higher education often require information that is different from the information that interests students and parents. While students and parents may be mostly concerned about the overall salary prospects for graduates in various professions relative to their investment of time and money, policy makers tend to focus on the broader needs of communities and regions. These include the need for a population that is well educated in an array of professions, including professions where the pay is relatively low but that are nonetheless essential for maintaining a healthy community.

The analysis of the employment status of college graduates provided in this report is intended to inform both policy and practice. The data we present strongly suggest that students who graduate with baccalaureate degrees in liberal arts disciplines are poised for long-term success in graduate or professional school and over the course of their working lives.

*Students who graduate with baccalaureate degrees in liberal arts disciplines are poised for long-term success in graduate or professional school and over the course of their working lives*

The data also suggest that liberal arts graduates play disproportionately significant roles in social services professions such as social work or counseling.

This report is organized as a response to questions commonly asked by students, parents, policy makers, and members of the media. It also responds to less common questions, the answers to which are nonetheless important to the careful marshaling of resources devoted to increasing educational opportunity—an essential societal imperative. Drawing on recent data collected by the US Census Bureau through its American Community Survey, this report provides

- a comparative portrait of median annual earnings for baccalaureate degree holders and for those who also attained graduate or professional degrees, organized by area of undergraduate major;
- a comparative portrait of the career pathways of baccalaureate degree holders, organized by area of undergraduate major;
- a comparative portrait, also organized by area of undergraduate major, of the “wage bump” provided by graduate or professional degree attainment;
- a comparative portrait of the range of professions held by baccalaureate degree holders, organized by area of undergraduate major;
- a comparative portrait of the educational backgrounds of those in education and in select social services professions.

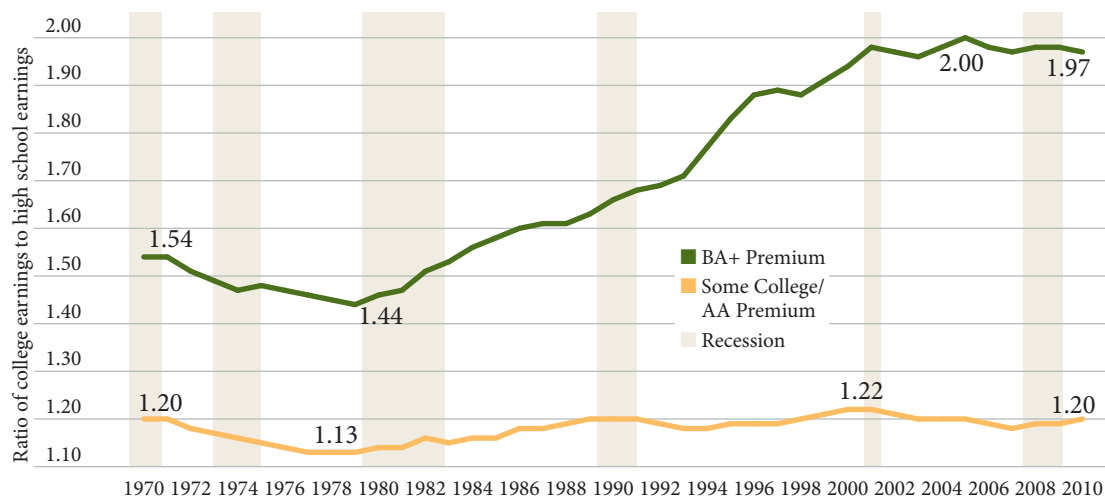
## Is a College Degree Still a Good Investment?

Prior to examining data about employment outcomes for those majoring in specific fields, it is essential to note that a college degree of any kind remains a good investment of time and money (see fig. 1). This has remained true even in the wake of a crippling recession (see fig. 2) and in light of a highly competitive global employment market. As Anthony Carnevale and his colleagues at the Georgetown University Center on Education and the Workforce make clear in their 2012 report, *The College Advantage: Weathering the Economic Storm*, “the average earnings of a bachelor’s degree-holder remain nearly twice as much as those of a worker with only a high school diploma” (Carnevale, Jayasundera, and Cheah 2012, 12). Moreover, the report continues, “the recession hit those with less schooling disproportionately hard—nearly four out of five jobs lost were held by those with no formal education beyond high school.” Those with a four-year degree, on the other hand, were

“largely protected against job losses during the recession and some had job gains” (3). As the authors of the report themselves put it, “college degrees have served as protection for Americans seeking shelter during a tough economic storm” (Georgetown University Center on Education and the Workforce 2012). According to an earlier report from the center, over the course of their lifetimes, workers with a baccalaureate degree earn 84 percent more than workers who complete high school only (Carnevale, Rose, and Cheah 2011, 1).

These trends are confirmed by the findings of a more recent study by the College Board. The study’s authors observe in their report, *Education Pays 2013*, that “the financial return associated with college credentials and the gaps in earnings by education level have increased over time.” Moreover, they note that “the 2012 unemployment rate for four-year college graduates ages 25–34 was 7.1 percentage points

FIGURE 1. The earnings premium for college study and degree attainment



SOURCE: Reprinted by permission from Carnevale, Jayasundera, and Cheah (2012, fig. 7); authors’ estimate using Current Population Survey data (1970–2011).

NOTE: The estimates are the three-month moving averages of mean earnings of full-time, full-year wage and salary workers ages 25 to 54. The four-year college earnings premium is the mean earnings of workers with Bachelor’s degrees or better relative to the mean earnings of workers with only a high school diploma. The AA premium is the earnings of workers with Associate’s degrees or some college relative to mean earnings of their high school-only counterparts. The shaded bars indicate periods of recession as reported by the National Bureau of Economic Research.

BA+ Premium: wage premium for workers with Bachelor’s degrees or better over workers with high school diplomas or less

Some College/AA Premium: wage premium for workers with Associate’s degrees or some college over workers with high school diplomas or less

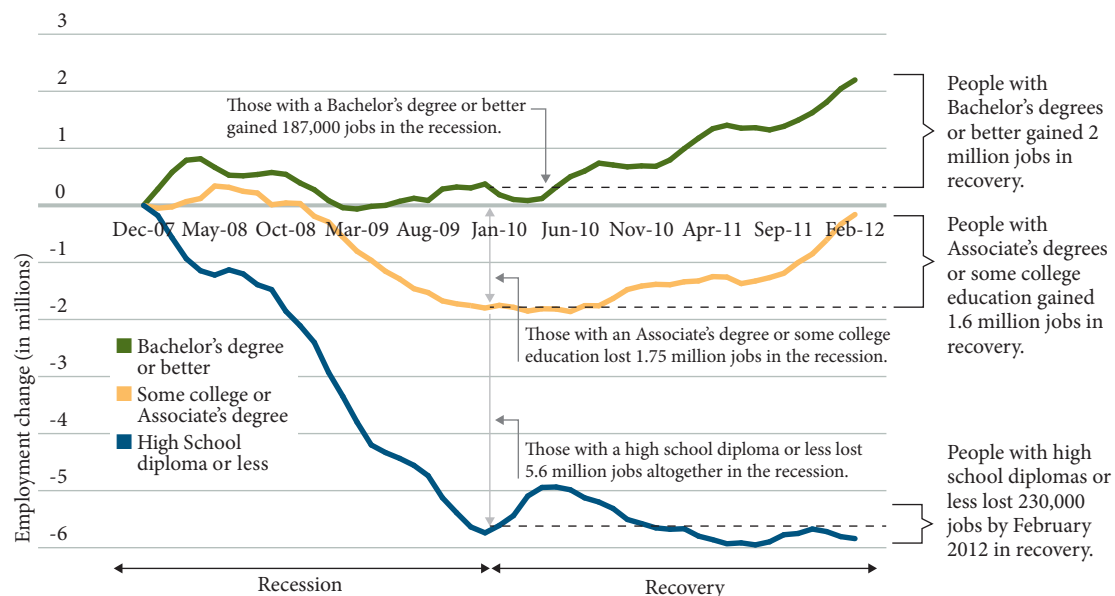
below that for high school graduates” (Baum, Ma, and Payea 2013, 5; emphasis added). It is clear that investment in a college degree pays off for individuals.

There also is persuasive evidence that public investments designed to increase the number of college graduates in a particular region “pay off” for entire communities, and that such investments are essential to future economic growth (Carnevale, Smith, and Strohl 2010). As Baum, Ma, and Payea point out, when regional percentages of residents with college degrees increase, “federal, state, and local governments enjoy increased tax revenues from college graduates and spend less on income support programs for them, providing a direct financial return on investment in postsecondary education.” Further, “adults with higher levels of education are more active citizens than others,” and “college education leads to healthier lifestyles, reducing health care costs” (2013, 5–6).

*Public investments designed to increase the number of college graduates in a particular region “pay off” for entire communities*

Investing time and money to attain a college degree is clearly worth it. But, as Carnevale and Cheah point out in *Hard Times: College Majors, Unemployment and Earnings*, while “it still pays to earn a college degree . . . not all college degrees are created equal” (2013, 3). Some graduates are prepared for and enter professions that pay significantly more than others. This is the result of several factors, including the relative supply and demand of workers in certain fields who possess specific skill sets and differences in how particular professions are “valued” in our society.

FIGURE 2. Impact of the 2008–10 recession on employment



SOURCE: Reprinted by permission from Carnevale, Jayasundera, and Cheah (2012, fig. 1); authors' estimate of the Current Population Survey data (2007–2012). Employment includes all workers aged 18 and older.

NOTE: The monthly employment numbers are seasonally adjusted using the US Census Bureau X–12 procedure and smoothed using four-month moving averages. The graph represents the total employment losses by education since the beginning of the recession in December 2007 to January 2010 and employment gains in recovery from January 2010 to February 2012.

# 2

## How Important Is the Choice of Undergraduate Major?

The focus of several recent reports—including this one—on relationships between college graduates’ major field of study and their employment outcomes may give the impression that the choice of undergraduate major is the most important factor in workplace success. But this is not necessarily the case. In fact, about 40 percent of baccalaureate degree holders in the paid labor force are working in a profession that is *unrelated* to their major field of study (Georgetown University Center on Education and the Workforce 2013). Moreover, the view that the choice of undergraduate major is the determining factor for success in the labor market is not one that is held by most employers.

In 2013, the Association of American Colleges and Universities commissioned a survey of

employers in order to probe their views on college learning and workforce preparation. When asked about what they look for in job candidates, the vast majority of the employers surveyed (93 percent) agreed that “a candidate’s demonstrated capacity to think critically, communicate clearly, and solve complex problems is *more important* than their undergraduate major” (see table 1). In addition, more than three in four employers urged colleges and universities to “place more emphasis” on five key learning outcomes: critical thinking, complex problem solving, written and oral communication, and applied knowledge in real-world settings (Hart Research Associates 2013, 1). While undergraduate programs in many fields excel at helping students develop

TABLE 1. Employer priorities for new hires

Percentage of employers who agree “somewhat” or “strongly” with each statement

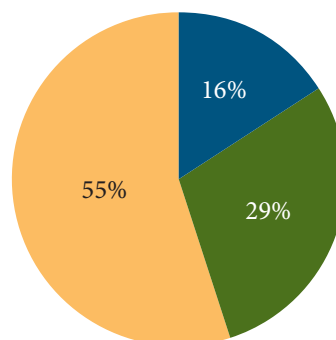
Our company puts a priority on hiring people with the intellectual and interpersonal skills that will help them contribute to innovation in the workplace.	95%
Candidates’ demonstrated capacity to think critically, communicate clearly, and solve complex problems is more important than their undergraduate major.	93%
Whatever their major, all students should have experience in solving problems with colleagues whose views are different from their own.	91%

SOURCE: Data from Hart Research Associates (2013).

FIGURE 3. Employer views on requirements for advancement and long-term career success

Which of the following ranges of knowledge and skills are more important for recent graduates who want to pursue advancement and long-term career success at your company?

- Knowledge and skills that apply to a specific field or position
- A range of knowledge and skills that apply to a range of fields or positions
- Both field-specific knowledge and skills *and* a broad range of knowledge and skills



SOURCE: Data from Hart Research Associates (2013).



these cross-cutting capacities, liberal arts majors tend to be *more focused* than others on these kinds of highly transferable skills (Arum and Roksa 2010). Accordingly, graduates with liberal arts majors are especially well prepared to succeed in volatile job market conditions and in environments that put a premium on flexibility and creativity.

Especially when considered together with findings from AAC&U’s previous employer surveys (Peter D. Hart Research Associates 2006, 2008; Hart Research Associates 2010), the findings from the 2013 survey strongly suggest that, in today’s competitive, fast-moving economic environment, those seeking well-paying and rewarding jobs will require both specific knowledge in a field of study and a broad range of skills that extend across fields—some of which are particularly well developed through study in the liberal arts. As figure 3 shows, a majority of employers (55 percent) believe that, in order to advance and achieve long-term success in their companies, it is most important for college graduates to possess both field-specific knowledge and skills, on the one hand, and a broad range of knowledge and skills, on the other. These employer surveys provide clear evidence of the high value employers place on broad learning,

*A candidate’s demonstrated capacity to think critically, communicate clearly, and solve complex problems is more important than their undergraduate major*

or what educators call “general education,” one of the hallmark features of higher education in the United States. Across all parts of the US higher education system, general education consists primarily of studies in the liberal arts and sciences. Finally, employers across a range of fields understand that all college students—whatever their chosen major—should have educational experiences that teach them about building civic capacity, broad knowledge about the liberal arts and sciences, and cultures outside the United States (see table 2).

When examining data about the earnings and employment status of college graduates, it is not entirely unhelpful to disaggregate by undergraduate major. But ultimately, the success of both individuals and companies alike may be more dependent on the availability of a diverse group of well-educated workers who hold degrees in a wide array of fields and who possess broad capacities and diverse skill sets.

TABLE 2. Employer views on the liberal arts and sciences and selected learning outcomes

Percentage of employers who agree “somewhat” or “strongly” with each statement

All students should have educational experiences that teach them how to solve problems with people whose views are different from their own.	91%
All students should learn about ethical issues and public debates important in their field.	87%
All students should have direct learning experiences working with others to solve problems important in their communities.	86%
All students should take courses that build knowledge, judgment, commitment to communities, ensure integrity/vitality of democracy.	82%
All students should acquire broad knowledge in liberal arts and sciences.	80%
All students should learn about societies and cultures outside the United States and about global issues and developments.	78%

SOURCE: Data from Hart Research Associates (2013).

# 3

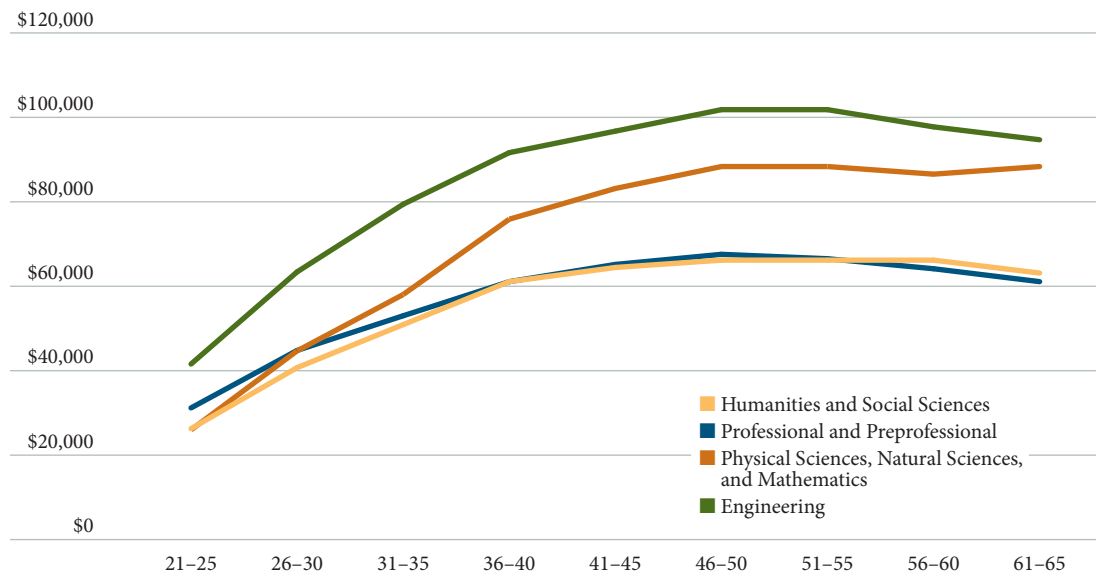
## What Are the Median Earnings and Employment Rates for Graduates in Different Fields?

When college graduates are grouped according to area of undergraduate major, comparison of their median annual earnings over the course of their working lives reveals, not surprisingly, some differences (see fig. 4). The annual earnings of graduates with a baccalaureate degree in engineering, in particular, are consistently higher than the earnings of those with a degree in a humanities or social science field, a professional or preprofessional field, one of the physical or natural sciences, or mathematics. However, not all students are interested in or prepared to pursue an engineering degree. While there is a shortage right now of qualified workers in engineering fields, the median annual earnings of those employed in those fields would be likely to decrease in relation to the size of any future influx of graduates with baccalaureate degrees in engineering. Currently, only about 9 percent of

college graduates in the labor force hold engineering degrees. Therefore, for the purposes of this study, we have chosen to focus primarily on the 91 percent of graduates who hold degrees in liberal arts and sciences fields and in professional or preprofessional fields.

Figure 4 shows that median annual earnings are roughly the same for those between the ages of twenty-one and twenty-five with an undergraduate major in a humanities or social science field, a professional or preprofessional field, one of the physical or natural sciences, or mathematics. Over time, however, as college graduates gain more experience, the annual earnings of those with a baccalaureate degree in engineering, science, or mathematics increase significantly compared to the annual earnings of those with a baccalaureate degree in a humanities, social science, professional, or

FIGURE 4. Median annual earnings for college graduates, by age-group and area of undergraduate major (2010–11)



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

NOTE: This figure depicts median earnings for those employed full time (35+ hours per week).

preprofessional field. The difference in earnings between those with a baccalaureate degree in science or mathematics and those with a baccalaureate degree in engineering decreases over time.

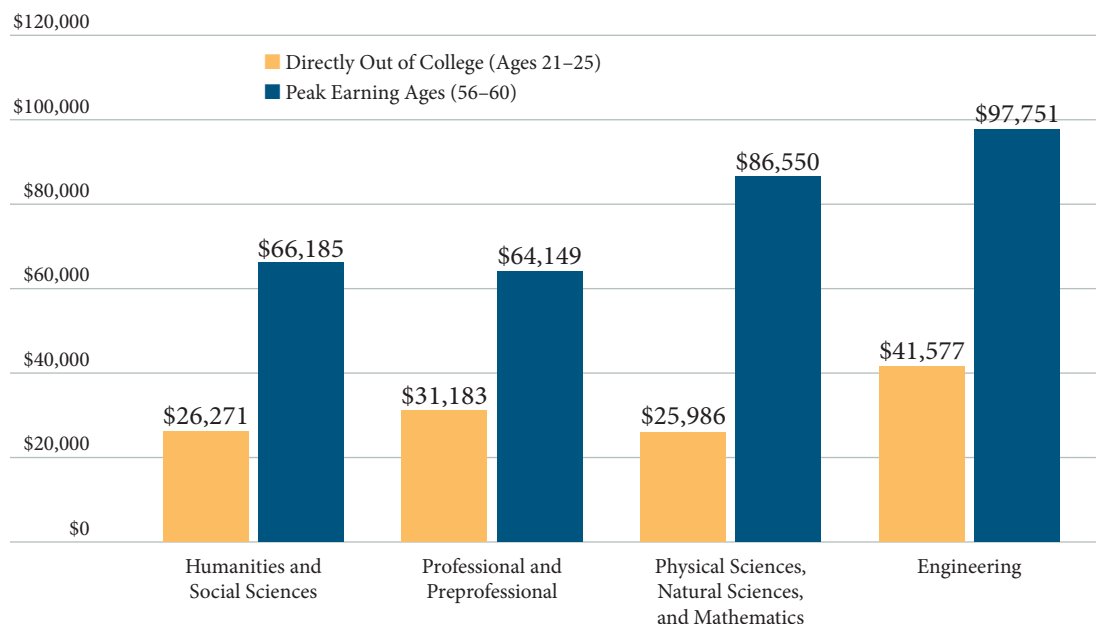
As figure 5 shows, the median annual earnings for *recent* college graduates with a baccalaureate degree in a humanities or social science field are slightly lower than those for recent graduates with a baccalaureate degree in a professional or preprofessional field. The median annual earnings for humanities and social science degree holders between the ages of twenty-one and twenty-five are about \$4,900 lower than those for professional or preprofessional degree holders. However, as individuals age and gain more work experience, the gap in earnings between these two groups closes. In fact, the median annual earnings for those between the ages of fifty-six and sixty with a

*Mature workers who majored in a humanities or social science field earn on average about \$2,000 more than those who majored in a professional or preprofessional field*

baccalaureate degree in a humanities or social science field *exceeds* the median annual earnings for those with a baccalaureate degree in a professional or preprofessional field. Mature workers who majored in a humanities or social science field earn on average about \$2,000 *more* than those who majored in a professional or preprofessional field.

Figure 5 also shows that median earnings increase substantially over time, with the biggest increase from early postgraduation to peak earning ages occurring among those with a

FIGURE 5. Short-term vs. long-term earnings: Median annual earnings for graduates directly out of college compared with peak, by area of undergraduate major (2010–11)



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

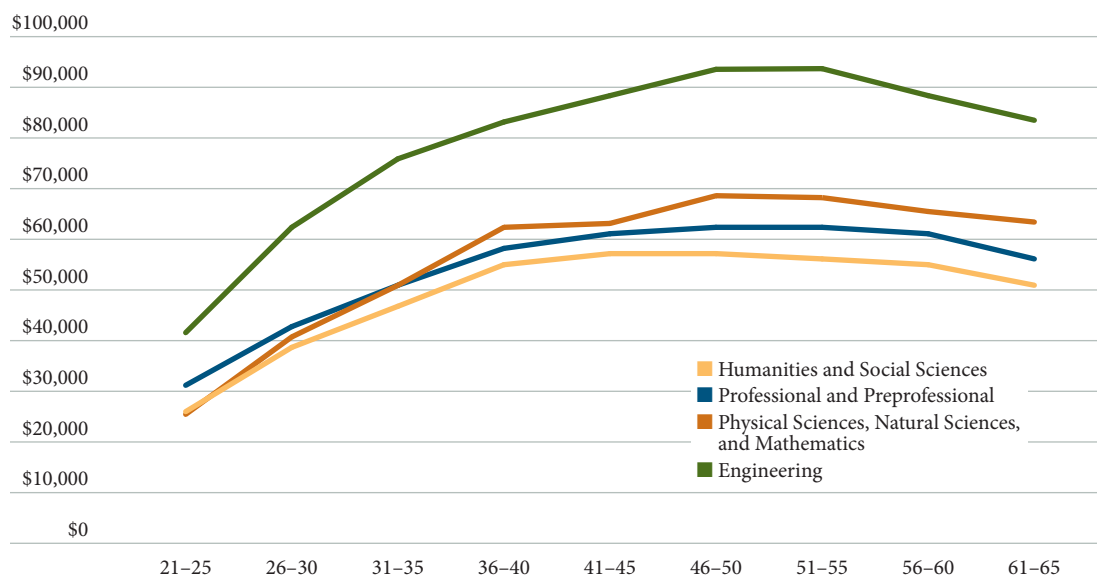
NOTE: This chart depicts median annual earnings for college graduates employed full time (35+ hours per week) by area of undergraduate major, regardless of whether or not they also attained an advanced degree in the same or a different field of study. The American Community Survey does not identify fields of postgraduate study.

baccalaureate degree in science or mathematics. At peak earning ages, those with a baccalaureate degree in a humanities or social science field earn nearly \$40,000 more annually than they earned in the early years after graduation. For those with a baccalaureate degree in science or mathematics, annual earnings are more than \$60,000 higher at peak ages than in the early years after graduation. Notably, and contrary to widespread assumptions, the earnings gap between those with a baccalaureate degree in a humanities or social science field and those with a baccalaureate degree in a professional or preprofessional field closes over time (see fig. 5). In fact, while those with humanities or social science degrees earn nearly \$5,000 less than those with professional or preprofessional degrees employed directly out of college, they earn more than \$2,000 more at peak ages.

In this context, it is important to note the effect that earning a graduate or professional degree, in addition to the baccalaureate, has on median earnings overall and on gaps between groups of degree holders—an effect that is especially pronounced for those who majored in a liberal arts and sciences field. Figure 6 shows that, for those who do not earn an advanced degree, the earnings gap between those with a baccalaureate degree in a humanities or social science field and those with a baccalaureate degree in a professional or preprofessional field persists over time. (The effects of earning an advanced degree are examined in greater depth in chapter 4 below.)

Apart from the earnings trajectories associated with different areas of undergraduate major, how well do particular baccalaureate degrees protect against unemployment over time? As

FIGURE 6. Median annual earnings for college graduates with a baccalaureate degree only, by age-group and area of undergraduate major (2010–11)



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

NOTE: This chart depicts median annual earnings only for graduates employed full time (35+ hours per week) for whom the baccalaureate degree was the highest degree earned.

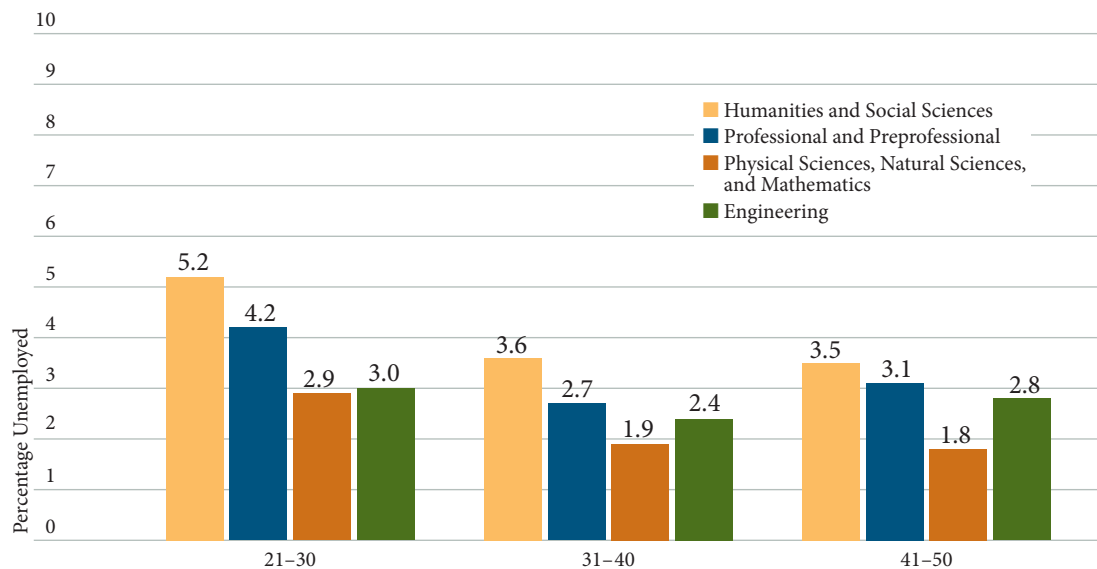
noted in chapter 1 above, the unemployment rates for college graduates are substantially lower than for those who do not graduate from college. However, there are differences across areas of undergraduate major. The unemployment rates for those who major either in a humanities or social science field or in science or mathematics decline over time, while the unemployment rates for those who major either in a professional or preprofessional field or in engineering initially decline and then rise slightly (see fig. 7).

In addition, differences in unemployment rates vary between areas of undergraduate major and over time. For example, the unemployment rate for those between the ages of twenty-one and thirty who hold a baccalaureate degree in a humanities or social science field is 5.2 percent—a full percentage point higher

*The earnings gap between those with a baccalaureate degree in a humanities or social science field and those with a baccalaureate degree in a professional and preprofessional field closes over time*

than for those with a degree in a professional or preprofessional field and more than 2 percentage points higher than for those with a degree in engineering, science, or mathematics. However, for those between the ages of forty-one and fifty who hold a baccalaureate degree in a humanities or social science field, the unemployment rate is only 3.5 percent—just 0.4 percentage points higher than the rate for those with a professional or preprofessional degree.

FIGURE 7. Unemployment rates for college graduates by age-group and area of undergraduate major (2010–11)



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

NOTE: This chart depicts unemployment rates for college graduates by area of undergraduate major, regardless of whether or not they also attained an advanced degree in the same or a different field of study. The American Community Survey does not identify fields of postgraduate study.

# 4

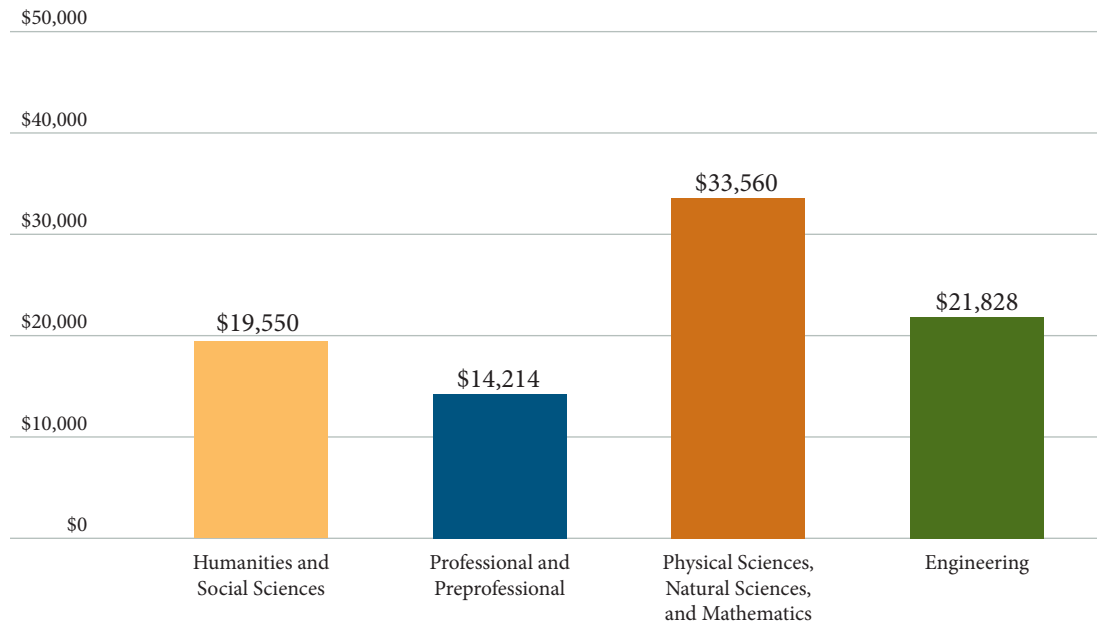
## What Difference Do Graduate and Professional Degrees Make?

Graduates of four-year colleges who go on to earn a graduate or professional degree see a significant boost in their earnings, regardless of their major field of undergraduate study (see fig. 8). The impact of earning an advanced degree is most significant for those who hold a baccalaureate degree in science or mathematics and is least significant for those with a baccalaureate degree in a professional or preprofessional field.

While baccalaureate degree holders in all four areas of undergraduate major experience

higher earnings if they also possess a graduate or professional degree, the proportions and numbers of individuals who go on to earn an advanced degree vary across the four areas (see fig. 9). For example, more than half of those with a baccalaureate degree in science or mathematics go on to earn a graduate or professional degree. Overall, however, only about four million individuals hold a baccalaureate degree in science or mathematics (about 10 percent of all baccalaureate degree holders),

FIGURE 8. The graduate school earnings bump: Additional median annual earnings for holders of advanced degrees by area of undergraduate major (2010–11)



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

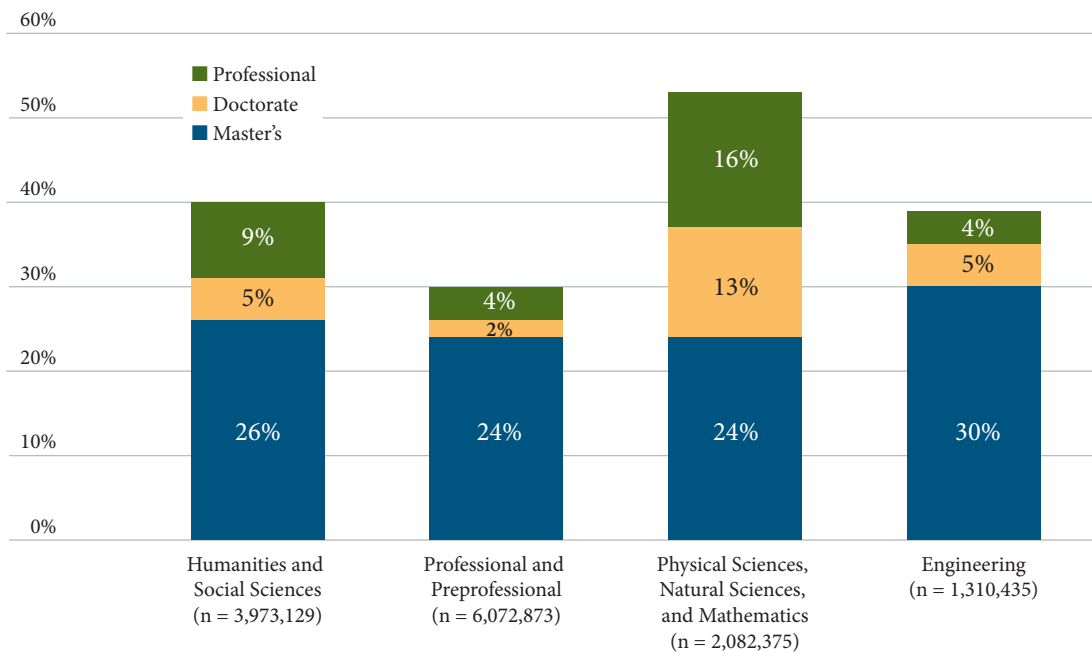
NOTE: This figure depicts median earnings for those employed full time (35+ hours per week).

and only slightly more than half of these individuals (about 2.1 million) also hold a graduate or professional degree (about 15 percent of all advanced degree holders).

By contrast, more than 9.6 million individuals hold a baccalaureate degree in a humanities or social science field, and nearly four million of these individuals (about 40 percent) also hold a graduate or professional degree (e.g., doctor of medicine, doctor of law, or master of business administration). Less than one-third of those

with a baccalaureate degree in a professional or preprofessional field go on to earn an advanced degree, and the majority of those who do so earn a master's degree. In other words, both liberal arts graduates and science and mathematics graduates are essential to US strength in education at the professional and doctoral levels and to the intellectual capital and expertise that these advanced degree holders provide to our society and the world.

FIGURE 9. Percentages and total numbers of baccalaureate degree holders who also earned advanced degrees, by area of undergraduate major (2010–11)



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

# 5

## What Professions Do Graduates in Different Fields Pursue?

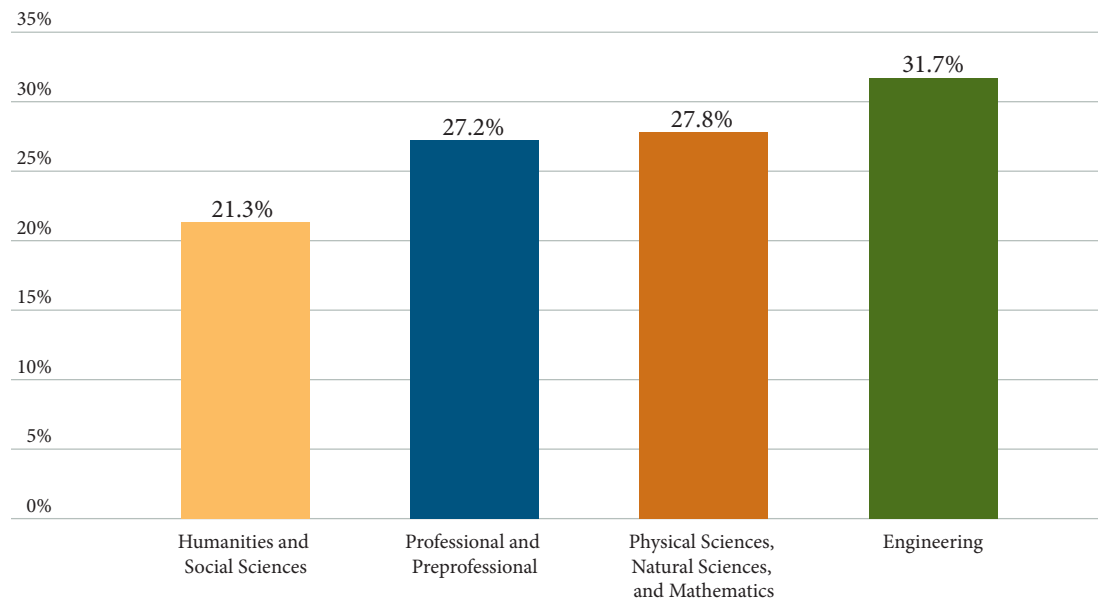
Data from the American Community Survey suggest that nearly all mature workers who hold a baccalaureate degree in engineering are employed either directly in engineering fields or in management positions within companies in the engineering, manufacturing, or technical sectors. But what professions do those with other baccalaureate degrees pursue? And do liberal arts and sciences graduates pursue a wider array of professions, compared to those who major in other fields?

As college graduates with a baccalaureate degree in a humanities or social science field mature and gain experience, they are employed across a relatively broad range of fields, running the gamut from highly paid positions in senior management, marketing, finance, and law to lower-paid but socially vital positions in education and social services professions.

Mature workers with a baccalaureate degree in science or mathematics are clustered in professions related to health care, education, and physical and computer science, while those with baccalaureate degrees in a professional or preprofessional field are clustered primarily in education, health care, accounting, and management (see table 3).

Based on the top five professions for baccalaureate degree holders in each area of undergraduate major, figure 10 shows that those with a degree in a humanities or social science field are the least likely group to be clustered in a small number of professions. The liberal arts have long emphasized “broad learning,” and college students who major in these fields go on to make careers in an especially broad array of enterprises and professions.

FIGURE 10. Percentages of college graduates represented in the top 5 professions, by area of undergraduate major (2010–11)



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

NOTE: This chart depicts percentages of college graduates by area of undergraduate major, regardless of whether or not they also attained an advanced degree in the same or a different field of study. The American Community Survey does not identify fields of postgraduate study.



TABLE 3. Top 20 professions by area of undergraduate major (2010–11)

Humanities and Social Sciences			Professional and Preprofessional		
Professions	Number Employed	Median Annual Earnings	Professions	Number Employed	Median Annual Earnings
Elementary and Middle School Teachers	129,177	\$53,967	Elementary and Middle School Teachers	520,258	\$51,930
Lawyers, and Judges, Magistrates, and Other Judicial Workers	127,300	\$125,243	Accountants and Auditors	291,187	\$72,760
Miscellaneous Managers	105,318	\$91,470	Registered Nurses	267,316	\$69,642
Postsecondary Teachers	78,363	\$63,131	Miscellaneous Managers, Including Funeral Service Managers and Postmasters and Mail Superintendents	234,758	\$93,549
Chief Executives and Legislators	51,764	\$135,126	Financial Managers	123,611	\$98,769
Education Administrators	51,548	\$72,760	Chief Executives and Legislators	120,604	\$132,371
Social Workers	47,626	\$46,774	Education Administrators	102,555	\$74,331
Secondary School Teachers	44,724	\$56,129	Sales Representatives, Wholesale and Manufacturing	101,196	\$88,587
Counselors	41,119	\$46,774	Secondary School Teachers	97,276	\$54,985
Sales Representatives, Wholesale and Manufacturing	40,455	\$83,495	First-Line Supervisors of Retail Sales Workers	91,066	\$56,003
Clergy	40,198	\$45,735	Marketing and Sales Managers	86,733	\$103,943
First-Line Supervisors of Retail Sales Workers	39,640	\$54,050	Software Developers, Applications and Systems Software	86,388	\$99,787
Secretaries and Administrative Assistants	38,736	\$40,729	General and Operations Managers	76,457	\$92,660
Accountants and Auditors	37,745	\$64,445	First-Line Supervisors of Non-Retail Sales Workers	74,165	\$91,641
Marketing and Sales Managers	37,381	\$103,943	Computer and Information Systems Managers	72,260	\$104,982
Financial Managers	35,251	\$103,943	First-Line Supervisors of Office and Administrative Support Workers	69,368	\$61,326
General and Operations Managers	35,091	\$91,641	Social Workers	68,316	\$44,802
Retail Salespersons	30,612	\$48,875	Postsecondary Teachers	68,119	\$61,094
First-Line Supervisors of Non-Retail Sales Workers	28,945	\$86,550	Secretaries and Administrative Assistants	65,807	\$39,498
First-Line Supervisors of Office and Administrative Support Workers	28,117	\$62,366	Retail Salespersons	65,656	\$51,971

TABLE 3 (continued)

Physical Sciences, Natural Sciences, and Mathematics			Engineering		
Professions	Number Employed	Median Annual Earnings	Professions	Number Employed	Median Annual Earnings
Physicians and Surgeons	117,538	\$260,669	Miscellaneous Managers	85,759	\$115,377
Miscellaneous Managers	49,135	\$103,943	Miscellaneous Engineers, Including Nuclear Engineers	67,454	\$101,824
Postsecondary Teachers	44,765	\$72,760	Software Developers, Applications and Systems Software	59,838	\$106,915
Elementary and Middle School Teachers	34,254	\$51,971	Civil Engineers	47,384	\$93,549
Physical Scientists, All Other	24,967	\$91,641	Electrical and Electronics Engineers	43,242	\$101,824
Software Developers, Applications and Systems Software	22,596	\$103,943	Architectural and Engineering Managers	35,004	\$122,188
Medical Scientists, and Life Scientists, All Other	18,751	\$86,550	Mechanical Engineers	32,656	\$91,641
Secondary School Teachers	18,148	\$59,058	Chief Executives and Legislators	27,589	\$166,309
Registered Nurses	15,368	\$67,563	Aerospace Engineers	23,783	\$110,988
Chemists and Materials Scientists	14,827	\$83,495	General and Operations Managers	20,477	\$133,047
Dentists	14,682	\$152,736	Computer and Information Systems Managers	19,530	\$122,188
Chief Executives and Legislators	14,455	\$146,560	Industrial Engineers, Including Health and Safety	18,336	\$85,233
Sales Representatives, Wholesale and Manufacturing	12,723	\$101,824	Construction Managers	16,042	\$101,824
Computer and Information Systems Managers	12,686	\$107,061	Sales Representatives, Wholesale and Manufacturing	15,398	\$103,943
Computer Programmers	12,237	\$93,549	Marketing and Sales Managers	14,312	\$132,008
Medical and Health Services Managers	11,593	\$91,641	Computer Programmers	13,635	\$89,605
Lawyers, and Judges, Magistrates, and Other Judicial Workers	11,400	\$122,188	Postsecondary Teachers	13,474	\$81,459
Education Administrators	11,357	\$72,760	Bus-Management Analysts	12,525	\$121,613
Marketing and Sales Managers	10,751	\$104,878	Computer Systems Analysts	12,200	\$101,824
Biological Scientists	10,667	\$68,222	Chemical Engineers	11,037	\$108,101

SOURCE: Data from US Census Bureau, 2012 American Community Survey.

NOTE: This ranking of professions is organized by area of undergraduate major, regardless of whether or not those employed in the occupations listed also attained an advanced degree in the same or a different field of study. The American Community Survey does not identify fields of postgraduate study.

# 6

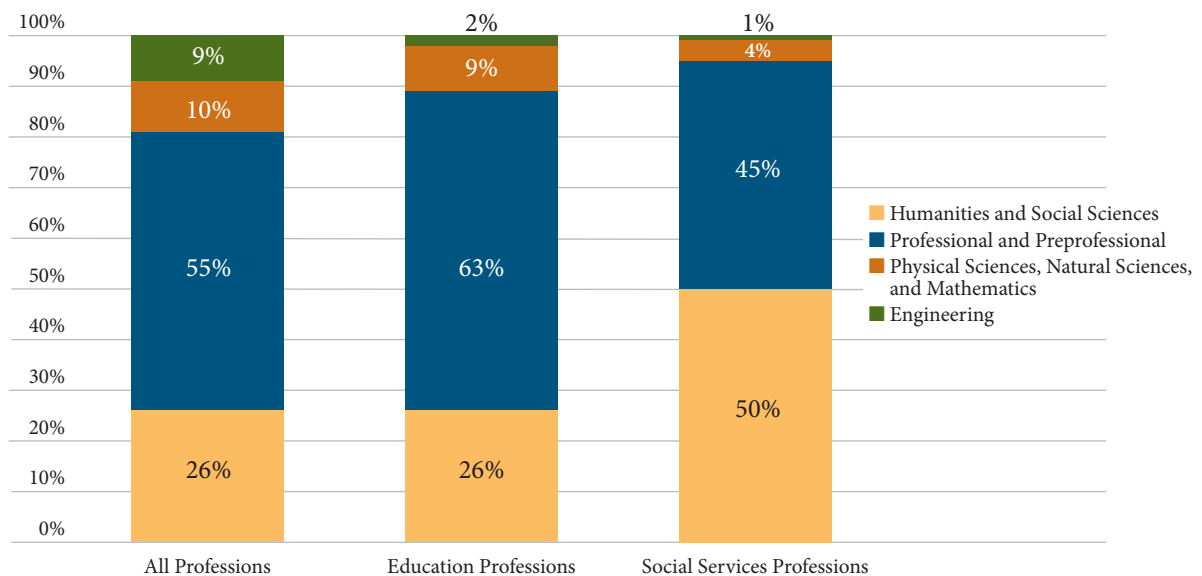
## What Role Do Different Fields Play in Education and Social Services Professions?

Some college students are interested in pursuing professions where they can expect to earn a high salary, but this is not the case for all college students. Clearly, it is essential to the health and welfare of our society and our economy that individuals are well-prepared to work in a wide array of professions and that *enough* individuals are willing to work in education and social services professions where the pay tends to be relatively low.

For the purposes of this study, we examined a cluster of professions that are especially important to the health and well-being of our

communities but where the median annual earnings are relatively low. Figure 11 shows that, relative to their share of the overall employment market, graduates with a baccalaureate degree in a humanities or social science field are overrepresented in social services professions. For example, while only about one-quarter of Americans in the overall labor force hold a baccalaureate degree in a humanities or social science field, half of those occupied in social services professions (e.g., social work and counseling) hold a humanities or social science degree. Humanities and social

FIGURE 11. Distribution of baccalaureate degree holders by area of undergraduate major in all professions, education professions, and social services professions (2010–11)



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

NOTE: For this study, the category of “social services professions” includes counselors; social workers; social and human/community service assistants, managers, and specialists; clergy and other religious workers; and similar categories.

science graduates are also heavily represented in education professions. Graduates who hold a baccalaureate degree in a professional or preprofessional field are *more highly represented* in education professions, but *less highly represented* in social services professions.

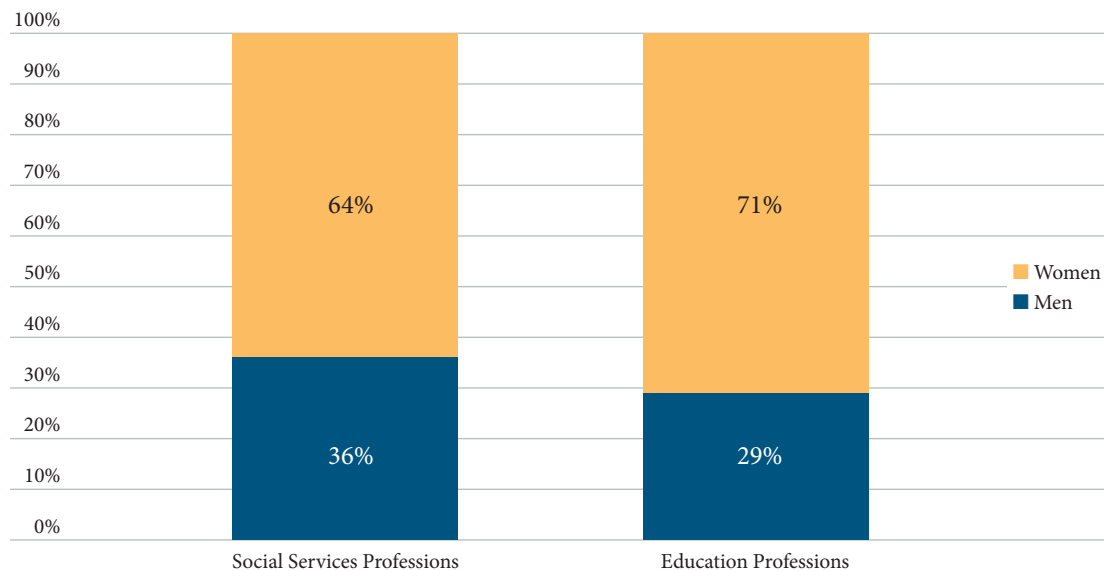
It is important to consider these data in the context of broader trends related to wage disparities between men and women. For example, data from the American Community Survey confirm that, across all professions, it remains the case that, on average, women earn about 85 percent of what men earn, even when they are in the same professions. Moreover, women are

disproportionately represented in some clusters of lower-paying professions (see fig. 12).

Gender disparities also exist among areas of undergraduate major. Among recent graduates between the ages of twenty-one and forty, overall undergraduate enrollment rates were similar for men and women. Yet, women are overrepresented among those who majored in a humanities, social science, or professional field, and they are underrepresented among those who majored in engineering, science, or mathematics (see fig 13).

Just as many factors influence whether a college graduate succeeds in his or her chosen

FIGURE 12. Percentages of men and women ages 21–40 in education and social services professions



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

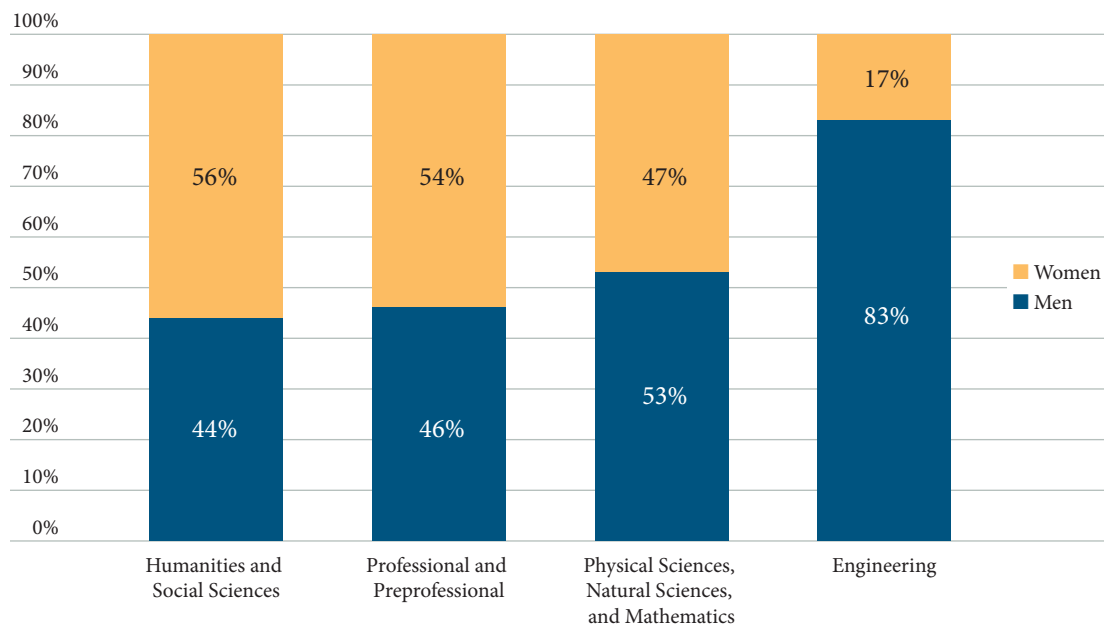
NOTE: For this study, the category of “social services professions” includes counselors; social workers; social and human/community service assistants, managers, and specialists; clergy and other religious workers; and similar categories.

profession, including some that have little or nothing to do with the student's choice of undergraduate major, so too many factors influence earnings disparities within and among particular professions. Nonetheless, our communities, our society, and our economy benefit from the availability of college graduates who are well prepared to work in all professions, including those that provide lower financial incentives than others. However, it also remains true that certain professions are dominated by graduates who majored in particular fields. If funding for the humanities and social sciences were to be cut, or if students were to

*Relative to their share of the overall employment market, graduates with a baccalaureate degree in a humanities or social science field are overrepresented in social services professions*

be discouraged from majoring in these fields, then socially vital professions, such as teaching and social work, could be deprived of an adequate supply of qualified workers.

FIGURE 13. Representation of men and women ages 21–40 with baccalaureate degrees, by area of undergraduate major



SOURCE: Data from US Census Bureau, 2012 American Community Survey.

## Conclusion

Students, parents, and policy makers are increasingly concerned about the return on investment of a college education. Many are focused on income from employment, but the truth is that a high-quality college education pays dividends in myriad ways, for graduates and for society. The data and information presented in this report add to the growing body of research that demonstrates the continued value of the college degree to individuals and our society. The liberal arts and sciences, in particular, play a major role in sustaining the social and economic fabric of our society. Study in these fields educates graduates for employment in a wide range of professions, including socially vital professions related to public service, education, healthcare, and other social services.

The choice of undergraduate college major is not all that matters in determining long-term career success. The analysis presented in this report affirms that, while there are differences in outcomes related to employment, the majority of college graduates do achieve success in their careers, regardless of their choice of undergraduate major. Moreover, public and policy doubts to the contrary, those with baccalaureate degrees in a humanities or social science field earn middle-class salaries, make progress in their careers, and close earnings gaps with those who hold baccalaureate degrees in professional and preprofessional fields.

Students making choices about their initial field of concentration and their long-term career prospects deserve to know that if they choose a career in science or engineering, they are likely to earn significantly more over the course of their working lives. If they are choosing between a liberal arts major and study in a preprofessional or professional field, however, earnings differentials should not be determinative. In terms of salary, college graduates who major in a humanities or social science field are likely to do as well as those who major in a

*The liberal arts and sciences, in particular, play a major role in sustaining the social and economic fabric of our society*

professional or preprofessional field. Students and parents would be well served by giving careful consideration to their investment of time and resources before selecting a college or a major field of undergraduate study. But they also should pay close attention to long-term career outcomes and to what employers themselves say are the most important skills and knowledge for professional success in today's highly competitive global economy.

Whatever undergraduate major they may choose, students who pursue their major within the context of a broad liberal education substantially increase their likelihood of achieving long-term professional success. Such an education provides knowledge and skills in areas such as critical thinking, analytic reasoning, written and oral communication, complex problem solving, and quantitative reasoning. Students and parents should examine information like that presented in this report for broad trends, but they also should take advantage of opportunities at their own college or university in order to explore their own strengths, weaknesses, and career goals. Success can and should be measured in multiple ways—including ways that extend far beyond income level.

Policy makers, too, can and should take a broad and longer-term view when they consider investments in educational institutions and systems of postsecondary education. We offer this analysis to help guide them in making wise choices that will ensure the future health of our communities, the continued strength of our democracy, and the economic vitality of our shared futures.

# Appendix

## List of Undergraduate Fields of Study from the American Community Survey

### Humanities and Social Science Fields

Area ethnic and civilization studies  
Communications  
Linguistics and comparative language and literature  
French, German, Latin, and other common foreign language studies  
Other foreign languages  
Pre-law and legal studies  
English language and literature  
Composition and rhetoric  
Liberal arts  
Humanities  
Multi/interdisciplinary studies  
Intercultural and international studies  
Interdisciplinary social sciences  
Philosophy and religious studies  
Theology and religious vocations  
Psychology  
Educational psychology  
Clinical psychology  
Counseling psychology  
Industrial and organizational psychology  
Social psychology  
Miscellaneous psychology  
Public administration  
Public policy  
General social sciences  
Economics  
Anthropology and archeology  
Geography  
International relations  
Political science and government  
Sociology  
Miscellaneous social sciences  
Fine arts  
Drama and theater arts  
Music  
Visual and performing arts  
Art history and criticism  
Studio arts  
Miscellaneous fine arts  
History  
United States history

### Professional and Preprofessional Fields

General agriculture  
Agriculture production and management  
Agricultural economics  
Miscellaneous agriculture  
Forestry  
Natural resources management  
Architecture  
Journalism  
Mass media  
Advertising and public relations  
Communication technologies  
Computer and information systems  
Computer programming and data processing  
Computer science  
Information sciences  
Computer administration management and security  
Computer networking and telecommunications  
Cosmetology services and culinary arts  
General education  
Educational administration and supervision  
School student counseling  
Elementary education  
Mathematics teacher education  
Physical and health education teaching  
Early childhood education  
Science and computer teacher education  
Secondary teacher education  
Special needs education  
Social science or history teacher education  
Teacher education (multiple levels)  
Language and drama education  
Art and music education  
Miscellaneous education  
Family and consumer sciences  
Court reporting  
Library science  
Pharmacology  
Statistics and decision science  
Military technologies  
Nutrition sciences  
Physical fitness parks recreation and leisure  
Nuclear, industrial radiology, and biological technologies  
Criminal justice and fire protection  
Human services and community organization

*Continued*

## **Professional and Preprofessional Fields**

*(continued)*

Social work  
Criminology  
Construction services  
Electrical, mechanical, and precision technologies and production  
Transportation sciences and technologies  
Commercial art and graphic design  
Film video and photographic arts  
General medical and health services  
Communication disorders sciences and services  
Health and medical administrative services  
Medical assisting services  
Medical technologies technicians  
Health and medical preparatory programs  
Nursing  
Pharmacy pharmaceutical sciences and administration  
Treatment therapy professions  
Community and public health  
Miscellaneous health medical professions  
General business  
Accounting  
Actuarial science  
Business management and administration  
Operations logistics and e-commerce  
Business economics  
Marketing and marketing research  
Finance  
Human resources and personnel management  
International business  
Hospitality management  
Management information systems and statistics  
Miscellaneous business and medical administration

## **Physical Sciences, Natural Sciences, and Mathematics**

Animal sciences  
Food science  
Plant science and agronomy  
Soil science  
Environmental science  
Biology  
Biochemical sciences  
Botany  
Molecular biology  
Ecology  
Genetics

Microbiology  
Physiology  
Zoology  
Neuroscience  
Miscellaneous biology  
Mathematics  
Applied mathematics  
Mathematics and computer science  
Cognitive science and biopsychology  
Physical sciences  
Astronomy and astrophysics  
Atmospheric sciences and meteorology  
Chemistry  
Geology and earth science  
Geosciences  
Oceanography  
Physics  
Materials science  
Multidisciplinary or general science

## **Engineering**

General engineering  
Aerospace engineering  
Biological engineering  
Architectural engineering  
Biomedical engineering  
Chemical engineering  
Civil engineering  
Computer engineering  
Electrical engineering  
Engineering mechanics physics and science  
Environmental engineering  
Geological and geophysical engineering  
Industrial and manufacturing engineering  
Materials engineering and materials science  
Mechanical engineering  
Metallurgical engineering  
Mining and mineral engineering  
Naval architecture and marine engineering  
Nuclear engineering  
Petroleum engineering  
Miscellaneous engineering  
Engineering technologies  
Engineering and industrial management  
Electrical engineering technology  
Industrial production technologies  
Mechanical engineering related technologies  
Miscellaneous engineering technologies



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## About the Authors

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**Patrick Kelly** is senior associate at the National Center for Higher Education Management Systems (NCHEMS), where he also serves as director of the NCHEMS Information Center for State Higher Education Policymaking and Analysis and works on many projects that apply research and policy analysis to link higher education with the critical needs of states and their residents. Kelly presents his work to a variety of audiences, including higher education researchers and policy analysts, state higher education executive officers and their staffs, and other state-level policy makers. Before joining NCHEMS in February 2002, Kelly worked for six years at the Kentucky Council on Postsecondary Education. His most recent position at the council was senior associate for information and research. In that position, he worked with higher education leaders to design performance indicators in order to measure progress toward postsecondary education reform in Kentucky, conducted research studies for statewide higher education policy initiatives, and coordinated the analysis and reporting of data and information in support of many other council projects. Prior to working at the council, he was research associate at the National Center for Family Literacy in Louisville, Kentucky. Kelly holds a PhD in urban and public affairs from the University of Louisville, where he also earned a master's degree in sociology. His undergraduate studies were completed at the University of Alabama at Birmingham. His areas of specialization and interest include research and statistical methodology, policy analysis, and program evaluation.

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