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a report on earnings and
long-term career paths

By Debra Humphreys and Patrick Kelly

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

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Contents

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. e Association of American Colleges and Universities (AAC&U) and the National

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, *Democracy and Global Education* (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 *Democracy and Global Education: A Report for the American Academy of Arts and Sciences* (2012), the National Task Force on Civic Learning and Democratic Engagement's *A Report for the American Academy of Arts and Sciences* (2012), and the National Leadership Council for Liberal Education and America's Promise's *Democracy and Global Education: A Report for the American Academy of Arts and Sciences* (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, *Democracy and Global Education: A Report for the American Academy of Arts and Sciences* (2007).

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a college education. Higher education in the United States has always been designed to prepare students not only for success in the

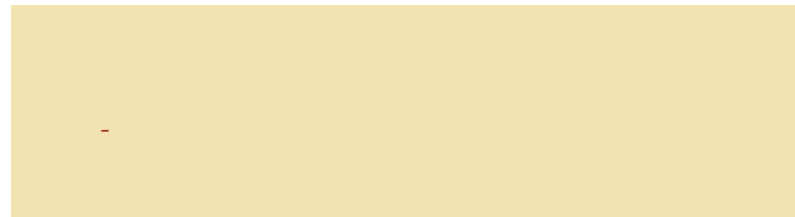
languages and linguistics, visual and performing arts, theology, and biological sciences) is there a pronounced _____ of college graduates relative to appropriate job openings.

Looking only at employment and earnings data for _____ 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.



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.

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, *A College Education Pays*, “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

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.

A+ The wage premium for workers with Bachelor’s degrees or better over workers with high school diplomas or less

/AA The wage premium for workers with Associate’s degrees or some college over workers with high school diplomas or less

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).



Investing time and money to attain a college degree is clearly worth it. But, as Carnevale and Cheah point out in *College for All*, “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 the 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 “so somewhat” or “strongly” with each statement

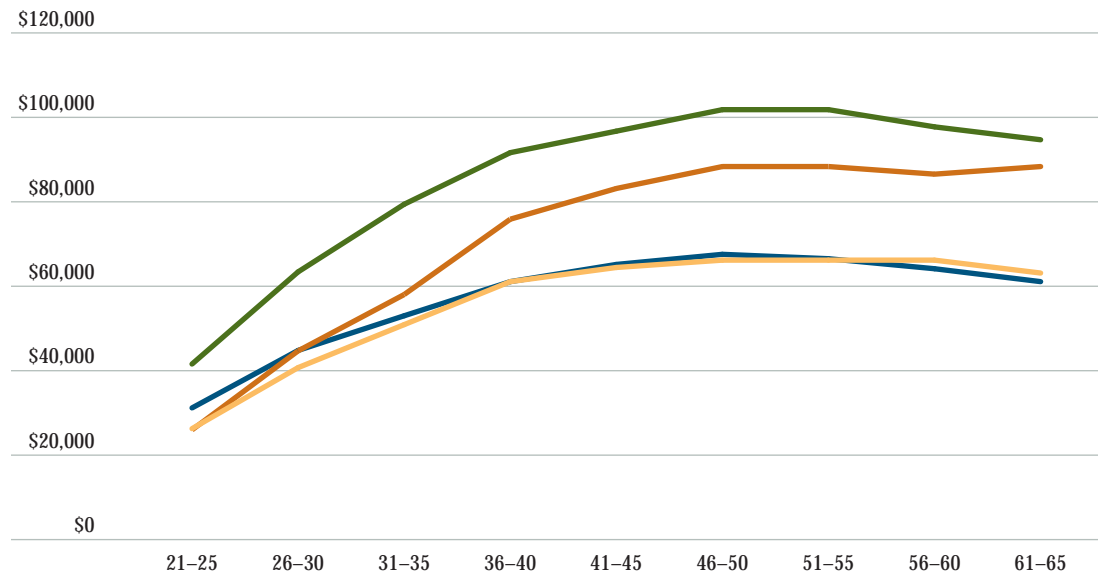
Source: Data from Hart Research Associates (2013).

3

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

When college graduates are grouped according

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 college graduates 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

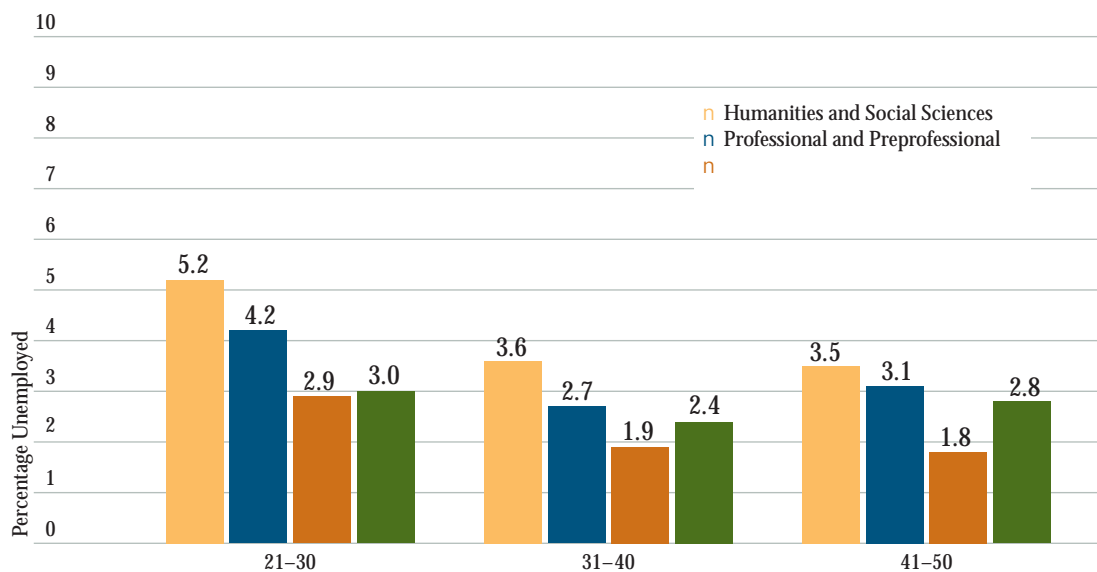
noted in chapter 1 above, the unemployment rates for college graduates are substantially lower than for those who do not graduate from college. However, there are differences across areas of undergraduate major. The unemployment rates for those who major either in a humanities or social science field 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



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.

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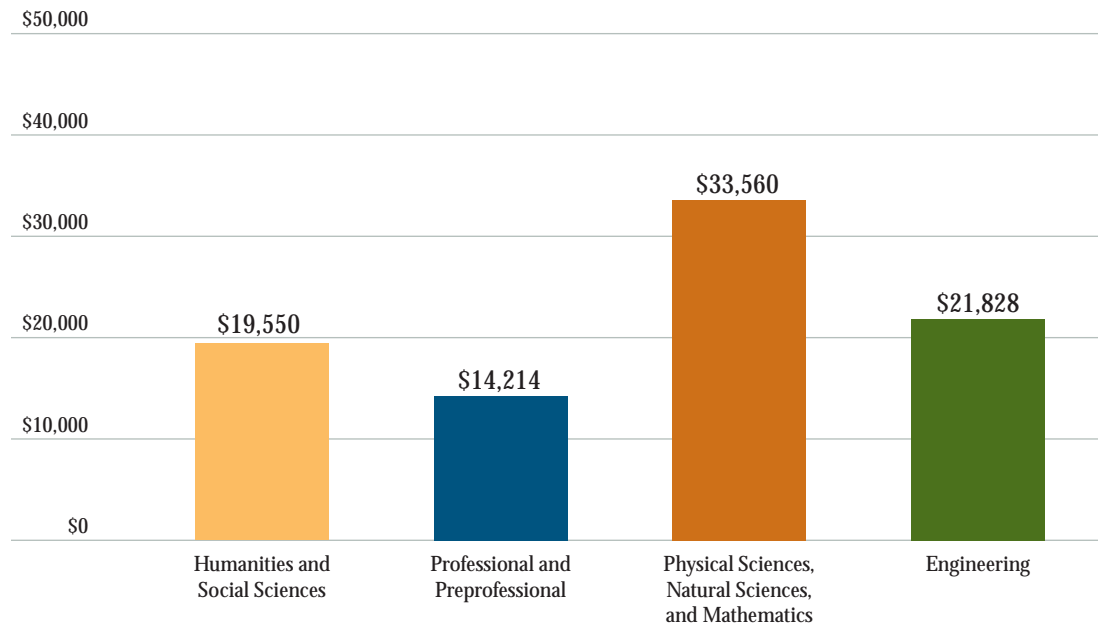
What Difference Do Graduate and Professional Degrees Make?

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 g. 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 g. 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)



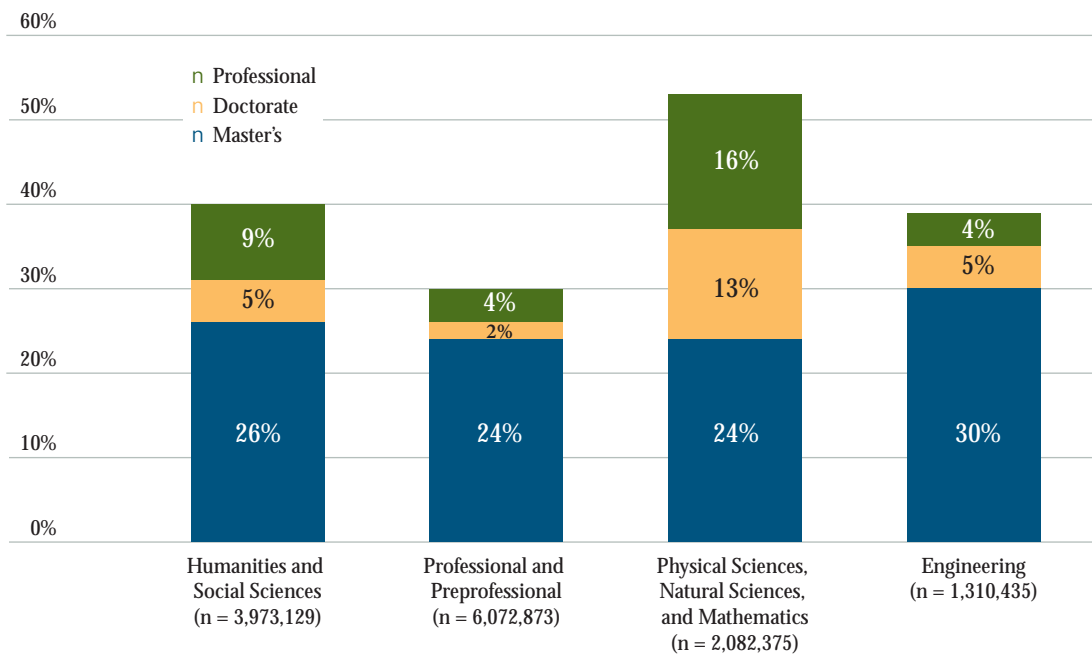
Source: Data from US Census Bureau, 2012 American Community Survey.

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. -





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

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

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Table 3 ()

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.

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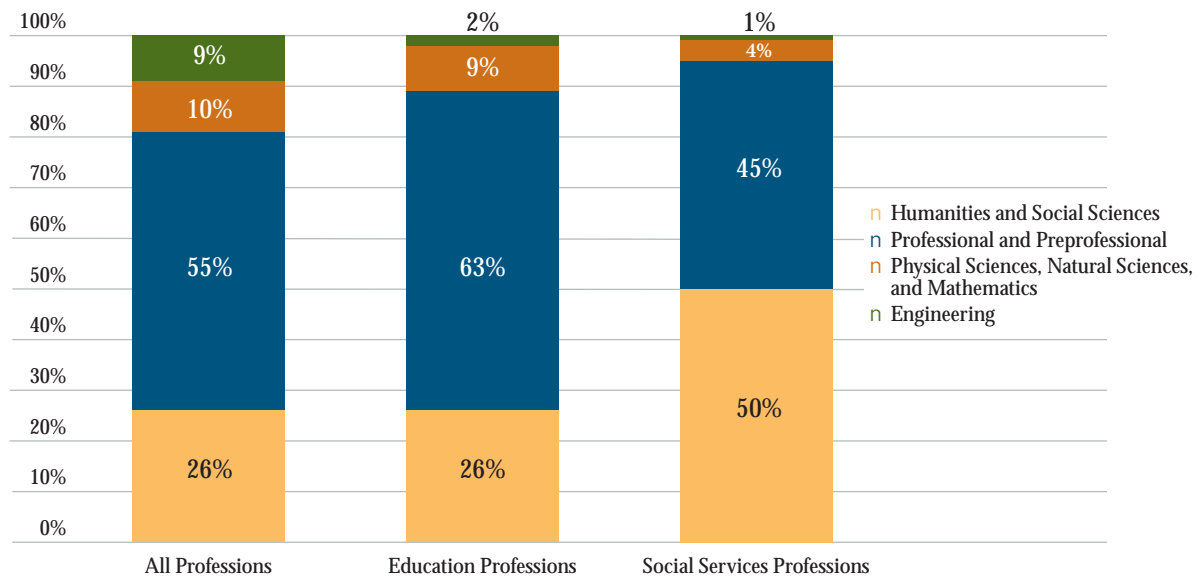
What Role Do Different Fields Play in Education and Social Services Professions?

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 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 in education professions, but - in social services professions.

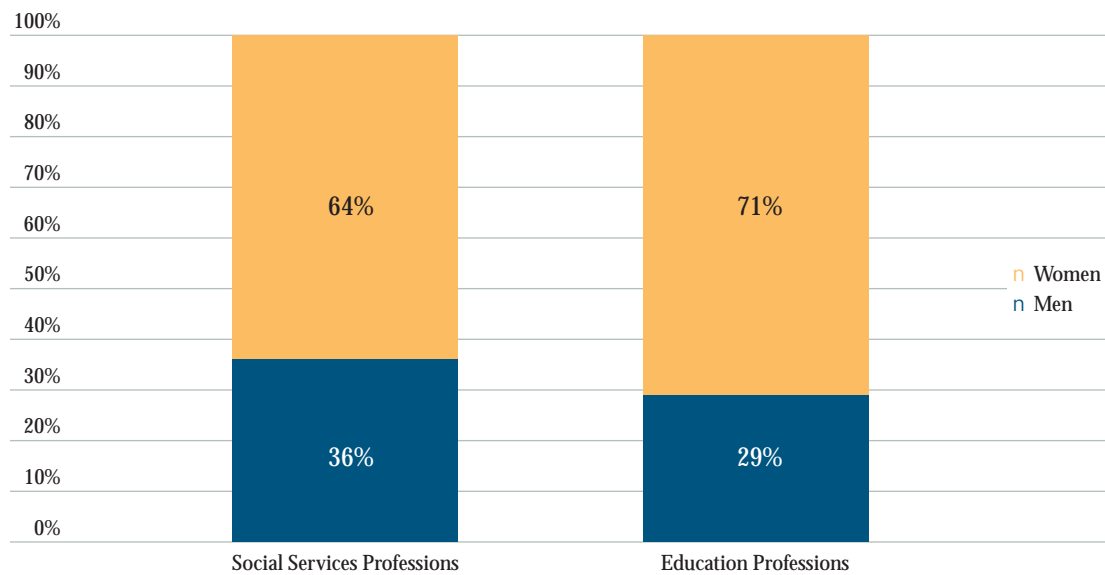
It is important to consider these data in the context of broader trends related to wage disparities between men and women. For example, data from the American Community Survey confirm that, across all professions, it remains the case that, on average, women earn about 85 percent of what men earn, even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

disproportionately represented in some clusters of lower-paying professions (see g. 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 g 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.

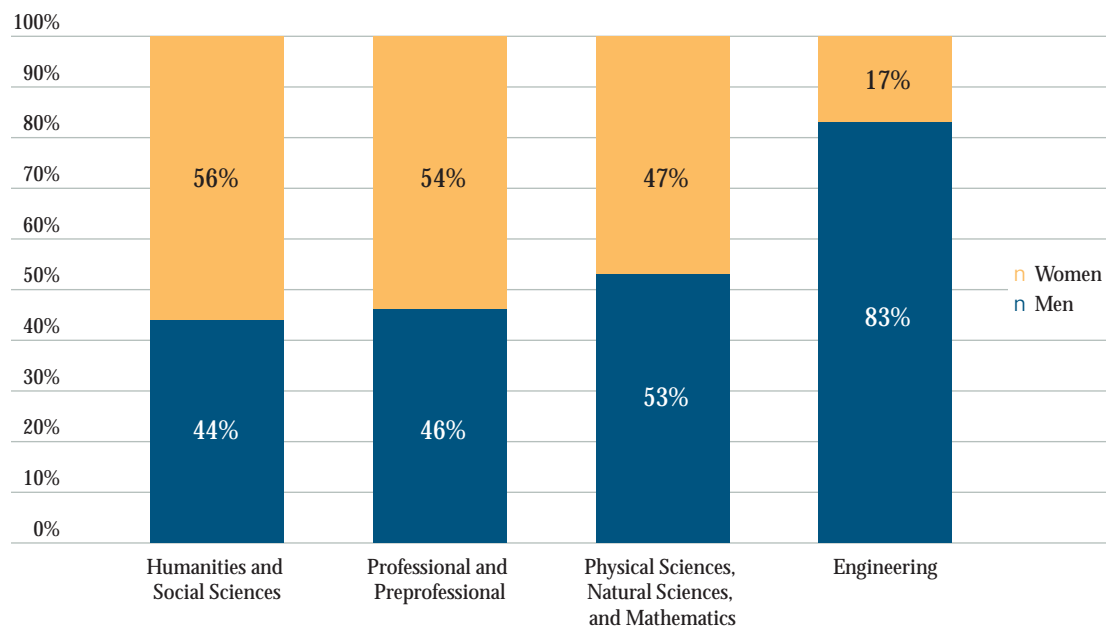
Note: For this study, the category of “social services professions” includes counselors; social workers; social and human/community service assistants, managers, and specialists; clergy and other religious workers; and similar categories.

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



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

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

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
 eology and religious vocations
 Psychology
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 Clinical psychology
 Counseling psychology
 Industrial and organizational psychology
 Social psychology
 Miscellaneous psychology
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 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 ne arts
 History
 United States history

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 tness parks recreation and leisure
 Nuclear, industrial radiology, and
 biological technologies



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



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



General engineering
Aerospace engineering
Biological engineering
Architectural engineering
Biomedical engineering

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About AAC&U and NCHEMS

The Association of American Colleges and Universities (AAC&U) is the leading national association concerned with the quality, vitality, and public standing of undergraduate liberal education. Its members are committed to extending the advantages of a liberal education to all students, regardless of academic specialization or intended career. Founded in 1915, AAC&U now comprises more than 1,300 member institutions—including accredited public and private colleges, community colleges, research universities, and comprehensive universities of every type and size. AAC&U functions as a catalyst and facilitator, forging links among presidents, administrators, and faculty members who are engaged in institutional and curricular planning. Its mission is to reinforce the collective commitment to liberal education and inclusive excellence at both the national and local levels, and to help individual institutions keep the quality of student learning at the core of their work as they evolve to meet new economic and social challenges. Information about AAC&U membership, programs, and publications can be found online at www.aacu.org.



Through its more than forty years of service to higher education, the National Center for Higher Education Management Systems (NCHEMS) has been committed to bridging the gap between research and practice by placing the latest concepts and tools in the hands of higher education policy makers and administrators. Since its founding, NCHEMS has received widespread acclaim for developing practical responses to the strategic issues facing leaders of higher education institutions and agencies. With project support from multiple foundations, NCHEMS develops information and policy tools targeted at policy makers and institutional leaders that can help them set strategic directions and evaluate their effectiveness. NCHEMS also delivers research-based expertise, practical experience, information, and a range of management tools that can help institutions and higher education systems and states improve both their efficiency and their effectiveness. A particular hallmark of what we do is identifying and analyzing data drawn from multiple sources to help solve specific policy and strategic problems.

