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AFTER GRADUATE AND PROFESSIONAL SCHOOL:
How Students Fare in the Labor Market

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Many people enroll in graduate and professional degree programs to develop expertise in a particular field, advance their careers and increase their earnings. Advanced degrees open doors to expanded career opportunities and offer monetary and nonmonetary benefits to individuals and society.[1]

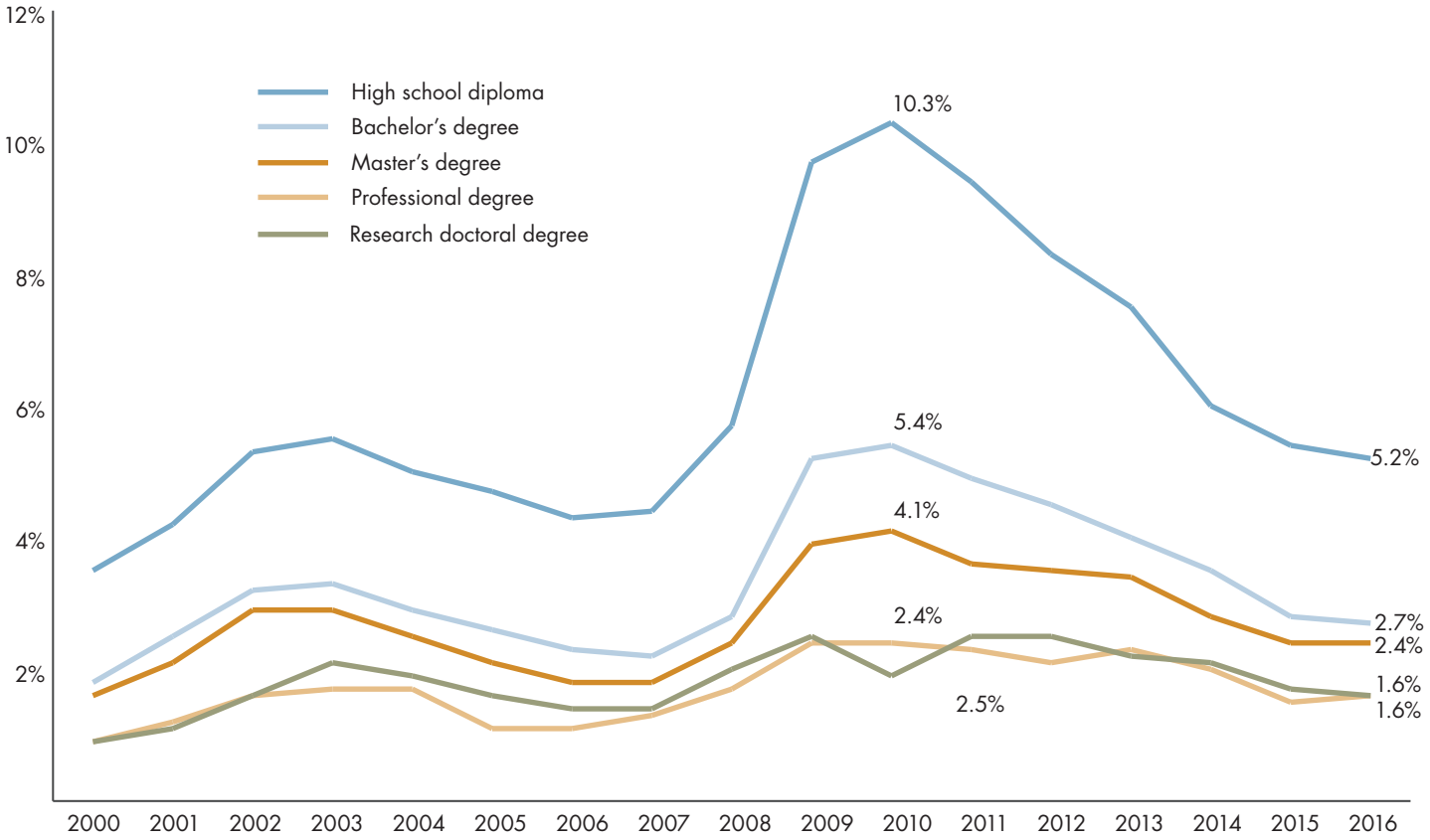
Although on average, advanced degrees are valuable in the labor market, students pursuing a graduate or professional degree face considerable uncertainty. Research doctoral and professional degree recipients have lower unemployment rates and higher average earnings than those with master's degrees, and there is wide variation in outcomes, even among students who complete the same type of degree. As noted in the first brief in this series, *Who Goes to Graduate School and Who Succeeds?*, about a quarter of students who enroll in graduate and professional degree programs leave school without earning a degree.[2] Among those who complete their studies, outcomes vary based on type of degree, field of study and occupation, as well as race, ethnicity and gender.

This brief explores employment and earnings outcomes among advanced degree recipients. Examining these outcomes across degree, occupational and demographic categories paints a nuanced picture of the payoffs of graduate and professional education. This information is critical for prospective students and others seeking to assess the value of these degree programs.

[1] Jennifer Ma, Matea Pender, and Meredith Welch (2016), *Education Pays 2016: The Benefits of Higher Education for Individuals and Society*, The College Board, https://trends.collegeboard.org/education-pays.

[2] Sandy Baum and Patricia Steele (2017), *Who Goes to Graduate School and Who Succeeds?*, AccessLex Institute and Urban Institute, https://www.accesslex.org/who-goes-graduate-school-and-who-succeeds, http://www.urban.org/research/publication/who-goes-graduate-school-and-who-succeeds.

FIGURE 1:
Unemployment Rate by Educational Attainment, 2000–2016



Note: Includes adults ages 25 and older.
Source: Federal Reserve Bank of St. Louis (2017). FRED Economic Data, based on data from U.S. Bureau of Labor Statistics (BLS), https://fred.stlouisfed.org/graph/?g=eL9L.

Employment and Earnings by Type of Advanced Degree

Unemployment

Unemployment rates are cyclical for all groups, rising and falling with the overall economy. But the unemployment rate for bachelor's degree recipients is consistently about half as high as the unemployment rate for high school graduates, and advanced degree recipients fare even better than four-year college graduates. Unemployment rates for research doctoral and professional degree recipients are about half the rate for bachelor's degree recipients. In 2010, at the peak of the recent recession, the unemployment rate for master's degree recipients was 4.1 percent, compared with 5.4 percent for bachelor's degree recipients and 2.4 percent for professional degree recipients. The unemployment rate for research doctoral degree recipients peaked at 2.5 percent in 2011. More recently, the unemployment rate for bachelor's degree recipients has fallen more than that for master's degree recipients, narrowing the gap to 0.3 percentage points in 2016 (Figure 1).

Employment by Job Sector

Adults with different types of postsecondary degrees are employed in different economic sectors. Three-quarters of both bachelor's and professional degree recipients are employed in the private business sector. Master's and research doctoral recipients are less likely to be in this sector and more likely to be employed by educational institutions; half of adults with research doctoral degrees are at educational institutions. Fourteen percent of professional degree recipients were employed in government in 2013, a larger share than for any other type of postsecondary degree (Figure 2).

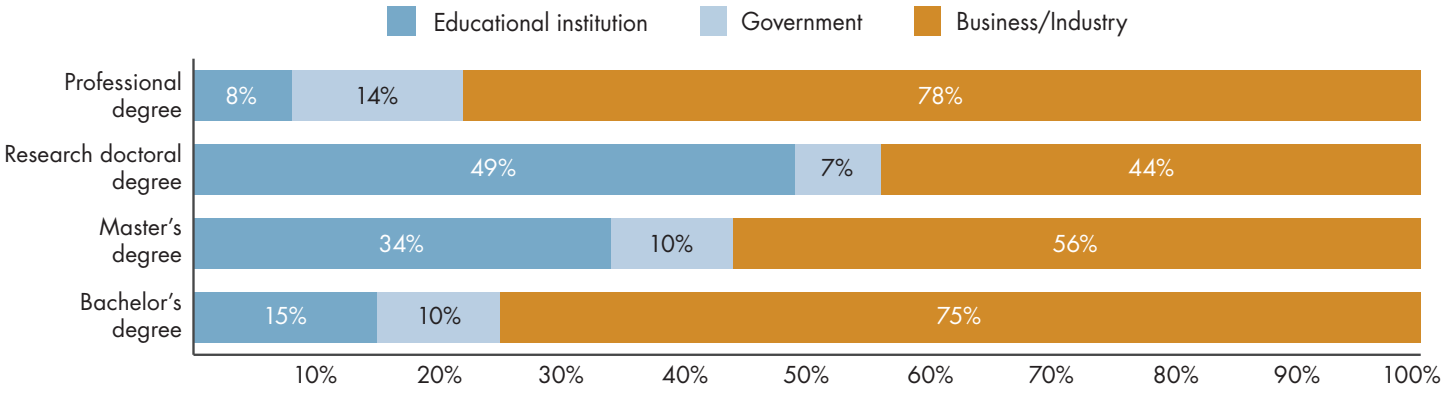
Earnings

On average, advanced degrees generate high labor market returns. Median earnings for adults ages 25 to 64 with professional degrees are almost twice as high as earnings for those with bachelor's degrees. Master's degrees do not lead to the same earnings as other advanced degrees, but in 2015, median earnings for master's degree recipients were $66,000, compared with $52,390 for bachelor's degree recipients (Figure 3).

There is a wide range of earnings among adults with the same level of educational attainment. In 2015, 46 percent of adults ages 25 and older with professional degrees and 40 percent of those with research doctoral degrees earned $100,000 or more. Twenty-two percent of master's degree recipients and 16 percent of adults whose highest degree was a bachelor's degree earned this much.

At the other end of the distribution, 15 percent of professional degree and research doctoral degree recipients earned less than $25,000. Twenty-three percent of master's degree recipients and 29 percent of bachelor's degree recipients were in this category (Figure 4).

FIGURE 2:
Employment Sector by Degree Type, 2013

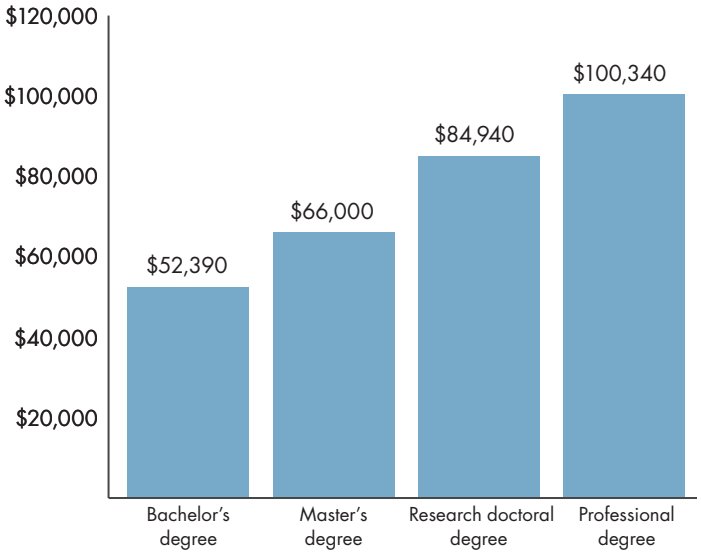


Source: National Science Foundation (NSF), National Survey of College Graduates, 2013.

Despite differences in median salaries and earnings distributions, there is considerable overlap in earnings among the degree categories. Among adults with earnings, about one-quarter of those with professional and research doctoral degrees earned less than the median for those with bachelor's degrees ($52,390). Thirty-seven percent of master's degree recipients with earnings were in this category.[3] Degrees never provide a guarantee of high earnings. But advanced degrees—particularly research doctoral and professional degrees—significantly increase the chances of high earnings.

FIGURE 3:

Median Earnings by Education Level for Workers Ages 25 to 64, 2015



Source: U.S. Census Bureau (2016), Current Population Survey (CPS) Annual Social and Economic (ASEC) Supplement, https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pinc/pinc-03.html.

Professional Degree Outcomes

Earnings by Race, Ethnicity and Gender

In 2015, median earnings for professional degree recipients were more than twice as high for Asian men ($140,770) as for Hispanic women ($61,920) (Figure 5). These differences may be partially attributable to fields of study and occupation, as well as age, but they highlight the variation in earnings among professional degree holders and demonstrate the need for caution when forming salary expectations.

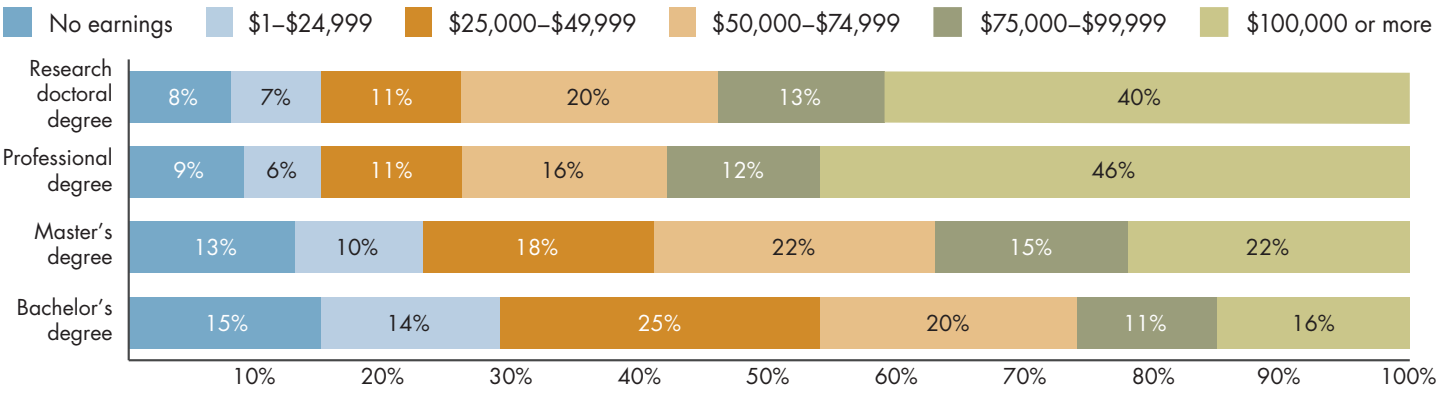
Variation Within Professional Degree Programs

Professional degree programs prepare individuals for a wide range of occupations—including chiropractic, dentistry, law, medicine, optometry, pharmacy, podiatry and veterinary medicine—and generate different employment opportunities. But even within these fields, labor market outcomes vary considerably. Consider, for example, law and medical degree programs.

[3] U.S. Census Bureau (2016), *Educational Attainment-People 25 Years Old and Over, by Total Money Earnings, Work Experience, Age, Race, Hispanic Origin, and Sex.* "Person Income in 2015," PINC-03.

FIGURE 4:

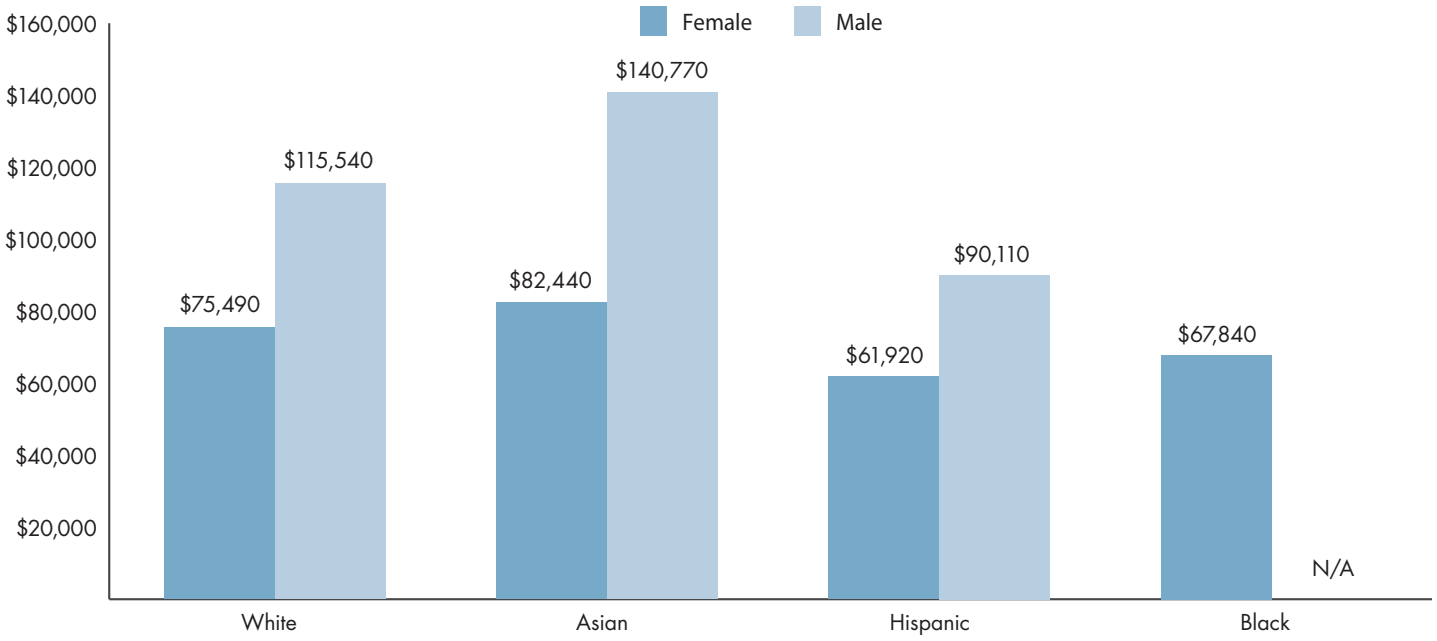
Distribution of Earnings by Educational Attainment, Adults Ages 25 and Older, 2015



Source: U.S. Census Bureau (2015), PINC-03.

FIGURE 5:

Median Earnings of Professional Degree Recipients by Gender and Race/Ethnicity, Workers Ages 25 and Older, 2015



Note: Sample size is too small to report on earnings of black males with professional degrees.
Source: U.S. Census Bureau (2015), PINC-03.

Law Degrees

The distribution of starting salaries among law school graduates is bimodal. About half of the class of 2014 reported starting salaries between $40,000 and $65,000, and about 20 percent of graduates reported salaries of $160,000 or higher.[4] For the class of 2016, some firms in major markets had raised their starting salaries to $180,000, but the median for all law firms was $104,000. The overall national median starting salary for the 2016 cohort was $65,000, with medians of $59,000 for government jobs, $55,000 for judicial clerkships, and $48,500 for public interest positions.[5]

Earnings variations persist when measured among practicing lawyers at all stages of their careers. According to the U.S. Bureau of Labor Statistics, the average annual wage for lawyers in 2016 was $139,880. But 25 percent earned less than $77,580, and 25 percent earned more than $176,580 (Table 1).

Some of the variation is based on the industries in which lawyers are employed. For example, in 2016, average earnings in the air transportation industry were $214,630, but for lawyers employed in state government, the average was $93,320. Earnings also vary widely by state. In 2016, average earnings for lawyers were $182,810 in the District of Columbia, $129,070 in Illinois, and $83,330 in Montana.[6]

TABLE 1:

Distribution of Annual Wages for Lawyers, May 2016

10th percentile	25th percentile	Median	75th percentile	90th percentile
$56,910	$77,580	$118,160	$176,580	$208,000 or higher

Source: U.S. Bureau of Labor Statistics (BLS) (2017), *Occupational Employment Statistics: Lawyers*, https://www.bls.gov/oes/current/oes231011.htm.

[4] National Association of Law Placement (NALP), (2017), *Salary Distribution Curves*, http://www.nalp.org/salarydistrib.

[5] NALP (2017), *Employment Rate Increases After Flat Market in 2015*, http://www.nalp.org/uploads/SelectedFindingsClassof2016.pdf.

[6] BLS (2017), *Occupational Employment Statistics: Lawyers*, https://www.bls.gov/oes/current/oes231011.htm.

Medical Degrees

Earnings of physicians vary across specialties. In 2016, when average earnings for physicians and surgeons were $210,170, pediatricians earned an average of $184,240, and anesthesiologists earned $269,600 (Figure 6).

Even within one area of specialization, there may be wide variation in earnings. Figure 7 illustrates this for two medical specialties: family and general practice and obstetrics and gynecology. In both fields, physicians employed by educational institutions earn less than those working in hospitals and doctors' offices, and those in laboratories have even higher earnings.

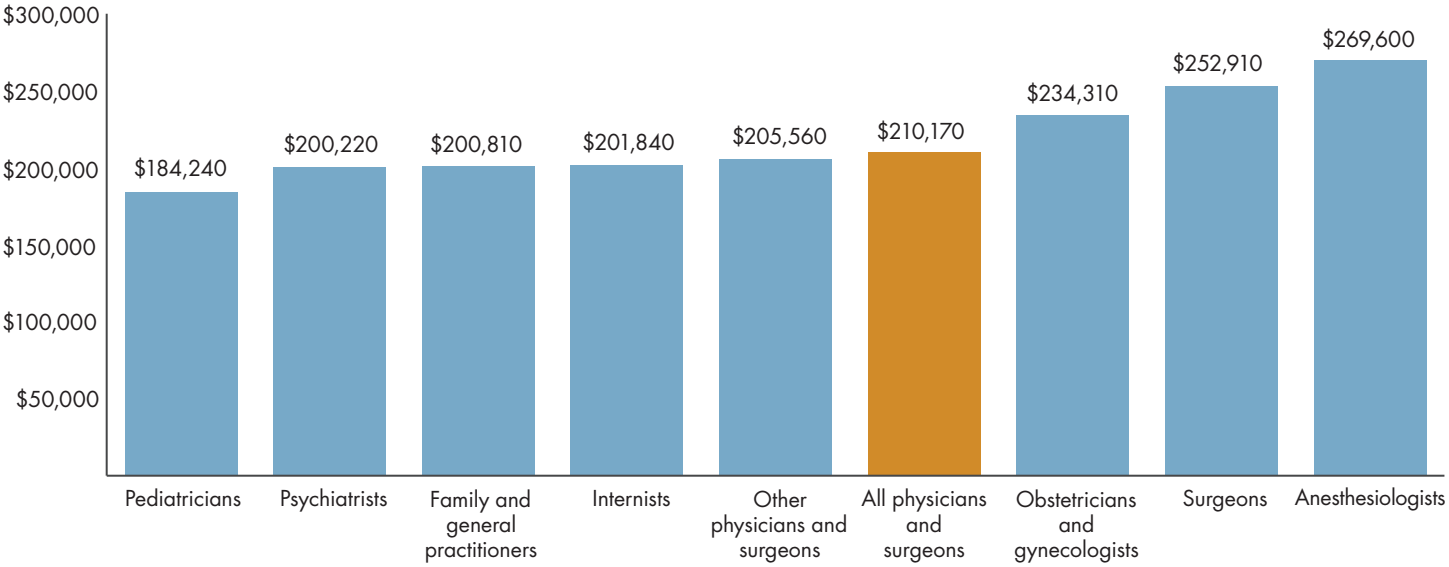
Professional degrees typically yield relatively high earnings, but this generalization is not sufficient for students making decisions about courses of study and career directions. Earnings vary considerably by field of study, job sector and employer type, and no degree guarantees high earnings. Prospective students should investigate labor market outcomes for alumni of the programs and universities they are considering and take their own interests and characteristics into account as they evaluate their plans for professional degree study.

Research Doctoral Degree Outcomes

Employment and Postgraduate Study

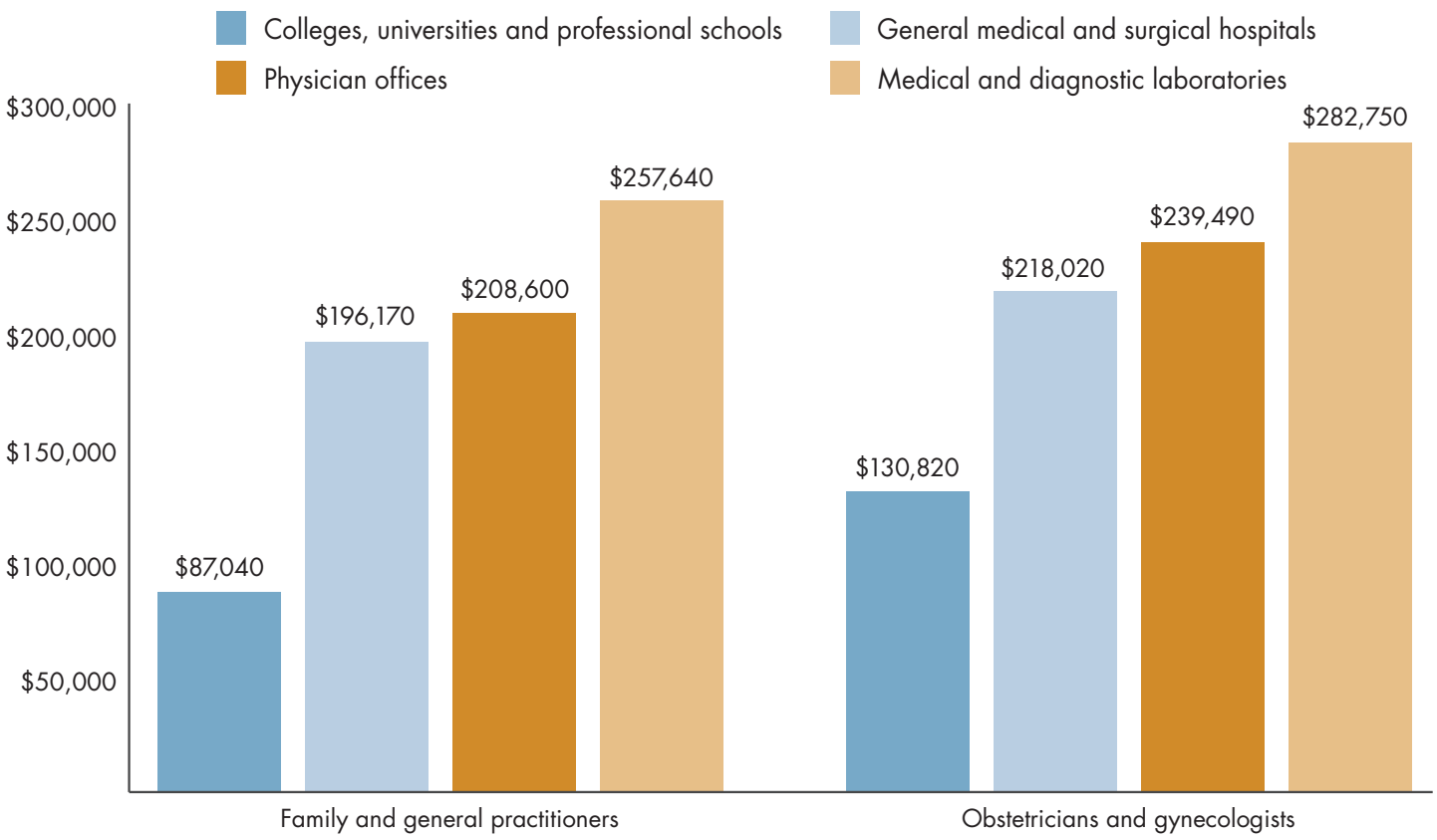
The share of research doctoral degree recipients graduating with solid job commitments has decreased from 49 percent in 1999 to 37 percent in 2014. Despite considerable variation by field of study, this downward trend is a pattern. For example, the share with confirmed employment fell from 56 percent to 44 percent in the humanities, and from 53 percent to 38 percent in engineering (Figure 8).

FIGURE 6:
Mean Annual Earnings of Physicians and Surgeons by Specialty, 2016



Source: BLS (2017), *Occupational Employment Statistics*, https://www.bls.gov/oes/current/oes_nat.htm#29-0000.

FIGURE 7:
Average Annual Earnings Within Medical Specialties, 2016



Source: BLS (2017), *Occupational Employment Statistics*, https://www.bls.gov/oes/current/oes_nat.htm#29-0000.

Meanwhile, more students are moving to postdoctoral study after completing their degrees, with the largest increase from 17 percent in 1999 to 25 percent in 2014 among social scientists. Although these opportunities can be valuable, they are not as desirable as full-time faculty appointments.

Employment by Job Sector

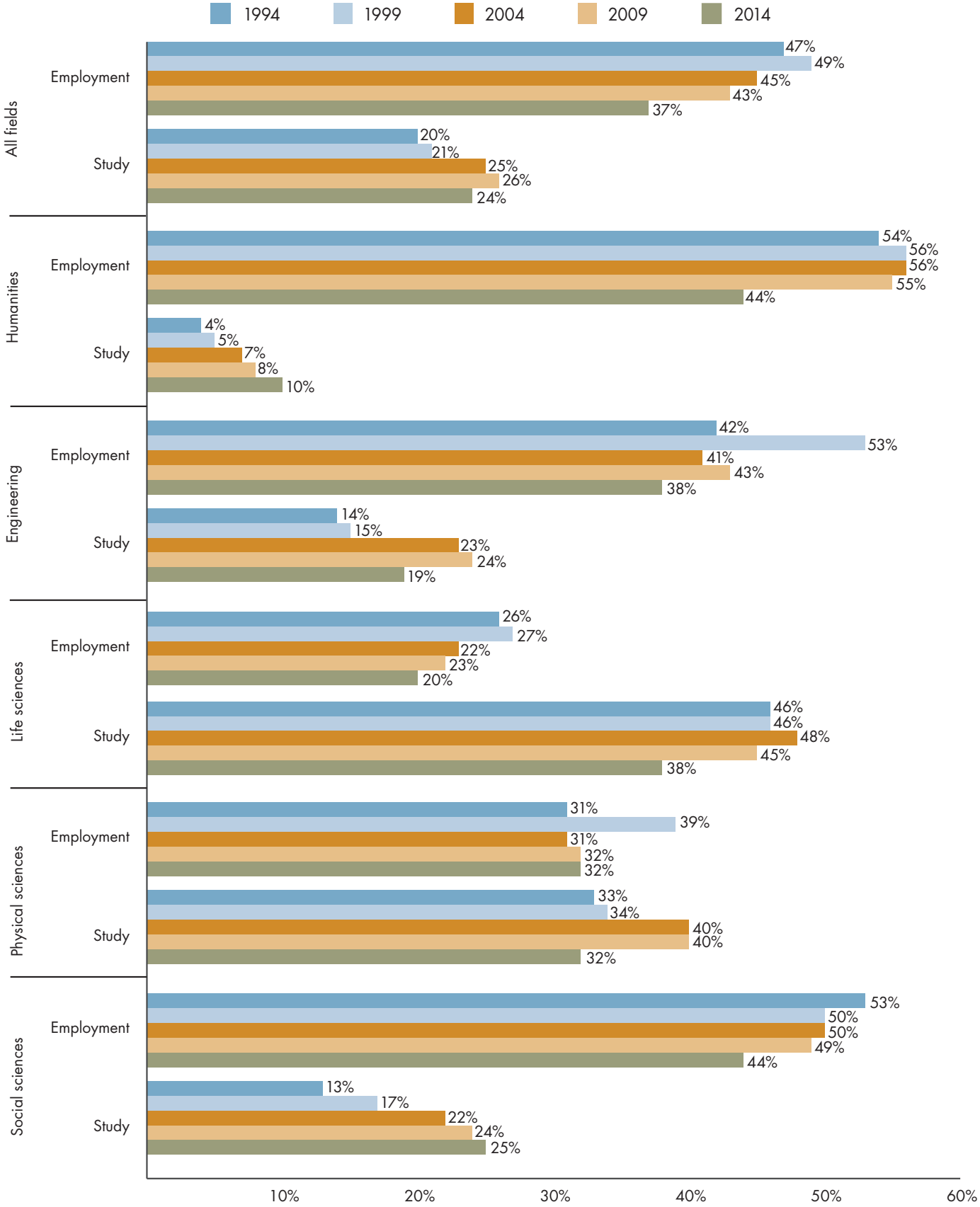
Research doctoral degree recipients are more likely than those with other advanced degrees to work for educational institutions and less likely to work in business and industry (Figure 2). But employment patterns differ by field of study. In 2014, 83 percent of adults with research doctoral degrees in the humanities were employed in educational institutions, compared with just 15 percent of those with research doctoral degrees in engineering (Figure 9). Government employment ranged from 2 percent for employees with degrees in the humanities to 11 percent for those who studied social sciences and life sciences. More than half of adults with humanities degrees who worked in the private sector were employed by nonprofits, while almost no physical scientists or engineers worked in this sector.

Earnings by Race, Ethnicity and Gender

Earnings of adults with research doctoral degrees vary across demographic groups (Figure 10). In 2015, median earnings ranged from $58,070 for black women to over $100,000 for white and Asian men. Among both men and women, median earnings for black research doctoral degree recipients were about 80 percent of the median for whites with the same level of education. Among all racial and ethnic groups,

FIGURE 8:

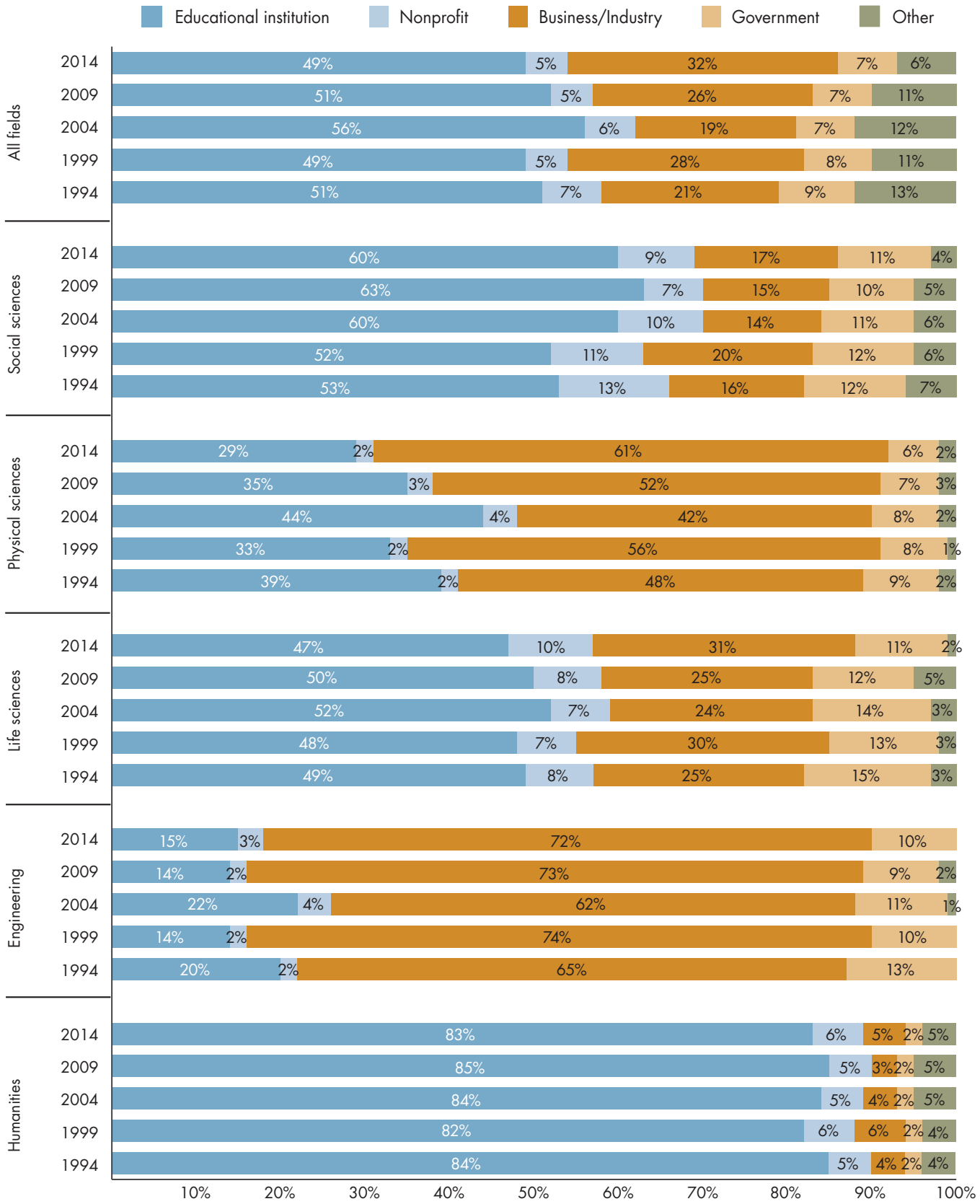
Research Doctoral Degree Recipients with Definite Employment Commitments or Further Study Plans at Graduation, Selected Fields, 1994–2014



Source: American Academy of Arts and Sciences (2011), *Humanities Indicators*, Supplementary Table III-6, based on data from NSF, National Center for Science and Engineering Statistics (NCSES), https://www.humanitiesindicators.org/content/indicatorDoc.aspx?d=68&hl=employment+commitments&m=0.

FIGURE 9:

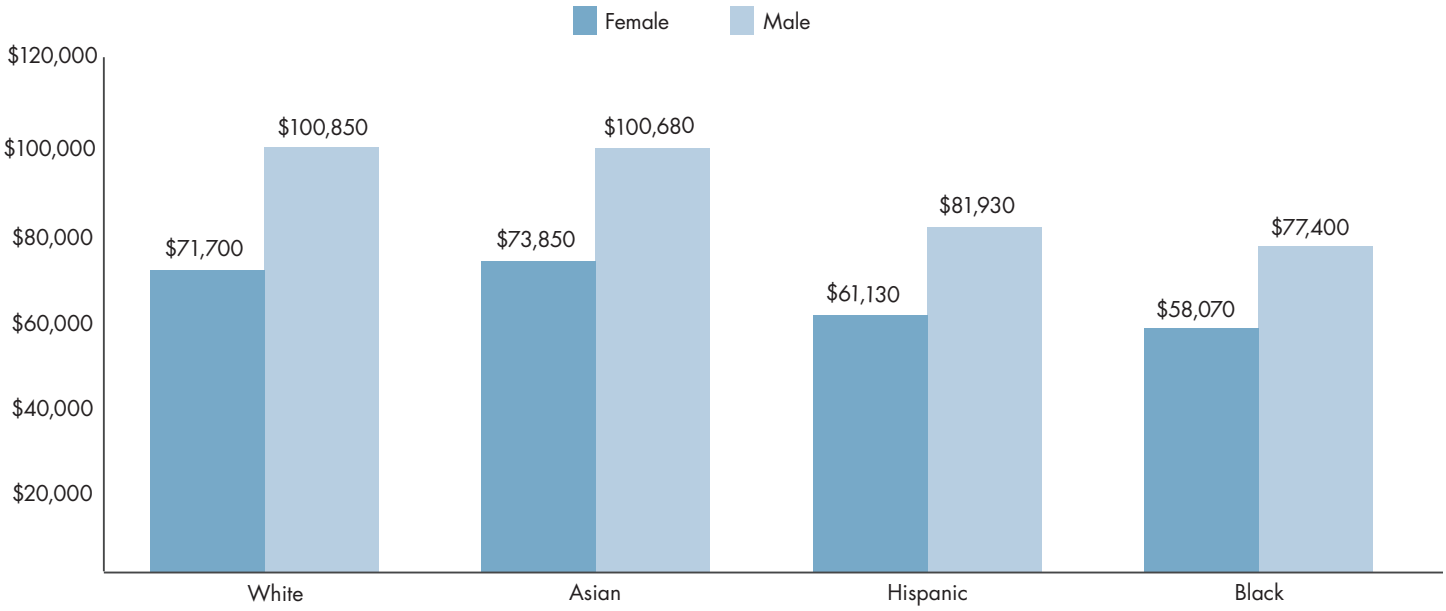
Adults with Research Doctoral Degrees: Employment by Sector, 1994–2014



Source: American Academy of Arts and Sciences (2016), *Humanities Indicators*, Supplementary Table III-6, based on data from NSF, NCSES, table 46, http://www.nsf.gov/statistics/sed/2011/start.cfm.

FIGURE 10:

Earnings of Research Doctoral Degree Recipients by Race/Ethnicity and Gender, Workers Ages 25 and Older, 2015



Source: U.S. Census Bureau (2015), PINC-03.

women's median earnings were 70 to 75 percent of the earnings of their male counterparts. Understanding the causes of these disparities requires more analysis, but they are likely attributable to a combination of fields of study, types of employment, geography and labor market discrimination.

Master's Degrees

Master's degree recipients have lower unemployment rates and higher earnings than adults with only a bachelor's degree. But the gaps between master's degree recipients and bachelor's degree recipients are smaller than the gaps between master's degree recipients and people with research doctoral and professional degrees.

Earnings by Race, Ethnicity and Gender

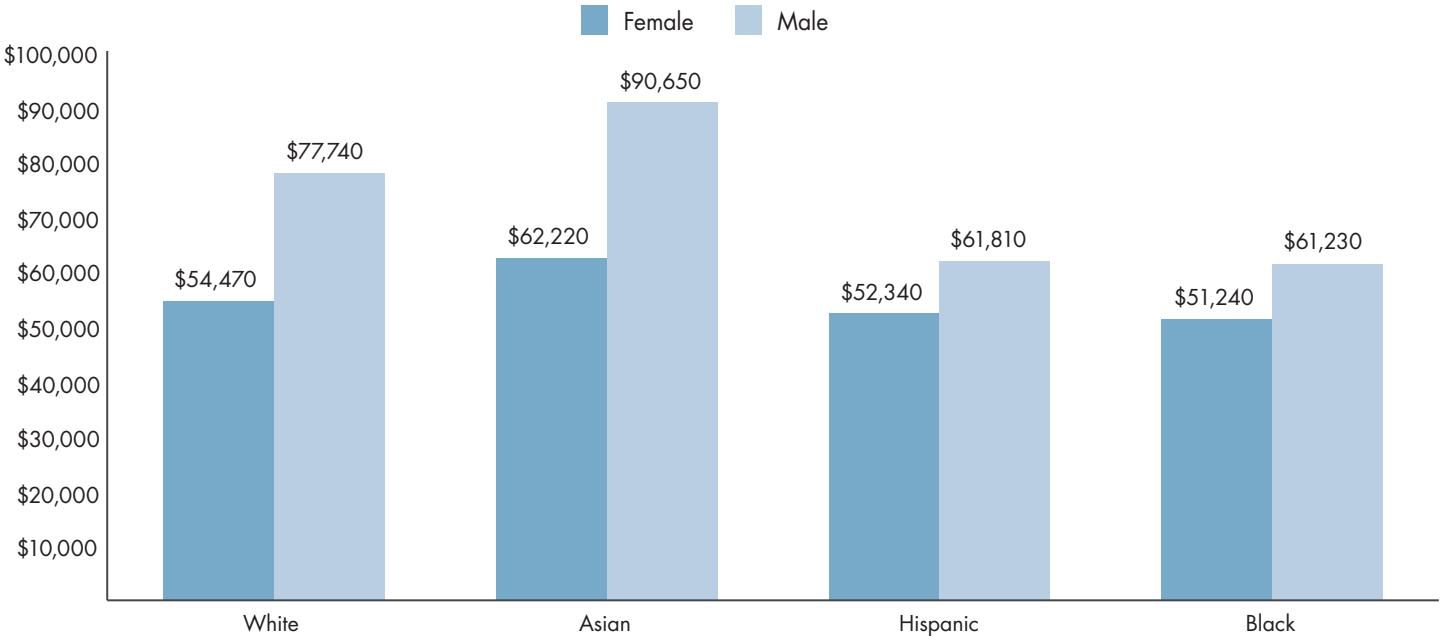
Earnings among master's degree recipients vary by race, ethnicity and gender. In 2015, median earnings ranged from $51,240 for black women with master's degrees to $90,650 for Asian men. At least a portion of this variation is a function of occupational differences.

The gender gaps among black and Hispanic master's degree recipients are smaller than those among whites and Asians. In 2015, median earnings for white and Asian women were about 70 percent of the median earnings for their male counterparts. In contrast, the median earnings of black and Hispanic women with master's degrees were about 85 percent of the median earnings for black and Hispanic men with the same level of education.

Among both men and women, median earnings for master's degree recipients vary across racial and ethnic groups. In 2015, median earnings for Asians were higher than earnings for whites, and men earned more than women. But the earnings gaps between white and black and between white and Hispanic master's degree recipients were larger among men than among women. Median earnings of black and Hispanic men with master's degrees were about 80 percent of the median for white men in 2015. Median earnings for black and Hispanic women with master's degrees were about 95 percent of the median among white women (Figure 11).

FIGURE 11:

Median Earnings of Master's Degree Recipients by Race/Ethnicity and Gender, Workers Ages 25 and Older, 2015



Source: U.S. Census Bureau (2015), PINC-03.

Earnings by Field of Study

Not all master's degrees lead to the same earnings, and this variation explains some of the racial, ethnic and gender disparities discussed earlier. Among 1992–93 bachelor's degree recipients who had earned a master's degree within 10 years of graduating from college, 30 percent had degrees in business and management. More than one-third of these degree recipients earned $75,000 or more in 2003. But among the 15 percent whose master's degrees were in education, only 8 percent had earnings this high, and 23 percent earned less than $25,000 (Figure 12).[7]

Figure 12 reports the earnings distribution of 1992–93 college graduates who had earned a master's degree within 10 years of finishing college.

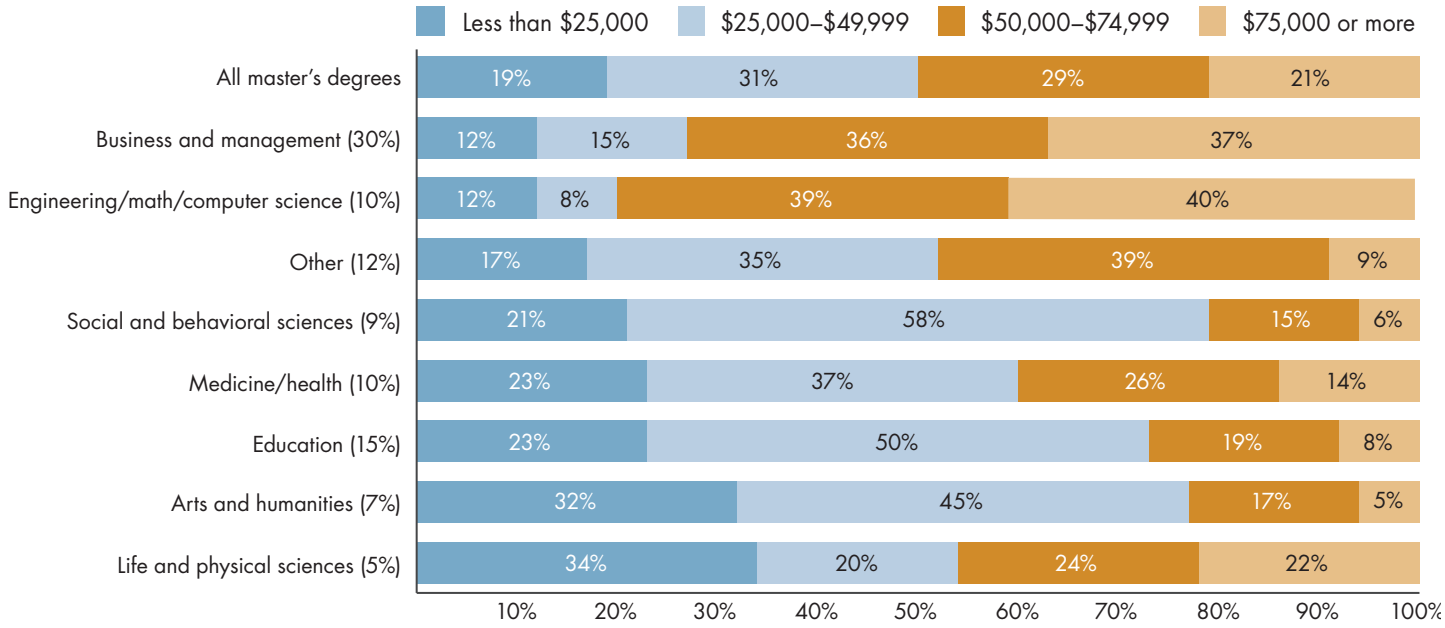
Some of the variation may be due to the timing of degree completion and years of work experience. But earnings data for those who earned master's degrees in the same year also show considerable variation by field.

National Science Foundation data report 2015 median earnings of adults who earned master's degrees in science, technology, engineering or mathematics (STEM) fields between 2010 and 2013. As the low earnings for adults with master's degrees in the life and physical sciences demonstrate, not all STEM degrees generate earnings higher than non-STEM degrees. The median ranged from $52,000 for adults with degrees in psychology and $56,000 in the biological and life sciences to $83,000 in engineering and $88,000 for those with degrees in computer and information sciences (Figure 13).

[7] NCES (1993/03), Baccalaureate and Beyond, PowerStats.

FIGURE 12:

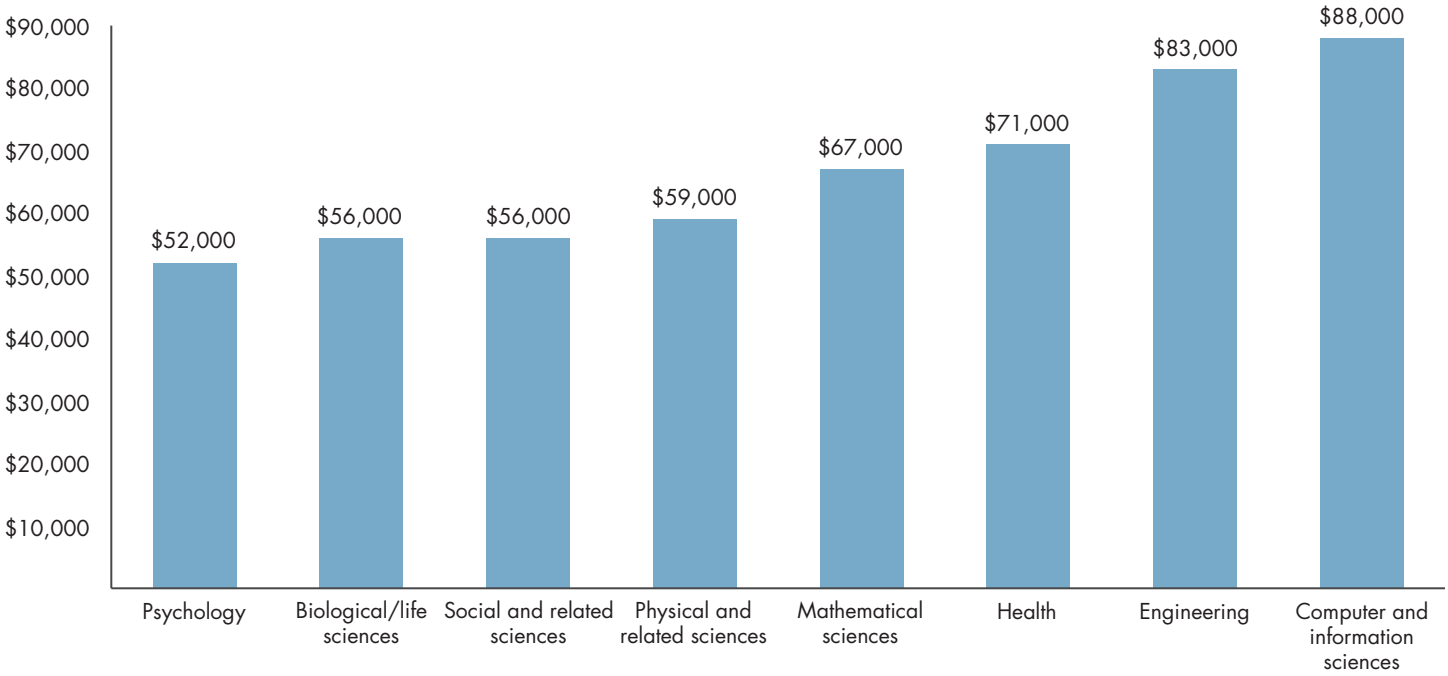
2003 Earnings of 1992–93 Bachelor's Degree Recipients Who Had Earned Master's Degrees by 2003, by Field of Study



Note: Percentages on vertical axis are percentage of master's degree recipients in each field.
Source: NCES (1993/03), Baccalaureate and Beyond, PowerStats.

FIGURE 13:

Median Salary of Recent Science, Engineering, and Health Master's Degree Recipients, by Field of Master's Degree, 2015



Notes: Salary data include only full-time employees. Includes adults who earned master's degrees in 2010, 2011, 2012, or 2013. Data are from the National Center for Science and Engineering Statistics, National Survey of College Graduates, 2015.
Source: NSF (2017), *Women, Minorities, and Persons with Disabilities in Science and Engineering*, Data Tables. Table 9.14, https://www.nsf.gov/statistics/2017/nsf17310/data.cfm.

Conclusion

On average, advanced degree recipients do well in the labor market. People who earn master's, research doctoral and professional degrees have lower unemployment rates and higher average earnings than those who end their education with a bachelor's degree. But there is considerable variation across and within degree types. Research doctoral and professional degree recipients have lower unemployment rates and higher earnings than master's degree recipients. And field of study, area of specialization and occupation are correlated with outcomes within each type of degree.

Demographic differences are also stark. Further research may shed light on how much the variation is associated with choice of field and the extent to which there are differences in outcomes by race, ethnicity and gender within fields of study and occupations.

Graduate and professional programs require a large investment of time, money and effort. Students making these choices should have reliable information about their prospects. Graduate and professional degree programs are, by and large, preparation for specific occupations. Students should have a strong sense of the likely outcomes. It is not enough just to know that advanced degrees generally yield significant economic benefits.

The data in this brief make it clear that, overall, master's degrees do not lead to the same financial outcomes as professional and research doctoral degrees. Master's degrees in business and management and in computer science and engineering yield high average earnings, but the same is not true for all fields of study.

The share of the population whose highest degree was a master's degree grew from 6 percent in 2000 to 9 percent in 2016. The share with professional or research doctoral degrees increased from 2.6 percent to 3.3 percent over these years.[8] Many graduate and professional degrees are valuable investments that transform the lives of those who earn them, but the variation in outcomes indicates the need for caution in making generalizations about the value of advanced degrees.

[8] U.S. Census Bureau (2016), Educational Attainment in the United States, Historical Tables, Table A-4, https://www.census.gov/data/tables/2016/demo/education-attainment/cps-detailed-tables.html.

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