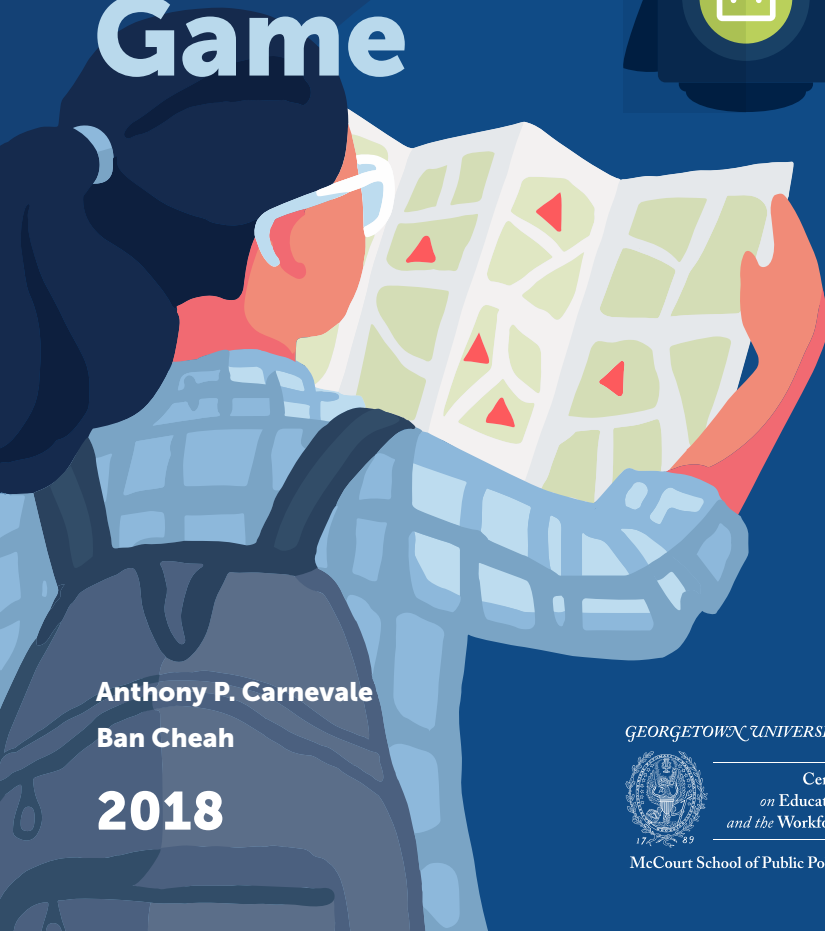


Five Rules of the College and Career Game



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Five Rules of the College and Career Game

In a republic, the mission of higher education is to empower individuals to live fully in their time free from economic or public dependency. The mission endures, but times change.

In the old industrial economy before the 1980s, high school was enough to provide middle class earnings for most Americans: two-thirds of jobs required workers with only a high school education or less. Now, except for about 20 percent of males who can still make it in the blue-collar sector, the high school economy is gone and it is not coming back. Two-thirds of jobs now require workers with at least some college.

The variety of postsecondary programs and credentials today, however, has become a Tower of Babel, a system too vast for prospective students to comprehend and evaluate by institutional reputation alone. Postsecondary programs more than quintupled from 1985 to 2010, from 410 to 2,260. Since



Because postsecondary education and training have become the most well-traveled pathways to middle class earnings, both students and the educators who serve them need to learn new rules of the college and career game.

1950, the number of colleges and universities has more than doubled and the number of college students has increased tenfold. At the same time, the number of distinct occupations has tripled to more than 800. This blizzard of options and the lack of transparency have driven the higher education market toward mediocrity.¹

Since 1980, tuition and fees at public four-year colleges and universities have risen 19 times faster than average family incomes.² This has fueled a basic efficiency problem in higher education. As prices go up, the United States has fallen from first to 13th in attainment among Organisation for Economic Co-operation and Development (OECD) nations.³ Our Canadian neighbors, for example, now get a 56 percent bachelor's degree attainment rate by spending 2.6 percent of their GDP on higher education. We get a 46 percent attainment rate by spending 2.7 percent of our GDP. At the current US higher education productivity rate, we would have to spend almost \$200 billion more annually to catch the Canadians.⁴ We cannot afford that. As it is, students are saddled with college debt they cannot afford and taxpayers are saddled with an 11.5 percent default rate on student loans.⁵

The growing buyer's remorse among former students has made times even more uncertain. The majority of Americans (51%) would change their degree type, institution, or major if they could do it again, according to the results of a 2017 Gallup Poll.⁶ These regrets were influenced by a number of factors, but one was lack of information about degrees and the careers they could lead to.

Because postsecondary education and training have become the most well-traveled pathways to middle class earnings, both students and the educators who serve them need to learn new rules of the college and career game. Students need to shop around for college because higher education is a student's first major investment in the transition from dependent adolescent to independent adult. Students deserve to know what they are paying for.

These five rules can help students navigate the college game in these uncertain times.

¹ Carnevale, Garcia, and Gulish, *Career Pathways*, 2017.

² Georgetown University Center on Education and the Workforce analysis of the College Board, *Trends in College Pricing* 2015, 2015, Table 2A; US Census Bureau and Bureau of Labor Statistics, *Current Population Survey, March Supplement*, 1980-2016.

³ OECD, *Education at a Glance*, 2017.

⁴ Georgetown University Center on Education and the Workforce analysis based on data from the US Census Bureau, OECD, Federal Reserve Bank of St. Louis, and National Center for Education Statistics surveys. A range of estimates using different methods suggests a range between \$120 billion and \$240 billion.

⁵ Default rate is for the FY2014 cohort. <https://www.ed.gov/news/press-releases/us-department-education-releases-national-student-loan-fy-2014-cohort-default-rate>

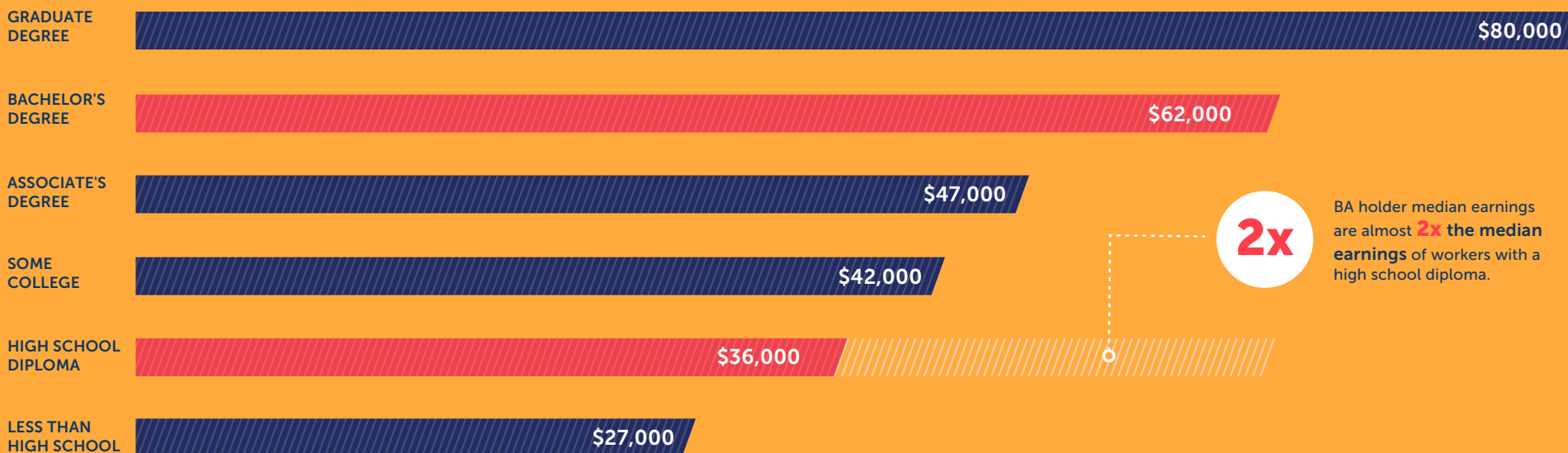
⁶ Carnevale, "Open Information about College Options and Outcomes," 2017.

1 Education level still matters, and generally more education is better.

Median earnings increase with each additional level of educational attainment.



MEDIAN EARNINGS BY EDUCATION LEVEL



Graduate degree median earnings: **\$80,000**



Bachelor's degree median earnings: **\$62,000**

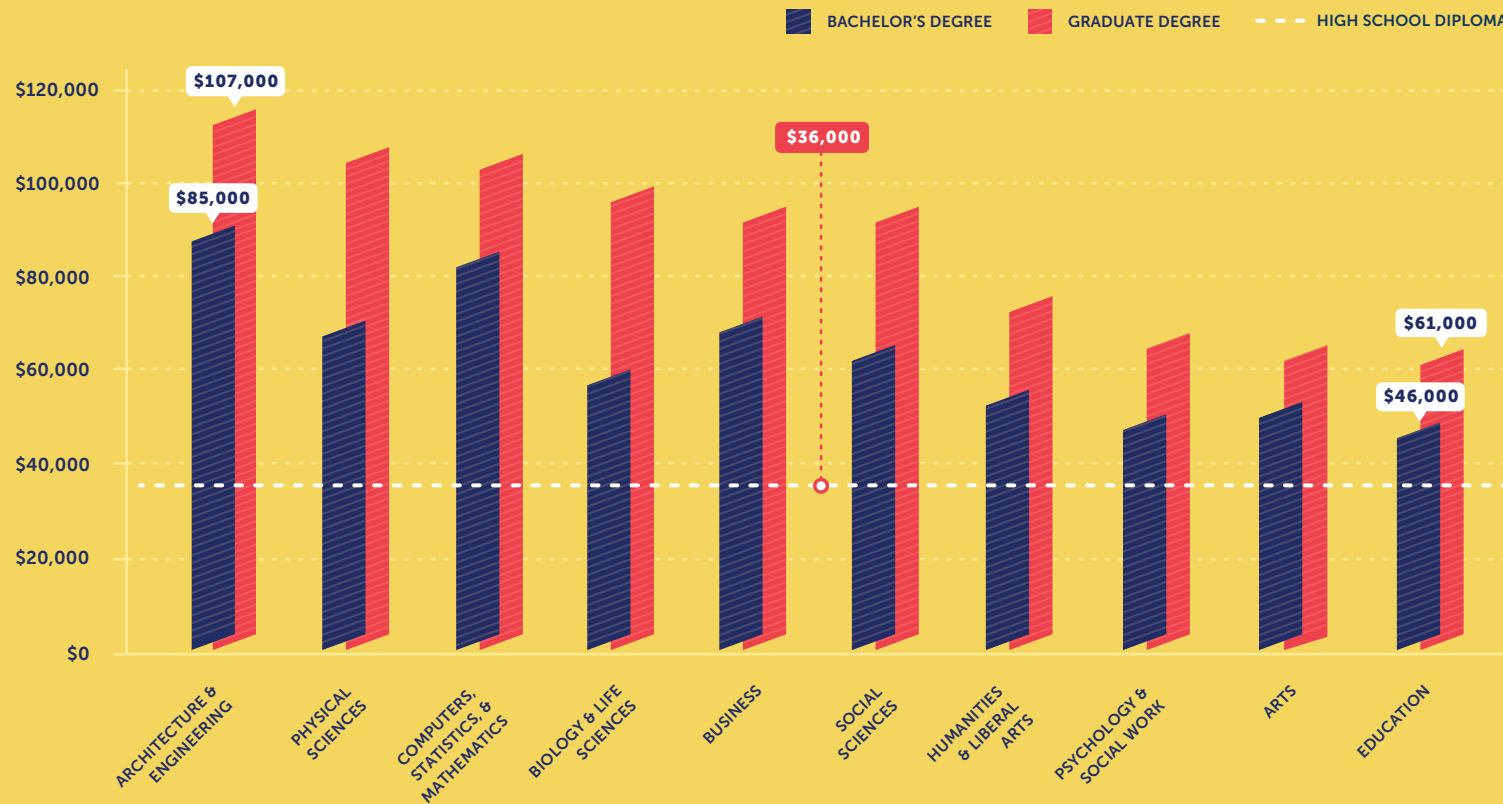
Source: Georgetown University Center on Education and the Workforce analysis of American Community Survey (ACS): 2009-2016 pooled one-year person level microdata files.

2 Education level matters, but program of study and majors matter even more.

The difference in earnings between the highest (architecture and engineering) and lowest (education) bachelor's degrees is \$39,000.



MEDIAN EARNINGS BY FIELD OF STUDY & DEGREE



The median earnings of every bachelor's and graduate degree are **higher than** the median earnings of a worker with just a high school diploma.



BAs in architecture and engineering lead to median annual earnings of **\$85,000**. This is **more than 2x** the median earnings of a worker with a high school diploma and **\$5,000 higher** than the median earnings of a graduate degree holder.



Other majors earn considerably less. The median annual earnings of education majors are **\$46,000**. This is still almost **30% more** than the median earnings of a worker with a high school diploma.

Source: Georgetown University Center on Education and the Workforce analysis of American Community Survey (ACS): 2009-2016 pooled one-year person level microdata files.

3 While field of study is important, it does not control one's financial destiny – there is great variation in earnings within majors.

The 25th percentile of architecture and engineering majors earn less than the 75th percentile of majors in either the arts or humanities and the liberal arts.



MEDIAN EARNINGS BY FIELD OF STUDY - TOP EARNERS VS. LOW EARNERS

◆ 75TH PERCENTILE ● MEDIAN ▲ 25TH PERCENTILE



\$67,000

is the **median** annual earnings for a worker with a **bachelor's** degree in **business**.



But, **25%** of workers who majored in **business** are earning more than **\$100,000** a year.



The **top 25%** of education majors **earn almost as much** as the **bottom 25%** of architecture and engineering majors.

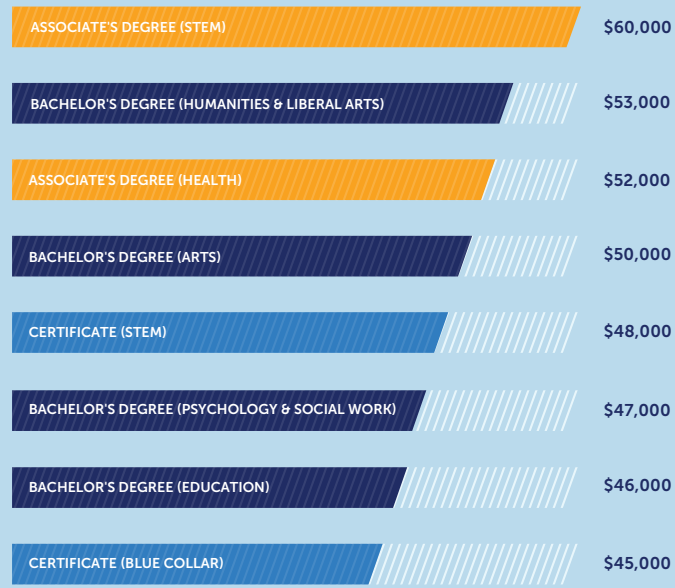
Source: Georgetown University Center on Education and the Workforce analysis of American Community Survey (ACS): 2009-2016 pooled one-year person level microdata files.

4 Less education can be worth more.

Some certificates pay more than some associate's degrees, some associate's degrees pay higher than some bachelor's degrees, and some bachelor's degrees result in higher earnings than some graduate degrees.

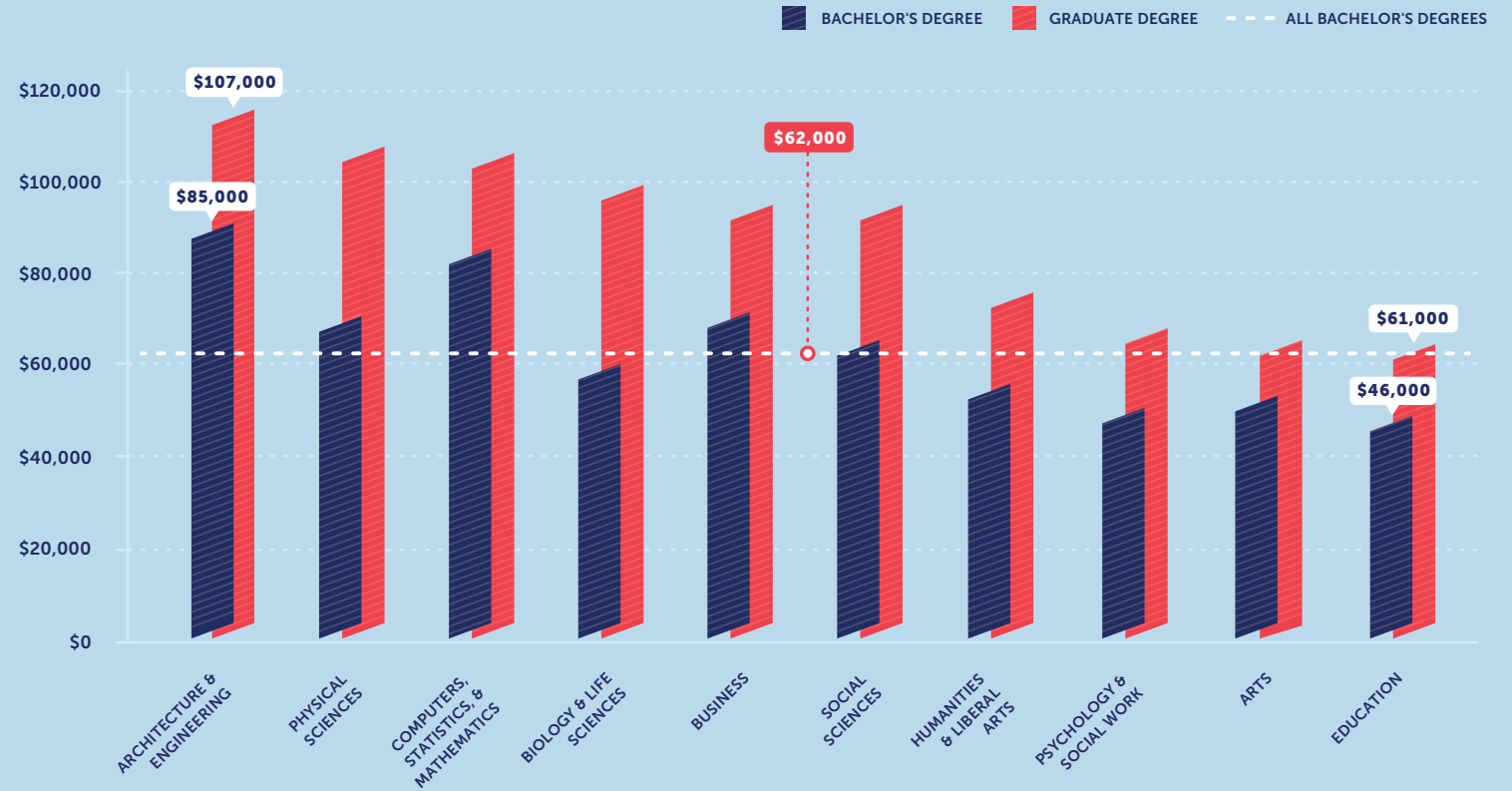


MEDIAN EARNINGS COMPARISON BY EDUCATION LEVEL & FIELD OF STUDY



■ BACHELOR'S DEGREE
 ■ ASSOCIATE'S DEGREE
 ■ CERTIFICATE

MEDIAN EARNINGS BY FIELD OF STUDY & DEGREE



Associate's degree holders who studied STEM earn **\$60,000** annually. This is **more than** bachelor's degree holders who majored in the **humanities and liberal arts**.



Education majors **need a graduate degree** to achieve the median earnings of a bachelor's degree holder. Arts and psychology and social work majors also need a graduate degree.



Biology and life sciences majors experience the **largest bump in earnings** from a graduate degree.

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau's American Community Survey (2009–2016 pooled one-year person level microdata files) and Survey of Income and Program Participation (2004/2008 combined panels).

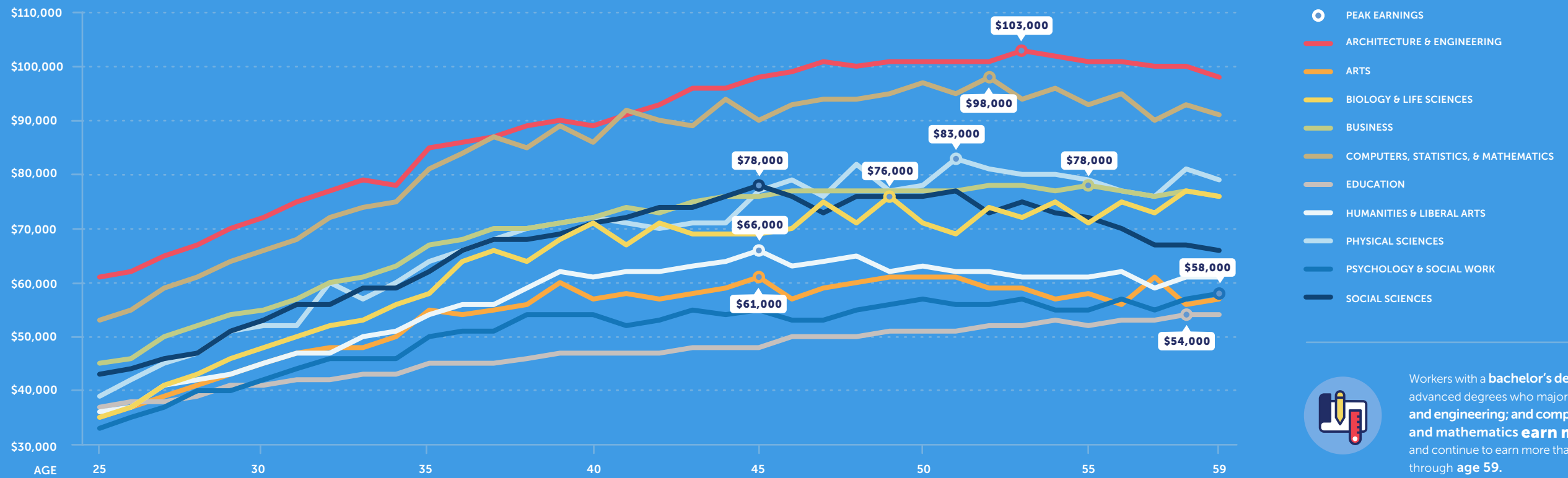
5 Humanities and liberal arts majors never catch up with the highest earning majors.

Earnings for social sciences majors drop off late in their careers, and they are passed by majors in business, biology and life sciences, and physical sciences.



Rule 5 Humanities & liberal arts majors never catch up in earnings

CAREER MEDIAN EARNINGS BY AGE & MAJOR



Workers with a **bachelor's degree** but without advanced degrees who major in **architecture and engineering; and computers, statistics, and mathematics** **earn more** at age 25 and continue to earn more than all other majors through **age 59**.

Source: Georgetown University Center on Education and the Workforce analysis of American Community Survey (ACS): 2009-2016 pooled one-year person level microdata files.

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Appendix

Fields of study, detailed majors, and median earnings of graduates with degrees in these fields

| FIELD OF STUDY | MAJOR | BACHELOR'S DEGREE | GRADUATE DEGREE |
|-----------------------------------|---------------------------------------|-------------------|-----------------|
| Agriculture and Natural Resources | Agricultural economics | \$66,000 | \$81,000 |
| | Animal sciences | \$45,000 | \$70,000 |
| | Food science | \$59,000 | \$71,000 |
| | Forestry | \$59,000 | \$74,000 |
| | General agriculture | \$48,000 | \$66,000 |
| | Natural resources management | \$50,000 | \$66,000 |
| | Plant science and agronomy | \$49,000 | \$64,000 |
| | Soil science | \$60,000 | \$67,000 |
| Architecture and Engineering | Aerospace engineering | \$86,000 | \$109,000 |
| | Architectural engineering | \$75,000 | \$79,000 |
| | Architecture | \$59,000 | \$67,000 |
| | Biomedical engineering | \$63,000 | \$79,000 |
| | Chemical engineering | \$90,000 | \$107,000 |
| | Civil engineering | \$79,000 | \$95,000 |
| | Electrical engineering | \$90,000 | \$111,000 |
| | Engineering and industrial management | \$73,000 | \$101,000 |

| FIELD OF STUDY | MAJOR | BACHELOR'S DEGREE | GRADUATE DEGREE | |
|------------------------------------|---|-----------------------------------|-----------------|----------|
| Architecture and Engineering | Engineering mechanics, physics, and science | \$71,000 | \$105,000 | |
| | Engineering technologies | \$66,000 | \$74,000 | |
| | Environmental engineering | \$68,000 | \$83,000 | |
| | General engineering | \$77,000 | \$101,000 | |
| | Geological and geophysical engineering | \$80,000 | \$111,000 | |
| | Industrial and manufacturing engineering | \$78,000 | \$100,000 | |
| | Industrial production technologies | \$72,000 | \$88,000 | |
| | Mechanical engineering | \$85,000 | \$105,000 | |
| | Mechanical engineering related technologies | \$67,000 | \$88,000 | |
| | Metallurgical engineering | \$95,000 | \$109,000 | |
| | Mining and mineral engineering | \$93,000 | \$104,000 | |
| | Petroleum engineering | \$133,000 | \$134,000 | |
| | Arts | Commercial art and graphic design | \$44,000 | \$56,000 |
| Drama and theater arts | | \$36,000 | \$51,000 | |
| Film, video, and photographic arts | | \$42,000 | \$51,000 | |
| Fine arts | | \$41,000 | \$52,000 | |
| Music | | \$39,000 | \$50,000 | |
| Studio arts | | \$33,000 | \$48,000 | |
| Visual and performing arts | | \$33,000 | \$48,000 | |
| Biology and Life Sciences | | Biochemical sciences | \$49,000 | \$88,000 |
| | | Biology | \$48,000 | \$85,000 |
| | | Botany | \$45,000 | \$61,000 |
| | Ecology | \$43,000 | \$61,000 | |
| | Environmental science | \$49,000 | \$64,000 | |
| | Microbiology | \$54,000 | \$84,000 | |
| | Miscellaneous biology | \$47,000 | \$71,000 | |
| | Molecular biology | \$46,000 | \$81,000 | |
| | Neuroscience | \$33,000 | \$61,000 | |
| | Zoology | \$45,000 | \$95,000 | |
| Business | Accounting | \$62,000 | \$84,000 | |
| | Actuarial science | \$82,000 | \$111,000 | |
| | Business economics | \$69,000 | \$91,000 | |
| | Business management and administration | \$56,000 | \$75,000 | |
| | Finance | \$68,000 | \$95,000 | |
| | General business | \$59,000 | \$81,000 | |
| | Hospitality management | \$45,000 | \$60,000 | |
| | Human resources and personnel management | \$53,000 | \$70,000 | |
| | International business | \$53,000 | \$75,000 | |
| | Management information systems and statistics | \$75,000 | \$89,000 | |

| FIELD OF STUDY | MAJOR | BACHELOR'S DEGREE | GRADUATE DEGREE | |
|---|---|--------------------------------------|-----------------|----------|
| Business | Marketing and marketing research | \$56,000 | \$72,000 | |
| | Operations logistics and e-commerce | \$66,000 | \$92,000 | |
| Communications and Journalism | Advertising and public relations | \$50,000 | \$60,000 | |
| | Communications and mass media | \$49,000 | \$61,000 | |
| | Journalism | \$51,000 | \$64,000 | |
| | Applied mathematics | \$76,000 | \$99,000 | |
| Computers, Statistics, and Mathematics | Computer and information systems | \$66,000 | \$82,000 | |
| | Computer engineering | \$85,000 | \$101,000 | |
| | Computer science | \$80,000 | \$98,000 | |
| | Information sciences | \$72,000 | \$86,000 | |
| | Mathematics | \$62,000 | \$80,000 | |
| | Statistics and decision science | \$70,000 | \$84,000 | |
| | Education | Art and music education | \$41,000 | \$57,000 |
| | | Early childhood education | \$34,000 | \$51,000 |
| | | Elementary education | \$39,000 | \$56,000 |
| | | General education | \$42,000 | \$56,000 |
| Language and drama education | | \$41,000 | \$57,000 | |
| Mathematics teacher education | | \$44,000 | \$61,000 | |
| Physical and health education teaching | | \$45,000 | \$64,000 | |
| Science and computer teacher education | | \$44,000 | \$62,000 | |
| Secondary teacher education | | \$44,000 | \$62,000 | |
| Social science or history teacher education | | \$42,000 | \$60,000 | |
| Health | Special needs education | \$42,000 | \$59,000 | |
| | Teacher education: multiple levels | \$40,000 | \$55,000 | |
| | Communication disorders sciences and services | \$38,000 | \$61,000 | |
| | Health and medical administrative services | \$48,000 | \$73,000 | |
| | Health and medical preparatory programs | \$42,000 | \$112,000 | |
| | Nursing | \$61,000 | \$84,000 | |
| | Nutrition sciences | \$41,000 | \$60,000 | |
| | Pharmacy and pharmaceutical sciences and administration | \$104,000 | \$111,000 | |
| | Treatment therapy professions | \$54,000 | \$67,000 | |
| | Humanities and Liberal Arts | Area ethnic and civilization studies | \$42,000 | \$66,000 |
| Art history and criticism | | \$41,000 | \$54,000 | |
| Composition and speech | | \$39,000 | \$50,000 | |
| English language and literature | | \$44,000 | \$61,000 | |
| French, German, Latin, and other common foreign languages | | \$43,000 | \$61,000 | |
| History | | \$47,000 | \$70,000 | |
| Humanities | | \$41,000 | \$62,000 | |

| FIELD OF STUDY | MAJOR | BACHELOR'S DEGREE | GRADUATE DEGREE |
|--|--|-------------------|-----------------|
| Humanities and Liberal Arts | Intercultural and international studies | \$41,000 | \$60,000 |
| | Liberal arts | \$45,000 | \$63,000 |
| | Linguistics and comparative language and literature | \$38,000 | \$56,000 |
| | Philosophy and religious studies | \$41,000 | \$61,000 |
| | Theology and religious vocations | \$38,000 | \$46,000 |
| Industrial Arts, Consumer Services, and Recreation | Family and consumer sciences | \$37,000 | \$54,000 |
| | Military technologies | \$65,000 | \$86,000 |
| | Physical fitness, parks, recreation, and leisure | \$42,000 | \$59,000 |
| | Transportation sciences and technologies | \$71,000 | \$92,000 |
| Law and Public Policy | Criminal justice and fire protection | \$51,000 | \$64,000 |
| | Pre-law and legal studies | \$46,000 | \$71,000 |
| | Public administration | \$56,000 | \$69,000 |
| | Public policy | \$57,000 | \$80,000 |
| Physical Sciences | Astronomy and astrophysics | \$57,000 | \$84,000 |
| | Atmospheric sciences and meteorology | \$62,000 | \$77,000 |
| | Chemistry | \$56,000 | \$96,000 |
| | Geology and earth science | \$60,000 | \$79,000 |
| | Geosciences | \$62,000 | \$88,000 |
| | Multidisciplinary or general science | \$54,000 | \$80,000 |
| | Nuclear, industrial radiology, and biological technologies | \$64,000 | \$94,000 |
| | Oceanography | \$53,000 | \$79,000 |
| | Physical sciences | \$57,000 | \$78,000 |
| | Physics | \$67,000 | \$95,000 |
| Psychology and Social Work | Human services and community organization | \$36,000 | \$50,000 |
| | Industrial and organizational psychology | \$55,000 | \$70,000 |
| | Psychology | \$41,000 | \$58,000 |
| | Social psychology | \$43,000 | \$52,000 |
| | Social work | \$37,000 | \$52,000 |
| Social Sciences | Anthropology and archaeology | \$39,000 | \$57,000 |
| | Criminology | \$49,000 | \$62,000 |
| | Economics | \$67,000 | \$100,000 |
| | General social sciences | \$45,000 | \$62,000 |
| | Geography | \$52,000 | \$68,000 |
| | International relations | \$53,000 | \$79,000 |
| | Political science and government | \$55,000 | \$84,000 |
| Sociology | \$44,000 | \$58,000 | |



Five Rules of the College and Career Game can be accessed online at cew.georgetown.edu/5Rules

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