



STEM Jobs: 2017 Update

Executive Summary

By
Ryan Noonan

ESA Issue Brief
#02-17

March 30, 2017

Science, technology, engineering and mathematics (STEM) workers help drive our nation's innovation and competitiveness by generating new ideas and new companies.¹ For example, workers who study or are employed in these fields are more likely to apply for, receive, and commercialize patents.² STEM knowledge also has other benefits; while often very specialized, it can be transferred to a wide variety of careers, particularly management occupations, while increased technology in the workplace means that, to handle non-repetitive tasks, workers need the critical thinking and technical skills that come with STEM training.³

A wealth of data is produced by the U.S. Census Bureau and the Bureau of Labor Statistics on many aspects of the STEM economy. Using data from these agencies, particularly the Census Bureau's Current Population Survey (CPS) and American Community Survey (ACS), allows us to look closely at the trends in STEM and perform a detailed analysis of wages and employment that goes beyond most published studies on STEM.

This report, the first in a series of upcoming reports from OCE on the STEM economy, is an update of findings from our previous report, "[STEM: Good Jobs Now and for the Future](#)." Future reports will update previous research by this office on sex, race, and ethnicity in STEM jobs, as well as present new findings about the geography of STEM jobs and the skills needed to participate in this vital sector of the economy.

¹ Throughout this report, "STEM workers" will be used interchangeably with "workers in STEM occupations" to indicate those workers whose occupations are in STEM fields.

² Thomasian, John. "Building a Science, Technology, Engineering, and Math Education Agenda: An Update of State Actions." National Governors Association Center for Best Practices, 2011. Available at <https://www.nga.org/files/live/sites/NGA/files/pdf/1112STEMGUIDE.PDF>.

³ Carnevale, Anthony P., Nicole Smith, and Michelle Melton. "STEM: Science, Technology, Engineering, Mathematics." Georgetown University Center on Education and the Workforce, 2011. Available at <https://cew.georgetown.edu/cew-reports/stem/>.



Key findings for this update, which are consistent with previous research, including research done by the Office of the Chief Economist (OCE) are that:

- In 2015, there were 9.0 million STEM workers in the United States. About 6.1 percent of all workers are in STEM occupations, up from 5.5 percent just five years earlier.
- Employment in STEM occupations grew much faster than employment in non-STEM occupations over the last decade (24.4 percent versus 4.0 percent, respectively), and STEM occupations are projected to grow by 8.9 percent from 2014 to 2024, compared to 6.4 percent growth for non-STEM occupations.
- STEM workers command higher wages, earning 29 percent more than their non-STEM counterparts in 2015. This pay premium has increased since our previous report, which found a STEM wage advantage of 26 percent in 2010.
- Nearly three-quarters of STEM workers have at least a college degree, compared to just over one-third of non-STEM workers.
- STEM degree holders enjoy higher earnings, regardless of whether they work in STEM or non-STEM occupations. A STEM degree holder can expect an earnings premium of 12 percent over non-STEM degree holders, holding all other factors constant.



What is STEM?

The acronym STEM—science, technology, engineering, and math—is defined more or less broadly depending on the source of the definition. All definitions of STEM include core occupations in the hard sciences, engineering, and mathematics, but there is often less consensus about whether to include other positions such as educators, managers, technicians, health-care professionals, or social scientists.

Following our previous report, our definition of STEM, which includes professional and technical support occupations in the fields of computer science and mathematics, engineering, and life and physical sciences, is slightly modified relative to the Census Bureau’s definition.⁴ Three management occupations are also included because of their clear ties to STEM.⁵ Because of data limitations, STEM educators are not included.⁶ Finally, one difference between our definition and the Census Bureau’s definition is that we elected not to include social scientists.⁷

In 2015, there were 9.0 million workers in STEM jobs, or 6.1 percent of the workforce.⁸ To put these jobs into context, we divide STEM occupations into four categories: computer and math, engineering and surveying, physical and life sciences, and STEM managerial occupations.⁹

Across all levels of educational attainment, the largest group of STEM jobs is within the computer and math fields, which account for close to half (49 percent) of all STEM employment. Second are engineering and surveying occupations with 30 percent of all STEM employment, while 12 percent are in the physical and life sciences and 9 percent in STEM management jobs.

Parallel to our list of STEM occupations, we also identify a set of STEM undergraduate degree fields that span computer science and mathematics, engineering, and life and physical sciences (see Appendix Table 2). We define STEM degree holders as persons whose primary or secondary undergraduate major

⁴ Our STEM list contains 56 specific occupation codes (see Appendix Table 1), an increase from 50 in our 2011 report. With one exception, this increase merely reflects a change in the amount of occupation detail available in our primary data sources. However, we have added actuaries to the list of STEM jobs for this report despite their exclusion in previous work. Their inclusion does not substantially change our findings.

⁵ These occupations are computer and information systems managers, engineering managers, and natural sciences managers.

⁶ Although our principal data sources, the monthly Current Population Survey (CPS) and the 2009 American Community Survey (ACS), collect detailed information on workers’ occupations, they do not break out educators by their specific field. As a result, it is not possible to distinguish math and science teachers and professors from other teachers and professors. Data from the Bureau of Labor Statistics’ Occupational Employment Statistics program show that there are roughly 200,000 postsecondary teachers in STEM fields, and their exclusion is unlikely to materially affect our results.

⁷ The Census Bureau and the National Science Foundation count social scientists among “science and engineering jobs.” Following Xie and Killewald, we have opted to exclude social scientists from the definition of STEM. As the authors point out, undergraduate degrees in social science are not closely linked to careers in social science. Using data from the American Community Survey, we find that, in 2015, over 97 percent of workers with social science degrees worked in non-social science jobs, compared to 65 percent for workers with STEM degrees. In addition, recipients of such degrees are less likely to pursue graduate education in science (including social science), and universities produce a very large number of social science degrees that skew any analysis of STEM education or the STEM workforce. For more on this topic, see Xie, Yu, and Alexandra Killewald. *Is American Science in Decline?* Cambridge, MA: Harvard University Press, 2012.

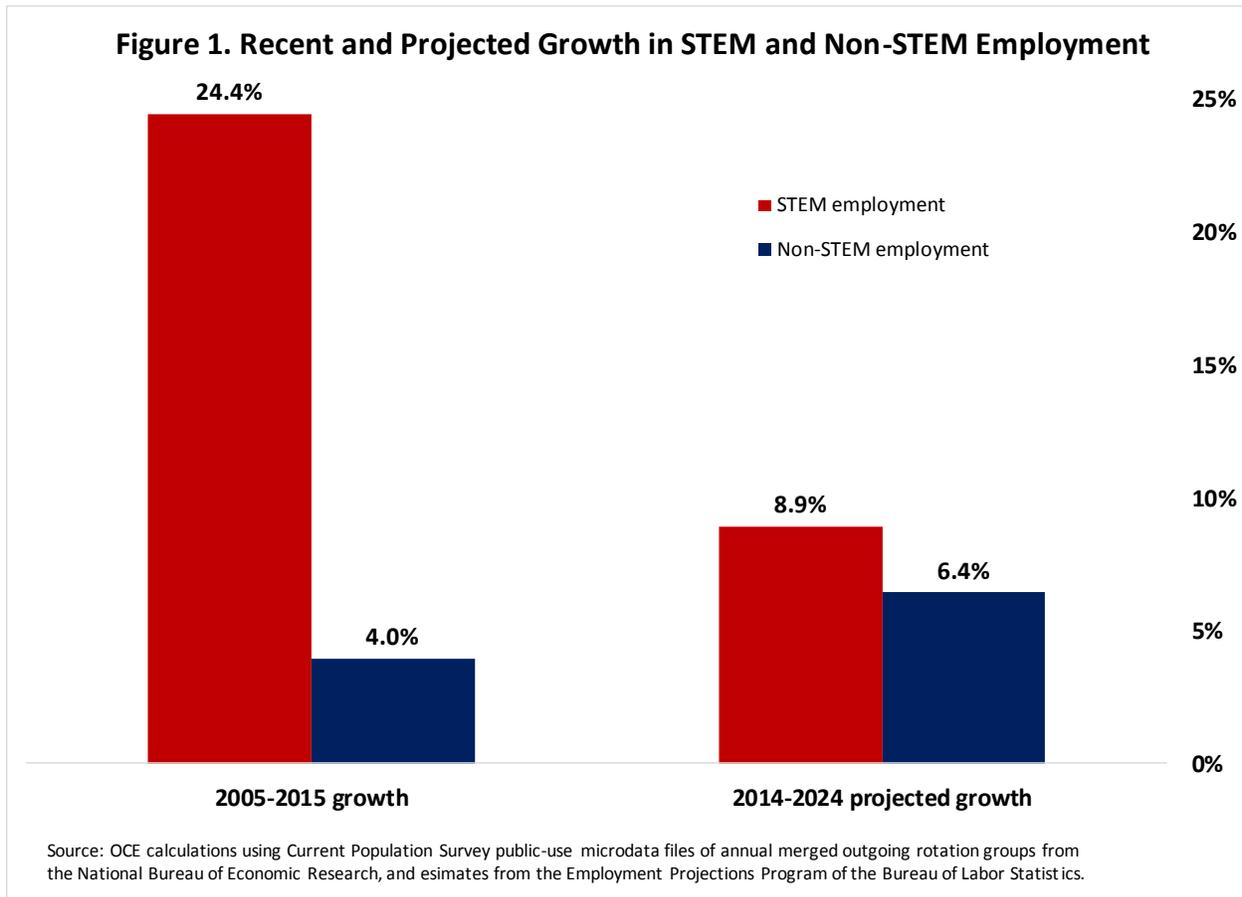
⁸ For purposes of this report, we use the primary job identified by respondents to the Current Population Survey to determine whether a worker is in a STEM field.

⁹ The distinction between “scientists” and “science occupations” is more than just semantic. “Science occupations” covers not just scientists but also science technicians. Likewise, engineering and surveying occupations include engineering technicians and drafters, and computer occupations range from computer support specialists to computer software engineers.

was in a STEM field. Following similar logic to that used in our occupation selection, we exclude business, healthcare, and social science majors. The largest group of STEM degrees among workers are the physical and life sciences, accounting for 40 percent of all STEM degrees, followed closely by engineering degrees (38 percent). Computer and math degrees make up the remaining 22 percent.

STEM Employment and Worker Earnings

In 2015, 9.0 million people, or 1 in 16 workers, held STEM jobs. Although STEM employment currently makes up only a small fraction of total U.S. employment, it has been growing and continues to grow rapidly. In our previous report, we found that STEM employment grew 7.9 percent from 2000 to 2010, or 0.8 percent per year. In contrast, employment in non-STEM jobs grew just 2.6 percent over this period, for an annual growth rate of 0.3 percent per year. Since then, employment growth in STEM has accelerated to 1.7 percent per year over the past five years, a two-fold increase from the pre-recession period. Much of this growth is likely due to the economic recovery, as non-STEM occupations have grown by 0.6 percent annually over the same time period, also double their pre-recession rate (see Figure 1).



The Bureau of Labor Statistics (BLS) produces employment projections that allow us to provide predictions about how different occupations will grow over time.¹⁰ Our previous report stated that STEM jobs were expected to grow 17.0 percent from 2008 to 2018, compared to just 9.8 percent for non-STEM jobs. While there are three years remaining in that projection window, STEM jobs have increased by 14.0 percent since 2008, while non-STEM jobs have grown only 1.7 percent.

The most recent projections from BLS cover a period from 2014 to 2024 and expect job growth to be slower across the economy, for a total increase of 6.5 percent over the ten-year window rather than the 2008 projection of 10.1 percent growth. While non-STEM job growth is expected to be slightly higher (6.4 percent), STEM job growth is expected to be much slower (8.9 percent).

From 2014 to 2024, BLS projects that all three broad categories of STEM jobs will see slowdowns in growth compared to its previous projections. While computer and math occupations are projected to grow a strong 13.1 percent, that is a sharp drop from the 22.2 percent growth projected in 2008. Architecture and engineering occupations are expected to grow 2.7 percent (down from 10.3 percent projected in 2008), and physical and life sciences occupations are expected to grow 7.4 percent (down from 19.0 percent).

Table 1. Average Hourly Earnings of Full-Time Private Wage and Salary Workers in STEM Occupations by Educational Attainment, 2015

	Average hourly earnings		Difference	
	STEM	Non-STEM	Dollars	Percent
High school diploma or less	\$27.53	\$16.21	\$11.32	69.8%
Some college or associate degree	\$30.79	\$19.09	\$11.70	61.3%
Bachelor's degree only	\$39.28	\$28.34	\$10.94	38.6%
Graduate degree	\$45.37	\$35.16	\$10.21	29.0%

Source: OCE calculations using Current Population Survey public-use microdata.

Workers in STEM occupations earn more on average than their counterparts in other jobs, regardless of their educational attainment. The STEM earnings differential is greatest on a percentage basis for those with a high school diploma or less in comparison to their counterparts in a non-STEM field. On average, they earned \$27.53 per hour, \$11.32 more per hour than those in other occupations in 2015. It should be noted, however, that fewer than 10 percent of STEM workers have a high school diploma or less. Those with graduate degrees in a STEM job earned more than \$45 per hour, over \$10 more per hour on average than those with non-STEM jobs.

The comparison of wage premiums raises several questions, including to what extent the STEM-earnings premium reflects other characteristics of workers, such as age, and how premiums have evolved over time. A regression analysis – which controls for a variety of demographic, geographic, and other worker characteristics – helps to address these questions. Using Current Population Survey public-use microdata for 1994-2015, we regressed the log of earnings against a list of characteristics that typically

¹⁰ BLS's Employment Projections Program's homepage is <http://www.bls.gov/emp> and detailed occupational projections are available at http://www.bls.gov/emp/ep_table_106.htm

have been found to be related to earnings, including age, marital status, race, ethnicity, educational attainment, region, industry, and whether a worker is in a STEM occupation.¹¹

Table 2. Regression-based Hourly Earnings Premiums for STEM Workers, 2015

Overall	29.3%
Less than a bachelor's degree	38.0%
Bachelor's degree only	27.6%
Graduate degree	14.9%

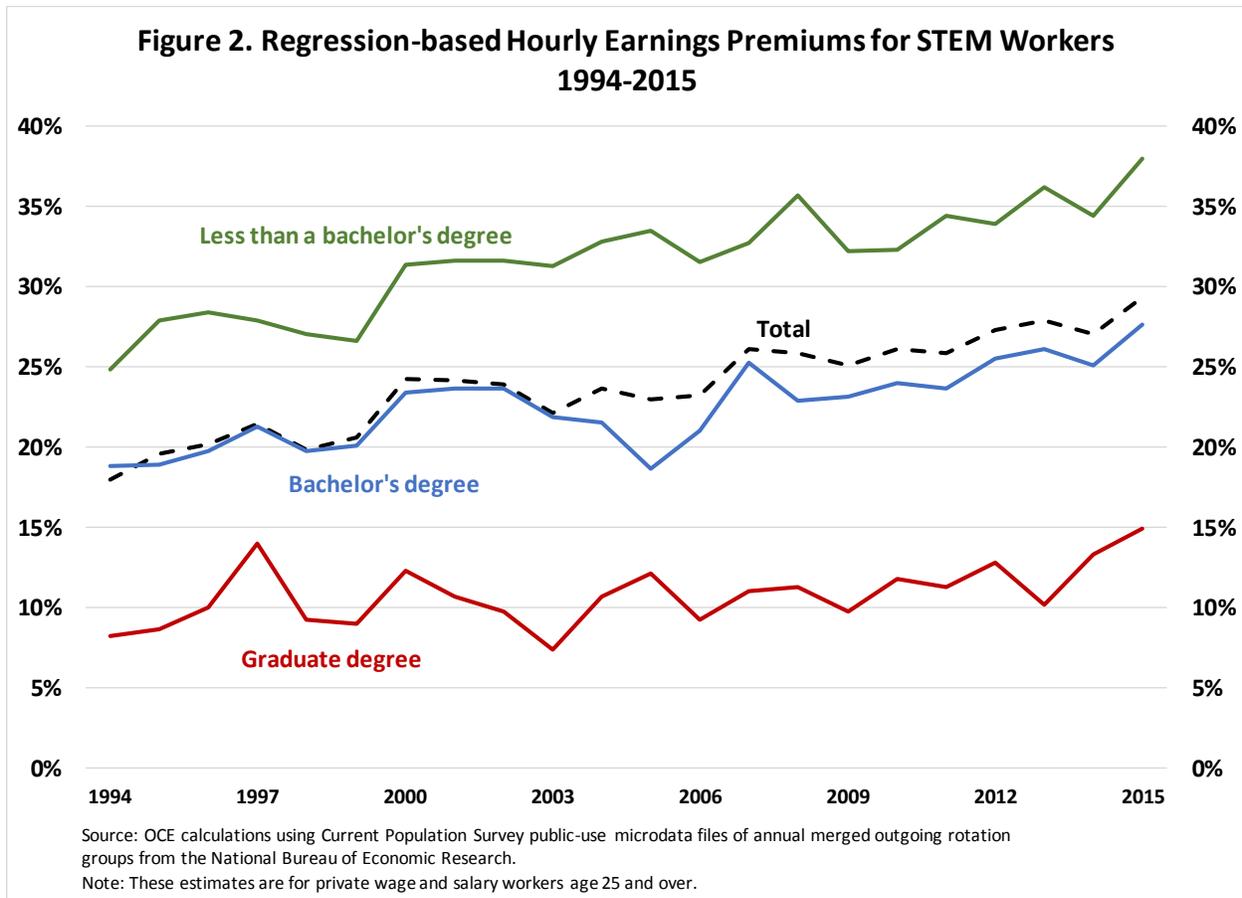
Source: OCE calculations using Current Population Survey public-use microdata.

After controlling for this set of characteristics, the overall regression-based STEM premium was 29 percent in 2015, up from our previous report's finding of 26 percent in 2010 and 18 percent in 1994. By education level, the earning premium remains noteworthy, most predominantly for workers with less than a college degree. In 2015, workers in STEM jobs with less than a bachelor's degree enjoyed a large premium (nearly 40 percent) compared with non-STEM workers with the same education level, even after taking other influences on earnings into account.¹² The regression-based premiums in 2015 were slightly less for workers with a bachelor's (28 percent) or graduate degree (15 percent), and somewhat closer to the premiums found in the simple comparison (without a regression adjustment).¹³ STEM earnings premiums have also shown persistence over time and have generally increased since the mid-1990s particularly for workers with less than a graduate degree (see Figure 2).

¹¹ More specifically, the earnings regressions control for age (up to a fourth degree polynomial of age), gender, marital status, race and Hispanic origin, nativity and citizenship, metropolitan area, region, union representation, major industry, whether a worker is in a STEM occupation, time, and STEM occupation status interacted with time. We used separate regressions for each level of educational attainment.

¹² For the regression analysis, we combined workers that had completed some college, high school, or less into a single "less than a bachelor's degree" category because of small sample concerns.

¹³ One caveat with these results is that the STEM premium may also capture other unidentified factors that systematically distinguish STEM workers from other workers. STEM workers may have more in common than just their career fields, such as a similar work ethic or affinity, and the STEM premium could reflect the net impact of those unidentified common characteristics as well as the pure premium from working in a STEM job.



STEM Jobs and STEM Degrees

The analysis so far has focused on STEM jobs, but conversations about policy in this area often focus on STEM education. One source of information to analyze the link between STEM jobs and STEM education, at least at the post-high school level, is the American Community Survey, which collects information on college-educated individuals' undergraduate majors. When examining the relationship between STEM education and STEM jobs, the following patterns emerge.¹⁴

First, a STEM degree is the typical path to a STEM job, as more than two-thirds (69 percent) of the 6.0 million STEM workers with at least a four-year college degree majored in a STEM field.¹⁵ However, this does not necessarily mean that STEM workers' degrees are in the same STEM field as their jobs. For example, only 34 percent of college-educated computer and math workers have a degree in computer science or math while 27 percent majored in the physical or life sciences or engineering.

¹⁴ Following standard practice, when discussing college graduates, we limit our attention to those individuals who are at least 25 years old.

¹⁵ As mentioned earlier, a person whose primary or secondary major was in a STEM field is counted as having a STEM undergraduate degree. To avoid double-counting those with two STEM majors, we used the primary major to determine the type of degree in those cases. Approximately 0.4 percent of all workers have at least a four-year degree with two STEM majors.

Second, there are many more workers with a STEM degree (11.9 million) than there are workers in STEM occupations. Thus, in addition to STEM jobs, STEM degrees also open the door to many other career opportunities. Almost two-thirds of the workers with a STEM undergraduate degree work in a non-STEM job.¹⁶ Life and physical science majors are the STEM degree holders most likely to work in non-STEM jobs; 83 percent of these graduates are employed outside of STEM fields. (Note that “non-STEM” occupations include the 27 percent of graduates who work as healthcare practitioners or technicians and the 11 percent who work in education.) In math, there is a strong pipeline into education jobs, as more than one-fifth (23 percent) of math majors go on to work in education.

Table 3. Employment of Workers Age 25 and Over with a Bachelor’s Degree or Higher, by STEM Occupation and STEM Undergraduate Degree, 2015

Employed persons in thousands

	Total	STEM degree					Physical and life sciences	Non-STEM degree
		Total	Computer	Math	Engineering			
Total	47,971	11,316	1,807	702	4,326	4,480	36,655	
STEM employment	5,693	3,918	977	186	1,973	781	1,775	
Computer and math	2,773	1,702	806	137	573	185	1,071	
Engineering	1,603	1,346	58	19	1,162	107	258	
Physical and life sciences	753	537	10	13	70	445	215	
STEM manager	563	333	104	17	168	43	230	
Non-STEM employment	42,278	7,398	830	516	2,353	3,699	34,880	

Source: OCE calculations using American Community Survey public-use microdata.

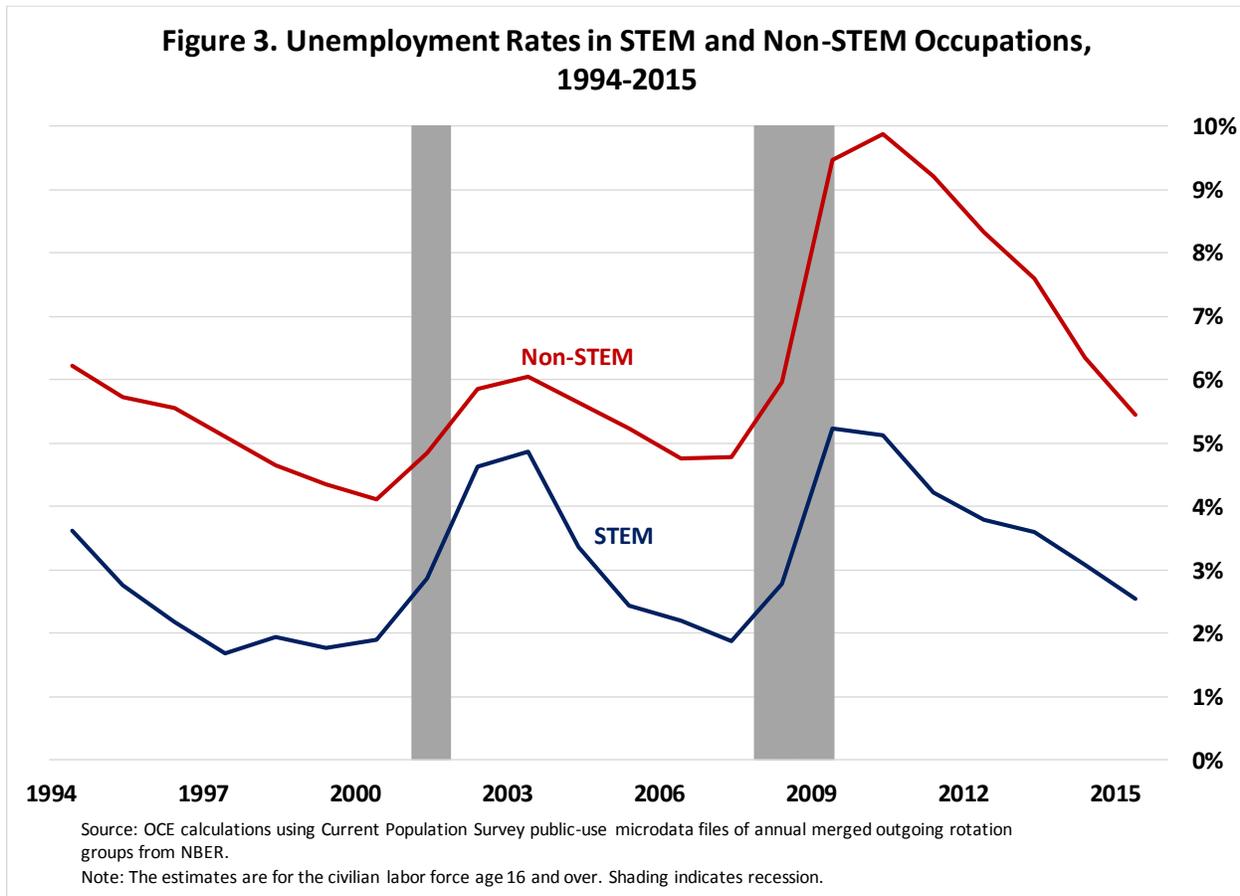
As discussed above, STEM workers earn significantly more than their non-STEM counterparts, but what about the earnings of STEM degree holders who do not necessarily work in STEM jobs? Using the 2015 American Community Survey public-use microdata, calculations of the regression-adjusted earnings premium of college-educated workers with a STEM degree show that they all receive an earnings premium relative to other college graduates, whether or not the STEM degree holders end up in a STEM job.¹⁷ Likewise, college graduates, regardless of their major, enjoy an earnings premium for having a STEM job. The earnings premium for having a STEM job regardless of major or a STEM degree regardless of occupation is quite similar, at 16 percent and 12 percent, respectively. Still, a much larger payoff tends to come when a STEM major goes on to work in a STEM job, as their earnings (all else equal) are about 31 percent higher than those of non-STEM majors working in non-STEM jobs.

¹⁶ By contrast, about 5 percent of workers with a non-STEM undergraduate degree work in STEM fields, with the majority (about 60 percent) working in computer and math occupations. The most common majors among non-STEM degree holders who work in STEM are business management, general business, psychology, economics, management information systems, English language and literature, finance, political science, and communications.

¹⁷ These regressions controlled for whether a worker is in a STEM occupation, whether a worker has a STEM degree (regardless of occupation), age, sex, marital status, race, ethnicity, place of birth, citizenship, educational attainment, region, and industry. Because these regressions are intended to capture the return to a four-year college degree with a STEM major, we restricted our analysis to workers at least 25 years old with at least a four-year college degree.

STEM Joblessness

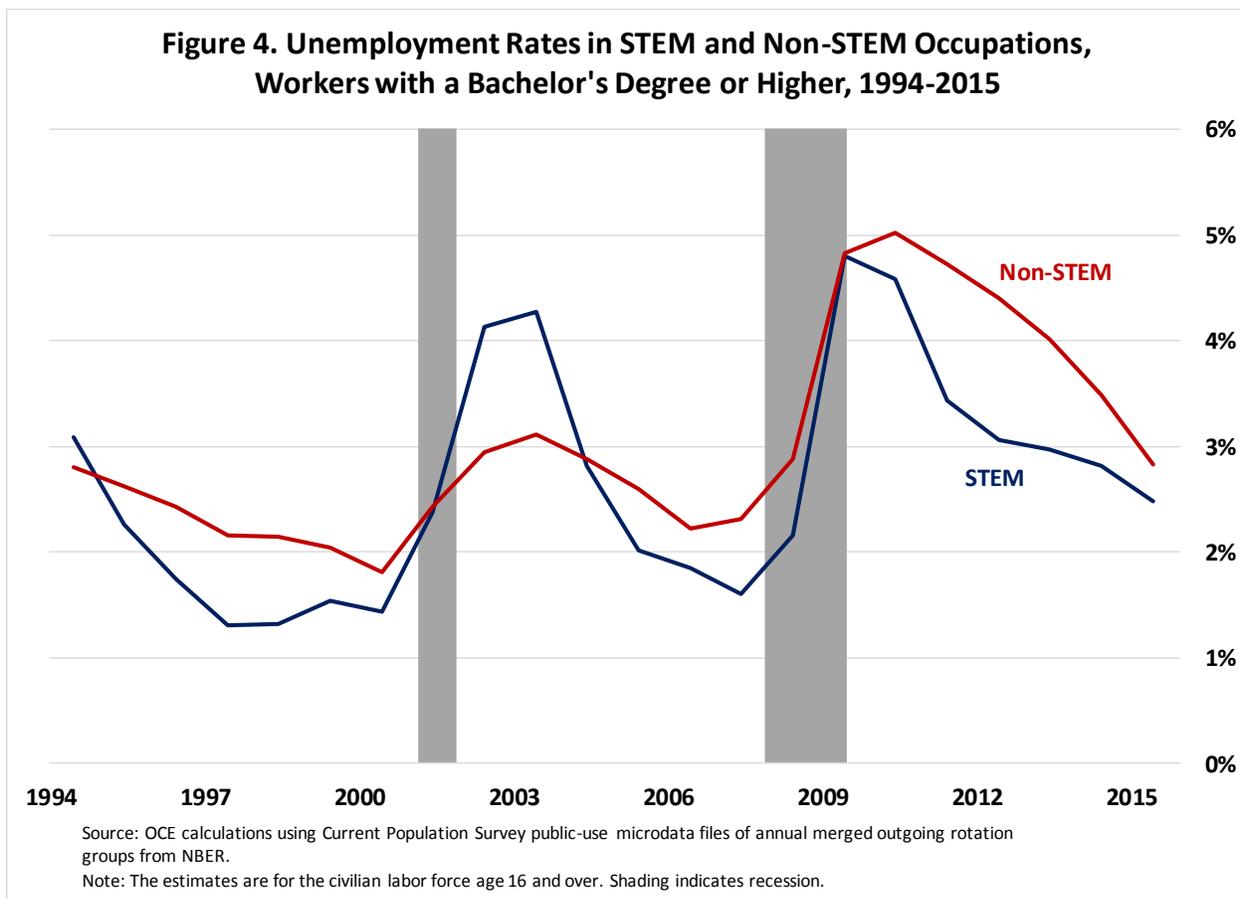
In addition to higher earnings, workers in STEM occupations on average experience lower unemployment rates than workers in other fields (see Figure 3).¹⁸ The unemployment rate for STEM workers rose from 1.9 percent in 2007 to 5.2 percent in 2009 before falling back to 2.5 percent in 2015. The unemployment rate for non-STEM workers rose from 4.8 percent in 2007 to 9.5 percent in 2009 and then continued to increase to almost 10 percent in 2010. As of 2015, the non-STEM unemployment rate has fallen to 5.5 percent, but this is still more than double the STEM unemployment rate.



Some of the difference in unemployment rates between STEM and non-STEM workers reflects differences in educational attainment. On balance, workers with a higher educational level tend to experience lower unemployment, and STEM workers tend to be better educated. Looking at workers with a bachelor's degree or graduate degree, one finds less of a difference in unemployment rates between STEM and non-STEM workers than for those with less education. During the latest recession,

¹⁸ In the Current Population Survey, occupations are assigned to persons based on their most recent work experience; for workers who are unemployed, this is the occupation of the job they had when they were last employed. As a result, unemployment rates by occupation are sometimes referred to as the "experienced unemployment rate." Thus, if we define U_{STEM} as the number of unemployed persons whose most recent job was in a STEM occupation and E_{STEM} as the number of persons currently employed in a STEM occupation, then the STEM unemployment rate is calculated as $U_{STEM} / (E_{STEM} + U_{STEM})$.

the unemployment rate for both college-educated STEM and non-STEM workers reached 4.8 percent in 2009 before diverging again, reaching 2.5 percent for STEM workers and 2.8 percent for non-STEM workers in 2015 (see Figure 4).¹⁹ As discussed in our previous report, the 2001 recession, featuring the crash of the dot-com bubble, had a much larger impact on college-educated STEM workers than on their non-STEM counterparts.

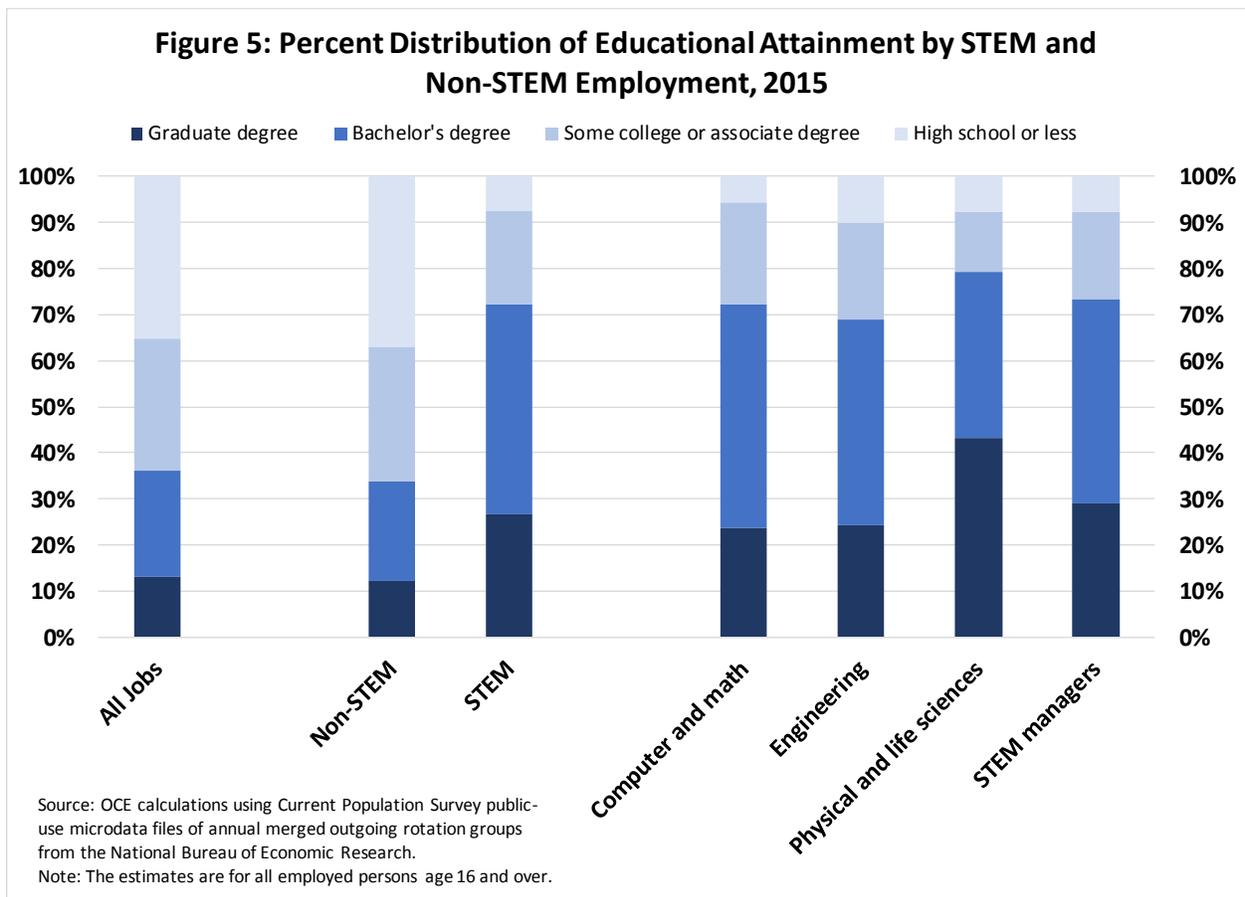


Educational Attainment of STEM Workers

One of the more distinguishing characteristics of STEM workers is their educational attainment. Nearly three-quarters (72 percent) of STEM workers have a bachelor's degree or higher, compared to just over one-third (34 percent) of other workers age 16 and over (see Figure 5). Among the four STEM occupational groups, the physical and life sciences have the highest-educated workforce, with more than 40 percent holding a graduate degree – about double the share for computer, math, and engineering jobs.

¹⁹ Using a regression similar to that used to determine the wage premium for STEM jobs and STEM degrees, we find that, in 2015, STEM degree holders were approximately 5 percent less likely to be unemployed than comparable college graduates with non-STEM degrees. This result matches fairly closely with a simple comparison of the unemployment rates between workers in STEM and non-STEM occupations, with STEM unemployment approximately 10 percent lower than non-STEM unemployment.

Nonetheless, because STEM includes professionals as well as workers in support jobs, we find that a number of STEM workers have less than a four-year college degree; 20 percent have completed an associate degree or at least some college, and 7 percent have a high school diploma or less. While opportunities exist for STEM workers with lower education levels, the proportion of these workers has declined somewhat since 2010, when those with some college but less than a bachelor's degree made up 23 percent of the STEM workforce and those with a high school diploma or less made up 9 percent. Nevertheless, the education level and other characteristics of workers who currently hold jobs does not necessarily provide information about the skills needed to hold unfilled or future jobs. Whether due to skills shortages, a changing environment, or an aging workforce, the skills hiring managers seek for new positions in an occupation may differ from the skills of workers who are already employed in that occupation. An upcoming OCE report will look more closely at data from the U.S. Department of Labor's O*NET database to examine the skills required for participation in the STEM workforce.



Conclusion

Although still relatively small in number, the STEM workforce has an outsized impact on a nation's competitiveness, economic growth, and overall standard of living. STEM workers drive innovation (as measured by patents), and they have the flexible skills needed for the modern economy. At a time when firms across the economy cite difficulty matching skilled workers to job openings, the ability of STEM workers to adapt to new circumstances and processes makes them highly sought after. For workers, STEM jobs are linked to lower unemployment and higher

wages, regardless of educational background or other factors. Strengthening the workforce training pipeline into STEM jobs can provide benefits to both businesses and workers.

Analysis of data from the U.S. Census Bureau’s American Community Survey and Current Population Survey provides new insights into the growing STEM workforce that is central to our economic vitality. This report takes a wide-angle approach to STEM jobs and STEM degrees in order to provide an overview of their impact. Future work in this series will dig deeper into the wealth of information provided by the American Community Survey, as well as other troves of government statistics, to update previous research on such topics as gender, race, and ethnicity in the STEM economy. New research will use that data to provide a look at the geography of STEM jobs in the United States and the skills needs of the current and future STEM workforce.



Appendix Table 1. Detailed STEM occupations and Standard Occupational Classification (SOC) codes

Occupation	SOC code	Occupation	SOC code
<i>Computer and math occupations</i>			
• Computer scientists and systems analysts	15-10XX	• Network systems and data communications analysts	15-1081
• Computer programmers	15-1021	• Actuaries	15-2011
• Computer software engineers	15-1030	• Mathematicians	15-2021
• Computer support specialists	15-1041	• Operations research analysts	15-2031
• Database administrators	15-1061	• Statisticians	15-2041
• Network and computer systems administrators	15-1071	• Miscellaneous mathematical science occupations	15-2090
<i>Engineering and surveying occupations</i>			
• Surveyors, cartographers, and photogrammetrists	17-1020	• Materials engineers	17-2131
• Aerospace engineers	17-2011	• Mechanical engineers	17-2141
• Agricultural engineers	17-2021	• Mining and geological engineers, including mining safety engineers	17-2151
• Biomedical engineers	17-2031	• Nuclear engineers	17-2161
• Chemical engineers	17-2041	• Petroleum engineers	17-2171
• Civil engineers	17-2051	• Engineers, all other	17-2199
• Computer hardware engineers	17-2061	• Drafters	17-3010
• Electrical and electronic engineers	17-2070	• Engineering technicians, except drafters	17-3020
• Environmental engineers	17-2081	• Surveying and mapping technicians	17-3031
• Industrial engineers, including health and safety	17-2110	• Sales engineers	41-9031
• Marine engineers and naval architects	17-2121		
<i>Physical and life sciences occupations</i>			
• Agricultural and food scientists	19-1010	• Physical scientists, all other	19-2099
• Biological scientists	19-1020	• Agricultural and food science technicians	19-4011
• Conservation scientists and foresters	19-1030	• Biological technicians	19-4021
• Medical scientists	19-1040	• Chemical technicians	19-4031
• Astronomers and physicists	19-2010	• Geological and petroleum technicians	19-4041
• Atmospheric and space scientists	19-2021	• Nuclear technicians	19-4051
• Chemists and materials scientists	19-2030	• Other life, physical, and social science technicians	19-40XX
• Environmental scientists and geoscientists	19-2040		
<i>STEM managerial occupations</i>			
• Computer and information systems managers	11-3021	• Natural sciences managers	11-9121
• Engineering managers	11-9041		

Appendix Table 2. Detailed STEM undergraduate majors

	<i>Computer majors</i>		
<ul style="list-style-type: none"> • Computer and information systems • Computer programming and data processing 	<ul style="list-style-type: none"> • Computer science • Information sciences 	<ul style="list-style-type: none"> • Computer administration management and security • Computer networking and telecommunications 	
	<i>Math majors</i>		
<ul style="list-style-type: none"> • Mathematics • Applied mathematics 	<ul style="list-style-type: none"> • Statistics and decision science 	<ul style="list-style-type: none"> • Mathematics and computer science 	
	<i>Engineering majors</i>		
<ul style="list-style-type: none"> • General engineering • Aerospace engineering • Biological engineering • Architectural engineering • Biomedical engineering • Chemical engineering • Civil engineering • Computer engineering • Electrical engineering • Engineering mechanics physics and science 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Petroleum engineering • Miscellaneous engineering • Engineering technologies • Engineering and industrial management • Electrical engineering technology • Industrial production technologies • Mechanical engineering related technologies • Miscellaneous engineering technologies • Military technologies 	
	<i>Physical and life sciences majors</i>		
<ul style="list-style-type: none"> • Animal sciences • Food science • Plant science and agronomy • Soil science • Environmental science • Biology • Biochemical sciences • Botany • Molecular biology • Ecology 	<ul style="list-style-type: none"> • Genetics • Microbiology • Pharmacology • Physiology • Zoology • Miscellaneous biology • Nutrition sciences • Neuroscience • Cognitive science and biopsychology 	<ul style="list-style-type: none"> • Physical sciences • Astronomy and astrophysics • Atmospheric sciences and meteorology • Chemistry • Geology and earth science • Geosciences • Oceanography • Physics • Nuclear, industrial radiology, and biological technologies 	

Acknowledgments

The author would like to thank the following persons who provided comments, suggestions, and other contributions to this report. Any errors in the report are solely the authors' responsibility.

Robert Rubinovitz, Deputy Chief Economist
David Langdon, Economist
David Beede, Economist
William Hawk, Economist



Suggested citation:

Noonan, Ryan. Office of the Chief Economist, Economics and Statistics Administration, U.S. Department of Commerce. (March 30, 2017). STEM Jobs: 2017 Update (ESA Issue Brief # 02-17). Retrieved from <http://www.esa.gov/reports/stem-jobs-2017-update>.

**U.S. Department of Commerce
Economics and Statistics Administration
Office of the Chief Economist
Room 4848
1401 Constitution Ave., NW
Washington, DC 20230
esa.doc.gov**

**Technical inquiries:
Office of the Chief Economist
(202) 482-3523**

**Media inquiries:
Office of Communications
(202) 482-3331**

