

# POSTSECONDARY EDUCATION AND STEM EMPLOYMENT IN THE UNITED STATES

An Analysis of National Trends with a Focus on the Oil and Natural Gas Industry



Jobs that require STEM skills and training currently comprise 20 percent of all jobs in the U.S. economy. Current projections anticipate that the STEM economy will grow about 9 percent between 2014 and 2024—faster than the growth rate projected for all other occupations. As an industry that supports 7.6 percent of the U.S. economy and 10.3 million American jobs, many of which are STEM jobs, the oil and natural gas industry has a great interest in better understanding and promoting the relationship between STEM education and employment.

In addition to the millions of jobs already supported by the industry, IHS projects that through 2035 nearly 1.9 million direct job opportunities will be available in the oil and natural gas and petrochemical industries. This includes close to 707,000 job opportunities projected to be filled by Blacks and Hispanics, and more than 290,000 projected to be filled by women. A significant number of these positions will require strong skills in the STEM disciplines across all education levels.

This report provides an in-depth analysis of education trends as well as the relationship between degree attainment and employment outcomes, specifically in STEM fields. The report pays particular attention to how minority and female students fit into these trends.

- Holding a STEM bachelor's degree nearly doubles the likelihood of working in the oil and natural gas industry, and earning a degree in an industry-specific or -related field increases the likelihood of working in the industry by three to seven times.
- It is estimated that nearly half of all STEM jobs do not require a four-year degree and that a third of all STEM jobs are in blue collar occupations.
- Of the 1.9 million projected job opportunities, 57% are expected to be in blue collar occupations. In many of these jobs, additional on-the-job training provided by the industry supplements formal education.
- Almost without exception, across all education levels, degree majors, gender and race/ethnicity groups, and occupation types, those who work in the oil and natural gas industry earn more than those who do not.
- In 2015, Millennials accounted for 34% of direct industry employment. That share is projected to rise to 41% over the next decade.

## BACHELOR'S DEGREES

More than 600,000 job opportunities in the oil, natural gas, and petrochemical industries are projected to be available in management and professional positions, which typically require a bachelor's degree.

- There is a large increase in wages on average for having a STEM degree as well as for working in a STEM occupation. Both are highly rewarded in the economy. This is true for both men and women, and across all race/ethnicity groups.
- STEM bachelor's degrees account for about 36% percent of all bachelor's degrees awarded annually.
- Bachelor's degrees awarded in oil & natural gas fields (e.g., petroleum, chemical, mechanical, and civil engineering; geosciences; and cartography) account for about 2.5% of all bachelor's degrees.
- Over the 2003-2015 period, men outnumbered women nearly 4 to 1 in earning these types of degrees, and Whites outnumbered minorities nearly 3 to 1.
- About 40.5% of STEM bachelor's graduates end up working in STEM occupations.
  - ⇒ Men with non-STEM bachelor's degrees are slightly more likely to work in a STEM occupation than women with a STEM bachelor's degree.
  - ⇒ Minorities have lower transition rates from STEM degrees to STEM employment as well as lower wages, including within STEM occupations.
- Those with a certification/license were more likely to be employed and when employed, earn higher wages when compared with those lacking a certification/license.
  - ⇒ These benefits are strongest for those lacking a high school diploma, women and Hispanics.
- For all sub-baccalaureate levels of education, having a certificate or license approximately doubles the likelihood of being employed in a STEM occupation.
- The share of associate's degrees that are in STEM fields varies somewhat by race/ethnicity. Asians and Hispanics have the highest share of earned associate's degrees in STEM fields (22% and 16%, respectively), followed by American Indians (15%), Whites (13%), and Blacks (11%).
- While the number of associate's degrees awarded increased by 60% over the past decade, the number of associate's degrees awarded in STEM fields increased by only 25%.
- Men earn substantially more STEM associate's degrees than women: In 2015, men earned 88,422 STEM associates degrees while women earned 54,507.

## ASSOCIATE'S DEGREES AND CERTIFICATES/LICENSES

The opportunities for employment in blue collar occupations in the oil and natural gas and petrochemical industries are tremendous – more than 1 million jobs through 2035. These jobs typically require a high school diploma and industry-provided on-the-job training.

## OPPORTUNITIES AHEAD

The findings in this report should help focus attention and efforts as we work to build the workforce of the future and to develop the strategies necessary to address the gaps. It is a business imperative that we better understand our current and future workforce challenges, the training and education necessary to fill those jobs, and how to improve diversity and inclusion to attract and retain the best available talent.

IT IS ALSO  
THE RIGHT  
THING TO DO.

