*STEM To Grow Faster Than Overall Occupations Through 2030*

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Science, Technology, Engineering, and Math (STEM) occupations are projected to grow faster than all occupations in Connecticut through 2030.1 These high-growth, good-paying occupations are distributed throughout most major industries in the state and include a variety of career opportunities for Connecticut workers.
 The Connecticut Department of Labor discussed our 2020-2030 long-term projections in the September 2022 edition of the Connecticut Economic Digest.2 That article noted expectations of employment increasing by 201,000 jobs in Connecticut from 2020 to 2030. The industries projected to drive this overall growth include Accommodation & Food Services, Health Care, Transportation & Warehousing, and Professional, Scientific, & Technical Services.3 The long-term projections are conducted every two years by all 50 states and major territories at the industry and occupational level. This article focuses on STEM occupations within the long-term projections to illustrate employment expectations for this important segment of the Connecticut economy.

**Top Ten STEM Occupations in CT** The ten largest STEM occupations account for 57% of overall STEM employment in the state. Among these ten occupations, four are computer occupations (SOC-15),4 three are engineering (SOC-17), two are management (SOC-11), and one involves sales (SOC-41). The largest STEM occupation in the state, Software Developers & Analysts (15-1256) had 2020 employment of 19,130 and is expected to grow by 5,280 or 28% to 24,410 by 2030. The other STEM occupations in Figure 1 are projected to grow between 8% and 22% through 2030. These occupations have annual average wages of between $63,380 (Computer User Support Specialist) and $150,629 (Computer & Information Systems Managers). STEM occupations earned an average of $103,214 overall in 2021, which compares favorably to $67,169 earned on average for all employment in the state. **Industry STEM Distribution** Figure 2 shows the industry distribution of STEM occupational employment for 2020 by two-digit NAICS Code.5 76% of STEM employment falls within the top five industries. The largest STEM occupation in 12 of 21 industries was either Software Developers & Analysts (15-1256) or Computer User Support Specialists (15-1232), both of which were the largest in six industries.
 Figure 3 includes the ten industries that employed the most STEM workers in 2020 by three-digit NAICS code. (Two digits indicates the broad sector, three digits indicates a particular industry.) Approximately half of all STEM workers in the state were employed within the first three industries, Professional, Scientific, & Technical Services (30,546 STEM workers), Transportation Equipment Manufacturing (17,228 STEM workers), and Insurance Carriers & Related Activities (10,156 STEM Workers). The Quarterly Workforce Indicators (QWI) provide demographic information on industry employment.6 Figure 4 includes total employment demographic breakouts for the three industries that employ the most STEM workers. These industry counts include all workers employed in those industries, both STEM and Non-STEM workers combined. When compared to the overall economy, the three STEM-employing industries are older, more male, less diverse, and have higher average education. As the labor force becomes more diverse, the need to broaden the demographic distribution of STEM industry employment will be an important focus for employers looking to expand or replace retiring workers.

 **Growth and Education** Based on research conducted by the U.S. Department of Labor, each occupation is assigned to an educational category based on the minimum education generally required to enter that occupation nationally. Using these categories, most STEM occupations require a Bachelor’s Degree. Our projections show that 84% of Connecticut STEM job growth from 2020 to 2030 will be in occupations that on average require that level of educational attainment. This is more than three times the 25% share of total growth for Bachelor’s degree occupations across all occupations. STEM occupations that require a high school diploma or less make up a smaller share of growth than they do for all occupations in the state. Additionally, 11% of STEM growth will be in occupations that on average require either an Associate’s Degree or some college courses, which is more than double the 5% growth share across all occupations. An occupation is a broader category than a job. Within each occupation, there may be jobs that require more or less education than is on average required for the occupation as a whole.

**HWOL – Job Ads** There were 11,680 job postings for STEM occupations in Connecticut during October 2022 according to Help Wanted Online (HWOL).7 During the most recent twelve months, “Other” Computer Occupations (SOC 15-1299) had the most STEM job ads, amounting to 20-22% of total STEM ads in a given month. Software Developers and Analysts (15-1256) was the second largest, ranging between 16-19% of total STEM ads. Figure 5 illustrates how STEM job ads over the past year have reached totals that exceed levels during the three prior years.

 The distribution of ads by minimum advertised education over the past 12 months had 58% of STEM job ads requiring a Bachelor’s, 8% required a High School Diploma, 4% required a Master’s or Doctorate, 3% required an Associate’s, and 26% did not have a specified educational requirement in the HWOL data. Among ads that specified a specific Bachelor’s program, the most common were Computer Science, Business Administration, Mechanical Engineering, Electrical Engineering, and Information Technology.

 The two-digit industries with the most STEM job ads unsurprisingly are the three with the most 2020 STEM employment. Manufacturing had 11,093 STEM ads over the year, Professional, Scientific, & Technical Services had 9,176, and Finance & Insurance had 7,009. Some of the STEM occupations with the most job ads were industry-specific, such as Mechanical Engineers in Manufacturing or Actuaries in Finance & Insurance, but all three of the industries included occupations that fall within Computer Occupations (SOC-15). The most common occupation among those three industries was “Other” Computer Occupations (SOC 15-1299).

**STEM and Adjacent States** STEM occupations are expected to outpace overall employment growth nationally, within Connecticut, and within most adjacent states (see Figure 7). STEM employment growth is expected to be faster than overall area employment growth in the U.S., Connecticut, Massachusetts, and Rhode Island. In Connecticut, STEM is projected to grow by over 18,000 jobs through 2030 and by over 208,000 among Connecticut, New York, Massachusetts, and Rhode Island.8

**Annual Openings**
 Nationwide there are expected to be over 860,000 annual openings in STEM occupations through 2030, this count includes openings from overall employment growth, transfers (the remaining vacancy when someone leaves an occupation for another) and exits (when someone leaves the labor force).9 There are expected to be over 10,000 annual STEM openings in Connecticut, and over 100,000 annual STEM openings in Connecticut and its neighboring states. While growth is important, the vast majority of hiring is to replace workers who have left the labor force (such as for retirement) or who have moved on to other occupations. Openings capture both new jobs and replacement hiring.
 **Largest STEM Occupation Statewide** Demand for STEM workers is projected to grow nationally, in Connecticut, and in our neighboring states (Figure 7). The largest STEM occupation and the one with the largest projected growth is Software Developers & Analysts (15-1256). Within Connecticut and nearby states, this occupation ranged between 14% (Rhode Island) and 25% (Massachusetts) of 2020 STEM statewide employment and accounts for between 29% (CT & RI) and 40% (Massachusetts) of STEM statewide growth through 2030. This occupation involves work activities that include analyzing user needs and developing software, troubleshooting computer application issues, and compiling technical information.10 This high-growth STEM occupation is expected to have 2,100 openings per year in Connecticut which equates to 11% of 2020 base-year employment.

**Conclusions** STEM occupations represent a growing and high-paying segment of the labor market. These occupations are integrated into every major industry in the state. They are expected to grow 34% faster than the overall economy through 2030 and currently earn 54% more than the statewide average wage. The current demographics of employment in industries that employ a large share of STEM workers suggest that the STEM workforce will have to become younger and more diverse to meet the expected employment growth and replacement needs through 2030. Most STEM jobs require a Bachelor’s or More, but compared to the overall labor force, a larger share of STEM employment requires an Associate’s or Some College, which indicates that there are employment opportunities for workers at every educational attainment level. In the past year, STEM occupations have had an increasing share of total job ads and are expected to have over 100,000 annual openings within Connecticut and its neighboring states through 2030. n

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1 BLS Definition of STEM: https://www.bls.gov/oes/topics.htm#stem

2 CT Economic Digest. Long Term Industry and Occupational Projections: 2020-2030. Sept. 2022.
https://www1.ctdol.state.ct.us/lmi/digest/pdfs/cedsep22.pdf

3 Projections available here: https://projectionscentral.org/

4 SOC is Standard Occupational Classification. The first two digits of a SOC Code indicate the major group. https://www.bls.gov/soc/home.htm

5 NAICS is the North American Industrial Classification System. Information about NAICS is available here: https://www.census.gov/naics/

6 The QWI come from the Longitudinal Employer Household Dynamics (LEHD) program of the U.S. Census. More information regarding LEHD including QWI is available here: https://lehd.ces.census.gov/

7 The latest Help Wanted Online (HWOL) information is available here: https://www1.ctdol.state.ct.us/lmi/hwol.asp

8 All states produce projections using the same methodology. CT DOL does not produce projections for other states. See www.projectionscentral.org

9 BLS Handbook of Methods. Employment Projections Calculation. https://www.bls.gov/opub/hom/emp/calculation.htm#occupational-employment-and-openings

10 BLS Occupational Outlook Handbook. Software Developers and Quality Assurance Analysts and Testers. https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm