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STEM Jobs in West Michigan

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This article uses statistics from the Occupational Employment Statistics (OES) database to discuss the role of STEM (Science, Technology, Engineering and Math) occupations in the West Michigan economy. The OES is a semi-annual survey of non-farm establishments in the United States conducted by the U.S. Bureau of Labor Statistics (BLS). The OES database provides local (metropolitan and non-metropolitan localities), state, and national employment and wage estimates for over 800 occupations.

The BLS identifies 100 occupations as STEM occupations. These occupations are relatively high-paying. Nationally, the median annual pay in all STEM jobs is $84,880 as compared to a median of $37,020 for non-STEM occupations.[1] The pay gap between STEM and non-STEM jobs in the Grand Rapids-Wyoming MSA, while significant, is smaller than for the nation: $69,320 for STEM occupations and $34,930 for non-STEM occupations.

There is a wide range of occupations, identified as the STEM occupations by the BLS. Thus, focusing on the median earnings for all STEM occupations hides large variation in pay across STEM occupations. **Figures 1** and **2** present median earnings for the 10 highest paying STEM occupations and 10 lowest-paying STEM occupations nationally. **Figures 3** and **4** present the same statistics for the Grand Rapids-Wyoming MSA.

Not surprisingly, STEM occupations have above average educational requirements. According to the BLS, about 99% of STEM occupations require education beyond high school and 76.5% require a Bachelor's degree or more. The Bachelor's degree is the most common minimum requirement. Moreover, the STEM occupations that are projected to grow the fastest over the next ten years require a Bachelor's degree or greater education. Only 27.7% of non-STEM occupations require a Bachelor's degree or more education while 14.8% require no formal educational credential. For non-STEM jobs a high school diploma is the most common educational requirement. About 79% of STEM jobs in the Grand Rapids-Wyoming MSA require a Bachelor's degree or more education, and about 13% require an Associate's degree.

On the other hand, non-STEM jobs require more on-the-job training. The BLS provides estimates of the "typical on-the-job training needed to attain competency in the occupation." They estimate that 88% of STEM occupations require no on-the-job training, whereas only 32% of non-STEM have no need for on-the-job training. **Table 1** presents the BLS-identified types of training and the percent of occupations requiring each type of training.

Table 1: Percent of Occupations Requiring Training to Attain Competency

Type of Training	STEM	non-STEM
Apprenticeship	--	2.11
Internship/residency	3.06	3.09
Long-term on-the-job training	1.02	7.88
Moderate-term on-the-job training	8.16	31.08
Short-term on-the-job training	--	24.19
None	87.76	31.65

There is a relationship between pay in STEM jobs and the occupation's educational requirements. Most STEM jobs require education beyond high school. However, of the 10 lowest paying STEM occupations nationally, only one (Biological Technicians) requires a four-year college degree. Of the remaining, seven require an Associate's degree and two require no degree beyond high school. All ten of the highest paying STEM occupations require a Bachelor's degree or more education. Two of the top-ten require education beyond the Bachelor's degree—Physicists (Doctoral or professional Degree) and Computer and Information Research Scientists (Master's degree). The same pattern holds for Grand Rapids-Wyoming. All ten of the highest paying STEM occupations require a Bachelor's degree, whereas only one of the ten lowest paying STEM occupations (Surveyors) needs education beyond the Associate's degree.

[1] For occupations for which hourly pay can be determined, annual pay is calculated as 2080 x (hourly pay). It is not possible to determine an estimate of hourly pay in all occupations—for example, teachers. For those occupations, the OES contains only annual pay estimates.

Figure 1: National Median Pay
(10 Highest Paid STEM Occupations)

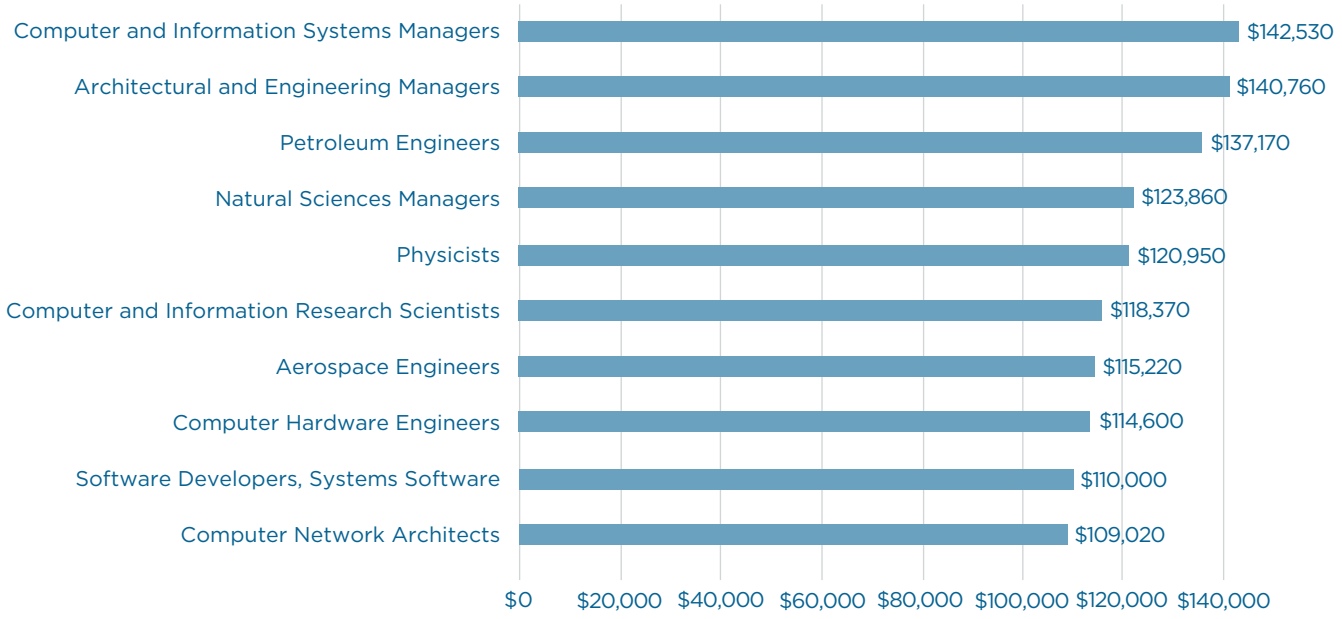


Figure 2: National Median Pay
(10 Lowest-Paid STEM Occupations)

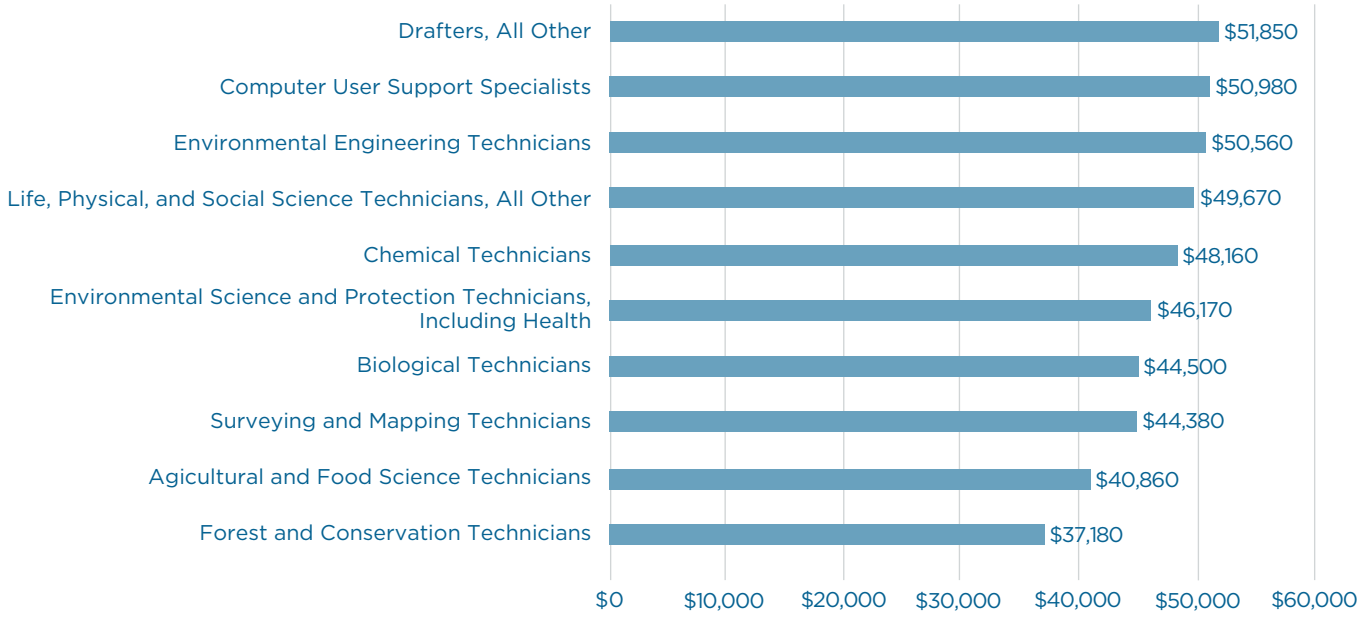


Figure 3: Median Pay in Grand Rapids-Wyoming MSA

(10 Highest-Paid STEM Occupations)

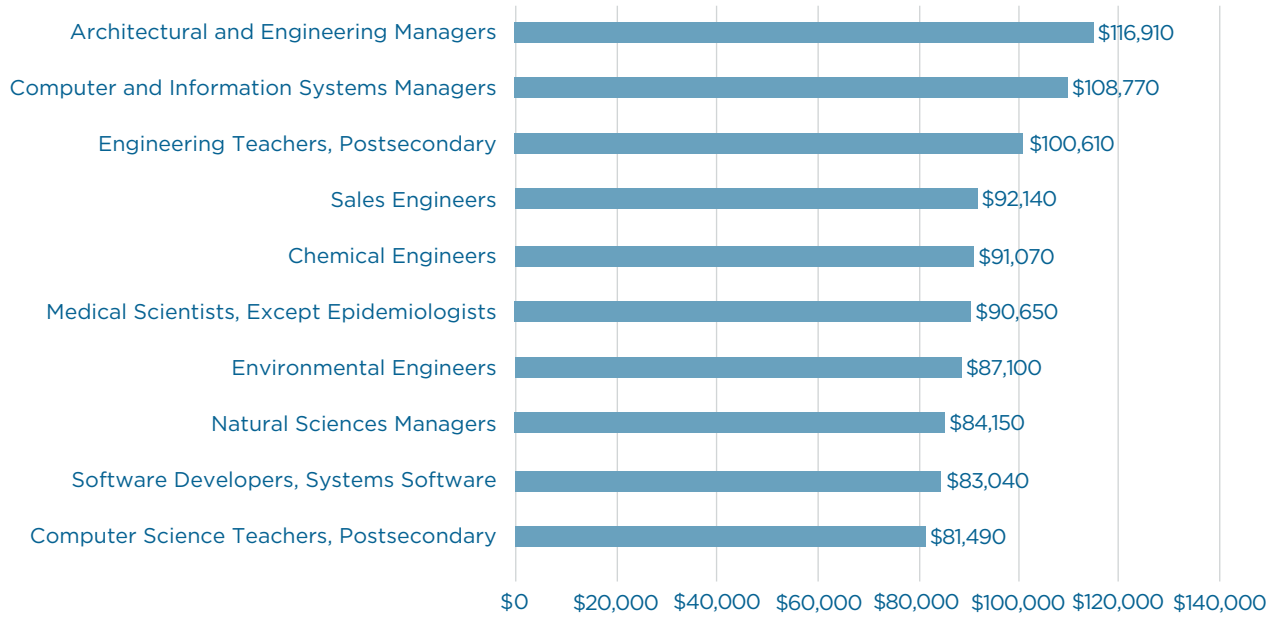
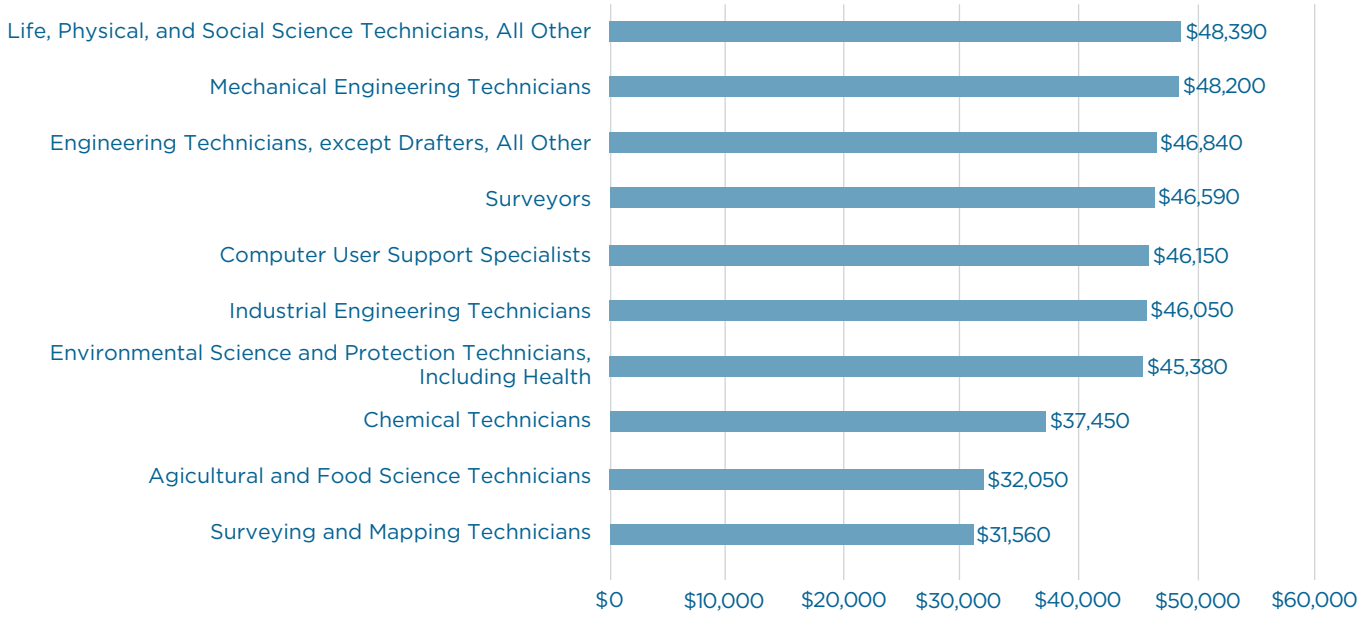


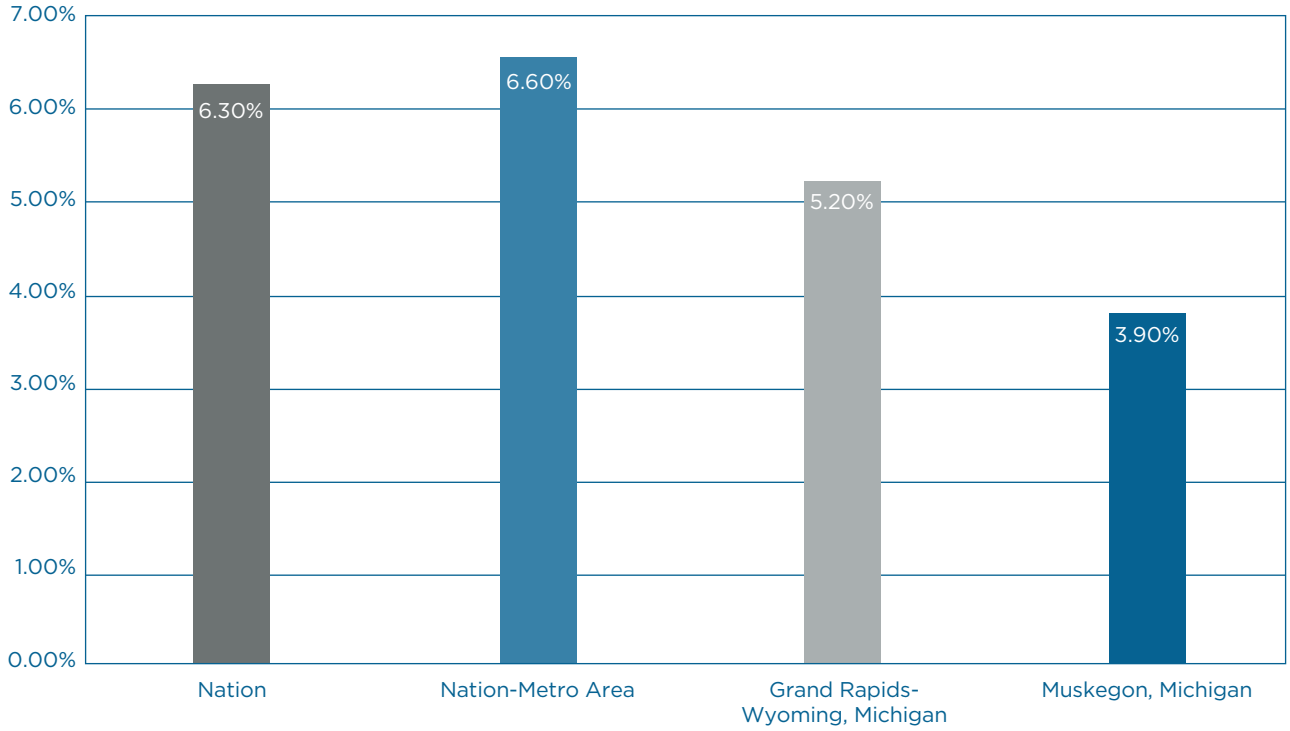
Figure 4: Median Pay in Grand Rapids-Wyoming, MSA

(10 Lowest-Paid STEM Occupations)



While relatively high-paying, STEM occupations are not a large part of the labor market, comprising only 6.3% of total employment in the United States (6.6% in metropolitan areas). STEM occupations make up an even smaller fraction of occupations in West Michigan (**Figure X**). One should be careful interpreting this, however, as STEM jobs are concentrated in a few MSAs, distorting comparisons of local STEM statistics to national averages. For example, STEM occupations make up 27.4% of all jobs in the California-Lexington Park, MD MSA and 21% of all jobs in the San Jose-Sunnyvale-Santa Clara, CA MSA. The top 50 MSAs for STEM occupations account for 70% of all STEM jobs nationally, while the top 50 MSAs for non-STEM jobs account for 58% of non-STEM jobs.

Figure 5: STEM Jobs as Percent of Total Jobs



Computer-related occupations are the most common STEM jobs. Software Developers (about 900,000 jobs), Computer User Support Specialists (631,000 jobs), Computer Systems Analysts (588,000 jobs) alone account for 23.5% of all STEM jobs. Engineering occupations also represent a large number of STEM jobs nationally. The number of jobs for Industrial, Mechanical and Civil Engineers totals about 889,000—those three occupations account for nearly 10% of all STEM jobs. STEM jobs are even more concentrated in engineering occupations in West Michigan. Mechanical Engineers and Industrial Engineers alone represent about 28% of the total number of STEM jobs in the Grand Rapids-Wyoming, MSA.

Conclusion

West Michigan can benefit from attracting both employers who offer jobs in STEM occupations and from attracting and retaining people with the required skills and education for these occupations. As this article demonstrates, STEM occupations are high-paying, and job growth in these occupations is projected to grow faster than employment overall. Many STEM occupations are in manufacturing—a significant portion of the West Michigan economy. Average educational attainment in West Michigan is similar to the nation overall and actually has a slightly higher percent of Bachelor's degree earnings than the nation overall. Arguably, then, the local economy is well-positioned to benefit from the growing importance of STEM occupations. ■