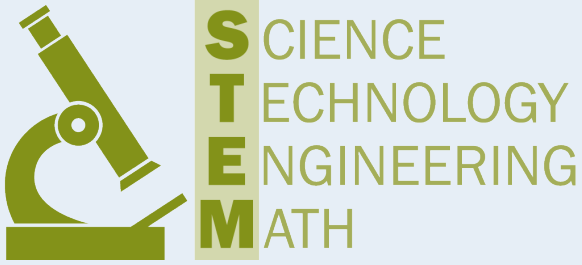
STEM Jobs in Montana

by Christopher Bradley, Economist

At all levels of schooling, students face difficult decisions choosing courses or even a field of study. Balancing personal interests and abilities with career opportunities is a difficult task. This balancing act can be particularly daunting for students and workers in STEM (Science, Technology, Engineering & Math) fields. Jobs that utilize STEM skills have benefits like higher pay and broad opportunity that make them appealing. While some have interests in math and the sciences, others may need the added encouragement that high wages provide to pursue higher education in these fields. This article reports on the current level of STEM employment in Montana and characterizes STEM jobs in a way that allows students and job seekers to determine whether STEM is right for them.

Fifty-Five Thousand STEM Jobs in Montana

Montana's 55,000 STEM workers make up 12% of the state's payroll employment, similar to the U.S. as a whole, where STEM occupations are 13% of payroll employment. STEM workers in Montana earn more than non-STEM workers, with an average annual wage of $68,695 compared to $36,643, respectively.



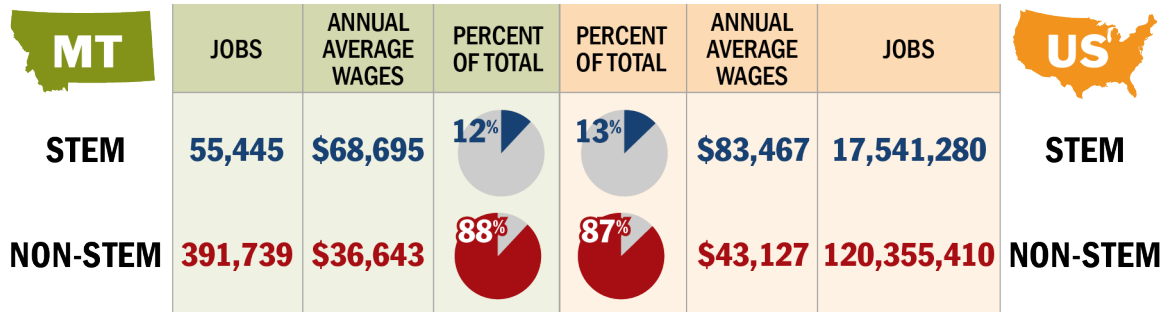
What is STEM?

STEM stands for Science, Technology, Engineering, and Math. There is no formal definition of which occupations qualify as STEM and which do not. This report focuses on STEM occupations identified by the Standard Occupational Classification Policy Committee (SOCPC). The SOCPC used definitions of STEM that federal agencies and academic bodies use to formally define STEM occupations within the Standard Occupational Classification (SOC) system. In doing so, STEM occupations were also split into four domains:

- Life and Physical Science, Engineering, Mathematics, & Information Technology
- Social Science
- Architecture
- Health

FIGURE 1:

Employment in STEM Occupation, MT and US



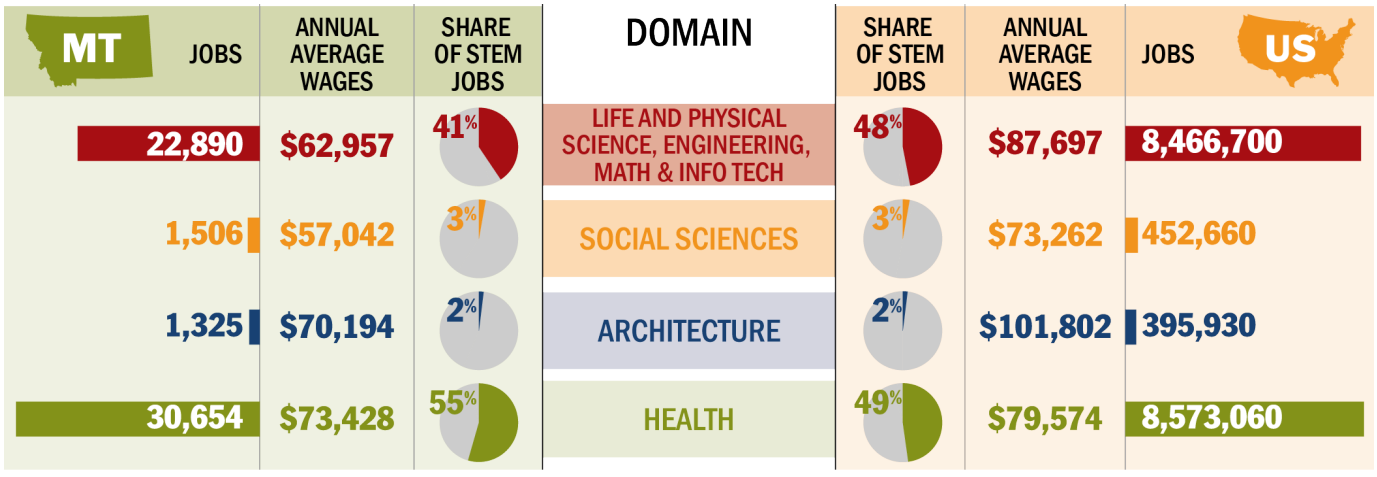
Source: Occupational Employment Statistics, May 2015 Data

However, workers in Montana's STEM occupations earn only 82% of the average wage of STEM workers in the U.S. as a whole. The lower wages for STEM occupations in Montana reflects Montana's overall lower wages. Montana's average annual wage is 84% of that of the U.S. and the wage discrepancy is larger at the higher end of the wage scale.[1] In other words, the differences reflect Montana's labor market overall and as Montana's wage growth continues to outpace that of the U.S.[2], so will wage growth in STEM jobs.

Of course, not all STEM jobs are the same. **Figure 2** displays the employment and wages of STEM workers grouped among common occupations, or domains. Health occupations are the largest group of STEM jobs for both the U.S. and Montana, reflecting not only the sizable Healthcare industry but also the labor intensiveness of healthcare services. Montana's Health STEM occupations make up a more sizeable portion of STEM jobs in Montana because of Montana's high concentration of all employment in Healthcare (both STEM and non-STEM). In 2015, Healthcare made up 17.5% of private payroll employment in Montana compared to 15.5% for the U.S. as a whole. Interestingly, Montana's Health STEM occupations are also the highest-paying group of STEM occupations, which contrasts with the U.S., where Health STEM

FIGURE 2:

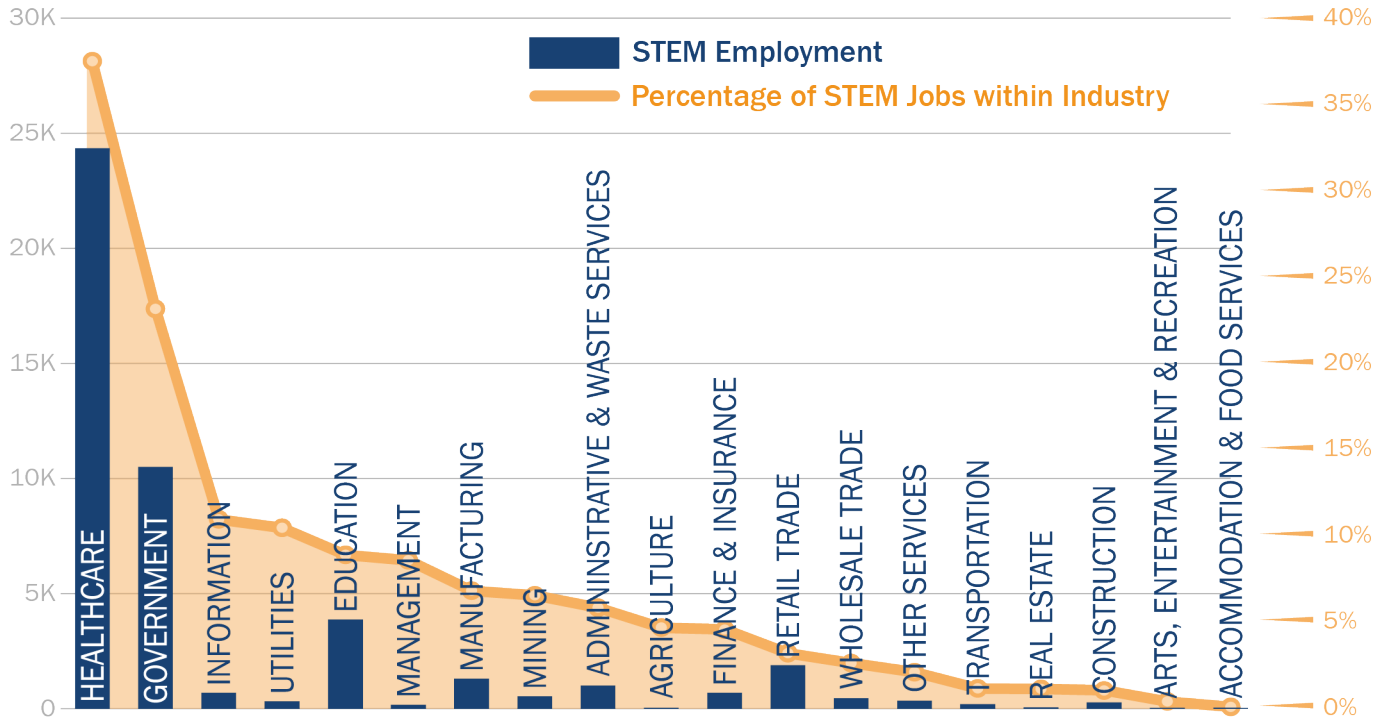
STEM Employment by Domain



Source: Occupational Employment Statistics, May 2015 Data

FIGURE 3

STEM Employment and Concentration by Industry



Source: MT DLI Occupational Employment Statistics, May 2015 File

occupations are the third highest-paying group. Montana has a high demand and low supply for specialized healthcare workers that contributes to the relatively higher wages of Health STEM jobs.

In Montana, most STEM jobs are in three industries: Healthcare, Public Administration, and Professional and Technical Services (see **Figure 3**). Part of the reason those three industries employ so many STEM workers is the large share of STEM occupations within the industry. In the Healthcare industry, 38% of all jobs are STEM jobs. In Public Administration, that number is 23%, and in Professional and Technical Services, it is 42%. High STEM employment in those industries is also expected because Health STEM occupations are the largest group of STEM jobs and many professors and researchers in STEM fields are employed by public universities. The Information and Utilities industries have the next highest concentrations of STEM workers with 10% of employment in STEM occupations, demonstrating that opportunities for workers with STEM skills exist in other industries beyond the three largest.

Examples of some of the most common and highest paying STEM occupations, by domain, can be seen in **Figure 4**. Within the domain of Life and Physical Sciences, Engineering, Math and IT, the most common occupations tend to be in the IT/Computer Science field with programmers, developers, and computer user support specialists making up 3 of the top 5 occupations. Interestingly, within that domain, forest and conservation technicians is the largest occupation, likely due to Montana's vast public lands and forest resources.

FIGURE 4

Top Ranked STEM Occupations for Employment and Wages, by Domain

Domain	Employment Rankings			Rank	Wage Rankings		
	Occupation	Employ.	Avg. Ann. Wage		Occupation	Employ.	Avg. Ann. Wage
Life & Physical Sci., Engineering, Math, and IT	Forest & Conservation Technicians	2,070	$35,647	1	Petroleum Engineers	234	$119,637
	Computer User Support Specialists	2,018	$43,426	2	Architectural & Engineering Managers	266	$116,286
	Civil Engineers	1,414	$71,095	3	Computer & Information Systems Managers	469	$114,222
	Computer Programmers	817	$63,606	4	Biochemists & Biophysicists	*	*
	Software Developers, Applications	717	$74,784	5	Physicists	*	*
Social Science	Clinical, Counseling, & School Psychologists	326	$56,925	1	Economists	107	$89,516
	Urban & Regional Planners	253	$65,533	2	Political Scientists	*	*
	Psychology Teachers, Postsecondary	203	$33,421	3	Psychologists, All Other	47	$74,675
	Life, Physical, & Social Science Technicians	175	$46,231	4	Survey Researchers	*	*
	Economists	107	$89,516	5	Economics Teachers, Postsecondary	*	*
Architecture	Architectural & Civil Drafters	488	$47,198	1	Architectural & Engineering Managers	266	$116,286
	Architects, Except Landscape & Naval	469	$70,312	2	Architects, Except Landscape & Naval	469	$70,312
	Architectural & Engineering Managers	266	$116,286	3	Landscape Architects	45	$64,437
	Architecture Teachers, Postsecondary	58	$56,230	4	Architecture Teachers, Postsecondary	58	$56,230
	Landscape Architects	45	$64,437	5	Architectural & Civil Drafters	488	$47,198
Health	Registered Nurses	9,643	$62,657	1	Anesthesiologists	*	$297,474
	LPNs & LVNs	2,507	$39,484	2	Obstetricians & Gynecologists	90	$246,124
	Physicians & Surgeons, All Other	1,198	$236,838	3	Nurse Anesthetists	66	$243,556
	Pharmacy Technicians	1,174	$33,385	4	Physicians & Surgeons, All Other	1,198	$236,838
	Medical & Health Services Managers	1,169	$84,706	5	Pediatricians, General	91	$235,444

Source: MT DLI Occupational Employment Statistics, May 2015

**Employment or wage data suppressed due to confidentiality requirements.*

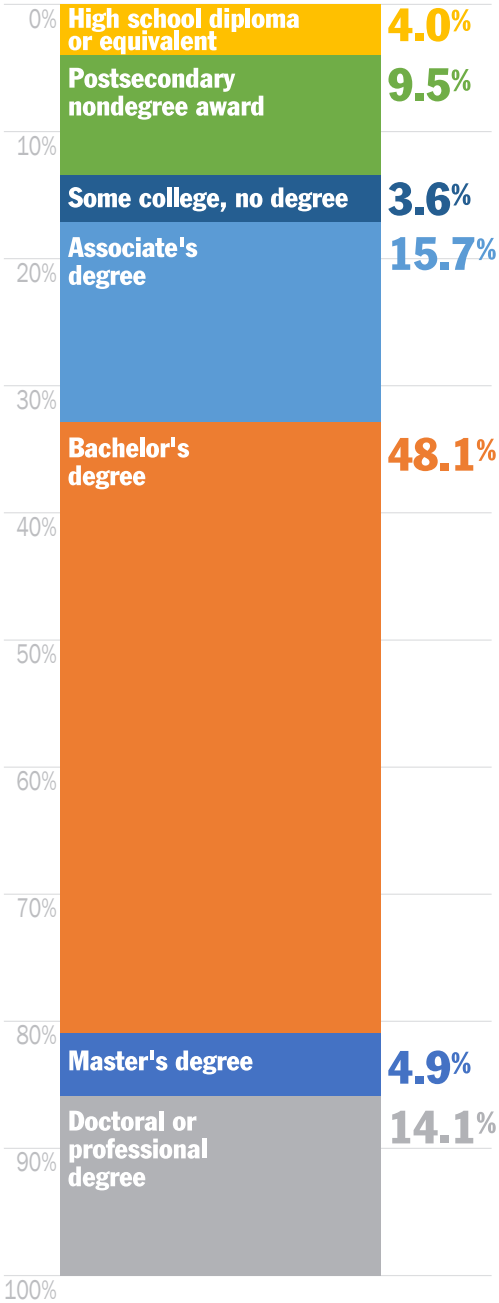
Future Opportunity in STEM Jobs

Higher education at the college or university level is necessary for the majority of jobseekers looking to enter STEM careers, as seen in **Figure 5**. Roughly 67% of STEM occupations require at least a bachelor's, with another 15% requiring an associate degree. The mix of education required by STEM jobs is more heavily weighted to higher levels of education than non-STEM jobs. These high education requirements are part of the reason that STEM skills education is encouraged in primary and secondary schools as a way to prepare students for colleges and universities and reduce training times after high school.

As Montana's economy continues to grow, opportunities in STEM careers will become more plentiful. According to the Montana Department of Labor and Industry's 2015-2025 occupational employment projections, occupations in STEM fields are expected to have approximately 2,300 annual job openings due to a combination of economic growth and replacement needs. Of those annual openings, about 930 are expected to be due to job growth. STEM occupations are expected to increase their share of total employment in Montana by about half a percent by 2025.

FIGURE 5

Education Requirements of STEM Jobs

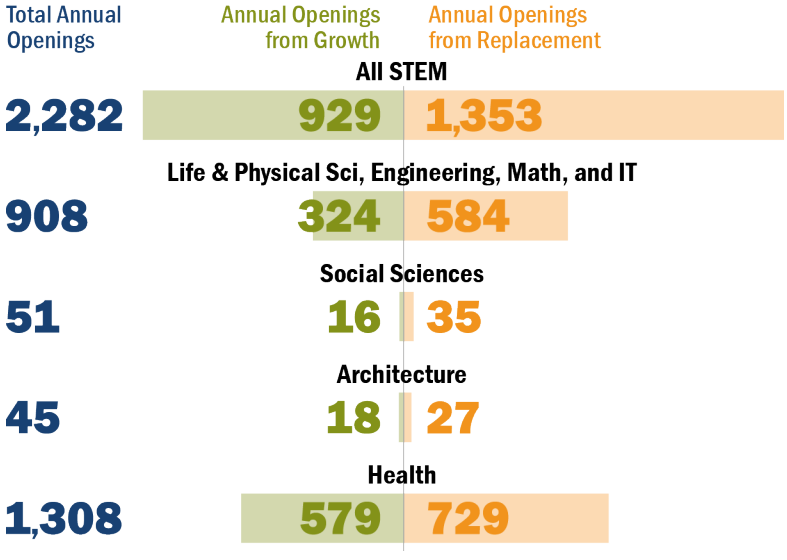


About 60% of Montana's projected STEM growth is expected to come from the Health domain, with the rest primarily coming from Life and Physical Sciences, Engineering, Math, and IT occupations. Montana's aging workforce is expected to result in high retirement and replacement needs in the upcoming years, leading to a predicted 1,350 replacement STEM openings every year. The breakdown of projected openings for STEM jobs by domain is shown in **Figure 6**.

With the anticipated growth in STEM occupations that require education beyond high school there will be opportunity to innovate how that training is delivered. Many workers in STEM occupations will continue to receive their educations as full or part-time students at colleges and universities, while others may benefit from the apprenticeship model of work-based learning. Among programs currently offered by the Montana Registered

FIGURE 6

STEM Projections by Domain



Source: MT DLI Occupational Employment Projections, 2015-2025

FIGURE 7:

Top Projected Apprenticeable STEM Occupations by Total Annual Openings through 2025

Rank	Occupation	Growth Openings	Replacement Openings	Total Annual Openings	Average Annual Wages
1	Licensed Practical and Licensed Vocational Nurses	32	75	107	$39,484
2	Computer User Support Specialists	42	31	73	$43,426
3	Medical and Health Services Managers	22	32	53	$84,706
4	Computer Programmers	15	36	51	$63,606
5	Medical Records and Health Information Technicians	18	22	40	$35,636
6	Software Developers, Applications	20	17	37	$74,784
7	Pharmacy Technicians	19	12	31	$33,385
8	Conservation Scientists	7	21	28	$60,512
9	Radiologic Technologists and Technicians	10	15	25	$53,035
10	Computer Systems Analysts	16	8	24	$67,546

Source: MT DLI Occupational Employment Projections 2015-2025

Apprenticeship Programs, there are 172 annual STEM openings expected through 2025. However, if Montana expanded their apprentice program offerings to include more occupations, a potential 785 annual openings could be filled through apprenticeship training. There is a large potential to expand apprenticeships into STEM fields in Montana.

Figure 7 displays the top 10 apprenticeable STEM occupations by projected annual openings through 2025. The occupations listed in **Figure 7** primarily fall into Healthcare and Computer occupation fields. LPNs and LVNs are the largest projected occupation, followed by computer user support specialists. Apprenticeships in healthcare fields already exist in Montana, but the demand exists to expand the apprenticeship training to train more healthcare apprentices. Montana also has one IT apprenticeship program, but there the demand for additional positions exists. Of the occupations listed in figure 7, all but three pay average annual wages above the Montana's statewide average annual wage.

Conclusion

STEM occupations make up a large part of Montana's employment and provide tens of thousands of Montanans with higher than average wages. Opportunity in STEM careers is not expected to fade making education and training in STEM skills a reliable investment providing many of Montana's future workers with employment and good pay. However, as a final note, STEM skills are not only important in STEM jobs. Researchers have begun to make note that not only do workers in STEM occupations earn higher wages, so do STEM fluent workers in non-STEM occupations.[3] Even if a worker does not intend to work in a STEM occupation there is a benefit to learning STEM skills that goes beyond STEM specific jobs.

References:

[1] *http://lmi.mt.gov/Portals/135/Publications/LMI-Pubs/Articles/2015/1215-ExaminingMTsWages.pdf*

[2] *http://lmi.mt.gov/Publications/PublicationsContainer/ArtMID/34826/ArticleID/4780/Labor-Day-Report-2016*

[3] *http://files.eric.ed.gov/fulltext/ED522129.pdf*