

A SURVEY:

STEM Jobs in West Virginia in 2015

October 2016



TECHCONNECT

WEST VIRGINIA

Produced in partnership with the



WEST VIRGINIA
DEPARTMENT *of* COMMERCE



TECHCONNECT

WEST VIRGINIA

A SURVEY: STEM Jobs in West Virginia in 2015

“Regardless of educational attainment, entering a STEM profession is associated with higher earnings and reduced joblessness.”

— U.S. Department of Commerce

Science, technology, engineering and mathematics (STEM) workers drive the economy through innovation and increased competitiveness by generating new industries, new companies, and new job opportunities.

In collaboration with the West Virginia Department of Commerce, TechConnect West Virginia compiled this report outlining the number of STEM-related jobs in West Virginia in 2015. It is designed to present a new portrait of the STEM economy in West Virginia and to encourage conversation about strategies and policies that will lay the foundation to increase the number of STEM occupations in the state. It also establishes a baseline for measuring future growth in STEM-related jobs.

STEM jobs are highly desirable because they pay higher than average wages, are more recession-proof, and are among the fastest growing sector of jobs across the nation. The Bureau of Labor Statistics reports that STEM workers command higher wages, earning 26 percent more than their non-STEM counterparts. From 2012 to 2022, the Bureau of Labor Statistics projects that STEM employment will grow approximately 13 percent compared to a projected total job growth rate of 11 percent. For example, software developers—both in applications and systems—are predicted to have more than 350,000 positions open up by 2022. These positions paid a median annual wage of \$97,035 in May 2013.

In its report, *The Hidden STEM Economy*, the Brookings Institution reports that half of all STEM jobs are available to workers without a four-year college degree, and these jobs pay \$53,000 on average—a wage 10 percent higher than jobs with similar educational requirements.

Executive Summary

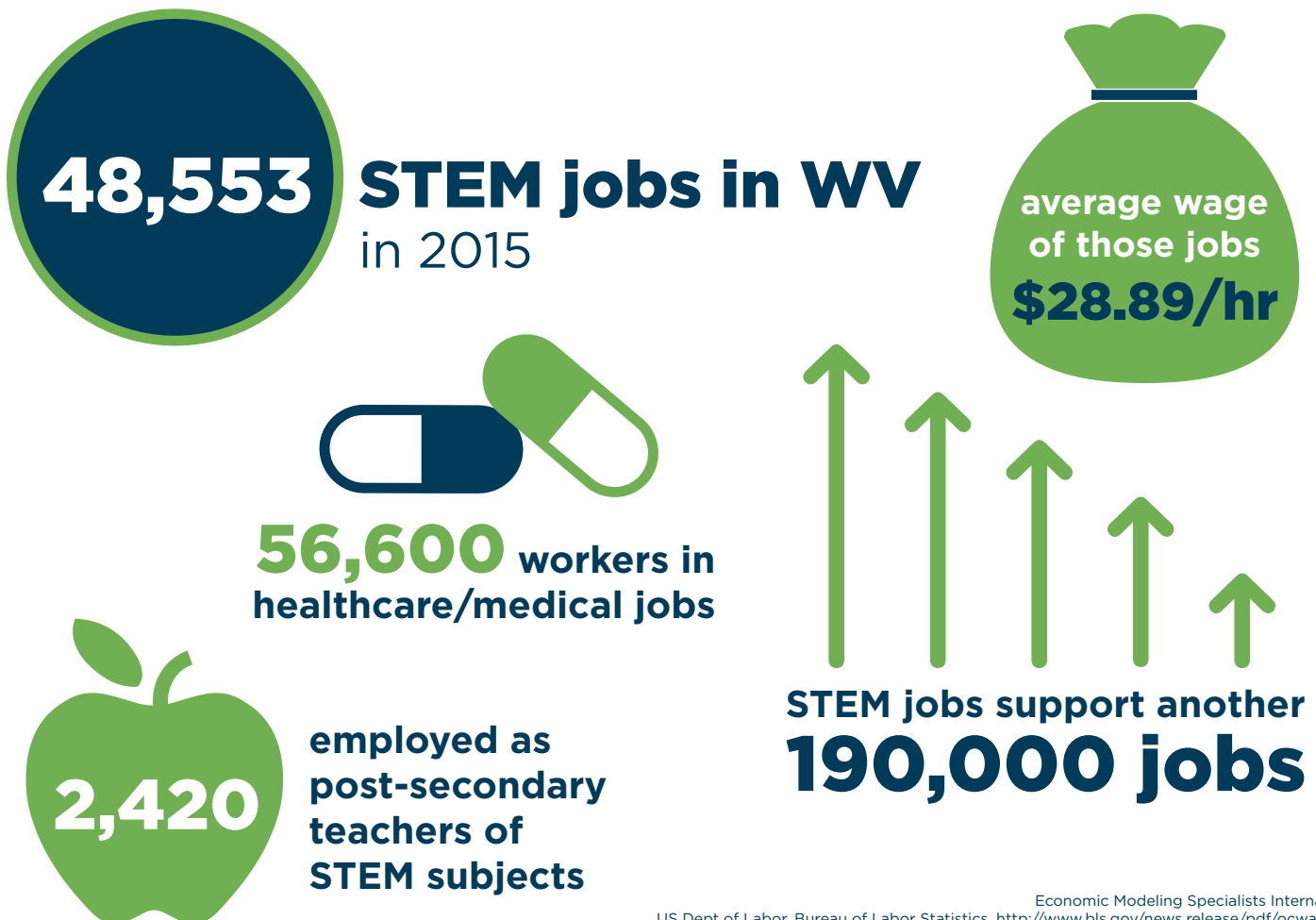
In 2015, West Virginia had **48,553** people working in STEM-related jobs. This represents 6.7 percent of the total number of jobs in that year—722,667.¹ Nationally, STEM jobs made up 6.2 percent of total employment in May.²

The survey found that West Virginia's **48,553** STEM economy jobs support another 190,000 jobs in the state and the average STEM job hourly wage in West Virginia is \$28.89 per hour.

While many of these jobs require a bachelor's, graduate and/or post-graduate degrees, others require less education, including one- and two-year degrees from community and technical colleges. It is important to not overlook the strong potential workforce of those with less than a four-year degree but substantial STEM skills. Sometimes called the "hidden STEM economy," these jobs are also critical to driving economic growth.

The common denominator is that in all of these jobs, workers use knowledge of science, technology, engineering and/or math to complete the tasks and duties of their jobs.

In addition to the 48,553 jobs identified in this survey, another 56,600 workers are employed in healthcare/medical jobs in the state, and yet another 2,420 workers are post-secondary teachers of STEM subjects.





Breakdown by STEM Discipline

Computer Science, Computer Related, Information Security	15,490
Engineering	15,481
Chemistry	5,822
Other	7,010
Accountants & Auditors	4,750
TOTAL	48,553

Conclusions

STEM jobs are the jobs of the future. Although still relatively small in number—both in West Virginia and the nation—the STEM workforce has an outsized impact on our nation’s competitiveness, economic growth, and overall standard of living. They are essential for developing technological innovation and global competitiveness.

One reason it is difficult to define who is and who is not in the STEM workforce is that technical proficiency is becoming mandatory in a diverse body of occupations. As an example, automation and innovation have changed American manufacturing, where computers and robots drive production. Digital proficiency is a requirement for a majority of middle-skill jobs that require a high school diploma, but not necessarily a four-year degree. Understanding and optimizing digital technologies across a variety of platforms will be even more important to the workforce of tomorrow.

Thousands of jobs that are not typically understood to be STEM jobs will require STEM capabilities, and in order for businesses to be successful, the workforce must be prepared if we are to remain competitive globally. As a state, we must consider sound policies that prepare our workforce and advance growth in these jobs.

Methodology

2015 data collected through the Occupation Information Network (O*Net) was evaluated and ranked by STEM discipline. O*Net, an initiative of the U.S. Department of Labor/Employment and Training Administration, is the nation’s primary source of occupational information. Central to the project is the O*NET database, containing information on hundreds of standardized and occupation-specific descriptors. The database, which is available to the public at no cost, is continually updated by surveying a broad range of workers from each occupation. Information from this database forms the heart of O*NET OnLine, an interactive application for exploring and searching occupations.

For purposes of this survey, occupations were included that require the following STEM disciplines: Life Sciences, Computer Science, Engineering, Chemistry, Environmental Science, Geosciences, Mathematics and Physics/Astronomy.

To determine the total number of jobs supported by the STEM occupations identified in this survey, the database of the Economic Modeling Specialists International (EMSI) was used.

Occupations by STEM discipline, 2015:

Code	Occupation	STEM Disciplines	Occupational Group	In WV	Median Hourly Earnings
13-2011	Accountants & Auditors			4,750	\$26.38
35-1012	First-Line Supervisors of Food Preparation & Serving Workers	Life Sciences		4,713	\$11.83
35-2012	Cooks, Institution & Cafeteria	Life Sciences		4,474	\$10.07
49-3023	Automotive Service Technicians and Mechanics			4,462	\$14.22
13-1199	Business Operations Specialists, All Other			3,078	\$29.54
15-1199	Computer Occupations, All Other			2,015	\$41.73
15-1151	Computer User Support Specialists	Computer Science	Computer and Mathematics	1,947	\$19.53
11-9199	Managers, All Other			1,318	\$36.23
15-1133	Software Developers, Systems Software	Computer Science, Engineering	Computer and Mathematics	1,287	\$35.21
17-2051	Civil Engineers	Engineering	Architecture and Engineering	1,254	\$32.44
13-1041	Compliance Officers			1,233	\$22.66
51-9011	Chemical Equipment Operators & Tenders	Chemistry		1,175	\$27.37
15-1142	Network & Computer Systems Administrators		Computer and Mathematics	949	\$27.61
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products		Sales and Related	855	\$28.51
15-1121	Computer Systems Analysts	Computer Science	Computer and Mathematics	799	\$32.33
15-1132	Software Developers, Applications	Computer Science, Engineering	Computer and Mathematics	793	\$40.63
11-3021	Computer & Information Systems Managers	Computer Science	Management	749	\$47.70
11-9021	Construction Managers	Engineering		728	\$39.76
15-1152	Computer Network Support Specialists	Computer Science	Computer and Mathematics	719	\$21.11
13-1051	Cost Estimators	Engineering		638	\$26.86
19-3031	Clinical, Counseling, and School Psychologists			625	\$23.25
19-2041	Environmental Scientists & Specialists, Including Health	Environmental Science	Life, Physical, and Social Sciences	588	\$20.83
15-1131	Computer Programmers	Computer Science	Computer and Mathematics	587	\$26.98
11-3051	Industrial Production Managers			581	\$42.16

Code	Occupation	STEM Disciplines	Occupational Group	In WV	Median Hourly Earnings
17-2071	Electrical Engineers	Engineering	Architecture and Engineering	517	\$40.70
49-3011	Aircraft Mechanics & Service Technicians	Engineering		504	\$25.47
27-1024	Graphic Designers	Computer Science		501	\$18.03
17-2112	Industrial Engineers	Engineering	Architecture and Engineering	494	\$39.50
13-2099	Financial Specialists, All Other			487	\$27.07
51-8091	Chemical Plant & System Operators	Chemistry		477	\$27.85
17-2199	Engineers, All Other		Architecture and Engineering	469	\$40.73
17-3023	Electrical and Electronics Engineering Technicians			448	\$24.23
45-4022	Logging Equipment Operators	Life Sciences		442	\$12.08
17-2141	Mechanical Engineers	Engineering	Architecture and Engineering	439	\$36.61
15-1141	Database Administrators	Computer Science	Computer and Mathematics	430	\$27.34
19-1020	Biological Scientists			429	\$30.20
19-4031	Chemical Technicians	Chemistry, Life Sciences	Life, Physical, and Social Sciences	416	\$22.00
17-1022	Surveyors			398	\$24.12
17-3031	Surveying & Mapping Technicians		Architecture and Engineering	387	\$15.70
29-1031	Dietitians & Nutritionists	Life Sciences		380	\$26.23
11-9041	Architectural & Engineering Managers	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Physics/Astronomy	Management	380	\$55.87
17-3011	Architectural and Civil Drafters			370	\$19.81
15-1143	Computer Network Architects	Computer Science	Computer and Mathematics	330	\$34.56
29-2051	Dietetic Technicians	Life Sciences		317	\$10.98
17-3026	Industrial Engineering Technicians	Engineering	Architecture and Engineering	277	\$25.77
17-2151	Mining & Geological Engineers, Including Mining Safety Engineers	Engineering	Architecture and Engineering	276	\$31.62
17-2081	Environmental Engineers	Engineering, Environmental Science	Architecture and Engineering	275	\$35.30
15-1134	Web Developers		Computer and Mathematics	267	\$21.45
19-2031	Chemists	Chemistry, Physics/Astronomy	Life, Physical, and Social Sciences	256	\$30.32

Code	Occupation	STEM Disciplines	Occupational Group	In WV	Median Hourly Earnings
19-4091	Environmental Science & Protection Technicians, Including Health	Environmental Science	Life, Physical, and Social Sciences	252	\$18.14
17-3029	Engineering Technicians, except Drafters, All Other		Architecture and Engineering	251	\$28.12
19-4021	Biological Technicians	Life Sciences	Life, Physical, and Social Sciences	247	\$16.00
17-2041	Chemical Engineers	Chemistry, Engineering	Architecture and Engineering	240	\$51.30
19-4099	Life, Physical, and Social Science Technicians, All Other			231	\$19.07
17-3022	Civil Engineering Technicians	Engineering	Architecture and Engineering	217	\$20.69
17-3025	Environmental Engineering Technicians	Engineering, Environmental Science	Architecture and Engineering	215	\$19.63
17-2171	Petroleum Engineers	Engineering	Architecture and Engineering	200	\$47.02
17-2111	Health & Safety Engineers, except Mining Safety Engineers & Inspectors		Architecture and Engineering	196	\$31.83
11-9121	Natural Sciences Managers	Chemistry, Computer Science, Engineering, Geosciences, Life Sciences, Mathematics, Physics/Astronomy	Management	190	\$45.37
19-4041	Geological & Petroleum Technicians		Life, Physical, and Social Sciences	188	\$26.80
29-2033	Nuclear Medicine Technologists	Physics/Astronomy		180	\$27.89
45-4023	Log Graders & Scalers	Life Sciences		179	\$14.80
19-1029	Biological Scientists, All Other			179	\$34.63
17-2072	Electronics Engineers, Except Computer	Engineering	Architecture and Engineering	168	\$41.32
15-2031	Operations Research Analysts	Computer Science, Mathematics	Computer and Mathematics	166	\$28.06
15-1122	Information Security Analysts	Computer Science	Computer and Mathematics	164	\$38.92
19-1042	Medical Scientists, Except Epidemiologists	Life Sciences	Life, Physical, and Social Sciences	163	\$29.62
17-3013	Mechanical Drafters		Architecture and Engineering	162	\$23.80
19-4092	Forensic Science Technicians		Life, Physical, and Social Sciences	151	\$21.21
25-9021	Farm & Home Management Advisors	Life Sciences		147	\$21.42
17-1011	Architects, Except Landscape & Naval	Engineering		146	\$35.07
19-4093	Forest & Conservation Technicians	Life Sciences	Life, Physical, and Social Sciences	144	\$16.54

Code	Occupation	STEM Disciplines	Occupational Group	In WV	Median Hourly Earnings
45-4021	Fallers	Life Sciences		141	\$13.02
43-9111	Statistical Assistants			139	\$20.76
17-2061	Computer Hardware Engineers	Computer Science, Engineering	Architecture and Engineering	138	\$49.95
19-2042	Geoscientists, Except Hydrologists & Geographers	Geosciences	Life, Physical, and Social Sciences	137	\$26.91
19-1032	Foresters	Engineering, Life Sciences	Life, Physical, and Social Sciences	126	\$20.73
19-1023	Zoologists & Wildlife Biologists	Life Sciences	Life, Physical, and Social Sciences	122	\$23.36
15-2041	Statisticians	Life Sciences, Mathematics	Computer and Mathematics	120	\$25.49
41-9031	Sales Engineers		Sales and Related	117	\$40.16
53-6051	Transportation Inspectors			109	\$30.02
11-9013	Farmers, Ranchers, & Other Agricultural Managers			92	\$30.33
19-3039	Psychologists, All Other	Life Sciences		91	\$40.16
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers			88	\$23.38
17-2131	Materials Engineers	Engineering	Architecture and Engineering	88	\$40.30
19-1031	Conservation Scientists		Life, Physical, and Social Sciences	83	\$31.21
17-3027	Mechanical Engineering Technicians	Engineering	Architecture and Engineering	82	\$22.97
51-3092	Food Batchmakers	Life Sciences		81	\$11.73
17-2011	Aerospace Engineers	Engineering	Architecture and Engineering	77	\$48.02
45-4011	Forest & Conservation Workers	Engineering, Life Sciences		76	\$18.13
19-2032	Materials Scientists	Engineering	Life, Physical, and Social Sciences	69	\$42.95
19-1021	Biochemists & Biophysicists	Chemistry, Life Sciences, Physics/Astronomy	Life, Physical, and Social Sciences	69	\$36.15
19-1013	Soil & Plant Scientists	Chemistry, Life Sciences, Physics/Astronomy	Life, Physical, and Social Sciences	68	\$24.92
19-2099	Physical Scientists, All Other		Life, Physical, and Social Sciences	64	\$38.60
17-3012	Electrical & Electronics Drafters		Architecture and Engineering	60	\$24.95
19-1022	Microbiologists	Life Sciences	Life, Physical, and Social Sciences	59	\$24.19
19-1041	Epidemiologists	Life Sciences	Life, Physical, and Social Sciences	55	\$25.62
17-2031	Biomedical Engineers	Engineering	Architecture and Engineering	50	\$37.11
17-2161	Nuclear Engineers	Engineering	Architecture and Engineering	49	\$42.85

Code	Occupation	STEM Disciplines	Occupational Group	In WV	Median Hourly Earnings
15-1111	Computer & Information Research Scientists	Computer Science	Computer and Mathematics	47	\$45.30
51-2023	Electromechanical Equipment Assemblers	Engineering		46	\$15.38
19-4011	Agricultural & Food Science Technicians		Life, Physical, and Social Sciences	45	\$12.75
49-2091	Avionics Technicians	Engineering		42	\$24.89
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic	Computer Science		37	\$20.44
15-2011	Actuaries	Mathematics	Computer and Mathematics	35	\$32.78
19-2012	Physicists	Mathematics, Physics/Astronomy	Life, Physical, and Social Sciences	35	\$48.97
19-2021	Atmospheric & Space Scientists	Physics/Astronomy	Life, Physical, and Social Sciences	31	\$38.68
19-1012	Food Scientists & Technologists	Life Sciences	Life, Physical, and Social Sciences	28	\$30.11
17-3024	Electro-Mechanical Technicians			27	\$22.86
17-3019	Drafters, All Others		Architecture and Engineering	27	\$23.02
19-1099	Life Scientists, All Other		Life, Physical, and Social Sciences	24	\$32.06
33-3031	Fish & Game Wardens	Life Sciences		23	\$14.58
19-4051	Nuclear Technicians		Life, Physical, and Social Sciences	20	\$32.30
17-2021	Agricultural Engineers	Engineering, Life Sciences	Architecture and Engineering	19	\$33.23
19-2043	Hydrologists	Geosciences	Life, Physical, and Social Sciences	19	\$35.43
17-2121	Marine Engineers and Naval Architects			18	\$31.66
49-9081	Wind Turbine Service Technicians	Engineering		17	\$23.50
17-3021	Aerospace Engineering & Operations Technicians	Engineering	Architecture and Engineering	16	\$26.77
15-2021	Mathematicians	Mathematics		12	\$34.15
15-2091	Mathematical Technicians	Mathematics	Computer and Mathematics	<10	Insf. Data
15-2099	Mathematical Science Occupations, All Other		Computer and Mathematics	<10	Insf. Data
19-1011	Animal Scientists	Life Sciences	Life, Physical, and Social Sciences	<10	Insf. Data
19-2011	Astronomers	Physics/Astronomy	Life, Physical, and Social Sciences	<10	Insf. Data
19-3032	Industrial-Organizational Psychologists	Life Sciences		<10	Insf. Data
45-2021	Animal Breeders	Life Sciences		<10	Insf. Data

Code	Occupation	STEM Disciplines	Occupational Group	In WV	Median Hourly Earnings
45-3011	Fishers & Related Fishing Workers	Life Sciences		<10	Insf. Data
			TOTAL	48,553	Avg: \$28.89
Source:	Economic Modeling Specialists, Inc.				
Potential Knowledge Providing Occupations					
25-1021	Computer Science Teachers, Postsecondary	Computer Science	Computer and Mathematics	310	NA
25-1022	Mathematical Science Teachers, Postsecondary	Mathematics	Computer and Mathematics	240	NA
25-1032	Engineering Teachers, Postsecondary	Engineering	Architecture and Engineering	320	NA
25-1041	Agricultural Sciences Teachers, Postsecondary	Life Sciences	Life, Physical, and Social Sciences	40	NA
25-1042	Biological Science Teachers, Postsecondary	Life Sciences	Life, Physical, and Social Sciences	230	NA
25-1043	Forestry & Conservation Sciences Teachers	Life Sciences	Life, Physical, and Social Sciences	50	NA
25-1052	Chemistry Teachers, Postsecondary	Chemistry	Life, Physical, and Social Sciences	90	NA
25-1053	Environmental Science Teachers, Postsecondary	Environmental Science	Life, Physical, and Social Sciences	30	NA
25-1054	Physics Teachers, Postsecondary	Physics	Life, Physical, and Social Sciences	80	NA
25-1071	Health Specialties Teachers, Postsecondary	Life Sciences	Life, Physical, and Social Sciences	780	NA
25-1072	Nursing Instructors & Teachers, Postsecondary	Life Sciences	Life, Physical, and Social Sciences	250	NA
			TOTAL	2420	
Source: WorkForce WV. Retrieved May 6, 2016. (Information not available through Economic Modeling Specialists, Inc.)					

SOC	Medical-Related Occupations in West Virginia	2015 Jobs	Median Hourly Earnings
29-1141	Registered Nurses	19,361	\$26.92
29-2061	Licensed Practical and Licensed Vocational Nurses	6,603	\$16.76
29-2052	Pharmacy Technicians	3,088	\$12.47
29-1069	Physicians and Surgeons, All Other	2,661	\$86.83
29-2041	Emergency Medical Technicians and Paramedics	2,512	\$12.45
29-1051	Pharmacists	2,210	\$59.58
29-2034	Radiologic Technologists	1,541	\$22.19
29-2071	Medical Records and Health Information Technicians	1,345	\$15.00
29-2053	Psychiatric Technicians	1,113	\$9.60
29-1123	Physical Therapists	1,103	\$38.21
29-2021	Dental Hygienists	1,056	\$26.90
29-1071	Physician Assistants	1,024	\$43.13
29-2011	Medical and Clinical Laboratory Technologists	995	\$25.45
29-1126	Respiratory Therapists	928	\$22.54
29-1127	Speech-Language Pathologists	907	\$26.91
29-2012	Medical and Clinical Laboratory Technicians	892	\$18.05
29-1171	Nurse Practitioners	757	\$42.84
29-2055	Surgical Technologists	589	\$17.70
29-1122	Occupational Therapists	544	\$34.96
29-9011	Occupational Health and Safety Specialists	510	\$36.41
29-1151	Nurse Anesthetists	498	\$78.48
29-2099	Health Technologists and Technicians, All Other	471	\$17.83
29-1062	Family and General Practitioners	452	\$80.62
29-2081	Opticians, Dispensing	447	\$13.19
29-2032	Diagnostic Medical Sonographers	419	\$26.90
29-1021	Dentists, General	388	\$73.72
29-1031	Dietitians and Nutritionists	380	\$26.23
29-2031	Cardiovascular Technologists and Technicians	366	\$17.46
29-2051	Dietetic Technicians	316	\$10.94
29-2056	Veterinary Technologists and Technicians	315	\$12.17
29-1131	Veterinarians	279	\$36.43
29-1061	Anesthesiologists	237	\$98.24
29-2035	Magnetic Resonance Imaging Technologists	190	\$28.16
29-2057	Ophthalmic Medical Technicians	187	\$14.80
29-2033	Nuclear Medicine Technologists	175	\$27.89
29-1066	Psychiatrists	171	\$68.08
29-2054	Respiratory Therapy Technicians	136	\$20.95
29-1041	Optometrists	132	\$43.32
29-1199	Health Diagnosing and Treating Practitioners, All Other	131	\$32.26
29-9091	Athletic Trainers	128	\$19.50
29-1181	Audiologists	124	\$29.80
29-9012	Occupational Health and Safety Technicians	106	\$22.64
29-9099	Healthcare Practitioners and Technical Workers, All Other	102	\$21.50

SOC	Medical-Related Occupations in West Virginia	2015 Jobs	Median Hourly Earnings
29-1124	Radiation Therapists	99	\$31.84
29-1125	Recreational Therapists	92	\$20.09
29-1067	Surgeons	90	\$86.88
29-1065	Pediatricians, General	83	\$37.87
29-2091	Orthotists and Prosthetists	74	\$25.00
29-1064	Obstetricians and Gynecologists	67	\$93.97
29-1063	Internists, General	61	\$82.64
29-1129	Therapists, All Other	61	\$24.54
29-1029	Dentists, All Other Specialists	30	\$72.04
29-1128	Exercise Physiologists	23	\$18.34
29-1023	Orthodontists	21	\$86.74
29-1081	Podiatrists	20	\$46.32
29-2092	Hearing Aid Specialists	19	\$18.14
29-1022	Oral and Maxillofacial Surgeons	19	\$93.81
29-1161	Nurse Midwives	19	\$42.01
29-1024	Prosthodontists	<10	Insf. Data
29-9092	Genetic Counselors	<10	Insf. Data
	TOTAL	56,678	\$29.74

For more information, please contact:

Anne Barth, Executive Director
 TechConnect West Virginia
info@techconnectwv.com
techconnectwv.org