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Science and Engineering State Indicators: Mountain West States

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SCIENCE AND ENGINEERING STATE INDICATORS: MOUNTAIN WEST STATES

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PURPOSE:

This fact sheet examines the Science & Engineering State Indicators database from the National Science Foundation (NSF) for the Mountain West states of Arizona, Colorado, Nevada, New Mexico, and Utah.[1]

ABOUT THE DATA:

The Science & Engineering State Indicators database provides state-level data on science and technology policies. The NSF provides data on elementary and secondary education, higher education, workforce, and other related topics.[2] This fact sheet focuses on three indicators: higher education, workforce, and research and development outputs.

KEY FINDINGS:

1. New Mexico ($1,814.76) is the only Mountain West state with expenditures on student aid per undergraduate student that exceed the national average ($1,085.21).
2. Nevada enrolls science, engineering, and health graduate students at approximately one third the rate (5.50 per 1,000 individuals aged 18-24) of the national average (14.89).
3. Among Mountain West states, Nevada reports the lowest workforce rates for all science and engineering occupations: life scientists (0.12%), computer and mathematical scientists (1.64%), physical scientists (0.15%), social scientists (0.14%), engineers (0.70%), and technical workers (1.07%).
4. Arizona (36.95), Utah (26.15), and New Mexico (23.90) had higher rates of academic patents awarded than the national average (21.69) in 2019, whereas Colorado (18.63) and Nevada (11.43) were below the national average.
5. Arizona (944) was the only Mountain West state that produced more academic science and engineering articles than the national average (936) in 2019, whereas Colorado (914), Nevada (902), Utah (901), and New Mexico (809) produced less than the national average.

Table 1 displays 2019 data on science and engineering in higher education in the Mountain West. Data are presented per 1,000 individuals in certain age groups, reflecting the ages that people typically receive degrees. Colorado confers associate degrees in science and engineering (0.75), and technology (0.55) at rates much lower than the national averages (3.42 and 1.16, respectively). Nevada confers associate degrees in technology (4.48) at a rate significantly higher than the national average (1.16). Nevada (13.38) and New Mexico (15.15) confer bachelor's degrees in science and engineering below the national average (23.78); Utah confers the same degrees at a higher rate than the national average (31.60). Nevada enrolls science, engineering, and health graduate students at almost a third of the rate (5.50) of the national average (14.89).

[1] "Science and Engineering State Indicators." *National Center for Science and Engineering Statistics*. https://ncses.nsf.gov/indicators/states/compare-indicators
[2] https://ncses.nsf.gov/indicators/states/overview

Table 1: Science and Engineering Degree Conferral Rates and Enrollment per 1,000 students in the Mountain West, 2019

Metric	U.S.	AZ	CO	NV	NM	UT
Associate Degrees in Science and Engineering Conferred (per 1,000 Individuals 18-24 Years Old)	3.42	4.14	0.75	1.99	4.64	2.67
Associate Degrees in Technology Conferred (per 1,000 Individuals 18-24 Years Old)	1.16	1.91	0.55	4.48	1.59	0.68
Bachelor's Degrees in Science and Engineering Conferred (per 1,000 Individuals 18-24 Years Old)	23.75	24.35	28.47	13.38	15.15	31.60
Science, Engineering, and Health Graduate Students (per 1,000 Individuals 25-34 Years Old)	14.89	12.90	16.22	5.50	13.28	12.66

*Adapted from "Science and Engineering State Indicators." *National Center for Science and Engineering Statistics.* https://ncses.nsf.gov/indicators/states/compare-indicators

Table 2 displays 2019 data on science and engineering degree conferral and funding for higher education in Mountain West states. Data are presented in percentages and dollars. Colorado (37.7%) is the only state in the Mountain West that confers science and engineering degrees at a rate higher than the national average (33.1%). New Mexico (5.28%) is the only Mountain West state that confers science and engineering doctoral degrees at a rate higher than the national average (4.17%). New Mexico (0.79%) and Utah (0.57%) are the only Mountain West states that appropriate state tax funds for higher education at a rate higher than the national average (0.41%). New Mexico ($1,814.76) is the only Mountain West state with expenditures on student aid per undergraduate student that exceed the national average ($1,085.21); Arizona ($89.77) and Utah ($62.99) report state expenditures on student aid less than 10% of the national average.

Table 2: Percentage of Science and Engineering Degrees Conferred and Funding for Higher Education in the Mountain West, 2019

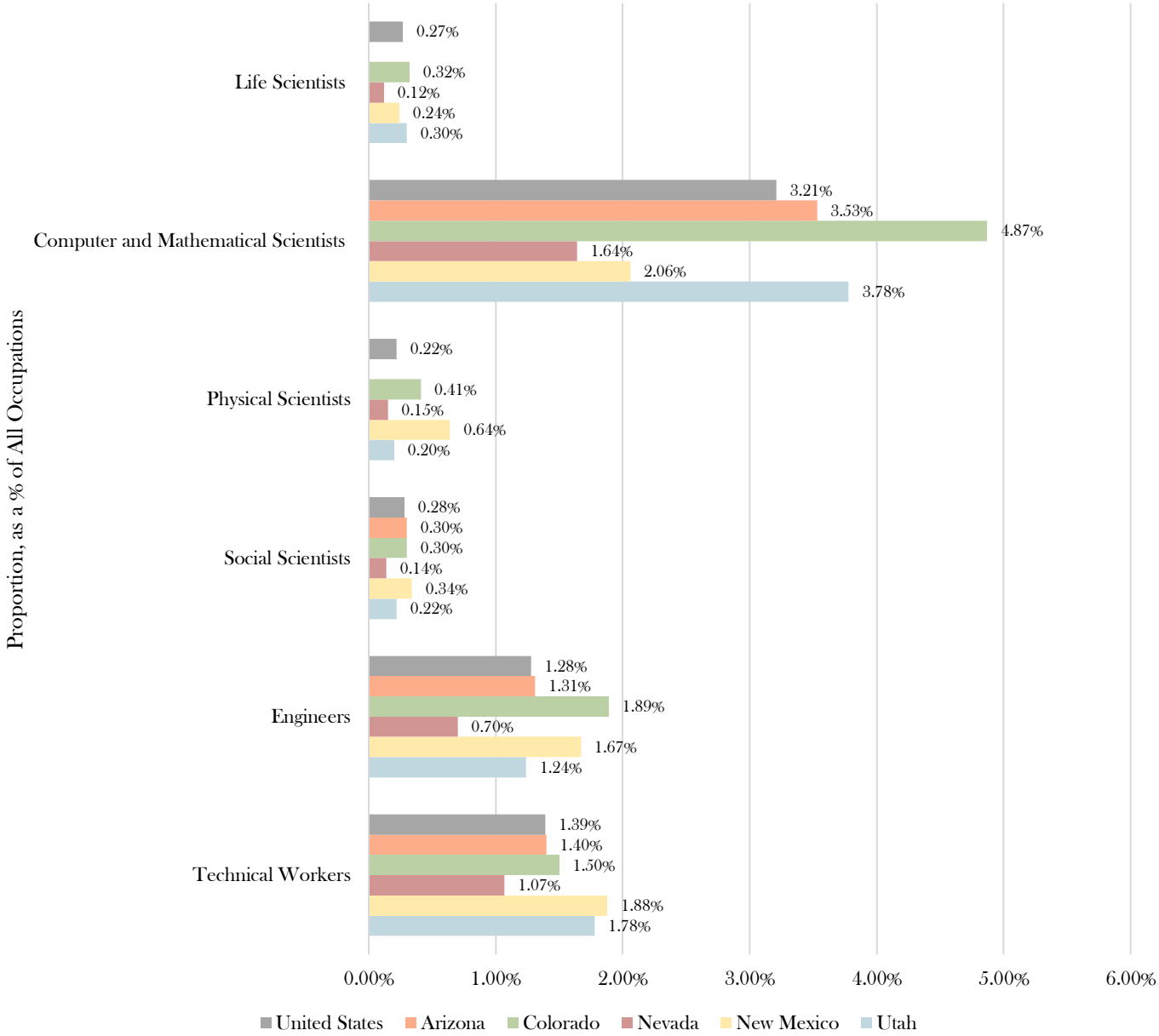
Metric	U.S.	AZ	CO	NV	NM	UT
Science and Engineering Degrees (% of Higher Education Degrees Conferred)[3]	33.1%	25.3%	37.7%	31.5%	33.0%	21.8%
Science and Engineering Doctoral Degrees (% of Science and Engineering Degrees Conferred)[4]	4.17%	3.69%	3.97%	3.54%	5.28%	2.85%
Appropriations of State Tax Funds for Higher Education (% of Gross Domestic Product)	0.41%	0.21%	0.25%	0.36%	0.79%	0.57%
State Expenditures on Student Aid (per Undergraduate Student)	$1,085.21	$89.77	$506.96	$496.03	$1,814.76	$62.99
State Support for Higher Education (per Full-Time Equivalent Student)	$7,566	$2,515	$5,078	$9,411	$11,159	$8,415

*Adapted from "Science and Engineering State Indicators." *National Center for Science and Engineering Statistics.* https://ncses.nsf.gov/indicators/states/compare-indicators

[3] This metric includes bachelor's, master's, and doctorate's degrees but excludes associate's degrees. https://ncses.nsf.gov/indicators/states/indicator/se-doctoral-degrees-to-all-se-degrees
[4] Ibid

Figure 1 displays the proportion of life scientists, computer and mathematical scientists, physical scientists, social scientists, engineers, and technical workers as a percentage of all occupations in each Mountain West state. The U.S. rate for each occupation is also included. Nevada has the lowest workforce rates for all science and engineering occupations reported. Among Mountain West states, Colorado has the highest proportions of life scientists (0.32%), computer and mathematical scientists (4.87%), and engineers (1.89%). New Mexico has the highest proportions of physical scientists (0.64%), social scientists (0.34%), and technical workers (1.88%). Arizona did not provide data on life scientists and physical scientists within the state, and therefore these values are not shown.

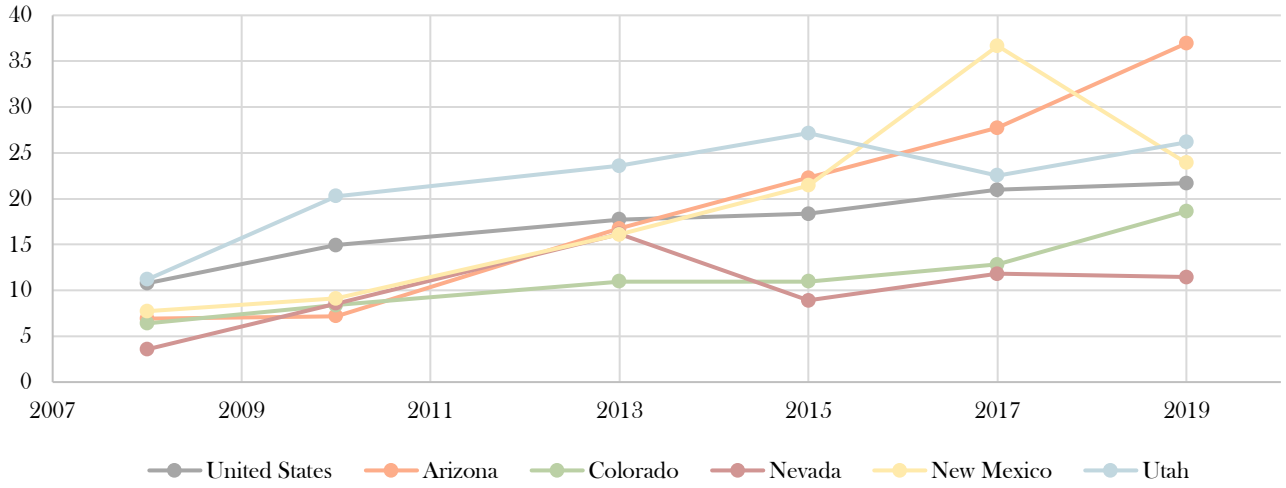
Figure 1: Science and Engineering Workforce, Mountain West States, 2020



*Adapted from "Science and Engineering State Indicators." *National Center for Science and Engineering Statistics.* https://ncses.nsf.gov/indicators/states/compare-indicators

Figure 2 displays the change in academic patents awarded per 1,000 science, engineering, and health doctorate holders in academia in each Mountain West state. Data are provided for select years between 2008 and 2019. Arizona (36.95), Utah (26.15), and New Mexico (23.90) had higher rates of academic patents awarded than the national average (21.69) in 2019, whereas Colorado (18.63) and Nevada (11.43) were below the national average. Within the Mountain West, Nevada had the lowest rate of academic patents awarded in 2008 (3.57), 2015 (8.89), 2017 (11.82), and 2019 (11.43).

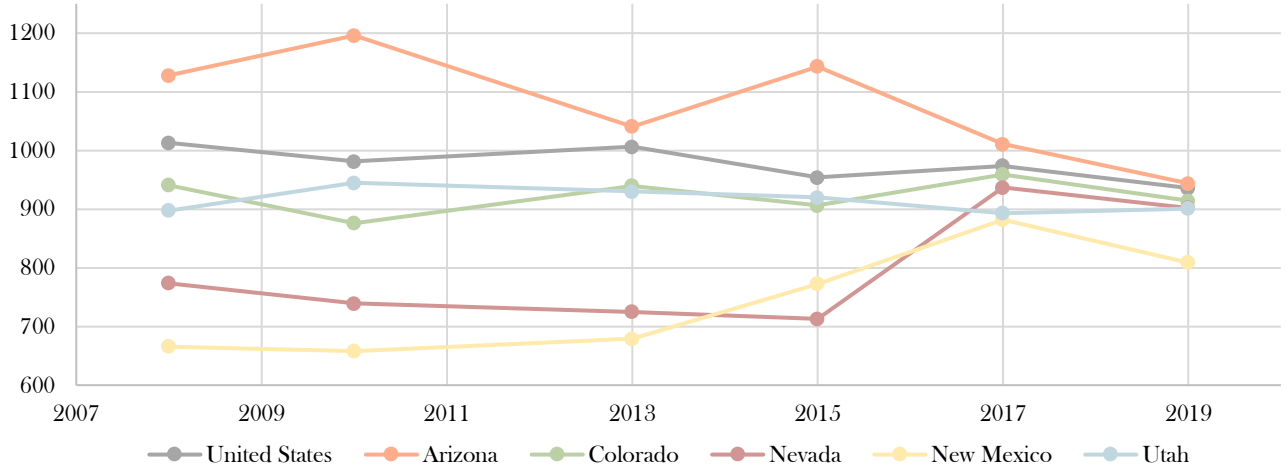
Figure 2: Academic Patents Awarded, Mountain West States, 2008-2019



*Adapted from "Science and Engineering State Indicators." *National Center for Science and Engineering Statistics.* https://ncses.nsf.gov/indicators/states/compare-indicators

Figure 3 displays the change in academic science and engineering articles produced per 1,000 science, engineering, and health doctorate holders in academia in each Mountain West state. Data are provided for select years between 2008 and 2019. Arizona (944) was the only Mountain West state that produced more academic science and engineering articles than the national average (936) in 2019, whereas Colorado (914), Nevada (902), Utah (901), and New Mexico (809) produced less than the national average. Nevada produced 224 more articles in 2017 (937) than in 2015 (713), the largest increase within the Mountain West for all years considered.

Figure 3: Academic Science and Engineering Article Output, Mountain West States, 2008-2019



*Adapted from "Science and Engineering State Indicators." *National Center for Science and Engineering Statistics.* https://ncses.nsf.gov/indicators/states/compare-indicators