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## Artificial Intelligence (AI) Capacity in Mountain West Metros

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**ARTIFICIAL INTELLIGENCE (AI) CAPACITY IN  
MOUNTAIN WEST METROS**

**Economic Development & Workforce Fact Sheet No. 43 | October 2021**

Prepared by: Olivia K. Cheche, Ally M. Beckwith, and William E. Brown, Jr.

**PURPOSE:**

This fact sheet highlights data on artificial intelligence (AI) growth in Mountain West metropolitan areas over the last several decades, as originally reported by Mark Muro and Sifan Liu from the Brookings Institution's Metropolitan Policy Program.<sup>1</sup> The Brookings report examines how various metros across the United States contribute towards AI technology creation and business activity.

**ABOUT THE DATA:**

Mark Muro and Sifan Liu's report examines 261 sites based on AI technology creation and business activity in the United States. The seven basic measures of AI capacity reported for each metro include AI companies, job postings, job profiles, research and development (R&D) dollars,<sup>2</sup> conference papers, patents, and contracts. The Brookings report includes data retrieved from various AI research measures and AI commercialization indicators. AI companies, conference papers, contracts, and patent data are presented as a ratio (per million workers). Job postings and job profiles are presented as another ratio (per 100 workers), while research and development data are presented as a third ratio (dollars per worker).

This fact sheet includes data for the following Mountain West metros that are categorized as early AI adoption centers: Boulder, CO and Santa Fe, NM.

The following Mountain West metros are potential AI adoption centers: Phoenix-Mesa-Chandler, AZ; Tucson, AZ; Colorado Springs, CO; Denver-Aurora-Lakewood, CO; Fort Collins, CO; Albuquerque, NM; Carson City, NV; Reno, NV; Logan, UT; Provo-Orem, UT; and Salt Lake City, UT.

The following Mountain West metros do not have significant AI activities and are grouped in a third category (Other): Flagstaff, AZ; Lake Havasu City-Kingman, AZ; Prescott Valley-Prescott, AZ; Sierra Vista-Douglas, AZ; Yuma, AZ; Grand Junction, CO; Greeley, CO; Pueblo, CO; Farmington, NM; Las Cruces, NM; Las Vegas-Henderson-Paradise, NV; St. George, UT; and Ogden-Clearfield, UT.

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<sup>1</sup> Muro, Mark and Sifan Liu. "The geography of AI: Which cities will drive the artificial intelligence revolution?" 2021. *Brookings Institution*. Retrieved from: [https://www.brookings.edu/research/the-geography-of-ai/?preview\\_id=1503414&](https://www.brookings.edu/research/the-geography-of-ai/?preview_id=1503414&)

<sup>2</sup> Muro and Liu note that "federal research and development expenditures at U.S. colleges and universities grew by 45% in the past decade. However, in 2018, the total federal expenditures on AI research and development at U.S. colleges and universities accounted for about \$2 billion, out of total U.S. spending of nearly \$40 billion on all topics. As such, federally funded AI projects in U.S. colleges and universities encompassed just 5% of total federal research and development expenditures at U.S. colleges in that year."

**KEY FINDINGS:**

1. Among Mountain West metros, Boulder, CO leads in AI job and research capacity with 416.4 AI companies per million workers and \$1,067.10 R&D dollars per worker.
2. Despite ranking in two separate clusters, Reno, NV (a potential adoption center for AI) and Las Vegas-Henderson-Paradise, NV (a metro without significant AI activities) report similar numbers of AI companies per million workers (61.3 and 60.6, respectively). R&D investment in Reno (\$122.60/worker) is significantly more than found in the Las Vegas-Henderson-Paradise metro (\$3.50/worker). R&D dollars invested in Reno is 35 times that of the Las Vegas-Henderson-Paradise metro.
3. Seven Mountain West metros report 0 AI companies per million workers: Sierra Vista-Douglas, AZ; Las Cruces, NM; Flagstaff, AZ; St. George, UT; Pueblo, CO; Farmington, NM; and Grand Junction, CO.
4. Six Mountain West metros report a complete lack of R&D investment (\$0/worker) for AI research efforts: Yuma, AZ; Sierra Vista-Douglas, AZ; St. George, UT; Pueblo, CO; Farmington, NM; and Grand Junction, CO.

Table 1 displays Mountain West metros categorized as early adopters of AI. Out of 13 sites identified as early adopters of AI, Boulder, CO and Santa Fe, NM are the only two metros located in the Mountain West region. Boulder, CO boasts the greatest AI job intensity in the Mountain West with 416.4 AI companies per million workers. Boulder also leads among Mountain West metros for AI research, with \$1,067.10 R&D dollars per worker dedicated to these efforts.

**Table 1: Early Adopters of Artificial Intelligence in the Mountain West**

Metro	AI Companies Per Million Workers	Job Postings Per 100 Workers	Job Profiles Per 100 Workers	R&D Dollars Per Worker	Conference Papers Per Million Workers	Patents Per Million Workers	Contracts Per Million Workers
Boulder, CO	416.4	1.6	1	\$1,067.10	0	123.6	292.8
Santa Fe, NM	128.1	0.6	0.5	\$213.50	0	0	42.7

\* Adapted from Muro, Mark and Sifan Liu. "The geography of AI: Which cities will drive the artificial intelligence revolution?" 2021. *Brookings Institution*. Retrieved from: [https://www.brookings.edu/research/the-geography-of-ai/?preview\\_id=1503414&](https://www.brookings.edu/research/the-geography-of-ai/?preview_id=1503414&)

Table 2 displays Mountain West metros categorized as potential adoption centers for AI. Within 87 sites identified as potential adoption centers for AI, 11 metros are located in the Mountain West region. Provo-Orem, UT and Carson City, NV lead within this cluster for AI job intensity with 190.4 and 95.7 AI companies per million workers, respectively. Colorado Springs, CO falls towards the bottom of the rankings in this regard with 16.1 AI companies per million workers. Salt Lake City, UT and Tucson, AZ lead within this cluster for research prospects, dedicating \$397.40 and \$393.10 R&D dollars per worker respectively to these efforts.

Table 2: Potential Adoption Centers for Artificial Intelligence in the Mountain West

Metro	AI Companies Per Million Workers	Job Postings Per 100 Workers	Job Profiles Per 100 Workers	R&D Dollars Per Worker	Conference Papers Per Million Workers	Patents Per Million Workers	Contracts Per Million Workers
Provo-Orem, UT	190.4	0.6	0.5	\$65.00	0	55.7	9.3
Carson City, NV	95.7	0.8	0.2	\$47.80	0	0	47.8
Denver-Aurora-Lakewood, CO	78.1	0.7	0.4	\$89.00	0	10.9	14.1
Fort Collins, CO	63.3	0.4	0.4	\$260.90	0	0	55.3
Reno, NV	61.3	0.3	0.2	\$122.60	0	372.8	15.3
Salt Lake City, UT	47.6	0.8	0.4	\$397.40	12.8	26.3	23
Logan, UT-ID	44.5	0.2	0.4	\$245.00	0	44.5	66.8
Phoenix-Mesa-Chandler, AZ	38.8	0.6	0.3	\$90.90	1.7	7.5	9.8
Albuquerque, NM	36.2	0.6	0.3	\$349.10	0	42.8	59.3
Tucson, AZ	31.2	0.4	0.2	\$393.10	9.5	9.4	25
Colorado Springs, CO	16.1	0.5	0.2	\$80.60	0	0	16.1

\* Adapted from Muro, Mark and Sifan Liu. "The geography of AI: Which cities will drive the artificial intelligence revolution?" 2021. *Brookings Institution*. Retrieved from: [https://www.brookings.edu/research/the-geography-of-ai/?preview\\_id=1503414&](https://www.brookings.edu/research/the-geography-of-ai/?preview_id=1503414&)

Table 3 displays Mountain West metros that do not currently support significant AI activities. Out of 261 sites that do not currently support significant AI activities, 13 metros are located in the Mountain West region. The Las Vegas-Henderson-Paradise, NV metro has 60.6 AI companies per million workers, with a mere \$3.50 R&D dollars per worker dedicated towards AI research efforts.

Seven Mountain West metros have 0 AI companies per million workers: Sierra Vista-Douglas, AZ; Las Cruces, NM; Flagstaff, AZ; St. George, UT; Pueblo, CO; Farmington, NM; and Grand Junction, CO. Despite a lack of AI companies, Las Cruces and Flagstaff dedicate \$207.60 and \$169.40 R&D dollars per worker respectively to AI research efforts.

Six Mountain West metros dedicate \$0 R&D dollars per worker to AI research efforts: Yuma, AZ; Sierra Vista-Douglas, AZ; St. George, UT; Pueblo, CO; Farmington, NM; and Grand Junction, CO.

Table 3: Mountain West Metros Without Significant Artificial Intelligence Activities

Metro	AI Companies Per Million Workers	Job Postings Per 100 Workers	Job Profiles Per 100 Workers	R&D Dollars Per Worker	Conference Papers Per Million Workers	Patents Per Million Workers	Contracts Per Million Workers
Las Vegas-Henderson-Paradise, NV	60.6	0.2	0.2	\$3.50	0	37.3	1.2
Ogden-Clearfield, UT	41.5	0.2	0.2	\$25.90	0	0	20.7
Lake Havasu City-Kingman, AZ	23.8	0.1	0.1	\$23.80	0	0	0
Yuma, AZ	22.2	0.1	0.1	\$0	0	0	0
Prescott Valley-Prescott, AZ	16.4	0.1	0.1	\$16.40	0	0	16.4
Greeley, CO	11.8	0.2	0.1	\$23.50	37.7	0	0
Sierra Vista-Douglas, AZ	0	0.3	0.2	\$0	0	0	0
Las Cruces, NM	0	0.2	0.3	\$207.60	0	0	0
Flagstaff, AZ	0	0.1	0.2	\$169.40	0	0	0
St. George, UT	0	0.1	0.2	\$0	0	0	0
Pueblo, CO	0	0.1	0.1	\$0	0	0	19.7
Farmington, NM	0	0.1	0	\$0	0	0	57.5
Grand Junction, CO	0	0	0.1	\$0	0	0	0

\* Adapted from Muro, Mark and Sifan Liu. "The geography of AI: Which cities will drive the artificial intelligence revolution?" 2021. *Brookings Institution*. Retrieved from: [https://www.brookings.edu/research/the-geography-of-ai/?preview\\_id=1503414&](https://www.brookings.edu/research/the-geography-of-ai/?preview_id=1503414&)