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DIGITALIZATION AND THE AMERICAN WORKFORCE

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PURPOSE:

This Fact Sheet examines the rate of digitalization within the Metropolitan Statistical Areas (MSAs) of the Mountain West division using the findings and data from *Digitalization and the American Workforce*, a report from the Brookings Institution.¹

WHAT IS DIGITALIZATION AND WHY IT IS IMPORTANT:

Digitalization, or the diffusion of digital technologies, is an ever-growing phenomenon that is changing the landscape of the American workforce. From taxi drivers to teachers, the use of computers, software, apps, etc. is becoming more integrated in every profession. The degree and growth rate of digitalization varies between different occupations, industries, and regions. Digitalization shows promise of opportunity and empowerment, enhancing regional economies, and securing jobs that would otherwise be vulnerable to automation. However, digitalization can also amplify the inequalities experienced between different social groups, regions, and the anxiety experienced towards future job security within some fields.

HOW DIGITAL SCORES ARE CREATED:

The report utilizes the Occupational Information Network (O*NET) surveys that gather specific details about jobs, including their requirement of “knowledge of computers and electronics” and “work activity-interaction with computers.”² The report measures the overall knowledge and activity required for an occupation by utilizing these variables and combining, then normalizing, their ratings from individual occupations into a digital score. The lower the value of digital score, the less digital interaction there is.

KEY TAKEAWAYS:

1. Typically, regions and cities with higher rates of digitalization in 2016 also started with higher rates in 2002. These regions did not increase their digitalization scores as much as regions with lower rates in 2002.
2. The Mountain West division has experienced moderate growth in digitalization but is ranked least digitized compared to other divisions in the United States.
3. Nevada, and more specifically the Las Vegas-Henderson-Paradise MSA, experience the lowest digitalization rates in the Mountain West, and some of the lowest in the country.

¹ See Mark Muro, Sifan Liu, Jacob Whiton, and Siddharth Kulkarni, “Digitalization and the American Workforce,” 2017 (https://www.brookings.edu/wp-content/uploads/2017/11/mpp_2017nov15_digitalization_full_report.pdf)

² Ibid.

DIGITALIZATION ACROSS THE COUNTRY

Starting by taking a more board look at digitalization across the country between different divisions, we see in Table 1 that not all regions are the same. The South Atlantic region held the highest mean digital score in 2002 (25.66) and achieved the highest score in 2016 (46). The Mountain West has the lowest digitalization score in 2016 compared to other divisions in the country. Given the consistent trend that we are seeing - of low-ranking regions in 2002 experiencing higher growth rate of digitalization - the Mountain West should be far more digitized in 2016 than it actually is. The East South-Central region started with a lower ranking than Mountain West in 2002 and grew to achieve a higher digital score in 2016, experiencing a 91% growth rate.

TABLE 1: DIGITAL SCORES FOR EACH DIVISION IN THE U.S. *

Digital Rank 2016	Division	Mean digital score in 2002	Mean digital score in 2016	% change 2002-2016
6	East South Central ³	23.00	44.00	+91.00%
5	East North Central ⁴	23.80	44.60	+87.39%
7	West North Central ⁵	23.71	44.43	+87.39%
9	Mountain West ⁶	23.75	43.87	+84.72%
4	Pacific Coast ⁷	24.40	45.00	+84.43%
8	West South Central ⁸	24.00	44.25	+84.37%
3	New England ⁹	25.00	45.66	+82.64%
2	Mid-Atlantic ¹⁰	25.33	45.66	+80.25%
1	South Atlantic ¹¹	25.66	46.00	+79.27%

*Divisions as defined by the U.S. Census Bureau

³ Alabama, Kentucky, Mississippi, Tennessee

⁴ Illinois, Indiana, Michigan, Ohio, Wisconsin

⁵ Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

⁶ Montana, Idaho, Nevada, Utah, Colorado, Wyoming, Arizona, New Mexico

⁷ Washington, Oregon, California, Alaska, Hawaii

⁸ Arkansas, Louisiana, Oklahoma, Texas

⁹ Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

¹⁰ New Jersey, New York, Pennsylvania

¹¹ Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, D.C. West Virginia

DIGITALIZATION IN THE MOUNTAIN WEST

Despite the score of the Mountain West being so low, there are a few outliers within the division that have higher than average concentration of digitalized occupations, as seen in Table 2. This includes the states of Utah, Arizona, and Colorado - all which have a digital score of 46 in 2016. Despite having relatively higher scores in 2002, Colorado and New Mexico reported the lowest growth rates, 70.37% and 76.00%, respectively. Utah and Arizona experienced the same increase of digitalization from 2002 to 2016, 91.66%. Table 2 also indicates that Nevada’s digital score ranks last in the Mountain West region and in the country for both 2002 and 2016. However, Nevada also experienced the highest percent change, growing by 95.24%.

TABLE 2: DIGITAL SCORES FOR STATES IN THE MOUNTAIN WEST

Digital rank 2016	State	Mean digital score in 2002	Mean digital score in 2016	% change
50	Nevada	21	41	+95.24%
7	Utah	24	46	+91.66%
8	Arizona	24	46	+91.66%
45	Montana	23	43	+86.96%
48	Wyoming	22	41	+86.36%
34	Idaho	24	44	+83.33%
39	New Mexico	25	44	+76.00%
9	Colorado	27	46	+70.37%

Table 3 shows that when we take a closer look at the Mountain West division, to the MSA’s within each of the states, we see a much wider distribution of the rank of digitalization per state. This implies that a state like Colorado does not have a uniform distribution of digitalization but only high digital scores in major metropolitan areas. Boulder has the highest digital score in the Mountain West but experienced the least growth from 2002 at 38.71%.

While larger metropolitan areas typically have higher digital ranks within a state, the opposite is true in Nevada. The Las Vegas-Henderson-Paradise digital score ranks last among all metro areas in the Mountain West. Reno (72.72%) and Las Vegas-Henderson-Paradise (71.43%) have similar growth rates from 2002-2016. Yuma, Arizona is the second lowest digitalization ranked city but was able to increase its digital score by 85.00%, having the greatest growth in the region.

TABLE 3: DIGITAL SCORES FOR METRO AREAS IN THE MOUNTAIN WEST BY DIGITAL RANK

Digital Rank 2016	Metros	State	Mean Digital Score In 2002	Mean Digital Score In 2016	% change
6	Boulder	CO	31	43	+38.71%
8	Logan	ID-UT	-	43	-
10	Salt Lake City	UT	25	43	+72.00%
16	Sierra Vista-Douglas	AZ	-	43	-
22	Provo-Orem	UT	25	42	+68.00%
43	Phoenix-Mesa-Scottsdale	AZ	25	42	+68.00%
64	Tucson	AZ	25	42	+68.00%
72	Lake Havasu City-Kingman	AZ	-	41	-
82	Denver-Aurora-Lakewood	CO	28	41	+46.43%
101	Colorado Springs	CO	28	41	+46.43%
108	Santa Fe	NM	27	41	+51.85%
122	Flagstaff	AZ	24	41	+70.83%
137	Albuquerque	NM	26	41	+57.69%
146	St. George	UT	-	41	-
151	Carson City	NV	-	41	-
163	Fort Collins	CO	26	40	+53.85%
164	Prescott	AZ	-	40	-
182	Grand Junction	CO	24	40	+66.66%
188	Pueblo	CO	22	40	+81.82%
193	Las Cruces	NM	23	40	+73.91%
208	Greeley	CO	25	40	+60.00%
214	Ogden-Clearfield	UT	25	40	+60.00%
326	Reno	NV	22	38	+72.72%
328	Farmington	NM	-	38	-
366	Yuma	AZ	20	37	+85.00%
373/out of 381	Las Vegas-Henderson-Paradise	NV	21	36	+71.43%

DIFFERENT LEVELS OF DIGITALIZATION IN OCCUPATIONS ACROSS THE MOUNTAIN WEST

Table 4 reports on “high digital level occupations.” A high digital level occupation has a standardized digital score of 60 and above, with a score of at least 5 (out of 7) in knowledge and work activity, and a score of at least a 3 in *both* knowledge and work activity (out of 5).

Las Vegas-Henderson-Paradise, which has the lowest digital score in the Mountain West also contains the greatest share of low digital level jobs in the region.

TABLE 4: DIGITAL RANK AND SHARE OF JOBS IN HIGH DIGITAL LEVEL OCCUPATIONS IN THE MOUNTAIN WEST

Digital rank 2016	Metros	State	High	Medium	Low
10	Salt Lake City	UT	30.00%	44.40%	25.60%
22	Provo-Orem	UT	26.30%	45.90%	27.80%
43	Phoenix-Mesa-Scottsdale	AZ	26.20%	45.90%	27.80%
64	Tucson	AZ	25.00%	47.80%	27.20%
82	Denver-Aurora-Lakewood	CO	26.80%	45.50%	27.70%
101	Colorado Springs	CO	25.00%	46.40%	28.60%
137	Albuquerque	NM	25.60%	44.10%	30.30%
214	Ogden-Clearfield	UT	22.60%	46.50%	30.90%
373/out of 381	Las Vegas-Henderson-Paradise	NV	16.70%	43.60%	39.70%