

Appendix A-WIOA 2019 R & P WIOA

Unified State Plan for Wyoming

(Note: The tables and figures referenced in the WIOA State Plan for Wyoming are attached in a separate PDF and will be available online at

https://doe.state.wy.us/LMI/WIOA_Plan_Tables_2019.)

(a) Economic, Workforce, and Workforce Development Activities Analysis.

(1) Economic and Workforce Analysis.

(A). Economic Analysis.

After a prolonged period of economic downturn that lasted nearly two years, Wyoming has experienced an extended period of moderate growth. The Research & Planning (R&P) section of the Wyoming Department of Workforce Services has defined *economic downturn* as a period of at least two consecutive quarters of over-the-year decline in both average monthly employment and total wages based on data from the Quarterly Census of Employment and Wages (QCEW).

Wyoming's most recent economic downturn began in second quarter 2015 (2015Q2) due to a decline in the prices of and demand for coal, oil, and natural gas (Gallagher, 2015). As shown in Table 1 and illustrated in Figure 1, Wyoming experienced an over-the-year decrease in both average monthly employment and total wages from 2015Q2 to 2016Q4. Total wages increased from prior year levels in 2017Q1, and employment followed two quarters later in 2017Q3. From 2017Q3 to 2018Q4, Wyoming experienced six quarters of continued moderate growth.

While reading the information presented in this document, it is important to consider that the mining (including oil & gas) sector drives economic changes in Wyoming. In July 2019, Blackjewel LLC filed for bankruptcy and closed two coal mines in Campbell County, leaving approximately 700 people without jobs (Erickson, 2019). The two mines that were closed, Eagle Butte and Belle Ayr, were the fourth

and sixth- largest producing coal mines in Wyoming, respectively. According to data from the Wyoming Mining Association (2019), these two mines represented about 11% of coal mining employment in the state, and 12% of coal produced. At the time this plan was completed, the two mines had not reopened. Large scale changes like this may affect the labor force in ways that have not yet been identified.

The tables and figures referenced in this document available online at:

https://doe.state.wy.us/LMI/WIOA_Plan_Tables_2019.

(i) Existing Demand Sectors and Occupations

Industries are classified by the North American Industry Classification System (NAICS). Broad sectors are given a two-digit NAICS code, such as mining, including oil & gas (NAICS 21) and construction (NAICS 23). Within each two-digit sector are several three-digit subsectors, four-digit industries, five-digit detailed industries, and six-digit detailed national industries. For example, there are three subsectors within mining: oil & gas extraction (NAICS 21), mining, except oil & gas (NAICS 22), and support activities for mining (NAICS 213). A variety of six-digit national detailed industries are found in each sector; for example, in construction are such detailed industries as new single-family general contractors (NAICS 236115), commercial building construction (NAICS 236210), and oil & gas pipeline construction (NAICS

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237120). More information about the NAICS structure is available at <https://www.census.gov/programs-surveys/economic-census/guidance/understanding-naics.html>.

Wyoming's economy is driven by the health of mining, including oil & gas (NAICS 21). Economic expansion occurs when demand for and prices of oil, coal, and natural are high. Conversely, economic contraction takes place when demand for and prices of these resources wane. Wyoming's two most recent economic downturns – 2009Q1-2010Q1 and 2015Q2-2016Q4 – were both preceded by declining energy prices.

Wyoming's moderate economic growth in 2017 and 2018 was driven primarily by growth in mining, including oil & gas. As seen in Table 2, from 2017 to 2018, mining added the greatest number of jobs (1,062) and experienced the greatest percentage increase (5.4%). Other industries with noticeable job growth included professional & business services (3.9%), construction (3.6%), manufacturing (3.6%), and transportation, warehousing, & utilities (2.9%). In most cases, these are industries that support Wyoming's mining industry during times of economic growth. For example, construction growth was primarily seen in oil & gas pipeline construction (NAICS 237120). Overall, construction added 701 jobs, while oil & gas pipeline construction added 902. Several other detailed industries within construction (NAICS 23) lost jobs from 2017 to 2018.

As seen in Table 3, over-the-year job growth in mining was primarily found in support activities for mining (NAICS 213), particularly support activities for oil & gas operations (NAICS 213112; 1,056 jobs, or 16.1%) and drilling oil & gas wells (NAICS 213111; 214 jobs, or 15.5%). At the subsector level, job losses were seen in oil & gas extraction (NAICS 211; -86, or -2.7%) and mining, except oil & gas (NAICS 212; -79, or -1.0%). The job losses in NAICS 212 included coal mining (NAICS 2121), which lost 98 jobs from 2017 to 2018 (-1.8%).

Existing demand occupations can be identified using the New Hires Job Skills Survey (New Hires Survey), which is conducted by R&P on a quarterly basis, based on a sample of new hires. The purpose of this survey is to collect information about jobs that are filled in the state, such as occupation, typical job duties, wages and benefits, license and certification requirements, necessary job skills, employers' satisfaction with their new hires' skills, and more. In addition, by linking New Hires Survey data with several administrative databases, R&P is able to identify demographics of new hires, such as gender and age. New Hires Survey results are published annually, and contain a wealth of information about the state's job and labor markets.

In 2017, there were 88,561 new hires in Wyoming. The majority of all new hires worked in occupations with no formal educational requirement (52.0%) or in occupations that required a high school diploma or equivalent (33.0%); together, these two categories accounted for 85.0% of all new hires. The remaining 13,292 new hires (15.0%) worked in occupations that required some education beyond a high school diploma, from some college courses or a postsecondary certificate to a master's degree or doctoral degree.

Table 4 provides a list of the 10 most frequently occurring new hires occupations requiring some

postsecondary education in 2017. The occupations in Table 4 that require less than an associate's degree could be seen as demand occupations for which training could be completed relatively quickly. For example, occupations that require a postsecondary non-degree award (certificate) include truck drivers,

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nursing assistants, medical assistants, computer user support specialists, and heating, air conditioning, & refrigeration mechanics.

(ii) Emerging demand industry sectors and occupations

Emerging demand industries and occupations were identified using R&P's most recent short-term industry and occupational projections for 2018Q2 to 2020Q2, available online at https://doe.state.wy.us/LMI/projections/2019/Short_Term_Projections_2018-20.htm.

For the purposes of this state plan, R&P identified *emerging demand industries* as subsectors (three digit NAICS) with projected growth of at least 5.0% and 20 jobs from 2018Q2 to 2020Q2. Table 5 shows the 13 subsectors (three-digit NAICS) that met these criteria, along with the major industry sector (two digit NAICS) to which each subsector belongs. The greatest increase in terms of the number of jobs and percentage (1,821, or 19.8%) is projected for support activities for mining (NAICS 213).

Three emerging demand industries were identified in Wyoming's manufacturing sector: beverage & tobacco product manufacturing (NAICS 312), plastics & rubber products manufacturing (NAICS 326), and fabricated metal product manufacturing (NAICS 332). Three emerging demand industries were also identified in transportation & warehousing: truck transportation (NAICS 484), support activities for transportation (NAICS 488), and warehousing & storage (NAICS 493).

For this unified state plan, R&P has listed 25 *emerging demand occupations* by identifying the top five occupations with the greatest number of projected openings from 2018 to 2020 for each educational requirement (see Table 6). Occupational projections include three types of openings: *growth* (numeric change), *exits* (persons leaving the workforce), and *transfers* (persons changing occupations).

The vast majority (74.9%) of openings are projected in occupations that require a high school diploma or less (see Figure 2). The occupations with the greatest number of total openings for this educational requirement included cashiers (2,423), retail salespersons (2,353), waiters & waitresses (2,254), combined food preparation & serving workers (1,951), and office clerks, general (1,565). Many of these occupations are relatively low-paying jobs with high turnover that are often found in industries such as retail trade and leisure & hospitality.

Occupations requiring some college and no degree or a postsecondary certificate accounted for all 8.4% of all projected openings from 2018Q2 to 2020Q2. These included occupations such as heavy & tractor-trailer truck drivers (1,794 openings), bookkeeping, accounting, & auditing clerks (759 openings), and nursing assistants (731 openings).

Occupations requiring an associate's degree made up 2.0% of all projected openings. Occupations in this category included forest & conservation technicians (144 openings), paralegals & legal assistants (128 openings), geological & petroleum technicians (126 openings), and chemical technicians 971

openings).

The second largest group of projected occupations required a bachelor's degree (12.5% of all projected openings). The occupations in this category varied, with the greatest number of openings

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projected for general & operations managers (952), registered nurses (639), elementary school teachers, except special education (463), and accountants & auditors (389), among other occupations.

Occupations requiring a master's degree accounted for just 1.2% of all projected openings. Many of these occupations are found in educational services, such as educational, guidance, school, & vocational counselors (136 openings), education administrators, elementary & secondary school (71 openings), and instructional coordinators (66 openings).

The smallest proportion of all projected openings were found in occupations requiring a doctoral or professional degree (1.0%). These included such occupations as lawyers (103 openings), physical therapists (50 openings), and clinical, counseling, & school psychologists (36 openings).

A full list of short-term projections of all occupations is available at https://doe.state.wy.us/LMI/projections/2019/Short_Term_Projections_2018-20.htm.

(B): Workforce Analysis.

As previously mentioned in this document, Wyoming has endured two periods of economic downturn over the last 10 years. To illustrate the effects that the most recent economic downturn (2015Q2 to 2016Q4) had on the state's population and workforce, this analysis compares population estimates and data on persons working from 2014 to 2018.

Wyoming's estimated resident population in 2018 was 577,737, a decrease of 4,811 people (-0.4%) from the estimated 582,548 in 2014, according to data from the U.S. Census Bureau (2019). This marked the third consecutive over-the-year population decrease for Wyoming; prior to 2015, the state's population increased each year.

The changes in Wyoming's population and workforce are illustrated in Table 7 and Figure 3. Note that during the previous economic downturn (2009Q1-2010Q1), Wyoming's population continued to grow, even though the number of persons working decreased. This suggests that although some Wyoming residents lost their jobs, many stayed in the state, since surrounding states also lost jobs during the national Great Recession. In contrast, during the most recent economic downturn, the estimated population and number of persons working both decreased, suggesting that some Wyoming residents who lost jobs in 2015 and 2016 apparently left the state. The growing economies of neighboring states may have contributed to Wyoming's declining population since the start of the most recent economic downturn. In 2018, the average rate of job growth from prior-year levels for Wyoming was 0.6%, substantially lower than states such as Utah (3.4%), Idaho (3.3%), and Colorado (2.5%), as noted by Moore (2019). Wyoming residents who lost jobs during the most recent economic downturn may have been able to quickly find work in another state.

Table 8 and Figure 4 show how the most recent economic downturn played a part in shaping Wyoming's population and workforce; in particular, there was a substantial decrease in the younger segments of the workforce. For example, from 2014 to 2018, the population of individuals ages 20-24 decreased by 11.1% (4,717 persons), while the number working decreased by 20.4% (7,899 persons). Altogether, the estimated population of individuals between the ages of 15 and 34 decreased by 5.6% (9,077 persons) and the number working decreased by 14.1% (20,107). These changes are consistent with previous

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research from R&P that demonstrated how younger male workers are the most likely to lose their jobs during times of economic downturn (Harris, 2013, and Moore, 2017).

The decrease in younger workers is also consistent with other documented behavior of the *Millennial generation*, the 66 million individuals born from 1981-1996 (Pew Research Center, 2015). In 2015, Millennials were ages 18-33 in 2014 and made up 32.5% of the total number of persons working in Wyoming. In 2018, Millennials were ages 22-37 and accounted for 30.3% of all persons working at any time. The number of millennials working in Wyoming decreased by 13.0% from 2014-2018.

Several studies have discussed millennials exiting rural areas for states with large metropolitan areas. Cromartie (2017), for example, noted that about 68% of rural counties saw a decrease in their millennial populations between 2010 and 2016, and Kumar (2018) stated that, "rural areas lack academic and economic opportunity compared to metropolises."

Wyoming's millennial population decreased from 130,897 in 2014 to 124,275 in 2018 (-6,622, or -5.1%). According to population estimates from the U.S. Census Bureau (2019), Wyoming experienced the third largest millennial population loss in the nation, behind only Vermont (-7.8%) and Rhode Island (-5.7%). In contrast, as seen in Figure 5, surrounding states with large metropolitan areas showed noticeable growth in their millennial populations, including Colorado (11.9%) and Utah (5.5%).

These data support the idea that Wyoming's younger workers are leaving to find work in nearby states with metropolitan areas. Liu (2019) observed, "Movers tend to be much younger than non-movers, and this is particularly true for Wyoming," and "if millennials continue to move to big metro areas, the state may face a serious labor force shortage and faster population aging in the near future."

Individuals with Barriers to Employment and Special Populations

Note: The data presented in this section on individuals with barriers to employment and special populations include data from the U.S. Census Bureau's American Community Survey (ACS). The Census Bureau has collected a complete enumeration of the country's population every 10 years since 1790, which is known as the decennial census. In more recent decades, the majority of the population was given the "short form" survey instrument, which only collected age, sex, and race, while a sample of the population was given the "long form" of the survey, which also collected socioeconomic and housing data. In 2010, the Census Bureau replaced this long form with the ACS, which collects similar data to the long form but is conducted on a yearly basis rather than once a decade. This yearly collection schedule allows the data to be released in a timelier manner, which is helpful to the entities that rely on Census data, such as federal, state, and local governments, and researchers (U.S. Census Bureau, 2008).

The ACS is sent to approximately 3 million people across the nation per year. The results are released as one-year, three-year, and five-year estimates based on the number of years of data used to create the estimates. The one-year estimates are the most current but are less accurate because the sample used to create them is smaller. Accuracy increases as more data samples are added to the estimation process. The data used for this report are five-year estimates, based on data collected between January 1, 2013, and December 31, 2017. Five-year estimates are the most accurate of those released by the Census Bureau, especially for areas with smaller populations, such as Wyoming, or for studying population subgroups such as age groups or gender (U. S. Census Bureau, 2008). For more information about the ACS, examples of

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the survey instrument, or instructions of filling out the survey, please visit <http://www.census.gov/programs-surveys/acs>. The data used for this report is from the Integrated Public Use Microdata Series (IPUMS), provided by the University of Minnesota (Ruggles, Genadek, Goeken, Grover, and Sobek, 2015).

Poverty

Poverty is measured by the U.S. government in two ways. The first is referred to the *poverty threshold*, which is updated annually by the U.S. Census Bureau and used for statistical purposes, such as counting the number of people living in poverty. The second, known as *poverty guidelines*, are a simplified version of the poverty thresholds, which are used by the U.S. Department of Health and Human Services for administering certain federal programs, such as the Supplemental Nutrition Assistance Program (SNAP). These measurements of poverty vary based on the year and the number of people in the family or household. In 2017, an individual with an income of up to \$12,488 or a family of four with an income of up to \$25,094 would be at or below the poverty threshold (U.S. Census Bureau, 2019).

As shown in Table 9, an estimated, 13.3% of Wyoming residents, or 77,667 people, were at or below the poverty threshold in 2017. A sizeable proportion of individuals younger than age 18 (14.2%) were at or below the poverty threshold. Substantial proportions of individuals ages 18-19 (40.4%) and 20-24 (31.7%) were at or below the poverty threshold; however, it should be noted that individuals in these two age groups make up a large proportion of individuals enrolled in college. Table 10 shows that greater proportion of Wyoming females (14.1%) were at or below the poverty threshold than males (12.6%).

Table 11 contains data for the population who earned 130% of the poverty threshold, or 30% more than the poverty threshold. This would include an individual who earned up to \$16,234 in a year or up to \$32,622 for a family of four. In Wyoming, 18.0% of individuals had incomes within this range. Again, the highest concentration of these individuals were ages 18-19 (45.8%), 20-24 (38.4%), or younger than age 18 (20.0%). Table 12 shows that a greater proportion of females (19.2%) were at or below 130% of the poverty threshold compared to males (16.8%).

Table 13 contains the proportion of individuals whose earnings were within 160% of the poverty threshold. For a single person, this would be in income up to \$19,981, and for the family of four, this would be an income up to \$40,150. In Wyoming, 22.6% of all individuals had incomes within 160% of the poverty threshold. Nearly half (48.6%) of those ages 18-19 had incomes within this range, and 44.4%

of those ages 20-24 had incomes within this range. Among individuals ages 65 or older, 20.5% of people had incomes up to 160% of the poverty threshold. Nearly one in four women (24.0%) had earnings within this range, compared to approximately one in five males (21.2%), as shown in Table 14.

Native American

American Indians or Alaska Natives (referred to as *Native American* individuals for the purposes of this section) reside in all 23 Wyoming counties (see Table 15), but Fremont County, where the Wind River Reservation is located, had the largest population (21.2%) in 2010, according to 2010 Decennial Census estimates (please note that these ACS data were not available so Decennial Census estimates were used).

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As shown in Table 16, nearly one-third (32.8%) of the state's Native American population were younger than age 18 in 2017, while approximately 15.1% were age 55 or older. Among Native Americans age 16 or older, 49.2% were employed and working, 9.2% were unemployed, and 41.6% were not in the labor force (see Table 17).

Veterans

The Census Bureau (2017a) defines *veterans* as individuals who served in any branch of the United States military during a time of war or peace, for any length of time, at home or abroad. Veterans who are ages 17 or older are included in the ACS statistics. As shown in Table 18, in 2017, there were 47,316 veterans in Wyoming, including active duty. The proportion of veterans increases with age. Only 1.7% of all veterans in Wyoming were younger than 25, while 41.6% of veterans were ages 65 or older.

The United States Department of Veterans Affairs (2015) assigns a disability rating to veterans who received a service-connected disability, defined as "an injury or illness that was incurred or aggravated during active military service." This affects, among other things, an individual's eligibility and priority for medical services. Approximately 19.4% of the state's veterans have some degree of disability rating (see Table 19). The largest proportion had a disability rating of 10 to 20 percent (6.8%).

The degree of disability rating varied by age group. The largest proportion of individuals with a 70 percent disability rating or higher were ages 35-44 (5.6%), while 8.5% of veterans ages 55-64 had a disability rating of 10-20 percent. The largest proportion of veterans with some degree of disability rating were ages 35-44: more than one-fourth (25.4%) of veterans in this age group had some degree of disability rating.

English Proficiency

Table 20 contains data on the ability of individuals in Wyoming to speak English. In 2017, 93.2% of individuals ages 5 or older indicated they spoke only English. Another 4.6% felt they spoke English very well, 1.2% thought they spoke English well, 0.9% felt they spoke English but not well, and only 0.1% indicated they did not speak English at all.

Disability

The number and percent of people residing in Wyoming with a disability in 2017 can be found in

Table 21. Disability, as defined by the Census Bureau (2017b), includes cognitive, ambulatory, independent living, self-care, vision, and hearing impairments. Although a person may have more than one type of disability, they are only counted once for the purposes of this section. Overall, 14.5% of the population who were ages 5 or older had a disability. The proportion of people with a disability increased with age, from 5.5% of individuals ages younger than 18 to 38.3% of individuals ages 65 or older.

Youth

Wyoming's estimated resident youth population declined over the last decade, from 38,839 in 2008 to 36,313 (-2,526, or -6.5%; see Table 22). The decline in youth working in Wyoming was even greater, from 27,190 in 2008 to 19,719 in 2018 (-7,471, or -27.5%). The greatest decrease in youth working in Wyoming occurred from 2008 to 2009 during the previous economic downturn (see Figure 6). The number

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of youth working increased slightly from 2010 to 2015, but once again decreased during the most recent economic downturn from 2015 to 2016.

According to school district enrollment and staffing data from the Wyoming Department of Education (WDE), fall enrollment for Wyoming's public schools steadily increased from 2008/09 to 2015/16 before declining slightly for the next two years (see Table 23 and Figure 7). Overall, total fall enrollment increased from 86,519 in 2008/09 to 93,029 in 2018/19, an increase of 6,510 students, or 7.5%).

Total fall enrollment peaked in 2015/16, with 94,002 students.

The WDE has used the Federal Four-Year Adjusted Cohort methodology established by the U.S. Department of Education since 2009/10. Wyoming's four-year (on-time) high school graduate rate gradually decreased from 2009/10 to 2012/2013, before increasing and trending upward through 2015/16. According to WDE state and district graduation rate data, Wyoming's four-year high school graduation rate for 2017/18 was 81.7%, higher than at any point since 2009/10 (see Table 24 and Figure 8). Graduation rates varied by district (see Table 25); in 2017/2018, the lowest graduation rates were found in Fremont County #21 (40.0%), Big Horn County #1 (50.0%), Niobrara County #1 (57.3%), and Fremont County #14 (57.9%).

From 2010/11 to 2017/18, a total of 8,892 students from grades 9-12 dropped out of Wyoming public schools, according to WDE data (see Table 26 and Figure 9). Since 2010/11, the total number of dropouts has averaged 1,112 per year, with a high of 1,203 in 2012/13 and a low of 1,024 in 2016/17. As shown in Table 27 and Figure 9, male students accounted for 57.8% of all dropouts, compared to 42.2% for female students. The total number of dropouts for 2017/18 by district are presented in Table 28.

Prior research from R&P has illustrated how Wyoming youth leave the state as they age. In *A Decade Later* (2012), Glover found that from 1992 to 2006, the average five-year retention rate for 18-year-olds with Wyoming as a primary state of wages was 55.8% (see Table 29). The average 10-year retention rate from 1992 to 2001 was just 43.8%. Data from R&P's Education: WE Connect project show similar five-year retention rates for Wyoming high school students and college completers. Of all high school seniors in 2006/07 and 2007/08, 57.7% were found working in Wyoming five years later (see

Table 30). Five-year retention rates were similar from graduates from the University of Wyoming and the state's community colleges: 57.2% for those with academic degrees, 63.1% for individuals with occupational one year degrees, and 60.0% for those with occupational two-year degrees (see Table 31).

(i) Employment and Unemployment

The Local Area Unemployment Statistics (LAUS) program provides estimates on the labor force (number of persons employed plus the number of persons unemployed) and the employment rate. Wyoming's labor force has steadily declined since 2012; from 2008 to 2018, labor force was 289,574, down 1.3% (-3,705) compared to 2008 (see Table 32 and Figure 10). The decline of Wyoming's labor force is likely influenced by the state's shrinking population (particularly young workers) and the growing economies of neighboring states like Colorado and Utah.

As Wyoming's population and labor force have declined, so has the state's labor force participation rate (see Figure 10). The labor force participation rate refers to the percentage of persons ages 16-64 eligible

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to participate in the labor force who are actively participating in the labor force, either working or looking for work. Wyoming has historically had a somewhat higher labor force participation rate than the U.S., although both have declined in recent years. In 2018, Wyoming's average monthly labor force participation rate was 64.7%, slightly higher than the national average of 62.9%.

A total of 13,543 unemployed workers received UI benefits in Wyoming in 2018, down 24.1% from 17,849 in 2017 (see Table 33). In addition, fewer UI recipients exhausted their regular UI benefits (3,195 exhaustees in 2018 compared to 4,178 in 2017). However, the benefit exhaustion rate remained largely unchanged from 2017 (23.4%) to 2018 (23.6%). Fewer UI recipients could be an indication that fewer people lost jobs in 2018 and needed to collect UI benefits as their temporary financial support. But the similar exhaustion rate (number of exhaustees divided by number of UI recipients) may indicate that job opportunities did not improve much from 2017 to 2018.

Table 34 shows that the highest UI benefit exhaustion rates were seen in individuals ages 65 and older (42.1%) and 55-64 (29.0%), while the lowest exhaustion rates were seen in younger workers ages 16-24 (14.5%) and 25-34 (18.9%). This indicates that older unemployed workers in general had more difficulty finding reemployment than younger individuals in Wyoming. In addition, women (28.7%) were more likely than men (21.0%) to exhaust their UI benefits.

Table 34 also shows that the higher wages an individual made before being laid off (total base period wages), the lower the UI exhaustion rate. A higher pre-layoff wage would make an individual qualify for more weeks of UI benefits. Recipients may receive UI benefits for a maximum of 26 weeks. The maximum benefit amount is \$475 per week. The more weeks of eligibility for UI benefits also was linked with a lower exhaustion rate, as more time allowed recipients to find a job before exhausting their benefits. For example, 19.5% of recipients who were eligible for 20-25 weeks in 2018 exhausted their benefits, compared to 49.6% of recipients who were eligible for 10-14 weeks. The only exception was the group with zero to nine weeks, which had an 8.6% exhaustion rate. It could be that individuals in this group were under much greater pressure to find work sooner, and would take any jobs they could.

(ii) Labor Market Trends Across Industries

This section provides discussion for five selected industries as identified by the North American Industry Classification System (NAICS). The industries discussed in this section are mining (NAICS 21), construction (NAICS 23), manufacturing (NAICS 31-33), health care & social assistance (NAICS 61), and leisure & hospitality (NAICS 71-72). The industries discussed in this section play a key role in Wyoming's economy. Quarterly data from the QCEW were used in the figures in this section to illustrate employment and wage changes.

Mining, Including Oil & Gas (NAICS 21)

Wyoming's mining sector (NAICS 21) contributes more wages to the state's total than any other industry. In 2018, \$13.1 billion in total wages made up 14.3% of the statewide total, and the 20,693 jobs in mining accounted for 7.6% of all jobs (see Table 35). The average annual wage in mining was \$90,207, notably higher than the statewide average of \$48,509.

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Figure 12 illustrates how the most recent economic downturn affected Wyoming. Average monthly employment decreased from a recent high of 27,708 in 2014Q4 to 17,961 in 2016Q3, a decrease of 9,747, or 35.2%. In other words, during the most recent economic downturn, Wyoming lost more than one-third of all mining jobs. Although mining employment remains substantially lower than pre-downturn levels, average monthly employment steadily increased from prior-year levels during each quarter from 2017Q2 to 2018Q4.

Construction (NAICS 23)

In 2018, construction accounted for 7.4% of total employment with 20,253 jobs, and 8.3% of the state's total wages, with \$1.1 billion (see Table 36). The average annual wage in construction was \$53,554, greater than the statewide average of \$48,059.

Employment in Wyoming's construction sector (NAICS 23) varies by season. As shown in Figure 13, employment tends to be lowest in the winter months of the first quarter, then increases during the spring (second quarter) and peaks during the summer months (third quarter) before declining in the fall (fourth quarter).

Wyoming's construction sector endured a prolonged period of job losses in recent years, as average monthly employment declined from prior-year levels during each quarter from 2015Q1 to 2018Q3 – more than three years (see Figure 13). That trend finally changed in 2018Q3 and 2018Q4, when average monthly employment increased compared to 2017Q3 and 2017Q4. The average monthly employment of 20,253 in 2018 was a 3.7% increase compared to 2017.

Manufacturing (NAICS 31-33)

The 9,721 jobs in Wyoming's manufacturing sector in 2018 represented 3.6% of the state's total employment (see Table 37). Manufacturing also contributed \$651.9 million in total wages, 5.0% of the statewide total.

Average monthly employment in mining has been on an upward trend since 2017Q2 (see Figure 14). During the second half of 2018, employment in manufacturing nearly returned to pre-downturn levels, while employment in other industries remained substantially lower. As discussed in Section A of this document, three emerging demand industries were identified in Wyoming's manufacturing sector: beverage & tobacco product manufacturing (NAICS 312), plastics & rubber products manufacturing (NAICS 326), and fabricated metal product manufacturing (NAICS 332).

Health Care & Social Assistance (NAICS 62)

In 2018, there were 25,363 jobs in health care & social assistance, 9.3% of all jobs in the state (see Table 38). The \$1.1 billion in total wages accounted for 8.4% of the state's total. The average annual wage was \$43,536, lower than the statewide average of \$48,059.

As seen in Figure 15, employment in health care & social assistance grew steadily over the last 10 years.

Employment peaked early in 2018 and remained steady throughout the year. Wyoming's aging population contributes to the need for more health care workers. In addition, as noted by Gallagher et al. (2017), "Wyoming's health care industry has an older workforce. When the aging health care workers retire, possibly having greater health care needs themselves, the need for more health care workers in Wyoming

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grows." Previous research from R&P (Moore, 2017) has shown that Wyoming's health care & social assistance sector has a high percentage of occupations requiring a bachelor's degree and a high percentage of individuals ages 55 or older. As those individuals reach the traditional age of 65, Wyoming will need younger, educated individuals to fill those vacancies.

Leisure & Hospitality (NAICS 71-72)

Wyoming's leisure & hospitality sector accounted for more jobs than any other private industry sector in 2018. The 36,403 jobs accounted for 13.4% of total employment in the state, and the \$774.3 million in total wages made up 5.9% of the statewide total (see Table 39). The average annual wage of \$21,270 in 2018 was noticeably lower than the statewide average of \$48,059.

Much like the construction industry, employment in Wyoming's leisure & hospitality industry varies by season (see Figure 16). Employment tends to be lowest during first quarter (winter months) and highest during third quarter (summer months). Because of the statewide, regional, and national economic trends during the most recent downturn, employment & hospitality remained steady over the last five years. Wyoming may have attracted visitors from states with strong economies.

(iii) Education and skill levels of the workforce.

(iv) Skill gaps.

As shown in Table 40, a greater proportion of Wyoming's population ages 25 and older graduated high school (93.1%) compared to the national average (87.3%), according to 2017 five-year estimates from the ACS. However, the proportion of the population with a bachelor's degree or higher is lower in Wyoming (26.8%) than in the U.S. (30.8%). Wyoming also has a greater proportion of the population with some college and no degree (26.5% to 20.8%) and associate's degrees (10.9% to 8.3%) compared to the national average. This disparity between Wyoming and the national average may be due in part to the

number of jobs that require a postsecondary certificate, as that information is not captured in ACS estimates.

These proportions were similar when comparing the state and national populations by gender. Among Wyoming women ages 25 and older, 93.4% were high school graduates, compared to 87.9% nationally, while 27.7% of Wyoming women ages 25 and older had a bachelor's degree or higher, compared to 31.1% nationally. Additionally, 27.3% had some college but no degree, compared to 21.0% nationally, while an additional 12.2% had an associate's degree, compared to 9.1% nationally.

For men ages 25 and older, 92.7% in Wyoming were high school graduates, compared to 86.6% nationally. Among all Wyoming men ages 25 and older, 26.0% had a bachelor's degree or higher, compared to 30.5% nationally. A greater proportion of Wyoming men also possessed some college but no degree than the national average (25.7% compared to 20.5%) and 9.7% had an associate's degree, compared to 7.4% nationally.

Educational attainment varies by industry. Table 41 shows the total number of persons working in Wyoming at any time in 2016 by industry, the percentage of those individuals 55 and older, and the percentage of individuals in the workforce with an associate's degree or bachelor's degree or higher as their highest level of education. An industry with a high percentage of individuals ages 55 and older and a high percentage of individuals with an associate's or bachelor's degree may be indicative of a training need or

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skills gap. As these older individuals age out of the workforce, employers will need trained, skilled workers to replace them.

The data in Table 41 were used to create Figure 16, which illustrates the percentage of individuals ages 55 and older with the percentage of individuals with a bachelor's degree or higher by industry. In Figure 16 the size of the bubble represents the number of persons working in that industry; in other words, the larger the bubble, the more people working. In 2018, leisure & hospitality had the greatest number of people working (54,459), hence it is represented by the largest bubble. Conversely, the smallest bubble represents information, the industry with the fewest people working in Wyoming (4,376).

Across all industries in Wyoming, 19.9% of all persons working were ages 55 or older, and 29.5% had a bachelor's degree or higher. The shaded area in Figure 16 indicates six industries which had higher than average proportions of older workers and persons with a bachelor's degree or higher: educational services, public administration, financial activities, health care & social assistance, information, and professional & business services. Long-term investments in education and training may be required to fill vacancies in these industries as educated individuals age out of the workforce.

Educational services had the highest percentage of persons 55 or older (28.0%) and persons with a bachelor's degree or higher (64.5%). In other words, more than one in four individuals working in educational services will reach the traditional retirement age of 65 within the next 10 years, and almost two thirds had a bachelor's degree or higher.

