



COLORADO
Department of
Labor and Employment

2020 ANNUAL REPORT

**FROM THE OFFICE
OF THE FUTURE OF
WORK**



TABLE OF CONTENTS

- 01 EXECUTIVE SUMMARY 3**
 - Future of Work Definition..... 4
 - OFOW Approach & 2019-2020 Activities..... 5
 - OFOW Approach & 2019-2020 Projects..... 6

- 02 INTRODUCTION 7**
 - Introduction..... 8

- 03 WHAT IS THE FUTURE OF WORK? 9**
 - What is the Future of Work?..... 10
 - Forces Shaping the Future of Work..... 12
 - Impact of COVID-19 Pandemic..... 27

- 04 OFOW 2019-2020 ACTIVITIES 30**
 - OFOW Approach..... 31
 - OFOW Areas of Exploration..... 32
 - OFOW Activities..... 34
 - OFOW Impact..... 37

- 05 OFOW 2019-2020 PROJECTS 38**
 - OFOW Projects..... 39
 - Digital Literacy & Inclusion..... 40
 - Colorado Economic Complexity & Regional Competitiveness..... 42
 - Future Independent Contractor Protections..... 43
 - Agile Employer..... 44
 - Skills-based Practices..... 45

- 06 THOUGHT LEADERS, PARTNERS & EXTERNAL REPORTS 47**
 - Partners..... 48
 - Reports..... 49
 - References..... 50



01

EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

THE OFFICE OF THE FUTURE OF WORK (OFOW) WAS CREATED BY AN EXECUTIVE ORDER FROM GOVERNOR JARED POLIS ON SEPTEMBER 4, 2019. The OFOW is housed within the Colorado Department of Labor and Employment and serves as the central point of contact for the State's effort to understand, prepare for, and develop effective policy and programmatic solutions to respond to the changing economy and raise awareness about the future of work. Each year, the OFOW submits a report to the Governor with its recommended potential policy initiatives. This first annual report from the OFOW explains what the future of work means in Colorado and how COVID-19 impacted its trends; describes the activities of the OFOW since its launch; shares the OFOW's plans for 2020-2021.

Future of Work Definition

The term "future of work" refers to the impact of globalization, market forces, technological advances, and demographic shifts on the work we do and how we do it. In many ways the term is a misnomer as these forces have been reshaping the nature of work over the last few decades, and will continue to do so in the future.

Future of Work Trends

- ❖ Technological advances, including automation, artificial intelligence, and digitalization, in the workplace are expected to continue. Industries with occupations that depend on more routine, noncognitive tasks are likely to face displacement. All industries and occupations have a share of tasks that can be done by technology, meaning that workers will increasingly need the skills to work alongside technology. As a result of technological advances, the future ready worker requires a combination of human skills, digital skills, business management skills as well as an adaptable mindset to weather industry transition. Rural and urban geographies are at risk of further divergence as a result of job displacement due to technological advances.
- ❖ Globalization and shifts in market forces have led to outsourcing and a fissuring of the workplace. These shifts have created a proliferation of low wage work and reduction in employer-provided benefits which have put pressure on minority populations, younger workers, and those without a college degree. Many of the same industries and geographies with potential for job displacement due to technological advances, have borne the brunt of the impact of globalization and shifts in market forces.
- ❖ Colorado is aging rapidly and diversifying. Strategies for the future of work must reflect the needs of an intergenerational and diverse workforce so that all workers can find success in the evolving economy.

The economic fall-out from the COVID-19 pandemic accelerated many of the future of work trends. Industries impacted by globalization and market forces, and expected to be most impacted by technological advances were most impacted by COVID-19. Low wage workers, primarily younger, minority populations, continue to suffer employment losses; meanwhile older workers were more likely to be laid off early in the pandemic and continue to struggle to reconnect with work. Adoption of technology in the workplace has highlighted the digital inequities present between different populations and geographies, and the need for targeted interventions to improve digital literacy and inclusion in the state.

01 EXECUTIVE SUMMARY

OFOW Approach and 2019-20 Activities

In order to raise awareness and identify policy and program solutions, the OFOW conducts new research and applies existing research to Colorado contexts, holds listening sessions and convenings, builds working groups, and participates and aligns with related efforts across Colorado and the United States. The OFOW has three areas of exploration determined in partnership with thought leaders, state agency partners, and stakeholders:

- ❖ **Modernizing Worker Protections and Benefits:** Worker protections and the social safety net need to be modernized to address the fissuring workplace and to support the people most vulnerable to the changing economy, and to ensure all types of workers are protected and have access to a living wage as work continues to evolve.
- ❖ **Transformation Planning for All:** Disruption to workplaces and the economy will continue as the future of work forces reshape the nature of work. The OFOW will build awareness of these transformations and equip workers, businesses, and communities across the state with tools and strategies to effectively understand what the future of work means for them and how to increase their resilience.
- ❖ **Support for Underserved Populations:** The OFOW works to understand the impact of the future of work on target populations, and realign government programs to better prepare them for success in the future of work. This work includes addressing the systemic inequities that create barriers to success for Coloradan workers.

These areas of exploration represent the overall efforts to guide the work of the OFOW, while the specific projects of the OFOW will fall within these areas. In addition to these overall areas of exploration the OFOW defined three key considerations as part of its work:

- ❖ **Acknowledging regional diversity:** Colorado's diverse communities have unique and distinct needs. While lessons may be learned from experiences across the state, there is no one size fits all approach.
- ❖ **Focusing on the needs of left behind Coloradans:** Many Coloradans feel left behind by Colorado's economy including low-wage workers, contingent workers, and underserved populations who have not experienced economic success and were most impacted by the COVID-19 pandemic.
- ❖ **Building policy and programs with the end user in mind:** To ensure that the office's work is effective and useful, policy, programs, and other solutions are designed with the end-user front and center.

In its first year, the OFOW gave 35 presentations on the future of work to over 1,900 Coloradans and wrote 29 articles that were viewed by more than 8,200 people. The OFOW managed the launch OnwardCO in April 2020 which has connected more than 90,000 COVID-19 impacted workers in 63 out of 64 counties to essential services, training, or work. The OFOW has partnered with, participated in, supported efforts of 12 state agencies and offices and seven of the divisions and offices within CDLE.

01 EXECUTIVE SUMMARY

OFOW 2020-21 Projects

In 2021, the OFOW will also continue its efforts to raise awareness about the future of work through ongoing publications, convenings, and presentations; will re-engage thought leaders to inform its work; and will establish an ongoing working task force to inform and coordinate the future of work efforts in the state. Based on the impact of the four forces of the future of work and the COVID-19 pandemic, the OFOW established four specific projects for 2020-21:

- ❖ **Digital Literacy and Inclusion:** The OFOW will lead a Digital Inclusion Subcommittee in partnership with the Colorado Broadband Advisory Board and publish a Digital Literacy and Inclusion report that will define digital literacy competencies, a framework to measure digital literacy, as well an overview of interventions to increase digital literacy rates across Colorado.
- ❖ **Economic Complexity and Regional Competitiveness:** The OFOW and the Brookings Institution Workforce of the Future Initiative will partner to create, deploy, and track the long-term outcomes of a data-informed workforce development toolkit and a Colorado Economic Complexity Report.
- ❖ **Agile Employer:** The OFOW, in partnership with the CWDC and others, will improve the agility of Colorado employers by increasing adoption of skills-based practices and location neutral employment.
- ❖ **Future of Independent Contractors:** The OFOW will publish the SB20-207 Independent Contractor study and continue research on the landscape of independent contractors, and develop policy options that reduce misclassification and increase access to worker benefits and protections.



02

INTRODUCTION



INTRODUCTION

The world of work is changing, propelling some to greater heights while leaving others behind. Globalization, advances in technology, demographic shifts, and other factors leave many wondering whether we, as a society, are ready to face the many challenges tomorrow's economy will bring. That's why the Office of the Future of Work (OFOW) was created by an [Executive Order from Governor Jared Polis](#) on September 4, 2019. Housed within the Colorado Department of Labor and Employment (CDLE), the OFOW serves as the central point of contact for the State's effort to understand, prepare for, and develop effective policy and programmatic solutions to respond to the changing economy and raise awareness about the future of work. The OFOW, led by the CDLE executive director, must submit a report to the Governor with recommendations for potential policy initiatives at least once per calendar year beginning in 2020. The OFOW's vision is a future where all Coloradan workers have access to education and skill training that is connected to meaningful and sustainable employment.

In this report, we'll explain what the future of work means in Colorado and how COVID-19 impacted future of work trends. Then we'll describe the activities of the OFOW since its launch, its key areas of exploration, and its plans to prepare Colorado for the future of work in the upcoming year. The future of work is an expansive topic, and this report aims to provide an overview of the major trends associated with the term, the impact of these trends for Colorado, and to provide context for the projects the OFOW has prioritized.



WHAT IS THE FUTURE OF WORK?

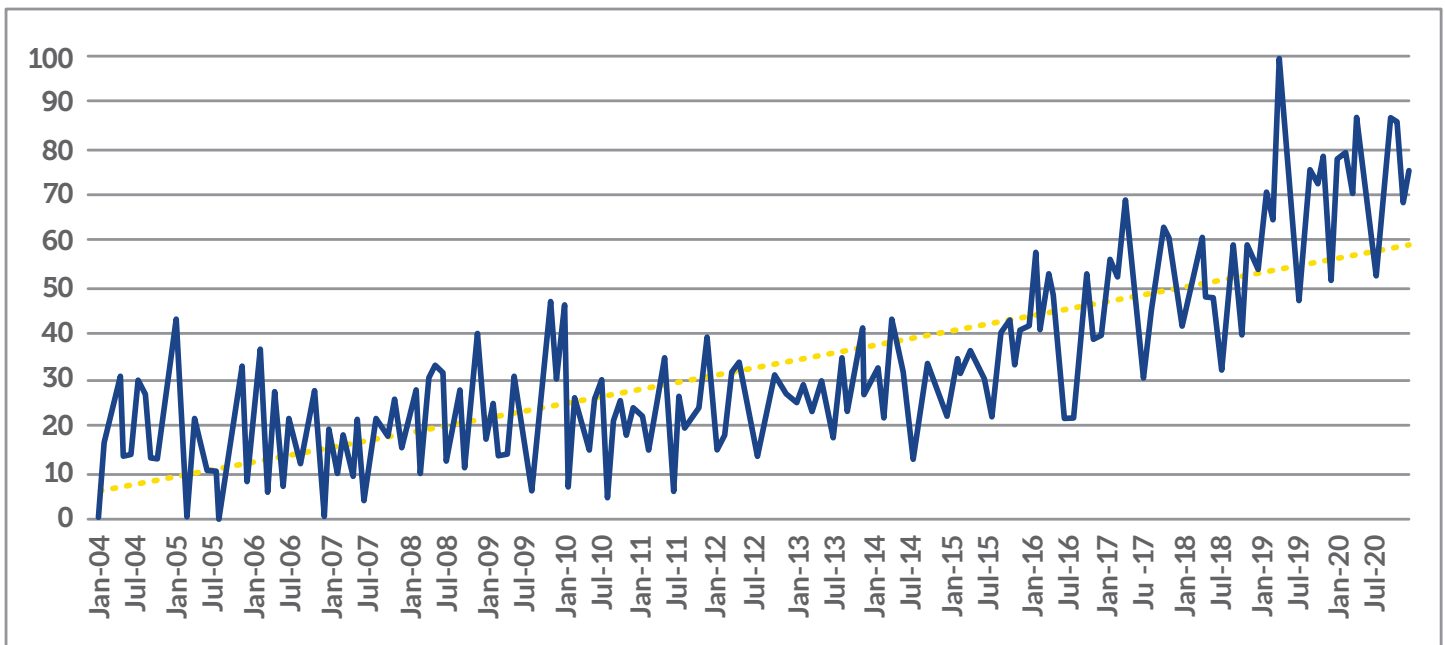


WHAT IS THE FUTURE OF WORK?

The term “future of work” has grown in popularity since 2004 (see *Figure 1* below). The term is used to describe a variety of trends, prescribe interventions, and is the subject of countless reports and initiatives across the world. Since 2016, nine states have established a task force or initiative to address the future of work and related topics (e.g. California’s Future of Work Commission), while multiple universities (e.g. MIT), consulting agencies (e.g. McKinsey, KPMG, Deloitte), and other organizations (e.g. Aspen Institute, World Economic Forum, OECD, Brookings Institution) have published future of work reports and/or established their own future of work initiatives.¹² Many of these groups directly informed the direction of the OFOW and provided content to share as part of the OFOW’s efforts to raise awareness.

Figure 1: Google searches for ‘future of work’ in the United States since 2004 (Google Trends³)

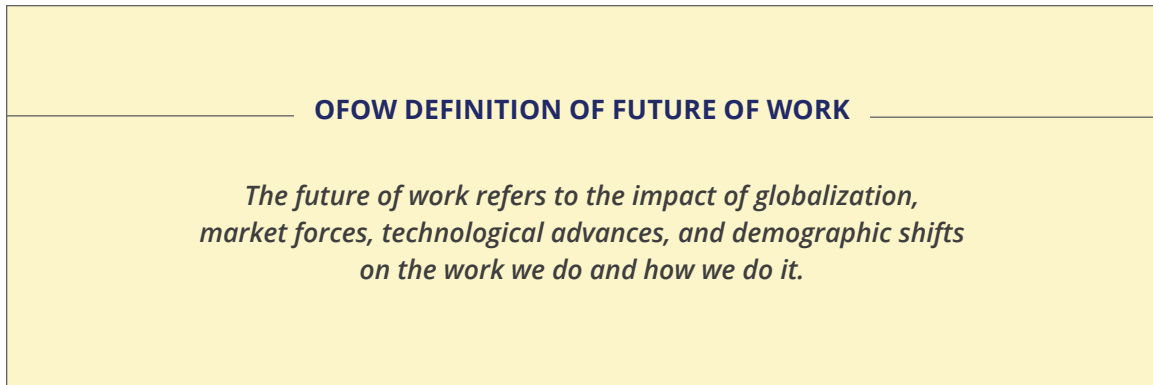
Google searches for “Future of Work” in the United States since 2004 (Google Trends)



Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means there was not enough data for this term.

03 WHAT IS THE FUTURE OF WORK?

Given the popularity of the term, one of the first activities for the OFOW was to define “future of work” to ensure everyone is using the same definition when the future of work is discussed in Colorado. The definition is below:



The goal for the OFOW's definition was to be inclusive of the major forces shaping the nature of work, and to highlight the complexity of the issue. The future of work is not one trend, but the impact of many forces on the work we do and how we do it. Additionally, the definition aims to acknowledge the fact that the term “future” of work is somewhat of a misnomer. The forces shaping the work have done so in the past, present, and will continue to do so in the future. The work of the OFOW is to understand these trends and their impact, and to identify interventions that curb their negative impacts and take advantage of the positive impacts. Next we'll describe these forces and how they are shaping the work we do and how we do it.

03 WHAT IS THE FUTURE OF WORK?

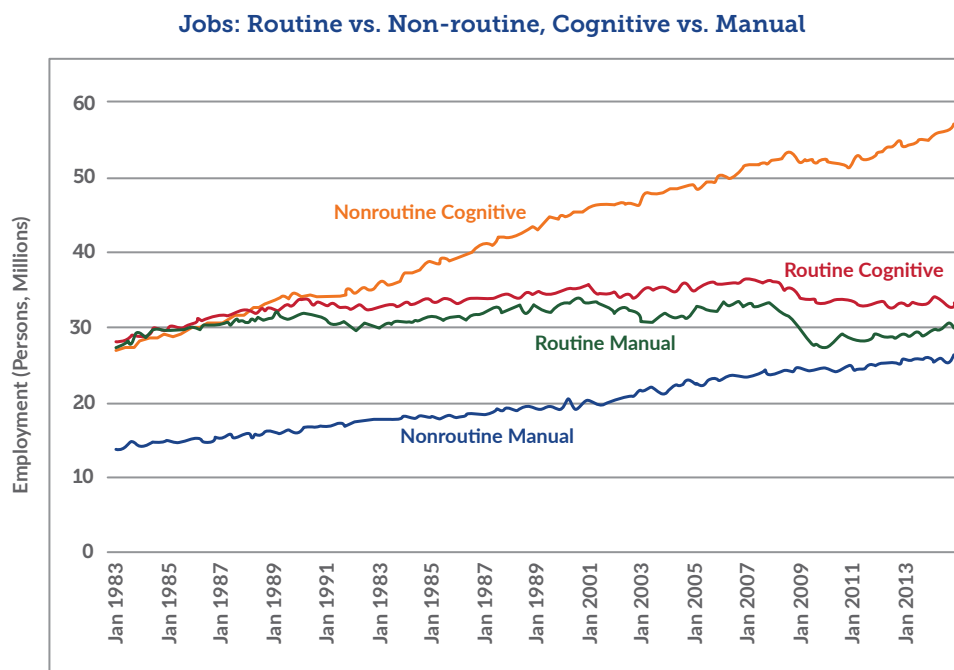
Forces Shaping the Future of Work

TECHNOLOGICAL ADVANCES

The impact of technological advances is perhaps the most common force that the term “future of work” brings to mind. Three technological advances, in particular, are transforming workplaces: automation, artificial intelligence, and digitalization. Automation is the use of technology to reduce the level of human activity needed to complete a particular task by replacing or augmenting labor.⁴ Artificial intelligence refers to computer systems that are able to perform tasks that normally require human intelligence such as visual perception and speech recognition, allowing for non-human decision making, process management, and analysis.⁵ Digitalization is the use of technologies to change or update business operational processes in order to optimize a variety of communication, management, design, and logistical tasks.⁶

To understand the impact of technological advances on employment in the past and predict its impact in the future most analyses look at the specific tasks that workers complete in a given occupation.⁴ Occupations that rely on routine cognitive tasks (e.g. sales and office occupations) and routine manual tasks (e.g. production, transportation, material moving, construction, extraction, installation, maintenance, repair) are more likely to be displaced due to technological advances.⁷ Between 1983 and 2015, these occupations stagnated with occasional dips (see Figure 2).⁷ During the same time period occupations with more nonroutine manual tasks (service occupations) employed the fewest people, and saw a slight, but steady increase in employment levels. Technological advances are less likely to displace roles with nonroutine tasks.⁷ Between 1983 and 2015, employment levels of occupations that rely on more nonroutine, cognitive tasks (such as management, professional, and related occupations) have consistently increased.

Figure 2: Employment levels of routine and non-routine tasks, 1983-2015 (Federal Reserve Bank of St. Louis⁷)

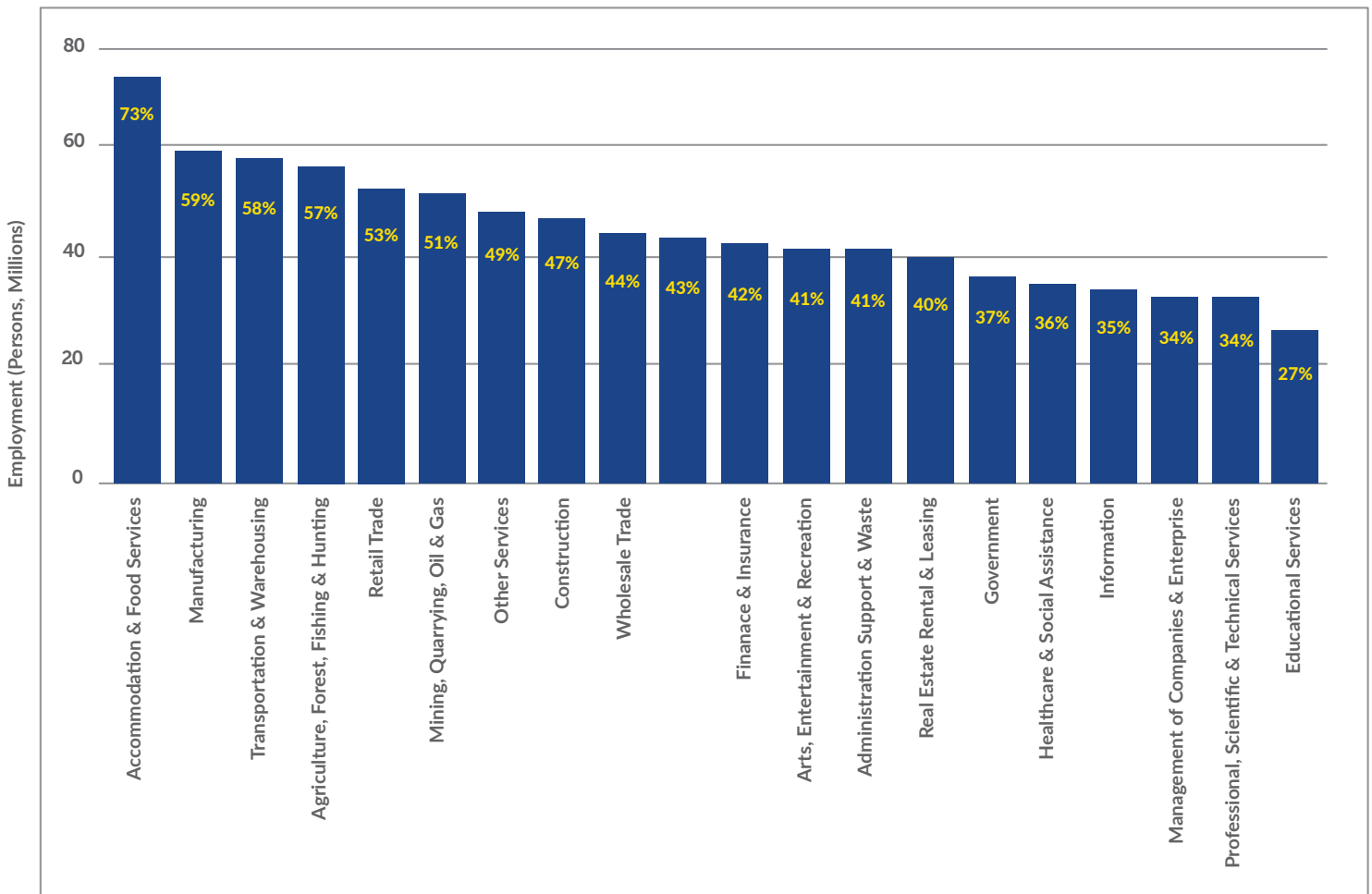


03 WHAT IS THE FUTURE OF WORK?

In 2019, in order to predict future displacement, the Brookings Institution analyzed specific industries by the percentage of tasks that could be done by technology (see [Figure 3](#)).⁴ Seventy-three percent of tasks within accommodation and food services occupations, 59 percent of tasks within manufacturing occupations, and 58 percent of tasks within transportation and warehousing occupations can be done by technology.⁴ Meanwhile, only 27 percent of tasks within educational services occupations, 34 percent of tasks within professional scientific and technical services occupations, 35 percent of tasks within information technology occupations, and 36 percent of tasks within health care and social assistance can be done by technology.⁴

Figure 3: Task automation potential by industry; % of sector (Brookings Institution⁴)

Task Automation Potential by Industry



One of the key takeaways from this analysis is that **all** occupations can and will be impacted by technology. While some occupations are more likely to be completely displaced, all occupations will require workers to work alongside technology, and to use technology to complete tasks efficiently and effectively.

03 WHAT IS THE FUTURE OF WORK?

Based on the occupations expected to be most impacted by technological advances, it is possible to identify which populations in Colorado will be most impacted. People without a high school diploma or a bachelor’s degree are more likely to work in occupations that will be most impacted by technological advances.⁴⁸⁹ Technological advances will likely exacerbate existing inequities as low-wage, marginalized populations are likely to hold jobs that could be most impacted by technological advances.⁴⁸⁹ According to an analysis from McKinsey Global Institute, Hispanic workers have the highest rate of potential displacement among all minority groups, at 25.5 percent, Black and African American workers have a potential displacement rate of 23.1 percent; meanwhile, white workers have a potential displacement rate of 22.4 percent, and Asian-American workers have the lowest rate at 21.7 percent.⁹

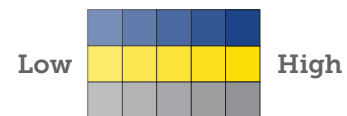
As automation and artificial intelligence transform industries, another technological advancement is shaping the workplace and the skills needed to succeed in the future of work: digitalization. An estimated 77 percent of jobs in 2020 require some use of technology and 84 percent of small businesses already use at least one digital platform.¹⁰

Low digital skill jobs represent a declining percentage of the U.S. labor market, with ongoing drops anticipated; meanwhile medium digital skills jobs have grown dramatically.⁶¹⁰ Looking at digitalization rates in Colorado we find that from 2002 to 2016 the mean digital score for Colorado rose from 27 to 46, meaning that the amount of jobs that require extensive knowledge of computers and electronics and in which work with computers is central to the overall work activity of the occupation have increased.⁶ As of a 2018 analysis, seven metropolitan statistical areas in Colorado had an average digitalization score of 50.17 (See Table 1).¹⁰

Table 1: Digitalization Rate by Colorado MSA (The Markle Foundation¹⁰)

Digitalization Rate by Colorado MSA

	Digitalization Score (2018)	Digitalization Score Absolute Change (2008-2018)
Boulder	54.76	2.918
Colorado Springs	51.84	3.947
Denver-Aurora-Lakewood	51.73	4.014
Fort Collins	49.78	4.942
Grand Junction	47.98	5.820
Greeley	47.43	4.067
Pueblo	47.64	5.272



03 WHAT IS THE FUTURE OF WORK?

Much like automation and artificial intelligence, digitalization amplifies both opportunity and inequality by creating new opportunities for work and advancement, but substituting for workers who perform routine cognitive or manual tasks.⁶ Over the last 20 years, digitalization has transformed jobs in the U.S. by expanding the digital content of hundreds of existing jobs and shifting the overall job mix toward more digitally intensive occupations.⁶ Digitalization of all jobs has been increasing, with larger increases seen in scores for traditionally labor-intensive, low-tech roles, such as in home health aides and heavy truck drivers. For workers, obtaining digital skills can offer a route to improved pay.^{6,11}

Despite the sustained increase in technology in the workplace, many U.S. workers across all industries lack the digital skills they need to ensure their continued success. A National Skills Coalition analysis of digital skills of the American workforce found that:

- ❖ 13 percent have no digital skills (workers who failed to meet one or more of 3 baseline criteria to even take the full digital skills assessment: prior computer use, willingness to take the computer-based assessment, or ability to complete 4 out of 6 very basic computer tasks, such as using a mouse or highlighting text on screen)
- ❖ 18 percent have very limited skills (Workers who can complete only very simple digital tasks with a generic interface and just a few simple steps; for example, these workers might struggle to sort emails that respond to an event invitation into different folders.)
- ❖ 35 percent have achieved a baseline level of proficient skills
- ❖ 33 percent have advanced skills¹¹

03 WHAT IS THE FUTURE OF WORK?

Looking at workers with limited or no digital skills by industry (**Table 2**), age group (**Figure 4**), and demographic group (**Figure 5**) we see that workers with limited or no digital skills are present across all industries, age groups, and demographic groups.¹¹ Black/African American and Latino workers are overrepresented among those with digital skill gaps; workers of all racial backgrounds feel that financial constraints are their greatest impediment to upskilling.¹¹

Table 2: Percent of U.S. workers with limited or no digital skills by industry (National Skills Coalition¹¹)

Percent of U.S. Workers with Limited or No Digital Skill by Industry

Selected Industries	Percentage of workers with no digital skills	Percentage of workers with limited digital skills	Combined percentage of workers with limited or no skills*
Construction, Transportation & Storage	22%	28%	50%
Retail, Wholesale & Auto Repair	14%	23%	37%
Hospitality & Other Services	18%	18%	36%
Manufacturing Administrative & Support Services	16%	19%	35%
Arts, Entertainment & Recreation	13%	22%	35%
Health & Social Work	12%	21%	33%
Finance, Insurance & Real Estate	6%	14%	19%*
Education	5%	11%	15%*



*Among US workers ages 16-64. Source: OECD Survey of Adult Skills, 2012-14. Industries not shown due to low sample size include agriculture; mining; utilities and waste management; professional, scientific and technical activities; information and communications; public administration.

NOTE: Numbers may not sum due to rounding.

03 WHAT IS THE FUTURE OF WORK?

Figure 4: Percent of U.S. workers with limited or no digital skills by age group (National Skills Coalition¹¹)

Percent of U.S. Workers with Limited or No Digital Skill by Age Group

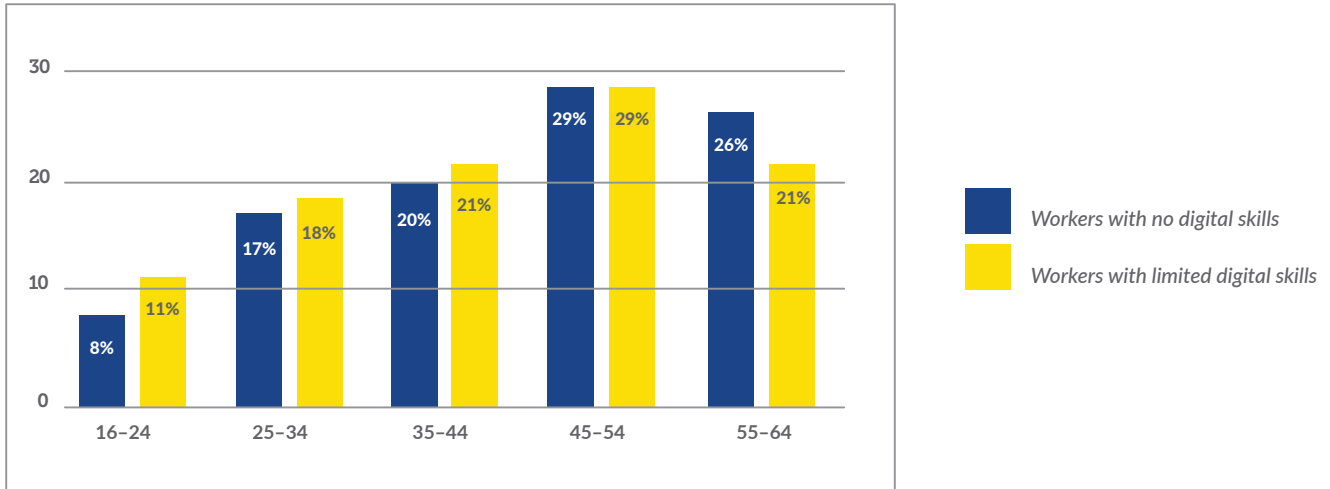
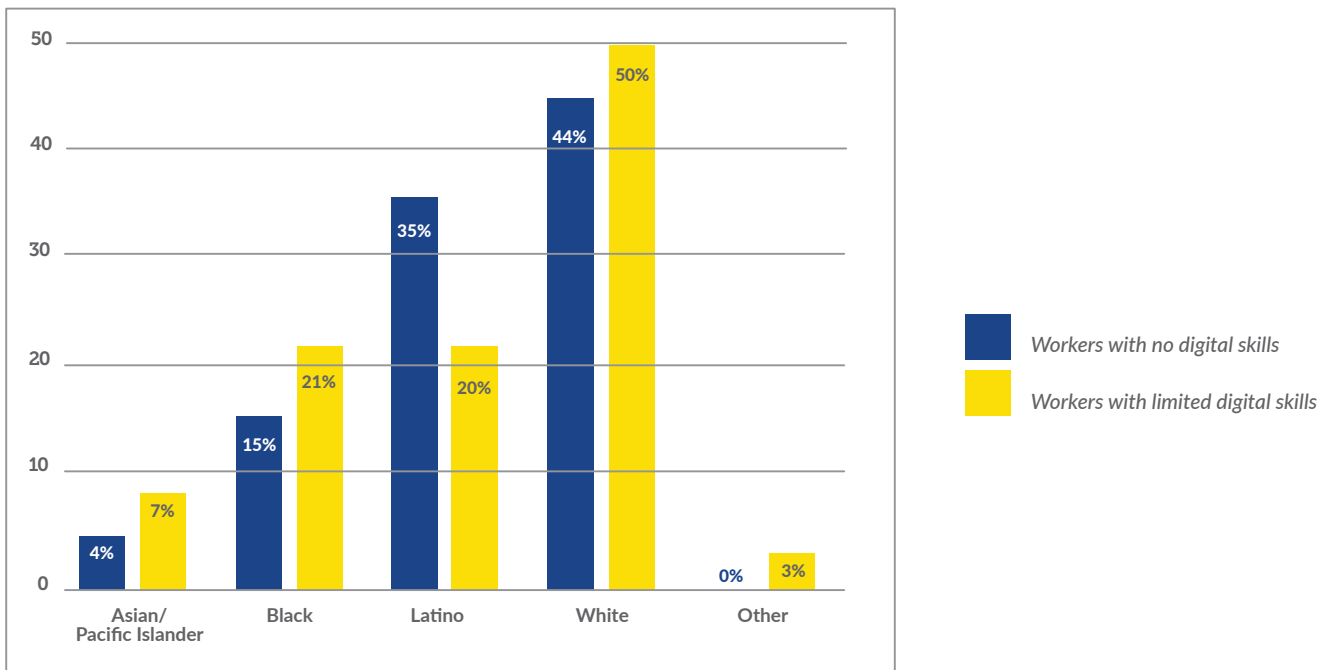


Figure 5: Percent of U.S. workers with limited or no digital skills by demographic group (National Skills Coalition¹¹)

Percent of U.S. Workers with Limited or No Digital Skills by Demographic Group



03 WHAT IS THE FUTURE OF WORK?

As a result of technological advances in the workplace and inevitable industry transitions, the future of work requires all workers to build new foundational skills and adopt new mindsets to ensure their success. As technology takes over the more routine tasks, there is more room for the tasks that leverage uniquely human skills. Industries that depend on more human skills such as education services and social services, are less likely to be displaced completely by technology but depend on technology to advance their work. Based on an analysis of more than 150 million unique U.S. job postings, Burning Glass Technologies defined 14 foundational skills of the digital economy.¹² These skills fell into three categories: human skills, digital building blocks, and business enablers, defined below:

- ❖ Human Skills apply social, creative and critical intelligence to problems. These include communication, creativity, critical thinking, collaboration, and analytical skills.¹²
- ❖ Digital Building Block Skills include analyzing data, managing data, software development, computer programming, and digital security and privacy.¹²
- ❖ Business Enabler Skills allow the other skills to be put to work in practical situations, and include project management, business process, communicating data, and digital design.¹²

Burning Glass found that having skills from all three groups can create an advantage for workers in the future of work and can increase job mobility; however only one-fifth of workers currently claim skills in all three categories.¹² In addition to these skills, it will be critical for all workers to build their adaptability skills including adopting lifelong learning and growth mindsets, comfort with change and ambiguity, and self-direction to manage the inevitable transitions as a result of future of work forces.¹³¹⁴

As technological advances continue to reshape work and industries transition, local economies will fare differently as well. To understand these disparate impacts, McKinsey Global Institute categorized all US cities and counties into 13 archetypes based on their economic health, business dynamism, industry mix, labor force demographics, and other characteristics in their report, “The future of work in America: People and places, today and tomorrow.”⁸ Colorado has nine of the 13 archetypes as shown in **Table 3** and **Figure 6**:

03 WHAT IS THE FUTURE OF WORK?

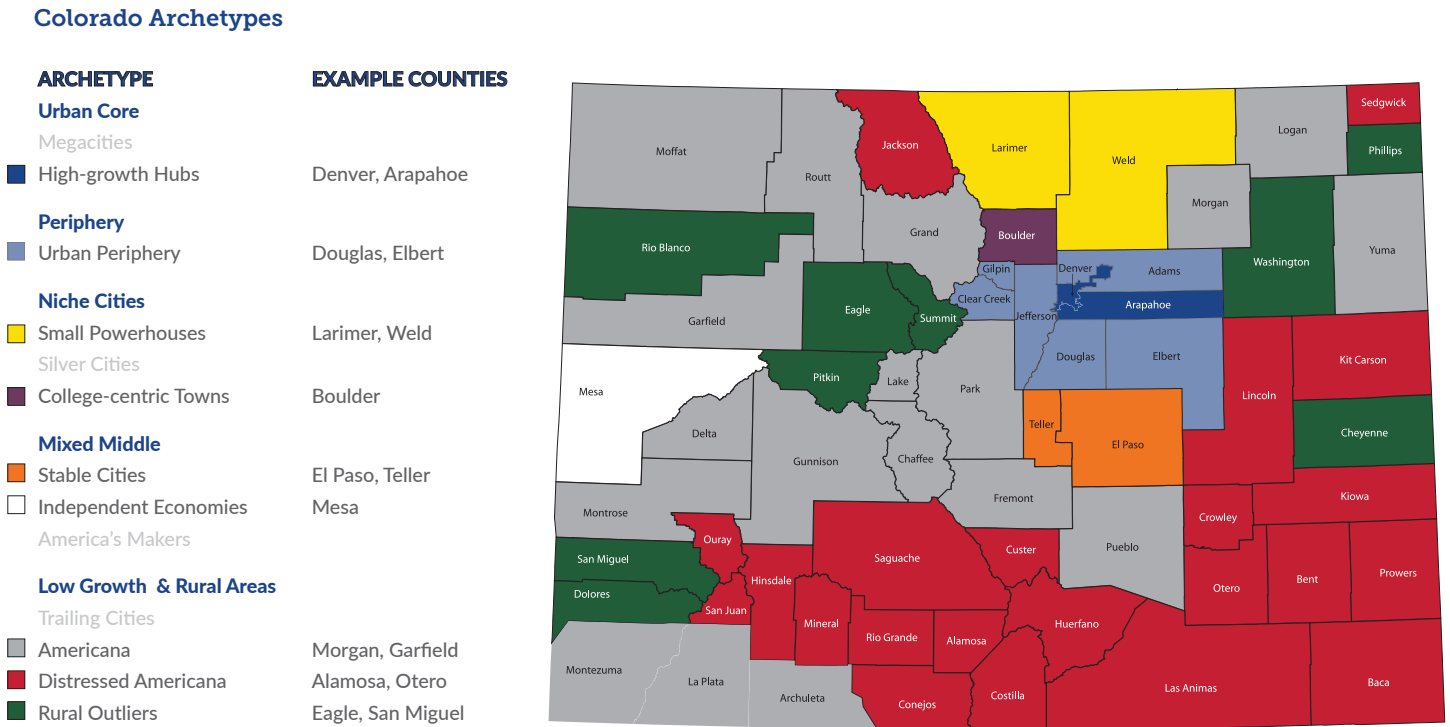
Table 3: Archetype profiles for Colorado Counties (McKinsey Global Institute⁸)

Archetype Profiles for Colorado Counties

Selected Industries	Counties	Share of CO population	Displacement (% of jobs 2017-30)	Displacement (% of jobs 2017-30)
High-growth Hubs	Arapahoe, Denver	24.0%	22%	15%
Urban Periphery	Adams, Broomfield, Clear Creek, Douglas, Elbert, Gilpin, Jefferson, Park	27.5%	22%	15%
Small Powerhouses	Larimer, Weld	11.4%	24%	15%
College-centric Towns	Boulder	5.8%	21%	18%
Stable Cities	El Paso, Teller	12.9%	22%	17%
Independent Economies	Mesa	2.7%	24%	11%
Americana	Archuleta, Chaffee, Delta, Fremont, Garfield, Grand, Gunnison, La Plata, Lake, Logan, Moffat, Montezuma, Montrose, Morgan, Pueblo, Routt, Yuma	10.7%	24%	1%
Distressed Americana	Alamosa, Baca, Bent, Conejos, Costilla, Crowley, Custer, Hinsdale, Huerfano, Jackson, Kiowa, Kit Carson, Las Animas, Lincoln, Mineral, Otero, Ouray, Prowers, Rio Grande, Saguache, San Juan, Sedgwick	2.6%	23%	-7%
Rural Outliers	Cheyenne, Dolores, Eagle, Phillips, Pitkin, Rio Blanco, San Miguel, Summit, Washington	2.4%	24%	-2%

03 WHAT IS THE FUTURE OF WORK?

Figure 6: Archetype profiles for Colorado Counties (McKinsey Global Institute, 2019)



Technological advances will create new jobs, transform existing occupations, and displace some jobs completely. It is important to recognize that across Colorado the pressure of these transformations will be felt disproportionately. Workers between and within rural and urban communities alike grow increasingly apart as their bifurcating access to high quality employment, training, and infrastructure drives a socioeconomic divide. Other regions, where seasonal tourism and creative tech jobs drive the local economy, have become miniature versions of the country's 'superstar cities', composed of high-wage workers fueling demand for an ever-growing low-wage service sector. Rural areas are expected to suffer more job loss and greater displacement due to technological advances. With less migration into these regions, lower levels of digital skills in the workforce, and less access to high speed broadband internet, targeted and locally driven economic and workforce development efforts will be critical to ensure their ability to thrive in the future of work.⁶⁸

03 WHAT IS THE FUTURE OF WORK?

GLOBALIZATION & MARKET FORCES

Globalization is generally used to describe the increasing internationalization of markets for goods and services, the means of production and supply chains, financial systems, competition, corporations, technology and industries.¹⁵ Overall, since 2001, the DHL Global Connectedness Score (a cumulative score based on an analysis of international trade, capital, information, and people) has increased, with occasional dips, showing the general trend towards increased globalization.¹⁶ Market forces refer to the shifts in supply and demand, trade, and government priorities that impact the economy. The combination of these forces over the last forty years has created opportunities for some workers, industries, and geographies, while putting pressure on others.

One product of globalization and its extended supply chains is outsourcing. Since the 1980s, with occasional pull-backs, the outsourcing of jobs by United States companies has grown.¹⁷ In particular, a significant percentage of outsourced jobs have been focused in the manufacturing and customer support functions. In Colorado, outsourcing especially impacts legal, engineering, architecture, accounting; computer systems design; services to buildings; and business support services sectors.¹⁸ Workers without college degrees were more likely to be in roles that faced outsourcing, and therefore, these workers had to compete against alternative labor forces around the world. As such, workers without college degrees have seen drops in wages since 1979.¹⁹ In particular, those without a high school diploma had a 20 percent **decrease** in hourly wages between 1979 and 2018.¹⁹⁶⁹

Trade policies have similarly impacted wages and incomes of Coloradan workers. As of a January 2020 report from the Economic Policy Institute on the jobs impact of the U.S.- China trade deficit since 2001 found that “because imports from China have soared while exports to China have increased much less, the United States is both losing jobs in manufacturing (in electronics and high tech, apparel, textiles, and a range of heavier durable goods industries) and missing opportunities to add jobs in manufacturing (in exporting industries such as transportation equipment, agricultural products, computer and electronic parts, chemicals, machinery, and food and beverages).”²⁰ In Colorado, 2.45 percent (67,700) net jobs were displaced due to the goods trade deficit with China.²⁰

Another market force that has shaped work is a phenomenon known as the “fissured workplace.”²¹ Over the last few decades, companies have faced increased pressure to improve short-term financial performance for private and public investors which resulted in a focus on “core competencies” and outsourcing less essential activities to third-parties such as labor brokers,²² consultants and temporary staffing agencies.²³ These “less essential” activities included activities like payroll, publications, accounting, and human resources and then spread to “core” competencies of the business themselves like strategic planning, janitorial and facilities maintenance and security.²⁴ In Deloitte’s 2019 Global Human Capital Trends study, 33 percent of respondents reported extensively using alternative arrangements for IT, 25 percent for operations, 15 percent for marketing, and 15 percent for research and development.²⁵ Some of these alternative arrangements take the form of outsourcing to other countries, while others depend on subcontracting to domestic workers and intermediaries. Because each level of a fissured workplace structure requires a financial return for work, the profit margins available to businesses shrink at each level. Therefore, not only does competition increase among smaller players who are attempting to operate within each level, but wages, access to employee benefits and protections, and opportunities to “climb the ladder” also decrease, as the worker becomes more removed from the “core” employer.²¹ Moreover, as a larger portion of people engage in non-traditional work, more workers lack essential benefits, such as health care, paid sick time, and assistance with retirement.⁶⁸

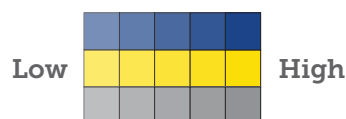
03 WHAT IS THE FUTURE OF WORK?

As a result of globalization, recent market forces, and technological advances, the United States has seen the proliferation of low wage work.⁸ According to a Brookings Institution analysis of the U.S. workforce, more than 53 million people—44 percent of all workers aged 18-64—are low-wage workers and they earn median hourly wages of \$10.22 and median annual earnings of \$17,950.²⁷ In Colorado metro areas included in the study, between 43 and 47 percent of the workforce consisted of low wage workers (see *Table 4*).

Table 4: Concentration of low-wage workers in Colorado metropolitan areas 2008-2017 (Brookings Institution²⁸)

Concentration of Low-wage Workers in Colorado Metropolitan Areas 2008-2017

	Percentage of low-wage workers	Percentage change in jobs	Percentage change in earnings	Median annual earnings 2008	Median annual earnings 2017
Boulder	43%	13.10%	-5.30%	\$34,515	\$32,689
Colorado Springs	46%	12.70%	-4.70%	\$36,532	\$34,806
Denver-Aurora-Lakewood	40%	19.90%	-3.80%	\$39,114	\$37,633
Fort Collins	46%	23.60%	-16.60%	\$36,490	\$30,420
Grand Junction	47%	-2.80%	-8.00%	\$34,403	\$31,639
Greeley	46%	31.90%	5.00%	\$30,786	\$32,324
Pueblo	47%	7.10%	-1.90%	\$32,358	\$31,744



03 WHAT IS THE FUTURE OF WORK?

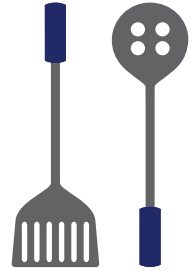
The most common jobs held by low wage workers across these metro areas were²⁶:



**Retail sales
workers**



**Information &
records clerks**



**Cooks & food
preparation workers**



**Miscellaneous
construction &
related work**



**Building cleaning &
pest control workers**



**Food & beverage
serving workers**



**Motor vehicle
operators**



**Nursing, psychiatric
& home health aides**



**Preschool, primary,
secondary & special
education school
teachers**

03 WHAT IS THE FUTURE OF WORK?

Prior to the pandemic, when Colorado was experiencing record low unemployment, a significant portion of the population, though employed, were earning less than living wage in their community.²⁸ Interventions to improve job quality for critical workers as well as supporting transitions for low wage workers are critical to Colorado's success in the future of work.

In addition to low wage work, we've also seen the growth of the individuals performing work as independent contractors across the U.S. and in Colorado, in part due to the introduction of platform-based companies into the labor marketplace.⁶⁹ This new technology added to the fissured nature of work. Transportation and Delivery (DNC) Network Companies (TNCs and DNCs) built technology to connect individual drivers to customers in search of a ride or a food/item delivery. TNCs and DNCs have created relatively flexible employment options with a relatively low barrier to entry allowing people to earn income, as well as allowed workers to find work through multiple "platforms" in a dynamic fashion and transformed consumer behavior; at the same time TNCs and DNCs have brought to the forefront the questions of changing methods of employer control, how to manage income volatility and inequality, the definition of employment, and, ultimately, what protections and benefits workers are entitled to.⁷⁰

Workers in traditional employment arrangements have access to a variety of legal protections and benefits, including, but not limited to, the right to receive the minimum wage and overtime pay, as well as other wage-and-hour protections such as required rest breaks and limits on permissible deductions; workers' compensation for workplace-related accidents or fatalities; unemployment insurance; sick leave and other forms of paid time off; the right to organize to improve working conditions and form unions; healthcare, retirement, disability insurance, and social security benefits; workplace safety standards and requirements; and protections against harassment and discrimination.²⁹³⁰ While these benefits and protections were hard-won by workers and advocates, from the beginning, they were designed to be unavailable (to varying degrees depending on the specific protection or benefit) to large segments of the population, including women, workers of color, individuals working as independent contractors, and many part-time, temporary, and undocumented immigrant workers. As the workforce continues to evolve, Colorado must consider how it can modernize worker protections and benefits to ensure that all workers have access to them. These questions are considered more thoroughly in the OFOW's complementary report, *Modernizing Worker Protections and Benefits: SB 20-207 Independent Contractor Study* published in January 2021, and described in more detail later in this report.

Between August and November 2019, the Pew Research Center conducted focus groups in the U.S. and United Kingdom to understand the impact of globalization and market shifts.³¹ Pew found that, "whether groups felt their communities were globalization "winners" who experienced job creation in their city or "losers" who felt the decline of industry, people focused on the changing character of their communities, the increased transience and the declining opportunities. Those "left behind" by globalization and those "swept up" often experienced similar feelings of loss."³¹ As we look to the future, a focus on increasing the availability of quality jobs, building community at the local level and across borders, and promoting the benefits of multiculturalism will be critical to combat this sense of loss that permeates workers across the globe.

03 WHAT IS THE FUTURE OF WORK?

DEMOGRAPHIC SHIFTS

As technological advances, globalization, and market forces shape the future of Colorado's workplace, Colorado's population makes up its workforce. As we consider the future of work in our state, it is imperative to place the people of Colorado's workforce at the center of our solutions. The two main trends that are impacting the workforce are Colorado's rapidly aging population and its diversifying younger generations.

COLORADO IS AGING

From 2010 through 2019, Colorado's population aged 65 and older increased by 53 percent which is the second fastest growth rate of the 65-plus population in the nation.³² Twenty-eight counties (all rural) in Colorado have more older adults than children; by 2050, 44 counties in Colorado will have more older adults than children.³² While Colorado has experienced a growth rate of 14.1 percent from 2010 to 2019 Colorado, in-migrants, who are typically younger, to the state have predominantly settled in urban counties, while 18 rural counties saw a decrease in population from 2018-2019.³³ As we consider the future of work for rural communities and strategies for economic diversification in response to technological advances and market forces, it will be important to consider how we support the aging workforce in those communities and attract new talent into all parts of Colorado.

Colorado's population over the age of 50 makes up more than 30 percent of the state population, contributes 42 percent to the state GDP, and represents 46 percent of those employed.^{34,35} Twenty four percent of Coloradans over the age of 65 remain in the labor force and by 2030, 33 percent of the labor force will be over the age of 50.³⁶ Many workers will continue to work beyond retirement age creating opportunities to build intergenerational workforces and capitalize on the skillsets of each generation. Approximately, one million workers are projected to age out of the workforce by 2030 which will require industries to manage their replacements, creating opportunities for others to join the workforce in these industries.³⁷

Beyond participation in the labor force, the 50-plus population fuels economic growth, stimulates jobs, and creates opportunities.³⁶ By 2050, 50-plus households in Colorado will account for 61 cents of every dollar spent in the state.³⁶ By 2030, the 50-plus population's activities will support 1.7 million jobs in Colorado, particularly in professional and business services; health services; wholesale and retail trade and finance, insurance; and real estate.³⁶

Strategies for the future of work must reflect the needs of an intergenerational workforce and population so that all workers can find success in the evolving economy.

03 WHAT IS THE FUTURE OF WORK?

COLORADO IS DIVERSIFYING

While the United States' population under 18 years old decreased between 2010 and 2019, Colorado's population under 18 years old increased by 2.6 percent; this is the 12th fastest growth rate for this population in the nation.³² The population under the age of 18 in Colorado is more diverse than older Coloradans, and the number and share of racial and ethnic minorities in Colorado are projected to increase, growing to comprise 46 percent of the state's population by 2050.³⁷ Hispanic Coloradans will comprise over one-third of the minority population by 2050, and a large segment of the labor force.³⁷ Yet Colorado's minority population are faced with systemic barriers to achieving economic success.³⁵ A Brookings Institution's analysis of the low-wage workforce found that both Latino or Hispanic and Black and African-American workers are overrepresented relative to their share of the total workforce, while whites and Asian Americans are under-represented.²⁶ In 2019, the overall unemployment rate in Colorado was 2.6 percent. Hispanic and Latinx and Black and African American individuals have higher unemployment rates at 3.4 percent and 4.0 percent, respectively, than their white counterparts at 2.4 percent.³⁸ Postsecondary credential attainment is often associated with labor force participation and connection to quality jobs, yet attainment gaps persist between demographic groups.³⁸ Black and African American, American Indian or Alaska Native, and Hispanic and Latinx groups have double-digit gaps with the overall average educational attainment rate, have lower income, and higher poverty rates.^{37,38,39} As we look to the future of work and Colorado's changing population, interventions must be targeted to appropriately address the needs of diverse populations and eliminate barriers to educational attainment, improve job quality, and create more pathways to economic opportunity.

03 WHAT IS THE FUTURE OF WORK?

Impact of COVID-19 Pandemic

The onset of the COVID-19 pandemic, accelerated many of changes expected from the four forces of the future of work and exacerbated the inequalities between different populations and geographies in Colorado. In this section we'll briefly describe the impact of COVID-19 on each of the four forces and in the next section, we'll share how these impacts shaped the 2020-2021 OFOW projects.

TECHNOLOGICAL ADVANCES

COVID-19 and ongoing technological advances are creating a “double-disruption” for workers in some industries.¹³ The industries and jobs that are vulnerable to displacement as a result of technological advances are many of the same jobs most impacted by closures amidst the COVID-19 pandemic: accommodation and food service, retail trade, personal services, leisure and hospitality.⁴⁰ Many of the businesses in these impacted industries are focused on remaining open amidst the pandemic versus adopting new technologies. Though some large employers are currently considering investments in technological advances, the time it takes to fully integrate machines into the workplace creates opportunities for upskilling current talent and transitioning workers to reduce displacement concerns.⁴¹

The COVID-19 pandemic has accelerated the digitalization of work as many companies shifted to remote work and leveraged new technologies to ensure continuity of their operations.^{42,43} The World Economic Forum reports that 91.5 percent of companies plan to accelerate the digitalization of work processes. The five most common types of technology that companies plan to adopt as part of digitalization efforts include cloud computing; internet of things and connected devices; artificial intelligence and machine learning; encryption and cyber security; big data analytics.¹³ Looking to the future of jobs post-pandemic, the World Economic Forum found that by 2025, the time spent on current tasks at work by humans and machines will be equal, cementing the need for workers to learn how to work alongside technology to remain competitive.¹³

The World Economic Forum also reports that 86.4 percent of employers will provide their workforce with more opportunities to work remotely after the pandemic.¹³ Remote work creates an opportunity for workers across Colorado to access economic opportunity and can be part of economic development strategies for communities across the state to attract and/or retain talent. Based on a McKinsey Global Institute analysis, more than 20 percent of the U.S. workforce could work remotely three to five days per week as effectively as they could in the office which would result in three to four times as many people working remotely compared to prior to the pandemic.⁴⁴ However, opportunities for remote work are concentrated in highly skilled industries including finance and insurance, management, professional scientific and technical services, IT and telecommunications.⁴⁴ One analysis found that approximately 60 percent of jobs in the U.S. cannot be done from home and the individuals in these occupations are more likely to be lower income, lack a college degree, rent their dwelling, be non-white, and lack employer-provided health insurance.⁴⁵

03 WHAT IS THE FUTURE OF WORK?

To effectively leverage new technologies in the workplace and work remotely, even part time, requires access to affordable high speed internet and digital literacy that many workers lack. Based on the American Community Survey 1-year estimate from 2019, 95,823 Colorado households have no computer device and 196,544 Colorado households have no internet subscription.⁴⁶ Based on the December 2020 U.S. Census Bureau Household Pulse Survey, 29,737 Colorado households with children in school lack consistent access to a device for educational purposes and 4,675 households with children in school lack consistent access to the internet for educational purposes.⁴⁷ The future of work post-COVID-19 requires a strategic effort to build the digital skills of the Colorado workforce, increase connectivity to ensure access to online education and employment opportunities, and proactive support for workers at risk for displacement.

GLOBALIZATION AND MARKET FORCES:

In April 2020, the World Trade Organization reported that COVID-19 could cause global trade to fall by as much as one-third and up to 33 percent decline in trade volume in North America.⁴⁸ In October 2020, the United Nations Conference on Trade and Development reported that Foreign direct investment, a bellwether of globalisation and economic confidence, fell by 49 percent in the first half of 2020.⁴⁹ The outlook remains uncertain as it depends on the length of the pandemic and the impact of varied policy responses.^{49,50,51} Despite these trends, the DHL Global Connectedness Index 2020, released in December 2020, suggests the world's level of global connectedness this year is unlikely to fall below levels seen during the 2008-09 global financial crisis. Even as global mobility declined due to border closures and shutdowns, capital flows have already started to recover; trade has rebounded, e-commerce has grown, and digital information flows have surged as people and companies remained connected.^{16,50} There is already evidence of growth in international services trade with more small businesses paying freelance workers abroad.¹⁶

COVID-19's impact has had an outsized impact on the low-wage and parttime workforce in the U.S. and in Colorado, specifically.⁵¹ As of October 2020, Colorado workers making less than \$27,000 per year had -17.6 percent employment rates compared to January 2020, while workers making between \$27,000 and \$60,000 had -5.8 percent employment rates, and workers earning more than \$60,000 had only a -0.02 percent change.⁵² The majority of unemployment insurance claims in 51 counties were filed by low wage workers between March and September 2020.⁴⁰ Research from the Brookings Institution indicates that low-wage workers more often churn through low-wage jobs, struggling to move up in the economy with uneven access to the tools that support mobility: education, skilling pathways, and employer-provided career development opportunities.⁵³ Recovery efforts should target low-wage workers with supportive services to remove barriers, data and coaching to guide their decision making, and resources to access training for in-demand pathways. Ongoing efforts to improve job quality for critical service occupations are necessary as well.

03 WHAT IS THE FUTURE OF WORK?

Many rural communities have a greater percentage of small businesses who were hit hardest by the pandemic and many have economies that depend on the most-impacted industries (accommodation, food service, retail trade, other personal services, arts, entertainment, recreation, health services) exacerbating the economic development challenges they faced before the pandemic hit.⁴⁰⁵³⁵⁴⁵⁵⁵⁶ Limited access to high speed internet prevents rural communities from taking advantage of the shift to remote work. COVID-19 has upended communities and businesses across Colorado, exacerbating existing challenges and accelerating industry transitions. While small business assistance and economic diversification are necessary to support comprehensive economic development, well-rounded and alternative perspectives need to be integrated into economic development planning during the COVID-19 recovery so that all Coloradans are economically empowered moving forward.

Modernizing worker protections and benefits to support the growing number of individuals performing work as independent contractors became even more critical in the aftermath of COVID-19. Individuals performing work as independent contractors who are traditionally ineligible for unemployment insurance were granted access to equivalent benefits through the federal Pandemic Unemployment Assistance program. However, these benefits were time-limited and many workers remained ineligible for the critical economic support provided by unemployment insurance, revealing structural flaws in coverage and the importance of ensuring that Colorado's growing independent workforce receives the same labor protections as workers in more traditional employment arrangements.

DEMOGRAPHIC SHIFTS

During the first six months of the COVID-19 pandemic, workers aged 55 and older were 17 percent more likely to lose their jobs than employees who were just a few years younger.⁵⁷ Roughly 1 million older adults would still have jobs right now if their unemployment rate matched that of mid-career workers between the ages of 35 and 54. Unemployed older adults have been rehired more slowly.⁵⁷ Currently, older job seekers face both high rates of job loss and longer durations of unemployment. During the past six months, older workers were 17 percent more likely to become unemployed than their slightly younger peers.⁵⁷ Based on a survey of Coloradans over the age of 50 conducted by Changing the Narrative, 53 percent of all survey participants indicated their work status had been negatively affected by the pandemic; 57 percent report not being allowed to work remotely; and 13 percent of respondents indicated they did not have access to the technology required to work from home.⁵⁸

The workers in the industries most impacted by COVID-19 were more likely to be people of color, especially in large cities; younger workers were 35 percent more likely to hold a vulnerable job. Eight percent of initial unemployment insurance claims between March and September were filed by Black and African-American Coloradans despite, Black and African Americans Coloradans making up only 4.6 percent of the state's population.⁴⁰

Recovery efforts should target impacted workers from these demographic groups with supportive services to remove barriers, data and coaching to guide their decision making, and resources to access training for in-demand pathways.



**OLOW 2019-2020
ACTIVITIES**



OFOW APPROACH

The OFOW has a broad mandate to both raise awareness of the impact of the future of work on Coloradan communities and to identify policy and program solutions that can create a skilled and resilient workforce. As shown in Figure 7 below, in order to meet this mandate the OFOW conducts new research and applies existing research to Colorado contexts, holds listening sessions and convenings, builds working groups, and participates and aligns with related efforts across Colorado and the U.S.

Figure 7: OFOW Activities to Raise Awareness and Identify Policy and Program Solutions

OFOW Activities to Raise Awareness and Identify Policy and Program Solutions



04 OFOW 2019-2020 ACTIVITIES

OFOW Areas of Exploration

In October 2019, as a result of the OFOW's examination of the forces shaping the future of work as well as feedback from thought leaders, state agency partners, and stakeholders, the OFOW established three areas of exploration to guide its ongoing work, described in more detail below:

- ❖ Modern worker protections and benefits
- ❖ Transformation planning for all
- ❖ Supporting underserved populations

These areas of exploration represent the overall efforts to guide the work of the OFOW, while the specific projects of the OFOW will fall within these areas. In addition to these overall areas of exploration the OFOW defined three key considerations as part of its work:

Acknowledging regional diversity: Colorado's diverse communities have unique and distinct needs. There is no one size fits all approach.

Focusing on the needs of left behind Coloradans: Many Coloradans feel left behind by Colorado's economy including low-wage workers, contingent workers, and underserved populations who have not experienced economic success.

Building policy and programs with the end user in mind: To ensure that the office's work is effective and useful, policy, programs, and other solutions are designed with the end-user front and center.

MODERN WORKER PROTECTIONS AND BENEFITS

Worker protections and benefits need to reflect the needs of a modern workplace and workforce to ensure that they have the support they need to weather today and tomorrow's economic changes. The universe of worker protection and benefits includes the minimum wage and other wage and hour protections, workers compensation, unemployment insurance, paid time off, the right to organize, healthcare, retirement, disability insurance, social security, workplace safety protections, harassment and discrimination protections, among others.²⁹³⁰ In considering how these protections and benefits can best benefit Coloradans, the OFOW will explore:

- ❖ How can we address the fissured workplace, the decline of unionization; labor market consolidation; and the widespread use of legal agreements such as arbitration agreements, confidentiality agreements, and agreements not to compete?
- ❖ How can we increase access to critical worker protections and benefits through the enforcement of existing laws, data-informed interventions, and the exploration of portable benefits systems?
- ❖ How can we improve the quality of today's low-wage, high-value occupations such as our direct care workforce?
- ❖ How can we better understand the on-demand economy and support its workforce?

04 OFOW 2019-2020 ACTIVITIES

TRANSFORMATION PLANNING FOR ALL

Digital transformation is a term often associated with technological adoption in a corporate environment, yet it is also an apt term to describe the impact of technological advances and other future of work forces on individuals, businesses, and communities in Colorado. The OFOW will build awareness of what the future of work means for workers, employers and communities, and connect Coloradans to the tools and strategies to help them thrive amidst these changes. To do so, the OFOW will focus on:

- ❖ Defining the key skills and mindsets that will serve individuals in the future of work
- ❖ Identifying key factors for community resilience in the face of economic shifts and supporting efforts to develop those factors across the state
- ❖ Ensuring state systems are responsive to the changing nature of work
- ❖ Understanding the needs of small- and medium-sized businesses, underserved populations, and diverse regions in their digital transformation journey

SUPPORT FOR UNDERSERVED POPULATIONS

The OFOW recognizes that Colorado's workers come from diverse economic, racial, ethnic, national, and educational backgrounds and have faced systemic barriers to finding economic opportunity. To ensure that the OFOW serves all Coloradans, it is dedicated to:

- ❖ Understanding the needs different populations in diverse locations can prepare for the future of work, and how the office can support them
- ❖ Understanding how different populations use state service programs, and how these programs can be improved
- ❖ Aligning with and promoting programs to better serve underserved populations

The OFOW will initially focus on how it can align with and inform existing and emerging efforts to support New Americans, people with disabilities, mid-career professionals, people who have been involved with the justice system, and mature workers.

04 OFOW 2019-2020 ACTIVITIES

OFOW 2019-2020 Activities

The two main activities for the OFOW in its first three months were outreach to partners and establishing a vision for the work ahead. Outreach began with CDLE Division directors and other state agencies to understand future of work efforts already underway. The OFOW also reached out to representatives from statewide future of work initiatives in Washington, California, Indiana, and New Jersey to learn more about their approach to inform efforts in Colorado. The OFOW connected with a variety of stakeholder groups, research institutions, businesses, intermediaries, and community-based organizations in its initial outreach. The OFOW was fortunate to have the support of numerous thought leaders on the future of work to guide the initial understanding of future of work trends and inform the approach to the office's work. These thought leaders included the Aspen Institute's Future of Work Initiative, Brookings Institution's Workforce of the Future Initiative, Deloitte, KPMG, McKinsey & Company, and Skillful. The OFOW participated in a variety of convenings in its first quarter to further inform its efforts and build partnership, including the National Governors Association Future Workforce Now Forum, New Collar Workforce Summit, and the Colorado Workforce Development Council (CWDC).

With insights and research from these initial efforts, the OFOW established its areas of exploration and approach (detailed in the previous section). In November 2019, presentations on the OFOW and trends began, and the OFOW and CWDC launched applications for future of work regional convenings. The regional convenings were designed to bring together diverse sets of community stakeholders in partnership with local Workforce Development Boards to raise awareness about the impact of the future of work, identify promising practices and assets in each community, and inform the OFOW. These convenings were originally planned to build towards a statewide future of work summit to take place in 2020. By January 2020, 12 convenings were scheduled to take place across the state between February and May. Convenings were held in Pueblo, Colorado Springs, and Adams/Broomfield (combined) before COVID-19 shutdowns began.

As a result of the COVID-19 pandemic, the OFOW pivoted its approach to respond to the immediate crisis. Remaining convenings were cancelled, and the statewide FOW summit planning ceased. In March, the OFOW staffed the Education and Workforce Subcommittee of the Governor's Emergency Council on Economic Stabilization and Growth. In April, the OFOW managed the development and launch of OnwardCO.org with Bitwise Industries. OnwardCO is COVID-19 response site that will provide support for individuals in Colorado impacted by job loss by connecting them with essential life services (such as monies, shelter, childcare, medical/mental health resources), retraining programs and immediate employment opportunities. The launch involved coordination with the Governor's Office, state agencies, community-based organizations, and other stakeholders to ensure effective data collection, beta testing of the site, awareness pre and post launch, and ongoing outreach and edits. Since its launch, the OFOW has conducted communication campaigns in partnership with state agencies, community colleges, and universities to share resources with OnwardCO users.

04 OFOW 2019-2020 ACTIVITIES

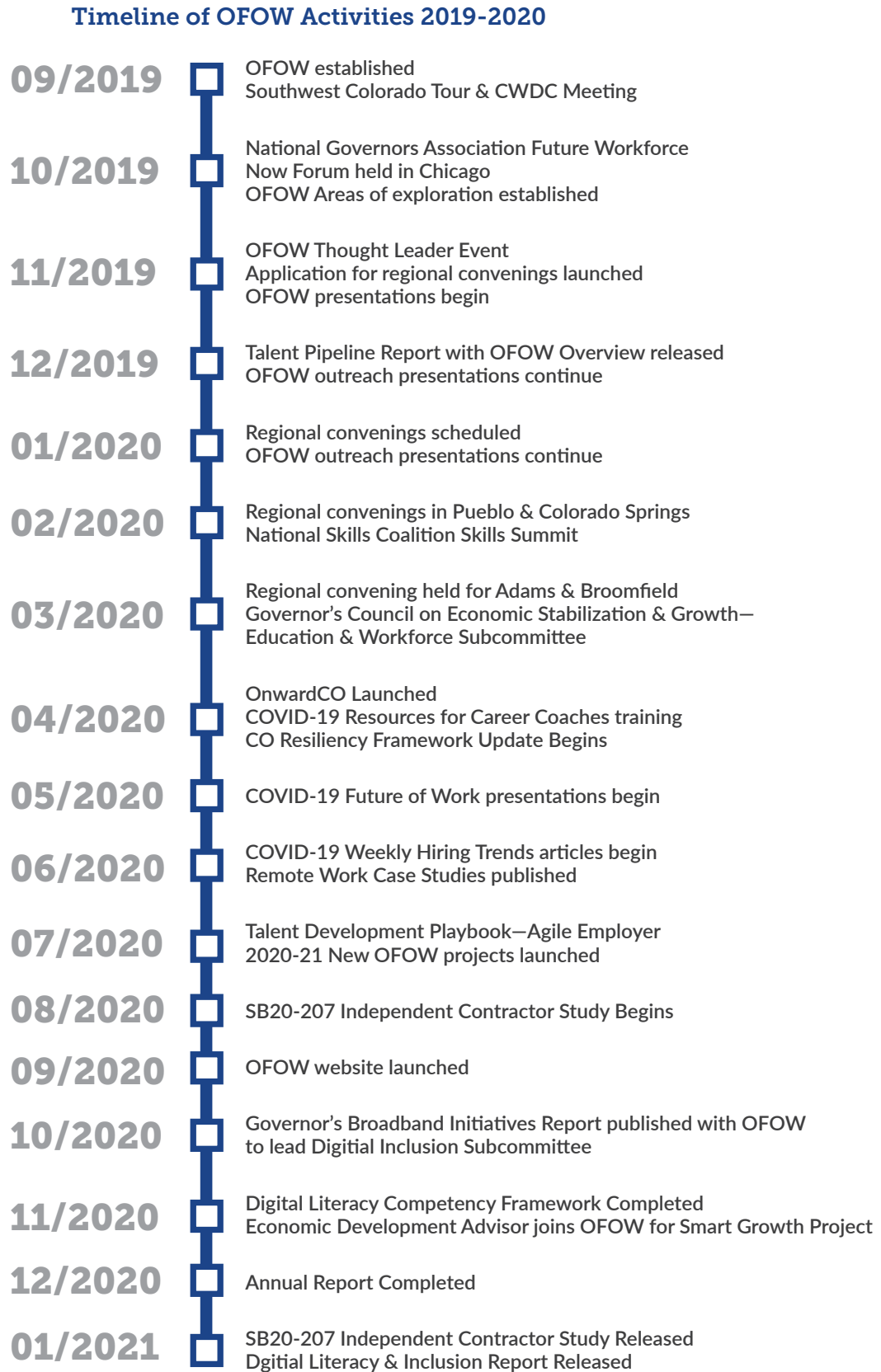
OnwardCO is a temporary site that will sunset once the economic impact of COVID-19 is reduced. As part of the sunset, all resource data is distributed to the appropriate service provider for ongoing maintenance (e.g. 211, Aunt Bertha, MyCOJourney, Connecting Colorado). Bitwise Industries will provide a final report with data on usage and lessons learned from program launch to sunset which will be used to improve state service delivery, evaluate response effort, prepare for the next emergency response needed, and to share with stakeholders. Colorado was the second state to launch an Onward site, with eight additional states launching a site since.

As the pandemic progressed, OFOW continued its research into the four forces of the future of work and the impact of COVID-19 on the trends associated with these forces. This research informed updates to the OFOW presentation and ongoing strategy development. Presentations on the post-COVID-19 future of work began in May to career coaches, HR representatives, businesses and community-based organizations and intermediaries, state agencies and internal divisions. In June, the OFOW launched a weekly article series to share hiring trends and highlight online and in-person resources to connect workers with meaningful employment during COVID-19 and published three case studies with CWDC (see Appendix C & D). The case studies explored the transition to remote work for a small, medium, and large business and aimed to raise awareness about remote work, share promising practices that support a smooth adoption of remote work, and promote the location-neutral incentive made available by OEDIT.

As the state of Colorado entered fiscal year 2020, the OFOW established its specific projects for 2020-2021 (detailed in next section), launched its website (See Appendix F) and continued in its charge to prepare Colorado for the future of work.

04 OFOW 2019-2020 ACTIVITIES

Figure 8: Timeline of OFOW activities 2019-2020

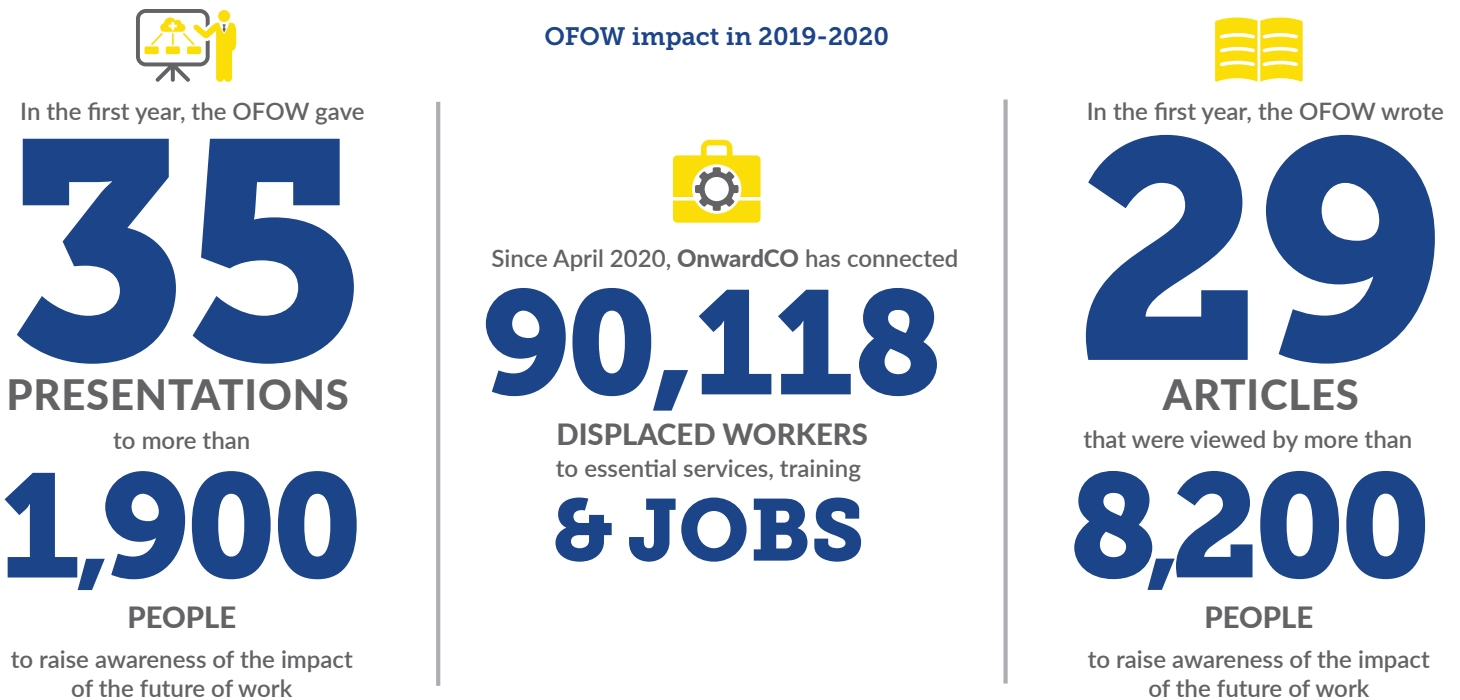


04 OFOW 2019-2020 ACTIVITIES

OFOW Impact

The OFOW's efforts in 2019 and 2020 were focused on raising awareness of the impact of the future of work in Colorado; promoting, partnering, and aligning with efforts related the OFOW's areas of exploration; identifying specific projects that will improve Colorado's future of work, and supporting the COVID-19 response and recovery. In its first year, the OFOW gave 35 presentations on the future of work to over 1,900 Coloradans and wrote 29 articles that were viewed by more than 8,200 people. OnwardCO, launched in April 2020 to connect COVID-19 impacted workers to their most immediate need and has connected more than 90,000 workers in 63 out of 64 counties to a resource (see Appendix E). The OFOW has partnered with, participated in, supported efforts of 12 state agencies and offices and seven of the divisions and offices within CDLE (see details in Appendix B).

Figure 9: OFOW impact in 2019-2020





05

**OLOW 2020-2021
PROJECTS**



OFOW 2020-2021 PROJECTS

In 2021, the OFOW will continue its efforts to raise awareness about the future of work through the ongoing publication of articles and resources on the OFOW and CDLE websites, hosting convenings and listening sessions throughout the state, and presentations to service providers, businesses, associations, state and local agencies, community partners, and other stakeholders throughout 2021. Additionally, in 2021, the OFOW will reconvene its Thought Leader working group to inform its research on the four forces of the future of work, its areas of exploration and current projects, and the strategies moving forward. In accordance with the Executive Order establishing the office, the OFOW will establish an ongoing working task force to inform and coordinate the future of work efforts in the state.

As Colorado moves into recovery from the COVID-19 pandemic, the OFOW will continue to support and inform larger recovery efforts. These activities include the evolution of OnwardCO, training/resources for career coaches, and information to connect displaced workers to training and employment opportunities, with a particular focus on transitioning low-wage workers to better pathways. Additionally, based on the impact of the four forces of the future of work and the pandemic, the OFOW established four specific projects for 2020-21 which are detailed below.

05 OFOW 2020-2021 PROJECTS

Digital Literacy and Inclusion (Areas of Exploration: Support for Underserved Populations; Transformation Planning for All):

The future of work requires every Coloradan worker to be digitally literate so they can work alongside technology, build new skills, connect with quality jobs, and adapt as work evolves. Digital literacy refers to the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills. Digital inclusion refers to the activities necessary to ensure that all individuals and communities have access to and use information and communication technologies. In other words, every Coloradan needs:

- ❖ Access to affordable, high-speed internet
- ❖ Access to affordable, web-enabled technology
- ❖ Access to relevant and high quality, effective training and support for digital skill development and use

With targeted efforts to build digital literacy and inclusion across the state, Colorado can create digital equity that ensures all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy, and, ultimately, find success in the future of work.

To increase digital literacy and inclusion across the state, the OFOW is partnering with the Colorado Center on Law and Policy, the Colorado Broadband Office, Colorado Department of Higher Education, CWDC, community stakeholders, and others to research digital literacy and the programmatic, technological, and educational infrastructure required to ensure all Coloradans are prepared to participate in the future of work. The process for this work is as follows:

- ❖ Assess current and future demands for digital skills in Colorado's growing industries and how those demands impact workers of color
- ❖ Conduct landscape analysis of digital literacy frameworks and core competencies from national research and local service providers
- ❖ Conduct landscape analysis of existing digital literacy programs and credentials and how digital skill-building efforts are woven into existing upskilling programs and policies
- ❖ Develop strategies to address any gaps in digital literacy programming to meet demand leveraging the education and workforce development ecosystem, including nonprofit providers with expertise in serving individuals with barriers
- ❖ Identify policy and program interventions to promote digital literacy instruction and access in education and workforce development programs.
- ❖ Conduct digital navigator pilots with target populations to inform ongoing work

05 OFOW 2020-2021 PROJECTS

The OFOW will produce a Digital Literacy and Inclusion report in January 2021 which will provide a taxonomy of digital literacy and a framework to measure digital literacy, as well an overview of interventions to increase digital literacy across Colorado.

The OFOW will establish a Digital Inclusion Subcommittee in 2021 which will provide regular updates to the Broadband Advisory Board, in accordance with Executive Order B 2020 009. The Digital Inclusion Subcommittee will consist of state agency representatives, digital inclusion leaders in Colorado, and representatives from target populations. Initially, the Subcommittee will coordinate efforts to reduce digital inequity; cataloging and coordinating digital inclusion resources; identify gaps in digital inclusion efforts across the state and develop strategies to reduce gaps; promote digital inclusion within state government.

Colorado Economic Complexity and Regional Competitiveness (Area of Exploration: Transformation Planning for All)

The burden for grappling with the consequences of economic shifts, industry transitions, and displacement is often borne by local economic and workforce development leaders, who themselves do not have the ability or bandwidth to access information providing tangible insight into questions of which industries and occupations need to be prioritized to take advantage of unique community assets. The problem is two-fold: 1) contextual industrial policy prescriptions are mostly developed reactively, because of information asymmetry between civil society and local decision makers, and 2) the vast resource bank developed by public workforce and industry leaders is often underutilized due to a lack of coordination and alignment with industrial policy planning.

To address these challenges, the OFOW, Office of Economic Development and International Trade (OEDIT), and other partners, have collaborated with the Brookings Institution's Workforce of the Future Initiative to build a Smart Growth Toolkit and Report which will identify opportunities for integrating work-based learning into economic development planning, and understand how an economic complexity approach can promote resilience and inform local economic and talent development.

The Toolkit will emphasize how communities can absorb impacted workers into the current labor market, and prioritize training and certifications placement and/or creation based on their local context. In addition to addressing the immediate need to connect unemployed, impacted workers with jobs as soon as possible using the Toolkit, CDLE and Brookings will also track the long term impact of the Toolkit on workers and communities statewide. The Toolkit will be developed by February 2021, with outcome tracking and ongoing support provided to participating communities over the course of multiple years.

The Report will serve as an extension of the Toolkit and focus on two specific use cases that will inform long-term State future of work planning: Rural Just Transition and Urban Tech Gap case studies. These case studies will provide local economic and workforce development practitioners with actionable, data-backed recommendations and insight. The Report will align Toolkit and economic complexity data with relevant State tools — including the Colorado Talent Pipeline Report, Colorado Just Transition Plan, Colorado Resiliency Framework, Rural Economic Blueprint, Rural Roadmaps, and State incentive and grant programs -- in order to make State resources more accessible for locally-driven economic development and education planning. The Report will be published by June 2021.

05 OFOW 2020-2021 PROJECTS

Future of Independent Contractor Protections (Areas of Exploration: Transformation Planning for All; Modernizing Worker Protections and Benefits):

During the 2020 legislation session, Unemployment Insurance bill [SB20-207](#) was passed, and then signed into law on July 14th, 2020. The bill includes a requirement for the Office of the Future of Work to study independent contractors and unemployment insurance as part of its recommendations to improve the state's labor and employment policy:

*The Office of Future of Work in the Department of Labor and Employment, created by Executive Order B 2019 009, shall, within the scope of the executive order, study unemployment assistance as part of its study on the modernization of worker benefits and protections. **On or before January 15, 2021,** the Office of the Future of Work shall submit an initial report as directed by the executive order to the governor and to the business, labor, and technology committee of the senate and the business affairs and labor committee of the house of representatives, or their successor committees.¹⁵*

With this legislation, the office narrowed the scope of its work on modernizing worker protections and benefits in 2020 to focus solely on individuals performing work as independent contractors, with an emphasis on TNC and DNC workers, and their access to the benefits and protections overseen by CDLE. As such, for the purposes of this report, when we refer to worker protections and benefits, we are referring to the suite of protections and benefits provided to “employees” by Colorado law, as administered and enforced by CDLE: access to unemployment insurance, workers’ compensation benefits, and the protection of wage-and-hour law.

Specifically, to lay a foundation for modernization of worker protections and benefits, the OFOW's study sought to answer the following questions:

- ❖ What is the current process for classification of workers in the CDLE's Unemployment Insurance, Workers' Compensation, and Labor Standards and Statistics divisions?
- ❖ What is the state of misclassification in Colorado? What is its economic impact? How can we reduce worker misclassification in Colorado?
- ❖ What data exists and what data is needed to better understand and serve individuals working as independent contractors in Colorado?
- ❖ How can we expand workers' access to unemployment insurance, workers' compensation, and wage and hour law for all workers in Colorado?

After publication of the SB20-207 study, the OFOW will work with the legislature, working groups, and others to continue the research and explore the menu of policy options. Additionally, the OFOW will work with CDLE's Employment and Training Division to ensure that the public workforce system provides support to the growing independent contractor workforce.

05 OFOW 2020-2021 PROJECTS

Agile Employer (Areas of Exploration: Transformation Planning for All; Support for Underserved Populations):

While a shift in the economy and the nature of work was already underway, the pandemic accelerated many trends associated with the future of work. As the pandemic took hold, markets shifted dramatically, and many businesses transformed with the help of technology to ensure continuity of services. As businesses begin to rethink how they innovate to stay competitive in this uncertain and shifting environment, finding new ways to invest in, attract and retain quality talent will be a key consideration. The OFOW, in partnership with the CWDC and CDLE Division of Employment and Training will promote the adoption of two practices that can support business agility and success in the future of work: remote work and skills-based practices.

REMOTE WORK INITIATIVE

In Colorado, a spatial mismatch exists between where workers live and where jobs are concentrated. This mismatch is perhaps the most pronounced among urban and rural communities where a large number of high quality jobs are concentrated along the urban corridors. Prior to COVID-19, tight labor markets left businesses along these corridors, searching for quality talent often having to recruit outside of the labor market, resulting in bringing labor into the market, creating density issues. Post-COVID, concentrated working environments along these corridors are now being challenged with the health and safety of their employees.

The need to bridge the urban/rural divide within the state is a critical need for Colorado but it is not the only instance where the spatial mismatch occurs. Portions of Colorado's urban communities are concentrated with workers needing access to quality jobs providing living wages but often face access issues as a result of transportation challenges, the need for greater digital skills training and lack of awareness of available jobs. Both instances represent examples of equity issues confronting the state in its aspiration to ensure all Coloradans have equitable opportunities for quality, life-long education connected to the future of work.

To ensure Coloradans are prepared for this evolution, the OFOW partnered with the CWDC, OEDIT, the Economic Development Council of Colorado to launch a Remote Work Initiative (RWI) in 2020. This multi-tiered initiative equips workers with skills needed to succeed in remote work environments; supports businesses as they transition to remote work; and strengthens Colorado's ability to attract businesses, secure talent and retain a location-neutral workforce that benefits the entire state. The RWI will include the following strategies:

- ❖ Remote worker and supervisor certification established through CSU Global by February 2021
- ❖ Framework established for remote work hubs and integrated into OEDIT's Rural Technical Assistance Program by March 2021
- ❖ State-led awareness campaign for remote work resources and opportunities by February 2021

The RWI will also contribute to CDLE's 2020-2021 Wildly Important Goal of enhancing the diversification of employment opportunities within local communities, starting with communities that were heavily impacted by the economic disruption in Q1 and Q2 of 2020, through the promotion of location neutral jobs, resources, training and support services to workers and employers.⁶⁰

Skills-Based Practices

A recent survey of the most growing and in-demand occupations in the U.S. (in technology, healthcare, and business management) states that while by 2025 employers will need to fill at least 27 million ‘destination’ jobs, paying an average of \$65,000 and resistant to automation, 89 percent of current job postings list at least a bachelor’s degree as a requirement.⁶¹ Research from Opportunity@Work suggests that up to 71 million workers in the US skilled through alternative routes (“STARS”) could be more efficiently integrated into the workforce through weaving private sector prioritization for leveraging existing skills throughout hiring, sourcing, and supply chain considerations.⁶² Both employers and workers stand to benefit from greater incorporation of skills-based hiring that would provide significant mobility for minority populations disproportionately underrepresented in jobs they have the skills to perform.⁶² Removing what McKinsey calls a “degree screen”⁶¹ from private sector hiring practices would go a long way towards filling a large market inefficiency in the form of tens of millions of workers underemployed relative to their skill levels while employers are unable to fill available positions. It would also combat narratives conflating wages and credentialing with skills, which stunt economic mobility and increase stagnation if jobs are not able to be filled.⁶³

Skills-based hiring can play a significant part in allowing the U.S. economy to realize the full benefits of automation and rapid technological innovation, taking full advantage of one of the American economy’s unique strengths rather than letting it become a detriment to social progress. Technological innovation will continue occurring, and will create new jobs. And counter to some popular opinion, increased productivity through automation doesn’t necessarily mean job losses will occur; if sales volume increases, employment will often do the same as new technologies require adapted skillsets.⁶⁴ However, these workplace shifts are often prolonged, especially for small and medium enterprises (SMEs), as inserting new equipment into production processes is typically done incrementally as to maintain systems-wide flow while gradually increasing productivity.⁶⁴ As such, the labor outcomes from automation are the result of “decisions made by R&D program managers, directors in boardrooms, planners in offices, and managers on shop floors [that] determine how jobs evolve as new tools emerge and become widely available.”⁶⁴ It is for these instances of human decision making that integrating skills-based hiring can form a significant part of the necessary investment in labor and institutional protections to allow for social outcomes to keep pace with rapid technological change.

05 OFOW 2020-2021 PROJECTS

In addition to the broader, economy-wide benefits, a shift to skills-based hiring carries unique advantages for private sector employers in their ability to reduce costs and ensure access to a more stable and productive labor market. Large employers such as Google and Apple have found that skills-based hiring not only widens talent pools to include a more diverse range of applicants, but workers hired on the basis of their skills stay with their employer for longer.⁶⁵ A study by Harvard Business School found that hiring time for new employees could be reduced by 40 percent if bachelor's degree screens were removed from job postings that didn't require them, reducing waste and improving productivity through solving an unnecessary market failure.⁶⁶ Employers who utilize a competitiveness-based approach to hiring stand to realize tangible improvements in cost reduction and productivity increases in lieu of adhering to dated and misrepresentative perceptions about the value of a four-year degree for jobs that do not require them.⁶⁶

Skills-based hiring can also form the basis for creating mobility pathways for low-wage workers. Opportunity@Work examined LinkedIn data for workers employed as IT Support Specialists, an in-demand, quality occupation, and found that 67 percent of those surveyed came to the job from non-tech industries, and 61 percent from non-IT functions.⁶³ By utilizing skills-based hiring practices, employers have the ability to benefit from greater efficiency and an expanded, diverse labor pool that will also allow for greatly expanded opportunities for low-wage workers and historically marginalized and underrepresented populations and communities.

The OFOW, CDLE's Office of Human Resources, CWDC have partnered with Skillful, A Markle Initiative, to increase adoption of skills-based practices in Colorado through a few key strategies:

- ❖ Promoting skills-based practices and skills gaps through campaign with chambers of commerce, Skillful, CWDC and CDLE
- ❖ Providing training for internal HR, staff who serve businesses, and staff who lead communications on skills-based hiring through Skillful Talent Series and through new Learning Management System
- ❖ Including skills-based hiring as a priority in state incentive fund programs
- ❖ Creating a survey to identify the number of state agencies currently using any type of skills based assessment as part of the hiring process for the purpose of sharing best practices across state agencies and promoting skills-based hiring

These efforts are part of CDLE's 2020-2021 Wildly Important Goal to facilitate Colorado employers within private and public sectors to increase skills based job descriptions/hiring from 5 percent to 10 percent by June 30, 2021



**THOUGHT LEADERS, PARTNERS,
& EXTERNAL FUTURE OF WORK
REPORTS USED TO INFORM OFOW**

THE FOLLOWING ORGANIZATIONS AND PARTNERS INFORMED, CONNECTED, AND SUPPORTED THE OFOW:

ASPEN INSTITUTE'S FUTURE OF WORK INITIATIVE

BELL POLICY CENTER

BROOKINGS INSTITUTION WORKFORCE OF THE
FUTURE INITIATIVE

CHANGING THE NARRATIVE COLORADO

COLORADO CENTER ON LAW AND POLICY AND
THE SKILLS TO COMPETE COALITION

COLORADO RESILIENCY OFFICE

COLORADO WORKFORCE DEVELOPMENT COUNCIL

DELOITTE

DENVER EDUCATION ATTAINMENT NETWORK

DIGITALUS

KPMG

MCKINSEY & COMPANY

MICROSOFT PHILANTHROPIES

NATIONAL DIGITAL INCLUSION ALLIANCE

NATIONAL GOVERNORS ASSOCIATION

NATIONAL SKILLS COALITION

NEW AMERICANS INITIATIVE

OFFICE OF JUST TRANSITION

SKILLFUL, A MARKLE INITIATIVE

STRADA INSTITUTE FOR THE FUTURE OF WORK

STRATEGIC ACTION PLANNING GROUP ON AGING

06 THOUGHT LEADERS, PARTNERS, AND EXTERNAL FUTURE OF WORK REPORTS USED TO INFORM OFOW

The following reports have informed the efforts of the OFOW:

ASPEN INSTITUTE

[Future of Work Initiative State Policy Agenda](#)

[Automation and a Changing Economy](#)

[Designing Portable Benefits: A Resource Guide for Policymakers](#)

BROOKINGS INSTITUTION

[Automation and Artificial Intelligence: How machines are affecting people and places](#)

[Meet the low-wage workforce](#)

[Growing cities that work for all: capability-based approach to regional economic competitiveness](#)

[Realism about reskilling](#)

DIGITALUS

[Building a Digitally Resilient Workforce: Creating On-Ramps to Opportunity](#)

MCKINSEY GLOBAL INSTITUTE

[The future of work in America: People and places, today and tomorrow](#)

MIT WORK OF THE FUTURE

[Final Work of the Future Report](#)

NATIONAL SKILLS COALITION

[New Landscape of Digital Literacy](#)

NATIONAL GOVERNORS ASSOCIATION

[State Guide for Preparing the Future Workforce Now](#)

REWORK AMERICA BUSINESS NETWORK, A MARKLE INITIATIVE

[Digital Blindspot: How digital literacy can create a more resilient American workforce](#)

06 THOUGHT LEADERS, PARTNERS, AND EXTERNAL FUTURE OF WORK REPORTS USED TO INFORM OFOW

References

1. Stephens, R. & Reder, L. (2019). Creating a Future of Work Commission: One Step States Can Take to Prepare for the Future of Work. Aspen Institute. Retrieved at <https://www.aspeninstitute.org/blog-posts/creating-a-future-of-work-commission/>
2. National Governors Association (2020). Reimagining Workforce Policy in the Age of Disruption: A State Guide for Preparing the Future Workforce Now. Retrieved at https://www.nga.org/wp-content/uploads/2020/07/State-Guide-for-Preparing-the-Future-Workforce_2020.pdf
3. Google Trends (2020). Retrieved at <https://trends.google.com/trends/explore?date=all&geo=US&q=future%20of%20work>
4. Muro, M., Maxim, R., & Whiton, J. (2019). Automation and artificial intelligence: How machines are affecting people and places. Brookings Institution. Retrieved at [brookings.edu/research/automation-and-artificial-intelligence-how-machines-affect-people-and-places](https://www.brookings.edu/research/automation-and-artificial-intelligence-how-machines-affect-people-and-places)
5. West, Darrell (2018). What is Artificial Intelligence? Brookings Institution. Retrieved at <https://www.brookings.edu/research/what-is-artificial-intelligence/>
6. Muro, M., Liu, S., & Kulkarni, S. (2017). Digitalization and the American Workforce. Brookings Institution. Retrieved at https://www.brookings.edu/wp-content/uploads/2017/11/mpp_2017nov15_digitalization_full_report.pdf
7. Dvorkin, M. (2016). Jobs Involving Routine Tasks Aren't Growing. Retrieved at <https://www.stlouisfed.org/on-the-economy/2016/january/jobs-involving-routine-tasks-arent-growing>
8. Lund, S., Manyika, J., Hilton Segel, L., Dua, A., Hancock, B., Rutherford, S. & Macon, B. Macon (2019). The future of work in America: People and places, today and tomorrow. McKinsey Global Institute. Retrieved at <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-in-america-people-and-places-today-and-tomorrow>
9. McKay, C., Pollack, E., & Fitzpayne, A. (2019). Automation and a Changing Economy. Aspen Institute. Retrieved at https://www.aspeninstitute.org/wp-content/uploads/2019/04/Automation-and-a-Changing-Economy-The-Case-for-Action_April-2019.pdf
10. The Markle Foundation. (2019). Digital blindspot: How digital literacy can create a more resilient American workforce. Retrieved at [markle.org/digitalblindspot](https://www.markle.org/digitalblindspot)
11. Bergson-Shilcock, A. (2020). The New Landscape of Digital Literacy: What policymakers and workforce advocates need to know. National Skills Coalition. Retrieved at <https://m.nationalskillscoalition.org/resources/publications/file/New-Digital-Landscape-web.pdf>
12. Markow, W., Hughes, D., & Bundy, A. (2018). The new foundational skills of the digital economy: Developing the professionals of the future. Burning Glass Technologies. Retrieved at burning-glass.com/research-project/new-foundational-skills
13. World Economic Forum (2019). The Future of Jobs Report 2020. Retrieved at http://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf
14. McKinsey Accelerate (2020). Adaptability and how to future-proof your skill set for the decade ahead. Retrieved at <https://www.mckinsey.com/business-functions/mckinsey-accelerate/our-insights/accelerate-blog/adaptability-and-how-to-future-proof-your-skill-set-for-the-decade-ahead>
15. OECD Glossary of Statistical Terms. Retrieved at <https://stats.oecd.org/glossary/detail.asp?ID=1121#:~:text=OECD%20Statistics,%2C%20corporations%2C%20technology%20and%20industries>
16. Altman, Steven & Bastian, P (2020). DHL Global Connectedness Index 2020: The State of Globalization in a Distancing World. DHL. Retrieved from <https://www.dhl.com/content/dam/dhl/global/dhl-spotlight/documents/pdf/spotlight-g04-global-connectedness-index-2020.pdf>
17. Jackson, J. (June 2013). Outsourcing and Insourcing Jobs in the U.S. Economy: Evidence Based on Foreign Investment Data. Congressional Research Service. Retrieved at <https://fas.org/sgp/crs/misc/RL32461.pdf>
18. Leeds School of Business . Colorado Business Outlook 2021 (December 2020). University of Colorado Boulder. Retrieved at https://www.colorado.edu/business/sites/default/files/attached-files/2021_cbeo_book_lr_final.pdf

06 THOUGHT LEADERS, PARTNERS, AND EXTERNAL FUTURE OF WORK REPORTS USED TO INFORM OFOW

19. Donovan, S. & Bradley, D. (July 2019). Real Wage Trends, 1979 to 2018. Congressional Research Service. Retrieved at <https://www.hsdl.org/?abstract&did=827842>
20. Scott, R. & Mokhiber, Z. (January 2020). Growing China trade deficit cost 3.7 million American jobs between 2001 and 2018. Economic Policy Institute. Retrieved at <https://www.epi.org/publication/growing-china-trade-deficits-costs-us-jobs/>
21. Weil, D. (March 2017). How to Make Employment Fair in an Age of Contracting and Temp Work. Harvard Business Review. Retrieved at <https://hbr.org/2017/03/making-employment-a-fair-deal-in-the-age-of-contracting-subcontracting-and-temp-work>
22. Twohey, M., Rosenberg, M. & McNeill, R. (February 2016). Wanted: foreign workers — and the labor brokers accused of illegally profiting from them. Reuters. Retrieved at <https://www.reuters.com/investigates/special-report/workers-brokers/>
23. Hyman, L. (2019). Temp the Real Story of What Happened to Your Salary, Benefits, and Job Security. Penguin Books.
24. Weil, David (2019). Understanding the Present and Future of Work in the Fissured Workplace Context. The Russell Sage Foundation Journal of the Social Sciences. Retrieved at <www.jstor.org/stable/10.7758/rsf.2019.5.5.08>
25. Volini, E., Schwartz, J. & Roy, I. (April 2019). The alternative workforce: It's now mainstream. Deloitte. Retrieved at <https://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2019/alternative-workforce-gig-economy.html>
26. Ross, M. & Bateman, N. (November 2019). Meet the Low Wage Workforce. Brookings Metropolitan Policy Program. Retrieved at https://www.brookings.edu/wp-content/uploads/2019/11/201911_Brookings-Metro-low-wage-workforce_Ross-Bateman.pdf
27. Escobari, M., Seyal, I. & Meaney, M. (November 2019). Realism about reskilling. Brookings Institution. Retrieved at <https://www.brookings.edu/research/realism-about-reskilling/>
28. MIT Living Wage Calculator. Retrieved at <https://livingwage.mit.edu/metros/39380>
29. Aspen Institute Future of Work Initiative (February 2019). State Policy Agenda. Retrieved at <https://www.aspeninstitute.org/publications/future-of-work-initiative-state-policy-agenda-february-2019/>
30. Smith, R. & Abernathy, N. (February 2017). Work Benefits: Ensuring Economic Security in the 21st Century. National Employment Law Project. Retrieved at <https://www.nelp.org/publication/work-benefits-ensuring-economic-security-in-the-21st-century/>
31. Silver, L., Schumacher, S. & Mordecai, M. (October 2020). In U.S. and UK, Globalization Leaves Some Feeling 'Left Behind' or 'Swept Up'. Pew Research Center. Retrieved at <https://www.pewresearch.org/2020/10/05/in-u-s-and-uk-globalization-leaves-some-feeling-left-behind-or-swept-up/>
32. Gedeon, N. (October 2020). Where and Why is Colorado's Current Population Changing?: 2010-2019 Population Estimates. State Demography Office, Colorado Department of Local Affairs. Retrieved at <https://drive.google.com/file/d/16j2LKEUH8W6J0gMX959ObBwrCg4F4egF/view>
33. DeGroen, C. (October 2020). Colorado Population Trends and the Impact of COVID-19. State Demography Office, Colorado Department of Local Affairs. Retrieved at https://drive.google.com/file/d/1sH3yaJF-z_7YuA00dWRmEihR8U96akuK/view
34. Changing the Narrative Colorado (January 2020). The case for age-friendly and inter-generational workplaces. Retrieved at <https://drive.google.com/file/d/1-OaxNjHRbHvU6XSuVjDNjK4joTMnnhW8/view>
35. Brennan, C. & Contorno, L. (December 2020). State of Working Colorado 2020. Colorado Center on Law and Policy. Retrieved at https://cclponline.org/wp-content/uploads/2020/12/SWCO_Final_122820_SM.pdf
36. AARP (2020). Longevity Economy Outlook: Outlook. Retrieved at https://www.aarp.org/content/dam/aarp/research/surveys_statistics/econ/2020/longevity-economy-outlook-colorado.doi.10.26419-2Fint.00044.006.pdf
37. Bell Policy Center (January 2018). Demographics: A Changing Colorado. Retrieved at <https://www.bellpolicy.org/wp-content/uploads/2018/01/Demographics-Guide-to-Economic-Mobility.pdf>
38. Dougherty, J. (December 2020). 2020 Colorado Talent Pipeline Report. Colorado Workforce Development Council. Retrieved at <https://drive.google.com/file/d/1aEij3P0ynhXtrknfbLBJ20Ve4R5kThc3/view>
39. Walker, R., Mitchell, K., & Dougherty, J. (2020) Colorado Talent Equity Agenda. Colorado Workforce Development Council. Retrieved at drive.google.com/file/d/1JxsVfTB6n5HDOeafFqOoqcq4mjHPJMKt/view

06 THOUGHT LEADERS, PARTNERS, AND EXTERNAL FUTURE OF WORK REPORTS USED TO INFORM OFOW

40. COLMIGateway. Colorado Department of Labor and Employment. Retrieved at <https://www.colmigateway.com/vosnet/lmi/default.aspx>
41. Beane, M. & Brynjolfsson, E. (September 2020). Working With Robots in a Post-Pandemic World. Harvard Business Review. Retrieved at <https://sloanreview.mit.edu/article/working-with-robots-in-a-post-pandemic-world/>
42. Khazan, O. (May 2020). Work From Home Is Here to Stay. The Atlantic. Retrieved at <https://www.theatlantic.com/health/archive/2020/05/work-from-home-pandemic/611098/>
43. Steemers, F., Erickson, R., Popiela, A., & Levanon, G. (October 2020). Adapting to the Reimagined Workplace: Human Capital Responses to the COVID-19 Pandemic. The Conference Board. Retrieved at <https://conference-board.org/topics/natural-disasters-pandemics/adapting-to-the-reimagined-workplace>
44. Lund, S., Madgavkar, A., Manyika, J. & Smit, S. (November 2020). What's next for remote work: An analysis of 2,000 tasks, 800 jobs, and nine countries. McKinsey Global Institute. Retrieved at <https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-remote-work-an-analysis-of-2000-tasks-800-jobs-and-nine-countries>
45. Dingel, J. & Neiman, B. (June 2020). How Many Jobs Can be Done at Home? University of Chicago, Booth School of Business, NBER, and CEPR. Retrieved at <https://brentneiman.com/research/DN.pdf>
46. U.S. Census Bureau (September 2020). 2019 American Community Survey Single-Year Estimates. Retrieved at <https://www.census.gov/newsroom/press-kits/2020/acs-1year.html>
47. U.S. Census Bureau (December 2020). Week 19 Household Pulse Survey: November 11 – November 23. Retrieved at <https://www.census.gov/data/tables/2020/demo/hhp/hhp19.html>
48. World Trade Organization (April 2020). Trade set to plunge as COVID-19 pandemic upends global economy. Retrieved at https://www.wto.org/english/news_e/pres20_e/pr855_e.htm
49. UN News (October 2020). Global foreign direct investment halved amid pandemic, but China remained resilient. Retrieved at <https://news.un.org/en/story/2020/10/1076232>
50. Pearson, J. (December 2020). Why COVID-19 shows the future not the end of globalization. World Economic Forum. Retrieved at <https://www.weforum.org/agenda/2020/12/covid-19-future-of-globalization-trade/>
51. Lund, S., Ellingrud, K., Hancock, B & Manyika, J. (April 2020). COVID-19 and jobs: Monitoring the US impact on people and places. McKinsey Global Institute. Retrieved at <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-jobs-monitoring-the-us-impact-on-people-and-places>
52. Opportunity Insights (2020). Economic Tracker. Retrieved at <https://www.tracktherecovery.org/>
53. Escobari, M., Geismar, N. & Gandhi, D. (July 2020). Visualizing vulnerable jobs across America: A tool to understand your local economy and inform its recovery. Brookings Institution. Retrieved at <https://www.brookings.edu/blog/up-front/2020/07/28/visualizing-vulnerable-jobs-across-america-a-tool-to-understand-your-local-economy-and-inform-its-recovery/amp/>
54. Lowrey, A. (May 2020). The Small-Business Die-Off Is Here. The Atlantic. Retrieved at <https://www.theatlantic.com/ideas/archive/2020/05/bridge-post-pandemic-world-already-collapsing/611089/>
55. Williams, M., Gelaye, B. & Broad Leib, E. (April 2020). The covid-19 crisis is going to get much worse when it hits rural areas. The Washington Post. Retrieved at <https://www.washingtonpost.com/opinions/2020/04/06/covid-19-crisis-is-going-get-much-worse-when-it-hits-rural-areas/>
56. McKinsey & Company (August 2020). Reimagining the post pandemic economic future. Retrieved at <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/reimagining-the-postpandemic-economic-future>
57. Terrell, K. (October 2020). Unemployment's Toll on Older Workers Is Worst in Half a Century. AARP. Retrieved at <https://www.aarp.org/work/working-at-50-plus/info-2020/pandemic-unemployment-older-workers.html>
58. Changing the Narrative (December 2020). 50+ Colorado Workforce Survey - Findings Snapshot. Retrieved at https://changingthenarrativeco.org/wp-content/uploads/2020/12/CTN_WorkforceSurvey_FindingsSnapshot.pdf

06 THOUGHT LEADERS, PARTNERS, AND EXTERNAL FUTURE OF WORK REPORTS USED TO INFORM OFOW

59. SB20-207 Unemployment Insurance (2020). Retrieved at <https://leg.colorado.gov/bills/sb20-207>
60. Colorado Department of Labor and Employment (July 2020). Performance Plan 2020-2021. Retrieved at <https://cdle.colorado.gov/sites/cdle/files/CDLE%20Performance%20Plan%20-%20October%20Revision%20v1.pdf>
61. McKinsey & Company (August 2020). Understanding how American workers progress to higher-wage jobs. Retrieved at <https://www.mckinsey.com/about-us/covid-response-center/covid-19-impact/understanding-how-american-workers-progress-to-higher-wage-jobs>
62. Opportunity@Work. Skilled Through Alternative Routes. Retrieved at <https://opportunityatwork.org/stars/>
63. Opportunity@Work (2020). Navigating with the STARS: Reimagining Equitable Pathways to Mobility. Retrieved at <https://opportunityatwork.org/navigating-stars-report/>
64. Autor, D., Mindell, D. & Reynolds, E. (November 2020). The Work of the Future: Building Better Jobs in an Age of Intelligent Machines. MIT Work of the Future Taskforce. Retrieved at <https://workofthefuture.mit.edu/wp-content/uploads/2020/11/2020-Final-Report2.pdf>
65. Budway, J. (July 2020). Skills-Based Hiring is the Future For Successful Employers. Penn Foster. Retrieved at <https://partners.pennfoster.edu/blog/2020/july/skills-based-hiring-is-the-future-for-successful-employers>
66. Harvard Business School (2014). Bridge The Gap: Rebuilding America's Middle Skills. Retrieved at <https://www.hbs.edu/competitiveness/Documents/bridge-the-gap.pdf>
67. Scheve, K. & Slaughter, M. (December 2018). How to Save Globalization: Rebuilding America's Ladder of Opportunity. Foreign Affairs. Retrieved at <https://www.foreignaffairs.com/articles/united-states/2018-10-15/how-save-globalization>

*For more information, visit the OFOW website at
cdle.colorado.gov/future-of-work*



COLORADO

Department of
Labor and Employment

The Office of the Future of Work
Colorado Department of Labor and Employment
633 17th Street, Suite 1200
Denver, CO 80202-3660