COLORADO TALENT PIPELINE REPORT
DECEMBER 2017

In accordance with C.R.S. 24-46.3-103, this *Colorado Talent Pipeline Report* was prepared by the Colorado Workforce Development Council (CWDC) in partnership with Colorado's Department of Higher Education (CDHE), Department of Education (CDE), Department of Labor and Employment (CDLE), including the CDLE's Labor Standards and Statistics division, and the Office of Economic Development and International Trade (OEDIT). Support was provided by the Office of State Planning and Budgeting (OSPB), the State Demography Office at the Department of Local Affairs (DOLA), the Department of Human Services (DHS) and the Department of Regulatory Affairs (DORA), along with other partners.

For legislative questions or requests related to this report, please contact:

Patrick Teegarden, Director of Policy and Legislation

Office of Government, Policy and Public Relations, CDLE

P 303.318.8019 | C 303-908-0866 | patrick.teegarden@state.co.us

All other inquires may be directed to:

Stephanie Veck, Director, CWDC

P 303.318.8235 | C 719.588.2373 | stephanie.veck@state.co.us

EXECUTIVE SUMMARY

Colorado is often lauded for a strong economy and highly educated workforce. However, it is also important to recognize that each region of Colorado has a distinct economic situation, with a unique blend of talent-related challenges and successes. This report explores issues related to the supply and demand of talent in Colorado.

As in previous reports, we explore "Top Jobs," high-demand, high-growth jobs that pay a good wage. We continue to look at two earnings tiers: a higher-earnings tier that includes jobs meeting a living wage for a family of three with one working adult (Tier 1) and a lower-earnings tier that includes jobs meeting a living wage for an individual (Tier 2).

Tier 1 job openings are largely concentrated in healthcare practitioners and technical roles, business/ finance, IT occupations, and in management positions. Even though there are regional wage differences in the fields in which Tier 1 jobs are concentrated, many healthcare practitioners and technical occupations often still make the top of regional lists across the state. Nearly all new entrants in this tier have education or training beyond high school, including degrees, certificates or work-based learning (WBL) experiences.

Tier 2 job openings are largely concentrated in construction, office and administrative support, healthcare support and food-preparation and serving occupations. This tier offers far more opportunity for entry for workers without education or training beyond high school.

While no one can predict the future, one thing we know for sure is that the workplace in Colorado will continue to change. While some jobs are being automated, many are requiring increasingly higher levels of technological literacy to operate more advanced systems and procedures. Employers highly value both technical and professional competencies, and in recent decades, fields experiencing job growth are requiring cognitive skills as well as social skills that are both high level. Perhaps more than ever before, it is important for Coloradans of all ages to maintain a fluid skills mindset, as jobs are evolving faster than ever due to technological innovations.

While Colorado has one of the lowest unemployment rates in the country at 2.4 percent, there is variation in this rate by region as well as variation in the share of residents that participate in the labor market. While many Colorado businesses are experiencing a talent pipeline crisis (not able to fill open jobs with qualified skilled talent), there is still untapped talent in Colorado. Unemployment rates are higher for various segments of the population, such as those with disabilities, those with a criminal record and youth. There are also over 400,000 Colorado adults with some postsecondary education, but no credential, connecting these individuals to training in high demand skills could put them on a path to the middle class while helping to close the skills gap for employers.

Colorado continues to be an attractive state to outsiders, gaining just over 60,000 residents in 2016, although this growth has largely been experienced along the Front Range. While Colorado's lifestyle, family-friendliness and collegial atmosphere rank high with our talent, when surveyed, Colorado's talent is feeling the impact of the rising cost of housing/living.

Our state is also facing demographic shifts. While the aging population is supporting the existence of about 240,000 jobs in the state through spending, it is also leading to the loss of highly experienced talent for many fields through retirement. While our state has a highly educated workforce relative to the national average, many racial or ethnic minorities do not have high levels of educational attainment. This is not just an education issue, but an economic issue, as our fast-growing Hispanic population, in particular, is changing the makeup of our workforce.

As a state always at the ready to collaborate, Colorado is actively engaged in a range of strategies supporting the development of talent. Strategies focused on better aligning the skills of our workforce with employer demand include:

- **Colorado's Sector Strategies Network:** This growing network now includes over 700 businesses involved with 23 regional partnerships across the state, a consortium of state trade associations and 19 local workforce boards.
- **Industry-Driven Career Pathways Systems**: This strategy and online tool for career-pathway development ensures that education, training and workforce systems stay attuned and responsive to the needs of the labor market; in 2016-17 the focus was on health care and construction fields, while forthcoming pathways include business operations and cybersecurity. Focusing on these critical occupations is key to addressing the talent pipeline crisis.
- **Expansion of Industry-Recognized Credentials:** An expanded credential system has great potential to improve our ability to promote and identify viable pathways to prosperity for Coloradans by creating common and recognized terminology that bridges the education and workforce communities. Additionally, programs that result in credentials allow high school students to be ready for their next step to get a job in Colorado and earn a living wage. Thousands of Colorado students are graduating with an industry credential in one hand and a high school diploma in the other. An example of a state program that encourages credential attainment is the Career Success Pilot Program that awards monetary incentives to school districts based on the number of students who complete qualifying industry credentials that are aligned with Top Jobs.
- **Engagement with Work-based Learning (WBL):** These initiatives include the expansion of adult and youth apprenticeships, internships and on-the-job training (OJT).
- **2Gen Approach:** Two-generation strategies align a variety of programs and services for children and adults to serve the whole family with a goal of achieving long-term self-sustainability and economic security.

Table of Contents

INTRODUCTION

In this year's Colorado Talent Pipeline Report, we explore:

DEMAND:
- Statewide Top Jobs: High-growth, high-openings jobs that offer a good wage
- Critical occupations contributing to the talent pipeline crisis in Colorado
- Analysis of regional high-growth jobs that offer a good wage
- Skills analysis and competency-based hiring
- The impact of sector strategies on business

SUPPLY:
- Migration trends
- Demographic issues, including age and race/ethnicity
- Talent-development initiatives, including the Career Success Pilot Program, industry-driven career pathways, experiential learning strategies, competency-based education, and the 2Gen approach to serving families.

DEMAND

This annual report explores the demand for various occupations, skills and types of education in Colorado. This section examines Top Jobs and analyzes professional and technical competencies for targeted high-priority occupations.

COLORADO'S TOP JOBS

This report uses labor-market projections from the CDLE Office of Labor Market Information to identify jobs that meet three criteria: **projected high annual openings (>40)**, **above-average growth rates (>2.05%)** and **a good wage**. The jobs in this report are categorized into two earnings tiers, recognizing that there are many essential jobs that may not typically pay a high wage but are in high demand and/or could lead to a higher-paying in-demand job.

- **Tier 1** includes jobs that have median earnings at or above a living wage for a family with two adults (one working) and one child ($24.19/hr.). This is an increase of $1.29 over the previous year's living-wage benchmark.
- **Tier 2** includes jobs that meet a living-wage benchmark for an individual (median earnings of $11.82/hr.). This is an increase of 49 cents over the 2016 benchmark.

Figure 1. Living Wage for Top Jobs Used in the Talent Pipeline Report by Year* Only the 2016 and 2017 reports use a living wage for an individual, in addition to the living wage for a family of three.
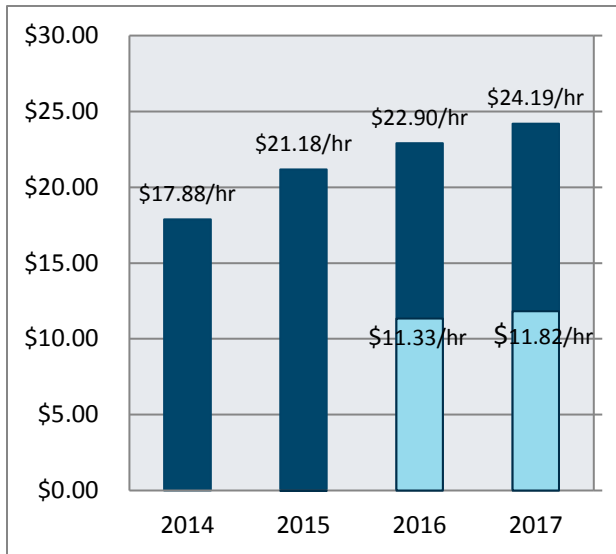
As the cost of living increases in Colorado, it is important to consider not just jobs, but jobs that pay a sustainable wage. Overall, these Top Jobs represent 41 percent of all annual job openings in Colorado. In addition, this report recognizes the clear value in identifying occupations with momentum and demand that could lead to jobs that do not exist today but will be in high demand in the future.

TOP JOBS BY OCCUPATION GROUP

See the Appendix for a complete list of occupations.

Table 1. Examples of Tier 1 Occupations

Health Care Practitioners	Business and Finance
Registered Nurses	Accountants
Physical Therapists	Market Research Analysts/Marketing Specialists
Pharmacists	Management Analysts
Speech-Language Pathologists	Personal Financial Advisors
Management	**Information Technology (IT)**
General and Operations Managers	Software Developers
Construction Managers	Computer User-Support Specialists
Food Service Managers	Computer Systems Analysts
Computer and Information Systems Managers	Web Developers

Table 2. Examples of Tier 2 Occupations

Skilled Trades	Office and Administrative Support
Construction and Extraction Laborers	Customer Service Representatives
Electricians	Medical Secretaries
Carpenters	Information and Record Clerks
Plumbers, Pipefitters and Steamfitters	Billing and Posting Clerks/Machine Operators
Health Care Support	**Education and Social Services**
Certified Nursing Assistants	Teacher Assistants
Home Health Aides	Preschool Teachers
Medical Assistants	Child, Family and School Social Workers
Licensed Practical Nurses	Mental Health Counselors

Similar to recent years, the higher-paying Tier 1 annual job openings are largely concentrated in healthcare as practitioners (vs. support personnel), in technical, business and finance, and IT occupations, and in management positions. Tier 2 job openings are largely concentrated in construction and extraction, office and administrative support, healthcare support, food-preparation and education occupations. Of the 168 occupations on this list, 128 carried over from the previous year, with additional occupations having appeared on past Top Jobs lists (for more information on the specific occupations that did not carry over from last year due to changes in projected growth rates and/or annual openings, please reference this report's Appendix E).

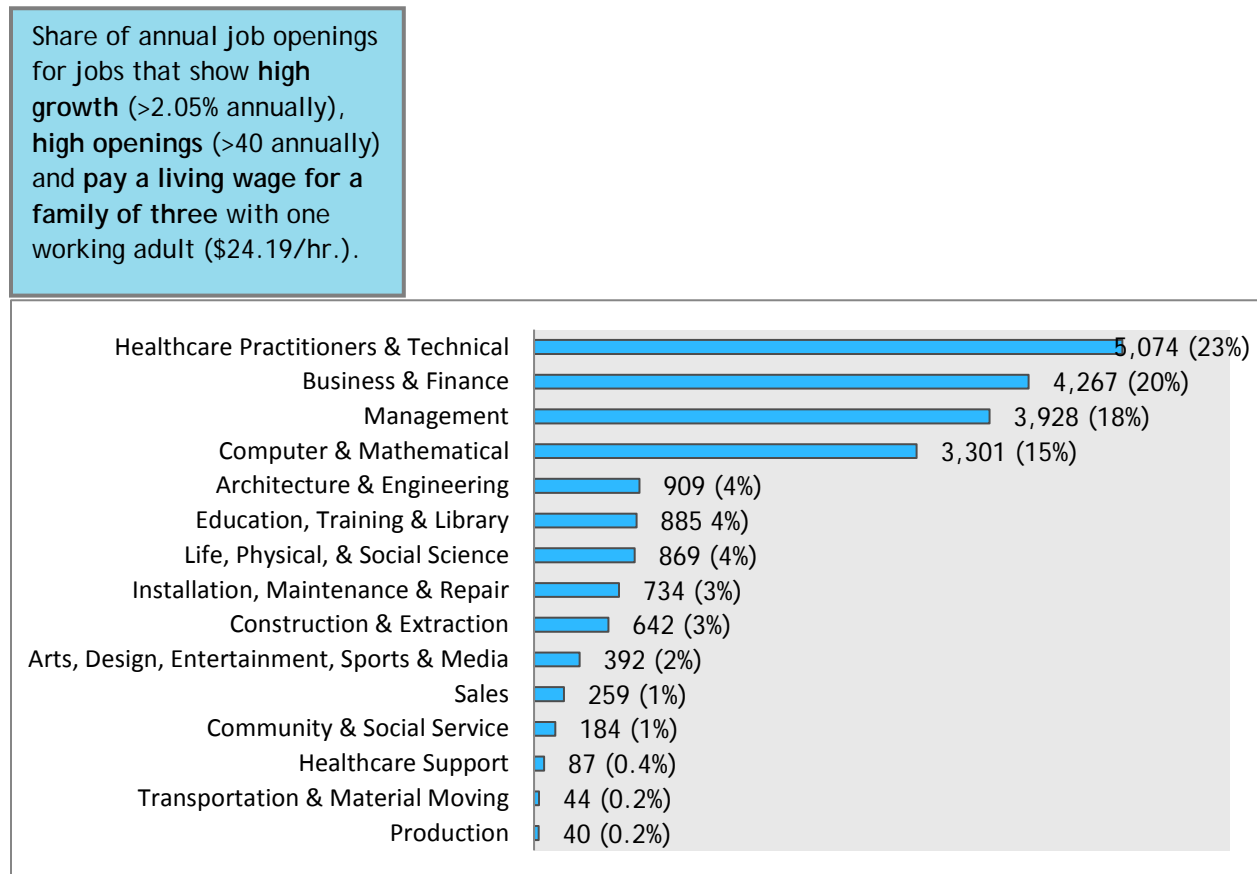**Figure 2. Tier 1 Top Jobs - Projected Annual Openings by Occupation Cluster**

Share of annual job openings for jobs that show **high growth** (>2.05% annually), **high openings** (>40 annually) and **pay a living wage for a family of three** with one working adult ($24.19/hr.).

Occupation Cluster	Annual Openings
Healthcare Practitioners & Technical	5,074 (23%)
Business & Finance	4,267 (20%)
Management	3,928 (18%)
Computer & Mathematical	3,301 (15%)
Architecture & Engineering	909 (4%)
Education, Training & Library	885 4%)
Life, Physical, & Social Science	869 (4%)
Installation, Maintenance & Repair	734 (3%)
Construction & Extraction	642 (3%)
Arts, Design, Entertainment, Sports & Media	392 (2%)
Sales	259 (1%)
Community & Social Service	184 (1%)
Healthcare Support	87 (0.4%)
Transportation & Material Moving	44 (0.2%)
Production	40 (0.2%)

Figure 3. Tier 2 Top Jobs - Projected Annual Openings by Occupation Cluster

Occupation Cluster	Annual Openings
Construction & Extraction	5,733 (21%)
Office & Administrative Support	4,374 (16%)
Healthcare Support	3,142 (12%)
Food Preparation & Serving	2,860 (11%)
Education, Training & Library	2,181 (8%)
Personal Care & Service	1,921 (7%)
Installation, Maintenance & Repair	1,505 (6%)
Healthcare Practitioners & Technical	1,457 (5%)
Community & Social Service	1,381 (5%)
Arts, Design, Entertainment, Sports & Media	588 (2%)
Transportation & Material Moving	528 (2%)
Production	353 1%)
Legal	266 (1%)
Life, Physical, & Social Science	257 (1%)
Business & Finance	138 (1%)
Management	49 (0.2%)

Share of annual job openings for jobs that show **high growth** (>2.05% annually), **high openings** (>40 annually) and **pay above a living wage for an individual** ($11.82/hr.) and below $24.19/hr.

9

Figure 4. All Top Jobs - Projected Annual Openings by Occupation Cluster

Occupation Cluster	Annual Openings (Share)
Healthcare Practitioners & Technical	6,531 (14%)
Construction & Extraction	6,375 (13%)
Business & Finance	4,405 (9%)
Office & Administrative Support	4,374 (9%)
Management	3,977 (8%)
Computer & Mathematical	3,301 (7%)
Healthcare Support	3,229 (7%)
Education, Training & Library	3,066 (6%)
Food Preparation & Serving	2,860 (6%)
Installation, Maintenance & Repair	2,239 (5%)
Personal Care & Service	1,921 (4%)
Community & Social Service	1,565
Life, Physical, & Social Science	1,126 (2%)
Arts, Design, Entertainment, Sports & Media	980 (2%)
Architecture & Engineering	909 (2%)
Transportation & Material Moving	572 (1%)
Production	393 (1%)
Legal	266 (1%)
Sales	259 (1%)

Share of annual job openings for jobs that show high growth (>2.05% annually), high openings (>40 annually) and pay at least a living wage for an individual ($11.82/hr.).

It should be noted that some of the occupational clusters that are now seeing the highest growth are those that underwent a crash during the Great Recession. For example, while construction and extraction jobs are currently growing at a very high rate, occupations in this cluster have been among the most volatile over the past 10 years. This volatility is demonstrated in Figure 5, which depicts the occupations with the highest standard deviation for annual percentage growth between 2006-2016. The most stable growth among occupations with the highest growth rate and job openings in Colorado for the past 10 years has been in healthcare, education and business, as seen in Figure 6.

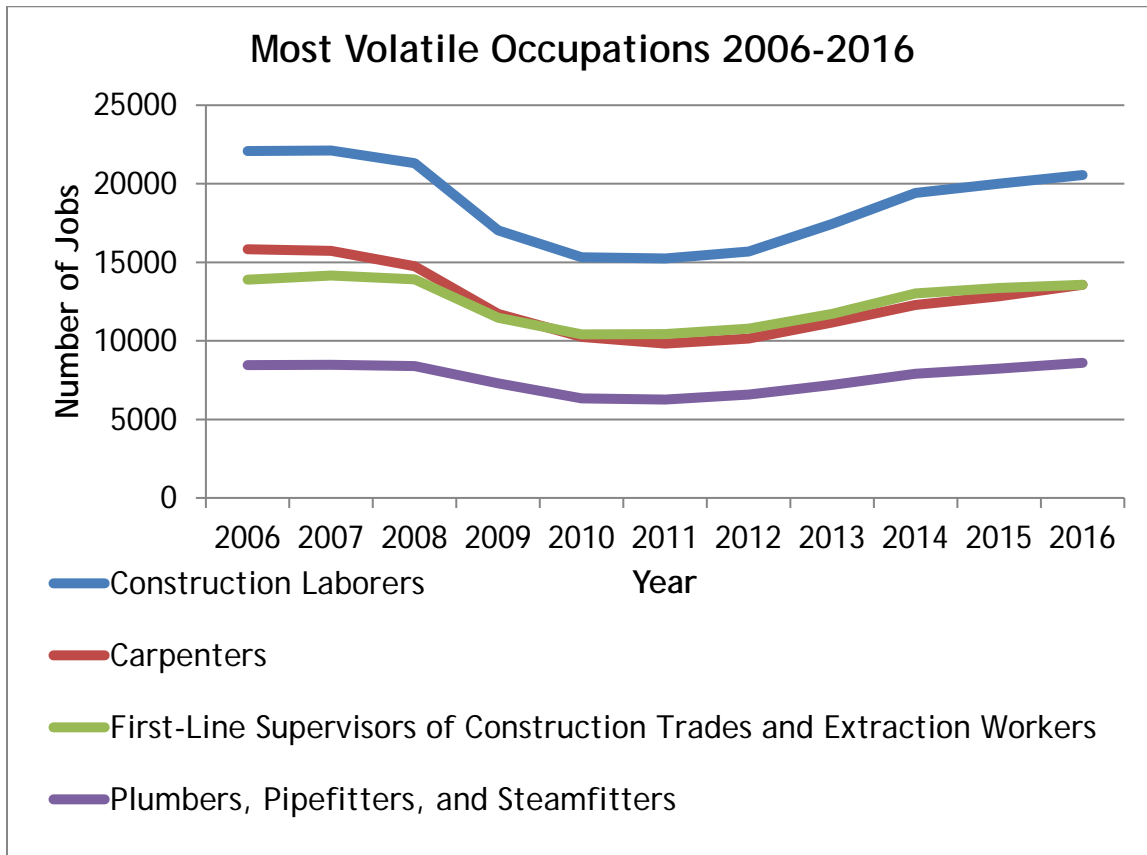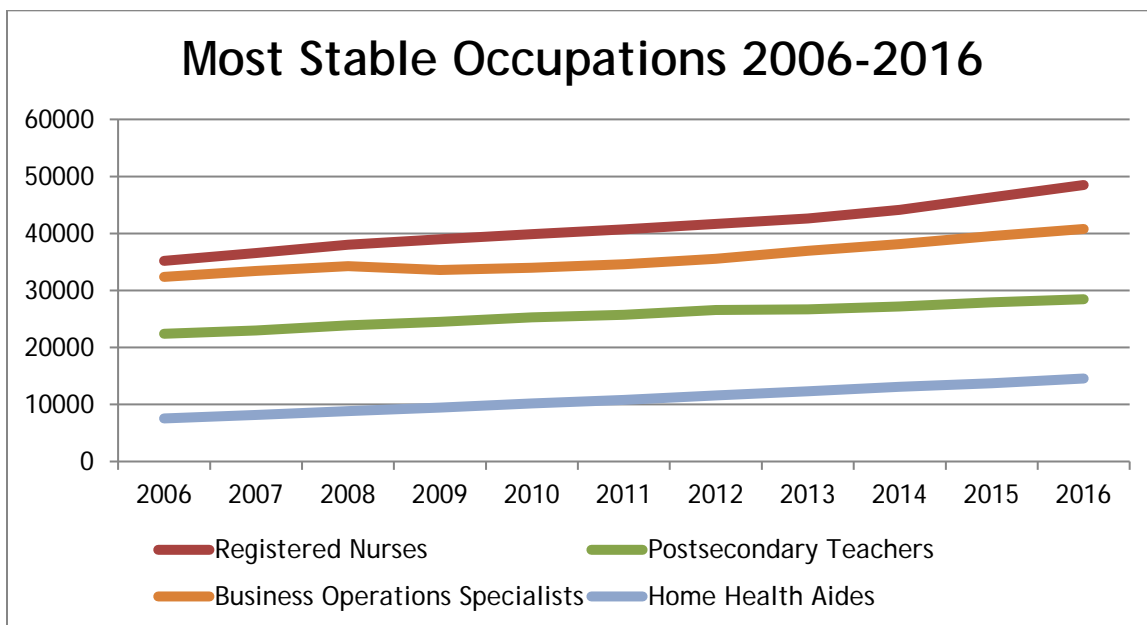**Figure 5. Most Volatile Occupations 2006-2016**
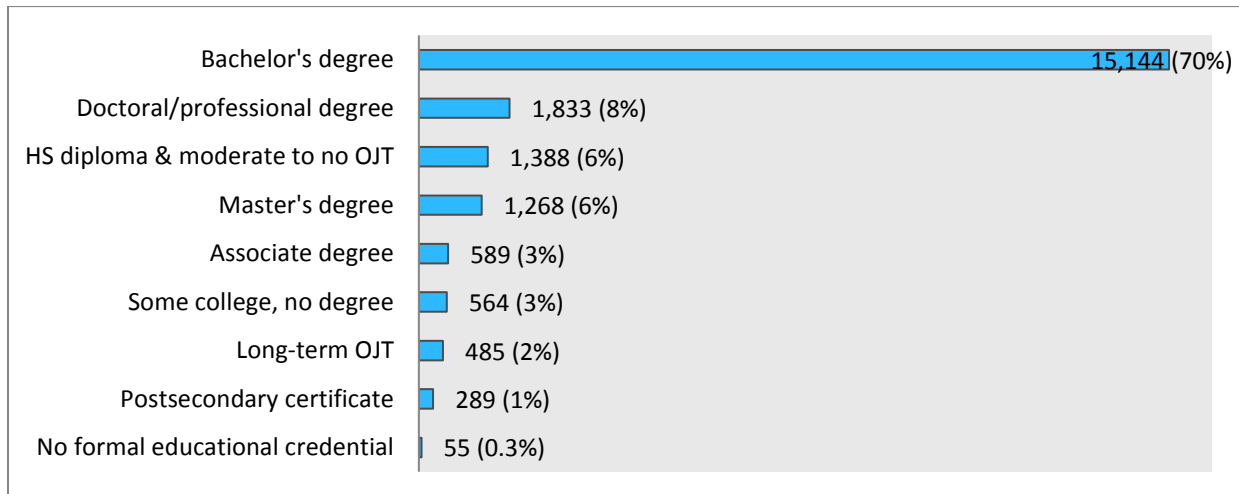

Most Volatile Occupations 2006-2016

- Construction Laborers
- Carpenters
- First-Line Supervisors of Construction Trades and Extraction Workers
- Plumbers, Pipefitters, and Steamfitters

Figure 6. Most Stable Occupations 2006-2016

Most Stable Occupations 2006-2016

- Registered Nurses
- Postsecondary Teachers
- Business Operations Specialists
- Home Health Aides

TOP JOBS BY TYPICAL EDUCATION LEVEL FOR ENTRY

The analysis in this section relies on the U.S. Bureau of Labor Statistics (USBLS) definition of typical entry education requirements for each occupation, while recognizing that workers within an occupation embody a range of education and training levels and that occupational requirements can also shift due to changes in complexity, perception or licensure regulation.

Tier 1

Occupations that are part of the Tier 1 list (high growth rates, high annual openings and pay a living wage for a family of three) overwhelmingly require education or training beyond high school for entry into the field. When measured by job openings, 93 percent typically demand some level of postsecondary education or training, ranging from one-year-or-longer programs that combine OJT and coursework, to graduate-level degrees. Nine percent of job openings are for middle-skill jobs—a job that typically requires additional education or training beyond a high school diploma but less than a bachelor's degree—in fields like IT, healthcare and the skilled trades. At the same time, a paradigm shift is underway, with employers increasingly recognizing the need to look for required competencies rather than simply defaulting to certain degree requirements. As WBL opportunities expand, more Top Jobs may be filled by individuals with these types of OJT experiences.

Figure 7. Tier 1 Top Jobs – Projected Annual Openings by Typical Education Needed for Entry
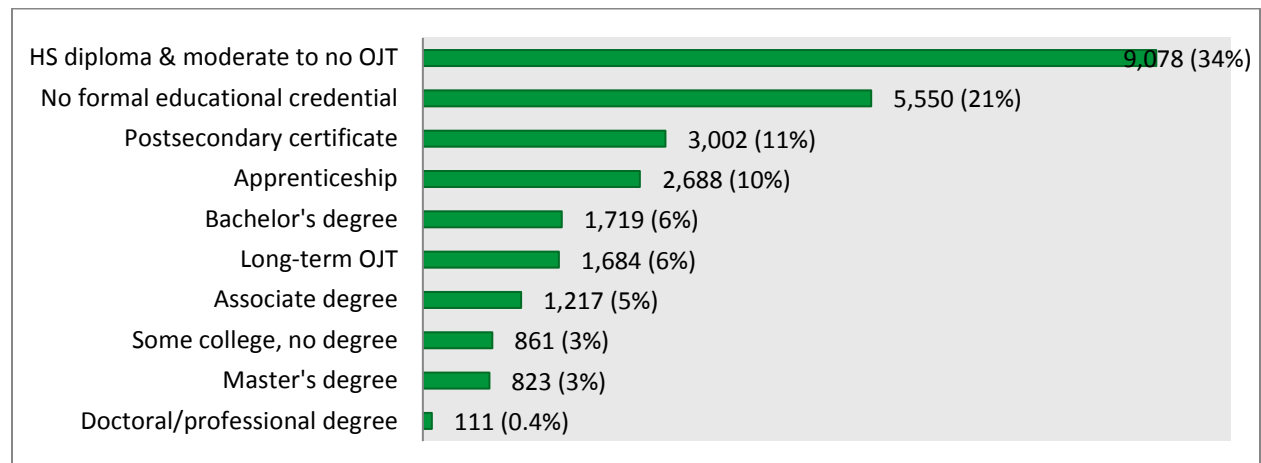

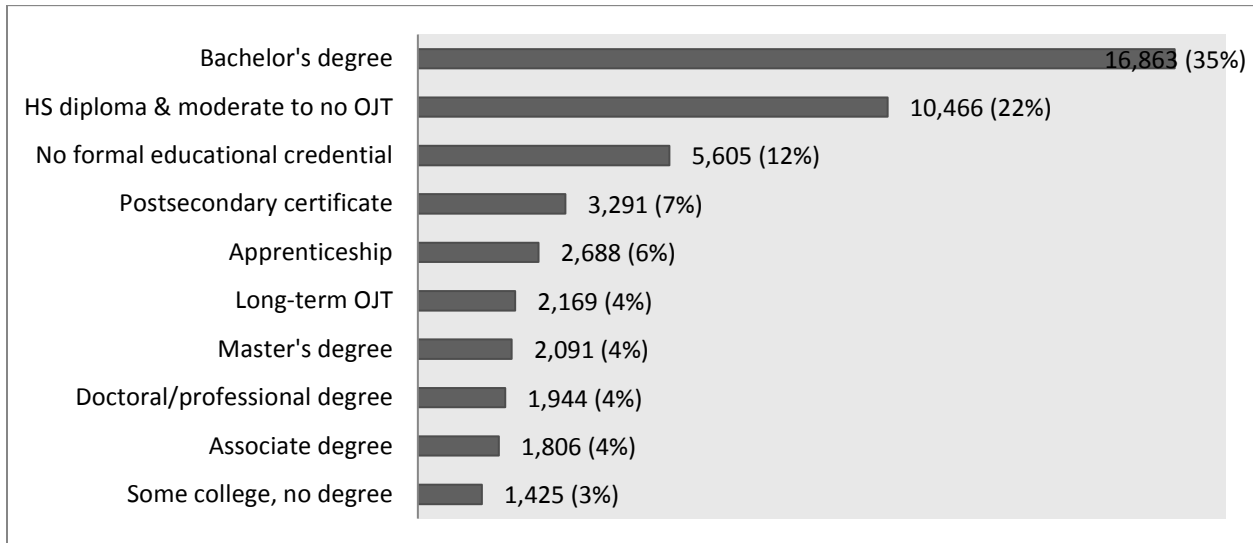|	
Bachelor's degree	15,144 (70%)
Doctoral/professional degree	1,833 (8%)
HS diploma & moderate to no OJT	1,388 (6%)
Master's degree	1,268 (6%)
Associate degree	589 (3%)
Some college, no degree	564 (3%)
Long-term OJT	485 (2%)
Postsecondary certificate	289 (1%)
No formal educational credential	55 (0.3%)

Tier 2

For occupations that are on the Tier 2 list (high growth rates, high annual openings and pay a living wage for an individual), less than half (45 percent) typically require formal postsecondary education/training for entry into employment. For jobs that call for education and/or training beyond high school, most are considered middle-skill jobs. Middle-skill jobs on this list are concentrated in the skilled trades and healthcare support positions. Here, occupations that expect a bachelor's or graduate degree tend to be in education, counseling or social services.

Figure 8. Tier 2 Top Jobs - Projected Annual Openings by Typical Education Needed for Entry

Category	Openings
HS diploma & moderate to no OJT	9,078 (34%)
No formal educational credential	5,550 (21%)
Postsecondary certificate	3,002 (11%)
Apprenticeship	2,688 (10%)
Bachelor's degree	1,719 (6%)
Long-term OJT	1,684 (6%)
Associate degree	1,217 (5%)
Some college, no degree	861 (3%)
Master's degree	823 (3%)
Doctoral/professional degree	111 (0.4%)

67 percent of job openings for Top Jobs typically require some level of formalized postsecondary education or training.

Figure 9. All Top Jobs – Projected Annual Openings by Typical Entry Education Level

Education Level	Value
Bachelor's degree	16,863 (35%)
HS diploma & moderate to no OJT	10,466 (22%)
No formal educational credential	5,605 (12%)
Postsecondary certificate	3,291 (7%)
Apprenticeship	2,688 (6%)
Long-term OJT	2,169 (4%)
Master's degree	2,091 (4%)
Doctoral/professional degree	1,944 (4%)
Associate degree	1,806 (4%)
Some college, no degree	1,425 (3%)

What share of Top Jobs requires high levels of STEM competencies?

- 66% of Tier 1 job openings
- 11% of Tier 2 job openings
- 35% of all Top Job openings

(Brookings STEM Definition)

Some industries may be missing out on opportunities to find talent for jobs where certain demographic groups tend to be underrepresented. Ultimately, all people should have the opportunity to pursue a good career path, but some fields may benefit by implementing intentional recruitment strategies to diversify and thereby fulfill talent needs.

While sector partnerships and/or career pathways are developing pathways to, or competencies required for, many of these Top Jobs, the ultimate goal is to have partnerships or pathways for all Top Jobs so as to support the development of skilled talent, help job seekers understand required competencies and ensure business is able to articulate its needs.

Nationwide, the vast majority of new jobs will require some form of postsecondary education. According to the Georgetown Center on Education and the Workforce, 9.9 million of the 15.4 million jobs created

during the 2008-2016 recovery period after the Great Recession went to workers with more than a high school education, as seen in Figure 10.

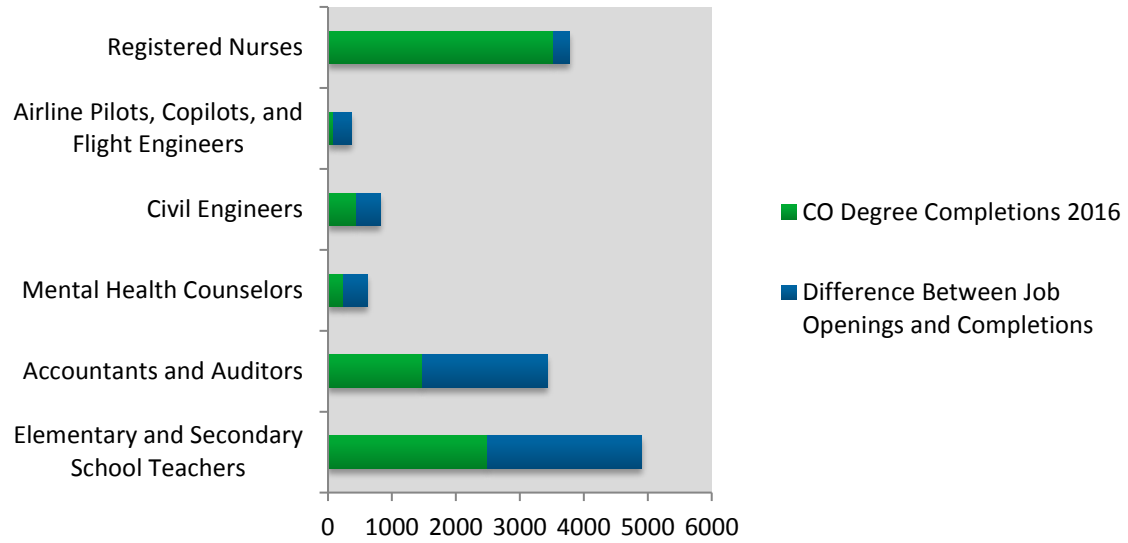**Figure 10. Nationwide Job Trends by Education Level 2008-2016**
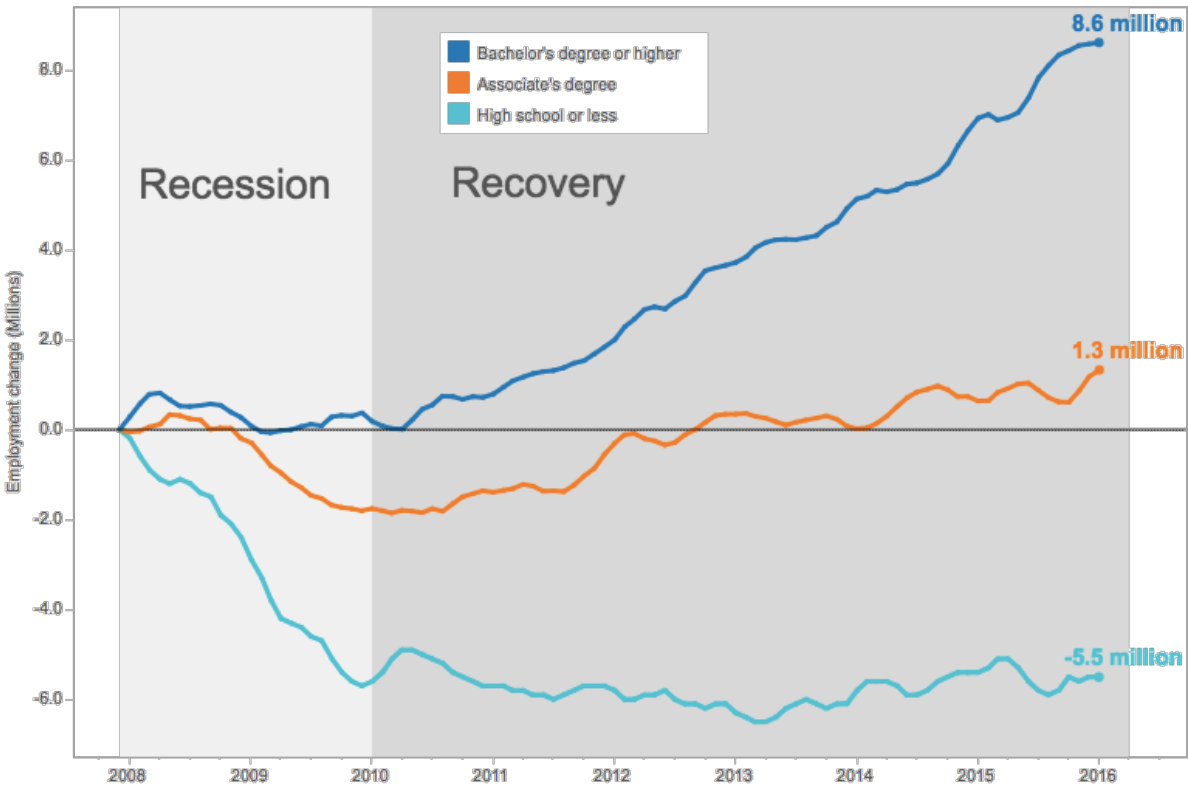
Source: Georgetown Center for Education and the Workforce

Demand for postsecondary education in Colorado is the fifth highest among all states, according to the CDHE 2017 Master Plan, Colorado Rises: Advancing Education and Talent Development. Current postsecondary attainment for Colorado adults is 55 percent, while the statewide goal is 66 percent attainment by 2025 in order to meet workforce needs and ensure a strong state economy. Beyond increasing attainment, it is important to look at the types of degrees that are being attained and how they match up with employer demand. The current gap between credential completion and employer demand is particularly acute for certain occupations, including teachers, accountants, mental health counselors, engineers and nurses, as shown in Figure 11. More information about the teacher shortage and Colorado's work to address this shortage can be found on the CDHE website.

Figure 11. Largest Gaps Between Job Openings and Degree Completions

Biggest Degree Gaps

Legend:
- CO Degree Completions 2016 (green)
- Difference Between Job Openings and Completions (blue)

Categories (top to bottom):
- Registered Nurses
- Airline Pilots, Copilots, and Flight Engineers
- Civil Engineers
- Mental Health Counselors
- Accountants and Auditors
- Elementary and Secondary School Teachers

X-axis: 0, 1000, 2000, 3000, 4000, 5000, 6000

Occupational growth and wages vary by region in Colorado. In the more rural areas of the state, the jobs with the highest annual openings typically do not require a postsecondary credential, while in the metropolitan areas, many of the Top Jobs require at least a bachelor's degree. Across the state, registered nurses, retail salespersons and office clerks are in high demand. The living wage ranges from $10.52 in Grand Junction to $13.65 in Boulder. Although areas with a higher cost of living typically have higher median wages, these wages still may not be high enough to cover expenses. Figure 12 below depicts the local living wage and median wage for registered nurses, a Top Job in every region of the state. While nurses in Boulder are paid more than in other parts of the state, their median wage is only 2.6 times the local living wage, while in Grand Junction, nurses earn 3.1 times the local living wage.

Figure 12: Comparing Living Wage and Median Wage Across Colorado Regions
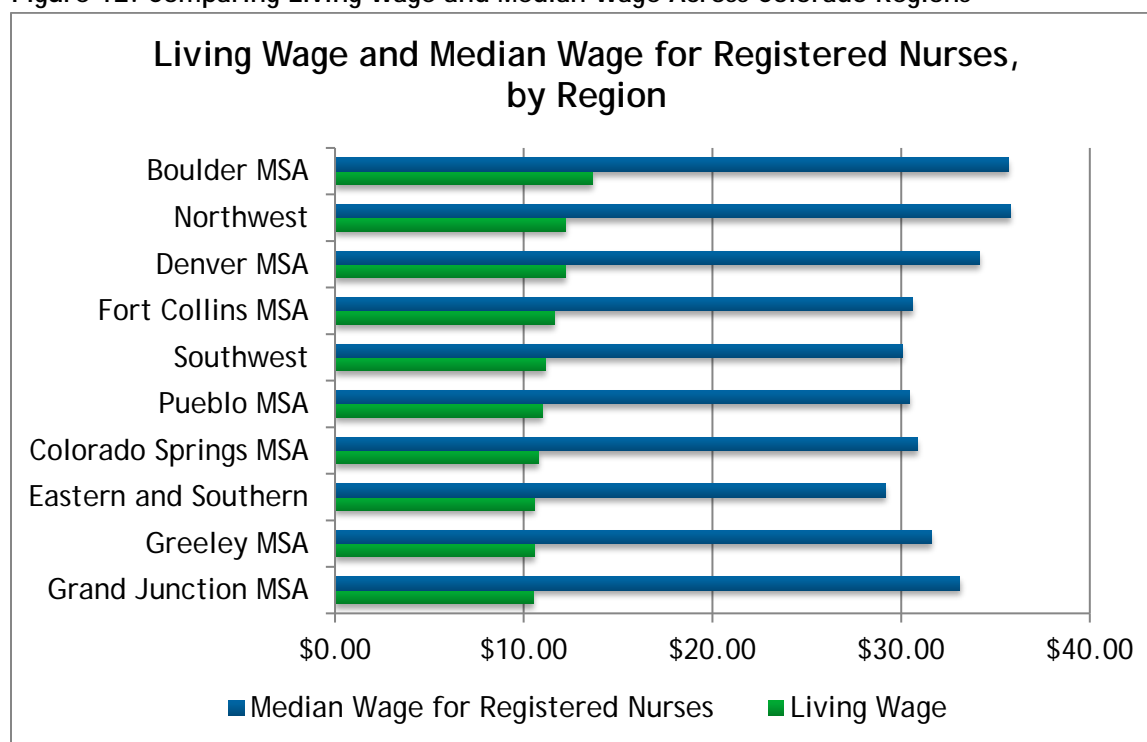
Along with wages and cost of living, education requirements also vary greatly by region. As Figure 13 shows, in Boulder, 60 percent of openings for jobs that pay a living wage require some form of postsecondary education, but in northwest Colorado, only 23 percent of openings for living-wage jobs require postsecondary education. More details on Top Jobs, occupation clusters and employers by region can be found in the Appendix C of this report.

Figure 13: Comparing Education Requirements for Top Jobs by Region

Percent of Top-Job Openings That Require Postsecondary Education
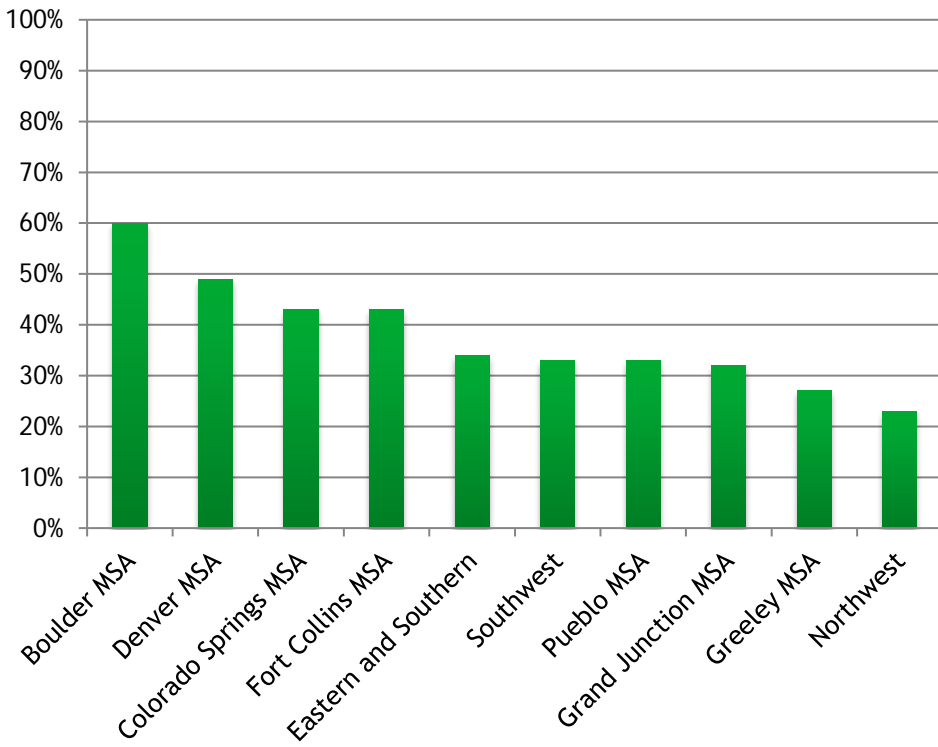
IN-DEMAND SKILLS

Research shows that both technical and professional competencies are important to employers. Matching employee skills with employer demands is critical both for business efficiency and worker well-being.

Whether over qualified or underqualified, workers who have a poor match of skills to their occupations earn lower wages, though such mismatch gradually declines over careers as workers better understand their abilities and aligned careers (Guvenen et al., 2015). New tools that help foster a better skills match have the potential to be beneficial for employers, talent and the state economy as a whole.

Tables 3 and 4 show the most in-demand skills, both hard and soft, according to 2017 Colorado job postings, as captured by Wanted Analytics. The most in-demand technical skills have to do with software, programming languages and quality assurance. The most in-demand soft skill is communication.

Table 3. Most In-demand Technical Skills for Colorado in 2017

Hard Skill	Number of job ads	Change from 2016
Quality Assurance	20,172	-1.74%
Linux	14,844	+12.19%
Java	12,692	+2.72%
Freight+	12,045	-3.62%
Technical support	11,784	+2.39%
Structured query language (SQL)	11,630	-2.29%
Customer relationship management	11,119	-4.76%
Quality control	10,653	+11.85%
Pediatrics	9,915	+13.51%
Preventive maintenance	9,041	+1.40%

Digital skills top the list of most in-demand technical skills. This is true for high-skill and middle-skill jobs. According to a study conducted by Capital One and Burning Glass, 82 percent of middle-skills jobs now require digital skills, up 4 percent since 2015. In addition, middle-skills jobs requiring digital skills pay higher wages and are more likely to lead to career-advancement opportunities than jobs that do not require digital skills.

While IT was once a segregated sector, technological fluency has increasingly become part of the essential skill set for all employees, regardless of sector. This technological fluency cannot simply

be learned via a one-time class, but must be an ongoing part of talent development and training within organizations as technology continues to change (Deloitte 2017).

DIGITAL JOBS PAY MORE

Baseline Digital Skills like productivity software pay **17% higher wages** than non-digital middle-skill jobs.

Advanced Digital Skills such as experience with Information Technology (IT) and Customer Relationship Management (CRM) software, place individuals in the top quarter of all earners.

Non-Digital Middle-Skill
$15/hour

Baseline Digital Skills
$20/hour

Advanced Digital Skills
>$28/hour

Source: Burning Glass, The Digital Edge: Middle-skill workers and careers

SKILLFUL

When companies hire candidates based on their skills, rather than degrees and experience in the field, everyone wins. Job seekers find rewarding work, employers find the best possible fit for the job they advertise, and the labor market becomes more transparent.

Skills-based practices provide ROI to the organizations deploying them, by:

◻ **Reduces hiring costs and time to fill positions** by attracting a higher quantity and quality of candidates
◻ **Improves productivity of incoming and incumbent employees** by streamlining the identification of competency gaps and enabling more efficient and targeted training or on-boarding
◻ **Increases company diversity** by valuing competencies regardless of the background in which they were gained

> Early investments in skills-based hiring is most effective when leveraged across numerous hiring and training processes, yielding an ever-increasing ROI with each application.

Six Ways to Adopt Skills-Based Hiring Practices:

1. Create a collaborative, cross-functional recruiting culture
2. Re-format job postings and descriptions to articulate the skills needed for each position
3. Enhance and link the talent search process from recruitment through selection and, ultimately, advancement
4. Deploy a skills-based on-boarding process
5. Create and define clear career paths
6. Develop incumbent talent through ongoing upskilling efforts

67% of Americans do not have a 4-year degree
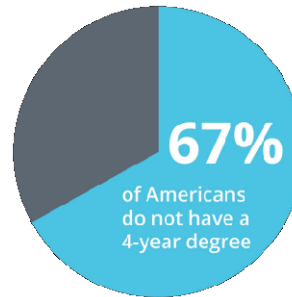
Employers looking for degree-only employees are missing out on over 2/3 of the workforce

Skillful focuses on the skills it takes to do a job—they help employers find qualified candidates, give career coaches the tools they need to better serve job seekers, and support job seekers advance their careers. For more information, visit skillful.com.

Table 4. Most In-demand Soft Skills for Colorado in 2017

Soft Skill	Number of job ads	Change from 2016
Oral and written communication	145,982	+1.55%
Detail-oriented	58,163	+6.34%
Integrity	58,069	+14.19%
Marketing	54,156	-7.51%
Microsoft Office	52,990	-0.52%
Problem-solving	52,094	+9.51%
Customer service-oriented	46,528	+1.81%
Creativity	45,316	+18.80%
Organizational skills	35,648	+4.36%
Team-oriented, teamwork	33,688	+2.89%

Employers highly value professional competencies like problem-solving, teamwork and communication even beyond skills specific to an occupation (Franklin and Lytle, 2015). Jobs requiring high levels of social interaction are a growing share of the labor market, as they are not as vulnerable to automation. Demand is even greater for employees possessing both high-level math and social skills (Deming, 2015), and Colorado has particularly high levels of jobs demanding non-

routine cognitive skills (OSPB, 2014). It is difficult to predict what the Top Jobs of the future will be, but there are key skills that are likely to be in high demand in many future occupations. These include skills that cannot be automated, such as social intelligence, cross-cultural competency, a design mindset and creative and adaptive thinking (Future Work Skills 2020, Institute for the Future).

Many of the most common jobs today will not be around in the future, due to automation and the rise of artificial intelligence. The latest report from America Succeeds entitled, The Age of Agility, details how workers, companies, educators and policymakers will need to adapt in order to deal with the latest technological disruptions. In particular, workers will need to be more flexible, training and education will be continuous throughout one's working life and the relationship between employers and employees will evolve.

Partners of TalentFOUND, the centralized access point for Colorado's talent development network, have also submitted expert guest articles on skills-based/competency-based hiring, which can be found throughout this report. Any organization interested in submitting a guest article for next year's Colorado Talent Pipeline Report should contact the CWDC for more information.

BE A PART OF IDENTIFYING THE SKILLS REQUIRED FOR COLORADO'S TOP JOBS

The 2016 Colorado Talent Pipeline Report cited data from employer surveys regarding the skills required and desired in new hires for Colorado hot jobs. Over 80 percent of those skills were not hard skills related to the job tasks, but rather the soft skills essential to thriving in the workplace and meeting employers' expectations for performance and attitude. As the Colorado talent pipeline crisis forces businesses to increasingly recruit outside of their traditional talent pool, understanding more about these skills in different career contexts is critical to effectively hiring and developing staff.

The CWDC has partnered with PAIRIN to provide a scientific basis for measuring the proficiency of Colorado- located top performers currently working in these positions. PAIRIN is a Colorado-based company and a nationally recognized leader in soft skills measurement and development. We have co-launched a project to (1) map the soft skills of top performers in Colorado top jobs, (2) help businesses select applicants based on their ability to perform and (3) inform the efforts of the programs preparing our future workforce.

PAIRIN's soft skills performance measurement is based on the Adjective Check List (ACL) created by Harrison Gough, Ph.D. The ACL is EEOC compliant and proven to increase diversity in hiring. PAIRIN's pattern-matching analysis creates targets for modeling the soft skills proficiencies of

applicants, employees and students to those of top performers. After surveying just 20 people, the system completes over 1 billion calculations to identify behavioral intensities that are common to the top (target) group. Once the system identifies the most significant patterns, it self-validates by analyzing all surveys against the created target.

This collaborative project will allow us to create soft skills profiles for Colorado Top Jobs similar to the profiles provided for this report, which were based on national data. We hope you will join us in this exciting initiative to improve Colorado's talent recruitment and retention for high impact jobs. All you need to do is complete a short, confidential, Google form to invite a small portion of your top performers to take a seven-minute assessment.

The data collected will only be shared in aggregate to protect your privacy and that of your employees, yet you will see how your top performers stack up against the aggregate scores of others in the same jobs, and be able to use this data to improve your own hiring. Review the list of jobs, and submit your top performers at www.pairin.com/TopJobs.

Participating businesses will receive:

- Comparative data to see how top performers at your company compare to aggregate scores of people in the sale role(s) at other companies.

- Exclusive early access to report data and results.

- One year, no obligation, free access for one user to PAIRIN, the applicant selection system used by hiring managers nationwide that will be leveraged to create the top performer profiles. You will also get a free, live, online data debrief for your hiring managers and/or HR professionals.

- PAIRIN, a TalentFOUND charter affiliate, will provide each participating organization the top performer profile target(s) they helped create and set up all free accounts.

SAMPLE TOP PERFORMER PROFILE 1: MARKETING MANAGER

Top performing marketing managers have a strong ability to find, recognize and relish the existence of beauty or excellence. Strong at organizing and planning, they are self-disciplined, punctual and well- prioritized. They are poised and positive—able to bounce back after setbacks and manage stress effectively.

They likely have many interests and tend to pursue adventure and out-of-the-box expressions of thought. Ideas and associations come to them quickly.

These individuals dislike unappealing environments, but won't hesitate to look for or bring about creative alternatives as needed. They are able to identify with diverse perspectives and pick up on emotional cues and social constructs. They blend thoughtful, compliant and receptive behaviors with those more determined, proactive or edgy.

Others find it easy to trust and respect them. Happy to assist others and willing to collaborate, they invite others' views into the decision-making process, while articulating their own opinions and values.

Sample Top Performer Profile 2: Software Developer Full Stack

Top performing developers have a strong ability to make sense of ambiguity and untwist knotted problems rapidly. Where others see difficulty, they seize opportunity, perceiving impossible as "I'm possible." Productive and assured, they can overcome challenges and manage stress when deadlines are moved up.

Organizations should let them lock onto a task with attention and complete concentration. They tend to tenaciously see things through to the end but can recognize when change is needed. Proactive, self-disciplined, punctual, well-prioritized and efficient, they work with diligent precision and expertise toward distant goals (while remembering to make room for play!).

While they operate best when free from an overly structured environment, they can consult, communicate and collaborate with others as needed. They are rarely anxious about not fitting in and refrain from subjective worry and irrelevant opinions. Cooperation and supportiveness come more easily when they respect another's competence and capabilities. They take responsibility for outcomes and avoid impulsiveness and indulgence, and take pride in being objective, clear-thinking and "right."

SECTOR STRATEGIES: A KEY TO INDUSTRY-LED TALENT SOLUTIONS IN COLORADO

Colorado is a national innovator in sector strategies. With the launch of our next-generation approach to sector partnerships in 2013, Colorado helped to elevate the value of this sector strategy nationally. In 2014, the federal Workforce Innovation and Opportunity Act (WIOA) identified sector strategies and industry-led career pathways as key strategies for successful workforce development.

> What is a Sector Partnership?
>
> A sector partnership is an industry-specific regional partnership that is led by business in collaboration with economic development, education and workforce development and formed to address specific priorities and needs as identified by business.

Sector partnerships are benefiting Coloradans and Colorado businesses. Today more than 700 businesses are involved with sector partnerships across the state.

COLORADO'S 23 SECTOR PARTNERSHIPS

- 10 Health and Wellness
- 7 Manufacturing
- 1 Construction and Development
- 1 Retail
- 1 Value-Added Agriculture
- 1 Technology and Information
- 1 Tourism and Outdoor Recreation
- 1 Tree Care (Arborist)

The annual Sector Partnership Impact Survey is an informal questionnaire that measures the impact on job seekers and students of partnerships across the state that result in better-aligned workforce, education and economic development. The survey also measures the impact of these partnerships on businesses.

According to survey results, sector partnerships had an average score of 4.5 for activity level and 4.48 for satisfaction level. 95 percent of business respondents who are involved with a sector partnership would recommend participating to a peer.

(1 = inactive; 6 = high activity) (1 = highly dissatisfied; 6 = highly satisfied)
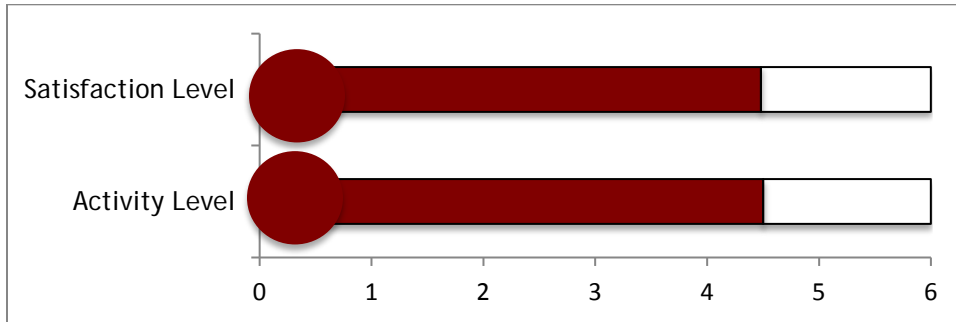
2016 Results	2017 Results		Over the past year, percentage of sector partnerships that…
81%	↑	83%	Increased **participation** by businesses in target industry and region
81%	↑	83%	Increased **collaboration** across partner organizations on talent development
67%	↑	78%	Enhanced existing or developed **new training/education** program(s)
n/a		57%	Were involved with **work-based learning opportunities** (e.g., apprenticeships, internships)

2016 Results	2017 Results		For individual businesses that experienced benefits from sector partnerships…
81%		83%	Experienced improvements in HR policies and/or employee development practices
81%	↑	83%	Found support in finding employees with the skills and experiences their

		business needs*
67%	78%	Formed new or enhanced joint ventures/B2B relationships
		*Denotes subcategory of HR policies and/or employee development practices

Businesses of all sizes are involved with sector partnerships.

3% are in the development/seed stage with owners/investors, but no employees
18% have 1-9 employees
31% have 10-99 employees
20% have 100-499 employees
27% have 500+ employees

Across the state, sector partnerships are bringing businesses together to solve workforce challenges. Examples of the success of these partnerships include:

The NorthernColoradoManufacturingPartnership hosted Parent's Night at Woodward, an aerospace manufacturing company. Over 200 parents and students attended to find out more about manufacturing. Eight school partners and 20 to 25 manufacturing companies were involved with this event.

One of the GreaterMetroDenverHealthcarePartnership's big successes this year has been the introduction and adoption of apprenticeships in healthcare. While it has been challenging to introduce this talent-development solution within different corporate structures, three hospital systems have been great champions. At Kaiser, the union environment adopted the concept for its medical lab technicians; they saw the need and implemented a program for four incumbent workers. At SCL Health, the concept of apprenticeships was widely accepted and they implemented an apprenticeship model for the entry-level position of certified nurse aide. Centura Health, despite having some challenges with the corporate structure, is moving forward with a medical assistant apprenticeship that will launch later this year.

The SoutheastColoradoManufacturingPartnership was instrumental in introducing the See the Change program to seven school districts. See the Change brings physics to middle school classrooms. The partnership raised $50,000 to start the program and, with 2016-2017 sector partnership support, they were able to continue the program in the districts. Rocky Ford School District found that younger students were missing some key skills for this curriculum by the time they entered the sixth grade. The district budgeted their own dollars to bring additional See the Change learning to the elementary students. Manufacturers in the partnership are also offering tours to students.

This past year, the Upper Arkansas Tourism and Outdoor Recreation Partnership was able to produce a four-county (Chaffee, Custer, Fremont and Lake) marketing brochure, a transportation study and a customer- service training program certificated by the partnership focusing on the tourism industry and training in essential soft skills. The brochure is flying off brochure racks at the Royal Gorge Bridge.

One of the greatest outcomes is that sector partners from the four counties have come together to support the promotion of the tourism and outdoor-recreation industry. Having respect for what each unique county has to bring to the table, these active partners are creating industry goals, objectives and accomplishments that benefit all.

The [Colorado Advanced Manufacturing Association Metro Manufacturing](#) [Partnership](#) (MMP) partnered with the Youth Pipeline group, American Council of Engineering Companies and Front Range Community College to sponsor the MMP Cool Careers Camp held in June that included touring local manufacturing sites. Sector partnership grant funds were also used to help sponsor the effort.

The [Northeast Colorado Manufacturing Partnership](#) has been busy engaging with students. A summer robotics camp for fifth- through eighth- graders was held at Morgan Community College. The camp filled up within 48 hours of being advertised. Over 30 students also participated in TRAINcation, a four-day boot camp at which industry leaders provide fun activities that emphasize the essential skills in the workplace. Next summer they plan on expanding TRAINcation to two more sites and five school districts in the area. Cargill, a beef-processing facility in Fort Morgan, is also offering a new [Women in Manufacturing Scholarship](#) for students in MCC's Industrial Maintenance Program.

SUPPLY

Colorado has one of the lowest unemployment rates in the country at 2.4 percent (CDLE, 2017); even so, there is untapped talent in the state. The unemployment rate is higher in rural Colorado, and the share of residents that participate in the labor market is lower in these areas.

Table 5. Region Unemployment and Labor Force Participation Rates

Region/ Metro Areas	June 2017 Labor Force Participation Rate	June 2017 Unemployment Rate
Boulder	68.12%	2.3%
Denver	68.28%	2.5%
Eastern	66.64%	2.1%
Larimer	69.66%	2.1%
Mesa	58.46%	3.6%
Northwest	70.9%	2.4%
Pikes Peak	58.92%	3.1%
Pueblo	55.27%	4%
Rural Resort	71.7%	2.3%
South Central	57.32%	3.4%
Southeast	54.38%	3.4%
Southwest	66.18%	2.5%
Upper Arkansas	47.89%	2.8%
Weld	66.14%	2.5%
Western	62.94%	2.7%

Unemployment is also higher for persons with disabilities and those that have been incarcerated. In addition, there are large gaps in labor-force participation by gender and ethnicity.

While women make up almost half of the Colorado labor force, they are more than twice as likely as men to work part time. A study by McKinsey Global Institute showed that if we achieved gender equity in Colorado, we could add 9 percent to our economy. Whether or not you believe gender inequity is an issue, it is a tremendous opportunity for Colorado—we are leaving money on the table and constricting our state's economy by not closing the gender inequity gap. -**Katica Roy, CEO, Pipeline**

"The Role of Gender Equity in Mobilizing Colorado's Untapped Talent" See Appendix H
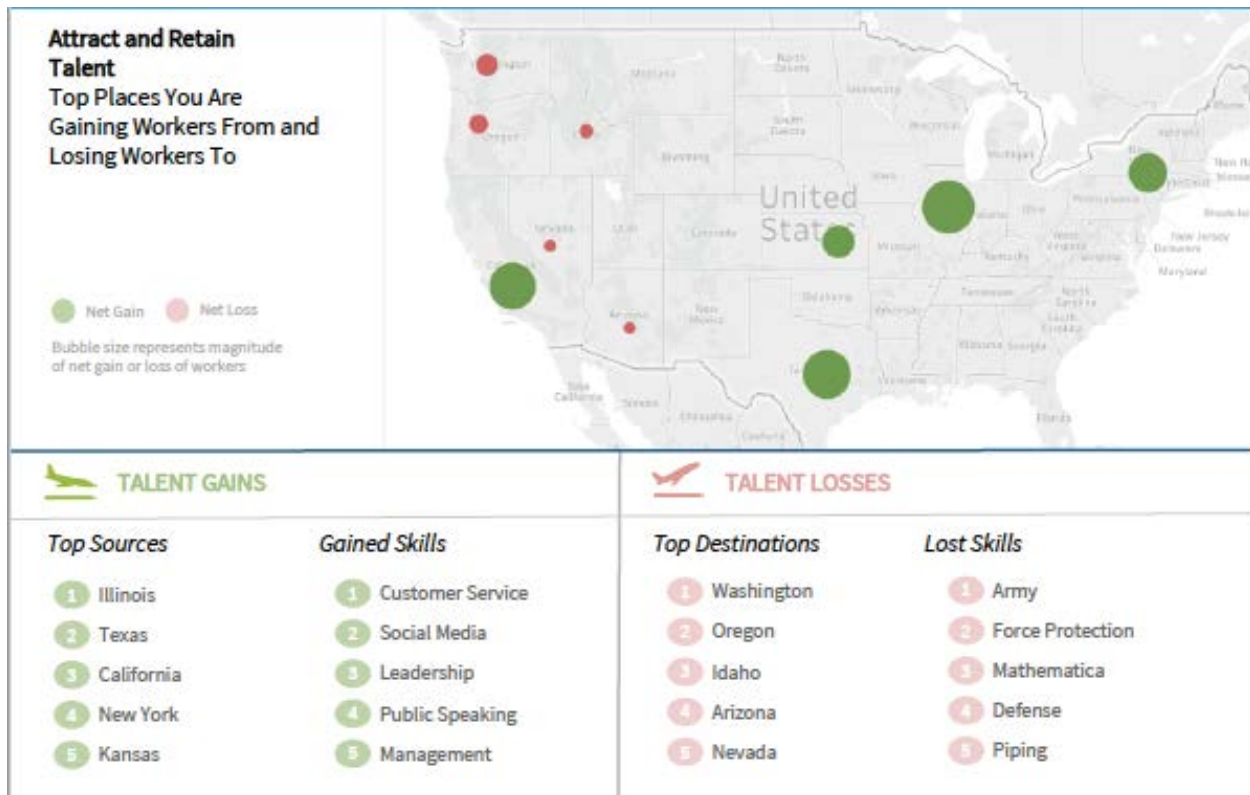
ATTRACTING TALENT

Colorado continues to be an attractive state to individuals from other states, especially with its high quality of life and many economic opportunities. The state gained over 60,000 residents in 2016, with much of that population growth in recent years focused along the Front Range. While the state population is expected to continue growing, the migration rate will likely decline for reasons such as a slowing economy, lower birth rates and the aging population. Despite this, Colorado's growth rate remains about twice the national growth rate (State Demography Office).

Figure 14. Colorado Migration, 2000-2016

Source: State Demography Office
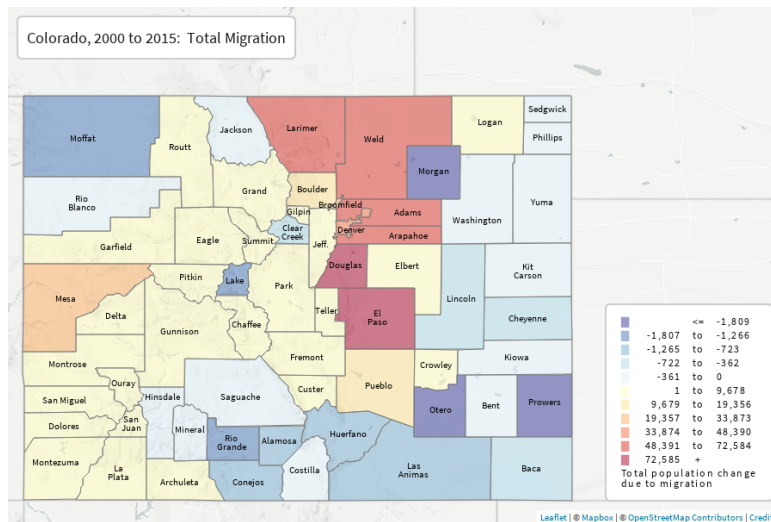
During the past year, according to data from LinkedIn, Colorado gained the most talent from Illinois, Texas, California, New York and Kansas. The top skills gained were in customer service, social media, leadership, public speaking and management.

Attract and Retain Talent
Top Places You Are Gaining Workers From and Losing Workers To

Net Gain   Net Loss
Bubble size represents magnitude of net gain or loss of workers

TALENT GAINS		TALENT LOSSES	
Top Sources	**Gained Skills**	**Top Destinations**	**Lost Skills**
1 Illinois	1 Customer Service	1 Washington	1 Army
2 Texas	2 Social Media	2 Oregon	2 Force Protection
3 California	3 Leadership	3 Idaho	3 Mathematica
4 New York	4 Public Speaking	4 Arizona	4 Defense
5 Kansas	5 Management	5 Nevada	5 Piping

The OEDIT conducted a survey on community features highly valued by talent in Colorado. While Colorado's lifestyle, family-friendliness and collegial atmosphere rank high with workers, Colorado receives lower scores on the cost of housing and living—even lower than several competing states that have similar or higher costs of living. This is likely reflective of wages not keeping pace with recent increases in housing costs.

Figure 15 depicts the survey results. It shows that Colorado's benefits and reputation rank near the top of surveyed states, but that costs were rated among the worst, driving down Colorado's overall desirability rating. In fact, this analysis found that talent in Utah, Texas and California are more satisfied overall with their communities than in Colorado.

Figure 15. Perceived Costs and Benefits of Living in Colorado and Other States
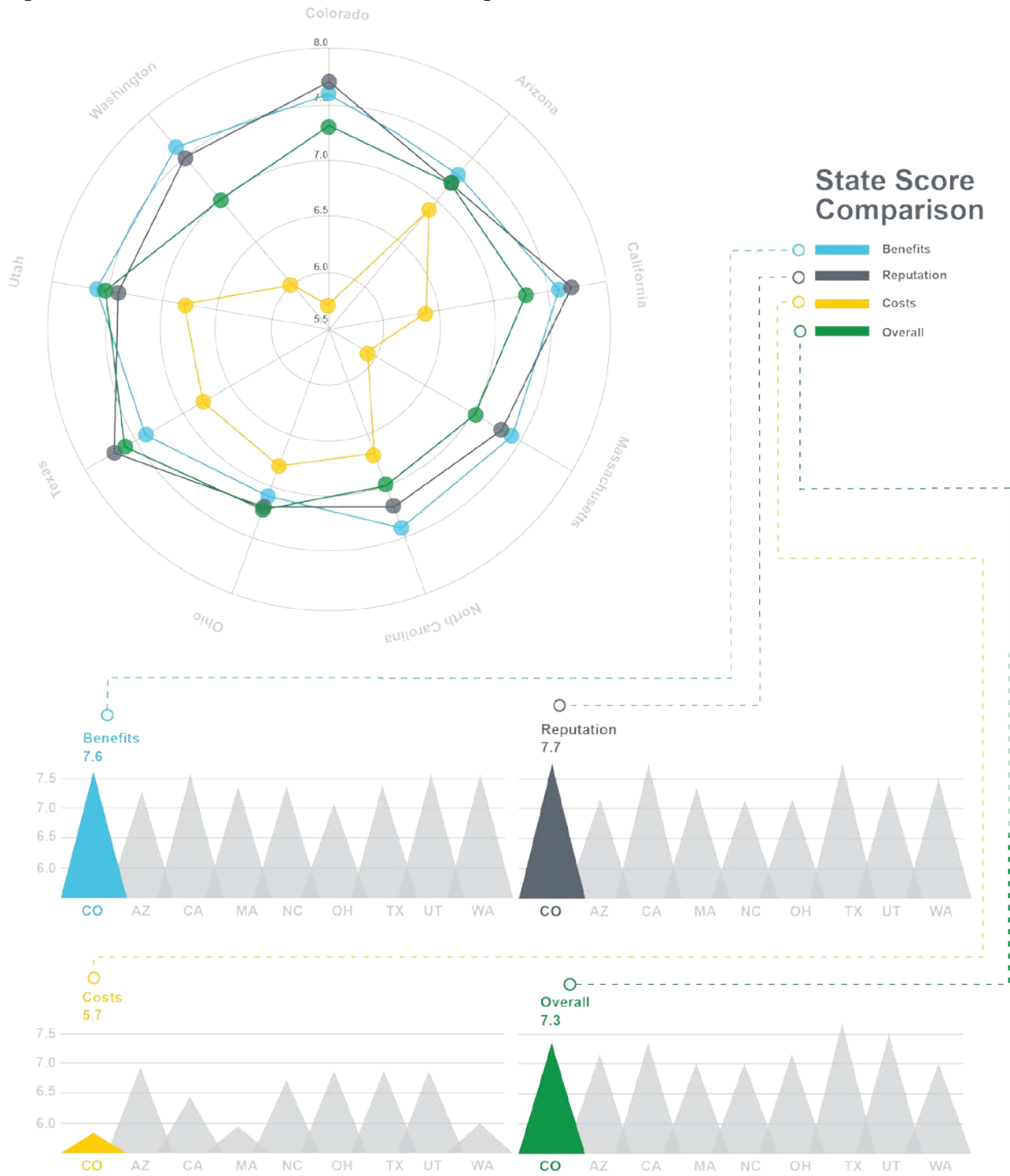
However, while cost of living was a major complaint for Colorado talent in the survey results, data from the Massachusetts Institute of Technology Living Wage Calculator shows that Colorado

actually ranks in the middle among these states for cost of living compared to average wages. Figure 16 shows average wages in the community and social services sector compared to the living wage for an individual or a family in the nine states depicted in the survey results in Figure 15 above. Among these nine states, Colorado was less affordable than Ohio, Texas, Washington and North Carolina, but more affordable than California, Arizona, Utah and Massachusetts. Perhaps the negative perceptions on affordability are related to recent increases in cost of living or dependent on which states talent may be emigrating from—for example, those moving to

Colorado from Texas might perceive Colorado as unaffordable, while those moving from California would be less likely to have that perception. Still, as Figure 16 shows, while average wages in the community and social services sector are sufficient to cover the living expenses of an individual in all of these states, in none of the states, including Colorado, are such wages sufficient to support a family of three. Wages vary considerably by sector, but this example shows that for certain sectors, the cost of living in Colorado is indeed unaffordable.

Figure 16: Average Salary as a Percent of Living Wage, By State
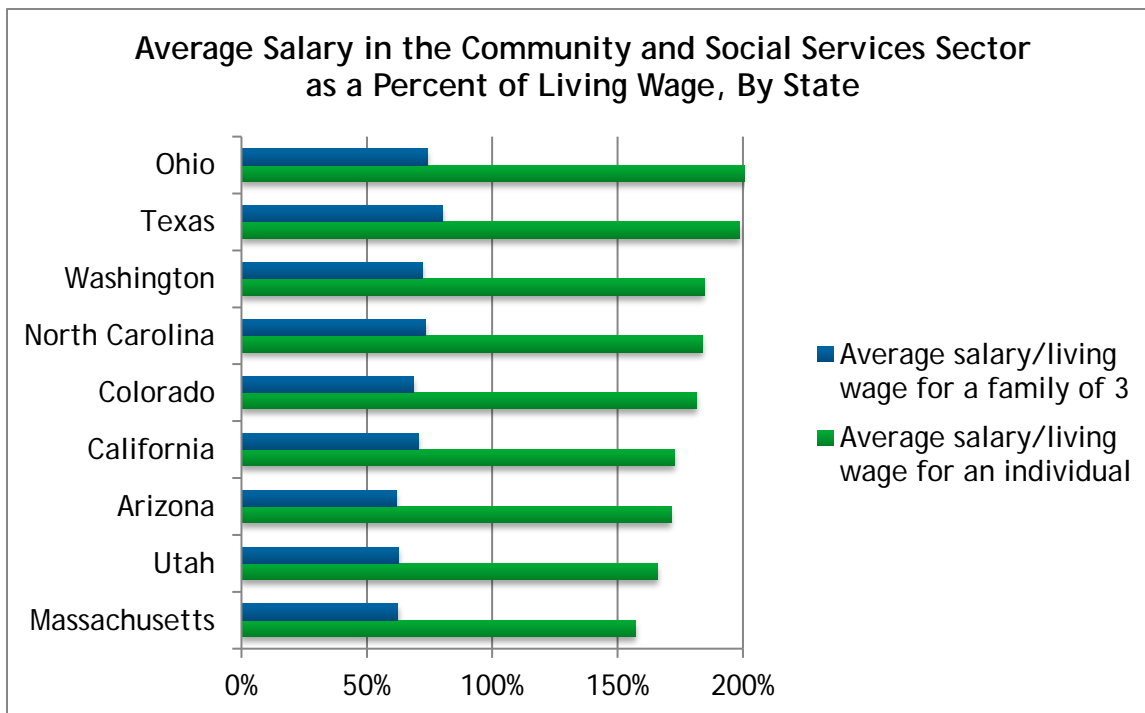
The Future of Jobs

While no one can predict the future, one thing we know for sure is that the workplace in Colorado will continue to change. Data from the Census Bureau show just how quickly the landscape changes in the state. The most common job in 1978 was secretary. By 1996 it had changed to truck or delivery driver. Today it is retail clerk. By 2030, who knows what it will be? The Institute for the Future estimates that 85 percent of the jobs we will be doing then haven't even been INVENTED yet. More importantly, which of today's jobs won't exist by then? Experts estimate that the biggest job losses will be in retail, food service and transportation—with an estimated 10 million jobs disappearing nationwide.

While technology has been changing the workplace since the invention of the steam engine, in modern history, there is a disrupting change that comes approximately every 30 years that causes a seismic shift. Following WWII, mass production transformed the American factory in the 1940s. The 1970s brought computers into factories and offices. The internet transformed the workplace from a location to a device in the 2000s. The next wave, a combination of automation and artificial intelligence (AI) will similarly transform work in America again by 2030. Knowing this, the challenge is ensuring that the students and job seekers of Colorado have the skills for the jobs of today <u>and</u> tomorrow.

No matter what sector you work in or career pathway that you're on, there will be some critical skills that need to be developed to make sure you are relevant in the future of work. There will continue to be jobs, even in retail and transportation—but the roles and competencies will be different from what we see today. To stay relevant in the future, we should all work to build these critical skills:

- Critical thinking

- Problem-solving

- Resilience

In addition to the technical skills you need in your current job, these skills will help you stay ahead of the curve and avoid becoming obsolete. No one knows what the future holds, but with the right skills and competencies, you can ensure that you have a career that will take you to 2030 and beyond! –Josh Davies, CEO, Center for Work Ethic Development

AGING TALENT

The sizable segment of our population that is nearing or has already entered retirement is anticipated to impact different occupations and industries in varying ways. Older Coloradans—residents 65 years and older—have a particular impact on workforce demand in certain occupations through spending. These occupations are concentrated first and foremost in healthcare, including registered nurses, certified nursing assistants and home health aides. Retail salespersons, food-preparation and serving workers and customer service representatives are also

supported by our older demographic spending.

> For more detailed information on the impact of senior spending on employment, the occupations and their corresponding employment figures, wages and typical education requirements, please visit State Demography Office.

From a supply lens, older workers are a rich resource of extensive skills and experience. About one outoffive adults over the age of 65 is still working at least part time. Although various tax disincentives may discourage older adults from remaining in the workforce past retirement age, most do want to stay involved in their communities. For those who do stay engaged, they play many roles in our talent-development strategies, such as mentoring younger workers, teaching occupational skills and filling in on a flexible and/or part-time basis.

At the same time, many industries are facing a crisis as more than one quarter of their employees will be retiring and new talent is not yet ready to fill these positions. Table 6 shows in-demand, good-paying occupations on the Top Jobs list that stand out as having more than one-quarter of workers currently 55 years of age and older.

Table 6. Examples of Occupations on the Top Jobs List with an Aging Workforce

SOC	Description	Percent of Occupation with Workers 55+	Annual Openings	Median Hourly Earnings
11-9021	Construction Managers	27%	614	$40.08
11-9033	Education Administrators, Postsecondary	33%	217	$37.74
11-9111	Medical and Health Services Managers	31%	553	$50.11
13-1051	Cost Estimators	36%	599	$30.52
29-1069	Physicians and Surgeons, All Other	29%	224	$120.82
29-1141	Registered Nurses	26%	4,575	$33.05
29-2061	Licensed Practical and Licensed Vocational Nurses	25%	671	$23.05
43-4199	Information and Record Clerks, All Other	28%	1,114	$19.58
43-6013	Medical Secretaries	30%	1,283	$17.72
47-2073	Operating Engineers and Other Construction Equipment Operators	26%	1,266	$22.78
49-9041	Industrial Machinery Mechanics	27%	680	$27.10
49-9071	Maintenance and Repair Workers, General	29%	3,039	$17.99
53-3021	Bus Drivers, Transit and Intercity	46%	523	$17.55
53-3022	Bus Drivers, School or Special Client	46%	996	$15.96

Source: Age estimates are from Emsi 2017.3. Opening and earnings are from the CDLE Labor Market Information Gateway.

Some parts of the state are facing greater challenges from an aging workforce than others. In general, the major metropolitan areas tend to have a fairly young population, while more rural

areas in the mountains and southern part of the state have a much higher median age, as seen in Figure 17.

Figure 17: Median Age in Colorado Counties
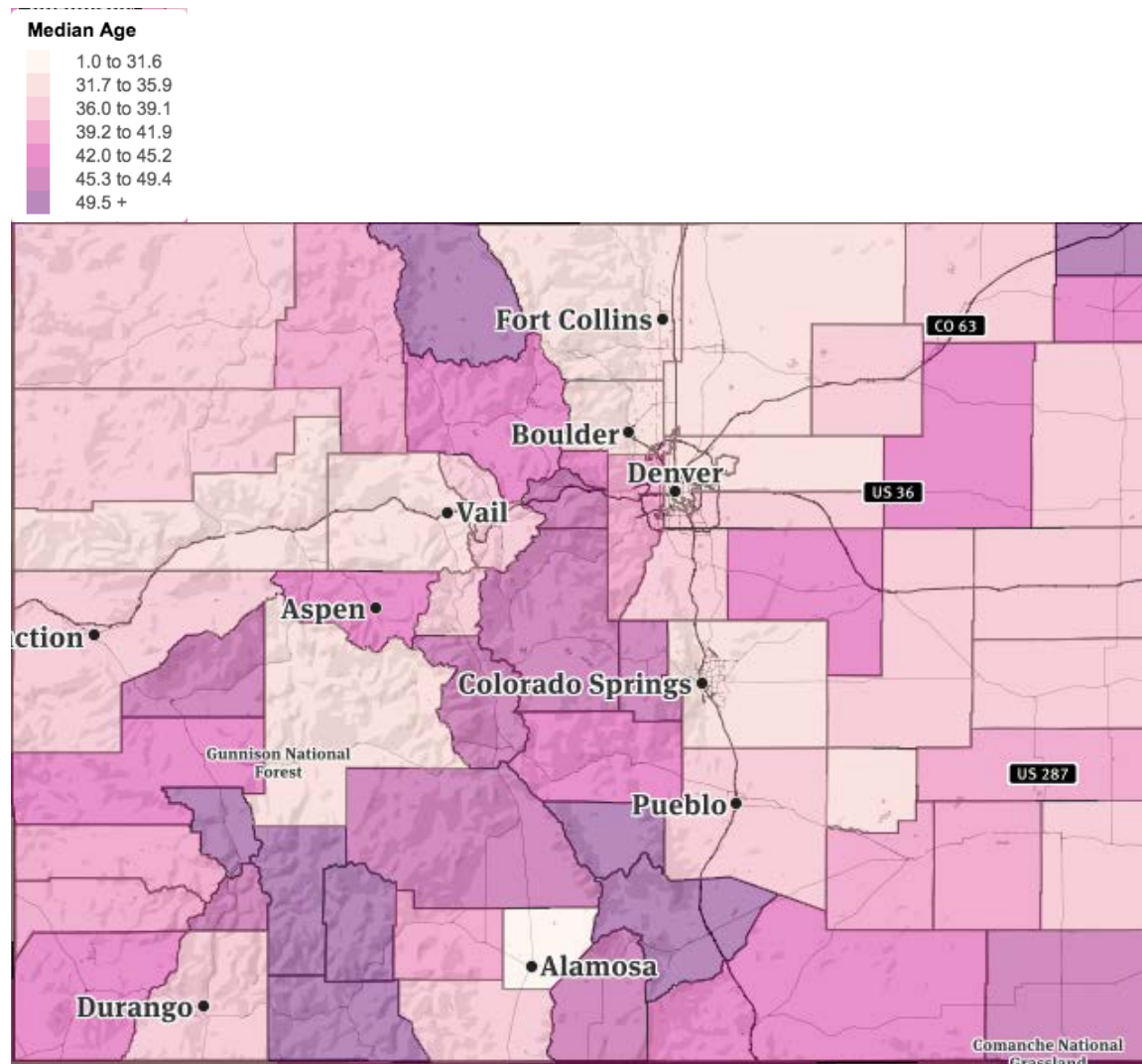
## EDUCATION LEVELS OF COLORADO ADULTS

According to the CDHE, 55 percent of Colorado adults have some form of postsecondary education. However educational attainment is uneven across segments of the population. The graph below shows that Hispanics, African Americans and Native Americans lag in educational attainment levels. Colorado has an economic imperative to reduce these attainment gaps; particularly that of Hispanics, which is Colorado's fastest-growing population. For more information, see the CDHE 2017 Master Plan, ColoradoRises: Advancing Education and Talent Development.

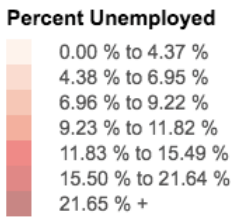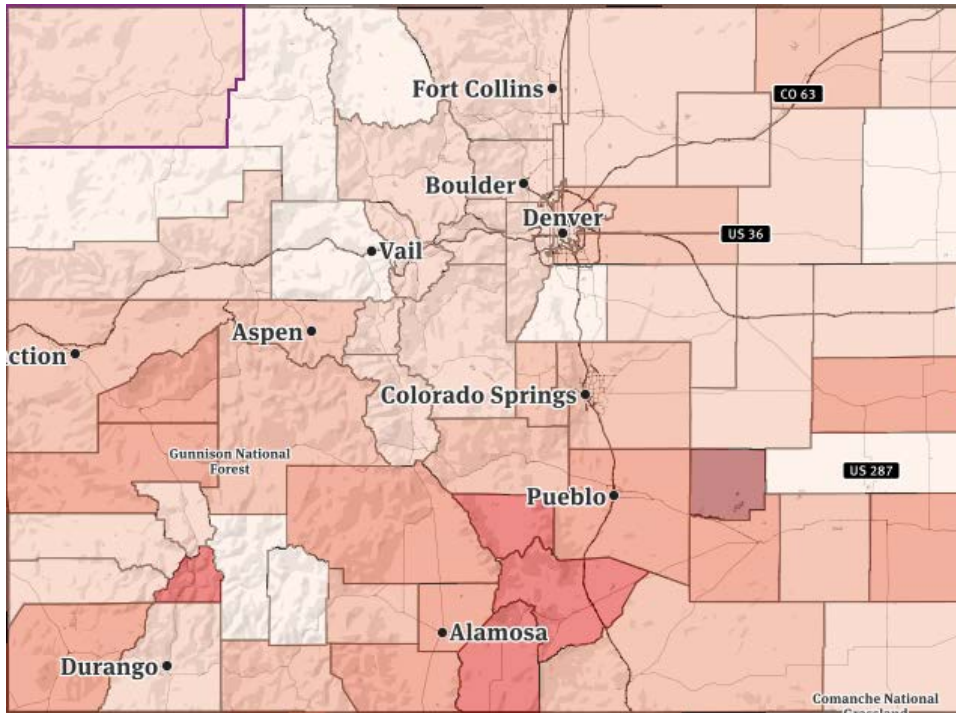**Figure 18. Percentage of Colorado Adults 25 and Older with an Associate Degree or Higher**
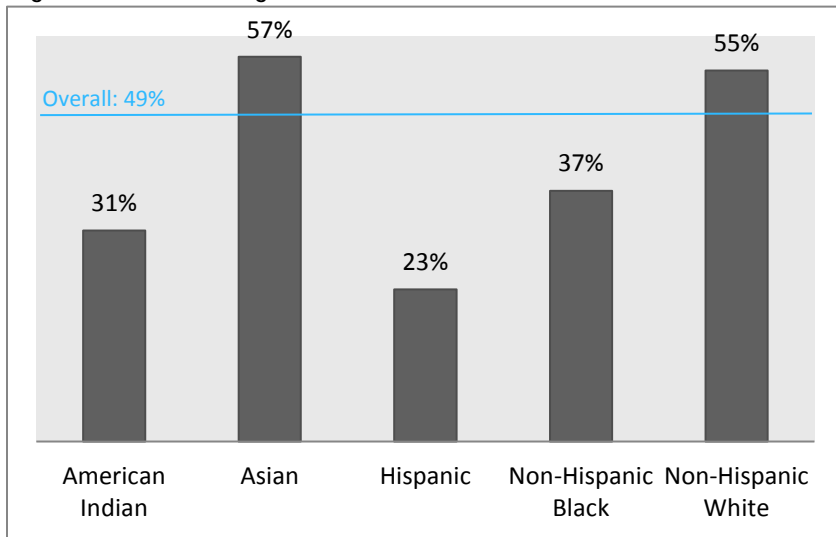
Source: U.S. Census Bureau, American Community Survey, 2016 one-year estimates

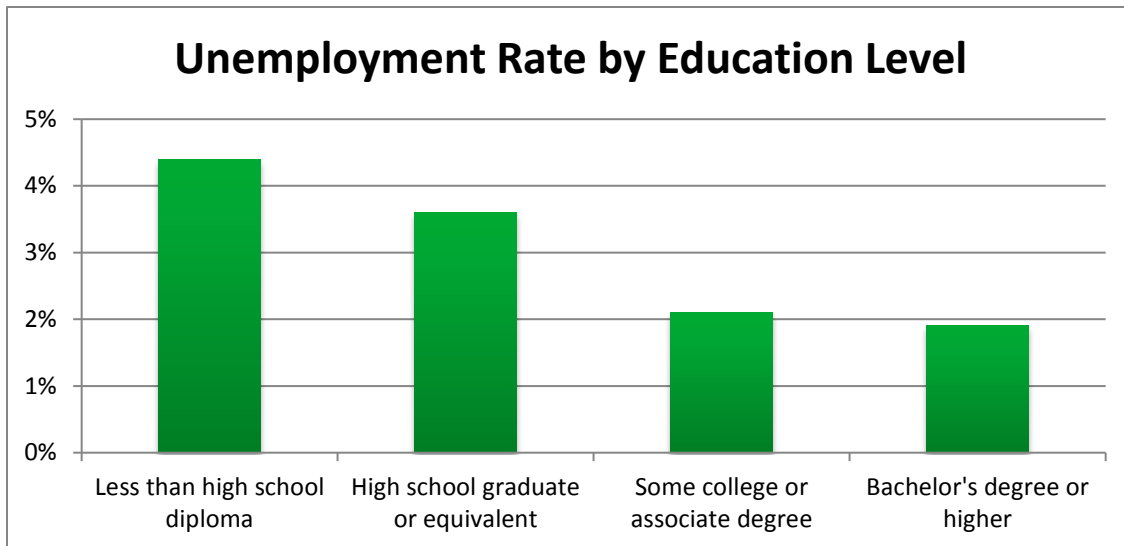**Figure 19. Changing Workforce Demographics in Colorado**
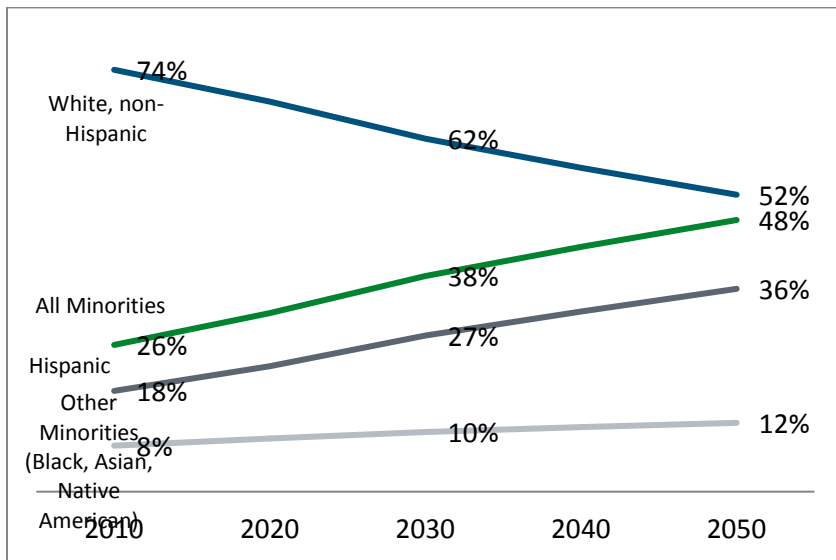
Source: Based on State Demography Office population projections

Figure 20: Unemployment by Colorado County

Percent Unemployed
- 0.00 % to 4.37 %
- 4.38 % to 6.95 %
- 6.96 % to 9.22 %
- 9.23 % to 11.82 %
- 11.83 % to 15.49 %
- 15.50 % to 21.64 %
- 21.65 % +

Figure 21: Unemployment Rate by Education Level

BUILDING COLORADO'S TALENT

Employers' value higher education: 70 percent consider a job candidate's college major important to a hiring decision, though where the candidate received the degree tends to be less important. But at a time when higher education is more important than ever, the cost of attaining higher education is out of reach for some students. In Colorado, the burden of paying for college has increased for the individual from 32 percent to 65 percent since 2000-2001, while the state share has declined from 68 percent to 35 percent (CDHE).

Furthermore, higher education alone is not providing students the skills they need to be successful in the workplace. While a major motivation for students is a good job, less than half (39 percent) of Americans agree that college graduates are well prepared for success in the workforce, and only one-third of business leaders believe that colleges and universities are graduating students with the skills and competencies that their business needs (Gallup and Lumina Foundation, 2014). Nearly all business leaders believe that the knowledge or applied skills a job candidate has in the field is somewhat or very important to hiring decisions. The research shows a perceived disconnect between education and the needs of today's students, with 78 percent of adults saying that colleges and universities need to change to better meet student's needs.

Providing students and job seekers with the right kind of guidance and opportunity at the right time is critical. Gallup research (2017) finds that, "about half of all U.S. adults would change at least one of the decisions they made along their education path, whether that be choosing a different major or field of study, a different institution or another degree type" (Gallup 2017,

p. 9). Generally, few people would choose another degree type; many more would select a different major (36 percent) or a different institution (28 percent). Interestingly, this analysis also finds that people who complete a trade or technical program are more positive about their education decisions than are individuals with an associate or bachelor's degree. Those who completed postgraduate work were least likely to respond that they would change their education decisions.

Following are various strategies Colorado is enacting to better align the skills of our workforce with employer demand. Additionally, see Appendix K for the annual report on implementation of the WIOA Colorado Strategic Plan.

HB 16-1289 CAREER SUCCESS PILOT PROGRAM

Colorado just completed the first year of the Career Success Pilot Program that awards monetary incentives to school districts based on the number of students who complete qualifying career and technical education programs and industry credentials that are aligned with Top Jobs.

The 2016 Phi Delta Kappa survey shows that the vast majority of Americans (86 percent) believe that public K-12 schools should offer classes that award certifications or licenses that prepare students

for employment. The Career Success Pilot Program reflects this drive to provide K-12 students with career-specific educational opportunities.

This program was already quite popular for the initial 2016-2017 program year, with 3,106 qualifying credentials/courses being submitted from 27 school districts. Due to the high number of industry certifications submitted (3,106), only the first tier of the certifications (1807) was able to be funded at $553.40 per certificate through the $1 million appropriation from the General Assembly.

Table 7. 2016-2017 Credentials Submitted

Qualified Programs	# Reported by Districts	# Funded	$ Amount Funded
Industry-Recognized Certificates	1,807	1,807	$1M
Internships	470	0	$0
Residency Programs	0	0	$0
Construction Industry Pre-Apprenticeships	86	0	$0
Construction Industry Apprenticeships	0	0	$0
Advanced Placement Computer Science Courses	743	0	$0

Source: CDE, 2017

Figure 22. School Districts Receiving Career Success Program Incentives
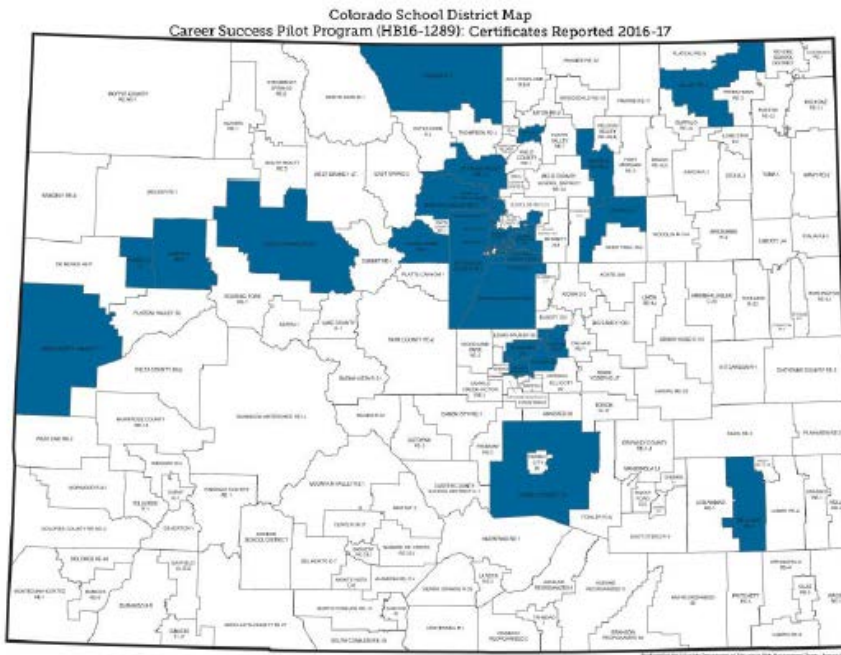
Source: CDE, 2017

Table 8. Demographics of K-12 Students Receiving Industry Certifications that Qualified for Career Success Incentives

Source: CDE, 2017

Category	Demographics of students receiving qualifying industry certifications	Demographics of all students, grades 9-12
Male	69%	51%
Female	31%	49%
9th Grade	9%	
10th Grade	23%	
11th Grade	27%	
12th Grade	41%	
American Indian	<1%	<1%
Asian	6%	3%
Black/African American	5%	5%
Hispanic/Latino	26%	33%
White	58%	55%
Pacific Islander	<1%	<1%
Two or more Races	4%	4%

EXPERIENTIAL-LEARNING OPPORTUNITIES

There are many kinds of experiential-learning or WBL programs being implemented across the state. Experiential-learning opportunities include internships, apprenticeships and other WBL initiatives and have the power to enhance a student or job seeker's knowledge, skills and abilities needed to be successful in the workforce. Such programs have been shown to have high return on investment for employers, participants and society. They are also an important component of career pathway systems.

Colorado already has a network of Registered Apprenticeships (RAs) through the USDOL Registered Apprentice System, which presents an opportunity to continue expansion in high-demand fields. New models and approaches include CareerWise Colorado, a high school apprenticeship program, which welcomed its inaugural cohort of students this fall, with 121 students apprenticing across 44 businesses in 13 industries.

The CDLE Work-based Learning Unit was created in spring of 2017 to advance WBL strategies and to partner with public and private entities to create a community of practice around strategies that promote economic growth and opportunity in Colorado. Toward that goal, the CDLE provides technical assistance and grant administration across the full range of WBL opportunities from OJT and internships to apprenticeship programs.

INNOVATIVE INDUSTRIES INTERNSHIP PROGRAM

In 2015, HouseBill15-1230 created the Innovative Industries Internship Workforce Development Program, now known as the Innovative Industries Internship Program, to incentivize employers in growing Colorado industries to increase paid internships and support a consistent and experienced talent pipeline. The program also contracts with trade associations; these intermediaries have been vital to the success of the program, both in marketing and in serving as a third-party coalition to select awards. Businesses are matched with student-interns through networks at universities, community colleges and certification or technical-training programs.

In FY16-17, the program launched its second cycle, and 109 employers were awarded funding. Since inception of the program, 338 internship spots with businesses have been approved. Currently, 291 interns have either completed the program, are enrolled or have a pending start date. There are 179 participating businesses in various industries, of which 7 percent are rural and 93 percent are within the metro Denver area. For FY 16-17, industry demand had grown to three times the available grant funding. See Appendix J3 for the legislative report, which includes demographic, industry and geographic details.

Internships are part of a continuum of WBL strategies ranging from short-term OJT to full-time registered apprenticeships. Registered apprenticeships are considered the most comprehensive and desirable form of WBL and are a targeted strategy in Gov. John Hickenlooper's economic development plan for Colorado.

During the first year, 44 percent of participating employers expressed interest in creating registered apprenticeships. Exposure to the Innovative Industries Internship Program made it possible to have individual conversations with employers about expanding their WBL program to include apprenticeships. The following quotes from employers and interns illustrate some initial successes of the program.

> "This is a great opportunity to grow the skilled workforce we need in the Front Range. What a great opportunity to encourage a small company, like ESI, to be able to offer an intern an opportunity like this. The intern comes away with real experience that can benefit his future employer (if not us) when he or she graduates."

"This is a good way to allow small companies to hire interns. Working for a small company let me see how the business was run and learn more than just the lab and research techniques. It definitely broadened my knowledge overall."

"I liked that I received hands on experience in both my field of study and other fields (due to the small size of the company). The program allowed me to be exposed to all aspects of a biomedical company while receiving hourly wages. Internships like those are hard to come by when still in school, so I am grateful for this opportunity."

Skilled Worker Outreach, Recruitment and Key Training Act (WORK ACT)

The purpose of this state grant is to increase awareness of, and enrollment in, Colorado's skilled-worker training programs in order to meet employers' needs. Outreach under this grant is largely targeted at populations typically underrepresented in their industry, including veterans, youth, dislocated workers, ex- offenders and residents of neighborhoods impacted by large infrastructure projects in Denver.

This three-year grant affords $10 million for marketing and updating training to meet industry standards and is administered in three grant cycles.

In Cycle 1, grantees were reimbursed $1,972,254 through June 30, 2017 with the following outcomes:

- 7,515 actively recruited through outreach efforts by recruiters
- 1,393 completed training ranging from 30-day boot camps to certificate programs
- 906 completers employed
- Average cost for outreach and training (in grant dollars) per job placement: $2,177

Cycle 1 trainee stories:

"I just want to thank you all at Construction Careers Now (CNN) for the support and encouragement through the program at Emily Griffith Technical College. CNN is a very wonderful program that has wonderful results. The position I accepted starts me off at a wage of $21.50 per hour." –David, January 2017 CCN Completer, ISEC Inc.

"I have been working for Mortenson since October 2016, and I love driving my kids around showing them the projects I've worked on. I have learned that I have a great interest in erosion control; I plan to start an Erosion Control Apprenticeship program soon. Until then, I am making $26.50 per hour and am very happy with my job and proud to be working for such a great company." –Aleyna, September 2016 CNN Completer, Mortenson Construction

APPRENTICESHIPUSA STATE EXPANSION GRANT (AEG)

The purpose of this grant is to strengthen registered apprenticeships (RA) efforts by expanding the industry sectors and range of occupations involved and increasing RA numbers. This work could fundamentally change the way Colorado's workforce and educational systems approach employment and training for youth and adults. RAs allow employers to design programs with specific skills, training and job-related instruction tailored to the company's needs and are considered the "gold standard" for apprenticeship training in the United States. A written contract between the apprentice and the sponsor is approved by and registered with the USDOL Office of Apprenticeship and specifies the length of training, school hours, skills to be learned and the wages the apprentice will receive.

Statewide, over a dozen new RA programs have been created and over 400 apprentices placed in new and existing apprenticeship programs through the efforts of the CDLE's dedicated apprenticeship coordinator, technical support to industry associations and with our key partner in the creation of youth apprenticeships, CareerWise Colorado.

Statewide Technical Assistance for WBL

In conjunction with the CWDC, the CDLE has co-hosted three WBL conferences, creating partnership and synergy among over 1,300 leaders in industry, education (K-12 and higher education), human services, corrections and the state workforce system. The purpose is to build a community of practice for creating economic opportunity in Colorado with effective cross-agency partnership and WBL at the core of an industry-sector strategy.

Work-based Learning Unit Summary for FY16-17

With these programs and work done through our federal apprenticeship expansion grant and industry partnerships, CDLE programs have generated the following employments in 14 major economic sectors:

- 14 newly created USDOL Registered Apprenticeship programs
- 280 new internships
- 213 apprentices placed in construction and energy, including 35 into newly created programs
- 939 employments in construction and energy industry jobs
- 200 direct youth employments from high school into hospitality
- 121 youth apprenticeships direct from high school (CareerWise Colorado)

Table 9. FY16-17 Apprenticeships in Colorado

U.S. Department of Labor Registered Apprentices

Industry Name	Active Apprentices
Accommodation and Food Services (72)	126
Construction (23, 611513)	3,567
Education (61, excluding 611513)	2
Finance and Insurance (52)	10

CareerWise Colorado High School Apprentices

Demographics	
Asian	7%
Black	12%
Hispanic	24%
Multiracial (Not Hispanic)	5%

Health Care and Social Assistance (62)	6
Manufacturing (31-33)	266
Other Services, except Public Administration (81)	23
Professional, Scientific and Technical Services (54)	11
Public Administration (92)	446
Transportation (48)	12
Utilities (22)	641
Grand Total	5,110

Source: USDOL RAPIDS

Active Apprentices in Colorado Regulated by the Department of Regulatory Agencies (DORA)

Electrical	10,197
Plumbing	7,883

Source: DORA

There may be duplication across active apprentices in the DORA database and the USDOL's active Registered Apprentices

White	50%
Other	2%
Female	39%
Career Pathway	
Accounting	8%
Advanced Manufacturing	24%
Business Operations	41%
Health care	8%
Technology	19%
Total Apprentices	121

Source: CareerWise Colorado

COMPETENCY-BASED EDUCATION AND HIRING

What is Competency-Based Education (CBE)?

Competency-based education strategies provide flexibility in the way that credit can be earned or awarded, and provide students with personalized learning opportunities. These strategies include online and blended learning, dual enrollment and early college high schools, project-based and community-based learning, and credit recovery among others.

Research shows that employers may not have great familiarity with the CBE model and related terminology despite expanding CBE initiatives and increasing involvement of employers to help develop such programs (Franklin and Lytle, 2015; Henrich, 2016). Human resource managers are often unsure of how the level of academic rigor of a CBE program compares to a traditional college degree program (Henrich, 2016).

Employers that tend to hire based on the associate or bachelor's degree seem to hesitate with a skills approach, as they don't want to lose the valued general skills that a typical degree signifies (Franklin and Lytle, 2015). At the same time, the same research on employers' perspectives on CBE shows that while "some employers believe that this generalized approach helps them hire the right people, nearly two-thirds think they could be doing better at identifying students with the skill set required for the specific job" (p. 2).

Colorado is exploring CBE, with parts of the education system moving more quickly than others to adopt and adapt. Many challenges certainly remain, but new initiatives are helping to shift the mindset from degrees and credentials to competencies.

TalentFOUND Sectors Summit 2017

The CWDC convened partners whose teams worked tirelessly to plan and execute the 2017 TalentFOUND Sectors Summit focused on accelerating work-based learning through competency-based hiring, education and training. The summit had four segments -- industry, postsecondary, education, and workforce – lead agencies for each put together remarkable work sessions where participants learned from subject matter experts and from each other. The turnout and the commitment of attendees in staying engaged and working right up to the end was impressive. The final report outs were creative, thoughtful, and demonstrated the incredible actions communities can make with collaborating across systems. Skillful, an initiative of the Markle Foundation supported the summit as the co-presenting sponsor along with the CWDC. A list of all hosts and sponsors can be found at [Sectors Summit website](#).

The CWDC sends a big thank you to hosts, sponsors, attendees, and everyone who partnered on the 2017 Sectors Summit to make it a success. The hosts believed an increase of work-based learning (WBL) is critical to Colorado's talent development network and the work happening could be less siloed, by collaborating to accelerate WBL in Colorado collectively. Partners from industry, workforce development, economic development, and education and training, convened in Keystone, Oct. 15-17, to share ideas and best practices across regions and segments. The approach included focusing on:

- Being industry-led and competency-based
- Partnering
- Being a WBL community

Outcomes include:

- Launched the definition and illustration of Colorado's WBL Continuum
- Introduced the definition of a "thriving WBL community"
- Announced creation of WBL community of practice
- Coalesced segment WBL plans into regional plans
- Validated the importance of sector strategies
- Published an updated list of terms to enable stronger alignment between partners
- Advanced the WBL work of two key state strategic partnerships - Skillful and CareerWise
- Launched the Colorado Talent Champion Awards.

Nearly 550 participants walked away with an increased level of transparency and awareness of WBL, more clarity on key next action steps and Colorado's talent development network grew and was strengthened. [See the CWDC website for links to resources from the Summit](#).

BUILDING INDUSTRY-DRIVEN CAREER PATHWAYS SYSTEMS

In Colorado, industry-driven career pathway systems ensure that education, training and workforce systems stay attuned and responsive to the needs of the labor market. Creating career pathways builds awareness among students and workers about the skills and credentials they need for jobs and careers, which ultimately helps provide industry with the skilled talent pipeline necessary to fuel Colorado's economy. Colorado has been developing career pathways, both in direct response to legislation (HB 15- 1274 designating the creation of statewide industry-driven career pathways) and through collaborations with industry-led sector partnerships, industry associations, education and training providers, community organizations and state agency partners.

> Early childhood educators are also a critical workforce priority. For more information on Colorado's efforts to develop, support, recruit, retain and compensate this workforce, please see the EC Workforce

In 2015-2016, the CWDC coordinated the development of the first statewide career pathways maps required by the 2015 legislation. Information technology was chosen as the first pathway due to IT occupations being in high demand and typically paying good wages. In 2016-2017, pathways in healthcare and construction fields were developed, which, combined, comprise about 40 percent of Colorado's Top Jobs statewide. Forthcoming career pathways include business operations and cybersecurity.

Utilizing Colorado labor market data and the CompetencyModelClearinghouse from the USDOL Employment and Training Administration as the basis, the CWDC engaged employers to validate data through regional sector partnership meetings and cross-agency collaboration.

The resulting work, which includes career pathway maps and interactive pathway modules, is now posted at CareersInColorado.org. Pathway maps provide an opportunity for a student or job seeker to see the industry big picture. Pathway modules facilitate users taking an interactive deeper dive to walk along regionally specific industry pathways including these core elements: middle school and high school preparation; earnings, outlook and demand; required education, training, credentials and certifications; necessary knowledge, skills and abilities; and available support services. Outreach and training efforts are underway to raise awareness among stakeholder groups about career pathways work and Careers in Colorado resources.

See this report's Appendix J1 & J2 for additional information on IT, healthcare and construction career pathway development.

2GEN APPROACH TO CONNECTING FAMILIES TO RESOURCES
Two generation (or 2Gen) strategies continue to be a cornerstone of Colorado's efforts to create cycles of economic opportunities for all families. The 2Gen approach works by meeting the needs of children and their parents or adult caregivers simultaneously, to harness the family's full potential and provide a path to permanent economic stability and security.

In the last year, Colorado was one of five states selected to participate in the Parents and Children Thriving Together (PACTT) State Policy Network, a peer learning network sponsored by the National Governors Association (NGA) and the Center for Law and Social Policy (CLASP). A State 2Gen Program Coordinator position has been created within the Governor's Office to assist state agencies and their local government and non-government partners in adapting practices, policies and systems to align with a 2Gen approach.

Key workforce and education initiatives – including sector partnerships, career pathways, and work-based learning opportunities – are using a 2Gen perspective to guide program, policy, and system development and implementation efforts.

PACTT participation will help Colorado achieve the next phase of the state's 2Gen work, outlined in the ColoradoGuideto2Gen,to ensure that all families and children are valued, healthy, and thriving. Future success will mean that families will:

- Have their basic needs reliably met so they can focus on improving their lives;
- Achieve economic security and a path out of poverty through meaningful work;
- Prepare for educational success, from pre-K to postsecondary learning;
- Build family supports and social/community networks; and
- Achieve safety, health, and well-being

In November 2017, the Governor's Office convened over 200 stakeholders from across the state – including policymakers at every level of government, parents, nonprofit and business leaders, philanthropists, and researchers – at a 2Gen Statewide Conference* in Golden, Colorado. The goal of this convening was to develop and strengthen public-private partnerships, and identify specific cross-sector strategies that will allow Colorado to take 2Gen to the next level. A report of the conference proceedings will be available in December 2017, and participant feedback from the event will be used to inform the continued development of the 2Gen Action Plan template developed by the Statewide Two-Generation Action Plan Workgroup.

Additional information about Colorado's 2Gen efforts and resources about 2Gen strategies are available on the Governor's Office website and Appendix I.

*Conference was made possible by generous support from the Chambers Family Fund, Gary Community Investments, Rose Community Foundation, and the Walton Foundation, and in partnership with NGA, CLASP, and Ascend at the Aspen Institute

FOLLOW-UP ON PAST YEAR'S ACTIVITY FROM 2016 RECOMMENDATIONS:

In the 2016 Colorado Talent Pipeline Report, there were four key priority areas around which recommendations were made. Following are some examples of work that has been done over the past year in line with the recommendations. Full details of follow-up activity on all recommendations can be found in Appendix F.

PRIORITY: CLOSE ATTAINMENT GAPS

- The CDHE is expanding initiatives to support educational attainment for foster youth, students with disabilities, veterans, ex-offenders, underrepresented minorities and those who are the first in their families to go to college. These initiatives include Colorado Challenge, Colorado GEAR UP, the Colorado Opportunity Scholarship Initiative and College In Colorado.
- Colorado's public workforce system issued a policy guidance letter that created a "Governor's Priority of Service" category for the adult program under WIOA Title I-B, which ensures a focus on targeted populations.

PRIORITY: ALIGN RESOURCES AND PROVIDE ACCESS TO INFORMATION

- 58 charter affiliates have signed onto TalentFOUND.
- The CDLE partnered with Skillful to produce a training series on skills-based hiring for employers.

PRIORITY: INCREASE JOB PLACEMENT, RETENTION AND WAGE GROWTH

- Colorado Opportunity Scholarship Initiative (COSI) partnered with various organizations to provide matching workforce scholarship grants for a variety of workforce programs focusing on special populations. Those organizations included the Colorado Council for Black Nurses, Colorado Educational Services and Development Association (CESDA), Denver Public Schools Career Connect, Hide in Plain Site, Mile High United Way's Bridging the Gap and Project Self-Sufficiency of Loveland-Fort Collins on behalf of the Larimer County Workforce Center.

PRIORITY: CONTINUED COLLABORATION AND INTEGRATED EFFORTS

- The CWDC continues to act as the coordinator and convener of the talent development network.
- The statewide postsecondary and workforce readiness coordinator, also known as the education liaison at the CWDC, continued to work for increased alignment and collaboration across education and business, increasing school district participation in business-led partnerships by 72 percent.
- Over the past year TalentFOUND partners, including state agencies, local partners, businesses and nonprofits like CareerWise Colorado, collaborated to create:
  - Common terms and definitions for talent development
  - A continuum to advance all aspects of WBL through school and work

- o The TalentFOUND Sectors Summit 2017: the largest cross-system convening of community and state leaders from education, higher education, training, workforce development and industry in Colorado to explore "[how might we accelerate Work Based Learning through competency based hiring education and training](#)".

2017 COLORADO TALENT PIPELINE REPORT RECOMMENDATIONS

Colorado is actively engaged in a range of strategies supporting the development of talent. The following recommendations build upon these existing strategies to focus on better aligning the skills of our workforce with employer demand and are designed to address the problems identified below.

PROBLEM STATEMENT #1:

The evolution of talent development calls for Colorado to accelerate partnerships among K-12, higher education and business/industry. There is a lack of resources to effectively support the expansion of these partnerships at the pace needed to scale and support a vibrant economy and viable talent pipeline throughout the state. Additionally, Colorado needs a sustainable commitment to furthering the collaborative work begun by the current administration, state agency management and business leadership to continue to innovate and lead the nation in cross-system talent-development strategies and implementation.

RECOMMENDATION #1:

Accelerate and deepen partnerships among education, business and industry to develop Colorado talent. Colorado is building a strong foundation for collaboration among education and training providers, the workforce-development system and local industry through initiatives such as sector strategies, career-pathway development and the expansion of industry-recognized credentials and WBL opportunities (e.g., internships and apprenticeships). These initiatives must continue to expand in scope and deepen in intensity so that the entire ecosystem of talent development is aligned and the quality of programs is more consistent across the state.

1A Increase support for Colorado's Sector Strategies Network:

This growing network now includes more than 700 businesses involved with 23 regional sector partnerships across the state; a consortium of state trade associations and 19 local workforce boards. Colorado has become nationally known for these public-private partnerships that lead talent development across the state. To continue to scale these partnerships in every region, additional financial resources are needed for technical assistance, facilitation and staffing.

> **1A.1** Provide financial support for regional organizations for the coordination of initiatives, industry engagement and collective impact across their respective regions, to ensure these partnerships continue to thrive and supported by their local community.

1A.2 Provide support for STAT, the newly formed state technical assistance team that is led by the CWDC. The goals of this alliance of state agencies is to provide technical assistance for building systems and connections among existing subject-matter experts for the communities and initiatives that need help. Examples of technical assistance include identifying best practices and providing support to model them, facilitation, providing opportunities for peer learning and networking, and other consultative services. For this strategy to be sustained and accelerated, a dedicated staff coordinator is required.

1A.3 Explore the expansion of the institutionalized, collaborative efforts resulting from SB14-205, which mandated this talent pipeline report and laid the foundation to ensure an industry-led talent- development network in Colorado. For example, adopt and fund the further development of the TalentFOUND gateway to ensure that every student, job seeker, worker and business in Colorado has access to the information and resources needed to design their own unique path to success.

1B Industry-driven, competency-based career-pathways systems: Career-pathway development ensures that education, training and workforce systems stay attuned and responsive to the needs of the labor market. In 2016-2017 the focus was on healthcare and construction fields; forthcoming pathways include business operations and cyber security.

1B.1 Ensure that any new programs align with existing work, such as creation of Pathways in Technology Early College High Schools (P-TECH) schools and programs in the above-named industry areas.

1B.2 Expand the role of competency-based education and training in these pathways, including WBL.

PROBLEM STATEMENT #2:

Jobs of the future will look very different from the jobs of today, as demonstrated in current research and throughout this report. This is largely due to technological advances, such as automation and artificial intelligence, and the continuing globalization of the world economy. The future workforce will need to be more flexible, as workers will likely change jobs more often or be hired on a contract basis rather than as long-term full-time employees. While it is difficult to predict what the future demand for particular occupations will be, research identified in this report suggests that certain skills will be in high demand, including technological fluency, social and interpersonal skills combined with STEM skills, creativity and cross-cultural competency.

RECOMMENDATION #2:

Ensure that Coloradans have the skills they will need to succeed and grow the state economy in the future. The current education and training system in Colorado must be forward-thinking in terms of knowledge transfer, career exploration and workforce preparation for youth as well as upskilling for adults as technology evolves and new skills come into demand.

2A Expansion of Industry-Recognized Credentials: An expanded credential system has great potential to improve our ability to identify and promote viable pathways to prosperity for Coloradans by creating common and recognized terminology that bridges the education and workforce communities. Additionally, programs like these encourage high school students to earn an in-demand credential to be ready for their next step to get a job in Colorado and earn a living wage.

> **2A.1** Expand and model future programs after the Career Success Pilot Program, HB16-1289, which awards monetary incentives to school districts based on the number of students who complete qualifying industry credentials that are aligned with Top Jobs. The current funding level is $1 million, which covered one-third of all potential incentives for high schools. Through programs like this, thousands of Colorado students are graduating with an industry credential in one hand and a high school diploma in the other.
>
> - Provide additional funding specifically for credentials focused on computer science and related skills, such as coding.
> - Consider college admissions requirements as a tool to encourage school districts to adopt computer science learning opportunities.

2A.2 Create a systematic approach to defining quality for credentials of value and WBL experiences and to creating pathways to attainment.

- Maintain transparent data on the market value of credentials, including documentation of the opportunities to achieve these credentials and a method for connecting individuals to the training and opportunities.
- Promote credentials as a pathway to success through effective public-awareness efforts.
- Fund additional institutional capacity to expand short-term, high-demand, high-wage credential attainment.
- Increase significantly the number of high school students graduating with a diploma as well as a certificate of value in the workplace through partnerships and financial support.

2B Expansion of WBL Opportunities Along the Continuum: These initiatives include the expansion of adult and youth apprenticeships, internships and OJT.

> **2B.1** Expand the model program that awards matching grants to businesses that offer internships so as to include apprenticeships and other types of WBL opportunities. This program has proved very successful in increasing the number of internships offered and subsequent student enrollments.
> **2B.2** Ensure that additional programs for WBL are integrated into the existing infrastructure at state agencies. For example, programs that incentivize business to expand WBL opportunities can utilize the existing program infrastructure within the DOLE; programs that incentivize colleges and training providers can use the existing infrastructure at the CDHE, etc.

2B.3 Consider updating school finance policy to more completely integrate flexibility for student's to connect work and school options, such as apprenticeship, internship and other work-based learning opportunities. School districts have suggested that Colorado high school students could be funded at full-time rather than full or part-time status, which is currently determined by the number of hours each day a student attends class in high school.

2B.4 Expand the use of and support for existing tools:

- Continue to leverage high school graduation guidelines to support schools and school districts in developing WBL for middle school and high school students.
- Expand resources for concurrent enrollment, where high school students earn college credit in high school, to ensure expansion of WBL opportunities.

PROBLEM STATEMENT #3:

While Colorado's economy is strong, there are still many sources of untapped talent that are not benefiting from the state's economic gains and prosperity. To continue to meet their growth targets, businesses must tap into additional sources of talent.

RECOMMENDATION #3:

Mobilize Colorado's untapped talent potential to close the skills gap and connect people to careers that lead to the middle class. For example, the CDHE and the Center for Education and Workforce at Georgetown University estimate that there are more than 400,000 Colorado adults with some postsecondary education, but no degree. Furthermore, attainment gaps between racial and ethnic minorities represent untapped potential: erasing these gaps would accelerate the pace of economic growth in the state. In addition, some populations, such as women, individuals with disabilities, youth and ex-offenders have lower rates of labor-force participation. Policies that make it easier for these populations to join the workforce will allow Colorado to better utilize all available talent.

3A Two-Generation (2Gen) Approach: Support the DHS 2Gen strategies that align a variety of programs and services for children and adults to serve the whole family with a goal of achieving long-term self-sustainability and economic security.

3A.1 Support the efforts of communities that are partnering with adult education programs, workforce centers and afterschool programs to assist in serving multiple generations of students and parents to assist with upskilling and education. Consider policies to ensure that young people who are or were in foster care have priority access to these opportunities.

3A.2 Expand the reach of available programs to allow more Coloradans to join or advance in the workforce and incentivize engagement with the business community for development of family-friendly policies that promote employee retention. Address the lack of access to quality, affordable child care, which prohibits a number of adults from beginning or completing education programs, acquiring the skills

necessary to obtain a job on a career pathway, and/or successfully maintaining employment and grow within their career.

3A.3 Incentivize employers to work with government programs to design benefit packages that mitigate the risk involved for employees who are transitioning off public assistance while supporting their career advancement.

3B Transitional jobs strategies, such as the DHS ReHIRE Colorado program, allow individuals that might be seen as unemployable or high risk to demonstrate their value to employers through OTJ and subsidized employment experiences. These strategies benefit both the individual and the employer, creating a pipeline for talent development for populations with barriers to entering employment, especially into jobs that lead to careers.

3B.1 Expand subsidized summer and year-round employment opportunities for youth (ages 16-19), a demographic that has an approximate 13 percent unemployment rate, as compared to Colorado's current overall unemployment rate of 2.4. This would provide teenagers with valuable skills and experience and offer benefits that last throughout their careers.

3B.2 Expand subsidized employment opportunities for ex-offenders, individuals with disabilities and other populations that are underrepresented in the workforce. This would be a win-win, with these untapped labor pools gaining valuable hands-on experience and businesses able to fill jobs to better meet customer demand.

3C Engage in a variety of strategies to engage and support untapped talent in exploring career opportunities and connecting to a career pathway to middle-class status.

3C.1 Support existing collaboratives and efforts such as those in the Best regards, Colorado STEM Roadmap to actively engage women and minorities in STEM occupations. Women and minorities are increasingly becoming a critical asset to the talent pool in Colorado, yet they remain underrepresented in many critical occupations, including the STEM fields.

3C.2 Support initiatives, such as the partnership with Skillful and the development of the TalentFOUND gateway, to connect individuals to multiple paths for success. In addition to the 400,000 Colorado adults with some postsecondary education and no degree, there are 300,000 adults without a high school diploma who are an untapped opportunity to upskill and prepare for the critical middle-skill jobs in Colorado. Middle-skills jobs, which require a high school diploma and some postsecondary education such as an industry credential, are Colorado's largest growing segment of jobs.

3C.3 Remove barriers to the educational success of students in foster care because of frequent moves and lack of continuity in education. Students enter the foster care system behind academically and often with a history of trauma. These young people experience frequent school moves, further disrupting their learning, fracturing relationships with their school communities and limiting their ability to access employment opportunities. Currently only one

in three students who experience foster care graduate from high school with their class. Of those who do graduate, only one in four enroll in postsecondary education by the next fall.

- Support solutions that set students who experience foster care on a pathway for success. Consider both the time youth are in and out of home placement and the long-term risk for low educational attainment.
- Close the policy gap that limits protections for students in foster care, such as transportation to their school of origin and waiving the school fees. Students need support for educational continuity until the end of the school year, regardless of placement setting or foster care status.

PROBLEM STATEMENT #4:

There are inequities in growth and opportunity across the state. Colorado is diverse; what works in metropolitan areas may not work in rural parts of the state. Every metropolitan area is not the same, nor are the rural areas of the state the same. As no one single challenge or solution fits all communities, priorities and solutions must be developed regionally. For long-lasting impact, solutions should be piloted in local communities and best practices shared across the state with support from state agencies and organizations.

RECOMMENDATION #4:

Promote equitable growth and opportunity across the state. As there is no single Colorado economy, it is essential to support and leverage the existing efforts of the OEDIT and other partners to implement ColoradoBlueprint2.0 and the strategies to develop regional solutions. In the major metropolitan areas, unemployment is low and demand for postsecondary education is at a premium. In these areas, individuals without a postsecondary education are being left behind, especially as rising housing costs drive up the minimum salary needed to support a family. Strategies for supporting equity in metropolitan areas include ensuring access and affordability of higher education opportunities, especially for historically underrepresented populations. In rural areas of the state, the cost of living is lower but the overall economy is weaker, and there is an aging workforce as well as fewer jobs that offer possibilities for upward mobility. In these areas, the priority should be on growing good jobs and ensuring a pipeline of skilled workers is available to fill them.

4A Utilize regional sector partnerships and organizations to support solutions that create economic diversity and increased access to the education and training, including credentials and WBL, specific to the region's needs.

4B Expand access to broadband across the state. High-speed internet access is not a luxury, it is a basic requirement for training and employment opportunities and business success. For individuals and public systems, virtual technology allows for collaboration across long distances, access to online tools for skills training, job hunting and life-long learning. Distance learning and other programs that expand the type and quality of education all require high-speed internet. Businesses require high-speed internet access for foundational processes like credit-card

acceptance, talent attraction through online tools, development and retention, marketing and promotion. As reflected in the goals of the Colorado Broadband Office, if Colorado believes that all people and communities of Colorado should have equal access to economic vitality, broadband must be made available to every part of the state.

> **4B.1** Launch a remote-working strategy. With access to quality broadband, workers can access online training to learn new skills for the digital economy and work remotely in new careers. This strategy can ensure that as the economy evolves and jobs are lost to automation and other technologies, individuals and families will not be forced to leave their homes to find work in the digital economy. With access to quality broadband, businesses can access talent across the state. A sustainable strategy could include remote working agreements, training and potentially even work hubs for those who prefer not to work from home. Without quality broadband, this strategy cannot work.

4C Transportation is a significant barrier for lower-income populations to accessing employment, healthcare, education, and training opportunities. In metropolitan areas public transportation is costly and inefficient for many people; in rural areas public transportation does not exist. In some circumstances public agencies are responsible for providing transportation but do not have adequate provider options for doing so.

> **4C.1** Increase access to driver's education and driver's licenses for youth in foster care. Access to driver licenses is key for the ability to access employment, education and essential services.
> **4C.2** Utilize cross-agency and public-private partnerships to develop technological solutions to promote ride-sharing and more efficient use of public resources. Leverage existing technology to devise effective and efficient transportation solutions.

REFERENCES

Burning Glass. (2017). *The Digital Edge: Middle-skill Workers and Careers.* Retrieved from http://burning-glass.com/research/digital-skills-gap/.

Carnevale, A. P., Jayasundera, T., and Gulish, A. (2016). *America's Divided Recovery.* Georgetown Center on Education and the Workforce. Retrieved from https://cew.georgetown.edu/cew-reports/americas-divided-recovery/

Colorado Office of State Planning and Budgeting. (September 2014). *The Colorado economic outlook.* Retrieved from https://drive.google.com/file/d/0B0TNL0CtD9wXVGotbENsT0txTm8/view

Deloitte (July 2017). "Tech Fluency: A foundation of future careers." *Deloitte Review*, 21. Retrieved from https://dupress.deloitte.com/dup-us-en/deloitte-review/issue-21/tech-fluency-mastering-the-language-of-technology.html.

Deming, D. J. (2017). "The growing importance of social skills in the labor market." *The Quarterly Journal of Economics*, *132*(4), 1593-1640. Retrieved from http://www.nber.org/papers/w21473.pdf.

Franklin, C. and Lytle, R. (2015). "Employer perspectives on competency-based education." American Enterprise Institute. Retrieved from https://www.aei.org/wp-content/uploads/2015/04/Employer-Perspectives-on-Competency-Based-Education.pdf

Gallup and Lumina Foundation. (2016). *Americans value postsecondary education.* Retrieved from https://www.luminafoundation.org/files/resources/american-attitudes-toward-postsecondary-education.pdf

Gallup and Lumina Foundation. (2014). *What America needs to know about higher education redesign.* Retrieved from https://www.luminafoundation.org/files/resources/2013-gallup-lumina-foundation-report.pdf

Gallup and Strada Education Network. (2017). *On Second Thought: U.S. Adults Reflect on Their Education Secisions.* Retrieved from http://news.gallup.com/reports/208535/7.aspx

Guvenen, F., Kuruscu, B., Tanaka, S., and Wiczer, D. (2015). *Multidimensional Skill Mismatch.* Federal Reserve Bank of Minneapolis Research Department. Retrieved from https://www.minneapolisfed.org/research/wp/wp729.pdf

Henrich, J. (2016). *Competency-based education: The employers' perspective of higher education.* The Journal of Competency-based Education, 1*: 122-129. doi:* 10.1002/cbe2.1023

Lumina Foundation. (2015). *A Stronger Nation.* Retrieved from http://strongernation.luminafoundation.org/report/2017/#page/downloads

Schmitt, J., and Warner, K. (2011). Ex-offenders and the Labor Market. "WorkingUSA," *14*(1), 87-109.

U.S. Census Bureau. (2016). American Community Survey one-year estimates.

2017 Talent Pipeline Report Appendices

Appendix A1 - Top Jobs—Tier 1 by Occupation Cluster
Appendix A2 - Top Jobs – Tier 2 by Occupation Cluster
Appendix B1 - Top Jobs—Tier 1 by Education
Appendix B2 -Top Jobs—Tier 2 by Education
Appendix C - Top Jobs by Region
Appendix D - All Top Jobs Spreadsheet
Appendix E - Changes in Top Jobs from Last Year to this Year
Appendix F - Follow-up Activities from 2016 Recommendations
Appendix G – 2017 Sector Partnership Impact Survey
Appendix H – The Role of Gender Equity in Mobilizing Colorado's Untapped Talent
Appendix I – 2Gen Work: Learn more.
Appendix J – Annual Reports on Recent State Legislation
- Appendix J1 - 15-1274 Annual Report 2017 (Healthcare and Construction)
- Appendix J2 - 15-1274 Annual Report 2016 (IT)
- Appendix J3 - 15-1230 Innovative Industries Internship Program
- Appendix J4 - 16-1289 List of approved industry recognized credentials
Appendix K - PY16 WIOA Annual Report