

# COLORADO'S FORGOTTEN MIDDLE-SKILL JOBS

MEETING THE DEMANDS OF A 21<sup>ST</sup>-CENTURY ECONOMY



October 2011



# ACKNOWLEDGMENTS

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To learn more about the Skills2Compete-Colorado campaign, go to [www.nationalskillscoalition.org/Colorado](http://www.nationalskillscoalition.org/Colorado)

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## INTRODUCTION

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Colorado's economy relies on a combination of traditional industries—agriculture, health care, manufacturing, oil and gas production, and tourism—and emerging, technology-based sectors such as aerospace, bioscience, and renewable energy. The Colorado Department of Labor and Employment projects that the top industries expected to produce the most job openings through 2020 are health care, education and social assistance, hospitality and tourism, professional, scientific and technical services, and energy and mining.<sup>1</sup> Though job creation in a number of these sectors remains sluggish and Colorado, like the rest of the country, continues to struggle with sustainable economic recovery, the state is in many ways well positioned to thrive in the 21st-century economy. Ensuring that Colorado has a highly skilled workforce with the education and credentials demanded by the labor market will be critical to guaranteeing the state's future economic success and competitiveness.

With a gross state product of \$257.6 billion in 2010, Colorado has the eighteenth largest state economy in the nation,<sup>2</sup> with nine companies ranked in the Fortune 500.<sup>3</sup> In 2010, Colorado ranked ninth in the Kauffman Foundation's ranking of states best positioned to succeed in the new economy.<sup>4</sup> Close to 90 percent of Colorado residents have at least a high school degree and 35 percent have a college degree or more, both well above the national average.<sup>5</sup>

This well-educated workforce played a key role in driving the state's economic diversification and expansion in recent years. As Colorado's economy continues to recover, a majority of new employment opportunities will require postsecondary education and training. To take full advantage of those opportunities, Colorado's workforce system must ensure that all workers—including the unemployed, underemployed, newly dislocated, and entry-level—have access to the education and training they need to succeed in the labor market, earn family sustaining wages, and develop the skills to support Colorado's long-term economic expansion.

Research on projected job openings and retirement trends in the workforce shows that middle-skill jobs—those that require more than a high school diploma but not a four-year degree—comprise the largest share of jobs in Colorado today. The data further indicate that middle-skill jobs will continue to make up the largest segment of Colorado's total labor market into the foreseeable future.

Middle-skill jobs are often forgotten because of conventional wisdom about the economy as a whole. That conventional wisdom holds that our nation has evolved into an hourglass economy with a small number of highly skilled, highly paid workers and a much larger number of low-skill, low-paid workers. Within such a model, middle-skill occupations are on the verge of extinction.

It's a bleak picture, to be sure. It's also a myth.

The truth is that **middle-skill jobs currently make up the largest segment of jobs in the U.S. economy (nearly half), and will continue to do so for years to come.**<sup>6</sup> This national picture holds true in Colorado. Middle-skill jobs account for 47 percent of the state's jobs today and will continue to account for the largest portion of jobs into the next decade. What's more, middle-skill jobs will account for 39 percent of job *openings* in the next decade, making them the engine of Colorado's economy. But while 47 percent of current jobs are middle-skill, only 36 percent of the state's workers are currently trained to the middle-skill level, a gap that threatens to undermine Colorado's economic growth and innovation efforts.

Despite the state's efforts to address postsecondary education and workforce training, Colorado is at risk of facing shortages of the middle-skill workers critical to its economic recovery and long-term success. Prior to the recession, businesses across the state were reporting the negative impact of skilled worker shortages on their productivity and growth. To maintain its edge and ensure that the state can take advantage of job creation and economic development strategies, Colorado must invest in middle-skill education and training to ensure that businesses have the talent they need. At the same time Colorado must also make investments to improve the basic skills of its low-skill workers.

If Colorado is to realize its full economic potential, educational access must reflect the demands of a 21st-century economy and the realities of the 21st-century workforce. Colorado needs a bold and broad vision to address the educational and economic challenges facing the state during these tough economic times and beyond. Those challenges demand a truly transformative vision that allows every worker to be a part of economic recovery—guaranteed access to two years of postsecondary education or training.

The following vision can shape Colorado's workforce and education policies and investments to meet these 21st-century realities:

*Every Colorado resident should have access to the equivalent of at least two years of education or training past high school—leading to a vocational credential, industry certification, or one's first two years of college—to be pursued at whatever point and pace makes sense for individual workers and industries. Every person must also have access to the basic skills needed to pursue such education.*

Businesses, labor, educators, community-based organizations and others must work together on this ambitious goal. Policymakers must step in with strong political leadership and commitment to ensure that Colorado has the middle-skill workforce it needs to recover and thrive.



## MIDDLE-SKILL JOBS IN COLORADO'S ECONOMY

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Colorado has always and will always rely on middle-skill workers. They are the environmental remediation technicians who will reclaim shuttered plants in Denver and the carpenters and welders who will rebuild those shells into new, more efficient factories with green heating and cooling systems. They are the machinists in Pueblo who will use new computer numerically controlled technologies to create new products to export. They are the chemical technicians in Boulder who will help develop the medications that keep Colorado families healthy and the skilled production workers in Aurora who make those drugs a reality. They are the biomedical equipment technicians in Colorado Springs who keep sophisticated life-saving medical equipment safe and working. They are the construction workers, electricians, and plumbers who keep Colorado's infrastructure up and running. Middle-skill jobs pervade almost every industry in this country, from licensed practical nurses and radiological technicians, to claims adjusters and paralegals, to auto repair diagnosticians. Middle-skill jobs are local, hands-on jobs, meaning that they are unlikely to be outsourced to other countries.

Many of these are well-paid jobs, offering workers a chance at economic security and prosperity. Of course not all middle-skill occupations pay well or have meaningful advancement opportunities. Skills are only part of the economic success equation. But nationally, growth in demand for many middle-skill occupations has been fast enough to generate not only strong employment growth, but also rapid growth in wages.<sup>7</sup>

Colorado's need for qualified middle-skill workers today is greater than ever before. As the economic recovery continues to gather momentum, existing and emerging job vacancies will need to be filled. While job creation is currently sluggish, investments in industries projected to grow will fully pay off only if a base of middle-skilled talent is in place to meet projected demand. Colorado needs to use this recessionary time to invest in its human capital, or the state will have employers who cannot find the qualified middle-skill workers they need to grow and be competitive. Matching the skills of the state's workforce with this demand will help Colorado take advantage of the job creation efforts, and prepare the state for better times ahead.

### **What is a middle-skill job?**

One that requires training beyond high school, but not a four-year degree.

### **Who provides middle-skill training?**

Employers, community colleges, apprenticeship programs, nonprofit community-based training organizations, and private career schools.

## Thirty Middle-Skill Jobs Colorado Can't Live Without

**TABLE 1. Projected Colorado Demand for 30 Middle-Skill Occupations, 2009–2019**

	Employment		Net Change		Job Openings	Median Earnings 2009
	2009	2019	Number	%		
<b>Computers</b>						
Support Specialists	12,253	12,733	480	3.9%	4,270	\$49,180
Specialists, Other	7,186	7,658	472	6.6%	2,410	\$75,540
<b>Construction</b>						
Carpenters	19,473	20,032	559	2.9%	3,430	\$39,440
Electricians	13,605	14,376	771	5.7%	4,190	\$45,860
Painters	5,366	5,820	454	8.5%	1,210	\$35,880
Operating Engineers	8,611	9,269	658	7.6%	2,310	\$42,290
Plumbers	9,043	9,832	789	8.7%	2,640	\$45,140
<b>Healthcare</b>						
Dental Hygienists	3,397	4,316	919	27.1%	1,570	\$76,490
Diagnostic Medical Sonographers	899	1,105	206	22.9%	330	\$75,100
Licensed Practical Nurses	7,162	8,281	1,119	15.6%	3,050	\$42,150
Medical Lab Technicians	1,959	2,297	338	17.3%	640	\$34,330
Physical Therapist Assistants	616	822	206	33.4%	290	\$40,240
Radiology Technicians	3,128	3,687	559	17.9%	980	\$56,230
Respiratory Therapists	1,706	2,185	479	28.1%	730	\$54,470
Surgical Technologists	1,556	2,009	453	29.1%	930	\$44,490
<b>Installation, Maintenance, and Repair</b>						
Aircraft Mechanics	1,773	1,808	35	2.0%	220	\$54,720
Auto Mechanics	13,744	14,771	1,027	7.5%	3,860	\$36,360
Bus/Truck Mechanics	3,780	3,978	198	5.2%	1,020	\$44,150
Heating and AC Installers	4,141	4,415	274	6.6%	1,000	\$44,910
Heavy Equipment Mechanics	3,258	3,493	235	7.2%	880	\$45,820
Industrial Machinery Mechanics	4,422	4,754	332	7.5%	1,050	\$44,520
<b>Transportation</b>						
Air Traffic Controllers	686	853	167	24.3%	360	\$117,670
Heavy Truck Driver	21,924	22,213	289	1.3%	4,280	\$39,720
<b>Public Safety</b>						
Emergency Medical Technicians	3,234	3,872	638	19.7%	1,010	\$33,190
Fire Fighters	4,264	4,857	593	13.9%	2,140	\$50,250
Police Officers	9,726	11,037	1,311	13.5%	3,910	\$61,490
<b>Other</b>						
Civil Engineering Technicians	1,510	1,579	69	4.6%	370	\$48,270
Claims Adjusters	3,965	4,192	227	5.7%	1,240	\$60,940
Environmental Engineering Technicians	404	470	66	16.3%	150	\$39,380
Paralegals	4,486	4,969	483	10.8%	1,070	\$47,540

\* 2009 median annual earnings for all occupations in Colorado = \$36,270

Source: Projections data tabulated using Colorado Department of Labor and Employment data. Median earnings data from the Bureau of Labor Statistics.

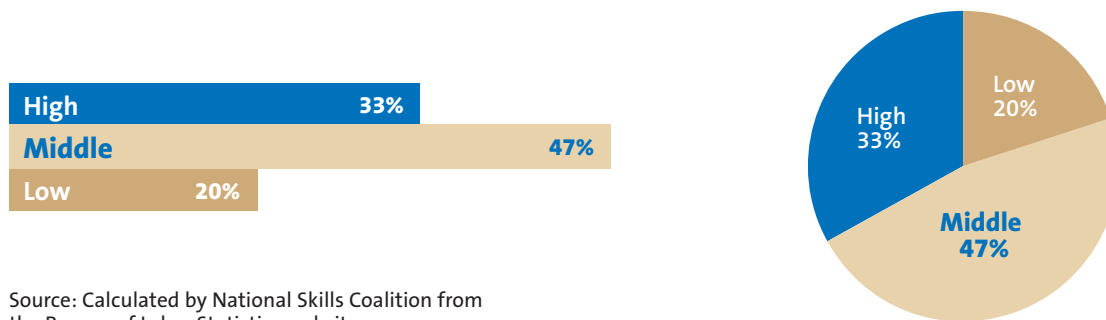


## COLORADO'S MIDDLE-SKILL GAP, TODAY AND TOMORROW

*Demand for Middle-Skill Jobs is Strong, Will Remain Strong in Colorado*

Nearly half of all Colorado jobs in 2009—47 percent—were middle-skill jobs, representing more than one million workers (Fig. 1, Table 2).

**FIGURE 1. Colorado Jobs by Skill Level, 2009**



Source: Calculated by National Skills Coalition from the Bureau of Labor Statistics website.

**TABLE 2. Colorado Jobs by Skill Level, 2009**

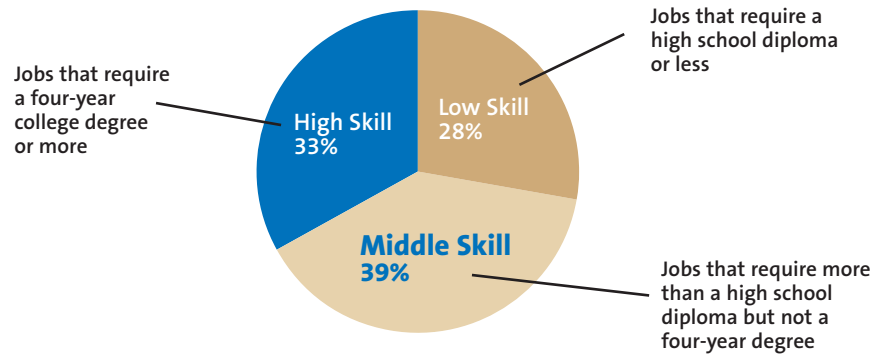
	Employment	Percent
<b>Total, All Occupations</b>	<b>2,234,250</b>	<b>100.0%</b>
Management	96,060	4.3%
Business and Financial	131,640	5.9%
Professional and Related	505,190	22.6%
<b>Total, High Skill</b>	<b>732,890</b>	<b>32.8%</b>
Sales and Related	247,610	11.1%
Office and Administrative Support	368,620	16.5%
Construction	131,390	5.9%
Installation and Repair	88,870	4.0%
Production	94,350	4.2%
Transportation and Material Moving	124,640	5.6%
<b>Total, Middle Skill</b>	<b>1,055,480</b>	<b>47.2%</b>
Service Occupations	442,670	19.8%
Farming, Fishing, and Forestry Occupations	3,210	0.1%
<b>Total, Low Skill</b>	<b>445,880</b>	<b>20.0%</b>

Source: Calculated by National Skills Coalition from the Bureau of Labor Statistics website.



The demand for middle-skill workers in the Colorado will remain high through 2019, with 39 percent of all job openings requiring a middle-skill credential. This compares with 33 percent of job openings in high-skill occupational categories and 28 percent in occupations requiring no more than a high school diploma (Fig. 2, Table 3).

**FIGURE 2. Colorado’s Total Job Openings by Skill Level, 2009–2019**



Source: Calculated by National Skills Coalition from the Colorado Department of Labor and Employment. Total number of job openings over the ten year period, including new and replacement jobs created by retirement and turnover.

**TABLE 3. Colorado Jobs and Total Job Openings by Skill Level, 2009–2019**

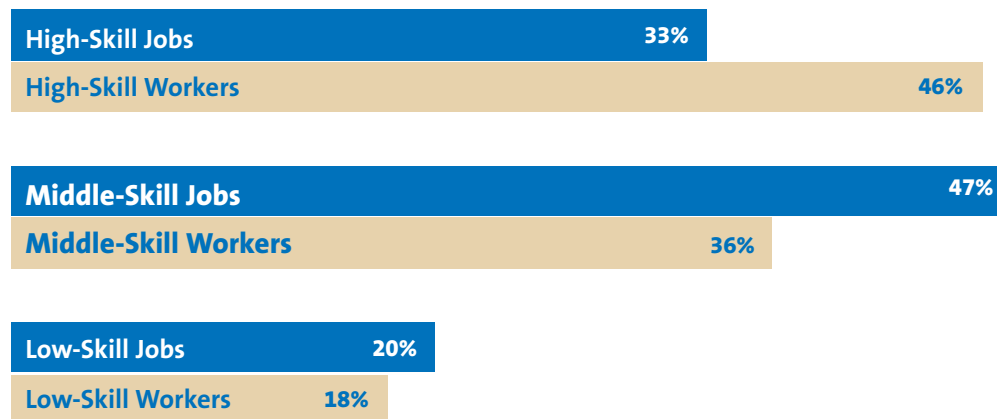
	Employment		Job Openings	
	2009	2019	Number	%
<b>Total, All Occupations</b>	<b>2,424,356</b>	<b>2,622,441</b>	<b>779,440</b>	<b>100.0%</b>
Management	120,750	124,722	31,150	4.0%
Business and Financial	143,294	159,249	40,010	5.1%
Professional and Related	547,992	616,341	184,230	23.6%
<b>Total, High Skill</b>	<b>812,036</b>	<b>900,312</b>	<b>255,390</b>	<b>32.8%</b>
Sales and Related	275,803	286,347	93,430	12.0%
Office and Administrative Support	377,235	385,064	101,640	13.0%
Construction	143,355	145,411	33,210	4.3%
Installation and Repair	95,785	100,564	21,120	2.7%
Production	94,578	84,902	21,220	2.7%
Transportation and Material Moving	128,799	128,410	32,960	4.2%
<b>Total, Middle Skill</b>	<b>1,115,555</b>	<b>1,130,698</b>	<b>303,580</b>	<b>38.9%</b>
Service Occupations	486,383	579,965	216,910	27.8%
Farming/Fishing/Forestry Occupations	10,382	11,466	3,580	0.5%
<b>Total, Low Skill</b>	<b>496,765</b>	<b>591,431</b>	<b>220,490</b>	<b>28.3%</b>

Source: Calculated by National Skills Coalition from the Colorado Department of Labor and Employment.

### Colorado's Skills Mismatch: A Middle-Skills Gap

Colorado has been experiencing a structural shortage of middle-skill workers (Fig. 3). Accounting for 47 percent of Colorado's jobs, only 36 percent of Colorado workers are trained to the middle-skill level, a gap that threatens to undermine economic growth and innovation. In reality, the gap was likely even greater in certain industries because many workers trained to the middle-skill level—and even those with bachelor's degrees—did not have the specific technical skills needed. This means that thousands of well-paid and rewarding jobs were going unfilled in the state, in industries that are and will be essential to Colorado's economic portfolio.

**FIGURE 3. Colorado's Jobs and Workers by Skill Level, 2009**



Sources: Calculated by National Skills Coalition from the Bureau of Labor Statistics website.

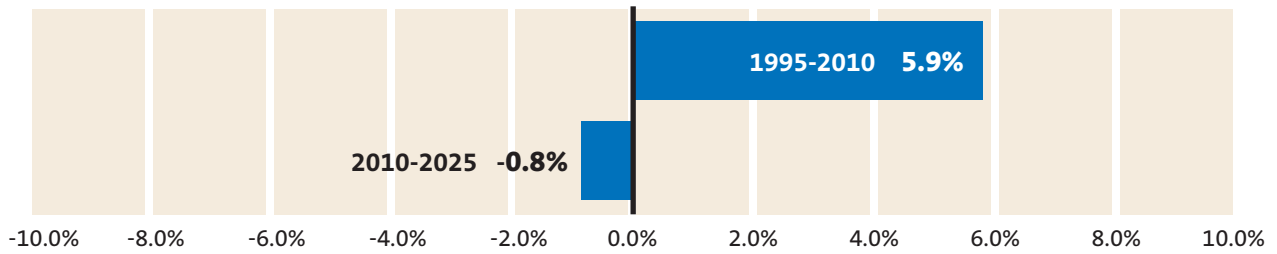
### Colorado Educational Projections: A Growing Middle-Skill Challenge

Educational projections for Colorado (Figs. 4, 5 and 6) suggest that the state is likely to face a continued shortage of middle-skill workers in the future. During the fifteen years between 1995 and 2010, Colorado saw an increase in residents with educational attainment at the high-skill level, while the number of residents with middle- and low-skill education levels decreased.

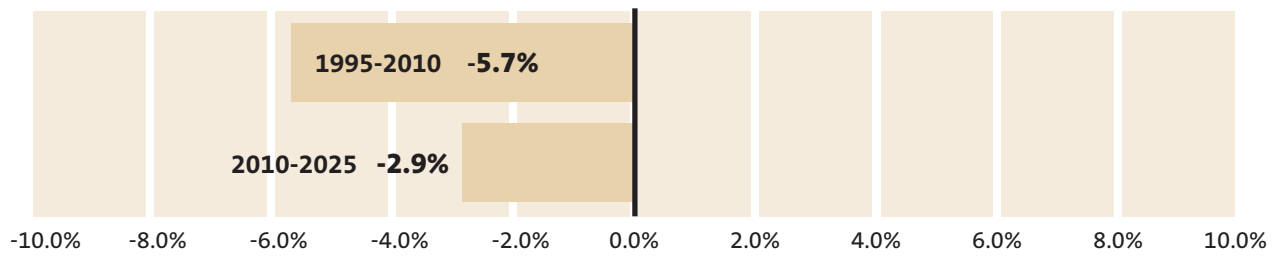
**Colorado's projected education trends for the subsequent fifteen years suggest that the state's middle-skill worker shortages will continue as the proportion of high- and middle-skill workers decline while the proportion of low-skill workers increases.**

If not addressed, these educational trends will only make it harder for Colorado businesses to meet their needs from the state's available workforce, stifling economic growth, while limiting opportunity for thousands of Colorado workers to advance within the state's economy.

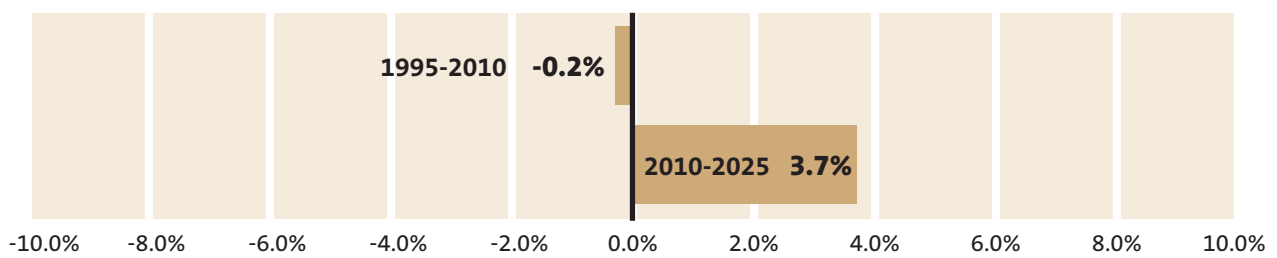
**FIGURE 4. Percentage Change in High-Skill Colorado Workers, 1995–2025**



**FIGURE 5. Percentage Change in Middle-Skill Colorado Workers, 1995–2025**



**FIGURE 6. Percentage Change in Low-Skill Colorado Workers, 1995–2025**

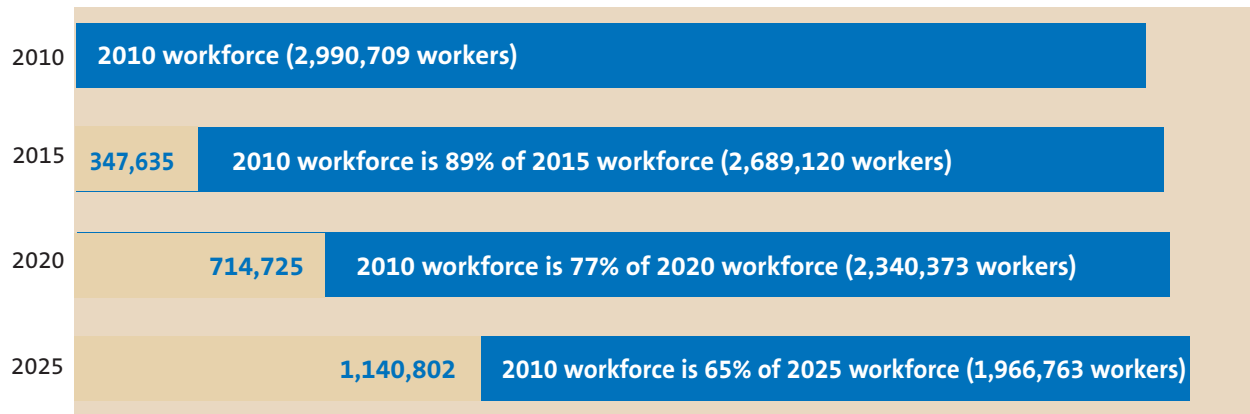


Sources, Figures 4-6: 1995-2010 attainment calculated by National Skills Coalition using June 1995 and 2010 CPS data. Current attainment calculated by National Skills Coalition using June 2010 CPS data. 2025 attainment projected by National Skills Coalition using demographic data from the June 2010 CPS and population projections calculated by RAND California Statistics.

### **Colorado's Workforce of Tomorrow is in the Workforce Today**

Colorado cannot address its middle-skill challenges by focusing its policies and public investments in education and training resources solely on youth. Two-thirds of the people who will be in Colorado's workforce were already working adults in 2010—long past the traditional high school-to-college pipeline (Fig. 7).

**FIGURE 7. Working Colorado Adults Age 20-64 in the Current and Projected Population, 2010-2025**



Source: Calculated by National Skills Coalition using population projections from the U.S. Bureau of the Census.

Colorado must take action to realign its workforce and educational resources to better meet the state's future labor market demand. Right now, the majority of public postsecondary education and training resources are devoted to a comparatively small number of young people under the age of 25. These are crucial investments, but they must be accompanied by significant investments in the adult workforce, including training programs that will prepare many more Colorado residents who are now at the low-skill level for the middle-skill jobs and careers that have been, and will continue to be, the core of the state's economy.

Raising the education and basic skills attainment of the state's lowest skilled residents is key to closing Colorado's skills gap and is a significant challenge that must be addressed. Currently, 362,500 Coloradans age 18-64 do not have a high school diploma or GED<sup>8</sup>—equivalent to about 14 percent of Colorado's total workforce of 2.7 million.<sup>9</sup> Of these, only about 14,000—or approximately 4 percent—are enrolled in adult education programs.<sup>10</sup> Colorado currently appropriates zero state funding for adult basic education. As a result, Colorado ranks near the bottom among the states in providing resources for adult basic education.<sup>11</sup> To be competitive economically, Colorado must invest in adult basic education and reach more of the eligible adult population so that workers can enter and succeed in industry-recognized credentialing programs and other postsecondary education and training opportunities that will allow them to thrive in the 21st-century labor market.



## **STRATEGIES FOR CLOSING COLORADO'S MIDDLE-SKILL GAP**

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To close its middle-skill gap and drive an innovation economy, Colorado can adopt a policy framework that cuts across agencies and programs to support a robust workforce development system that responds to the reality of today's labor market needs. By drawing on a set of core strategies—credential attainment, career pathways, adult basic education, and sector partnerships—Colorado can grow an innovation workforce.

### ***Credential Attainment***

In the current fiscal climate it is more important than ever for Colorado to allocate education and training resources to achieve better outcomes for workers, industries, and the economy as a whole. But Colorado must first be able to measure what its current investments are buying before the state can hold those investments accountable to the demands of the labor market. That requires the collection and alignment of outcome data across multiple federal and state programs to support a robust workforce development system that is outcome driven and responds to the reality of the state's labor market needs. As Colorado is forced to do more with less, it is more important than ever for state policymakers to support stronger collaboration across their education and training systems to collect credential data and use this data to set goals and measure progress to strengthen the workforce.

### ***Career Pathways***

As mentioned previously, two-thirds of Colorado's workforce of 2025 was already in the workforce in 2010, beyond the reach of K-12 or traditional college access policy reforms. Career pathways expand access to workforce education and training for all workers by better aligning adult basic education, job training and higher education systems to create pathways to postsecondary educational credentials for people while they continue to work and support their families. Career pathways adapt existing programs and services—and add new ones—to enable individuals to advance to successively higher levels of education and employment. Where most effective, career pathways help transform institutions and organizations involved in education, employment and social services by strengthening cooperation to improve capacity to respond to the needs of workers and employers.

### ***Adult Basic Education***

Raising the education and basic skills attainment of Colorado's lowest skilled residents must be addressed in order to close the state's skills gap and prepare more Coloradans for the 21st-century labor market. Colorado should adopt a bold goal—with resources to match—to significantly increase the number people served by the state's adult basic education system so that more workers can develop the basic skills they need to enter and succeed in postsecondary education and training opportunities. Strategies that have succeeded elsewhere, such as Washington State's IBEST program, could work in Colorado. IBEST's accelerated learning model allows students to gain literacy (or language) and occupational skills at the same time. Integrated education and skills training helps educationally underprepared adults achieve success by combining basic skills and career-specific training that moves students further and faster toward certificate or degree completion and into the workforce.

### ***Sector Partnerships***

To foster an innovation economy, Colorado must ensure that investments in training and education are targeted to meet the full range of skill needs of local industries, and that all stakeholders connected to those industries are engaged to ensure the greatest return for local workers and firms. Sector partnerships do this by creating capacity to organize key stakeholders connected to an industry—multiple firms, labor, education and training providers, community-based organizations, trade associations, and the workforce and education systems—to develop customized solutions for that industry at the regional level. In addition, these partnerships improve worker training, retention and advancement by developing cross-firm skill standards, career pathways, job redefinitions, and shared training and support capacities that facilitate the advancement of workers at all skill levels, including the least skilled.



## CONCLUSION

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If Colorado is to realize its full economic potential, educational access must reflect the demands of a 21st-century economy and the realities of the 21st-century workforce. Given that the largest portion of Colorado jobs are at the middle-skill level and the majority of future workers are already in the workforce today, the most important thing the state can do is prepare today's workers for tomorrow's jobs. Therefore, the Skills2Compete-Colorado campaign supports the following vision for the state:

*Every Colorado resident should have access to the equivalent of at least two years of education or training past high school—leading to a vocational credential, industry certification, or one's first two years of college—to be pursued at whatever point and pace makes sense for individual workers and industries. Every person must also have access to the basic skills needed to pursue such education.*

It's an ambitious goal, but it can be achieved.

Middle-skill workers are at the heart of the Colorado's economic growth, and they will serve as the backbone of the state's economy for years to come. They will repair the state's roads and bridges, care for the sick and elderly, transport goods, keep Colorado communities safe, and provide a host of other services residents rely on daily.

Colorado needs greater investments and focus on middle-skill education and training as well as the basic skills education needed to achieve that training so that all residents have the opportunity to improve their skills and advance in their careers. Without these education and training opportunities, businesses and communities will suffer from a lack of qualified workers and economic recovery will be slowed.

**It is time for a bold, visionary step that will ensure all Colorado workers can be a part of economic recovery and secure the state's place in a 21st-century economy** — guaranteed access to at least two years of postsecondary education or training. This should be the guiding vision for Colorado's economic and education policy. It would provide the state's workers and businesses with the skills they need not only to rebuild and recover, but to compete in an increasingly competitive global marketplace.

How will Colorado do this? Leaders from the business, labor, and training communities are ready to roll up their sleeves and make it happen, if they are supported by strong political leadership and commitment. It is time for Colorado policymakers, educators, unions and businesses to unite with others around the country around this new vision, to champion the policies and strategies necessary to ensure that Colorado recovers and thrives, and that its workforce is at the forefront of the innovation economy.

## APPENDIX: METHODOLOGY

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**Table 1:** Based on occupational projections for 2009-2019 by the Colorado Department of Labor and Employment using a recategorization of occupations according to BLS Education and Training Categories.<sup>12</sup> Jobs requiring at least moderate-term on-the-job training, related work experience, a post-secondary vocational award, or an associate's degree were classified as middle-skill.

**Figure 1 and Table 2:** Data from the Bureau of Labor Statistics.<sup>13</sup> Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.<sup>14</sup>

**Figure 2 and Table 3:** Based on occupational projections for 2009-2019 by the Colorado Department of Labor and Employment. Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007.

**Figure 3:** Based on occupational estimates for 2009 by the Bureau of Labor Statistics, and December 2009 Current Population Survey (CPS) data on educational attainment by state.<sup>15</sup> Occupational categories (high, middle, low skill) based on the methodology used in Holzer and Lerman, 2007. Only workers in the labor market and at least 25 years of age (i.e., past traditional school age) are counted.

**Figures 4, 5, and 6:** Based on Current Population Survey (CPS) data for June 1995 and 2010<sup>16</sup> along with population projection data<sup>17</sup> by RAND California Statistics and labor force estimates<sup>18</sup> by the Bureau of Labor Statistics.

**1995, 2010 and 2025 Educational Attainment:** Past years educational attainment data reported only for workers in labor force and aged 25 and over, using CPS data. 2025 projections calculated using static educational attainment model presented in Hanak and Baldassarre, 2005.<sup>19</sup> In that model, educational attainment figures are calculated for the state's current workers (workers aged 25-49 in 2010) for each of eight different race, ethnicity, gender and age cohorts. Educational attainment for these cohorts is assumed to be static over the ensuing 15 years (2025), and educational attainment for new cohorts of workers (i.e., younger than 25 years in 2010) is assumed to mirror that of similar age-race-gender groups today. As such, changing educational attainment throughout the state's population is calculated based on projected demographic changes in the composition of the working population, and does not take into account possible changes in behavior, immigration, et.al.

**Figure 7:** Data from long-term population projections (2010 to 2025) by age cohorts, as calculated by the U.S. Census Bureau.<sup>20</sup> Each cohort was either classified as a "current working age adult" or "not a current working age adult" based solely on age. Current working age was defined as ages 20 to 64.



## ENDNOTES

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- 1 Labor Market Information (LMI) Gateway, *What industries are predicted to have the most future job openings in an area*, Colorado Department of Labor and Employment (Denver, CO, 2011). Available at: <http://lmigateway.coworkforce.com/lmigateway/saintro.asp?session=faq&faq=20>.
- 2 Bureau of Economic Analysis, *Regional Economic Accounts*, U.S. Department of Commerce (Washington, DC, 2009). Available at <http://www.bea.gov/regional/index.htm>.
- 3 CNN Money, *Fortune 500 Rankings* (2011). Available at <http://money.cnn.com/magazines/fortune/fortune500/2011/states/CO.html>.
- 4 Robert D. Atkinson and Scott Andes, *The 2010 State New Economy Index*, The Information Technology and Innovation Foundation and the Ewing Marion Kauffman Foundation (Washington, DC, 2010). Available at [http://www.kauffman.org/uploadedfiles/snei\\_2010\\_report.pdf](http://www.kauffman.org/uploadedfiles/snei_2010_report.pdf).
- 5 Sarah R. Crissey, *Educational Attainment in the United States: 2007*, U.S. Census Bureau (Washington, DC, 2009). Available at <http://www.census.gov/prod/2009pubs/p20-560.pdf>.
- 6 Harry Holzer and Robert Lerman, *America's Forgotten Middle-Skill Jobs: Education and Training Requirements in the Next Decade and Beyond*, National Skills Coalition (formerly The Workforce Alliance) (Washington, DC, 2007). Available at [http://www.nationalskillscoalition.org/assets/reports-/americasforgottenmiddleskilljobs\\_2007-11.pdf](http://www.nationalskillscoalition.org/assets/reports-/americasforgottenmiddleskilljobs_2007-11.pdf). While middle-skill jobs have declined slightly as a portion of total employment nationwide, roughly half of all employment today is in middle-skill occupations. And nearly half (about 45 percent) of all job openings between 2004 and 2014 will be at the middle-skill level. This compares with one-third of job openings in high-skill occupational categories and 22 percent in occupations requiring no more than a high school degree.
- 7 Holzer and Lerman, 2007. Between 1997 and 2005, American workers on the whole saw and overall real wage increase of just 5 percent (adjusting for inflation). At the same time, many middle-skill occupations saw significantly higher wage increases.
- 8 Rich Jones and Frank Waterous, *Opportunity Lost: 2010 Update*, The Bell Policy Center (Denver, Colorado, 2010). Available at: [http://bellpolicy.org/sites/default/files/OpportunityLostUpdate\\_2.pdf](http://bellpolicy.org/sites/default/files/OpportunityLostUpdate_2.pdf).
- 9 Colorado Fiscal Policy Institute, *Colorado Recovery Watch*, Colorado Center on Law and Policy (Denver, Colorado, September 2011). Available at [http://cclponline.org/publication\\_library/pub/single/1035/colorado-recovery-watch-13](http://cclponline.org/publication_library/pub/single/1035/colorado-recovery-watch-13).
- 10 Jones and Waterous, 2010.
- 11 Jones and Waterous, 2010.
- 12 Colorado Department of Labor and Employment. *Occupation Employment and Projections (Long-Term) 2009-2019* (Denver, Colorado, 2010). Available at [http://lmigateway.coworkforce.com/lmigateway/analyzer/session/session.asp?cat=HST\\_EMP\\_WAGE\\_OCC](http://lmigateway.coworkforce.com/lmigateway/analyzer/session/session.asp?cat=HST_EMP_WAGE_OCC).
- 13 Bureau of Labor Statistics, *May 2009 State Occupational Employment and Wage Estimates* (Washington, DC, 2010). Available at <http://data.bls.gov:8080/oes/search.jsp>.
- 14 Holzer and Lerman, 2007, p. 9.
- 15 U.S. Census Bureau, *Current Population Survey*.
- 16 U.S. Census Bureau, op.cit.
- 17 RAND California Statistics, *Population Projections for U.S. States*. Available at: <http://ca.rand.org/stats/popdemo/popprojUS.html>.
- 18 Colorado Department of Labor and Employment. *Labor Force Data*. Available at [http://lmigateway.coworkforce.com/lmigateway/analyzer/session/session.asp?cat=HST\\_EMP\\_WAGE\\_LAB\\_FORCE](http://lmigateway.coworkforce.com/lmigateway/analyzer/session/session.asp?cat=HST_EMP_WAGE_LAB_FORCE).
- 19 Ellen Hanak and Mark Baldassare, *California 2025: Taking on the Future* (Public Policy Institute of California, San Francisco, 2005), pp. 44-45.
- 20 RAND California Statistics, op. cit.