TIP strategies

LABOR MARKET PROFILE

Prepared for the City of Fort Collins
September 2014

ABOUT THIS WORK

TIP Strategies would like to thank the City of Fort Collins for their time and guidance in the preparation of this labor market profile. We would also like to thank the many businesses who participated in the survey conducted as part of this work. Their insights greatly contributed to our understanding of the area's workforce, its challenges, and its opportunities.

THE CITY OF FORT COLLINS

Located in northern Colorado, Fort Collins is home to Colorado State University and an outstanding public school system. Nestled at the base of the Rocky Mountains, Fort Collins offers exciting recreational opportunities, unique cultural offerings, and is a regional center for employment and shopping. Throughout the year, live music and entertainment, as well as great local dining, can be found throughout the historic downtown area. Fort Collins offers the convenience of a small town with all the amenities of a larger city.

TIP STRATEGIES, INC.

TIP Strategies, Inc. is a privately held Austin-based economic development consulting firm committed to providing quality solutions for public and private sector clients. Established in 1995, the firm's primary focus is strategic economic development planning. In addition, TIP has experience with entrepreneurship, target industry analysis, workforce, and redevelopment. TIP's methods establish a clear vision for economic growth. Community leaders across the country have embraced the TIP model of Talent, Innovation, and Place to achieve successful and sustainable economies.

106 East 6th Street, Suite 550
Austin, Texas 78701
www.tipstrategies.com
PH: 512.343.9113

CONTENTS

INTRODUCTION

Larimer County employers are not alone in facing challenges filling key positions, especially in the context of a regional energy boom. The "skills gap" is at the center of attention in economic and workforce development conversations both nationally and internationally. Despite elevated numbers of unemployed, employers are still having difficulty finding the talent that they need. In 2013, Manpower, which conducts an annual talent shortage survey, found that 39 percent of US companies were struggling to fill key jobs.

The "skills gap" describes the difference between the skills employers seek and the skills workers have.

REASONS FOR THE SKILLS GAP

A number of reasons for the skills gap have been suggested by researchers investigating the issue. These reasons include:

- **Changing Skills.** With heightened automation, changes in technology, and evolving processes, the skills required of the workers have evolved. Mature workers often find themselves with skill sets that have not kept pace with current needs. In addition, training programs are not always as dynamic as the workplace and may not be teaching the skills needed by the employers.
- **Demographics.** The aging of the Baby Boomers has resulted in a wave of retirements that is looming large, particularly in many of the middle skills occupations—machinists, craft trades, utility linemen, and many others. The talent pipeline is not currently robust enough to fill the openings left by these retirements.
- **Policies and Priorities.** The focus on four-year degrees may have had the unintended consequence of siphoning students from vocational and technical training.
- **Culture.** Many young people today are not interested in pursuing careers in the occupations that are difficult to fill. In a recent survey by Nuts, Bolts, and Thingamajigs, The Foundation of the Fabricators & Manufacturers Association, 52 percent of teenagers ages 13 to 17 had little to no interest in manufacturing. Parents and their children often hold negative perceptions of manufacturing and trade jobs. Others are simply unaware of the opportunities in these careers.
- **Field of Study Choice.** Students often choose their field of study based on personal interest, rather than labor market information. This contributes to a mismatch between the supply of and demand for graduates of post-secondary education programs.

These and other reasons contribute to the growing divide between skills employers seek and skills workers have.

THE RESPONSE

To better understand the Larimer County labor market and its challenges, the City of Fort Collins hired TIP Strategies to assist in developing a detailed labor market profile. This profile examines the regional labor force, drivers of demand, and occupational strengths. It also looks at staffing environment indicators to identify occupations that are hard to fill and expected to be high in demand. The education and training landscape is also summarized. Next, detailed occupational profiles of key talent clusters and industry sectors are provided. Finally, the results of a regional employer survey are presented.

KEY FINDINGS

Larimer County has a high labor force participation rate with a pool of just over 175,000 workers who are aged 16 and older and either employed or seeking employment.

The unemployment rate in the region is consistently lower than Colorado's and the nation's. During the recession, the Larimer County economy proved to be resilient with the unemployment rate rising only to just over eight percent and staying, on average, two percentage points under the state's post-recession.

In general, the labor force is relatively young and highly educated. In fact, 47 percent of Larimer County's labor force has a bachelor degree or higher. Yet, only 23 percent of the jobs in the region require a college degree. This indicates a mismatch between the educational attainment of the population and the educational requirements of the region's jobs. This mismatch likely results in a high degree of under-employment. It is also a likely explanation of why the region exports almost 45,000 workers each day and why it has difficulty retaining its young residents.

To improve the alignment of the skills the region's workers have and the skills the region's employers need, it is useful to understand the key occupations that support the region's economic drivers.

As in most regions, many of Larimer County's fastest growing industries are service industries that support the population—retail, restaurants, hospitality, and personal services. The occupations that are related to these services are relatively low paying—retail salespeople, food prep, waiters, cashiers, and janitors. The region has an over-qualified workforce to meet the needs of these industries. It also has such a high quality of place that over-qualified workers will choose to take these jobs.

An analysis of the staffing environment in the county revealed 29 occupations that are likely to be hard to fill currently based on rapidly rising demand and/or higher than expected wages. The analysis shows that companies in Larimer County face a difficult staffing environment in many of the areas that have been identified as national shortages—sales representatives, IT staff, skilled trades (i.e., welders), mechanics, and managers. In addition, most of the occupations are expected to grow over the next five years and 12 of the occupations are already paying wage premiums higher than 10 percent over the national average. One notable difference in the hard to fill occupations in Larimer County, however, is that only about 10 percent of these occupations are facing a sizeable wave of retirements. Nationally, the aging of the workforce is a primary challenge in many of the occupations that are hardest to fill.

A closer look into the region's primary private sector industries is more revealing. This report examines four industry sectors in detail and profiles the talent clusters that support them. The four industry sectors are manufacturing, healthcare, IT and software development, and R&D and engineering. The talent clusters are engineering and technical, information technology, sales and operations, and healthcare.

The primary conclusion from this analysis is that the alignment between the education and training infrastructure and the needs of the region's employers can be strengthened. In the survey conducted as part of this study, employers reported that they recruit most of their professional and technical workers as well as skilled labor from outside of Larimer County. A study of the region's primary education institutions shows that the region graduates about 14,000 students each year. However, most of these students choose fields of study are that are not related to the occupations that are most critical to the region's key industries. In fact, a number of the critical occupations in the talent clusters do not have any completions from regional institutions.

Better alignment of the skills of the region's graduates and the needs of the region's employers could improve the staffing environment for the region's employers and facilitate the retention of the region's graduates.

GENERAL CHARACTERISTICS OF THE LABOR FORCE

The Larimer County civilian labor force consisted of just over 175,000 individuals in 2012. The labor force represents the region's civilian pool of labor age 16 and older—both employed and unemployed.

High labor force participation. In spite of the large population of college students, the region's labor force participation rate is relatively high compared to both the state (67.9 percent) and the nation (63.4 percent).

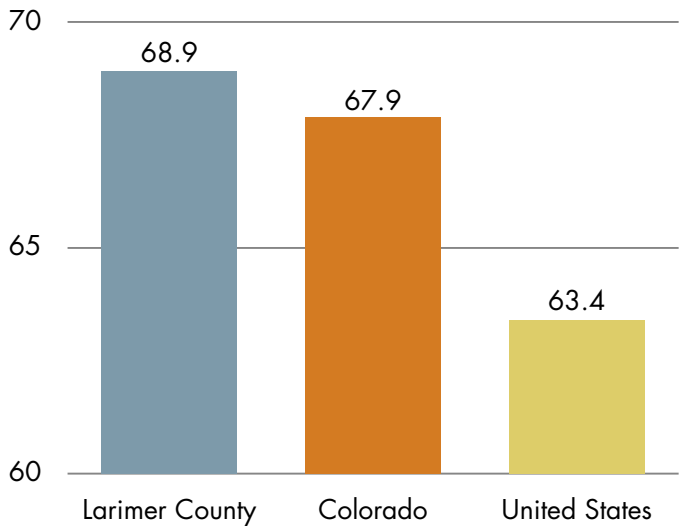
Low unemployment. Prior to the recession, the county's unemployment rate was, on average, lower than that of the state and the nation by 0.6 percent and 0.8 percent, respectively. During the recession, Larimer County's unemployment rate peaked at just over 8 percent, while Colorado's and the US' peaked around 10 percent. After the recession, Larimer County's unemployment rate was, on average, 1.3 percentage points lower than Colorado's and 2.0 percentage points lower than the nation's.

CIVILIAN LABOR FORCE

175,142

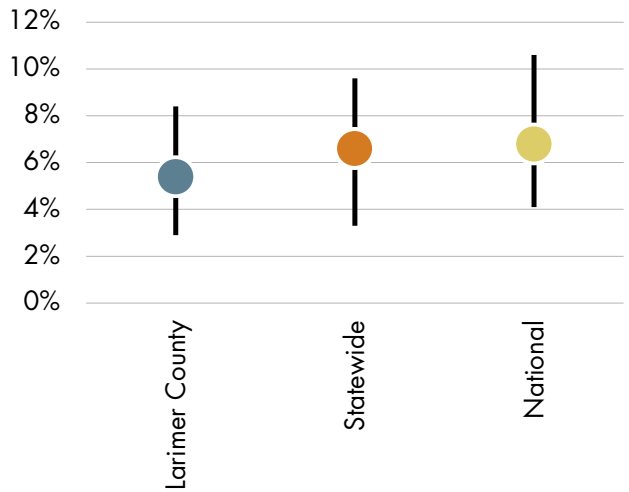
LABOR FORCE PARTICIPATION RATE

Civilian Labor Force, % of Total
2012



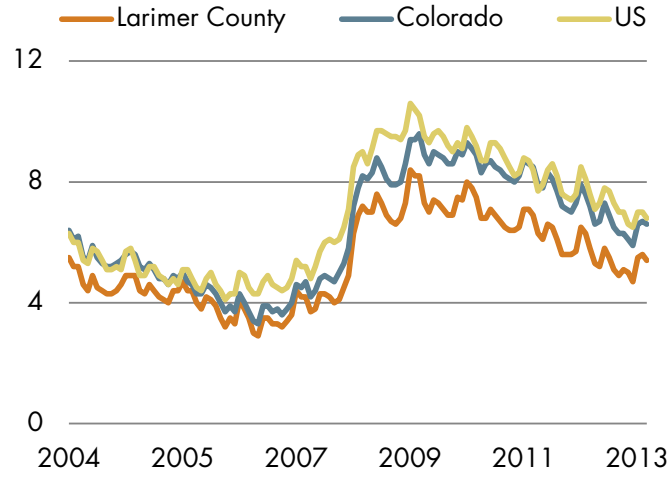
UNEMPLOYMENT RATE RANGE

2004-2014



UNEMPLOYMENT RATE

2004-2014

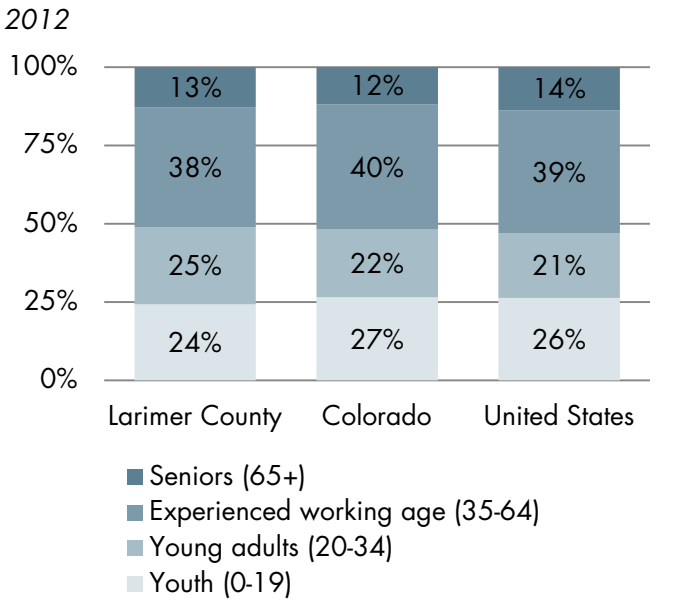


Source: US Bureau of Labor Statistics–CPS (US) & LAUS (State & County), US Census Bureau–American Community Survey.

Young population. The age distribution of Larimer County's population reflects the presence of Colorado State University. The county's young adult population represents a significantly higher share of the overall population than that of Colorado and the US. Youth and experienced working age cohorts represent a relatively small share of the overall population in the county, this implies a smaller share of families with children than the state and the nation. The share of seniors in the Larimer County population falls in between the state's and the nation's.

High educational attainment. The labor force of Larimer County is highly educated, with over 47 percent of the population attaining at least a bachelor's degree. Only 23 percent of this population has a high school diploma or less.

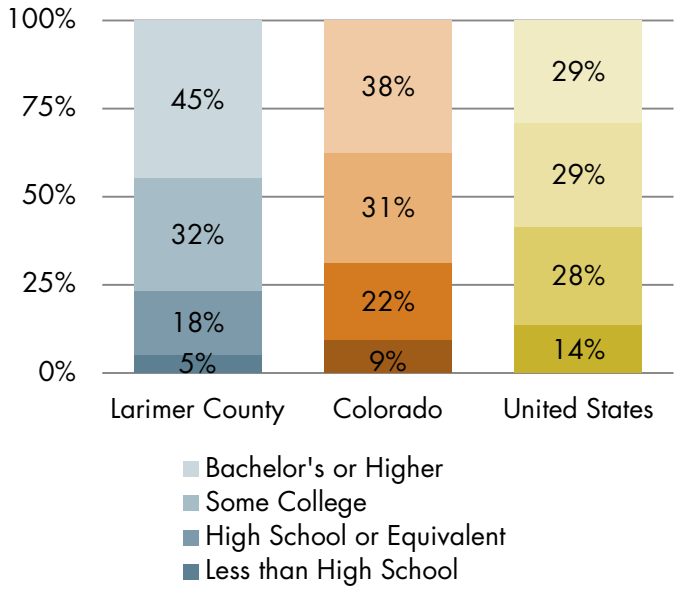
AGE DISTRIBUTION



High under-employment. The comparison of the educational requirements of the region's job base and the educational attainment of the population (25 years and older) reveals a mismatch. Though 47 percent of the population has a bachelor's degree or higher, only 23 percent of the jobs require a degree. This type of mismatch is an indicator of under-employment and shows that a significant segment of the county's labor force is under-utilized.

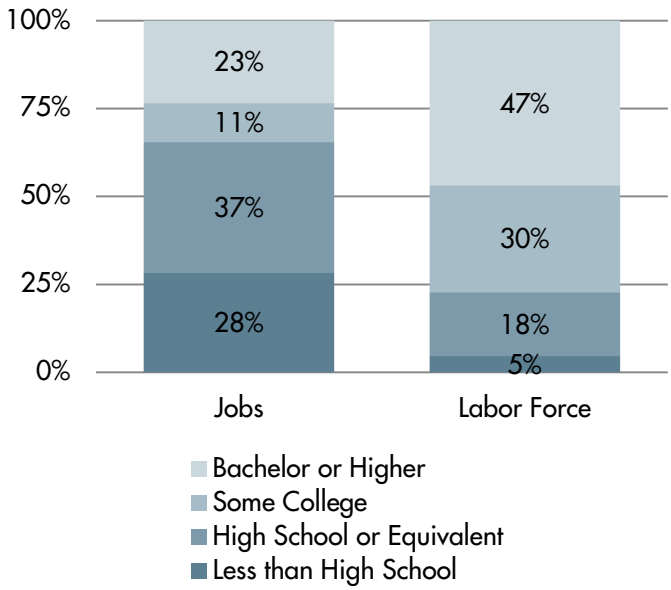
EDUCATIONAL ATTAINMENT

Population 25 Years and Older
2012



COMPARISON: JOBS VS EDUCATION

Comparison of educational requirements of jobs versus educational attainment in Larimer County



Source: US Census Bureau–American Community Survey, EMSI Complete Employment 2014.1

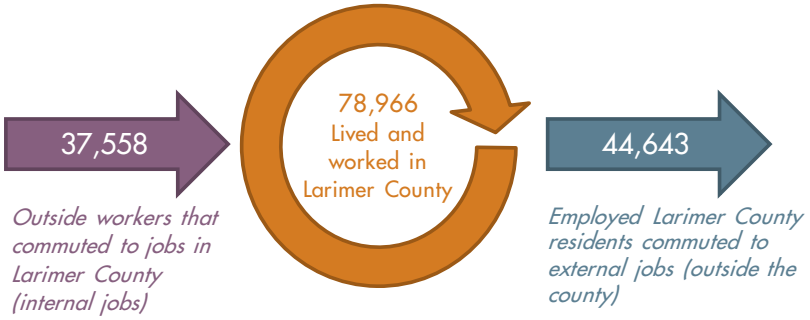
COMMUTING PATTERNS AND LABORSHED

Commuting patterns data were compiled from the US Census Bureau's Local Employment Dynamics (LED) program, which derives its commuter data based largely on those workers covered by unemployment insurance and federal workers.

Larimer County is a **net exporter of labor**, which indicates a mismatch between the skills residents have and the workers local employers need. The primary consequences of this include a reduction in daytime population and longer commuting distances, which have implications on tax revenues, quality of life, and the environment. *Capturing a larger share of outbound commuters represents an opportunity for Fort Collins.*

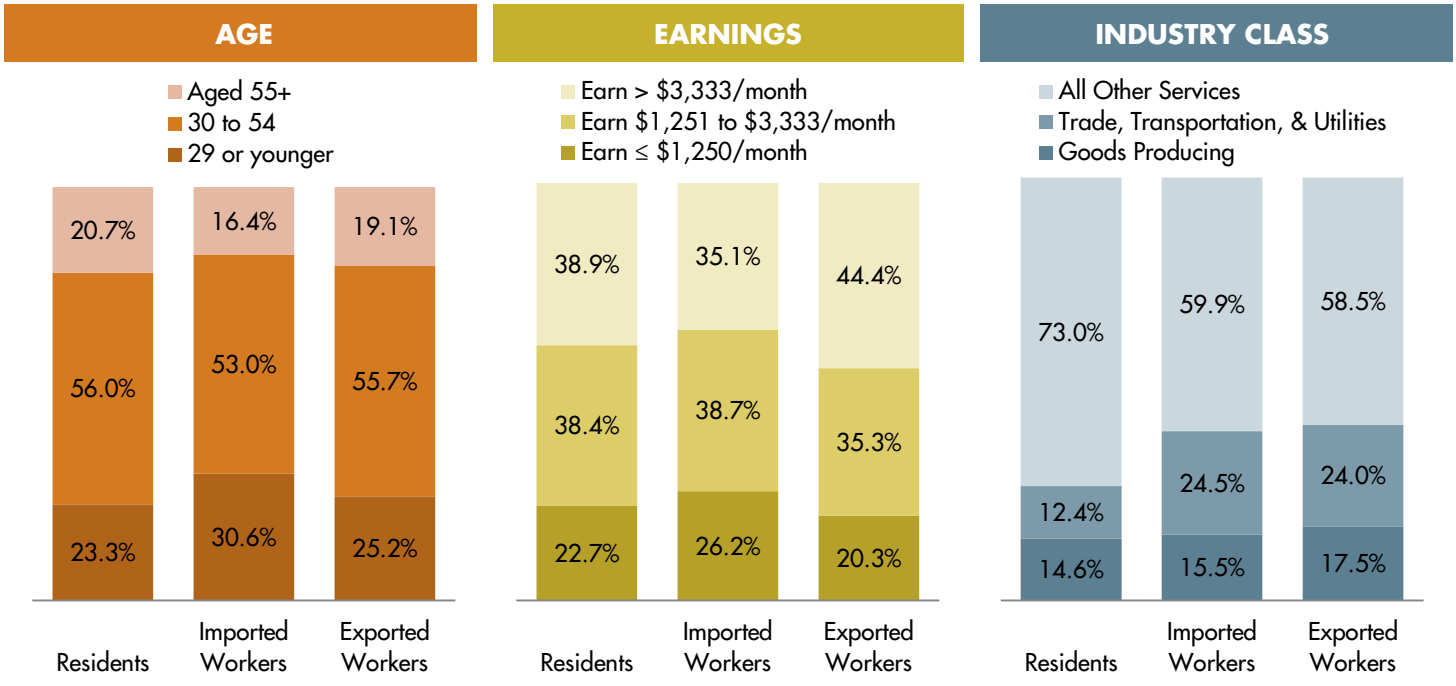
A look at select characteristics of commuters by type reveal that commuters out of the county tend to earn higher wages and are less likely to work in the service sector than those residents that live and work in the county.

OVERVIEW OF LARIMER COUNTY COMMUTING FLOWS



Larimer County is a net exporter of labor—about 7,000 more residents leave the county for work than commute into the county.

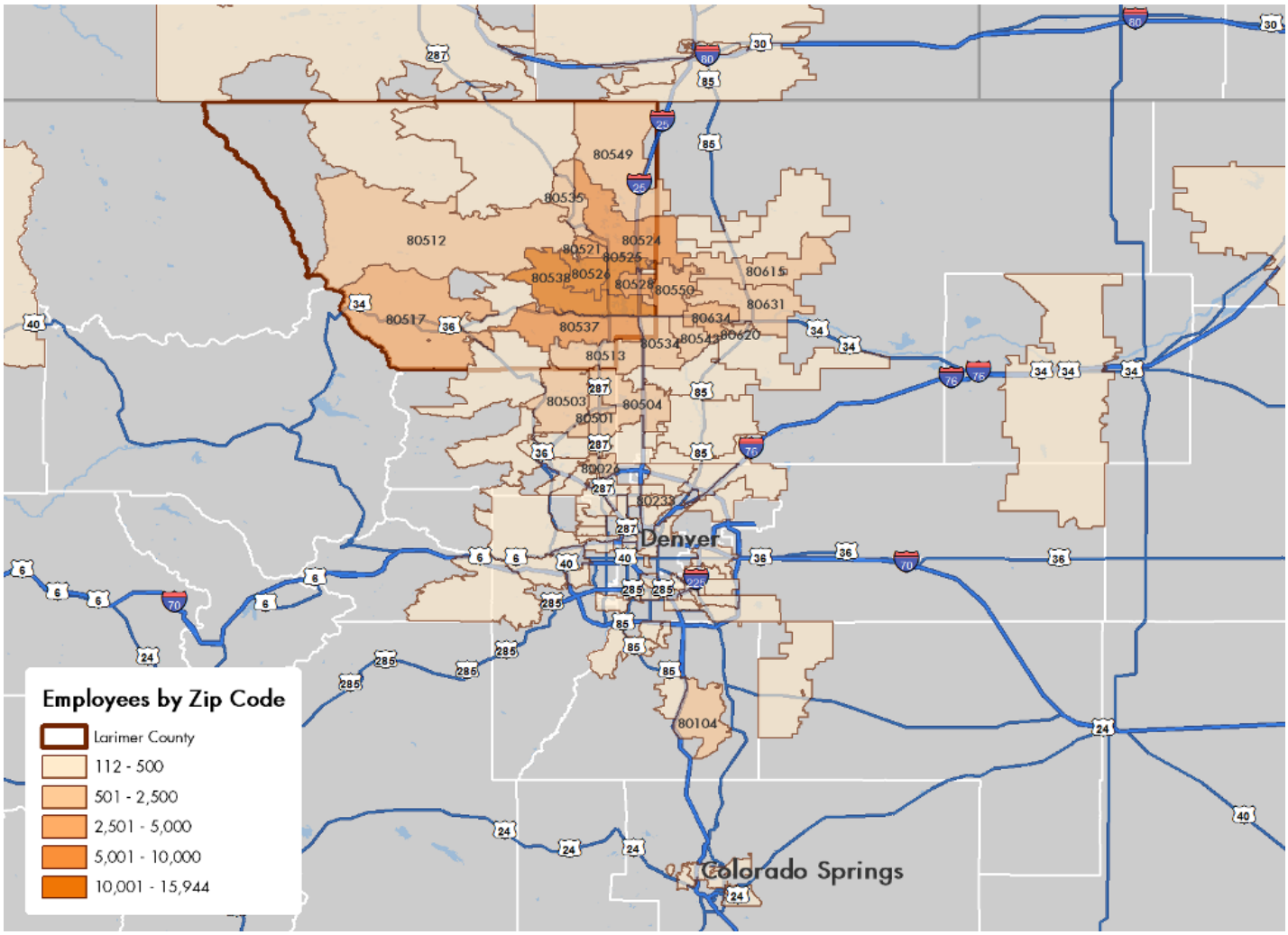
SELECTED CHARACTERISTICS OF COMMUTERS BY TYPE OF FLOW (INTERNAL/EXTERNAL)



Source: US Census Bureau, OnTheMap Application, and LEHD Origin-Destination Employment Statistics. Most recent available at time of analysis (i.e., beginning of quarter employment, 2nd quarter of 2002-2011). Note: Demographic statistics are beta results and are not available prior to 2009. Educational Attainment is only produced for workers aged 30 and over.

LARIMER COUNTY LABOR SHED

EMPLOYEES BY ZIP CODE, 2011



Source: US Census Bureau, OnTheMap Application, and LEHD Origin-Destination Employment Statistics.

The county's large labor shed demonstrates that it functions as a **regional employment center**. The vast majority of the labor force lives in Northern Colorado's population centers along Interstate 25—Fort Collins, Loveland, Greeley, and Windsor. However, the map shows that some workers commute long distances to work in Larimer County.

The primary axis of the labor shed extends north-south almost 170 miles as far south as Colorado Springs and as far north as Cheyenne and Laramie. Highway 34 is the primary east-west axis of the labor shed, extending from Estes Park about 100 miles east to Fort Morgan.

Labor shed by zip code

Top 10 sources of workers

	Zip Code	City	Count	% of total
1	80525	Fort Collins	15,944	12.8%
2	80526	Fort Collins	14,341	11.6%
3	80538	Loveland	11,149	9.0%
4	80524	Fort Collins	9,595	7.7%
5	80537	Loveland	9,128	7.4%
6	80521	Fort Collins	8,256	6.7%
7	80528	Fort Collins	5,484	4.4%
8	80550	Windsor	4,316	3.5%
9	80634	Greeley	3,642	2.9%
10	80517	Estes Park	2,607	2.1%

PEOPLE WHO WORK IN LARIMER COUNTY

More than half of the workers in Larimer County travel less than 10 miles between home and work. Another 20 percent travel 10 to 24 miles to work.

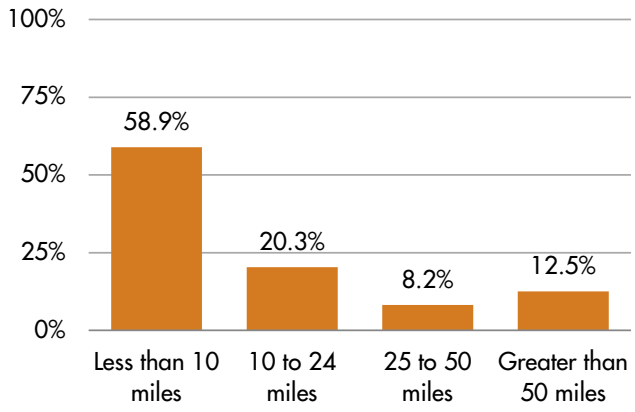
Almost 50 percent of the workers in the county live in Fort Collins and Loveland. Seven percent of the workers live in Greeley and Windsor. Workers from Wellington and Estes Park account for almost 3 percent of the workers in the county. Colorado Springs supplies just over 1 percent of the workers in Larimer County.

The majority (55 percent) of workers are between 30 and 54 years of age. One quarter have at least a bachelor's degree or higher and another quarter have at least some college or an associate's degree. Thirty-nine percent earn between $1,250 and $3,333 while another 38 percent earn over $3,333.

CHARACTERISTICS OF PEOPLE WHO WORK IN LARIMER COUNTY, 2011

Commute distance for Larimer County workers

Share by distance traveled between work and home

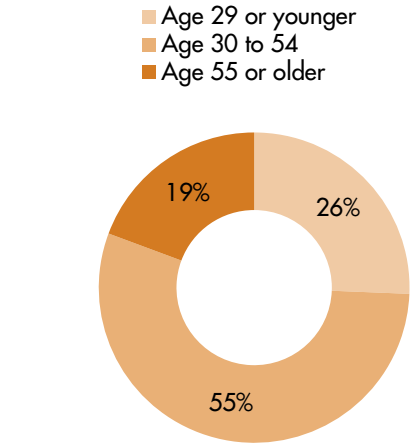


Where Larimer County workers live

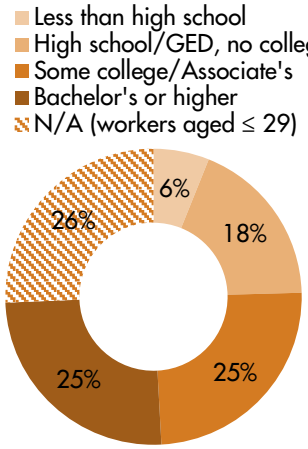
Top 10 sources of workers

	City	Count	% of total
1	Fort Collins, CO	41,878	35.9%
2	Loveland, CO	15,569	13.4%
3	Greeley, CO	4,764	4.1%
4	Windsor, CO	3,792	3.3%
5	Denver, CO	2,244	1.9%
6	Wellington, CO	1,658	1.4%
7	Longmont, CO	1,629	1.4%
8	Colorado Springs, CO	1,519	1.3%
9	Estes Park, CO	1,442	1.2%
10	Aurora, CO	1,287	1.1%

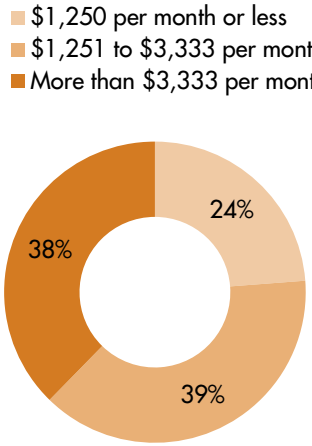
AGE



EDUCATIONAL ATTAINMENT



EARNINGS



Source: US Census Bureau, OnTheMap Application, and LEHD Origin-Destination Employment Statistics. Most recent available at time of analysis (i.e., beginning of quarter employment, 2nd quarter of 2002-2011). Note: Demographic statistics are beta results and are not available prior to 2009. Educational Attainment is only produced for workers aged 30 and over.

PEOPLE WHO LIVE IN LARIMER COUNTY

Almost 55 percent of the people who live in Larimer County travel less than 10 miles between work and home. Another 19 percent travel between 10 and 24 miles between home and work.

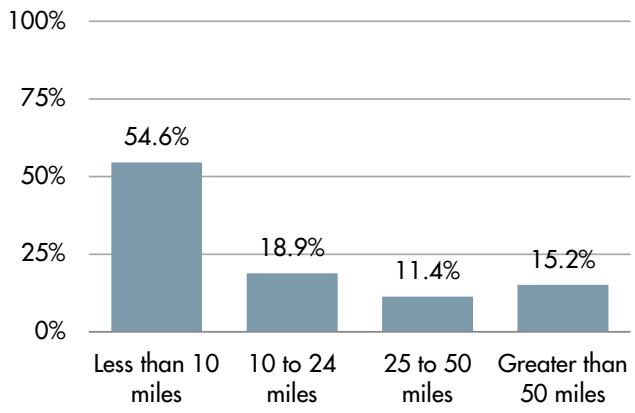
The majority of employed residents (51.7 percent) work in Fort Collins and Loveland. Estes Park employs another 1.6 percent. About 5 percent of employed residents commute to Denver and almost 4 percent work in Greeley. Longmont, Boulder, Windsor, Colorado Spring, and Aurora are other major destinations that employ workers from Larimer County.

Fifty-six percent of the employed residents are between 30 and 54 years of age. Twenty-six percent hold a bachelor's degree or higher and another 25 percent have attended college or earned an associate's degree. Thirty-seven percent earn between $1,251 and $3,333 and 41 percent earn more than $3,333.

CHARACTERISTICS OF EMPLOYED PEOPLE WHO LIVE IN LARIMER COUNTY, 2011

Commute distance for Larimer County residents

Share by distance traveled between work and home

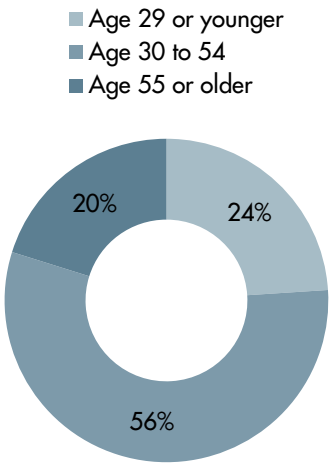


Where Larimer County residents work

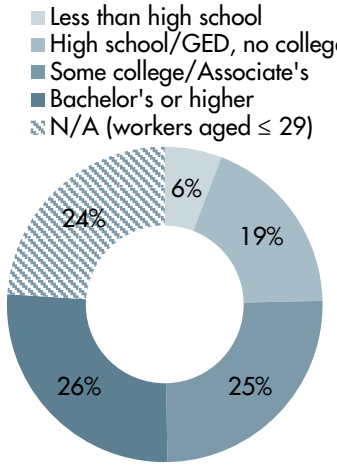
Top 10 destinations for job holders, 2011

	City	Count	% of total
1	Fort Collins, CO	48,750	39.4%
2	Loveland, CO	15,265	12.3%
3	Denver, CO	6,020	4.9%
4	Greeley, CO	4,735	3.8%
5	Longmont, CO	3,593	2.9%
6	Boulder, CO	3,568	2.9%
7	Windsor, CO	2,427	2.0%
8	Estes Park, CO	1,976	1.6%
9	Colorado Springs, CO	1,795	1.5%
10	Aurora, CO	1,511	1.2%

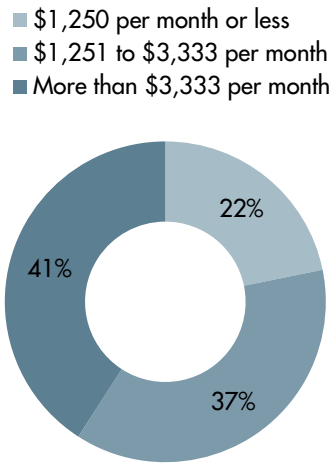
AGE



EDUCATIONAL ATTAINMENT



EARNINGS



Source: US Census Bureau, OnTheMap Application, and LEHD Origin-Destination Employment Statistics. Most recent available at time of analysis (i.e., beginning of quarter employment, 2nd quarter of 2002-2011). Note: Demographic statistics are beta results and are not available prior to 2009. Educational Attainment is only produced for workers aged 30 and over.

REGIONAL DEMAND FOR WORKERS

DRIVERS OF OCCUPATIONAL DEMAND

TOP INDUSTRIES IN LARIMER COUNTY

Rank	Employment	LARGEST, 2013	Earnings per Worker
1	12,395	Education and Hospitals (State Government)	$44,615
2	7,412	Education and Hospitals (Local Government)	$44,194
3	7,005	Full-Service Restaurants	$19,261
4	6,271	Local Government, Excluding Education and Hospitals	$63,943
5	5,941	Limited-Service Eating Places	$14,654
6	3,697	General Medical and Surgical Hospitals (Private)	$62,183
7	3,124	Offices of Physicians	$104,698
8	3,112	Services to Buildings and Dwellings	$22,819
9	2,929	Building Equipment Contractors	$59,430
10	2,791	Employment Services	$32,908

Rank	Change	FASTEST-GROWING, 2013-2018 (#)	Earnings per Worker
1	+1,268	General Medical and Surgical Hospitals (Private)	$62,183
2	+1,237	Education and Hospitals (State Government)	$44,615
3	+760	Business Support Services	$31,115
4	+659	Full-Service Restaurants	$19,261
5	+641	Education and Hospitals (Local Government)	$44,194
6	+632	Other General Merchandise Stores	$27,708
7	+628	Computer Systems Design and Related Services	$87,061
8	+560	Limited-Service Eating Places	$14,654
9	+412	Local Government, Excluding Education and Hospitals	$63,943
10	+410	Offices of Physicians	$104,698

Rank	Change	FASTEST-GROWING, 2013-2018 (%)	Earnings per Worker
1	94%	Communications Equipment Manufacturing	$149,482
2	46%	Specialty (except Psychiatric and Substance Abuse) Hospitals (Private)	$50,229
3	39%	Business Schools, Computer, Management Training (Private)	$46,314
4	38%	Promoters of Performing Arts, Sports, and Similar Events	$25,206
5	36%	Miscellaneous Durable Goods Merchant Wholesalers	$41,028
6	35%	Office Administrative Services	$80,003
7	34%	General Medical and Surgical Hospitals (Private)	$62,183
8	34%	Business Support Services	$31,115
9	33%	Nondepository Credit Intermediation	$103,540
10	31%	Colleges, Universities, and Professional Schools (Private)	$30,868

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

Larimer County's labor market is defined by its top industries—post-secondary education, healthcare, government, and services that support those industries and the population (restaurants, construction, building services).

In many cases, the top industries are also the fastest growing industries—healthcare, education, restaurants. However, business support services and computer system design are rising to prominence in the region.

The industries that are expected to experience the largest percentage growth show a diverse set of emerging industries—manufacturing, healthcare, education and training, arts, wholesale trade, and other business support.

OVERVIEW OF OCCUPATIONAL DEMAND

TOP OCCUPATIONS IN LARIMER COUNTY

Rank	Employment	LARGEST, 2013	Median hourly earnings
1	6,028	Retail Salespersons	$10.42
2	5,355	Food Prep & Serving	$8.76
3	4,833	Secretaries & Administrative Assistants	$15.38
4	3,527	Waiters & Waitresses	$8.89
5	3,392	Postsecondary Teachers	$28.01
6	3,083	Cashiers	$9.23
7	2,878	Registered Nurses	$29.07
8	2,780	Janitors & Cleaners	$10.75
9	2,639	Office Clerks, General	$13.51
10	2,222	Bookkeeping, Accounting, & Auditing Clerks	$15.46

Rank	Annual Openings	FASTEST-GROWING, 2013-2018 (#)	Median hourly earnings
1	+323	Food Prep & Serving	$8.76
2	+296	Retail Salespersons	$10.42
3	+234	Waiters & Waitresses	$8.89
4	+201	Registered Nurses	$29.07
5	+181	Cashiers	$9.23
6	+127	Secretaries & Administrative Assistants	$15.38
7	+126	Customer Service Representatives	$13.80
8	+124	Postsecondary Teachers	$28.01
9	+108	Janitors & Cleaners	$10.75
10	+106	Office Clerks, General	$13.51

Rank	% LQ Growth (5-yr)	RAPIDLY INCREASING DEMAND	% Job Growth (5-yr)
1	21%	Lodging Managers	26%
2	19%	Tax Preparers	23%
3	19%	Appraisers & Assessors of Real Estate	24%
4	14%	Computer-Controlled Machine Tool Operators	16%
5	13%	Packaging & Filling Machine Operators & Tenders	9%
6	12%	Industrial Machinery Mechanics	18%
7	9%	Physician Assistants	32%
8	8%	Computer Network Support Specialists	12%
9	8%	Computer User Support Specialists	19%
10	4%	Physicians & Surgeons, All Other	18%

Source: QCEW Employees, Non-QCEW Employees, & Self-Employed–EMSI 2013.4 Class of Worker.

Note: Location Quotients (LQs) show how the occupation's share of total local employment compares to its share nationally. LQs of greater than 1 indicate that occupations that have a larger share of total employment in Larimer County than they do nationally. LQs of 1.25 or higher are interpreted to mean that Larimer County is relatively specialized in those areas.

Larimer County's top occupations are, for the most part, a reflection of its top industries. Food prep, waiters, postsecondary teachers, registered nurses, and janitors map directly to the region's top industries. Other occupations, such as retail salespersons and cashiers, are in line with national trends in service sector growth.

Looking at demand in terms of percentages and relative concentrations reveals which occupations have experienced unusually high demand in recent years. Regional growth in hospitality, manufacturing, healthcare, and IT is responsible for much of this unusually high-demand growth.

OVERVIEW OF OCCUPATIONAL DEMAND

TOP OCCUPATIONS IN LARIMER COUNTY

Rank	Change	FASTEST-DECLINING, 2013-2018 (#)	Median hourly earnings
1	-163	Computer Hardware Engineers	$52.89
2	-136	Farmers, Ranchers, & Other Agricultural Managers	$11.17
3	-55	Electrical & Electronic Equipment Assemblers	$13.53
4	-47	Cabinetmakers & Bench Carpenters	$12.17
5	-37	Construction Managers	$26.97
6	-34	Travel Agents	$12.46
7	-34	Real Estate Sales Agents	$20.70
8	-21	Childcare Workers	$8.39
9	-18	Door-to-Door Sales Workers, News & Street Vend., & Related…	$7.01
10	-14	Data Entry Keyers	$13.27

Rank	Change	FASTEST-DECLINING, 2013-2018 (%)	Median hourly earnings
1	-52%	Travel Agents	$12.46
2	-33%	Farmers, Ranchers, & Other Agricultural Managers	$11.17
3	-30%	Reporters & Correspondents	$16.64
4	-21%	Cabinetmakers & Bench Carpenters	$12.17
5	-19%	Furniture Finishers	$14.15
6	-18%	Dental Laboratory Technicians	$19.95
7	-17%	Computer Hardware Engineers	$52.89
8	-15%	Meter Readers, Utilities	$19.70
9	-15%	Door-to-Door Sales Workers, News & Street Vend., & Related…	$7.01
10	-15%	Floral Designers	$11.88

Source: QCEW Employees, Non-QCEW Employees, & Self-Employed–EMSI 2013.4 Class of Worker.

On the other end of the spectrum are the occupations for which demand is expected to decline. At the top of the list is Computer Hardware Engineers. The decline in demand for this occupation, as well as for electrical and electronic equipment assemblers, most likely reflects the computer hardware industry's ongoing restructuring.

The declining demand for Agricultural Managers, Travel Agents, Reporters, Door-to-Door Sales Workers, and Floral Designers reflect long-term national industry trends and technological innovations that are displacing some of these workers.

The presence of some construction-related occupations is most likely a reflection of how hard this industry was hit during the most recent recession. Because these figures are projections that are based on historical trends, they most likely do not capture the construction industry's recovery in Larimer County. With large construction projects—such as the Woodward Headquarters, the renovation of Foothills Mall, the Banner Health Campus, and the reconstruction of flood-damaged areas of the county—demand for these types of construction workers is likely higher than these projections reflect.

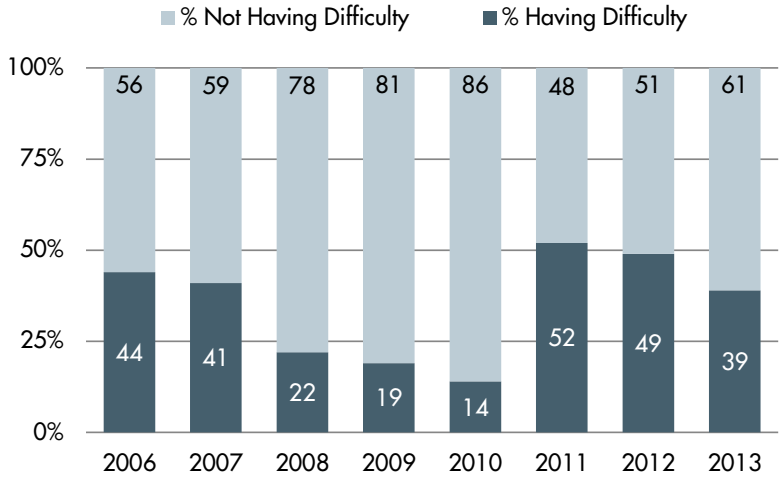
STAFFING ENVIRONMENT

Across the US, companies are having difficulty filling certain positions. In spite of the high unemployment rolls, many employers cannot find the talent they need. In Manpower Group's most recent national talent shortage survey, 39 percent of the companies surveyed reported difficulty filling jobs.

According to this survey, skilled trades—which include occupations such as machinists, electricians, welders, and pipefitters—are the most difficult jobs to fill. Sales representatives and drivers round out the list of the top three. Other difficult to fill jobs include IT staff, accounting and finance staff, engineers, technicians, management, mechanics, and teachers.

Sharply rising demand and higher than expected wages can be indicators of a difficult staffing environment. The occupations listed on the following page are likely to be difficult to fill as indicated by the demand and wage environment in Larimer County. These occupations face rising demand, rising wages, and/or a wave of retirements.

2013 NATIONAL TALENT SHORTAGE SURVEY



TOP 10 JOBS EMPLOYERS ARE HAVING DIFFICULTY FILLING

1	Skilled Trades
2	Sales Representatives
3	Drivers
4	IT Staff
5	Accounting & Finance Staff
6	Engineers
7	Technicians
8	Management/Executive
9	Mechanics
10	Teachers

Source: Manpower, *2013 Talent Shortage Survey Research Results.*

The list of hard to fill occupations for Larimer County includes many of the same types of occupations that are on the list for the nation. Sales representatives, IT staff, skilled trades (i.e., welders), mechanics, and managers are all expected to be in demand and difficult to fill in Larimer County.

Note that some of the occupations on this list are projected to experience declines in demand. However, these positions still have a significant number of openings due to turnover. In other words, even if there are no new positions, positions that are vacated must be filled. These represent replacement jobs.

Significant wage premiums, as indicated by a median hourly wage greater than 110% of the US median, are also indicators that local employers have difficulty recruiting talent to those positions. Machine operators and tenders pay one of the highest premiums, followed by physicians, electronics engineers, and police officers.

Two of the occupations face a potential wave of retirements in the near future. For physicians and purchasing agents, the share of workers 55 and older is 25 percent or more.

HARD-TO-FILL OCCUPATIONS

STATISTICAL OVERVIEW FOR SELECT OCCUPATIONS

SOC Code	Description	Location Quotient (LQ) 2013	Employment 2013 (estimated)	Employment 2018 (projected)	Median Hourly Earnings	% of US Median	Job Openings, 2013-2018 Total (projected)	Job Openings, 2013-2018 % New Growth	Job Openings, 2013-2018 % Replacement	Share of workers age 55+
41-4012	Sales Representatives, Wholesale and Manufacturing	0.96	1,500	1,576 ▲	**$22.85**	88%	235	32%	68%	23%
15-1133	Software Developers, Systems Software	2.98	1,273	1,264 ▼	**$48.67**	103%	94	0%	100%	12%
17-2061	Computer Hardware Engineers	10.92	940	777 ▼	**$52.89**	110%	89	0%	100%	13%
49-3023	Automotive Service Technicians and Mechanics	1.15	875	884 ▲	$18.45	**113%**	143	6%	94%	13%
41-3099	Sales Representatives, Services, All Other	0.97	784	849 ▲	**$23.24**	96%	183	36%	64%	20%
15-1151	Computer User Support Specialists	1.26	782	886 ▲	**$23.30**	104%	171	61%	39%	16%
33-3051	Police and Sheriff's Patrol Officers	0.88	597	649 ▲	**$32.50**	**122%**	151	34%	66%	21%
29-2061	Licensed Practical and Licensed Vocational Nurses	0.67	521	624 ▲	**$20.90**	105%	175	59%	41%	24%
17-2141	Mechanical Engineers	1.70	460	470 ▲	**$37.97**	98%	91	11%	89%	19%
15-1121	Computer Systems Analysts	0.80	434	515 ▲	**$36.64**	97%	119	68%	32%	17%
13-1071	Human Resources Specialists	0.98	434	464 ▲	**$24.17**	90%	71	42%	58%	20%
29-1069	Physicians and Surgeons, All Other	1.13	408	470 ▲	**$110.97**	**127%**	118	53%	47%	**27%**
51-9012	Machine Setters, Operators, and Tenders	9.07	399	428 ▲	**$25.49**	**137%**	102	28%	72%	15%
15-1199	Computer Occupations, All Other	1.85	386	412 ▲	**$43.00**	**112%**	60	43%	57%	18%
51-4121	Welders, Cutters, Solderers, and Brazers	0.98	373	372 ▼	$17.75	102%	53	0%	100%	14%
11-9041	Architectural and Engineering Managers	1.76	354	345 ▼	**$64.33**	107%	43	0%	100%	22%
15-1142	Network and Computer Systems Administrators	0.93	353	393 ▲	**$32.89**	95%	72	56%	44%	12%
49-9041	Industrial Machinery Mechanics	1.02	340	384 ▲	**$25.23**	**113%**	100	44%	56%	19%
49-1011	First-Line supervisorsof Mechanics, Installers, and Repairers	0.71	320	343 ▲	**$32.19**	**111%**	69	33%	67%	24%
13-1023	Purchasing Agents	0.99	299	308 ▲	**$32.03**	**113%**	37	24%	76%	**25%**
17-2112	Industrial Engineers	1.20	280	292 ▲	**$40.40**	107%	54	22%	78%	20%
11-3021	Computer and Information Systems Managers	0.82	279	306 ▲	**$57.35**	100%	48	56%	44%	15%
11-9111	Medical and Health Services Managers	0.79	251	302 ▲	**$45.20**	107%	86	59%	41%	22%
15-1152	Computer Network Support Specialists	1.27	241	255 ▲	**$29.11**	103%	34	41%	59%	13%
17-2072	Electronics Engineers, Except Computer	1.63	235	250 ▲	**$55.14**	**125%**	42	36%	64%	20%
49-2022	Telecommunications Equipment Installers and Repairers	1.00	225	250 ▲	**$28.01**	108%	41	61%	39%	13%
51-8031	Water and Wastewater Treatment Plant Operators	1.82	204	216 ▲	**$23.88**	**116%**	49	24%	76%	25%
51-4011	Computer-Controlled Machine Tool Operators	1.26	188	198 ▲	$19.50	**114%**	38	26%	74%	14%
29-1071	Physician Assistants	1.79	165	199 ▲	**$49.45**	**112%**	51	67%	33%	13%

Source: QCEW Employees, Non-QCEW Employees, & Self-Employed–EMSI 2013.4 Class of Worker.

Notes: Shaded "Median Hourly Earnings" indicate the occupation pays more than the regional average. Shaded "% of US Median" indicates the occupation pays more than 110% of the US Median.

STAFFING ENVIRONMENT INDICATOR

The determination of hiring difficulty draws on EMSI's Talent Market Analyst which provides useful indicators of the staffing environment for occupations in a given metropolitan region. A relative wage indicator and a supply/demand indicator were combined to determine hiring difficulty. The relative wage is built around two different statistics: the absolute wage regional workers in the occupation earn and EMSI's proprietary indicator that considers the expected wage against a regional wage index. The supply/demand indicator is weighted by three factors.

- How concentrated (therefore important) the occupation is in the region
- How this concentration has changed over time (whether the occupation is becoming more or less important to the area)
- How actual employment in the occupation in the region has changed

Together, these statistics provide a picture of how the region's supply of and demand for workers play into the staffing environment. This evaluation is ranked by degree of difficulty in hiring. Additional information about Talent Market Analyst can be found at: http://www.economicmodeling.com/analyst/tma-analyst/

EDUCATION AND TRAINING

The analysis presented in this section includes data for the 8 institutions listed below. Colorado State University is, by far, the largest institution and confers, on average, about 6,500 degrees each year. Front Range Community College is the next largest and confers, on average, 3,000 degrees each year. University of Northern Colorado confers about 2,600 degrees each year. Aims Community College confers almost 1,500 degree each year. Many students in the region transfer from Front Range Community College to Regis University. Regis' completions data, however, was not available for its Larimer County campus.

REGIONAL INSTITUTIONS

LARIMER & WELD COUNTY INSTITUTIONS, PLUS FRONT RANGE COMMUNITY COLLEGE

				Years Institution is Included in IPEDS		
UNITID	**INSTITUTION NAME**	**CITY**	**SECTOR**	2010	2011	2012
126207	Aims Community College	Greeley	Public, 2-year	✓	✓	✓
126818	Colorado State University-Fort Collins	Fort Collins	Public, 4-year or above	✓	✓	✓
127200	Front Range Community College	Westminster	Public, 2-year	✓	✓	✓
127741	University of Northern Colorado	Greeley	Public, 4-year or above	✓	✓	✓
372329	Institute of Business and Medical Careers	Fort Collins	Private for-profit, 2-year	✓	✓	✓
381866	Healing Arts Institute	Fort Collins	Private for-profit, less-than 2-year		✓	✓
448761	College America-Fort Collins	Fort Collins	Private for-profit, 4-year or above	✓	✓	✓
449454	Academy of Natural Therapy Inc*	Greeley	Private for-profit, 2-year	✓	✓	✓

*Listed as "Private for-profit, less-than 2-year" in 2010 IPEDS survey.

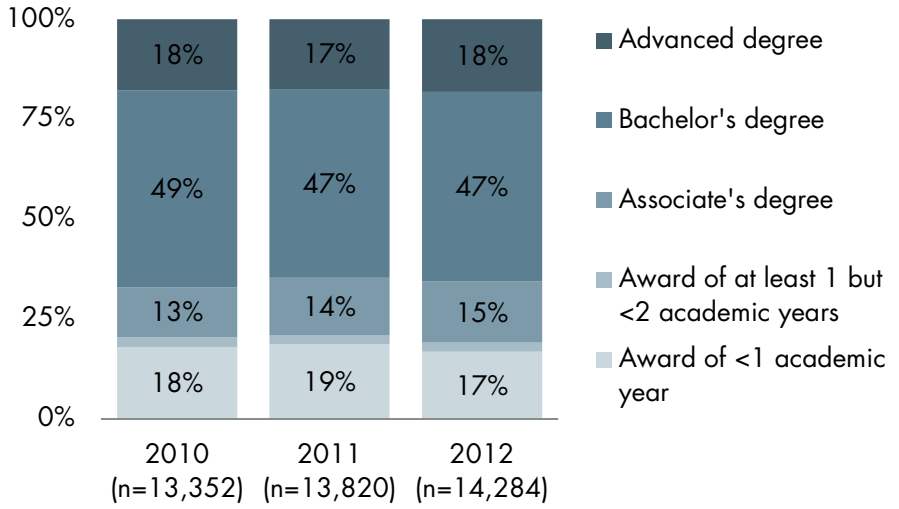
Source: National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, & 2011-2012. See page 64 for a description of IPEDS.

Together, these institutions conferred an average of almost 14,000 awards in credit-bearing programs over the three-year period analyzed.

Of these, almost half were bachelor's degrees. On average, 18 percent of awards were advanced degrees (defined as all awards made above the bachelor's level). Postsecondary certificates and associate's degrees comprised 34 percent of all awards conferred for credit during this period.

DISTRIBUTION OF FOR-CREDIT COMPLETIONS BY AWARD LEVEL

FOR-CREDIT COMPLETIONS BY SELECTED INSTITUTIONS (2010–2012)

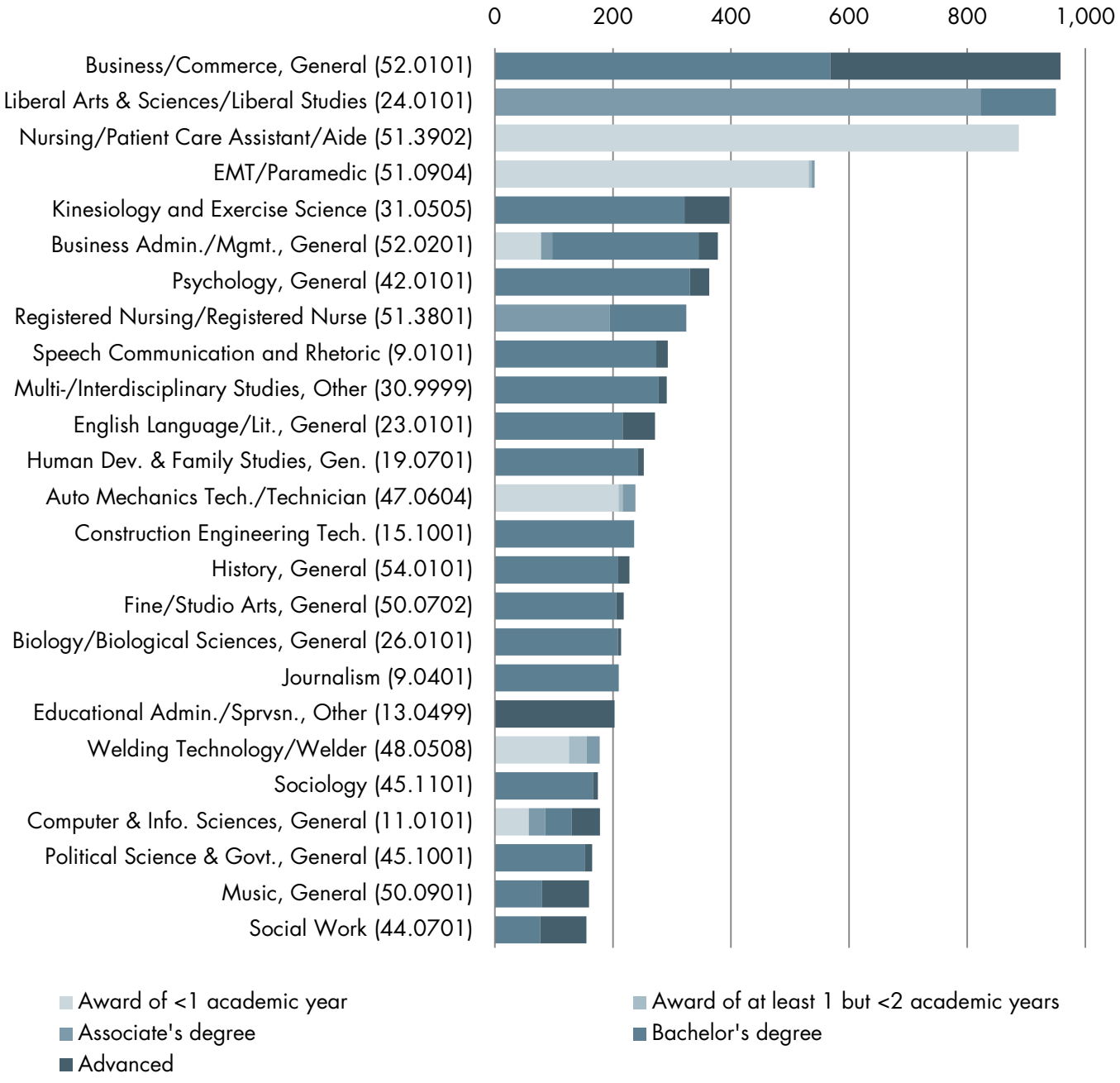


Source: National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012.

Over the last three academic years, the share of associate's degrees has climbed slightly from 13 percent in 2010 to 15 percent in 2012. Conversely, the share of post-secondary awards has dropped from a high of 19 percent in 2011 to 17 percent in 2012, and the share of bachelor's degrees has fallen from 49 percent in 2010 to 47 percent in 2012.

25 LARGEST FIELDS OF STUDY

RANKED BY AVERAGE NUMBER OF COMPLETIONS (2010-2012 ACADEMIC YEARS), ALL AWARD LEVELS

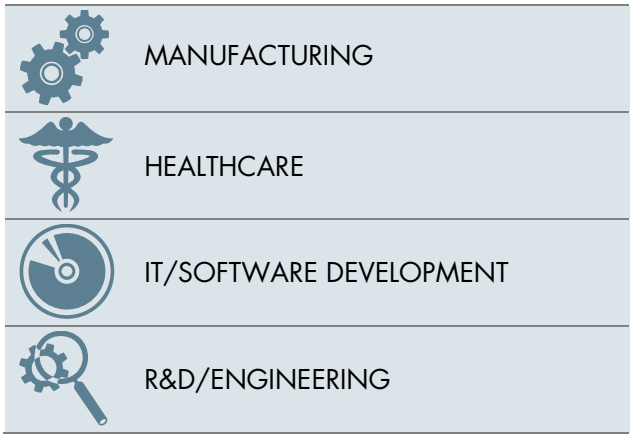


Source: National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012.

The 25 most popular fields of study at regional institutions are shown above. A comparison of this list with the list of hard-to-fill occupations on page 13 reveals a mismatch between the fields of study students in the region are choosing and the skills employers need. Of the top 25, only five fields of study correspond with any of the occupations on the hard-to-fill list—nursing (51.3902 & 51.3801), auto technicians (47.0604), welding (48.0508), and computer science (11.0101). Instead, most of the popular fields of study are general or correspond with occupations that are not particularly high in demand.

INDUSTRY PROFILES

The following section profiles select industry clusters. The industries were chosen because of their importance to the region or because they represent a component of the region's target industry clusters.



For each of the industries, we provide an overview of the industry, its staffing patterns, and its staffing environment. A description of the indicators is provided below:

- *Representative employers*: the Top 10 employers in the sector.
- *Employment trends*: the performance of the sector in comparison to Denver, Colorado, and the US, based on year-over-year employment increases/decreases.
- *Relative industry strengths*: the location quotients for the most heavily concentrated industries relative to national concentrations.
- *The top 20 occupations*: the top 20 occupations based on the combined share of total employment in key industry segments.
- *Median Hourly Wage*: The median hourly wage for Larimer County is provided. The local median is also shown as a percent of the US Median Hourly wage, to indicate where local employers are paying a wage premium. Those occupations paying 110 percent or greater than the US median are shaded orange.
- *Staffing Environment*: Based on the ranking of the staffing environment indicator (see text box page 13), a category of hiring difficulty was assigned. These categories indicate whether the occupation is relatively hard to fill, neutral, or easy to fill. Hard to fill occupations are classified as facing an unfavorable staffing environment, and easy to fill are classified as facing a favorable staffing environment.
- *Openings, 2013-2018*: Openings are the number of new jobs (the change in total employment) and the number of replacement jobs (jobs that must be filled due to turnover).
- *Share of Workers, Age 55+:* This statistic indicates which occupations are likely facing a wave of retirements in the near future.

STAFFING PATTERNS *TOP 20 OCCUPATIONS BY COMBINED SHARE OF TOTAL EMPLOYMENT IN KEY SEGMENTS*

MANUFACTURING

The Manufacturing sector employs 11,700 workers in the Larimer County economy, accounting for 8 percent of total employment.

The region outperformed Denver, the state, and the US during the recession, following sharp job losses in 2005. However, manufacturing employment has fallen 5 percent between 2008 and 2013 and is expected to fall another 6 percent between 2013 and 2018.

The Manufacturing sector is anchored by nationally recognized companies, many of which have a long history in the area. The county has formidable strengths in breweries and engine, instrument, and fan manufacturing.

One-half of the top 20 occupations (in terms of share of total employment in key segments) were identified as hard-to-fill. Eight of the occupations paid wage premiums more than 10 percent above the national median.

Replacement demand is the key driver of openings in these 20 occupations. Only one occupation—Electrical and Electronic Equipment Assemblers—is estimated to have an aging workforce (defined here as 25 percent of the workforce age 55 years or over). This suggests that the replacement openings are driven more by turnover than retirements.

REPRESENTATIVE EMPLOYERS

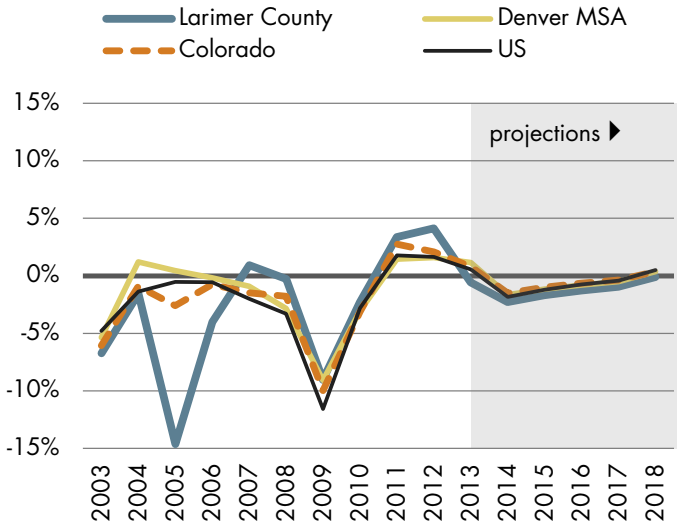
Company	Employment range
Woodward Inc.	>1,000
Avago Technologies US Inc.	500 to 999
Otter Products LLC	500 to 999
Anheuser Busch Inc.	500 to 999
Intel Corporation	100 to 499
Tolmar Inc.	100 to 499
New Belgium Brewing Co Inc.	100 to 499
Advanced Energy Industries Inc.	100 to 499
LSI Logic Corporation	100 to 499
Walker Manufacturing Company	100 to 499

Source: QCEW

EMPLOYMENT TRENDS

Percent change in jobs from prior year

2003-2013 (historic), 2014-2018 (projected)



INDUSTRY LOCATION QUOTIENTS (LQS)

NAICS Code	Industry	2013 LQ (US=1.00)	2013 Jobs
333618	Other Engine Equipment Manufacturing	33.94	1,577
312120	Breweries	31.14	1,015
334516	Analytical Laboratory Instrument Manufacturing	21.18	725
335211	Electric Housewares and Household Fan Manufacturing	15.09	136
334515	Instrument Mfg. for Measuring /Testing Electricity and Electrical Signals	14.83	616

Source: EMSI 2014.1 Complete Employment

SOC Code	Description	2013 Jobs	Navigating, Measuring, & Control Instruments (NAICS 3345)	Engine/Turb. & Power Trans. Equip. (NAICS 3336)	Beverage Mfg. (NAICS 3121)	Computer/ Peripheral Equip. (NAICS 3341)
17-2061	Computer Hardware Engineers	940	**8.4%**			**25.3%**
15-1133	Software Developers, Systems Software	1,273	**12.9%**	0.6%		**17.6%**
51-9012	Separating/Filtering/Clarifying Machine Workers	399			**28.6%**	
51-2022	Electrical and Electronic Equipment Assemblers	513	**10.6%**	1.9%		**6.4%**
51-2031	Engine and Other Machine Assemblers	327		**18.5%**		
15-1132	Software Developers, Applications	1,058	2.9%	0.9%		**8.5%**
51-9111	Packaging and Filling Machine Operators and Tenders	367			**10.3%**	
17-2141	Mechanical Engineers	460	3.1%	**6.0%**		0.9%
51-4041	Machinists	397	1.5%	**6.9%**		
41-4012	Sales Reps., Whlsl. & Mfg., Exc. Tech./Scientific Prods.	1,500	1.0%	1.4%	**5.7%**	
51-2092	Team Assemblers	530	2.6%	**4.7%**	0.8%	
11-9041	Architectural and Engineering Managers	354	2.4%	2.3%		**3.3%**
17-2112	Industrial Engineers	280	2.9%	**3.0%**		0.9%
17-3023	Electrical and Electronics Engineering Technicians	275	**3.5%**	0.6%		2.6%
11-1021	General and Operations Managers	2,097	1.7%	1.5%	1.6%	1.4%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	389	1.5%	2.4%	1.4%	0.8%
49-9041	Industrial Machinery Mechanics	340		2.3%	**3.8%**	
51-1011	First-Line Supervisors of Production/Operating Workers	426	1.2%	2.1%	**2.1%**	0.5%
17-2071	Electrical Engineers	247	**3.4%**	0.9%		0.8%
51-2023	Electromechanical Equipment Assemblers	125	**3.4%**	0.7%		0.8%

Source: EMSI 2014.1 Complete Employment

OCCUPATIONAL CHARACTERISTICS *FOR TOP 20 OCCUPATIONS (ABOVE)*

Staffing Environment Indicator: ▲ *Favorable* ◀▶ *Neutral* ▼ *Unfavorable*

SOC Code	Description	Median Hourly Wages	Relative to US (US=1.00)	Staffing Environment	Estimated openings, 2013-2018 Total #	% New Growth	% Replacement	% 55 Years or Older
17-2061	Computer Hardware Engineers	$52.89	**1.10**	▼	89	100%		13%
15-1133	Software Developers, Systems Software	$48.67	1.03	▼	94	100%		12%
51-9012	Separating/Filtering/Clarifying Machine Workers	$25.49	**1.37**	▼	102	28%	72%	15%
51-2022	Electrical and Electronic Equipment Assemblers	$13.53	0.98	◀▶	30	100%		**25%**
51-2031	Engine and Other Machine Assemblers	$16.05	0.92	◀▶	52	48%	52%	16%
15-1132	Software Developers, Applications	$38.02	0.88	◀▶	158	55%	45%	12%
51-9111	Packaging and Filling Machine Operators and Tenders	$14.95	**1.20**	▼	55	20%	80%	13%
17-2141	Mechanical Engineers	$37.97	0.98	▼	91	11%	89%	19%
51-4041	Machinists	$18.94	1.00	◀▶	66	26%	74%	23%
41-4012	Sales Reps., Whlsl. & Mfg., Exc. Tech./Scientific Prods.	$22.85	0.88	▼	235	32%	68%	23%
51-2092	Team Assemblers	$14.75	**1.11**	◀▶	49	8%	92%	17%
11-9041	Architectural and Engineering Managers	$64.33	1.07	▼	43	100%		22%
17-2112	Industrial Engineers	$40.40	1.07	▼	54	22%	78%	20%
17-3023	Electrical and Electronics Engineering Technicians	$30.84	**1.11**	◀▶	29	100%		20%
11-1021	General and Operations Managers	$38.47	0.84	◀▶	350	41%	59%	21%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$18.54	**1.11**	◀▶	53	15%	85%	23%
49-9041	Industrial Machinery Mechanics	$25.23	**1.13**	▼	100	44%	56%	19%
51-1011	First-Line Supervisors of Production/Operating Workers	$28.75	**1.12**	▼	35	3%	97%	20%
17-2071	Electrical Engineers	$43.44	1.03	◀▶	33	15%	85%	21%
51-2023	Electromechanical Equipment Assemblers	$14.15	0.94	◀▶	7	100%		24%

Source: EMSI 2014.1 Complete Employment. Orange shading indicates wages that are 10 percent or more above the US for the occupation. Blue shading indicates occupations where 25 percent or more of the workforce is estimated to be 55 years or older.

HEALTHCARE

The Healthcare sector employs 15,874 workers in the Larimer County economy, accounting for 10 percent of total employment.

Between 2003 and 2011, the region outperformed Denver, the state, and the US. However, healthcare employment growth has faltered since 2011. The sector grew 16 percent between 2008 and 2013 and is expected to grow another 20 percent between 2013 and 2018.

The sector is anchored by University of Colorado Health, which has over 1,000 employees. The county has strengths in Ambulatory Centers and Offices of Other Health Practitioners.

Nine of the top 20 occupations (in terms of share of total employment in key segments) were identified as hard-to-fill. Three of the occupations paid wage premiums more than 10 percent above the national median.

Replacement and new jobs account for roughly equal shares of the openings in these 20 occupations, which means that the high rates of growth in the industry are counterbalanced by high rates of turnover. Four of the occupations—Secretaries, Medical Secretaries, Personal Care Aides, and Physicians—have a share of workers greater than 25 percent that is 55 years or older.

REPRESENTATIVE EMPLOYERS

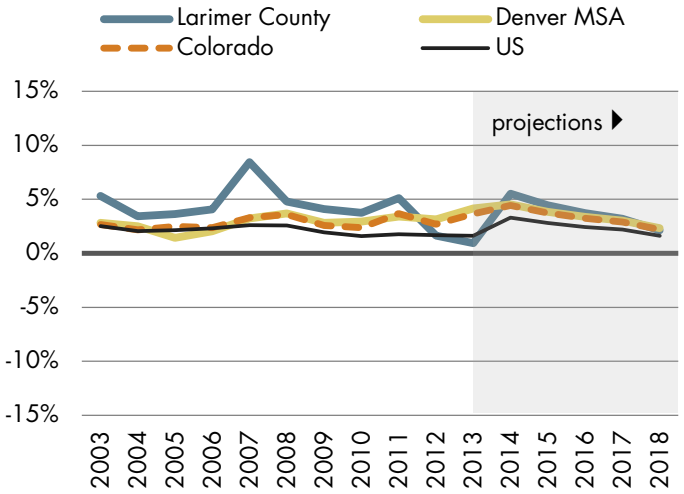
Company	Employment range
University of Colorado Health	>1,000
Foothills Gateway Rehabilitation Ctr.	100 to 499
Fort Collins Orthopedic Assoc. PC	100 to 499
Evergreen Home Healthcare	100 to 499
Maguire Senior Services Inc.	100 to 499
Greenfield Mgmt. Services Inc.	100 to 499
Interim Healthcare of Ft Collins	100 to 499
Larimer Center for Mental Health	100 to 499
Associates In Family Medicine PC	100 to 499
Centre Ave Health & Rehab Facility	100 to 499

Source: QCEW

EMPLOYMENT TRENDS

Percent change in jobs from prior year

2003-2013 (historic), 2014-2018 (projected)



INDUSTRY LOCATION QUOTIENTS (LQS)

NAICS Code	Industry	2013 LQ (US=1.00)	2013 Jobs
621493	Freestanding Ambulatory Surgical and Emergency Centers	3.91	471
621399	Offices of All Other Miscellaneous Health Practitioners	2.61	329
621310	Offices of Chiropractors	1.80	271
623312	Homes for the Elderly	1.76	693
621420	Outpatient Mental Health and Substance Abuse Centers	1.50	325

Source: EMSI 2014.1 Complete Employment

STAFFING PATTERNS *TOP 20 OCCUPATIONS BY COMBINED SHARE OF TOTAL EMPLOYMENT IN KEY SEGMENTS*

SOC Code	Description	2013 Jobs	Ambulatory Health Care Services (NAICS 621)	Hospitals, Private (NAICS 622)	Nursing and Residential Care Facilities (NAICS 623)
29-1141	Registered Nurses	2,878	**7.6%**	**34.3%**	**8.3%**
31-1014	Nursing Assistants	1,289	1.3%	**5.1%**	**23.7%**
31-1011	Home Health Aides	1,171	**5.3%**		**11.8%**
43-4171	Receptionists and Information Clerks	1,457	**6.9%**	0.9%	1.5%
29-2061	Licensed Practical and Licensed Vocational Nurses	521	1.6%	1.4%	**6.2%**
43-6014	Secretaries/Admin. Assts., Exc. Legal, Medical, & Exec.	4,833	3.4%	**2.2%**	1.4%
31-9092	Medical Assistants	618	**5.6%**	1.1%	
43-6013	Medical Secretaries	536	4.5%	**2.2%**	
31-9091	Dental Assistants	591	**6.4%**		
39-9021	Personal Care Aides	908	2.6%		3.5%
37-2012	Maids and Housekeeping Cleaners	1,429		1.5%	3.4%
29-1069	Physicians and Surgeons, All Other	408	3.2%	1.6%	
29-1123	Physical Therapists	304	2.3%	1.3%	0.7%
35-3041	Food Servers, Nonrestaurant	269		0.7%	**3.6%**
11-9111	Medical and Health Services Managers	251	1.1%	1.8%	1.1%
29-2034	Radiologic Technologists	227	1.1%	**2.6%**	
21-1014	Mental Health Counselors	295	1.4%		1.8%
43-9061	Office Clerks, General	2,639	1.6%	0.9%	0.6%
43-3021	Billing and Posting Clerks	454	2.1%	0.8%	
29-2021	Dental Hygienists	236	2.7%		

Source: EMSI 2014.1 Complete Employment.

OCCUPATIONAL CHARACTERISTICS *FOR TOP 20 OCCUPATIONS (ABOVE)*

Staffing Environment Indicator: ▲ *Favorable* ◀▶ *Neutral* ▼ *Unfavorable*

SOC Code	Description	Median Hourly Wages	Relative to US (US=1.00)	Staffing Environment	Estimated openings, 2013-2018 Total #	% New Growth	% Replacement	% 55 Years or Older
29-1141	Registered Nurses	$29.07	0.93	◀▶	1,004	68%	32%	24%
31-1014	Nursing Assistants	$12.33	1.05	◀▶	359	62%	38%	18%
31-1011	Home Health Aides	$11.53	**1.16**	▼	376	66%	34%	20%
43-4171	Receptionists and Information Clerks	$12.95	1.03	▼	338	38%	62%	21%
29-2061	Licensed Practical and Licensed Vocational Nurses	$20.90	1.05	▼	175	59%	41%	24%
43-6014	Secretaries/Admin. Assts., Exc. Legal, Medical, & Exec.	$15.38	0.99	◀▶	637	52%	48%	**26%**
31-9092	Medical Assistants	$14.84	1.04	▼	175	61%	39%	15%
43-6013	Medical Secretaries	$17.13	**1.14**	▼	158	77%	23%	**26%**
31-9091	Dental Assistants	$15.45	0.93	◀▶	116	44%	56%	8%
39-9021	Personal Care Aides	$9.60	1.01	◀▶	301	87%	13%	**29%**
37-2012	Maids and Housekeeping Cleaners	$8.82	0.95	◀▶	291	48%	52%	21%
29-1069	Physicians and Surgeons, All Other	$110.97	**1.27**	▼	118	53%	47%	**27%**
29-1123	Physical Therapists	$32.77	0.86	◀▶	106	59%	41%	11%
35-3041	Food Servers, Nonrestaurant	$10.13	1.07	▼	90	51%	49%	14%
11-9111	Medical and Health Services Managers	$45.20	1.07	▼	86	59%	41%	22%
29-2034	Radiologic Technologists	$23.17	0.88	◀▶	71	75%	25%	16%
21-1014	Mental Health Counselors	$18.94	0.98	◀▶	63	48%	52%	22%
43-9061	Office Clerks, General	$13.51	1.02	◀▶	529	44%	56%	24%
43-3021	Billing and Posting Clerks	$16.50	1.02	▼	109	59%	41%	20%
29-2021	Dental Hygienists	$32.45	0.95	◀▶	68	50%	50%	12%

Source: EMSI 2014.1 Complete Employment. Orange shading indicates wages that are 10 percent or more above the US for the occupation. Blue shading indicates occupations where 25 percent or more of the workforce is estimated to be 55 years or older.

IT/SOFTWARE DEVELOPMENT

The IT/Software sector employs 3,107 workers in the Larimer County economy, accounting for 2 percent of total employment.

Between 2003 and 2012, the region outperformed Denver, the state, and the US by a considerable margin. Though there was a brief contraction of the sector in 2013, EMSI projects a strong recovery in 2014 and going forward. The sector grew 19 percent between 2008 and 2013 and is expected to grow another 24 percent between 2013 and 2018.

AMD, Telvent/Schneider Electric, and Techni Graphic Systems are the largest firms in the sector. The county's strongest sectors are Data Processing and Custom Computer Programming.

Half of the top 20 occupations (in terms of share of total employment in key segments) were identified as hard-to-fill. Three of the occupations paid wage premiums more than 10 percent above the national median.

Replacement jobs dominate openings in certain occupations, including Systems Software Developers, Computer Hardware Engineers, and Data Entry Keyers. For the remaining occupations, new jobs account for between 36 percent and 68 percent of openings in the occupations. The occupations in this industry facing an aging workforce are clerical and finance positions.

REPRESENTATIVE EMPLOYERS

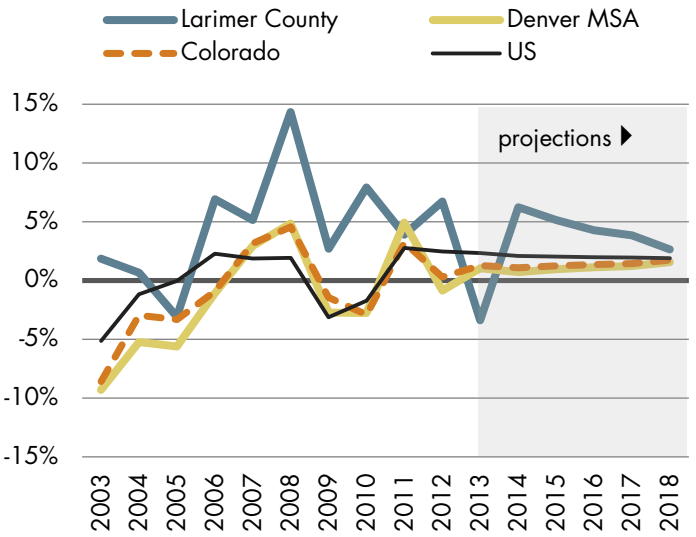
Company	Employment range
Advanced Micro Devices Inc.	100 to 499
Telvent USA LLC/Schneider Electric	100 to 499
Techni Graphic Systems Inc.	100 to 499
Cherokee Services Group LLC	50 to 99
Colorado Customware Incorporated	50 to 99
CA Technologies Inc.	50 to 99
Heit Consulting Inc.	50 to 99
New Century Software Inc.	<50
Vistronix Inc.	<50
Deltek Systems Inc.	<50

Source: QCEW

EMPLOYMENT TRENDS

Percent change in jobs from prior year

2003-2013 (historic), 2014-2018 (projected)



INDUSTRY LOCATION QUOTIENTS (LQS)

NAICS Code	Industry	2013 LQ (US=1.00)	2013 Jobs
518210	Data Processing, Hosting, and Related Services	1.67	449
541511	Custom Computer Programming Services	1.32	1,082
541512	Computer Systems Design Services	1.09	950
334611	Software Reproducing	0.65	—
511210	Software Publishers	0.62	187

Source: EMSI 2014.1 Complete Employment; — indicates industry represented fewer than 100 jobs in 2013.

STAFFING PATTERNS *TOP 20 OCCUPATIONS BY COMBINED SHARE OF TOTAL EMPLOYMENT IN KEY SEGMENTS*

SOC Code	Description	2013 Jobs	Computer Systems Design & Related Svcs. (NAICS 5415)	Software Publishers (NAICS 5112)	Data Processing, Hosting, & Related Services (NAICS 5182)
15-1132	Software Developers, Applications	1,058	**16.8%**	**21.2%**	**11.3%**
15-1133	Software Developers, Systems Software	1,273	**15.9%**	**19.8%**	**9.1%**
15-1151	Computer User Support Specialists	782	**5.7%**	**6.9%**	**6.0%**
15-1121	Computer Systems Analysts	434	**6.8%**	2.3%	**6.2%**
15-1134	Web Developers	282	4.1%	1.3%	**4.6%**
17-2061	Computer Hardware Engineers	940	**5.9%**	1.8%	1.9%
15-1131	Computer Programmers	196	4.2%	**2.9%**	1.7%
11-3021	Computer and Information Systems Managers	279	2.6%	**2.8%**	2.7%
15-1142	Network and Computer Systems Administrators	353	2.6%	1.3%	3.9%
15-1199	Computer Occupations, All Other	386	2.3%	2.6%	2.8%
13-1199	Business Operations Specialists, All Other	1,669	2.0%	**2.8%**	2.4%
41-3099	Sales Representatives, Services, All Other	784	2.5%	0.9%	3.3%
15-1152	Computer Network Support Specialists	241	2.0%	1.7%	2.6%
11-1021	General and Operations Managers	2,097	2.0%	2.1%	2.1%
43-4051	Customer Service Representatives	1,422	0.9%	1.2%	4.1%
13-1161	Market Research Analysts and Marketing Specialists	562	1.3%	2.6%	1.4%
43-6014	Secretaries/Admin. Assts., Exc. Legal, Medical, & Exec	4,833	1.7%	1.4%	1.9%
43-9021	Data Entry Keyers	205			4.2%
13-2011	Accountants and Auditors	1,347	1.0%	1.7%	1.3%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	2,222	1.0%	0.8%	1.7%

Source: EMSI 2014.1 Complete Employment.

OCCUPATIONAL CHARACTERISTICS *FOR TOP 20 OCCUPATIONS (ABOVE)*

Staffing Environment Indicator: ▲ *Favorable* ◀▶ *Neutral* ▼ *Unfavorable*

SOC Code	Description	Median Hourly Wages	Relative to US (US=1.00)	Staffing Environment	Estimated openings, 2013-2018 Total #	% New Growth	% Replacement	% 55 Years or Older
15-1132	Software Developers, Applications	$38.02	0.88	◀▶	158	55%	45%	12%
15-1133	Software Developers, Systems Software	$48.67	1.03	▼	94		100%	12%
15-1151	Computer User Support Specialists	$23.30	1.04	▼	171	61%	39%	16%
15-1121	Computer Systems Analysts	$36.64	0.97	▼	119	68%	32%	17%
15-1134	Web Developers	$20.83	0.75	◀▶	56	57%	43%	8%
17-2061	Computer Hardware Engineers	$52.89	**1.10**	▼	89		100%	13%
15-1131	Computer Programmers	$39.32	**1.12**	◀▶	60	52%	48%	14%
11-3021	Computer and Information Systems Managers	$57.35	1.00	▼	48	56%	44%	15%
15-1142	Network and Computer Systems Administrators	$32.89	0.95	▼	72	56%	44%	12%
15-1199	Computer Occupations, All Other	$43.00	**1.12**	▼	60	43%	57%	18%
13-1199	Business Operations Specialists, All Other	$29.10	0.93	◀▶	228	47%	53%	22%
41-3099	Sales Representatives, Services, All Other	$23.24	0.96	▼	183	36%	64%	20%
15-1152	Computer Network Support Specialists	$29.11	1.03	▼	34	41%	59%	13%
11-1021	General and Operations Managers	$38.47	0.84	◀▶	350	41%	59%	21%
43-4051	Customer Service Representatives	$13.80	0.94	▼	630	64%	36%	15%
13-1161	Market Research Analysts and Marketing Specialists	$26.37	0.91	◀▶	108	62%	38%	15%
43-6014	Secretaries/Admin. Assts., Exc. Legal, Medical, & Exec.	$15.38	0.99	◀▶	637	52%	48%	**26%**
43-9021	Data Entry Keyers	$13.27	0.95	◀▶	12		100%	16%
13-2011	Accountants and Auditors	$25.90	0.86	◀▶	344	38%	62%	**25%**
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$15.46	0.91	◀▶	273	60%	40%	**29%**

Source: EMSI 2014.1 Complete Employment. Orange shading indicates wages that are 10 percent or more above the US for the occupation. Blue shading indicates occupations where 25 percent or more of the workforce is estimated to be 55 years or older.

R&D/ENGINEERING

The R&D/Engineering sector employs 3,417 workers in the Larimer County economy, accounting for almost 2 percent of total employment.

The sector experienced a growth rate of 97 percent in 2005. This incredible growth was followed by seven years of negative or flat growth. The sector contracted by 19 percent between 2008 and 2013. However, the sector is expected to grow 11 percent between 2013 and 2018.

HP is by far the largest firm in this sector. AECOM is also a significant player. The county's strongest sectors are R&D in the Physical, Engineering and Life Sciences and Engineering Services.

Five of the top 20 occupations (in terms of share of total employment in key segments) were identified as hard-to-fill. Two of the occupations paid wage premiums more than 10 percent above the national median.

Replacement jobs account for most of the openings in the sector. However, only three occupations have more than 25 percent of their workers greater than 55 years of age. This suggests that a number of the occupations are experiencing high rates of turnover for reasons other than retirement.

REPRESENTATIVE EMPLOYERS

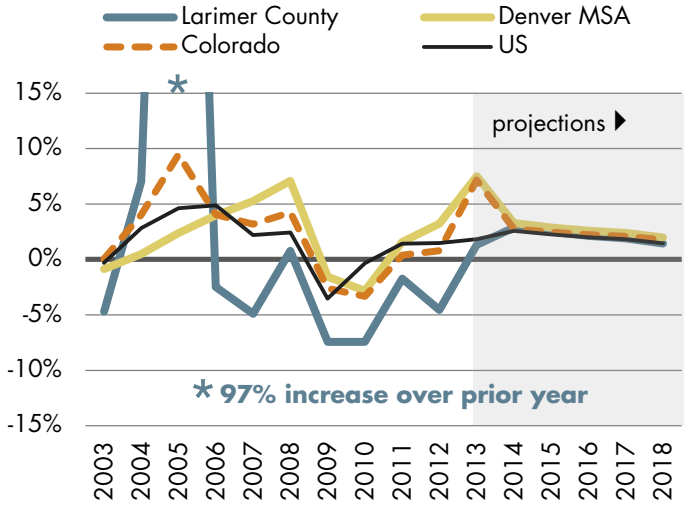
Company	Employment range
Hewlett Packard Co.*	>1,000
AECOM Technology Corporation	100 to 499
Tetra Tech Inc.	50 to 99
ESC Engineering Inc.	50 to 99
Riverside Technology Inc.	50 to 99
ALS Group USA Corp	50 to 99
CPP Inc.	<50
EDM International Inc.	<50
Cargill Incorporated	<50
Dresser Rand Company	<50

Source: QCEW. *Includes HP Enterprise Services LLC

EMPLOYMENT TRENDS

Percent change in jobs from prior year

2003-2013 (historic), 2014-2018 (projected)



INDUSTRY LOCATION QUOTIENTS (LQS)

NAICS Code	Industry	2013 LQ (US=1.00)	2013 Jobs
541712	R&D in the Physical, Engineering, and Life Sciences (except Biotechnology)	2.98	1,372
541330	Engineering Services	1.79	1,763
541711	Research and Development in Biotechnology	1.03	155
541420	Industrial Design Services	1.01	—
541380	Testing Laboratories	0.62	106

Source: EMSI 2014.1 Complete Employment; — indicates industry represented fewer than 100 jobs in 2013.

STAFFING PATTERNS *TOP 20 OCCUPATIONS BY COMBINED SHARE OF TOTAL EMPLOYMENT IN KEY SEGMENTS*

SOC Code	Description	2013 Jobs	Architectural, Engineering, & Related Svcs. (NAICS 5413)	Specialized Design Services (NAICS 5414)	Scientific R&D Services (NAICS 5417)
27-1024	Graphic Designers	324		**32.2%**	
27-1025	Interior Designers	107	0.6%	**19.6%**	
17-2051	Civil Engineers	528	**14.6%**		
17-2061	Computer Hardware Engineers	940	1.9%		**9.5%**
43-6014	Secretaries/Admin. Assts., Exc. Legal, Medical, & Exec.	4,833	3.5%	2.3%	2.7%
15-1133	Software Developers, Systems Software	1,273	3.0%		**5.0%**
17-2141	Mechanical Engineers	460	**4.1%**	0.7%	2.6%
17-1011	Architects, Except Landscape and Naval	172	**6.7%**	0.5%	
13-1199	Business Operations Specialists, All Other	1,669	1.6%	1.0%	2.9%
11-1021	General and Operations Managers	2,097	1.8%	2.1%	1.6%
11-9041	Architectural and Engineering Managers	354	**3.7%**		1.8%
11-9121	Natural Sciences Managers	176			**5.0%**
11-9199	Managers, All Other	643	0.7%	**3.2%**	0.7%
15-1132	Software Developers, Applications	1,058	1.2%		3.3%
17-2081	Environmental Engineers	193	**3.7%**		0.7%
27-1021	Commercial and Industrial Designers	33		**4.3%**	
17-3011	Architectural and Civil Drafters	124	**4.2%**		
19-2031	Chemists	160	0.5%		**3.6%**
27-1011	Art Directors	77		**3.9%**	
19-4021	Biological Technicians	188			**3.8%**

Source: EMSI 2014.1 Complete Employment.

OCCUPATIONAL CHARACTERISTICS *FOR TOP 20 OCCUPATIONS (ABOVE)*

Staffing Environment Indicator: ▲ *Favorable* ◀▶ *Neutral* ▼ *Unfavorable*

SOC Code	Description	Median Hourly Wages	Relative to US (US=1.00)	Staffing Environment	Estimated openings, 2013-2018 Total #	% New Growth	% Replacement	% 55 Years or Older
27-1024	Graphic Designers	$19.10	0.94	◀▶	56	20%	80%	16%
27-1025	Interior Designers	$17.39	0.82	◀▶	21	33%	67%	21%
17-2051	Civil Engineers	$37.29	0.99	◀▶	91	22%	78%	23%
17-2061	Computer Hardware Engineers	$52.89	**1.10**	▼	89		100%	13%
43-6014	Secretaries/Admin. Assts., Exc. Legal, Medical, & Exec.	$15.38	0.99	◀▶	637	52%	48%	**26%**
15-1133	Software Developers, Systems Software	$48.67	1.03	▼	94		100%	12%
17-2141	Mechanical Engineers	$37.97	0.98	▼	91	11%	89%	19%
17-1011	Architects, Except Landscape and Naval	$35.49	1.09	▼	39	21%	79%	18%
13-1199	Business Operations Specialists, All Other	$29.10	0.93	◀▶	228	47%	53%	22%
11-1021	General and Operations Managers	$38.47	0.84	◀▶	350	41%	59%	21%
11-9041	Architectural and Engineering Managers	$64.33	1.07	▼	43		100%	22%
11-9121	Natural Sciences Managers	$53.89	0.97	◀▶	43	56%	44%	20%
11-9199	Managers, All Other	$29.56	0.86	◀▶	93	9%	91%	**29%**
15-1132	Software Developers, Applications	$38.02	0.88	◀▶	158	55%	45%	12%
17-2081	Environmental Engineers	$37.94	0.98	◀▶	33	24%	76%	16%
27-1021	Commercial and Industrial Designers	$33.78	**1.26**	–	7	43%	57%	–
17-3011	Architectural and Civil Drafters	$22.72	0.99	◀▶	9		100%	15%
19-2031	Chemists	$27.87	0.81	◀▶	44	50%	50%	16%
27-1011	Art Directors	$19.88	0.72	◀▶	11		100%	**25%**
19-4021	Biological Technicians	$16.24	0.85	◀▶	60	48%	52%	14%

Source: EMSI 2014.1 Complete Employment. Orange shading indicates wages that are 10 percent or more above the US for the occupation. Blue shading indicates occupations where 25 percent or more of the workforce is estimated to be 55 years or older.

TALENT CLUSTERS

For the purposes of this study, we drilled down into four talent clusters that are integral to the region's economic drivers. These are listed in the table to the right.

ENGINEERING & TECHNICAL

INFORMATION TECHNOLOGY

SALES & OPERATIONS

HEALTHCARE

For each talent cluster, we present the following indicators for each of the key occupations:

- *Relative concentration (2013 Location Quotient)*: This shows how the occupation's share of total local employment compares to its share nationally. Location Quotients (LQs) of greater than 1 indicate that occupations that have a larger share of total employment in Larimer County than they do nationally. LQs of 1.25 or higher are interpreted to mean that Larimer County is relatively specialized in those areas.
- *Employment, 2013-2018*: These statistics show the estimated number of jobs in each occupation for 2013 and the projected number of jobs in 2018.
- *Staffing Environment*: Based on the ranking of the staffing environment indicator (see text box page 13), a category of hiring difficulty was assigned. These categories indicate whether an occupation is relatively hard to fill, neutral, or easy to fill. Hard to fill occupations are classified as facing an unfavorable staffing environment, and easy to fill are classified as facing a favorable staffing environment.
- *Median Hourly Wage*: The median hourly wage for Larimer County is provided. Any occupation that pays more than the local average is shaded dark blue. The local median is also shown as a percent of the US Median Hourly wage to indicate where local employers are paying a wage premium. Those occupations paying 110 percent or greater than the US median are shaded dark blue.
- *Openings, 2013-2018*: Openings are the number of new jobs (the change in total employment) and the number of replacement jobs (jobs that must be filled due to turnover).
- *Share of Workers, Age 55+:* This statistics indicates which occupations are likely facing a wave of retirements in the near future.
- *Education & Training*: The education and training information shows the type of education, work experience, and on-the-job training that is typically needed to gain entry into each occupation.

ENGINEERING & TECHNICAL

The Engineering and Technical talent cluster includes all of the architecture and engineering occupations (17-0000) and associated managers. The three primary subcomponents of this group are Architects, Surveyors, and Cartographers (17-1000), Engineers (17-2000), and Drafters, Engineering Technicians, and Mapping Technicians (17-3000).

This sector accounted for 4,793 jobs in 2013. The sector contracted just over 8 percent between 2008 and 2013 and is projected to contract another 1.5 percent between 2013 and 2018. Much of this decline is driven by a projected drop in employment for Computer Hardware Engineers. Embedded in this negative trend, however, are some important bright spots.

First, all but six of the primary occupations are projected to experience increases in employment. In fact, excluding the expected declines in Computer Hardware Engineers, the sector is expected to grow by 2 percent.

Second is the relative strength of the region in most of these engineering and technical occupations. In all but 2 occupations, the location quotient of Larimer County is higher than 1. In three occupations, the relative concentration of employees in these sectors is significantly higher than the nation—Computer Hardware Engineers, Environmental Engineers, and Environmental Engineering Technicians.

PRIMARY OCCUPATIONS

RELATIVE CONCENTRATIONS (2013) AND PROJECTIONS 2013-18

SOC Code	Description	Location Quotient (LQ) 2013	Employment 2013 (estimated)	Employment 2018 (projected)	
17-2061	Computer Hardware Engineers	10.92	940	777	▼
17-2051	Civil Engineers	1.83	528	548	▲
17-2141	Mechanical Engineers	1.70	460	470	▲
11-9041	Architectural and Engineering Managers	1.76	354	345	▼
17-2112	Industrial Engineers	1.20	280	292	▲
17-3023	Electrical and Electronics Engineering Technicians	1.80	275	264	▼
17-2071	Electrical Engineers	1.45	247	252	▲
17-2072	Electronics Engineers, Except Computer	1.63	235	250	▲
17-2081	Environmental Engineers	3.56	193	201	▲
17-1011	Architects, Except Landscape and Naval	1.52	172	180	▲
17-3011	Architectural and Civil Drafters	1.32	124	121	▼
17-3022	Civil Engineering Technicians	1.58	118	115	▼
17-3025	Environmental Engineering Technicians	5.40	107	110	▲
17-3031	Surveying and Mapping Technicians	1.84	102	106	▲
17-3013	Mechanical Drafters	1.39	95	91	▼
17-3026	Industrial Engineering Technicians	1.02	72	75	▲
17-2199	Engineers, All Other	0.43	63	64	▲
17-1022	Surveyors	1.32	59	60	▲
17-3029	Engineering Technicians, All Other	0.84	59	62	▲
17-3012	Electrical and Electronics Drafters	1.63	50	51	▲

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

ENGINEERING & TECHNICAL (CONT.)

Examining the staffing environment for the primary occupations reveals other areas of potential need. Due to the recent change in demand and wage environment, eight of the primary occupations are currently considered hard to fill. These are Mechanical Engineers, Computer Hardware Engineers, Industrial Engineers, Architectural and Engineering Managers, Electronics Engineers, Architects, Industrial Engineering Technicians, and Mechanical Drafters.

Furthermore, five occupations pay a premium to the national median hourly wage rate of more than 10%. In some cases, this can indicate recruiting difficulty as well. Those occupations are Electronics Engineers, Electrical and Electronics Engineering Technicians, Surveying and Mapping Technicians, and Mechanical Drafters.

Another primary factor influencing staffing difficulty is the rate of turnover. Looking at the ratio of new jobs, versus replacement jobs and the aging of workers in each occupation, can provide insight into the expected rate of turnover. In all of the primary occupations, replacement jobs account for most of the openings. In four occupations, replacement jobs account for 100 percent of the total openings and the age profile of workers is relatively young. These include Computer Hardware Engineers, Architectural and Engineering Managers, Architectural and Civil Drafters, and Mechanical Drafters. None of the occupations have a large share of workers greater than 55 years old.

STAFFING ENVIRONMENT

STAFFING ENVIRONMENT INDICATOR, WAGES, OPENINGS, AGE PROFILE

			Earnings		Job Openings, 2013-2018			
SOC	Description	Staffing Environment	County ($)	% of US	Total (projected)	% New Growth	% Replacement	Share of workers age 55+
17-2051	Civil Engineers	Neutral ◀▶	**$37.29**	99%	91	22%	78%	22.7%
17-2141	Mechanical Engineers	Hard to Fill ▼	**$37.97**	98%	91	11%	89%	18.7%
17-2061	Computer Hardware Engineers	Hard to Fill ▼	**$52.89**	110%	89	0%	100%	13.0%
17-2112	Industrial Engineers	Hard to Fill ▼	**$40.40**	107%	54	22%	78%	20.0%
11-9041	Architectural & Engineering Managers	Hard to Fill ▼	**$64.33**	107%	43	0%	100%	22.0%
17-2072	Electronics Engineers, Except Computer	Hard to Fill ▼	**$55.14**	**125%**	42	36%	64%	20.0%
17-1011	Architects, Except L&scape & Naval	Hard to Fill ▼	**$35.49**	109%	39	21%	79%	18.0%
17-2071	Electrical Engineers	Neutral ◀▶	**$43.44**	103%	33	15%	85%	21.0%
17-2081	Environmental Engineers	Neutral ◀▶	**$37.94**	98%	33	24%	76%	16.0%
17-3023	Electrical and Electronics Engineering Technicians	Neutral ◀▶	**$30.84**	**111%**	29	0%	100%	20.0%
17-3025	Environmental Engineering Technicians	Easiest to Fill ▲	$18.07	83%	14	21%	79%	18.0%
17-3031	Surveying&Mapping Technicians	Neutral ◀▶	**$21.48**	**112%**	14	29%	71%	16.0%
17-3022	Civil Engineering Technicians	Easy to Fill ▲	$18.09	79%	12	0%	100%	18.0%
17-3026	Industrial Engineering Technicians	Hard to Fill ▼	**$28.09**	**115%**	11	27%	73%	18.0%
17-2199	Engineers, All Other	Neutral ◀▶	**$43.65**	102%	11	9%	91%	24.0%
17-3011	Architectural & Civil Drafters	Neutral ◀▶	**$22.72**	99%	9	0%	100%	15.0%
17-1022	Surveyors	Neutral ◀▶	**$29.76**	109%	9	33%	67%	19.0%
17-3029	Engineering Technicians, Except Drafters, All Other	Neutral ◀▶	**$29.67**	104%	8	13%	88%	20.0%
17-3013	Mechanical Drafters	Hard to Fill ▼	**$26.92**	**111%**	6	0%	100%	16.0%
17-3012	Electrical & Electronics Drafters	Neutral ◀▶	**$27.42**	103%	5	20%	80%	--

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

ENGINEERING & TECHNICAL (CONT.)

All but one of the occupations requires at least two years of education. The engineering and architect occupations require a bachelor's degree. The technician and drafter occupations require an associate's degree. Surveying and Mapping Technicians require a high school dipoloma and moderate on-the-job training.

EDUCATION & TRAINING

EDUCATION LEVEL, WORK EXPERIENCE, AND ON-THE-JOB TRAINING

			Education & Training		
SOC	**Description**	**Average Regional Completions**	**Typical education needed for entry**	**Work experience in a related occupation**	**Typical on-the-job training (OJT) needed to attain competency in the occupation**
17-2051	Civil Engineers	119	Bachelor's degree	None	None
17-2141	Mechanical Engineers	125	Bachelor's degree	None	None
17-2061	Computer Hardware Engineers	6	Bachelor's degree	None	None
17-2112	Industrial Engineers	0	Bachelor's degree	None	None
11-9041	Architectural & Engineering Managers	414	Bachelor's degree	5 years +	None
17-2072	Electronics Engineers, Except Computer	46	Bachelor's degree	None	None
17-1011	Architects, Except Landscape & Naval	0	Bachelor's degree	None	Internship/residency
17-2071	Electrical Engineers	46	Bachelor's degree	None	None
17-2081	Environmental Engineers	12	Bachelor's degree	None	None
17-3023	Electrical & Electronics Engineering Technicians	30	Associate's degree	None	None
17-3025	Environmental Engineering Technicians	0	Associate's degree	None	None
17-3031	Surveying & Mapping Technicians	34	HS diploma or equiv.	None	Moderate-term OJT
17-3022	Civil Engineering Technicians	236	Associate's degree	None	None
17-3026	Industrial Engineering Technicians	0	Associate's degree	None	None
17-2199	Engineers, All Other	26	Bachelor's degree	None	None
17-3011	Architectural & Civil Drafters	27	Associate's degree	None	None
17-1022	Surveyors	34	Bachelor's degree	< 5 years	None
17-3029	Engineering Technicians, Except Drafters, All Other	109	Associate's degree	None	None
17-3013	Mechanical Drafters	27	Associate's degree	None	None
17-3012	Electrical & Electronics Drafters	27	Associate's degree	None	None

Source: Bureau of Labor Statistics, National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012.

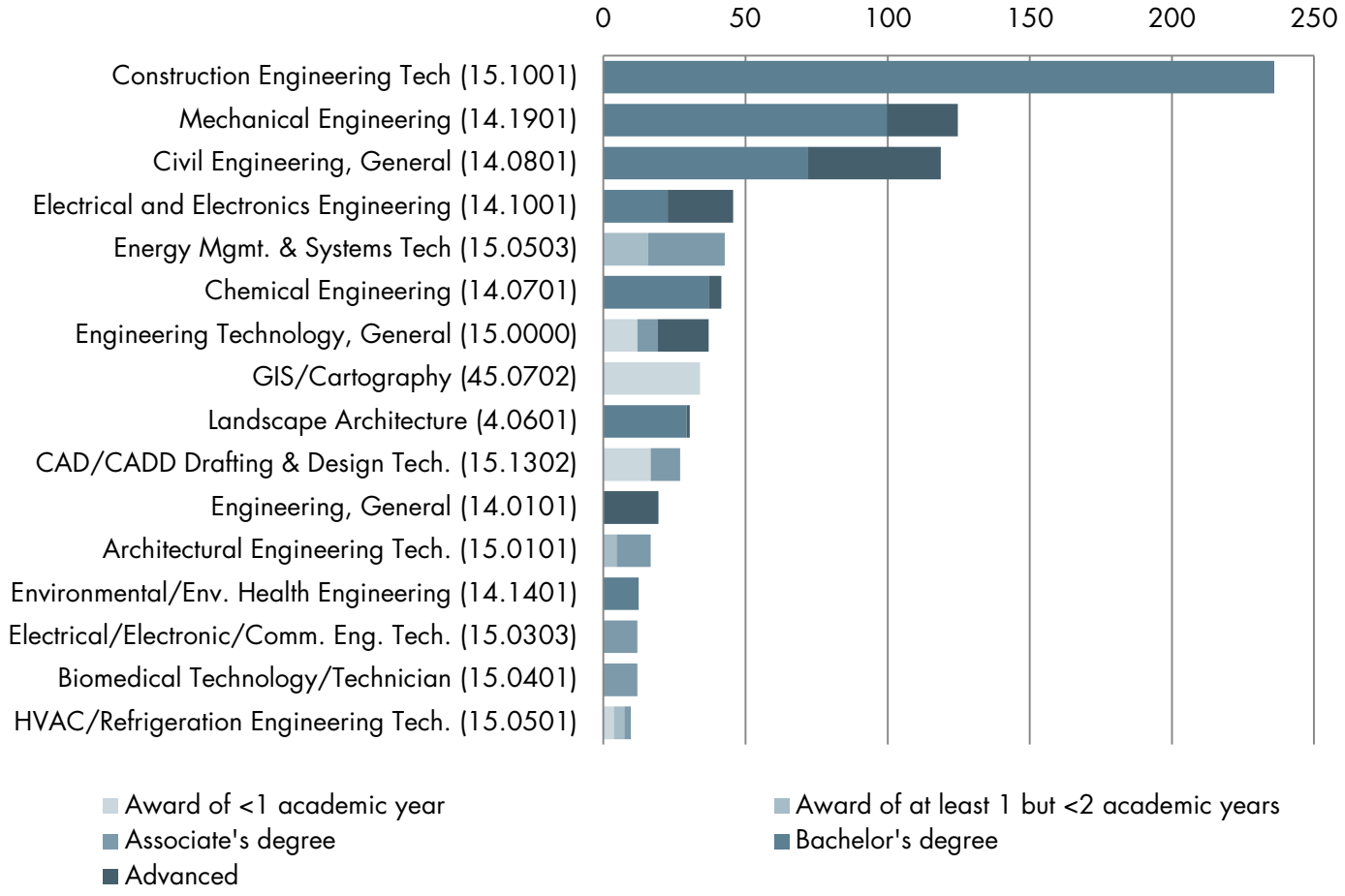
ENGINEERING & TECHNICAL (CONT.)

TOP FIELDS OF STUDY

Looking at the number of students graduating from regional programs in fields related to engineering and technical occupations, reveals that the largest number are Construction Engineering Technicians.

Mechanical Engineering and Civil Engineering are also popular fields of study, graduating more than 100 students on average each year.

Of note, there are no Computer Hardware Engineering, Industrial Engineering, Environmental Engineering technician, and Industrial Engineering technician graduates in the region.



Source: National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012

ENGINEERING & TECHNICAL (CONT.)

On the following pages are profiles of individual occupations that are expected to continue to face a difficult staffing environment. The profiles provide an overview of the occupations with sample job titles and a snapshot of local demand and supply statistics.

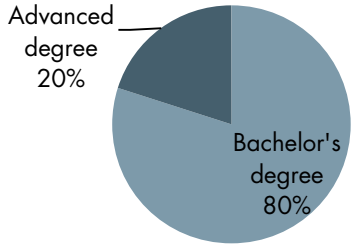
MECHANICAL ENGINEERS (SOC 17-2141)

Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.

Sample of reported job titles: Mechanical Engineer, Design Engineer, Product Engineer, Mechanical Design Engineer, Process Engineer, Equipment Engineer, Design Maintenance Engineer, Systems Engineer, Chassis Systems Engineer, Commissioning Engineer

Occupation Snapshot	
Average annual awards, 2010-2012	125
Jobs in occupation in region, 2013	460
2013 LQ (US = 1.00)	1.70
Total est. openings, 2013-2018	91
From new growth	10
From replacement demand	81
Median hourly wage	$37.97
Relative to US (US = 1.00)	0.98

Average Annual Completions by Award Level



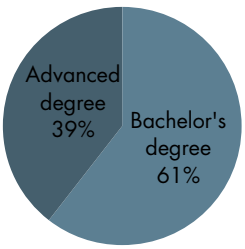
Typical Education/Training: Bachelor's degree

CIVIL ENGINEERS (SOC 17-2051)

Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems.

Sample of reported job titles: Civil Engineer, Engineer, Project Engineer, Project Manager, Structural Engineer, City Engineer, Civil Engineering Manager, Design Engineer, Railroad Design Consultant, Research Hydraulic Engineer

Occupation Snapshot	
Average annual awards, 2010-2012	119
Jobs in occupation in region, 2013	528
2013 LQ (US = 1.00)	1.83
Total est. openings, 2013-2018	91
From new growth	20
From replacement demand	71
Median hourly wage	$37.29
Relative to US (US = 1.00)	0.99



Typical Education/Training: Bachelor's degree

COMPUTER HARDWARE ENGINEERS (SOC 17-2061)

Research, design, develop, or test computer or computer-related equipment for commercial, industrial, military, or scientific use. May supervise the manufacturing and installation of computer or computer-related equipment and components.

Sample of reported job titles: Design Engineer, Engineer, Field Service Engineer, Hardware Design Engineer, Hardware Engineer, Network Engineer, Project Engineer, Senior Hardware Engineer, Systems Engineer, Systems Integration Engineer

Occupation Snapshot	
Average annual awards, 2010-2012	6
Jobs in occupation in region, 2013	940
2013 LQ (US = 1.00)	10.92
Total est. openings, 2013-2018	89
From new growth	-163
From replacement demand	252
Median hourly wage	$52.89
Relative to US (US = 1.00)	1.10

Typical Education/Training: Bachelor's degree

INDUSTRIAL ENGINEERS (SOC 17-2112)

Design, develop, test, and evaluate integrated systems for managing industrial production processes, including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination.

Sample of reported job titles: Industrial Engineer, Process Engineer, Engineer, Operations Engineer, Engineering Manager, Manufacturing Specialist, Plant Engineer, Supply Chain Engineer, Tool Engineer, Production Engineer

Occupation Snapshot	
Average annual awards, 2010-2012	None
Jobs in occupation in region, 2013	280
2013 LQ (US = 1.00)	1.20
Total est. openings, 2013-2018	54
From new growth	12
From replacement demand	42
Median hourly wage	$40.40
Relative to US (US = 1.00)	1.07

Typical Education/Training: Bachelor's degree

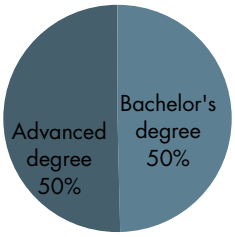
ELECTRONICS ENGINEERS, EXCEPT COMPUTER (SOC 17-2072)

Research, design, develop, or test electronic components and systems for commercial, industrial, military, or scientific use employing knowledge of electronic theory and materials properties. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls.

Sample of reported job titles: Design Engineer, Engineer, Test Engineer, Electronics Engineer, Product Engineer, Engineering Manager, Electrical Design Engineer, Integrated Circuit Design Engineer (IC Design Engineer), Evaluation Engineer, Research and Development Engineer (R&D Engineer)

Occupation Snapshot	
Average annual awards, 2010-2012	46
Jobs in occupation in region, 2013	235
2013 LQ (US = 1.00)	1.63
Total est. openings, 2013-2018	42
From new growth	15
From replacement demand	27
Median hourly wage	$55.14
Relative to US (US = 1.00)	1.25

Average Annual Completions by Award Level



Typical Education/Training: Bachelor's degree

INFORMATION TECHNOLOGY

The Information Technology talent cluster includes all of the Computer and Mathematical occupations (15-1100) and associated managers. This group includes Computer and Information Research Scientists (15-1110), Computer and Information Analysts (15-1120), Software Developers and Programmers (15-1130), Database and Systems Administrators (15-1140), and Computer Support Specialists (15-1150)

This sector accounted for 5,235 jobs in 2013. The sector grew 6.5 percent between 2008 and 2013 and is projected to grow another 8.6 percent between 2013 and 2018. This growth is spread fairly evenly across most of the occupations in the sector with the exception of Systems Software Developers.

In six of the occupations, the region has a higher than average concentration of employees than the nation. The location quotient for Systems Software Developers is almost three times that of the nation. Web Developers, Applications Software Developers, Computer User Support Specialists, and Computer Network Support Specialists have higher than average location quotients.

In Computer Programmer, Computer Network Architect, and Database Administrator occupations, the concentration of employees is significantly low relative to the nation.

PRIMARY OCCUPATIONS

RELATIVE CONCENTRATIONS (2013) AND PROJECTIONS 2013-18

SOC Code	Description	Location Quotient (LQ) 2013	Employment 2013 (estimated)	Employment 2018 (projected)	
15-1133	Software Developers, Systems Software	2.98	1,273	1,264	▼
15-1132	Software Developers, Applications	1.65	1,058	1,145	▲
15-1151	Computer User Support Specialists	1.26	782	886	▲
15-1121	Computer Systems Analysts	0.80	434	515	▲
15-1199	Computer Occupations, All Other	1.85	386	412	▲
15-1142	Network and Computer Systems Administrators	0.93	353	393	▲
15-1134	Web Developers	1.96	282	314	▲
11-3021	Computer and Information Systems Managers	0.82	279	306	▲
15-1152	Computer Network Support Specialists	1.27	241	255	▲
15-1131	Computer Programmers	0.55	196	227	▲
15-1141	Database Administrators	0.74	90	105	▲
15-1143	Computer Network Architects	0.54	81	95	▲

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

INFORMATION TECHNOLOGY (CONT.)

All but three of the primary occupations in the Information Technology sector are currently considered hard-to-fill. These include Computer User Support Specialists, Computer Systems Analysts, Systems Software Developers, Network and Computer Systems Administrators, Other Computer Occupations, Computer and Information Systems Managers, Computer Network Support Specialists, Database Administrators, and Computer Network Architects.

Three of the occupations are paying a wage premium of 10 percent over the US median hourly wage. These occupations include Other Computer Occupations, Computer Programmers, and Database Administrators. Of note, Computer Programmers and Database Administrators are also occupations with relatively low location quotients, which means there are relatively few workers in those occupations.

For all but one occupation, new jobs account for the majority of the openings while replacement jobs account for 32 to 59 percent of the openings. The share of workers age 55 and older is not more than 18 percent in any of the occupations.

Although the total number of Systems Software Developers is expected to decline, 94 openings are projected for the occupation over the next 5 years, which is an indicator that there is high turnover in that occupation.

STAFFING ENVIRONMENT

STAFFING ENVIRONMENT INDICATOR, WAGES, OPENINGS, AGE PROFILE

SOC Code	Description	Staffing Environment	Earnings: County ($)	Earnings: % of US	Job Openings, 2013-2018: Total (projected)	Job Openings, 2013-2018: % New Growth	Job Openings, 2013-2018: % Replacement	Share of workers age 55+
15-1151	Computer User Support Specialists	Hardest to Fil ▼	**$23.30**	104%	171	61%	39%	16%
15-1132	Software Developers, Applications	Neutral ◀▶	**$38.02**	88%	158	55%	45%	12%
15-1121	Computer Systems Analysts	Hardest to Fil ▼	**$36.64**	97%	119	68%	32%	17%
15-1133	Software Developers, Systems Software	Hardest to Fil ▼	**$48.67**	103%	94	0%	100%	12%
15-1142	Network & Computer Systems Administrators	Hard to Fill ▼	**$32.89**	95%	72	56%	44%	12%
15-1199	Computer Occupations, All Other	Hard to Fill ▼	**$43.00**	**112%**	60	43%	57%	18%
15-1131	Computer Programmers	Neutral ◀▶	**$39.32**	**112%**	60	52%	48%	14%
15-1134	Web Developers	Neutral ◀▶	**$20.83**	75%	56	57%	43%	8%
11-3021	Computer & Information Systems Managers	Hard to Fill ▼	**$57.35**	100%	48	56%	44%	15%
15-1152	Computer Network Support Specialists	Hardest to Fil ▼	**$29.11**	103%	34	41%	59%	13%
15-1141	Database Administrators	Hard to Fill ▼	**$41.95**	**113%**	24	63%	38%	13%
15-1143	Computer Network Architects	Hard to Fill ▼	**$42.49**	98%	24	58%	42%	--

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

INFORMATION TECHNOLOGY (CONT.)

Of the primary IT occupations, only Computer User Support Specialists, Web Developers, and Computer Network Support Specialists require less than a bachelor's degree. Computer User Support Specialists require some college but no degree while Web Developers and Computer Network Support Specialists need associate's degrees.

All of the other primary occupations require a bachelor's degree. Computer and Information Systems Managers and Computer Network Architects require five or more years of related work experience. Database Administrators require between one and five years.

EDUCATION & TRAINING

EDUCATION LEVEL, WORK EXPERIENCE, AND ON-THE-JOB TRAINING

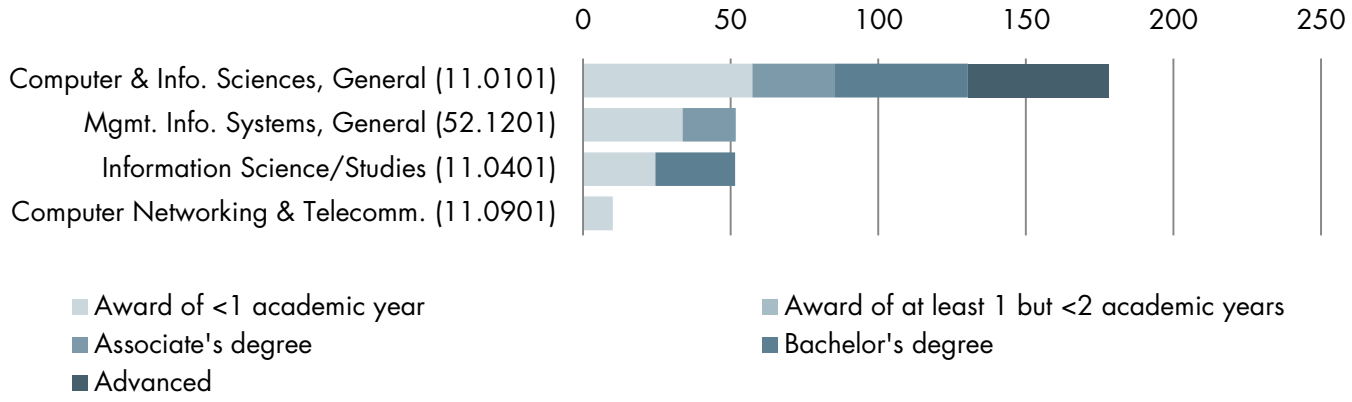
			Education & Training		
SOC Code	**Description**	**Average Regional Completions**	**Typical education needed for entry**	**Work experience in a related occupation**	**Typical on-the-job training (OJT) needed to attain competency in the occupation**
15-1151	Computer User Support Specialists	282	Some college, no degree	None	Moderate-term OJT
15-1132	Software Developers, Applications	10	Bachelor's degree	None	None
15-1121	Computer Systems Analysts	282	Bachelor's degree	None	None
15-1133	Software Developers, Systems Software	53	Bachelor's degree	None	None
15-1142	Network & Computer Systems Admin.	451	Bachelor's degree	None	None
15-1199	Computer Occupations, All Other	282	Bachelor's degree	None	None
15-1131	Computer Programmers	282	Bachelor's degree	None	None
15-1134	Web Developers	4	Associate's degree	None	None
11-3021	Computer & Info. Systems Managers	267	Bachelor's degree	5 years +	None
15-1152	Computer Network Support Specialists	14	Associate's degree	None	None
15-1141	Database Administrators	282	Bachelor's degree	< 5 years	None
15-1143	Computer Network Architects	185	Bachelor's degree	5 years+	None

Source: Bureau of Labor Statistics, National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012.

INFORMATION TECHNOLOGY (CONT.)

TOP FIELDS OF STUDY

In the region, there are about 300 completions, on average, in fields of study related to IT occupations. Although the primary occupations in this sector require specific skills, almost all of the regional completions are in more general computer and information science fields. The majority of the regional completions are in the General Computer and Information Science field. Management Information Systems and Information Science each have about 50 completions, on average. Computer Networking and Telecommunications has 10 completions.



Source: National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012

INFORMATION TECHNOLOGY (CONT.)

On the following pages are profiles of individual occupations that are expected to continue to face a difficult staffing environment. The profiles provide an overview of the occupations with sample job titles and a snapshot of local demand and supply statistics.

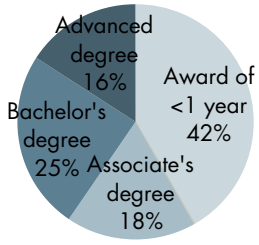
COMPUTER USER SUPPORT SPECIALISTS (SOC 15-1151)

Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.

Sample of reported job titles: Information Technology Specialist (IT Specialist), Support Specialist, Computer Technician, Computer Support Specialist, Help Desk Analyst, Technical Support Specialist, Network Support Specialist, Electronic Data Processing Auditor (EDP Auditor), Network Technician, Computer Specialist

Occupation Snapshot	
Average annual awards, 2010-2012	301
Jobs in occupation in region, 2013	782
2013 LQ (US = 1.00)	1.26
Total est. openings, 2013-2018	171
From new growth	104
From replacement demand	67
Median hourly wage	$23.30
Relative to US (US = 1.00)	1.04

Average Annual Completions by Award Level



Typical Education/Training: Some college, no degree

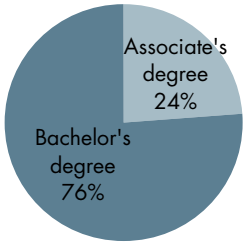
SOFTWARE DEVELOPERS, APPLICATIONS (SOC 15-1132)

Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. May supervise computer programmers.

Sample of reported job titles: Software Engineer, Application Integration Engineer, Programmer Analyst, Software Development Engineer, Computer Consultant, Software Architect, Software Developer, Technical Consultant, Applications Developer, Business Systems Analyst

Occupation Snapshot	
Average annual awards, 2010-2012	10
Jobs in occupation in region, 2013	1,058
2013 LQ (US = 1.00)	1.65
Total est. openings, 2013-2018	158
From new growth	87
From replacement demand	71
Median hourly wage	$38.02
Relative to US (US = 1.00)	0.88

Average Annual Completions by Award Level



Typical Education/Training: Bachelor's degree

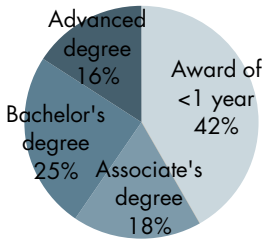
COMPUTER SYSTEMS ANALYSTS (SOC 15-1121)

Analyze science, engineering, business, and other data processing problems to implement and improve computer systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software.

Sample of reported job titles: Systems Analyst, Programmer Analyst, Business Systems Analyst, Computer Systems Analyst, Computer Systems Consultant, Computer Analyst, Information Systems Analyst (ISA), Applications Analyst, Business Analyst, Systems Engineer

Occupation Snapshot	
Average annual awards, 2010-2012	301
Jobs in occupation in region, 2013	434
2013 LQ (US = 1.00)	0.80
Total est. openings, 2013-2018	119
From new growth	81
From replacement demand	38
Median hourly wage	$36.64
Relative to US (US = 1.00)	0.97

Average Annual Completions by Award Level



Typical Education/Training: Bachelor's degree

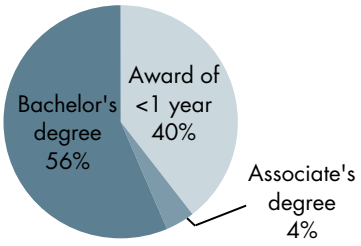
SOFTWARE DEVELOPERS, SYSTEMS SOFTWARE (SOC 15-1133)

Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. May design embedded systems software. Apply principles and techniques of computer science, engineering, and mathematical analysis.

Sample of reported job titles: Developer, Infrastructure Engineer, Network Engineer, Publishing Systems Analyst, Senior Software Engineer, Software Architect, Software Developer, Software Engineer, Systems Coordinator, Systems Engineer

Occupation Snapshot	
Average annual awards, 2010-2012	62
Jobs in occupation in region, 2013	1,273
2013 LQ (US = 1.00)	2.98
Total est. openings, 2013-2018	94
From new growth	-9
From replacement demand	103
Median hourly wage	$48.67
Relative to US (US = 1.00)	1.03

Average Annual Completions by Award Level



Typical Education/Training: Bachelor's degree

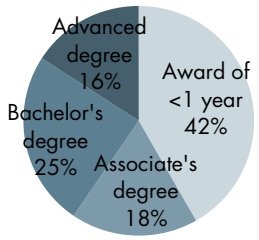
NETWORK AND COMPUTER SYSTEMS ADMINISTRATORS (SOC 15-1142)

Install, configure, and support an organization's local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Monitor network to ensure network availability to all system users and may perform necessary maintenance to support network availability. May monitor and test Web site performance to ensure Web sites operate correctly and without interruption. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software. May supervise computer user support specialists and computer network support specialists. May administer network security measures.

Sample of reported job titles: Systems Administrator, Network Administrator, Network Engineer, Information Technology Specialist (IT Specialist), Local Area Network Administrator (LAN Administrator), Information Technology Manager (IT Manager), Information Technology Director (IT Director), Systems Engineer, Network Manager, Network Specialist

Occupation Snapshot	
Average annual awards, 2010-2012	301
Jobs in occupation in region, 2013	353
2013 LQ (US = 1.00)	0.93
Total est. openings, 2013-2018	72
From new growth	40
From replacement demand	32
Median hourly wage	$32.89
Relative to US (US = 1.00)	0.95

Average Annual Completions by Award Level



Typical Education/Training: Bachelor's degree

SALES & OPERATIONS

The Sales & Operations talent cluster includes the managers, analysts, and specialists related to core business functions that support the region's industry clusters. These include ocucupations such as finance, human resources, purchasing, logistics, sales, and marketing.

This sector accounted for 11,053 jobs in 2013. The sector grew almost 1 percent between 2008 and 2013 and is projected to grow another 7.9 percent between 2013 and 2018. The primary sources of growth are in General and Operations Managers, Business Operations Specialists, Accountants and Auditors, and Sales Representatives for Wholesale, Manufacturing, and Services.

Larimer County has a relatively low concentration of workers in this sector in comparison to the nation. Sixteen of the primary occupations in this cluster have location quotients at or below the nation. Business Operations Specialists, Cost Estimators, and Market Research Analysts are the only occupations that have location quotients 25 percent or more higher than national.

Financial Managers, Sales Representatives of Technical and Scientific Products, Financial Analysts, Financial Specialists, Industrial Production Managers, and Human Resource Managers have relative concentrations less than half that of the nation.

PRIMARY OCCUPATIONS

RELATIVE CONCENTRATIONS (2013) AND PROJECTIONS 2013-18

SOC Code	Description	Location Quotient (LQ) 2013	Employment 2013 (estimated)	Employment 2018 (projected)	
11-1021	General and Operations Managers	1.02	2,097	2,241	▲
13-1199	Business Operations Specialists, All Other	1.66	1,669	1,777	▲
41-4012	Sales Representatives, Wholesale and Manufacturing	0.96	1,500	1,576	▲
13-2011	Accountants and Auditors	1.00	1,347	1,478	▲
41-3099	Sales Representatives, Services, All Other	0.97	784	849	▲
13-1111	Management Analysts	0.76	564	613	▲
13-1161	Market Research Analysts and Marketing Specialists	1.25	562	629	▲
13-1071	Human Resources Specialists	0.98	434	464	▲
13-1051	Cost Estimators	1.50	326	336	▲
11-2022	Sales Managers	0.59	226	240	▲
11-3031	Financial Managers	0.40	214	242	▲
13-1041	Compliance Officers	0.73	179	196	▲
41-4011	Sales Representatives, Technical and Scientific Products	0.39	159	173	▲
11-2021	Marketing Managers	0.74	145	157	▲
13-1151	Training and Development Specialists	0.59	139	168	▲
13-2051	Financial Analysts	0.42	111	124	▲
13-1081	Logisticians	0.71	93	107	▲
41-9031	Sales Engineers	1.01	75	81	▲
13-2099	Financial Specialists, All Other	0.46	73	82	▲
11-3051	Industrial Production Managers	0.40	68	72	▲
11-3121	Human Resources Managers	0.47	53	59	▲
13-2031	Budget Analysts	0.81	50	55	▲

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

SALES & OPERATIONS (CONT.)

Four of the primary occupations in Sales & Operations sector are currently considered hard-to-fill. These include Wholesale and Manufacturing Sales Representatives, Services Sales Representatives, Human Resource Specialists, and Sales Engineers.

One of the occupations is paying a wage premium of 10 percent over the US median hourly wage—Industrial Production Managers.

The split of new jobs to replacement jobs is fairly even across most of the occupations with a few exceptions. The openings for Cost Estimators are driven by replacement jobs, with more than 30 percent of the workers in this occupation age 55 and older. The openings for Market Research Analysts, Training and Development Specialists, Logisticians, and Financial Specialists are largely driven by new jobs rather than replacement jobs.

Three of the occupations—Accountants, Management Analysts, and Cost Estimators—face a likely wave of retirements with more than 25 percent of workers in these occupations age 55 or older.

STAFFING ENVIRONMENT

STAFFING ENVIRONMENT INDICATOR, WAGES, OPENINGS, AGE PROFILE

SOC Code	Description	Staffing Environment	Earnings: County ($)	Earnings: % of US	Job Openings, 2013-2018: Total (projected)	Job Openings, 2013-2018: % New Growth	Job Openings, 2013-2018: % Replacement	Share of workers age 55+
11-1021	General & Operations Managers	Neutral	**$38.47**	84%	350	41%	59%	21%
13-2011	Accountants & Auditors	Neutral	**$25.90**	86%	344	38%	62%	**25%**
41-4012	Sales Representatives, Wholesale & Manuf.	Hard to Fill	**$22.85**	88%	235	32%	68%	23%
13-1199	Business Operations Specialists, All Other	Neutral	**$29.10**	93%	228	47%	53%	22%
41-3099	Sales Representatives, Services, All Other	Hard to Fill	**$23.24**	96%	183	36%	64%	20%
13-1161	Market Research Analysts & Marketing Specialists	Neutral	**$26.37**	91%	108	62%	38%	15%
13-1111	Management Analysts	Neutral	**$29.15**	81%	95	52%	48%	**37%**
13-1071	Human Resources Specialists	Hard to Fill	**$24.17**	90%	71	42%	58%	20%
13-1051	Cost Estimators	Neutral	**$26.23**	94%	65	15%	85%	**31%**
11-3031	Financial Managers	Neutral	**$52.72**	101%	49	57%	43%	19%
13-1151	Training & Development Specialists	Neutral	**$25.49**	95%	44	66%	34%	17%
11-2022	Sales Managers	Neutral	**$40.08**	81%	40	35%	65%	16%
13-1041	Compliance Officers	Neutral	**$22.89**	77%	35	49%	51%	21%
41-4011	Sales Representatives, Technical & Sci. Products	Neutral	**$34.03**	95%	32	44%	56%	18%
11-2021	Marketing Managers	Neutral	**$45.63**	82%	29	41%	59%	17%
13-2051	Financial Analysts	Neutral	**$38.65**	105%	28	46%	54%	11%
13-1081	Logisticians	Easy to Fill	**$28.39**	81%	20	70%	30%	19%
11-3121	Human Resources Managers	Neutral	**$50.08**	108%	15	40%	60%	21%
13-2031	Budget Analysts	Neutral	**$35.55**	107%	15	33%	67%	--
13-2099	Financial Specialists, All Other	Neutral	**$30.35**	104%	14	64%	36%	18%
41-9031	Sales Engineers	Hard to Fill	**$47.21**	107%	13	46%	54%	19%
11-3051	Industrial Production Managers	Neutral	**$47.87**	**113%**	11	36%	64%	21%

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

SALES & OPERATIONS (CONT.)

All of the primary occupations in the Sales & Operations talent cluster require a bachelor's degree. Sales Representatives for Wholesale, Manufacturing, and Services and Business Operations Specialist require a high school diploma or equivalent.

Financial Managers, Marketing Managers, Human Resource Managers, and Industrial Production Managers also require five or more years of work experience. General and Operations Managers, Management Analysts, Training and Development Specialists, and Sales Managers require between one and five years of work experience.

EDUCATION & TRAINING

EDUCATION LEVEL, WORK EXPERIENCE, AND ON-THE-JOB TRAINING

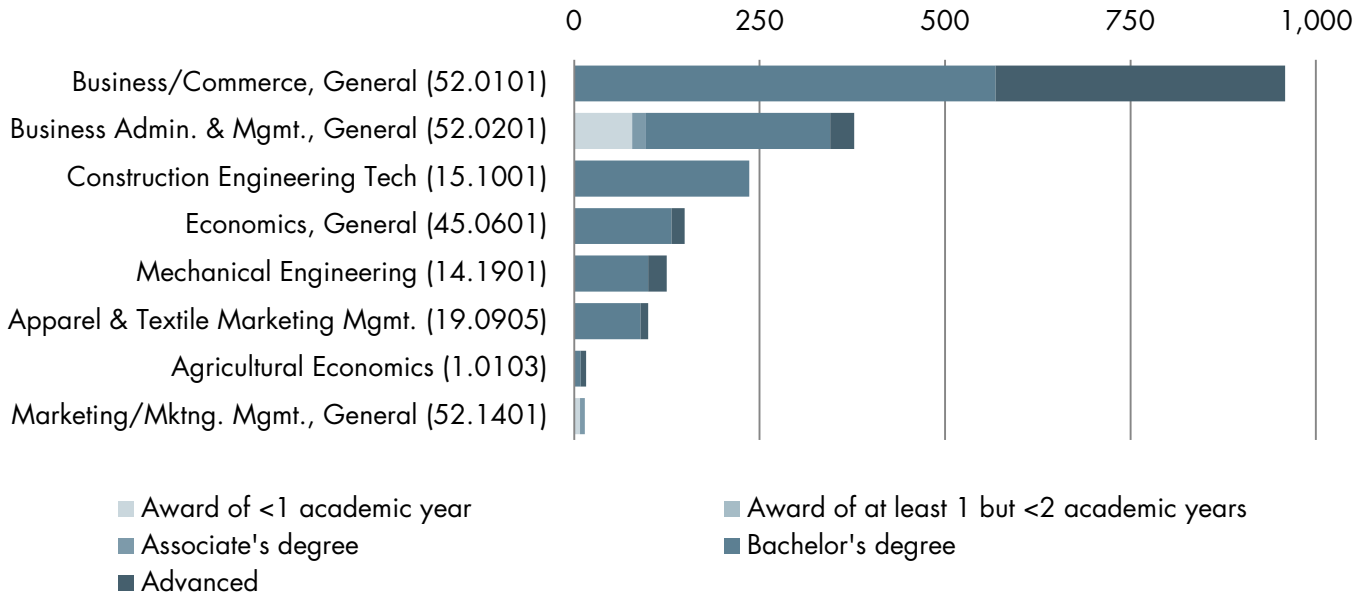
			Education & Training		
SOC Code	Description	Average Regional Completions	Typical education needed for entry	Work experience in a related occupation	Typical on-the-job training (OJT) needed to attain competency in the occupation
11-1021	General & Operations Managers	1,336	Bachelor's degree	< 5 years	None
13-2011	Accountants & Auditors	6	Bachelor's degree	None	None
41-4012	Sales Rep, Wholesale & Mfg.	0	HS diploma or equiv.	None	Moderate-term OJT
13-1199	Business Ops. Specialists, All Other	0	HS diploma or equiv.	None	None
41-3099	Sales Rep., Services, All Other	0	HS diploma or equiv.	None	Short-term OJT
13-1161	Market Research Analysts & Marketing Spec.	177	Bachelor's degree	None	None
13-1111	Management Analysts	1,336	Bachelor's degree	< 5 years	None
13-1071	Human Resources Specialists	0	Bachelor's degree	None	None
13-1051	Cost Estimators	1,697	Bachelor's degree	None	None
11-3031	Financial Managers	6	Bachelor's degree	5 years +	None
13-1151	Training & Development Specialists	0	Bachelor's degree	< 5 years	None
11-2022	Sales Managers	1,348	Bachelor's degree	< 5 years	None
13-1041	Compliance Officers	0	Bachelor's degree	None	Moderate-term OJT
41-4011	Sales Rep., Technical & Sci. Products	0	Bachelor's degree	None	Moderate-term OJT
11-2021	Marketing Managers	111	Bachelor's degree	5 years +	None
13-2051	Financial Analysts	6	Bachelor's degree	None	None
13-1081	Logisticians	0	Bachelor's degree	None	None
11-3121	Human Resources Managers	0	Bachelor's degree	5 years +	None
13-2031	Budget Analysts	6	Bachelor's degree	None	None
13-2099	Financial Specialists, All Other	6	Bachelor's degree	None	Moderate-term OJT
41-9031	Sales Engineers	0	Bachelor's degree	None	Moderate-term OJT
11-3051	Industrial Production Managers	1,336	Bachelor's degree	5 years +	None

Source: Bureau of Labor Statistics, National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012.

SALES & OPERATIONS (CONT.)

TOP FIELDS OF STUDY

For the most part, the completions in the fields of study related to the primary occupations in the Sales & Operations are in general topic areas: business, economics, and marketing. In these general fields of study, the region has, on average, about 1,500 completions.



Source: National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012

SALES & OPERATIONS (CONT.)

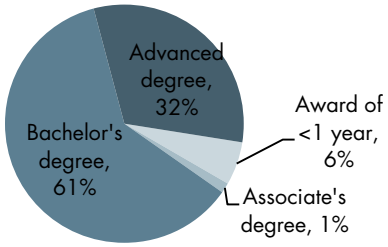
On the following pages are profiles of individual occupations that are expected to continue to face a difficult staffing environment. The profiles provide an overview of the occupations with sample job titles and a snapshot of local demand and supply statistics.

GENERAL AND OPERATIONS MANAGERS (SOC 11-1021)

Plan, direct, or coordinate the operations of public or private sector organizations. Duties and responsibilities include formulating policies, managing daily operations, and planning the use of materials and human resources, but are too diverse and general in nature to be classified in any one functional area of management or administration, such as personnel, purchasing, or administrative services.

Sample of reported job titles: Operations Manager, General Manager (GM), Director of Operations, Plant Manager, Store Manager, Facilities Manager, Plant Superintendent, Vice President of Operations, Warehouse Manager, Chief Operating Officer (COO)

Occupation Snapshot	
Average annual awards, 2010-2012	1,336
Jobs in occupation in region, 2013	2,097
2013 LQ (US = 1.00)	1.02
Total est. openings, 2013-2018	350
From new growth	144
From replacement demand	206
Median hourly wage	$38.47
Relative to US (US = 1.00)	0.84



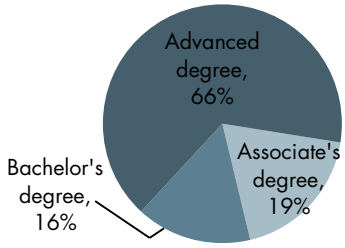
Typical Education/Training: Bachelor's degree

ACCOUNTANTS AND AUDITORS (SOC 13-2011)

Examine, analyze, and interpret accounting records to prepare financial statements, give advice, or audit and evaluate statements prepared by others. Install or advise on systems of recording costs or other financial and budgetary data.

Sample of reported job titles: Accountant, Certified Public Accountant (CPA), Staff Accountant, Accounting Manager, Cost Accountant, General Accountant, Accounting Officer, Business Analyst, Accounting Supervisor, Financial Reporting Accountant, Auditor, Internal Auditor, Auditor-in-Charge, Assurance Manager, Audit Manager, Internal Audit Director, Assurance Senior, Audit Partner, Deputy for Audit, Financial Auditor

Occupation Snapshot	
Average annual awards, 2010-2012	6
Jobs in occupation in region, 2013	1,347
2013 LQ (US = 1.00)	1.00
Total est. openings, 2013-2018	344
From new growth	131
From replacement demand	213
Median hourly wage	$25.90
Relative to US (US = 1.00)	0.86



Typical Education/Training: Bachelor's degree

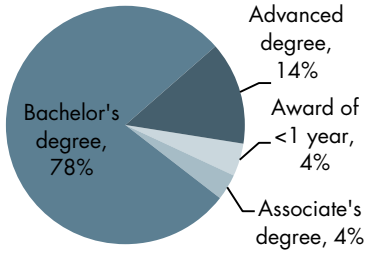
MARKET RESEARCH ANALYSTS AND MARKETING SPECIALISTS (SOC 13-1161)

Research market conditions in local, regional, or national areas, or gather information to determine potential sales of a product or service, or create a marketing campaign. May gather information on competitors, prices, sales, and methods of marketing and distribution.

Sample of reported job titles: Market Research Analyst, Market Analyst, Project Manager, Market Research Consultant, Client Service and Consulting Manager, Market Research Manager, Product Line Manager, Business Development Specialist, Client Services Vice President, Communications Specialist

Occupation Snapshot	
Average annual awards, 2010-2012	177
Jobs in occupation in region, 2013	562
2013 LQ (US = 1.00)	1.25
Total est. openings, 2013-2018	108
From new growth	67
From replacement demand	41
Median hourly wage	$26.37
Relative to US (US = 1.00)	0.91

Average Annual Completions by Award Level



Typical Education/Training: Bachelor's degree

HUMAN RESOURCES SPECIALISTS (SOC 13-1071)

Perform activities in the human resource area. Includes employment specialists who screen, recruit, interview, and place workers.

Sample of reported job titles: Corporate Recruiter, Employment Coordinator, Employment Representative, Employment Specialist, Human Resources Coordinator, Human Resources HR Generalist, Human Resources Specialist (HR Specialist), Personnel Coordinator, Recruiter, Technical Recruiter

Occupation Snapshot	
Average annual awards, 2010-2012	None
Jobs in occupation in region, 2013	434
2013 LQ (US = 1.00)	0.98
Total est. openings, 2013-2018	71
From new growth	30
From replacement demand	41
Median hourly wage	$24.17
Relative to US (US = 1.00)	0.90

No for-credit completions were reported

Typical Education/Training: Bachelor's degree

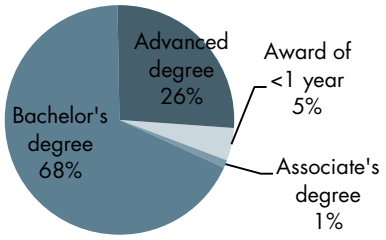
COST ESTIMATORS (SOC 13-1051)

Prepare cost estimates for product manufacturing, construction projects, or services to aid management in bidding on or determining price of product or service. May specialize according to particular service performed or type of product manufactured.

Sample of reported job titles: Estimator, Cost Estimator, Estimator Project Manager, Project Manager, Construction Estimator, Cost Analyst, Design Consultant, Operations Manager, Sales Engineer

Occupation Snapshot	
Average annual awards, 2010-2012	1,697
Jobs in occupation in region, 2013	326
2013 LQ (US = 1.00)	1.50
Total est. openings, 2013-2018	65
From new growth	10
From replacement demand	55
Median hourly wage	$26.23
Relative to US (US = 1.00)	0.94

Average Annual Completions by Award Level



Typical Education/Training: Bachelor's degree

HEALTHCARE

The Healthcare talent cluster consists of Healthcare Practitioners and Technical Occupations (29-000) and Healthcare Support Occupations (31-0000).

The sector as a whole employed 15,976 workers in 2013. The sector grew 16.9 percent between 2008 and 2013 and is projected to grow another 18.1 percent between 2013 and 2018. This increase is largely accounted for by growth in the number of Registered Nurses, Nursing Assistants, and Home Health Aides.

Larimer County has high concentrations of Massage Therapists, Veterinary Techs, Veterinerians, Medical Transcriptionists, and Opticians. It has low concentrations of LVNs, Pharmacy Techs, Pharmacists, Respiratory Therapists, and Nurse Practitioners.

PRIMARY OCCUPATIONS

RELATIVE CONCENTRATIONS (2013) AND PROJECTIONS 2013-18

		Location Quotient (LQ)	Employment		
			2013	2018	
SOC Code	Description	2013	*(estimated)*	*(projected)*	
29-1141	Registered Nurses	1.03	2,878	3,559	▲
31-1014	Nursing Assistants	0.84	1,289	1,512	▲
31-1011	Home Health Aides	1.19	1,171	1,421	▲
31-9092	Medical Assistants	1.03	618	725	▲
31-9091	Dental Assistants	1.86	591	642	▲
29-2061	Licensed Practical and Licensed Vocational Nurses	0.67	521	624	▲
31-9011	Massage Therapists	3.05	449	487	▲
29-1069	Physicians and Surgeons, All Other	1.13	408	470	▲
29-2056	Veterinary Technologists and Technicians	3.52	315	380	▲
29-1123	Physical Therapists	1.43	304	367	▲
29-2052	Pharmacy Technicians	0.68	257	290	▲
11-9111	Medical and Health Services Managers	0.79	251	302	▲
29-2021	Dental Hygienists	1.17	236	270	▲
29-2034	Radiologic Technologists	1.10	227	280	▲
29-2041	Emergency Medical Technicians and Paramedics	0.91	221	231	▲
29-1131	Veterinarians	3.04	214	232	▲
29-1051	Pharmacists	0.71	212	238	▲
29-1127	Speech-Language Pathologists	1.38	183	210	▲
29-2071	Medical Records and Health Information Technicians	0.92	181	216	▲
31-9094	Medical Transcriptionists	2.01	181	203	▲
29-1021	Dentists, General	1.31	177	194	▲
29-2012	Medical and Clinical Laboratory Technicians	0.99	165	205	▲
29-1071	Physician Assistants	1.79	165	199	▲

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

PRIMARY OCCUPATIONS (CONT.)

RELATIVE CONCENTRATIONS (2013) AND PROJECTIONS 2013-18

SOC Code	Description	Location Quotient (LQ) 2013	Employment 2013 (estimated)	Employment 2018 (projected)	
29-2011	Medical and Clinical Laboratory Technologists	0.96	160	193	▲
29-1122	Occupational Therapists	1.36	158	187	▲
29-1062	Family and General Practitioners	1.10	144	159	▲
29-2081	Opticians, Dispensing	2.02	140	158	▲
31-9099	Healthcare Support Workers, All Other	1.18	132	156	▲
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	1.37	114	133	▲
29-2099	Health Technologists and Technicians, All Other	1.12	107	130	▲
29-1067	Surgeons	1.88	95	107	▲
29-2055	Surgical Technologists	0.87	90	113	▲
31-9097	Phlebotomists	0.76	81	99	▲
29-1126	Respiratory Therapists	0.60	73	88	▲
29-1031	Dietitians and Nutritionists	1.05	71	86	▲
29-1171	Nurse Practitioners	0.59	67	83	▲
31-9093	Medical Equipment Preparers	1.24	67	85	▲
31-2022	Physical Therapist Aides	1.28	66	81	▲
29-9011	Occupational Health and Safety Specialists	1.04	66	72	▲
29-2032	Diagnostic Medical Sonographers	1.05	65	88	▲
29-1041	Optometrists	1.55	59	64	▲
29-1199	Health Diagnosing and Treating Practitioners, All Other	1.20	55	63	▲
29-2057	Ophthalmic Medical Technicians	1.70	53	59	▲

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

Thirteen of the 43 primary occupations in the Healthcare talent cluster are considered hard to fill. Many of these occupations also earn a wage premium of 10 percent or more of the US median hourly wage. Physicians and Surgeons earn 27 percent more than the US median.

Most of the openings in the Healthcare cluster are driven by new jobs. Over 75 percent of the openings are from new jobs in the Veterinary Techs, Radiologic Techs, Health Techs, Diagnosis Medical Sonographers, and Dietitians. Over 70 percent of the openings are from replacement jobs in Veterinarians and EMTs. Physicians, Family and General Practitioners, and Health Diagnosing and Treating Practitioners are the three occupations that have 25 percent or more of their workers age 55 and older.

HEALTHCARE (CONT.)

STAFFING ENVIRONMENT

STAFFING ENVIRONMENT INDICATOR, WAGES, OPENINGS, AGE PROFILE

SOC Code	Description	Staffing Environment	Median Hourly County ($)	Median Hourly % of US	Job Openings, 2013-2018 Total (projected)	Job Openings, 2013-2018 % New Growth	Job Openings, 2013-2018 % Replacement	Share of workers age 55+
29-1141	Registered Nurses	Neutral	**$29.07**	93%	1,004	68%	32%	24.0%
31-1011	Home Health Aides	Hard to Fill	$11.53	**116%**	376	66%	34%	19.9%
31-1014	Nursing Assistants	Neutral	$12.33	105%	359	62%	38%	17.6%
31-9092	Medical Assistants	Hard to Fill	$14.84	104%	175	61%	39%	14.7%
29-2061	Licensed Practical & Licensed Vocational Nurses	Hard to Fill	**$20.90**	105%	175	59%	41%	24.4%
29-1069	Physicians & Surgeons, All Other	Hard to Fill	######	**127%**	118	53%	47%	**27.2%**
31-9091	Dental Assistants	Neutral	$15.45	93%	116	44%	56%	8.0%
29-1123	Physical Therapists	Neutral	**$32.77**	86%	106	59%	41%	11.0%
31-9011	Massage Therapists	Neutral	$12.50	83%	93	41%	59%	8.0%
11-9111	Medical & Health Services Managers	Hard to Fill	**$45.20**	107%	86	59%	41%	22.0%
29-2056	Veterinary Technologists & Technicians	Hard to Fill	$13.88	95%	83	78%	22%	7.0%
29-2034	Radiologic Technologists	Neutral	**$23.17**	88%	71	75%	25%	16.0%
29-2021	Dental Hygienists	Neutral	**$32.45**	95%	68	50%	50%	12.0%
29-1131	Veterinarians	Neutral	**$33.12**	85%	66	27%	73%	15.0%
29-2012	Medical & Clinical Laboratory Technicians	Neutral	$14.73	82%	65	62%	38%	18.0%
29-2071	Medical Records & Health Information Technicians	Neutral	$16.80	102%	62	56%	44%	20.0%
29-2011	Medical & Clinical Laboratory Technologists	Neutral	**$29.67**	107%	57	58%	42%	18.0%
29-1051	Pharmacists	Neutral	**$55.28**	99%	53	49%	51%	24.1%
29-1071	Physician Assistants	Hardest to Fil	**$49.45**	**112%**	51	67%	33%	13.0%
29-2052	Pharmacy Technicians	Neutral	$15.54	110%	47	70%	30%	12.0%
29-2041	Emergency Medical Technicians & Paramedics	Neutral	$16.90	**113%**	41	24%	76%	9.0%
29-1127	Speech-Language Pathologists	Hard to Fill	**$33.05**	99%	41	66%	34%	16.0%
29-1122	Occupational Therapists	Neutral	**$34.32**	95%	41	71%	29%	11.0%
31-9094	Medical Transcriptionists	Neutral	$15.40	96%	40	55%	45%	19.0%
29-1021	Dentists, General	Neutral	**$50.95**	71%	40	43%	58%	23.0%
29-2081	Opticians, Dispensing	Neutral	$14.10	87%	40	45%	55%	18.0%
31-9099	Healthcare Support Workers, All Other	Neutral	$13.09	83%	39	62%	38%	16.0%
29-1062	Family & General Practitioners	Neutral	**$44.02**	55%	34	44%	56%	**29.2%**
31-9096	Veterinary Assistants & Lab. Animal Caretakers	Hard to Fill	$12.95	**116%**	31	61%	39%	11.0%
29-2055	Surgical Technologists	Hard to Fill	**$22.81**	**113%**	29	79%	21%	13.0%
29-2099	Health Technologists & Technicians, All Other	Neutral	$17.53	86%	28	82%	18%	16.0%
29-2032	Diagnostic Medical Sonographers	Hard to Fill	**$35.49**	**112%**	28	82%	18%	15.0%
31-9097	Phlebotomists	Hard to Fill	$14.50	101%	27	67%	33%	--
31-9093	Medical Equipment Preparers	Hard to Fill	$15.15	102%	26	69%	31%	16.0%
29-1067	Surgeons	Neutral	**$97.82**	109%	25	48%	52%	22.0%
29-1171	Nurse Practitioners	Neutral	**$46.40**	107%	24	67%	33%	22.0%
31-2022	Physical Therapist Aides	Hard to Fill	$12.84	**112%**	24	63%	38%	--
29-1126	Respiratory Therapists	Neutral	**$26.35**	98%	21	71%	29%	16.0%
29-1031	Dietitians & Nutritionists	Neutral	**$22.86**	85%	19	79%	21%	18.0%
29-1041	Optometrists	Neutral	**$39.78**	84%	16	31%	69%	--
29-9011	Occupational Health & Safety Specialists	Neutral	**$36.04**	**112%**	15	40%	60%	17.0%
29-1199	Health Diagn. & Treating Practitioners, All Other	Neutral	**$24.12**	75%	14	57%	43%	**25.0%**
29-2057	Ophthalmic Medical Technicians	Neutral	$16.47	100%	9	67%	33%	--

Source: QCEW Employees, Non-QCEW Employees & Self-Employed–EMSI 2013.4 Class of Worker

HEALTHCARE (CONT.)

The primary occupations in the Healthcare talent cluster require a wide range of training, from support workers that require a high school diploma and no training to the practitioners that require a doctoral or professional degree and residency.

By far the most popular field of study related to Healthcare is Nursing Aide, with almost 900 students, on average, completing the program each year. Just over 300 students complete Registered Nursing each year, on average. Veterinary Medicine graduates just over 100 students each year.

EDUCATION & TRAINING

EDUCATION LEVEL, WORK EXPERIENCE, AND ON-THE-JOB TRAINING

			Education & Training		
SOC Code	Description	Average Regional Completions	Typical education needed for entry	Work experience in a related occupation	Typical OJT needed to attain competency in the occupation
29-1141	Registered Nurses	352	Associate's deg.	None	None
31-1011	Home Health Aides	0	Less than high school	None	Short-term OJT
31-1014	Nursing Assistants	887	Postsecondary non-deg.	None	None
31-9092	Medical Assistants	279	Postsecondary non-deg.	None	None
29-2061	Lic. Practical & Lic. Vocational Nurses	65	Postsecondary non-deg.	None	None
29-1069	Physicians & Surgeons, All Other	0	Doctoral or prof. deg.	None	Internship/residency
31-9091	Dental Assistants	13	Postsecondary non-deg.	None	None
29-1123	Physical Therapists	0	Doctoral or prof. deg.	None	None
31-9011	Massage Therapists	91	Postsecondary non-deg.	None	None
11-9111	Medical & Health Services Managers	6	Bachelor's deg.	None	None
29-2056	Veterinary Technologists & Tech.	45	Associate's deg.	None	None
29-2034	Radiologic Technologists	27	Associate's deg.	None	None
29-2021	Dental Hygienists	0	Associate's deg.	None	None
29-1131	Veterinarians	149	Doctoral or prof. deg.	None	None
29-2012	Medical & Clinical Laboratory Tech.	0	Associate's deg.	None	None
29-2071	Medical Records & Health Info. Tech.	87	Postsecondary non-deg.	None	None
29-2011	Medical & Clinical Lab. Tech.	0	Bachelor's deg.	None	None
29-1051	Pharmacists	0	Doctoral or prof. deg.	None	None
29-1071	Physician Assistants	0	Master's deg.	None	None
29-2052	Pharmacy Technicians	46	HS diploma or equiv.	None	Moderate-term OJT
29-2041	Emergency Med. Tech. & Paramedics	538	Postsecondary non-deg.	None	None
29-1127	Speech-Language Pathologists	65	Master's deg.	None	None
29-1122	Occupational Therapists	42	Master's deg.	None	None
31-9094	Medical Transcriptionists	0	Postsecondary non-deg.	None	None
29-1021	Dentists, General	0	Doctoral or prof. deg.	None	None

HEALTHCARE (CONT.)

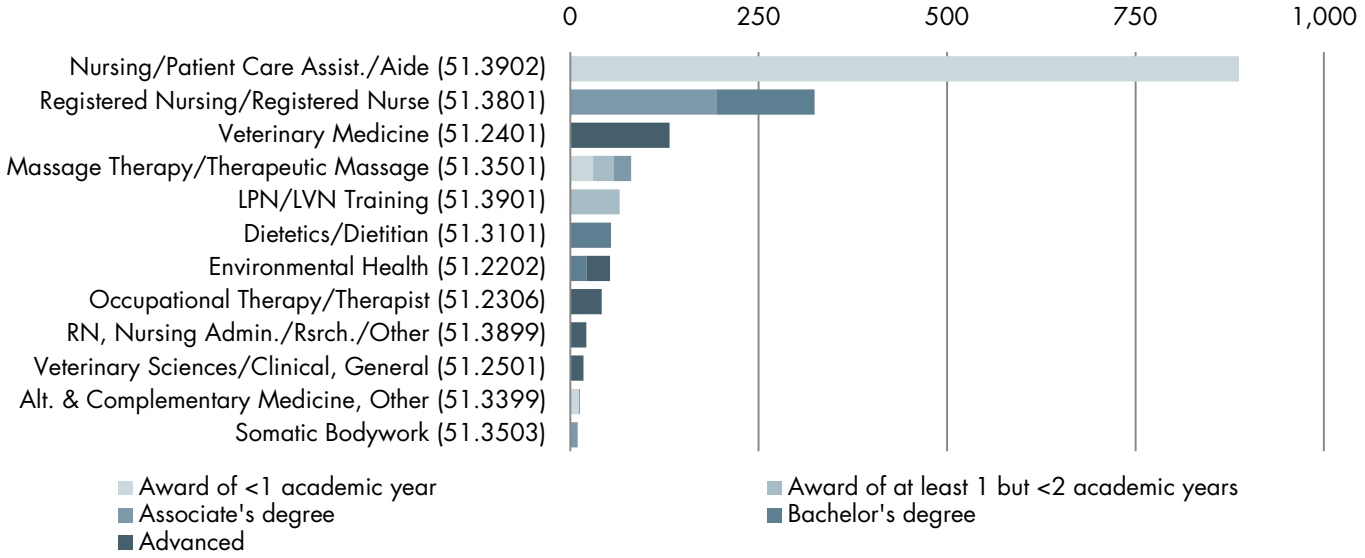
EDUCATION & TRAINING (CONT'D)

EDUCATION LEVEL, WORK EXPERIENCE, AND ON-THE-JOB TRAINING

			Education & Training		
SOC Code	Description	Average Regional Completions	Typical education needed for entry	Work experience in a related occupation	Typical OJT needed to attain competency in the occupation
29-2081	Opticians, Dispensing	0	HS diploma or equiv.	None	Long-term OJT
31-9099	Healthcare Support Workers, All Other	159	HS diploma or equiv.	None	None
29-1062	Family & General Practitioners	0	Doctoral or prof. deg.	None	Internship/residency
31-9096	Vet. Assistants & Lab. Animal Caretakers	45	HS diploma or equiv.	None	Short-term OJT
29-2055	Surgical Technologists	10	Postsecondary non-deg.	None	None
29-2099	Health Technologists & Technicians, All Other	23	HS diploma or equiv.	None	None
29-2032	Diagnostic Medical Sonographers	0	Associate's deg.	None	None
31-9097	Phlebotomists	88	Postsecondary non-deg.	None	None
31-9093	Medical Equipment Preparers	136	HS diploma or equiv.	None	Moderate-term OJT
29-1067	Surgeons	0	Doctoral or prof. deg.	None	Internship/residency
29-1171	Nurse Practitioners	21	Master's deg.	None	None
31-2022	Physical Therapist Aides	0	HS diploma or equiv.	None	Short-term OJT
29-1126	Respiratory Therapists	0	Associate's deg.	None	None
29-1031	Dietitians & Nutritionists	161	Bachelor's deg.	None	Internship/residency
29-1041	Optometrists	0	Doctoral or prof. deg.	None	None
29-9011	Occupational Health & Safety Specialists	53	Bachelor's deg.	None	Short-term OJT
29-1199	Health Diag. & Treating Pract., All Other	12	Master's deg.	None	None
29-2057	Ophthalmic Medical Technicians	0	Postsecondary non-deg.	None	None

Source: Bureau of Labor Statistics, National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012.

TOP FIELDS OF STUDY



Source: National Center for Education Statistics, IPEDS Surveys for academic years 2009-2010, 2010-2011, and 2011-2012

HEALTHCARE (CONT.)

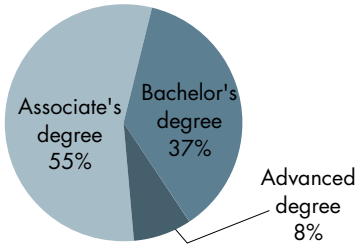
On the following pages are profiles of individual occupations that are expected to continue to face a difficult staffing environment. The profiles provide an overview of the occupations with sample job titles and a snapshot of local demand and supply statistics.

REGISTERED NURSES (SOC 29-1141)

Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required.

Sample of reported job titles: Charge Nurse, Director of Nursing (DON), Emergency Department RN (Emergency Department Registered Nurse), Oncology RN (Oncology Registered Nurse), Operating Room Registered Nurse (OR RN), Public Health Nurse (PHN), Registered Nurse (RN), School Nurse, Staff Nurse, Staff RN (Staff Registered Nurse)

Occupation Snapshot	
Average annual awards, 2010-2012	352
Jobs in occupation in region, 2013	2,878
2013 LQ (US = 1.00)	1.03
Total est. openings, 2013-2018	1,004
From new growth	681
From replacement demand	323
Median hourly wage	$29.07
Relative to US (US = 1.00)	0.93



Typical Education/Training: Associate's degree

NURSING ASSISTANTS (SOC 31-1014)

Provide basic patient care under direction of nursing staff. Perform duties such as feed, bathe, dress, groom, or move patients, or change linens. May transfer or transport patients. Includes nursing care attendants, nursing aides, and nursing attendants.

Sample of reported job titles: Certified Medication Aide (CMA), Certified Nurse Aide (CNA), Certified Nurses Aide (CNA), Certified Nursing Assistant (CNA), Geriatric Nursing Assistant (GNA), Licensed Nursing Assistant (LNA), Nurses' Aide, Nursing Aide, Nursing Assistant, State Tested Nursing Assistant (STNA)

Occupation Snapshot	
Average annual awards, 2010-2012	887
Jobs in occupation in region, 2013	1,289
2013 LQ (US = 1.00)	0.84
Total est. openings, 2013-2018	359
From new growth	223
From replacement demand	136
Median hourly wage	$12.33
Relative to US (US = 1.00)	1.05

Typical Education/Training: Post-secondary non-degree

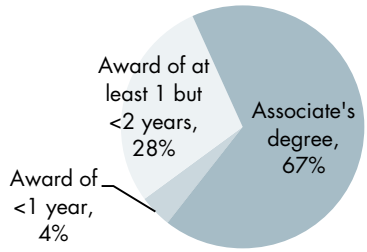
MEDICAL ASSISTANTS (SOC 31-9092)

Perform administrative and certain clinical duties under the direction of a physician. Administrative duties may include scheduling appointments, maintaining medical records, billing, and coding information for insurance purposes. Clinical duties may include taking and recording vital signs and medical histories, preparing patients for examination, drawing blood, and administering medications as directed by physician.

Sample of reported job titles: Certified Medical Assistant (CMA), Chiropractor Assistant, Clinical Assistant, Doctor's Assistant, Medical Assistant (MA), Medical Office Assistant, Ophthalmic Technician, Optometric Assistant, Optometric Technician, Registered Medical Assistant (RMA)

Occupation Snapshot	
Average annual awards, 2010-2012	279
Jobs in occupation in region, 2013	618
2013 LQ (US = 1.00)	1.03
Total est. openings, 2013-2018	175
From new growth	107
From replacement demand	68
Median hourly wage	$14.84
Relative to US (US = 1.00)	1.04

Average Annual Completions by Award Level



Typical Education/Training: Post-secondary non-degree

LICENSED PRACTICAL AND LICENSED VOCATIONAL NURSES (SOC 29-2061)

Care for ill, injured, or convalescing patients or persons with disabilities in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse. Licensing required.

Sample of reported job titles: Charge Nurse; Clinic Licensed Practical Nurse (CLINIC LPN); Clinic Nurse; Licensed Practical Nurse (LPN); Licensed Practical Nurse, Clinic Nurse (LPN, Clinic Nurse); Licensed Vocational Nurse (LVN); Office Nurse; Pediatric Licensed Practical Nurse (PEDIATRIC LPN); Private Duty Nurse; Triage Licensed Practical Nurse (TRIAGE LPN)

Occupation Snapshot	
Average annual awards, 2010-2012	65
Jobs in occupation in region, 2013	521
2013 LQ (US = 1.00)	0.67
Total est. openings, 2013-2018	175
From new growth	103
From replacement demand	72
Median hourly wage	$20.90
Relative to US (US = 1.00)	1.05

Average Annual Completions by Award Level

Typical Education/Training: Post-secondary non-degree

PHYSICIANS AND SURGEONS, ALL OTHER (SOC 29-1069)

All physicians and surgeons not listed separately.

Sample of reported job titles: Allergist, dermatologist, hospitalist, neurologist, nuclear medicine physicians, ophthalmologist, pathologist, physical medicine and rehabilitation physician, preventative medicine physicians, radiologist, sports medicine physician, urologist.

Occupation Snapshot	
Average annual awards, 2010-2012	0
Jobs in occupation in region, 2013	408
2013 LQ (US = 1.00)	1.13
Total est. openings, 2013-2018	118
From new growth	62
From replacement demand	56
Median hourly wage	$110.97
Relative to US (US = 1.00)	1.27

No for-credit completions were reported

Typical Education/Training: Doctoral or professional deg.

EMPLOYER SURVEY

To identify specific hiring issues, TIP facilitated a web-based survey of Larimer County area employers. A link to the survey was emailed in March 2014 to employers in the region. A total of 27 firms completed the survey.

RESPONDENT PROFILE

Respondents to the survey were firms that ranged in size from as few as two employees to almost 750. In terms of the employment base, the responding firms represented 4,771 employees (3,274 full-time, 1,182 part-time, and 315 contract/temporary workers).

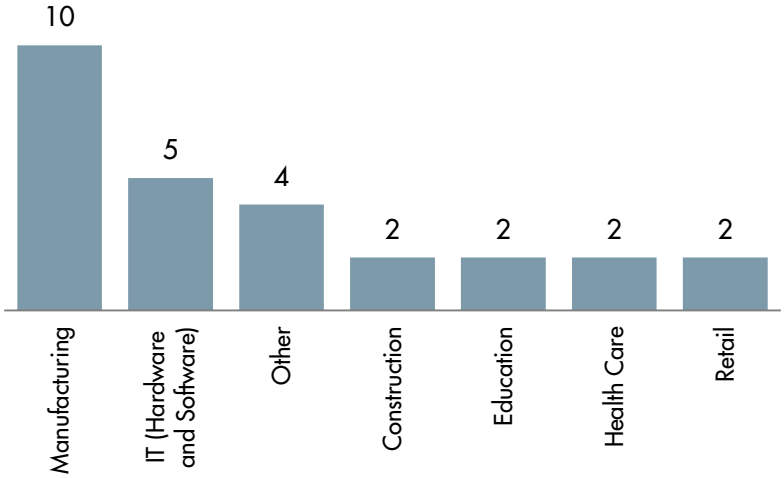
More than one-third of the firms that responded were from the Manufacturing sector. IT (Hardware and Software) represented 19 percent. The other respondents represented education, construction, health care, retail, telecommunications, defense, and energy.

Staffing patterns vary widely across the firms. For most firms (62 percent), management occupations represent 10 to 24 percent of total employment. For almost one-third, management represents less than 10 percent. Professional and technical occupations represent less than 10 percent for about 30 percent of the firms. Sales and marketing represents less than 10 percent for 56 percent of the firms. For 42 percent of the firms, skilled labor represents more than 25 percent. Very few of the firms have unskilled labor. For 67 percent of the firms, clerical and administrative occupations represent less than 10 percent of total employment.

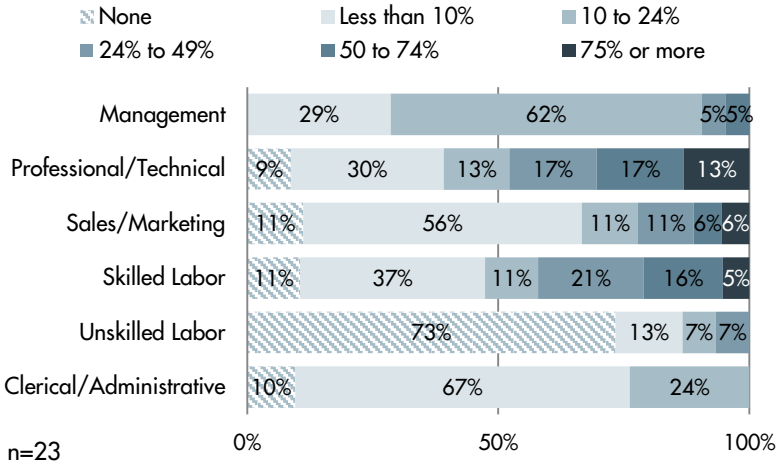
NUMBER OF EMPLOYEES

	Full-time	Part-time	Contract/ Temporary
Total number of workers	3,274	1,182	315
Minimum value	2	0	0
Maximum value	748	550	191
Average value	131	62	19

INDUSTRY OF RESPONDENTS



OCCUPATION CATEGORY SHARE OF TOTAL EMPLOYMENT
BY PERCENT OF RESPONDENTS



The average wages by occupation category also vary widely for the management, professional and technical, and sale and marketing occupations. For management occupations, the average wage is $49 an hour ($102,000 per year). For professional/ technical, the average wage is almost $38 an hour ($78,000 per year). The average wage for sales and marketing is $35 an hour ($72,000 per year). On average, skilled labor earns almost $19 an hour ($39,000 a year). Unskilled labor earns about $9 an hour ($19,000 a year) and clerical/administrative earns about $19 an hour ($40,000 a year).

WORKFORCE QUALITY

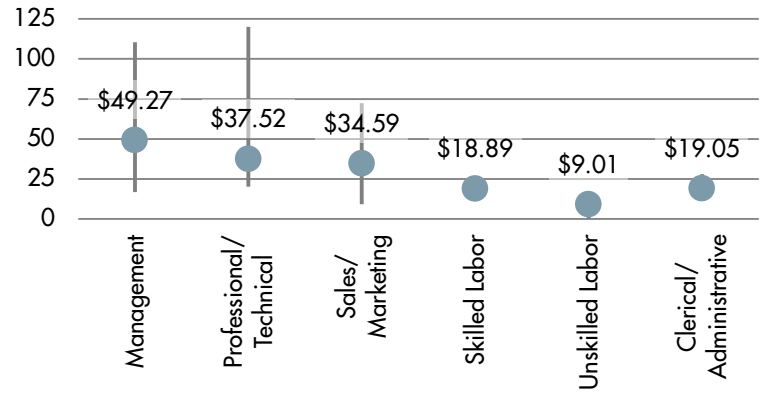
Respondents indicated a high level of satisfaction with the regional workforce overall. In most areas, respondents rated the workforce "good" or "excellent." The areas that were rated with the highest "poor" ratings were communications, reliability, math skills, and flexibility.

HIRING NEEDS & PRACTICES

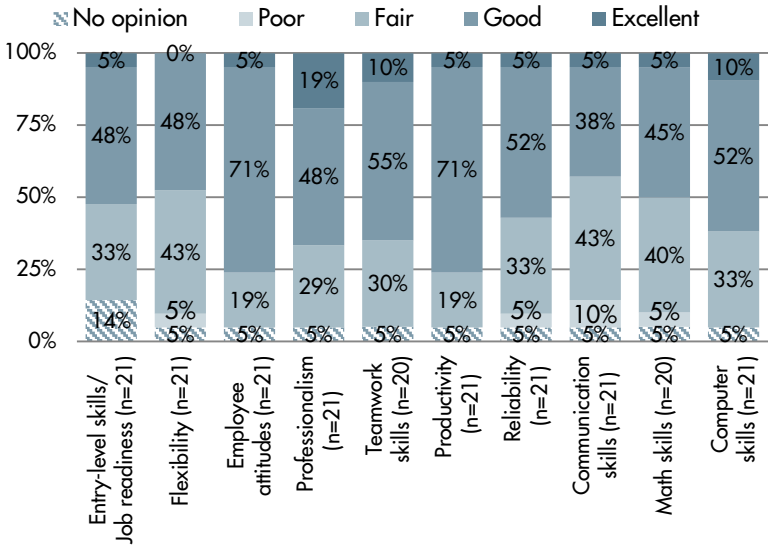
Over the next 12 to 24 months, 87 percent of the respondents plan to hire additional employees. Only 9 percent do not plan on hiring additional staff.

The respondents that plan to hire estimate that they will have just over 300 openings to fill, which represents almost a 10 percent increase in full-time employees. One-third of these estimated openings will be professional/technical occupations and another third will be skilled labor. Just over 10 percent will be unskilled labor and another 10 percent will be for management occupations. The remaining openings will largely be clerical and sales occupations.

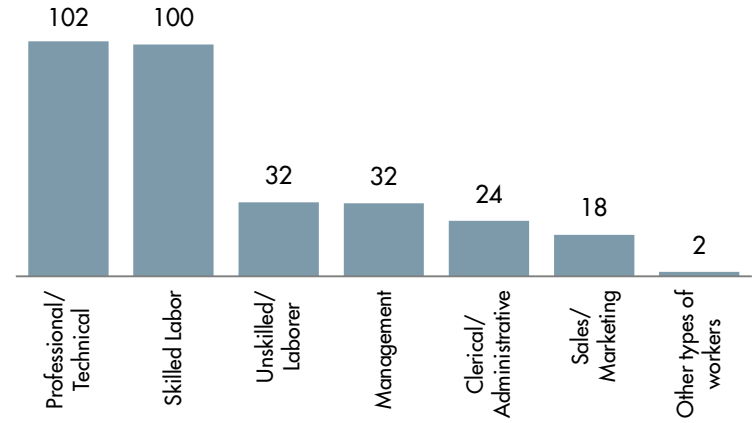
AVERAGE WAGES ($/HR) BY OCCUPATION CATEGORY



How would you rate the regional workforce overall on the following characteristics?



If you plan to hire additional employees in larimer county in the next 12 to 24 months, approximately how many workers do you plan to add in each of the following categories?



Turnover in Larimer County is less than 10 percent for the majority of the respondents across the majority of the occupational categories. The lowest turnover rates are in professional/technical occupations, clerical, and sales and marketing. The highest rates of turnover are in unskilled occupations. Turnover rates in skilled occupations are also somewhat higher than other occupations.

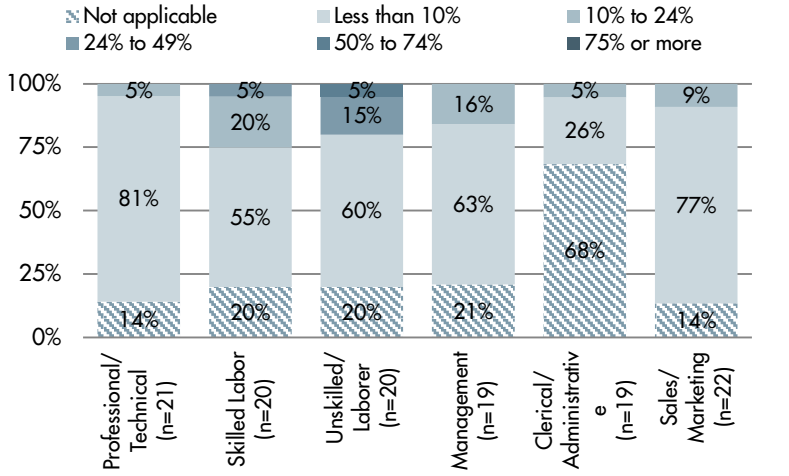
Openings in the region are most commonly filled in one to three months. Clerical/administrative occupations most often take less than two weeks to fill. Management, as well as sales and marketing occupations, most often take two to four weeks. Professional/technical occupations can take more than six months to fill.

The majority of the positions are filled by the local workforce. Professional/technical occupations are least likely to be filled by workers in Larimer County; almost one-quarter of the respondents report that they must recruit workers outside of Colorado to fill their positions. Another 29 percent of respondents hiring professional/technical positions must recruit outside of the Denver metro area but still in Colorado.

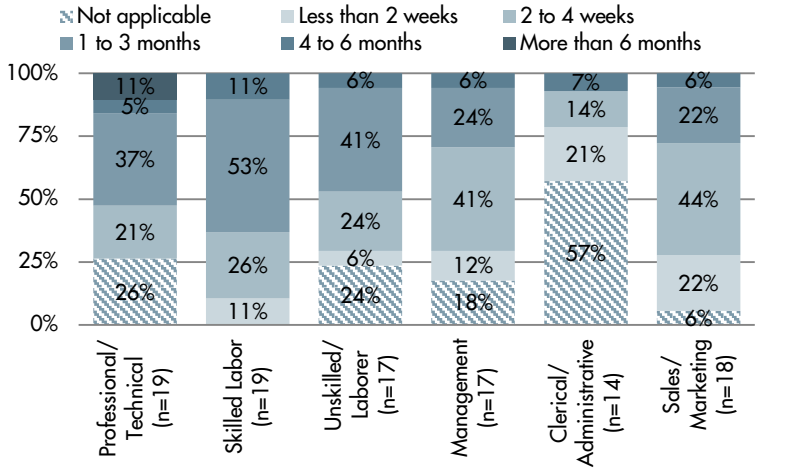
One-quarter of respondents filling skilled labor positions report having to recruit outside of the Denver metro area. Fifty percent of the skilled labor positions are filled with workers in Larimer County.

Respondents report that management, clerical, and sales/marketing positions are filled almost entirely with Larimer County workers.

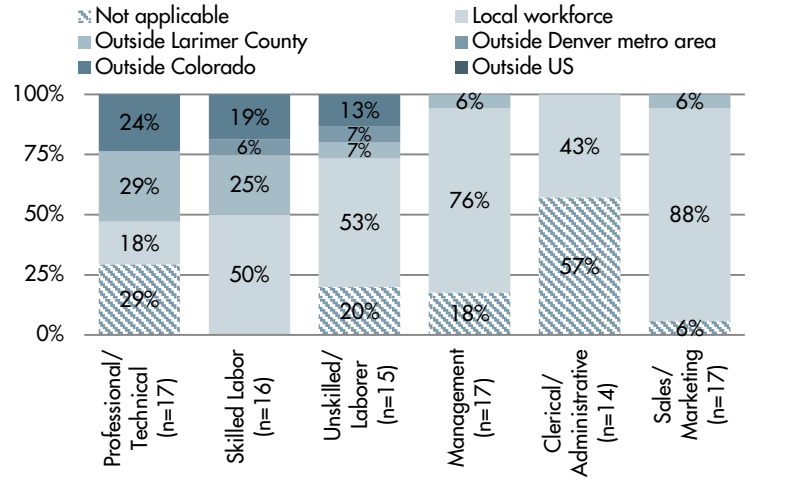
Approximately what is your average turnover rate in each of the following categories?



Approximately how long does it typically take to fill a vacancy for each of the following classifications of workers?



When hiring, please indicate which geographic area is typically used to recruit workers.



Respondents find word of mouth and direct referrals to be the best source of quality candidates. Internet job boards such as Monster, CareerBuilder, and Indeed are the next most effective resource. These two resources are used by all respondents.

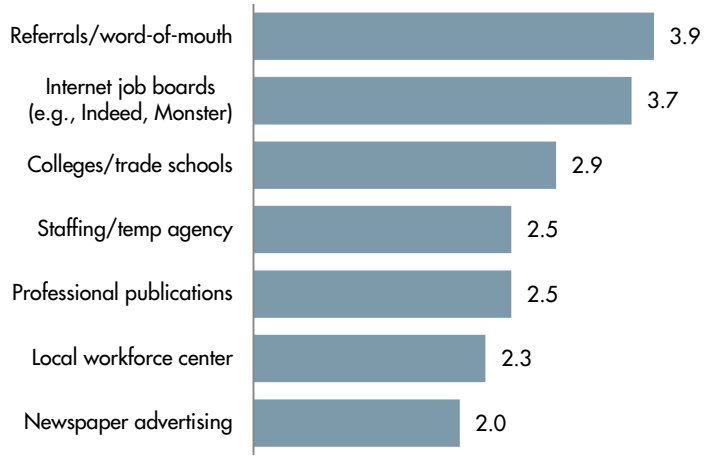
Newspaper advertising and the local workforce center are among the least effective resources. These are also the least commonly used resources.

Other resources used include professional recruiters, social media, and networking organizations including NoCoNet and LongsPeakNet.

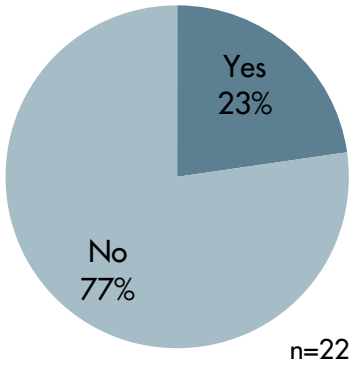
Only 23 percent of respondents have been unable to fill positions. The positions that respondents have been unable to fill include the following:

- Academic Dean
- Technical Writer
- Web Developer
- Applications Engineer
- Customer Support Engineer

Which of the following resources you find most effective in identifying quality candidates? (5 = most effective, 1 = least effective)



Have you had specific positions which you have been unable to fill at all?



More than 50 percent of respondents reported having difficulty recruiting for specific occupations or skills. The occupations or skills that were listed as difficult to recruit are listed below:

Senior Management
Marketing/Branding
Social Media Specialist
Architecture
Revit
Power System Engineers
Customer Support Engineer/ Robotics, Welding
Formulation Scientists
Flavor Chemists
Millwrights
Manual Machinists (Lathe/Mill Operators)
CNC Machinists (CNC Lathe/Mill Operators)
Mechanical Assemblers
Skilled Trades Faculty
Nursing Faculty
Nurse Practitioner Within Long Term Care
Physician Assistant W/ Emergency Medicine Experience
Software Engineers
Developers/Software With GIS Experience
Network Administrators
Quality Web Developer
Quality Systems Programmer/Engineer
Quality Network Engineer
Application Engineers
IT Support Technicians

Many of the occupations or skills that are currently difficult to recruit are also the occupations and skills that respondents anticipate needing in the future. The types of occupations or skills that respondents anticipating needing in the future are listed below:

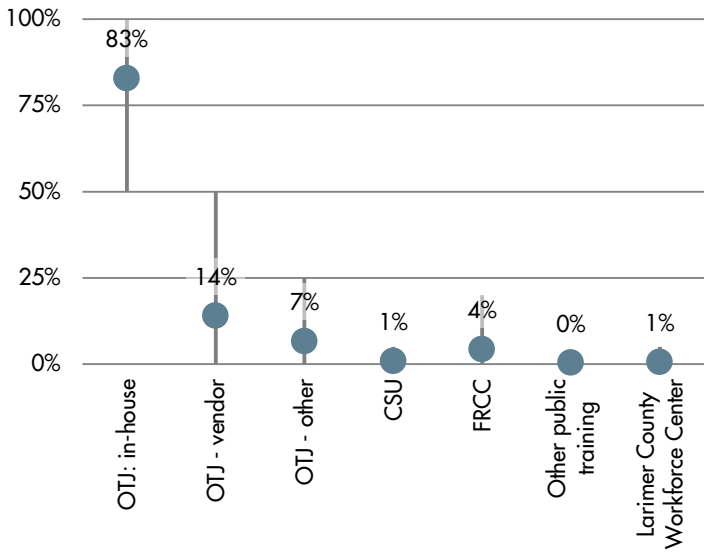
Business Assistant
Marketing
Project Managers
Sales and Marketing
Sales Management
Senior Management
Social Media Specialist
Emergency Physician
License Practical Nurse
Nurse Practitioner
Nursing Faculty
Physician
Physician Assistant
Registered Nurse
Mechanical Engineer
Packaging Engineers
Power System Engineers
Process Development Engineers
Systems Programmer/ Engineer
Application Engineers
Network Engineer
Software Engineer
Architecture
Construction Management
Draftsman
Flavor Chemists
Customer Support Engineer/ Robotics, Welding
GIS Technicians
Production Maintenance Technicians
Production Technicians
Project Engineer/Robotics, Welding, Programming
Quality Associates
Quality Engineers
Quality Management
Technical Support
Assemblers
CNC Machinists (CNC Lathe/Mill Operators)
Fabricators/Welders
Manual Machinists (Lathe/Mill Operators)
Mechanical Assemblers
Millwrights
Production Supervisors

TRAINING

Respondents indicated that the vast majority (83 percent) of their employee training is provided in-house or on the job by existing personnel. The next most commonly used training type is training provided in-house or off-site by a vendor or equipment supplier (14 percent). Very few respondents use CSU, FRCC, or Larimer County Workforce Center.

That said, when asked about specific training programs in the area, many were associated with FRCC. These included the following FRCC programs: Corporate Training, GIS Certificate, Welding, Machining, Smart Grid Bootcamp, and Good Manufacturing Practices (GMP). In addition, the Larimer County Workforce Center's business series was mentioned as was Situational Leadership, Crucial Conversations, and LEAD 1.0.

Please indicate the approximate percentage of your employee training that is provided by each of the following sources.



When asked about training programs lacking in the area, the following programs were mentioned:

- Skilled Trades (welders, fabricators, electricians)
- GIS Certificate (at the Fort Collins campus)
- Pharmaceutical industry related training—GMP, GCP, GLP, Regulatory
- Manual Machining (not just CNC)
- Basic Computer Training

APPENDIX A: DATA & METHODOLOGY

CLASSIFICATION SYSTEMS

Much of the analysis presented in this report relies on three separate classification systems. A brief overview of each is presented below.

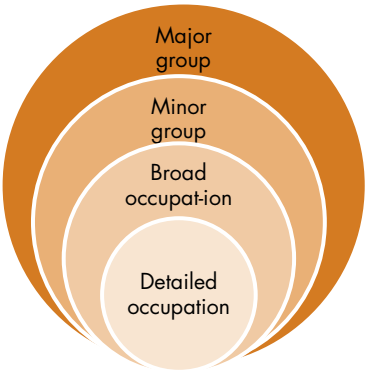
The **Standard Occupational Classification (SOC)** system is used by federal statistical agencies to classify workers into categories for the purpose of collecting, calculating, or disseminating data. This system groups all occupations in which work is performed for pay or profit according to the type of work performed and, in some cases, on the skills, education, or training needed to perform the work at a competent level. Under the 2010 SOC system, workers are classified into one of 840 detailed occupations, which are combined to form 461 broad occupations, 97 minor groups, and 23 major groups.

The **North American Industry Classification System** (NAICS, pronounced *Nakes*) was developed under the direction and guidance of the Office of Management and Budget (OMB) as the standard for use by Federal statistical agencies in classifying business establishments for the collection, tabulation, presentation, and analysis of statistical data describing the US economy. The classification system was developed jointly with government agencies in Canada and Mexico to allow for a high level of comparability in business statistics among the North American countries.

The version of NAICS currently in wide use was released in 2007 and classifies industries into 20 sectors based on production processes. These sectors are broken into subsectors, industry groups, and individual industries. An additional level of detail is provided to accommodate industry codes specific to the three countries. The classification system is updated every five years. The 2012

STANDARD OCCUPATIONAL CLASS. (SOC)

STRUCTURE



EXAMPLE

Major group 51-0000 Production occupations

Minor group 51-2000 Assemblers & fabricators

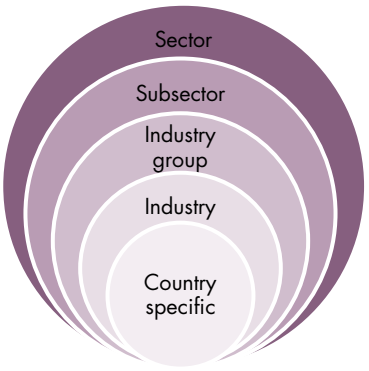
Broad occupation 51-2090 Miscellaneous assemblers & fabricators

Detailed occupation 51-2092 Team assemblers

Source: US Bureau of Labor Statistics; TIP Strategies

NORTH AMERICAN INDUSTRIAL CLASS. (NAICS)

STRUCTURE



EXAMPLE

Sector 31-33 Manufacturing

Subsector 336 Transportation equipment manufacturing

Industry group 3361 Motor vehicle manufacturing

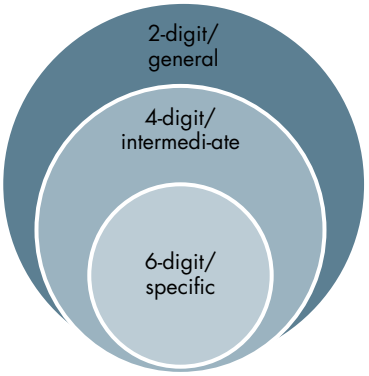
Industry 33611 Automobiles & light duty motor vehicles, incl. chassis

Country-specific 336111 Automobiles & light duty motor vehicles, incl. chassis

Source: US Census Bureau; TIP Strategies

CLASS. OF INSTRUCTIONAL PROGRAMS (CIP)

STRUCTURE



EXAMPLE

General 14. Engineering

Intermediate 14.08 Civil engineering

Specific 14.0802 Geotechnical engineering

Source: National Center for Education Statistics; TIP Strategies

NAICS structure was finalized in August 2011. Federal statistical agencies were directed to begin using the new system for data published for reference years beginning on or after January 1, 2012.

The **Classification of Instructional Programs** (CIP) is the accepted federal government statistical standard on instructional program classifications. Developed in 1980 by the National Center for Education Statistics, the CIP is used by state agencies, national associations, academic institutions, and employment counseling services for collecting, reporting, and analyzing instructional program data.

The CIP titles and program descriptions are intended to be generic categories into which program completions data can be placed, and are not exact duplicates of specific major or field of study titles used by individual institutions. The vast majority of CIP titles correspond to academic and occupational instructional programs offered for credit at the postsecondary level. These programs result in recognized completion points and awards, including degrees, certificates, and other formal awards. The CIP also includes other types of instructional programs, such as residency programs in various dental, medical, podiatric, and veterinary specialties that may lead to advanced professional certification, personal improvement and leisure programs, and instructional programs that lead to diplomas and certificates at the secondary level only.

DATA SOURCES

EMSI

The occupational data presented in this report were prepared using EMSI's Complete Employment series. EMSI gathers and integrates economic, labor market, demographic, and education data from over 90 government and private-sector sources, creating a comprehensive and current database that includes both published data and detailed estimates with full coverage of the US.

The company's core data consists of jobs (historical and projected) and earnings (current year) by industry and occupation for every ZIP code and county in the US. EMSI data are annual averages of jobs (not workers); full- and part-time jobs are counted equally.

PRIMARY INDUSTRY/OCCUPATION DATA SOURCES
MAJOR SOURCES USED FOR EMSI'S 2013.2 DATA RELEASE

DATA SOURCE	ABBRV.	AGENCY	VERSION USED*
State Personal Income	SPI	BEA	2011
Local Area Personal Income	LPI	BEA	2010
Industry Economic Accounts	IEA	BEA	2002-2011
American Community Survey	ACS	Census	2005-2011
County Business Patterns	CBP	Census	2010
ZIP Code Business Patterns	ZBP	Census	2010
Nonemployer Statistics	NES	Census	2010
Quarterly Census of Employment and Wages	QCEW	BLS	2012 Q3
Current Employment Statistics	CES	BLS	Feb. 2013
Natl. Employment Projections (Industry Occupation Matrix)	EP	BLS	2010-2020
Occupational Employment Statistics	OES	BLS	2011
Railroad Retirement Board Tables, State/County	RRB	RRB	2012/2011
Equifax Business Data		Equifax	2013 Q1
Long-term state industry projections		Individual states	varies by state
LEHD/Quarterly Workforce Indicators	QWI	Census	varies by state

Source: EMSI data release notes * Indicates release date, not data reference period

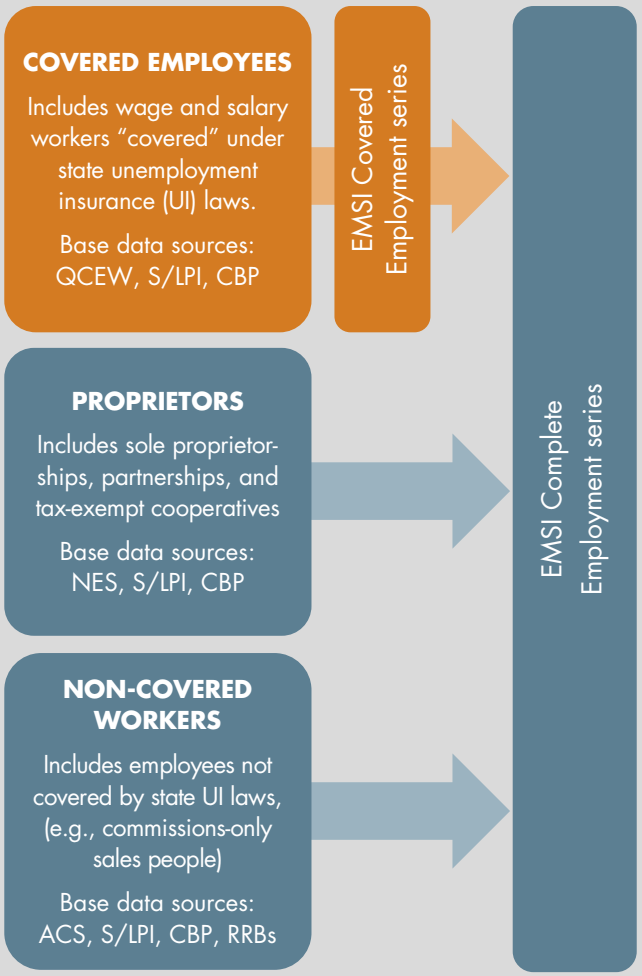
EMSI produces industry and occupation datasets with two different types of coverage. Coverage refers to the types of jobs counted.

EMSI Covered: This dataset primarily counts "payroll" jobs that are covered by unemployment insurance (UI); the primary source is the Quarterly Census of Employment and Wages (QCEW). But EMSI also includes some jobs excluded from QCEW, such as railroad jobs (which have their own UI program), all wage and salary agriculture jobs, and military. These additional categories are based on figures from State and Local Area Personal Income (S/LPI) reports produced by the Commerce Department's Bureau of Economic Analysis (BEA), and state and county railroad retirement boards (RRBs). Data from the Census-produced County Business Patterns (CBP) are also used.

EMSI Complete: This dataset includes all jobs in EMSI Covered, plus additional types of noncovered jobs, such as the self-employed (proprietors), commissions-only salespeople, and various types of non-UI-covered wage and salary workers. Major sources of self-employment data include Nonemployer Statistics (NES), the American Community Survey (ACS), and the S/LPI.

The relationship between EMSI Covered Employment and EMSI Complete Employment is diagrammed in the table above.

RELATIONSHIP OF EMSI CORE DATA SETS
TYPES OF WORKERS CAPTURED AND BASE DATA SOURCES



Source: TIP Strategies based on EMSI infographic

For each data set, EMSI creates long-term, 10-year industry projections starting from the current year. These projections are based on a combination of the following:

- Recent trends in all industries for every local geography,
- National industry projections produced by the US Bureau of Labor Statistics (BLS),
- State and sub-state regional projections produced by individual states.

The company's methodology is designed to capture the expertise embodied in federal and state agencies. However, since official projections produced through the state-federal partnership typically have a base year that lags 2-3 years behind the current year, EMSI projections are also informed by the most recent data and trends available.

The first step in the process is to track recent local trends using a linear regression function. Taking into account the previous base data from 15, 10, and 5 years prior to the base year, EMSI's analysts plot a line as a function of year and employment. This line is dampened (flattened) to smooth out the effects of any volatility. Once this is done, state and

local government industries (as well as the US Postal Service) are projected based on the growth or decline of local economies rather than projected through linear regression. Federal government and military, however, are projected through linear regression at the national level and their growth rate is then applied to the states and counties. Next, EMSI adjusts the projections for all counties so they sum to state- and national-level numbers.

After these initial projections are completed, EMSI's analysts begin a series of controls and adjustments to other data sources. The first of these is an adjustment to the BLS staffing patterns. Essentially the company's projected national growth rate is changed to match the growth rate of the BLS numbers. This adjusts the curve up or down while staying as close to our projected values as possible. Following this, county and state-level projections are adjusted to the state-produced state and sub-state regional projections. County values are controlled to the regional data and state projections are controlled to the reported state data. Once these adjustments and controls are completed, the final state-level numbers are aggregated to determine the final national projections. This causes EMSI data to match state projections very closely, but it also means EMSI projections can stray from the national projections.

The company has incorporated workforce demographics in the latest release of its analytical tools. This data is drawn from the relatively new Local Employment Household Dynamics series produced through a partnership of several federal agencies led by the US Census Bureau. One of its primary data sources, Quarterly Workforce Indicators, provides the basis for EMSI's estimates of occupations by age and gender.

EDUCATION & TRAINING

Under the Higher Education Act of 1965, every college, university, and vocational or technical institution that participates in federal financial student aid programs, such as Pell grants or federally backed student loans, is required to report annually to the US Department of Education (DOE) on a range of indicators. Data are collected through a system of interrelated surveys and are made available through the Integrated Postsecondary Education Data System (IPEDS).

Each fall, institutions report on the number of awards conferred **for credit** by field of study, by award level, and by the gender and race or ethnicity of the recipient. These data are referred to as "completions." Data on completions for the three most recent academic years available (2009-2010, 2010-2011, and 2011-2012) were downloaded from the IPEDS Data Center for all schools in Larimer and Weld Counties that participate in IPEDS surveys, except for schools in which training was limited to cosmetology.

To help understand how education and training programs in the region align with the key occupations, we also compiled for-credit completions from the IPEDS analysis for key occupations in the talent clusters profiled in this report This analysis was accomplished using three separate crosswalks that align occupational classifications (SOC codes) with subject matter areas (CIP codes). Specifically, we used the following crosswalks: (1) a 2011 crosswalk created by the National Center for Education Statistics in cooperation with the US Bureau of Labor Statistics (available from the National Crosswalk Service Center), (2) a crosswalk based on information downloaded from the Occupational Supply Demand System (OSDS) website formerly maintained by the Georgia Career Information Center at Georgia State University, and (3) Table 7 of the National Research Center for Career and Technical Education's Perkins Crosswalk Validation Project.

The results of this matching process are provided in each of the talent cluster profiles. These brief snapshots provide a description of the occupation (including alternate job titles), a snapshot of the occupation (including an estimate of the total number of openings anticipated from both new and replacement demand through 2018), and a breakdown of completions data by award level.

While the analysis provides a starting point for discussion, it has several technical limitations that prohibit its use as a strict measure of the "gap" or "surplus" between the supply and demand of labor. First, as mentioned previously, IPEDS data include only awards and degrees conferred for credit, that is, as part of a formal program of study leading to a degree. Noncredit coursework—which encompasses a wide range of instruction, including customized workforce training, professional development programs, and continuing education classes—is excluded. While this limitation is less problematic for positions that typically require an associate's degree or above, it can be challenging when trying to understand the pool of available labor for positions which require less formal, shorter-term awards.

The use of completions data as a proxy for the supply of workers also does not consider the level of training or experience employers require. As indicated in the prior analyses, demand for workers can be driven by new job growth and by the replacement of existing workers. In each case, employers may be seeking candidates with a particular credential or level of experience. Simply having a degree or post-secondary award in a subject area does not necessarily make an individual qualified for employment in that field.

Beyond the issues with completions data generally, the use of a crosswalk also presents a number of limitations. The most fundamental of these is that a standardized crosswalk cannot capture the actual relationship between an individual's educational coursework and their ultimate choice of occupation. In other words, many people obtain their degree in one field and end up pursuing employment in another. In addition, the relationships identified in the crosswalks are inconsistent at best. Some occupations are matched to many broad fields of study, while others are only linked with highly specific CIP Codes.

Finally, in thinking about training "gaps," it is important to remember that education and workforce training is not a closed system. Students may attend college outside the region and return for employment; others may attend college locally and take a job elsewhere. Postsecondary education systems are also not closed in terms of time. While data collection efforts are designed to measure completion within a set period of time (two years, four years, six years), the path to graduation for individual students often does not fit these norms. This is particularly true of community colleges which are sometimes used by students to sample courses and "try out" career choices prior to making a larger investment.