THE CHAMBER
FARGO MOORHEAD WEST FARGO

February 1, 2016

Dr. Mark Hagerott, Chancellor
North Dakota University System
10th Floor, State Capitol
600 East Boulevard Ave, Dept. 215
Bismarck, ND 58505-0230

Dear Chancellor Hagerott,

This letter was prompted by the recent media coverage of North Dakota State University President Dean Bresciani's trip to India to recruit graduate students to our university here in Fargo. But the purpose of this communication goes much deeper than one business trip.

NDSU may be a fine institution of higher learning, but it is also a large business with a huge economic impact, not only in Fargo, but throughout our state. As the "CEO" of this large entity, it is incumbent on Dr. Bresciani to "grow the business" by seeking innovation, as well as both practical and creative solutions to accomplish this goal.

We at The Chamber of Fargo Moorhead West Fargo believe he has done just that in his tenure at NDSU, and it is inspiring to watch as he and his team continue to pursue excellence in academics and research, with an eye toward the economic success of our region. And, it's apparent that at the heart of all this is a recent phrase the university has been using to describe its commitment. It states simply, "We serve our citizens."

While colleges and universities around the country struggle with enrollment, under President Bresciani's leadership, NDSU continues to grow and prosper. And, his goal of 18,000 students by 2018 is not only achievable, but will be beneficial to the state of North Dakota, as these students, in ever increasing numbers, decide to remain in the state after graduation.

To that point, I'll quote President Bresciani from a recent letter to the editor in The Forum newspaper. He said: "The overwhelming message from civic leaders, business leaders and individual citizens around the state is that North Dakota needs all of our two-year, four-year and research universities to educate and graduate more students. Our state's current job vacancies of 20,000 positions, most of which call for a college education, is estimated to double if not triple by 2020."

That quote alone shows that President Bresciani has his heart and head in the right place when it comes to serving the citizens of North Dakota.

By now, I'm sure it's clear that The Chamber, and the large business community it represents, is solidly behind President Bresciani, and we are grateful for the accomplishments of the president and the faculty and staff of NDSU. In fact, this support was overwhelmingly confirmed at the most recent Chamber Board of Directors meeting.

Attached is a recent poll taken live at our State of the Cities address with our region's four mayors on January 14 of this year. You will see that there clearly is support from the business community for further expansion of North Dakota State University.

I look forward to meeting you in person.

Regards,

Craig Whitney
President /CEO
Fargo Moorhead West Fargo Chamber of Commerce

REGIONAL WORKFORCE STUDY
GREATER FARGO/MOORHEAD REGION

ACKNOWLEDGEMENTS

CONTENTS

INTRODUCTION

Over the last decade, the Fargo-Moorhead region has been booming. Between 2004 and 2014, employment in the region grew 24 percent, from 119,367 jobs to 148,313 jobs. Over this same time period, the US economy grew by only 5 percent. Even during the Great Recession, when the rest of the nation saw employment contract by more than 6 percent, the Fargo-Moorhead region's employment base contracted by less than 1 percent and had fully recovered by 2010.

FIGURE 1. EMPLOYMENT GROWTH, 2004 - 2014

Geography	2004 Jobs	2014 Jobs	# Change	% Change
US	146,163,720	153,804,968	7,641,249	5.2
North Dakota	384,888	518,761	133,873	34.8
Minnesota	2,929,086	3,063,217	134,132	4.6
Fargo-Moorhead MSA	**119,367**	**148,313**	**28,947**	**24.2**
11-County Laborshed	241,081	276,609	35,528	14.7

Source: EMSI 2015.1 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed)

Healthcare and education were primary economic engines over the last decade, adding almost 8,000 jobs to the economy. In fact, these sectors were responsible for more than a quarter of all employment growth in the metro region.

In addition, five other sectors, including management of companies and enterprises, administrative and support services, professional and technical services, transportation and warehousing, and finance and insurance, experienced above average growth. Together, these sectors added about 8,200 jobs, which accounted for another 29 percent of the region's employment increase over the last decade.

Even the manufacturing sector grew more than 12 percent, adding more than 1,000 jobs. Considering the US manufacturing sector contracted almost 15 percent during the time period, this manufacturing employment increase is extraordinary.

With this employment expansion, the region's population increased almost 20 percent from 186,000 in 2004 to 223,500 in 2013. The additional population has also spurred growth in the construction, accommodation and food services, and retail trade sectors. These three sectors added 6,700 jobs between 2004 and 2014.

Over the past decade, Fargo-Moorhead's unemployment rate has remained below 4 percent, except at the height of the recession when it reached a peak of 4.3 percent. Most economists consider full employment to be between 5 and 5.5 percent, thus the region is well beyond full employment. In November 2014, the unemployment rate fell to 2.2 percent. Furthermore, the metro area's labor force participation rate is 75 percent, which is 11 percentage points above the national labor force participation rate and one of the highest in the country.

These strong economics are expected to continue. The regional economy is projected to grow another 7.6 percent over the next five years, reaching an employment base of almost 159,000 by 2019.

FIGURE 2. EMPLOYMENT BY INDUSTRY, 2004 - 2014

NAICS	Description	2004 Jobs	2014 Jobs	# Change
72	Health Care and Social Assistance	14,371	20,135	5,764
9026/36	Construction	7,653	10,434	2,781
31	Accommodation and Food Services	10,035	12,417	2,382
56	Wholesale Trade	7,181	9,478	2,297
61	Education and Hospitals (State & Local Government)	8,992	11,126	2,134
44	Finance and Insurance	6,640	8,459	1,818
42	Administrative and Support Services	4,810	6,617	1,807
62	Management of Companies and Enterprises	1,649	3,390	1,741
55	Professional, Scientific, and Technical Services	5,285	6,952	1,667
9012	Retail Trade	14,480	15,967	1,486
54	Transportation and Warehousing	3,991	5,166	1,175
9029/39	Manufacturing	9,030	10,177	1,146
52	Educational Services	2,473	3,336	863
9011	Other Services (except Public Administration)	5,917	6,453	535
71	Government, Excluding Education and Hospitals	4,005	4,505	499
48	Arts, Entertainment, and Recreation	1,430	1,776	346
81	Federal Government, Military	1,220	1,397	177
53	Federal Government, Civilian	2,321	2,456	134
51	Real Estate and Rental and Leasing	1,909	2,011	103
21	Information	3,272	3,308	36
23	Mining, Quarrying, and Oil and Gas Extraction	38	68	30
11	Utilities	190	153	-37
22	Crop and Animal Production	2,470	2,212	-259

Source: EMSI 2015.1 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed)

WORKFORCE CHALLENGES

With this economic growth, workforce has emerged as a key challenge for the region as businesses struggle to find the talent they need to grow. In fact, over the last several years, workforce has been cited as one of the primary concerns of businesses in the Fargo-Moorhead region. As a result, the Greater Fargo-Moorhead Economic Development Corporation (GFMEDC) has led the initiative of recruiting, retaining, and developing talent to support business growth in the region. In GFMEDC's most recent five-year strategic plan, workforce attraction is the first priority.

Understanding the region's labor market challenges provides insight into why workforce is at the top of business and civic leaders' minds.

Many jobs to fill. The Fargo-Moorhead region currently has over 6,700 job openings, and the 11-county laborshed has more than 11,000 job openings. Over the next five years, the region is projected to have more than 30,000 openings, and the laborshed is projected to have 55,000 openings. These job openings include both new jobs and replacement jobs, which are open due to natural turnover in the workplace.

Mismatch in skills. Employers across the region are already having difficulty securing the talent they need. Some of this difficulty is consistent with challenges employers across the United States are facing—the mismatch between the skills available workers have and the skills employers need. This is known as the skills gap.

Tight local labor market. In the Fargo-Moorhead region, however, the workforce challenges are further complicated by the low unemployment rate and the high labor force participation rate. There are not enough workers in the region to fill these job openings.

THE PROJECT

In the face of these challenges, the GFMEDC, the Fargo Moorhead West Fargo Chamber of Commerce (the Chamber), United Way of Cass-Clay, the Fargo-Moorhead Convention and Visitor's Bureau (the CVB), and the FM Area Foundation came together to spearhead the development of a regional workforce study and comprehensive strategy. The group hired TIP Strategies, an economic and workforce development strategy consultancy, to assist in conducting a detailed labor study and in developing a regional workforce strategy with deep dives into three of the region's key economic drivers—healthcare, manufacturing, and information technology.

Over the course of the last six months, the project team visited with stakeholders across the region and across industry sectors. We gathered input through one-on-one interviews, employer and educator roundtable discussions, an employer survey, an employee survey, and a series of community conversations with high school and college students. We also conducted a comprehensive analysis of the region's labor force, factors driving demand, and an examination of the alignment between educational output and industry requirements. For each of the three industries, we developed detailed profiles that include staffing patterns, regional labor supply, job posting analytics, relevant educational output, and regional resources.

THE NATIONAL 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.

The report that follows outlines the recommended response in a four-part strategy. These strategies focus not only on workforce development, retention, and recruitment but also on building a stronger framework for financial self-sufficiency and an emphasis on innovation to solve some of the workforce-related challenges. The regional strategy is summarized in Figure 3. The appendices include a detailed labor analysis, industry-specific workforce profiles, as well as the results of the employer and employee surveys.

FIGURE 3. REGIONAL STRATEGY SUMMARY

Vision. The Fargo-Moorhead region is an economically diverse employment center with a strong pipeline of talent to support current and future employers.

Goal. To strengthen the regional workforce system to support regional employers and to address the gap between available positions and qualified workers.

Strategic Framework and Priority Projects:

1. **CULTIVATE:** Strengthen the pipeline of local talent to support employers in the region.

   ❶ Community 101 for College Students

   ❷ TinyPulse for Talent Insights

   ❸ Winter Festival to "Embrace the Cold"

2. **ATTRACT:** Enhance and coordinate efforts to bring new talent to the region.

   ❶ Friends & Family Campaign

   ❷ Talent Recruitment Services

   ❸ Trailing Spouse Network

3. **BUILD:** Develop a framework for financial self-sufficiency and upward mobility for workers in low-wage and basic-skill jobs.

   ❶ Nonprofit Collaborative

   ❷ Affordable Housing Advocacy

   ❸ Employer-Led Childcare

4. **INNOVATE:** Encourage the development of innovative solutions to address the region's workforce-related challenges.

   ❶ Technology Hackathon

   ❷ Social Innovation Challenge

SUMMARY OF FINDINGS

As part of the project, an analysis of the regional labor market was conducted. This quantitative analysis was validated, informed, and augmented by interviews and group discussions with employers, education providers, students, nonprofit organizations, and workforce development officials. In addition, a survey of employers and employees was used to provide additional insights into the quantitative data. The key findings from this research is summarize on the following pages.

The laborshed has a civilian workforce of over 240,000. The laborshed of the Fargo-Moorhead Metropolitan Statistical Area (MSA) extends to an 11-county area that includes Grand Forks, Steele, Traill, Stutsman, Barnes, Becker, Richland, Wilkin, and Otter Tail counties in addition to the core counties of Cass and Clay. While the MSA has a civilian workforce of 125,000, the region that employers in the MSA draw from encompasses a civilian workforce of more than 240,000. Cass and Clay counties are significant employment centers in this laborshed as are Grand Forks and Otter Tail.

Most of the respondents to the employer reported that they largely recruit from the local workforce to fill their positions. Yet, commuting patterns reveal that many workers from the full 11-county region are willing to commute into the MSA for work. Furthermore, the labor force participation rates in some of the outlying counties are much lower than the MSA, which signifies that there is more slack in the labor markets in outlying counties. Tapping into the full laborshed could be an opportunity for regional employers.

FIGURE 4. FARGO MSA 11-COUNTY LABORSHED
BASED ON SHARE OF COMMUTING FLOWS AND RELATIONSHIP TO TRANSPORTATION NETWORK
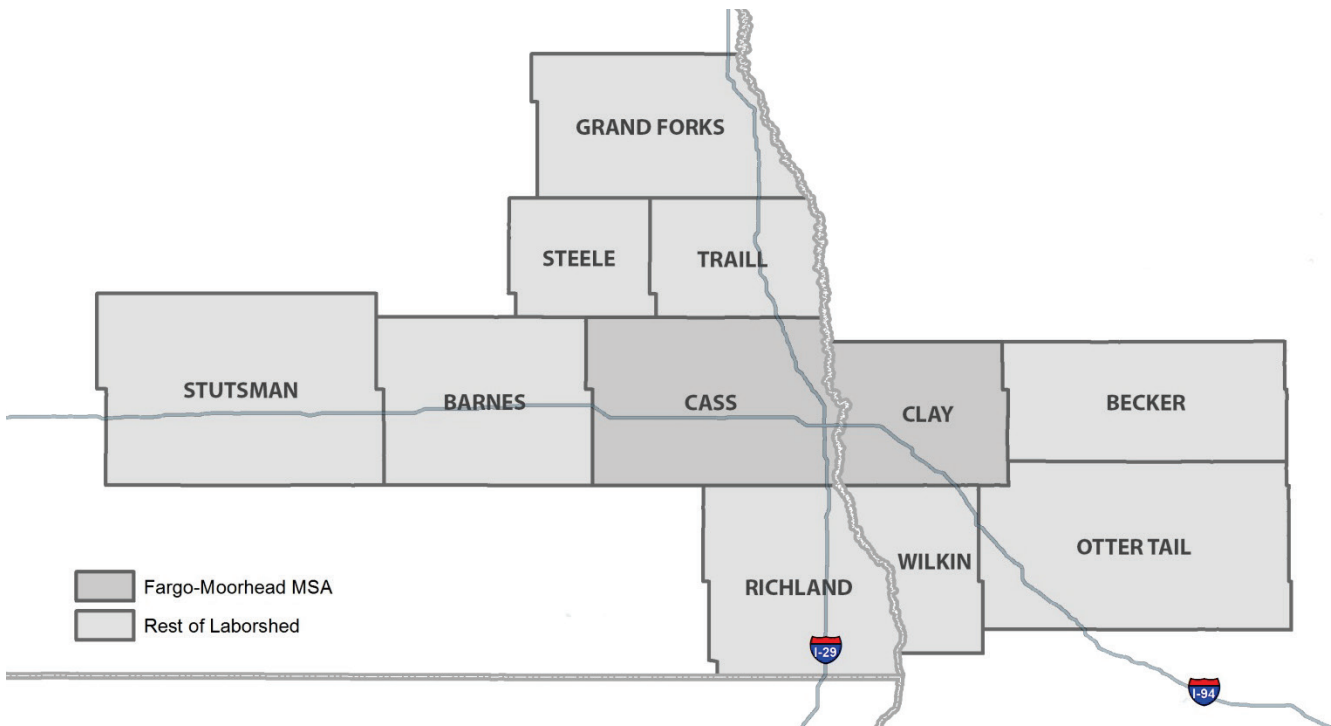
Source: TIP Strategies

Low-skill jobs have been and are the fastest growing segment. As mentioned earlier, the Fargo-Moorhead MSA is projected to have more than 30,000 job openings between 2014 and 2019. More than 45 percent of these openings are considered low-skill. The average median hourly wage for the low skill occupations is $12.98, which is well below the regional average. At the current cost of living, wages in these low skill occupations are not high enough to sustain a household with children without another working adult, which in many cases necessitates childcare. This also makes attracting talent to the region to fill these positions very challenging.

Employers who participated in the roundtable discussions as part of the project indicated that low-skill jobs are currently some of the hardest positions to fill. They described the situation as highly competitive and price sensitive with a lot a churn.

FIGURE 5. JOBS BY SKILL LEVEL
BASED ON ENTRY-LEVEL EDUCATION AND TRAINING REQUIREMENTS
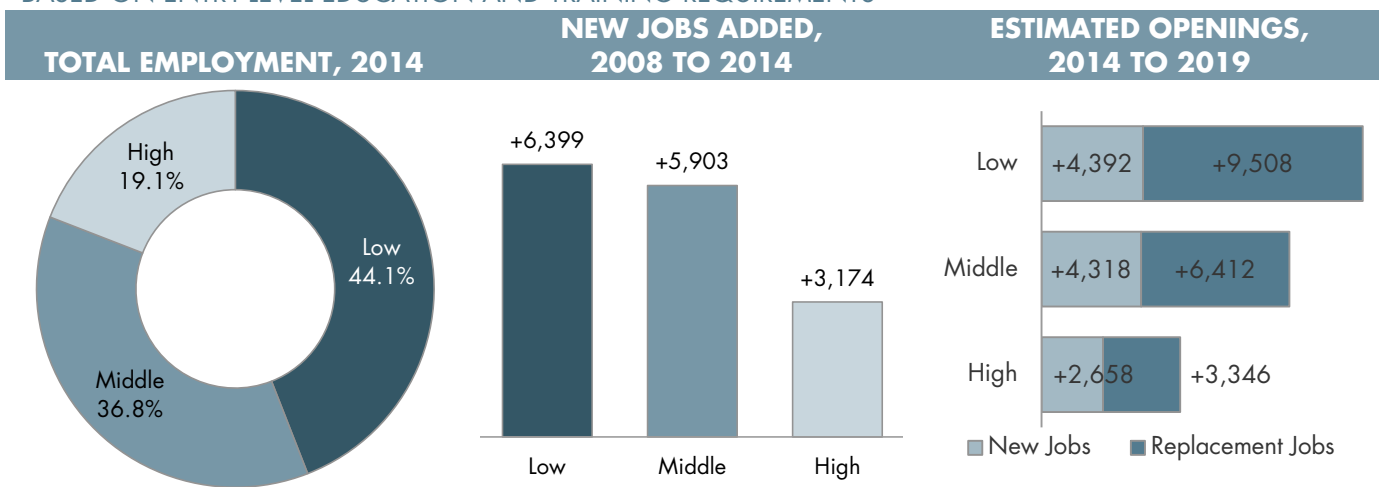
Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed) Note: Skill levels determined for individual occupations based on typical entry-level education and training requirements. "Openings" reflect new growth and replacement demand.

Regional wages are lower than the nation's. In spite of past and anticipated employment growth and the tight labor market, the region's wages still lag the nation's, particularly in more skilled occupational categories. The regional median hourly earnings is $18.10, which is 10 percent lower than the national median hourly earnings of $20.06. As shown in Figure 6, lower wage occupational groups are more on par or even higher than the national median. However, many of the higher wage occupations earn more than 20 percent less than the national median. For example, in the computer and mathematical occupations, the median hourly wage is 27 percent less than that of the United States. The median hourly wage for scientists and engineers is 23 percent less. Even taking into account the lower cost of living in the region, these wages are considerably low.

A look at online job posting analytics (Figure 7) reveals discrepancies in salaries by industry as well. Among all current job postings, the local salary range is about 90 percent of the national salary range. For healthcare-related job postings, the local salary range is about 14 percent higher than the national average. For manufacturing-related job postings, the local salary range is 34 percent less than the national average, and for information technology-related job postings, the local salary range is 40 percent less.

FIGURE 6. MEDIAN HOURLY WAGE RATES BY MAJOR OCCUPATIONAL GROUP
FARGO MSA WAGES PRESENTED IN THE CONTEXT OF US WAGE RANGE
Line = US wage range from 10th to 90th percentile; Markers = Median hourly wage rates for US (x) and Fargo MSA (dot)
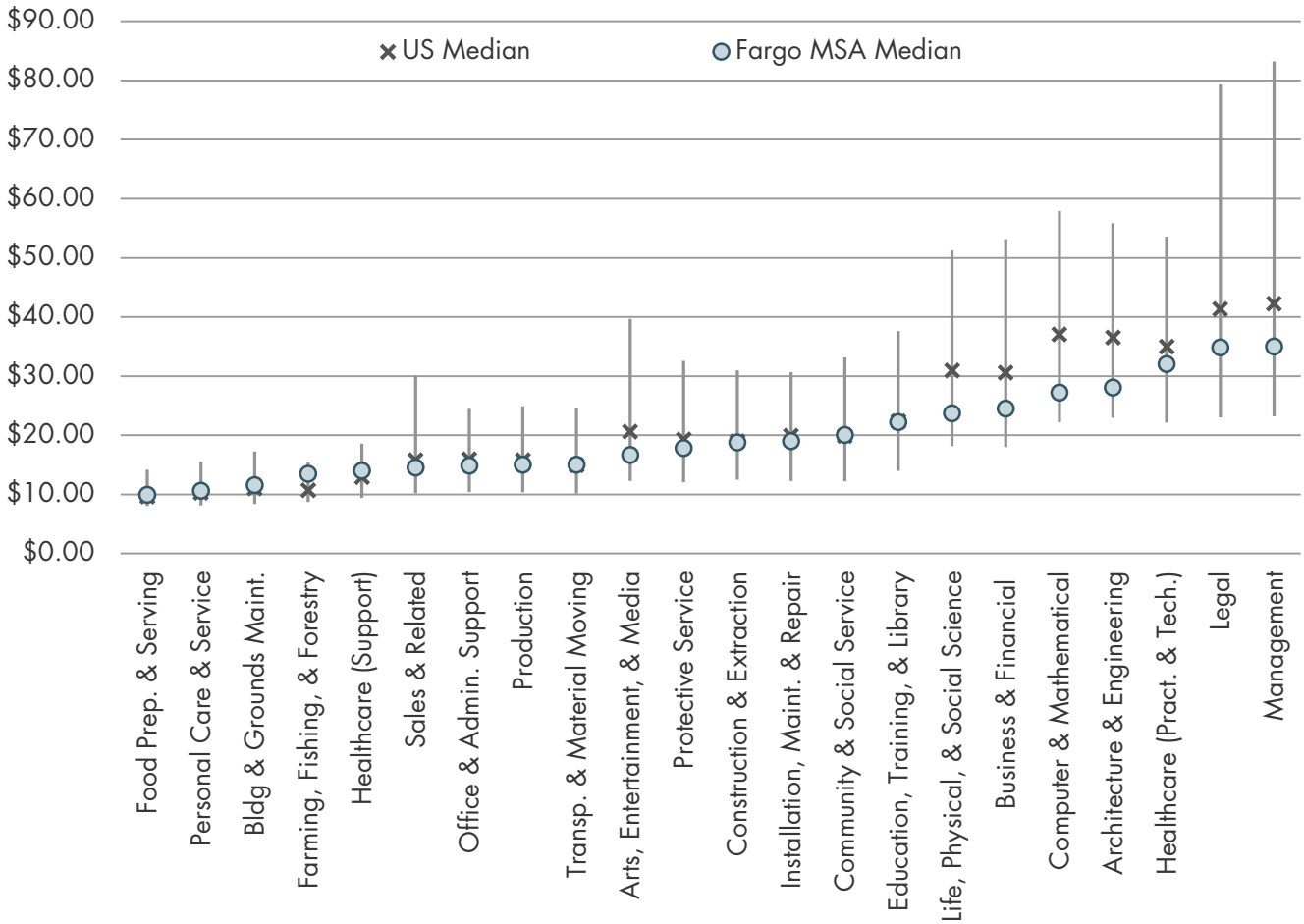
Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed)

FIGURE 7. SALARY RANGES BY INDUSTRY
HEALTHCARE
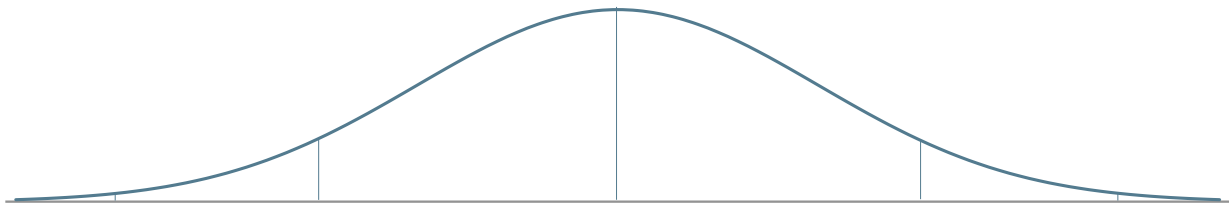
Percentile	10th	25th	Median	75th	90th
Local	$43,900	$59,450	$76,750	$94,050	$109,650
National	$39,400	$52,600	$67,250	$81,900	$95,100
US=1.00	1.11	1.13	1.14	1.15	1.15

MANUFACTURING

Percentile	10th	25th	50th	75th	90th
Local	$28,050	$35,950	**$44,750**	$53,500	$61,450
National	$39,600	$52,900	**$67,700**	$82,450	$95,750
US=1.00	0.71	0.68	**0.66**	0.65	0.64

INFORMATION TECHNOLOGY
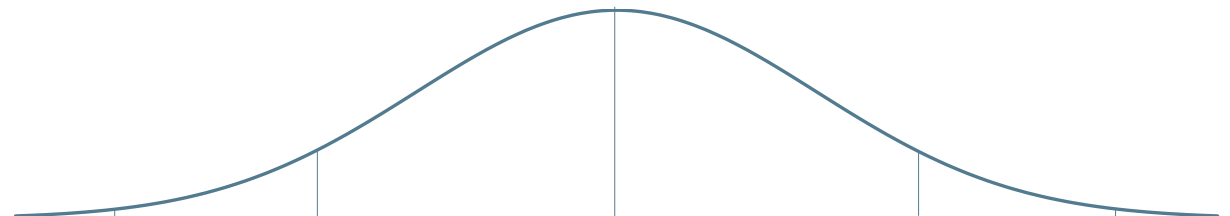
Percentile	10th	25th	50th	75th	90th
Local	$31,600	$41,050	**$51,500**	$62,000	$71,450
National	$47,900	$65,750	**$85,600**	$105,400	$123,250
US=1.00	0.66	0.62	**0.60**	0.59	0.58

Source: Wanted Analytics

Students in the region, in many cases, are not choosing education programs that match with high demand occupations. The occupational clusters that are in highest demand are hospitality and tourism, business management and administration, and marketing. Within these clusters, most of the openings require a high school degree or less. Of the occupational clusters that require postsecondary education, health science, transportation, finance, and manufacturing top the list. Within these clusters, the training required is, for the most part, less than a four-year degree. In comparison, the list of the top 25 fields of study that graduates in the region are choosing are four-year degrees or above and are in fields such as registered nursing, business administration and management, elementary education, psychology, biology, accounting, and criminal justice. There are few graduates with degrees related to manufacturing, with the exception of mechanical and electrical engineering. There are also few graduates in health science other than registered nursing, licensed practical nursing, and medical technician.

In focus groups, representatives from the regional postsecondary institutions noted that the problem is not the absence of programs related to the high demand occupations. The programs are available, but few students are choosing these programs.

FIGURE 8. HIGH DEMAND CAREER CLUSTERS VS TOP FIELDS OF STUDY

ANNUAL OPENINGS
BY CAREER CLUSTER & SKILL LEVEL

Career Cluster	Annual Openings	Low	Middle	High
Hospitality & Tourism	821			
Business Management & Administration	764			
Marketing	674			
Health Science	509			
Transportation, Distribution & Logistics	431			
Finance	374			
Manufacturing	363			
Architecture & Construction	355			
Human Services	335			
Education & Training	316			
Information Technology	132			
Agriculture, Food & Natural Resources	107			
Law, Public Safety, Corrections & Security	56			
Science, Technology, Engineering & Mathematics	50			
Government & Public Adminstration	33			
Arts, Audio/Video Technology & Communications	25			

DEGREE AWARDS
BY FIELD OF STUDY & AWARD LEVEL

Legend: Award of <1 academic year | Award of at least 1 but <2 yrs. | Associate's degree* | Bachelor's degree | Advanced degree**

Field of Study	Annual Openings
Registered Nursing	571
Business Administration	496
Liberal Arts	466
Elementary Education	309
Psychology	308
Biology	253
Accounting	249
Criminal Justice	230
Licensed Practical Nurse	200
Social Work	191
Mechanical Engineering	160
English Language and Literature	127
Civil Engineering	125
Medical Technician	122
Marketing	121
Communication	117

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed). Natl. Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). Note: IPEDS data include only schools eligible to participate in federal financial aid programs. Figures shown include first and second majors. *Associate's-degree-level completions include awards categorized by IPEDS as "Award of at least two but less than four academic years." **Advanced-level completions represent all awards above the bachelor's-degree level.

Employers report that retaining talent from other areas of the country is difficult. In multiple roundtable discussions with employers across many different industries, employers discussed what they were doing to recruit talent to the region to fill open jobs. Some are using third-party recruiters, others are recruiting heavily at specific colleges or in specific areas of the country. One common thread that we heard was that employers can attract talent to the region, but retaining outside talent past two or three years is very difficult. A wide range of reasons were given for this, including the desire to return "home," relocating to a larger city, the pursuit of higher wages elsewhere, and the climate. These employers reported that talent that had previously lived in the region or had a connection to the region was more likely to stay.

In a separate employee survey, the almost 400 respondents can provide some insights into who stays in the region. Of the respondents that were not born in the region, most came to the region for college and then stayed. Of the respondents that came to the region specifically for an employment opportunity and stayed, the overwhelming majority came from other parts of Minnesota and North Dakota.

The new American population offers opportunities, but needs more educational support. In many different roundtable discussions over the course of this project, participants recognized that the new American population offers a resource for employers seeking to fill certain jobs. About 1,100 refugees have been resettled in the Fargo/West Fargo area over the past three years. Employers who have hired these new Americans had positive things to say about their work ethic. They did, however, note the need for English language acquisition and orientation to culture in the work place.

For many workers, affordable housing, childcare, and transportation are significant barriers to employment. Finding affordable housing is out of reach for many low-wage workers in the Fargo-Moorhead region. A 2012 study found that the number of homeless adults more than doubled between 2000 and 2012, with a total homeless population of 874 persons. The study also found that about one-third of the homeless persons interviewed had a job with around 10 percent working full-time. Of those not working, a lack of transportation was the most common barrier to employment.

Another barrier to work is the availability of high quality and affordable childcare. According to the most recent capacity snapshot of Child Care Aware North Dakota, Cass County has enough licensed childcare seats to meet only about 54 percent of the identified demand and the average cost accounted for about 9 percent of the median income for families with children. Furthermore, for many of the workers that need childcare, healthcare workers in particular, it is very difficult to find childcare with hours that match their shift work.

Transportation was also often cited as a barrier to employment. Affording a car was an obstacle to many, and public transportation focuses its coverage on high-density and high-traffic areas, which can leave out many of the residents that need it most. The hours of public transportation also did not serve the needs of those who work shifts.

CONCLUSION

The economics of the region are expected to remain strong, and employment and population growth will continue to stretch the regional labor market. To meet the region's current and future workforce needs, employers, education and training institutions, nonprofit organizations, workforce and economic organizations must come together to strengthen the region's talent pipeline.

The strategy that follows offers a framework for cultivating and developing local talent, attracting new talent to the region, building a strong path towards financial stability for those who need it, and encouraging innovation to maximize efficiencies in the region's use of human capital. With the diligent implementation of the strategies over the next three to five years and careful evaluation of its progress, the region will move towards its goal of a demand-driven workforce system that supports business growth.

REGIONAL WORKFORCE STRATEGY

The regional workforce strategy provides a playbook to help the Fargo-Moorhead region strengthen its internal and external talent pipeline to support its current and future employers. This will better position employers in the region to fill the more-than-30,000 openings that are projected over the next five years.

VISION

Establishing a common vision provides direction for the many stakeholders who participate in and contribute to the Fargo-Moorhead workforce development system. For this reason, the regional strategy begins with a vision statement:

> **The Fargo-Moorhead region is
> an economically diverse employment center
> with a strong pipeline of talent to support current and future employers.**

The vision statement focuses on the region's long-standing role as an employment center and recognizes that workforce is a critical element of the region's ongoing economic success. It also highlights the importance of economic diversity and the evolving roster of employers in the regional economy.

GOAL

With this vision in mind, the primary goal of the regional workforce strategy becomes clear:

> **To strengthen the regional workforce system
> to support regional employers and
> to address the gap between available positions and qualified workers.**

FRAMEWORK

Over the course of the project, four distinct themes emerged as necessary components of the regional workforce strategy. These are:

1. **CULTIVATE:** Strengthen the pipeline of local talent to support employers in the region.

2. **ATTRACT:** Enhance and coordinate efforts to bring new talent to the region.

3. **BUILD:** Develop a framework for financial self-sufficiency and upward mobility for workers in low-wage and basic-skill jobs.

4. **INNOVATE:** Encourage the development of innovative solutions to address the region's workforce-related challenges.

1 CULTIVATE.

Strengthen the pipeline of local talent to support employers in the region.

The large number of projected openings coupled with the tight labor market offer great economic opportunity for the region's local workforce. To the degree possible, efforts should be made to align the region's talent base with the needs of its employers. This will require increasing the region's retention of graduates and employees from outside the region as well as creating more opportunities for connection between employers and employment-ready residents.

PRIORITY PROJECTS

❶ Community 101 for College Students
❷ TinyPulse for Talent Insights
❸ Winter Festival to "Embrace the Cold"

1. Retain more graduates from regional high schools

Currently, the region's high schools and colleges graduate about 12,000 students annually. This pool of talent represents a rich resource for employers seeking entry-level workers. Our focus groups with area high school and colleges students revealed that their connection to and their perception of the community could be strengthened. It also revealed that students do have access to a wide array of career exploration opportunities, but their level of career awareness and knowledge of regional employers could be enhanced. Building awareness of regional career opportunities and strengthening students' connection to the community and to specific employers can help the region retain a larger portion of this talent pool.

a. Raise awareness of career opportunities in the region among high school and college students and their parents, school counselors, and career centers.

- Continue events such as Manufacturing Day and the Health, Tech & Trades Career Expo to provide hands-on opportunities for career exploration and to feature regional employers. Work with the IT Sector Council to plan an IT-specific event.

- Partner with Junior Achievement, who reaches more than 7,000 K-12 students, to incorporate real careers at real employers in the region so that K-12 students are exposed to this information in their financial literacy training.

- Work with the regional colleges' career centers to plan workshops that present students with information on high-demand careers, the skills these require, and the programs of study that support them. Also, provide students with a list of employers by sector.

b. Forge stronger connections between students and local employers.

- Continue to work with employers to develop internship, job shadowing, apprenticeship, and scholarship programs that provide students with opportunities to explore different workplaces and provide employers

opportunities to find entry-level talent. Maintain an inventory of these programs and distribute it to career counselors at high schools, college career centers, and through CareerFM. (*See Strategy 1.4.c. on page 19*).

- Partner with employers to get involved with student activity clubs such as DECA to establish connections and build awareness. Plant or workplace tours, hands-on projects, and technology demonstrations could be good activities to engage students involved in these clubs.

c. Actively work to integrate college students into the community.

- Create a Fargo-Moorhead Community 101 course that could be part of a student orientation that highlights the community and region's key assets and provides students with information on how to find activities that match their interests.

- Bring knowledge of community events to them by ensuring local publications such as High Plains Reader and Fargo Monthly are distributed on campus and that students know about these resources and seek them out.

- Invite college students to seek internships, take leadership courses, and participate in community service and recreation clubs.

2. Work closely with employers to retain talent in the region.

Employers in the region report that attracting talent to the Fargo-Moorhead region is not as difficult as retaining experienced talent past two or three years. The reasons reported by employers were various, but many reported that most employees leaving the region moved back home or pursuing opportunities in a bigger city. For example, employers report that many nurses move to the Minneapolis-Saint Paul area for higher pay and bigger city amenities after working for two to three years in the Fargo-Moorhead region. Employers also commonly cite the climate as a barrier to retention.

a. Support employers in matching workers from outside the region with local hosts to help new residents build roots in the community and find what they like to do.

- Expand SmartConnections to include a community ambassadors program of individuals and families willing to serve as hosts and resources to new residents who have moved to the region to work.

- Continue to develop and refine the SmartMove resource guide for ambassadors and new arrivals to use to find what they like to do.

- Continue to hold SmartConnections events for new arrivals and their hosts to attend and socialize.

b. Survey employees and residents to understand their quality of place preferences, identify projects that could improve their lives in Fargo-Moorhead, and set priorities for investments in quality of place initiatives.

- Use an innovative tool such as Tiny Pulse that makes the survey-taking fun, short, and useful.

- Continue to conduct in-depth market research, such as that done for the IT sector group, with a focus on different sectors and age cohorts.

- Convene relevant stakeholders to report results and make a plan to move quality of place projects forward.

c. Create an initiative aimed at "embracing the cold" and changing the internal and external negative perceptions of the regional weather.

- Plan a community-wide celebration of winter such as Winnipeg's Festival de Voyageur.

- Create a positive messaging campaign about winter months aimed at changing internal perceptions about the cold.

- Ensure that community marketing materials include pictures of people enjoying winter activities.

3. Encourage more of the existing population to enter the workforce.

The labor force participation rate of the Fargo-Moorhead region is extremely high—75 percent versus 64 percent for the United States. However, there are pockets of residents who are willing and able to work if the right opportunity is available. Engaging the existing population is important for two primary reasons. First, about 45 percent of the openings over the next five years are for low-skill jobs, most of which are fairly low wage. Importing labor to fill these positions is problematic because the jobs do not pay wages that can support a family, which creates a greater demand for social services. In contrast, students and secondary income earners can fill these jobs and are less likely to need additional social support. Second, the strong economy can provide greater possibilities of connecting low-income residents with greater economic opportunity. However, a deliberate effort must be made to ensure this population is positioned to take advantage of the opportunities. Ensuring that employment-ready clients of local nonprofits are trained for high-demand, living wage jobs is the first step. Building a direct bridge between employers and trained, employment-ready residents is the second.

a. Work with schools and colleges to encourage students to get part-time or full-time jobs to learn customer service skills and other basic employability skills.

- Partner with schools and colleges to create for-credit and/or work-study programs that would encourage students to seek employment.

- Identify or develop a strong curriculum for basic employability skills that could be incorporated these programs.

b. Make channels of re-entry easier for residents who have been out of the workforce (e.g. stay-at-home moms, caretakers, retirees, and ex-offenders).

- Create targeted awareness campaigns to reach these residents.

- Partner with employers to make the application process friendlier to these populations.

- Create job-seeker resources specifically targeted at them (e.g. resume writing, interview skills, basic computer skills, job fair, etc.)

- Work with employers to understand the needs of these populations and to make modifications to the workplace and work schedule where appropriate.

c. Partner with the nonprofit community to connect clients who are work-ready to living wage jobs.

WORKFORCE EMPLOYER RESOURCE COLLABORATIVE (WERC)
Chicago, IL

The Workforce Employer Resource Collaborative (WERC) matches employers with quality individuals, assists people in finding living wage jobs, and customizes strategies to enhance recruitment and retention. WERC includes more than 35 nonprofit organizations who are committed to meeting employers human resource needs. It is coordinated by Inspiration Corporation, one of the nonprofit members.

The WERC coordinator cultivates employer relationships and identifies job openings. The coordinator then works with the nonprofit network to identify top candidates to fill those jobs. Once candidates are hired, the WERC network provides employers and employees support that improves retention rates. The collaborative provides these services at no cost to the employer.

- Designate a connector that can work with employers and the nonprofit network to match candidates with available job openings.

- Assemble a network of local nonprofits who work with residents to alleviate barriers to employment and provide training.

- Reach out to employers to inform them of this matching service and collect information on any openings they have that could be good fits for work-ready clients.

- When information on job openings has been collected, send a notice to the network of nonprofits to have them submit the resumes of candidates they think would be a good match for the job. Screen the resumes carefully and provide a list of top candidates back to the employer. The success of the network is dependent on the employers finding high-quality candidates.

4. **Improve the alignment of student career choices, training resources, and industry needs.**

A comparison of high-demand occupations and the top 25 fields of study chosen by regional graduates reveals a mismatch. The demand for workers in many career clusters outstrips the supply of graduates. This imbalance is evident in finance, manufacturing, construction, and information technology. Even within healthcare, business, and education, there is a mismatch, with students overwhelmingly choosing one particular field—registered nursing, business administration, and elementary education—while occupations require more skill diversity. Furthermore, a comparison of the educational requirements of the occupations and the types of degrees awarded by field of study reveals another mismatch. Many of the high-demand occupations require technical education (a two-year degree or less) while most of the region's students are pursuing a four-year degree. This mismatch is not because of a lack

of programs aligned with industry needs. The region's higher education providers offer the classes, but the students, in many cases, are not choosing the programs that are aligned with high-demand careers.

a. Partner with Minnesota State Community and Technical College (M State) and North Dakota State College of Sciences (NDSCS) to develop a train-to-hire model as a tool to directly align incumbent worker training and adult worker training with specific employers openings.

- Convene customized workforce training leaders from each college to discuss possible models. Skills for Chicagoland's Future and WorkAmerica provide examples of models.

- Identify an industry sector or talent cluster to pilot the program with first. Possible sectors could include the healthcare, manufacturing, and construction. Possible talent clusters could include skilled trades, information technology, and direct care.

- Work with the appropriate sector group to identify common openings, develop a list of common skills and requirements, and design a basic training module that meets those common skills and requirements. Then, work with individual employers to determine their customized training needs related to these openings and design a more advanced module to prepare employees specifically for their openings.

- Design and launch a targeted recruitment campaign to identify candidates for the training program. Job Service North Dakota, the Moorhead WorkForce Center, and local nonprofits would be good places to start.

- With a strong roster of training candidates and employers with related openings to fill, conduct training and place the candidates at participating employers. Help employers access any relevant training grants.

- Conduct follow-up interviews with employers to gather feedback and insights as to how the training and candidates fit their needs.

b. Utilize sector councils to provide a channel for interaction between industry & education.

EXXONMOBIL COMMUNITY COLLEGE PETROCHEMICAL INITIATIVE

In 2013, ExxonMobil initiated a workforce training program to enable the Greater Houston Region's nine community colleges to collaborate more closely in an effort to prepare local residents for jobs in the petrochemical sector. The initiative brought together the community colleges to identify occupations critical to the industry, inventory training resources available to support those occupations, document the skills and certifications required for the critical occupations, ascertain training gaps, and share expertise and curricula to fill the training gaps.

The Community College Petrochemical Initiative has evolved into EnergizeHouston in partnership with the Greater Houston Partnership's Upskill Houston and with additional support from ExxonMobil. EnergizeHouston has expanded its collaboration to include school districts in the region as well as scholarships to support training in the key occupations. In addition, the initiative provides in-service training and curriculum development assistance for all instructors that support critical occupations in the community colleges. In both spring and fall, they hold a Career and Technical Education Conference for school counselors, career and technical education directors, and teachers of career and technical education courses.

For more information, visit:
www.gulfcoastcc.org/ccpi.php

- Continue to ensure the relevancy of K-12 and post-secondary curricula through events such as industry summits and Minnesota State University Moorhead's sector breakfasts.

- Continue convening the Manufacturing Committee and participating in the IT Sector Group. Create a permanent Healthcare Committee that continues the work started during this workforce study. (*See Sector-Specific Strategies on page 31.*)

- Engage employers through the sector councils in the education process by jointly discussing and developing more work-based learning opportunities for both K-12 and postsecondary students.

c. Create a database of tools that education and training providers can use to educate students on career pathways and local career opportunities.

- Include information on high-demand careers, work-based learning opportunities, job shadowing, plant tours, internships, summer learning opportunities, etc.

- Distribute this database to education and training providers in the region and make it available to students through CareerFM.

- Conduct outreach to employers to list or create opportunities to be included in the database. Reach out to career counselors, career centers, and students to distribute the database and drive traffic to it.

d. Continue to promote, develop, and refine the Education that Works initiative.

- Through the sector councils, provide a forum for the business community to engage with the school districts and voice their specific needs and observations as they pertain to 21st Century skills and career readiness.

- Create a working group focused on dual-credit and early college programs to work on identifying and removing obstacles (legislative and administrative) to create more opportunities for high school students to graduate with post-secondary credentials.

- Collaborate with regional public school districts and regional universities on teacher training and certification to ensure that new teachers are prepared for teaching 21st Century skills.

- Continue to provide professional development opportunities for educators through the Educators-in-Industry as well as programs such as InSourced and EdVentures to promote curriculum relevancy.

- Continue to create and promote both curricular and extracurricular experiences for students to be immersed in project-based learning.

2 ## ATTRACT.
Enhance and coordinate efforts to bring new talent to the region.

Though retaining talent in the region and bringing more residents into the workforce will enlarge the region's pool of available talent, it will only add a few hundred workers, not the thousands of workers needed to fill the anticipated openings. Growing the labor pool through the in-migration of new workers is imperative to meet the staffing needs of regional employers.

PRIORITY PROJECT
❶ Friends & Family Campaign
❷ Talent Recruitment Services
❸ Trailing Spouse Network

Yet, many employers spoke of the challenges of recruiting talent to the region. Reinforcing their efforts with strong community messaging, supportive materials, and a set of tools can help facilitate the attraction of new talent to the region.

Employers did note, however, that recruiting people with connections to the region is considerably easier. For this reason, a key aspect of this talent attraction strategy is establishing ties and greater access to the network of Fargo-Moorhead's friends and family.

1. Launch a campaign to build awareness of the opportunities in Fargo.

Reaching out strategically to key talent pools can help the region position itself as a talent magnet, not only in the Great Plains region, but also in distinct markets across the United States. Social media has created valuable distribution channels for targeting talent. Developing clear messages and consistent content about opportunities in the Fargo-Moorhead region and leveraging social networks to distribute this information can be a highly effective means of reaching talent that has a high propensity to consider moving to the region.

a. Reinforce the North of Normal branding campaign in activities promoting Fargo to the young, professional, creative audience.

- Marry the North of Normal Campaign with the SmartMove Campaign and develop co-marketing collateral to "sell" the community to potential new residents. Tailor the information to make it inclusive and appealing to a range of demographic groups and skill levels.

- Leverage social media tools to engage target audiences in games or contests that promote the brand and raise awareness of the region.

- Create a digital ambassadors program as a channel to push positive messages out about the Fargo-Moorhead region. Social Toaster is a common tool for managing this program.

b. Design a friends and family campaign to inform alumni, who live in other areas, of the opportunities and great quality of life in Fargo-Moorhead.

- Assemble a network of local alumni associations—both high school and college—that are willing to push content out to their alumni network.

- Organize a committee that includes influential alumni as well as young professionals to be champions for the network, act as a sounding board, provide content for the online network hubs, and assist in planning events. Make a goal of creating a committee of 20 members who would each recruit 100 individuals to the network.

- Through this network of alumni associations, committee members, and other social media outlets (LinkedIn, Facebook, Twitter), invite individuals to join the Fargo-Moorhead North of Normal network. Use a tool such as ProudCrowd to manage the network.

- Post current information on initiatives and events that may be of interest to the alumni network.

- Invite alumni interested in moving back to the Fargo-Moorhead region to post their resumes on CareerFM and encourage more regional employers to post job openings.

- Set up a mentoring program that will connect young alumni with more experienced alumni in their current city of residence to assist young alumni with professional development and career advancement.

- Hold regular networking events in metro areas with high concentrations of Fargo-Moorhead region alumni.

- Hold an annual alumni event in Fargo, possibly in conjunction with the Winter Festival or another local event/festival.

- Create online forums where alumni can interact with one another.

c. In partnership with Emerging Prairie, develop residents as community advocates to spread positive messages about the region and strengthen community pride.

- Organize and hold regular community events that celebrate what makes Fargo "North of Normal" and recognize individuals who are actively making the region a better community.

- Create a series of Sonic IDs to promote community pride.

SONIC IDs

Atlantic Public Media pioneered the **Sonic ID**, which has been replicated across the country. These short sound bites feature residents telling stories and anecdotes about things that they love about the region and what makes the region unique. The 30 to 60 second spots help to create a local voice and a distinct sense of place as they are woven throughout a broadcast during interstitial time.

While Sonic IDs have most often been used during public radio broadcasts, there is no reason that they couldn't be used on other radio stations and on television broadcasts.

For more information on their program and examples, visit: www.atlantic.org/local/the-sonic-ids

- Use the digital ambassador network to push positive content out to Fargo-Moorhead residents to help establish a more positive perception of their community.

2. Support employers with recruitment tools that many can access and use.

All employers seeking to fill job openings with talent from outside the region are actively marketing the region. Supporting these employers' efforts with common community marketing materials and tools can help reduce employers' marketing costs and help ensure consistent messaging. In addition, leading coordinated efforts to recruit targeted populations can also provide employers greater access to talent pools they might not be able to reach on their own.

a. Create a suite of services to support employer recruitment efforts.

- Share community marketing collateral (*Strategy 2.1.a.*) with employers to support their recruiting efforts.

- Continue to provide out-of-state recruits with community tours.

- Ensure the resume database on CareerFM is populated with Fargo-Moorhead region alumni (*See Strategy 2.1.b.*) and accessible to employers.

- For high-demand jobs, use a tool such as Wanted Analytics to identify target markets for recruitment and organize out-of-market trips to promote career opportunities in Fargo-Moorhead.

**BATON ROUGE AREA CHAMBER –
TALENT INITIATIVE**

The Baton Rouge Area Chamber of Commerce (BRAC) launched its Talent Development Program in 2011 as part of its five-year strategic plan. The program focuses on talent retention and talent attraction. The program consists of a talent database, regional relocation resources (R3), and the Baton Rouge Area Intern Network (BRAIN).

The talent database is a catalog of resumes of professionals who are seeking to further their careers in the Baton Rouge Area. To populate the database, BRAC works closely with the alumni associations from the region's universities and high schools.

R3 assists area employers with their talent attraction efforts by connecting them with out-of-market candidates, creating tailor-made regional awareness presentations to aid in talent recruitment, leading tours of the region for recruits, and making out-of-market recruitment trips.

BRAIN works to increase the number of internships available to students in the area by providing resources to support the employers that create them and the students that are seeking them. An internship job board is one of the resources provided.

Additionally, BRAC recently launched the website www.livecapitalized.com, designed to be a resource for newcomers to connect and grow roots in the community.

For more information, visit:
www.brac.org/ecocomp/talentdev.asp

- Organize joint recruiting trips where multiple employers can present their opportunities for work in the Fargo-Moorhead region. Not only can these trips spread costs across multiple employers, but they can demonstrate to potential recruits that there are clusters of companies in Fargo that provide a rich array of career opportunities.

b. Organize alumni events in areas where there are high concentrations of Fargo-Moorhead alumni to inform them of the opportunities to move home.

- Request zip codes of alumni's addresses from the alumni network partners and create a map that identifies concentrations of Fargo-Moorhead alumni.

- Create a video that features residents who have moved back to the region who can talk about why they moved back, what they love about the region, and how it has changed.

- In the top three to five markets, plan an alumni event that features fun Fargo-made products, North of Normal product giveaways, an update on what is going on in Fargo-Moorhead (from people like the mayors), the video described above, an orientation of the CareerFM tools that could help the alumni find opportunities, and an invitation to come see for themselves how great the region is. These could be held before the annual alumni event (*See 2.1.b*).

c. Formalize the use of a network of employers to identify employment opportunities for trailing spouses.

- Conduct interviews with trailing spouses to understand their experience, skills, and interests.

- Invite trailing spouses to post their resumes on CareerFM.

- Circulate trailing spouses' resumes among Fargo-Moorhead employers that might be a good fit.

- Where possible, introduce the trailing spouses to potential employers.

d. Explore avenues for promoting temporary immigration to fill critical openings through temporary work programs.

- Organize a group of employers interested in seeking temporary foreign workers to fulfill short-term staffing needs and create a working group by which these employers can share resources and collaborate on ideas.

- Identify an existing designated sponsor to

FORMALIZING A TEMPORARY WORK PROGRAM

The United States has two types of visas that support temporary work: the **H-2B Visa** for temporary non-agricultural workers and the **J-1 Visa** for exchange visitors. Both of these programs offer employers a short-term and temporary solution to meet their staffing needs as the region works to develop and attract talent.

The H-2B Visa program can assist employers in meeting seasonal, intermittent, or peak-load staffing needs. The worker may stay in the United States for increments of up to 1 year. The program is currently capped at 66,000 visas. In Fiscal Year 2015, This cap was reached by March, and no more petitions will be accepted until October 1.

The J-1 Visa supports a variety of different cultural exchange programs. The intern, trainee, and specialist programs allow employers opportunities to bring in foreign workers for cultural exchange and professional development. Program participants apply through a designated sponsor, who places them. There is no cap on this program.

Bringing employers and universities together to create a joint international exchange program will allow the region to better meet its short-term staffing needs. By developing expertise in navigating these programs, the region will be better positioned to take advantage of these visa programs and create a pipeline of international talent.

support J-1 Visa programs or create a sponsoring organization.

- Help employers identify possible housing solutions for temporary workers. For workers without families, a network of local host families could be organized to provide temporary housing and opportunities for cultural exchange. For workers with families, short-term rentals or possibly second homes could be identified and offered as solutions.

- Work with regional college offices that assist international students to create information resources for international workers and to identify local resources that could help connect international workers with needed assistance.

BUILD.

3

Develop a framework for financial independence and upward mobility for workers in low-wage and basic-skill jobs.

As mentioned earlier, about 45 percent of the openings between 2014 and 2019 have been and will continue to be in low-skill occupations. Many of these openings are in hospitality, food service, and retail, which are important contributors to the region's quality of place. Other openings include occupations that are vital supports for families, including child care workers and

PRIORITY PROJECT

❶ Nonprofit Collaborative

❷ Affordable Housing Advocacy

❸ Employer-Led Childcare

nursing assistants. Valuable skills can be gained in each of these occupations, but a strong framework for financial independence and upward mobility must be developed to support these workers. Having such a framework in place can help to ensure that the region's economic growth is inclusive and that low-income residents are in positions to take advantage of economic opportunities.

1. **Create a more formal collaborative of nonprofits working with low-income clients around income stability.**

Working with nonprofit partners to establish a regional framework for financial independence and stability can strengthen the regional support network and wraparound services available to low-income residents. Such a collaboration can provide nonprofit partners with a common set of goals and opportunities to share information, best practices, and lessons learned. It also helps build connections between nonprofits and formalize referral networks and shared services. This holistic approach, in turn, enhances the capacity of the nonprofit network to offer comprehensive and bundled services to the benefit of their low-income clients.

a. **Establish a common set of goals.**

- Convene nonprofits that provide services for low-income residents.

- Define a common set of long-term goals and desired outcomes for the network.

UNITED WAY THRIVE
Houston, TX

In July 2008, United Way of Greater Houston launched the THRIVE program, which is a collaboration of 21 nonprofits that provide comprehensive services to help families find the path to financial stability.

The initiative grew out of a community study that pinpointed financial instability as a leading issue for families. United Way found that while many programs were addressing pieces of the problem, there was a need for a more coordinated effort, so it pulled together elements of the various programs to create a more holistic approach.

THRIVE seeks to enable families to reach their financial goals in three ways: by increasing income, building savings, and acquiring assets. It does this through its network of nonprofits and by partnering with community colleges, workforce development offices, financial institutions, and employers.

Since its launch, the program has reached 52,000 families.

For more information, visit www.unitedwayhouston.org/our-work/family-stability/united-way-thrive

- Collaborate to integrate these goals into the individual missions of each nonprofit.

- Identify any gaps in the support network that could be barriers to reach these goals.

- Identify and secure key partnerships outside of the nonprofit network that will help to fill these gaps.

b. Facilitate collaboration and information sharing.

- Convene nonprofit partners in quarterly workshops to share information, discuss challenges, and brainstorm solutions.

- Create a set of shared resources and make them accessible to partners. An example of a shared resource is a list of high-demand jobs and related education and training programs. This list should include the occupation, related program of study, duration of training, cost of program, related scholarships, etc.

c. Collect, aggregate, and report the results.

- Request that partners submit a common list of output and outcome measures.

- Aggregate these measures and report them back to the network of partners and funders.

- Work with the partner network to analyze the results and make strategic and programmatic changes where needed.

2. Increase access to and the supply of affordable housing.

Housing stability is one of the critical components of financial stability. Yet, access to affordable housing for low-income workers is low in the region. A low vacancy rate and high rental rates make affordable housing out of reach for many low-income individuals.

a. Expand the FM Coalition for Homeless Persons' Landlord Risk Mitigation Fund with employer support to improve access to housing for their employees who are considered "high-risk."

- Work with members of the Coalition to define how the program could be managed to support employers who are struggling to fill low-skill, low-wage positions.

- Invite employers who employ low-wage workers to make a contribution to the Fund based on a percentage of the number of low-wage workers in need of housing support and their risk of rent default.

- Assist employers in identifying employees in need of housing assistance and connecting them with the program.

b. Advocate for making rental units and housing available for low-income working families, particularly adjacent to major employment centers.

- Work with the cities of Fargo, West Fargo, and Moorhead to identify their primary employment centers, affordable housing units, and transportation routes. Evaluate their existing affordable housing policies from a regional supply standpoint and provide assistance/guidance in helping them make any needed policy modification.

- Based on this analysis and the state Housing Needs Assessment, identify where affordable housing units are needed and define appropriate partners for ensuring the housing units are built or made available.

- Meet with the owners of older multifamily rental units to discuss the possibility of dedicating those units to affordable housing.

3. **Increase the number of childcare spots available for low-income, working families.**

For working families with young children, finding reliable, high quality childcare is essential. In interviews and roundtable discussions, employers and other stakeholders agreed that the regional shortage of childcare is a big challenge for all working families in the region and for low-income working families in particular. This shortage of childcare is a major barrier to employment for parents who are willing and able to work.

a. Help interested employers establish near-site child care centers. These centers could be placed in clusters of employer partners and shared among those partners' workers.

- Invite employers to express interest in participating in the program.

- Connect interested employers who are in close proximity to each other and facilitate a discussion of how the employers' childcare needs could be met collaboratively. Note, cooperative models can reduce the cost (making it more accessible) and reduce staffing needs, which are key advantages to meeting this community need.

b. Explore creative solutions for meeting childcare needs among low-wage workers, such as co-operative models, intergenerational care models, or innovative subsidies.

- See Strategy 4.2.b.

EMPLOYEE MODEL COOPERATIVE: GEOKIDS

GeoKids is an employee-model cooperative child care center located in Menlo Park, CA on the campus of the US Geological Survey (USGS). The center opened its doors in 1987 and serves USGS employees as well as employees at surrounding companies.

A parent-elected board of director governs the cooperative and includes parents, the program director, and employer representatives. Parents contribute "co-op hours" based on the number of hours their child is at the center. "Co-op hours" include helping with the care of children and other support activities, such as weekend workdays. Parents also participate in four hours of training each year.

The center currently serves almost 70 children ages 3 months through pre-kindergarten.

For more information on cooperative models, visit: www.reic.uwcc.wisc.edu/childcare

4. Improve access to public transportation for low-income families.

For many low-income workers, car ownership is out of reach. Even for those that do own cars, break-downs and repairs can keep their vehicles off the roads for extended periods of time. As a result, many low-income workers must rely on public transportation to get to work. However, the routes and hours often do not match with the employment opportunities. As such, the lack of access to reliable transportation serves as a major barrier to employment for many low-income individuals.

a. Ensure public transportation connects low-income areas with locations where low-income residents are likely to find jobs or be employed.

- In partnership with large employers, conduct a survey of transportation needs to identify clusters of individuals that rely on public transportation or that have unreliable transportation. Collect information on the individuals' work schedules.

- Work with city officials and businesses to identify new transportation routes and schedules according to where clusters of employees without transportation live and what their work schedules are.

RIDESHARE
Central Virginia

RideShare is a program of the Thomas Jefferson Planning District Commission and Shenandoah Planning District Commission. The program works to increase mobility and reduce traffic congestion throughout Central Virginia.

The program offers a variety of services including carpool matching and vanpool coordination. For employers, RideShare works to analyze the transportation patterns of employees, identify opportunities for corporate involvement, and develop a customized transportation plan.

For more information, visit: www.rideshareinfo.org

b. Explore creative solutions for meeting transportation needs, including ride share programs, van pools, and carpool matching.

- See Strategy 4.2.b.

INNOVATE.

4

Encourage the development of innovative solutions to address the region's workforce-related challenges.

As stated previously, the Fargo-Moorhead region's workforce demand cannot be met with the existing population. Yet, bringing new talent into the region creates more demand for services—retail, hospitality, food, and personal services—and the jobs that support

PRIORITY PROJECTS

❶ Technology Hackathon

❷ Social Innovation Challenge

those services, which are often low-skill, low-wage jobs. Demand in this segment of jobs is already one of the most challenging segments to fulfill.

Furthermore, the region's low-income workforce faces significant barriers to employment. The primary challenges include access to affordable housing, high quality childcare, and reliable transportation.

The Fargo-Moorhead region is not alone in its struggle to meet the demand for low-wage work. Across the country, communities struggle with the rapid growth of low-wage/low-skill jobs, the demand for social services that these types of jobs create, and the barriers to employment that low-income families often face. Innovative technology solutions to meet the demand for these service jobs and reduce barriers to employment could put the region at the forefront of an economy where growth is led by middle and high-skill occupations and where individuals have greater access to these opportunities.

1. **Foster the development and adoption of technology-based solutions to meet the demand for low-wage jobs.**

    a. Sponsor a hackathon in partnership with the NDSU Technology Incubator focused on process automation and the use of technology.

       • With representatives from employers and the incubator, define specific topics or areas that will be targeted for innovative solutions.

       • Around each topic, hold a hackathon that brings together multidisciplinary teams of product designers, developers, engineers, and entrepreneurs to develop products that would automate processes in the region's service industry.

       • Match winning solutions to regional business expertise and mentors to assist in accelerating the ideas to market.

    b. Develop an outreach partnership that would work with service industry businesses who are having difficulty finding workers to examine processes and look for staffing efficiencies.

- Work with Impact Dakota to understand which of their existing programs could be applied to the service industry.

- Organize a series of workshops on lean concepts as applicable to the service sector (retail, hospital, food and personal services) and on possible technology solutions that are available.

- Enlist panels of experts to serve as consulting teams to assist these service businesses in examining their processes, assessing their needs, and making recommendations.

- Create and manage a loan fund that could assist businesses with investing in the capital required to implement some of the recommended changes.

2. **Engage local social entrepreneurs in resolving transportation, housing, and childcare challenges.**

   a. Invite local nonprofits and stakeholders to discuss the issues at the social innovators forum before 1 Million Cups.

   - Organize a panel of local and national experts to explore the regional issues of transportation, housing, and childcare as barriers to employment.

   - Present innovative case studies of solutions as they have been applied to address the challenges in other areas. If possible, invite representatives who are knowledgeable of the cases to present and answer questions.

   - Brainstorm possible solutions for the Fargo-Moorhead region with audience members.

   b. Organize a social innovation challenge around transportation, housing, and childcare.

   - Invite teams to register ideas about how to address the challenges through social enterprise.

   - Hold a pitch competition for these ideas, judged by a panel of experts, to choose winners in each of the three areas.

   - Award grants to idea winners to be used to accelerate their ideas to market. Connect these teams to incubator space and other entrepreneurial support resources.

INDUSTRY-SPECIFIC INITIATIVES

Through a series of industry-specific meetings, each of the three sector groups identified one to two initiatives to undertake. The initiatives are described below:

HEALTHCARE

❶ The sector participants decided that it would be most beneficial to conduct targeted work around critical occupations. The first occupation identified is nursing assistants/personal care aides that do not need a formal certification. The idea is to provide basic training (25-30 hours) that would provide aides with building blocks that all employers need. Then each employer could provide any specific training on top of this. The program would support home health as well as facilities.

❷ Another area of critical need for the healthcare employers is childcare that meets the scheduling needs of shift-work. The sector participants wish to explore the idea of a joint childcare facility that would be structured around the types of shift work that healthcare workers typically have.

MANUFACTURING

❶ Sector participants felt that jointly working on a certification program aimed at attracting high school students into manufacturing. The basic manufacturing certification is a program that would be offered to high school students. Upon completion of the coursework, the student would earn a certificate while concurrently earning a high school diploma. The program would cover basic manufacturing processes and soft skills. It could also have a core of modules and electives that would be more employer specific.

❷ The manufacturing committee has coordinated an annual Manufacturing Day event in prior years. In 2014, the event exposed 170 high school students to regional manufacturers. The committee plans to coordinate this event again in 2015.

INFORMATION TECHNOLOGY

❶ The IT sector group would like to plan an IT specific event like the Health, Tech & Trades Career Expo. This event would expose students to IT careers and to IT employers. It would provide students with opportunities to for hands-on learning and build awareness of the types of employers and careers in the Fargo-Moorhead region.

❷ Sector participants also felt that the IT community in the Fargo-Moorhead region lacked a center of gravity. The participants felt that developing a mechanism to build a stronger community of tech talent in the Greater Fargo region is necessary. This mechanism would also be instrumental in attracting tech talent to the region. The sector group has completed a first phase of market research and is now working on defining what the best mechanism would be.

APPENDIX A: LABOR MARKET PROFILE

This section will provide an overview of the local labor market, with comparisons to the state and the United States. Topics addressed in this section include commuting patterns, unemployment rates, population trends, educational attainment, and domestic migration flows. The quantitative analysis is supplemented by findings from a survey of Fargo-area employers and employees, as well as insights gleaned from roundtables and interviews with others knowledgeable about the local workforce. Additional details regarding the surveys are presented as Appendices C and D.

LABORSHED DEFINITION

To document the Fargo laborshed, commuting patterns data were compiled from the US Census Bureau's Local Employment Dynamics (LED) program. This state-federal partnership combines data from state administrative records with federal data products, such as censuses and surveys, to provide a comprehensive picture of the labor force.

REGIONAL EMPLOYMENT CENTER. A look at commuting flows (Figure 9) reveals that more than three-quarters of the jobs in the Fargo MSA (77 percent) were filled by local residents in 2011, the most recent year for which data were available at the time of analysis. In addition, the metropolitan area "imports" more workers than it "exports" with slightly more than 25,000 people commuting to work from communities outside the MSA, compared with roughly 11,400 Fargo residents commuting to jobs outside the two counties. These findings point to Fargo's role as an employment hub for residents of the MSA as well as workers living in the surrounding area.

FIGURE 9. INFLOW/OUTFLOW FOR FARGO ND-MN, 2011
FLOW OF WORKERS TO/FROM THE TWO-COUNTY MSA

25,234
Commute to jobs in Fargo MSA from outside

85,712 Live and work in Fargo MSA

11,398
Live in Fargo MSA and commute to jobs outside

The Fargo MSA is a net importer of labor, drawing in **nearly 14,000 more workers** in 2011 than it exported to surrounding areas.

Of the 110,946 workers that held jobs in the Fargo MSA in 2011, slightly less than one-quarter (23 percent) lived outside the MSA.

Of the 97,110 Fargo residents employed in 2011, about one in nine (12 percent) commuted to jobs outside the MSA.

Source: US Census Bureau, Local Employment Dynamics
Note: Overlay arrows are for illustrative purposes and do not indicate directionality of worker flow between home and employment locations.

A look at long-term trends (Figure 10) confirms that the two-county MSA has consistently drawn workers to the area, with the number of inbound commuters exceeding those outbound in each of the years for which data are available. After narrowing considerably in the first half of the decade, the gap widened sharply later, with the number of inbound commuters nearly double the outbound figure by 2011.

DISTANCE & DIRECTION Because the majority of people who are employed within the Fargo MSA live within its boundaries, commute distances are minimal. Most workers (70 percent) traveled less than 10

FIGURE 10. COMMUTING FLOWS, 2002 TO 2011
FARGO DRAWS IN MORE WORKERS THAN IT "EXPORTS"

Source: US Census Bureau, Local Employment Dynamics

miles between work and home in 2011 (Figure 11). This figure has dropped slightly from 2002. During the same period, the share of workers who commute much greater distances—50 miles or more each way—has risen slightly, from 15 percent of the MSA's workforce in 2002 to 18 percent in 2011.

Figure 11 also shows the direction traveled. The MSA's workforce is relatively evenly distributed on this variable, although workers are slightly more likely to live south of their place of employment, with the fewest number traveling from northern compass points. However, workers traveling more than 50 miles were significantly more likely to live to the west or southeast of their job, reflecting the path of Interstate 94.

FIGURE 11. DISTANCE & DIRECTION TRAVELED
SHARE OF JOB HOLDERS THAT WORK IN THE FARGO MSA

Distance traveled, 2002 vs. 2011
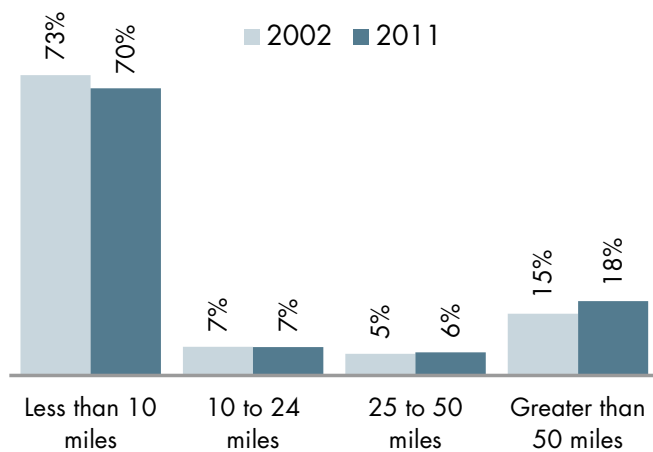
Direction traveled from work to home, 2011
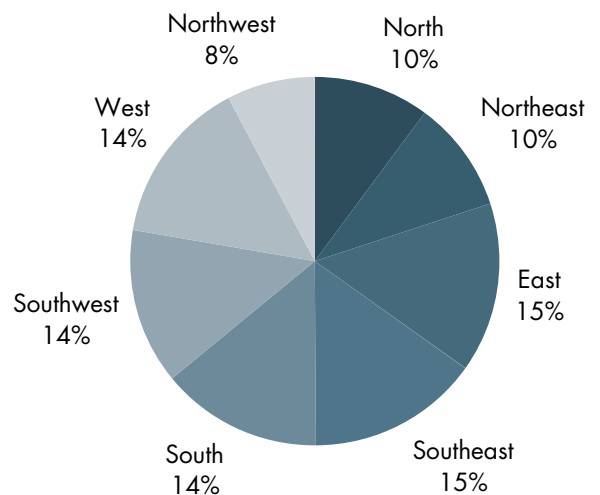
Source: US Census Bureau, Local Employment Dynamics

WHERE WORKERS LIVE. Two out of five people employed in the Fargo MSA lived in the city of Fargo in 2011, representing roughly 41 percent of the total workforce (Figure 12). Among the top 10 cities, only three were located in counties other than Cass and Clay. Together, these three communities accounted for just over 3 percent of the MSA's workforce.

A look at selected economic and demographic characteristics (Figure 13) shows several differences between those who live and work in the Fargo MSA (identified as "internal job holders") and its inbound and outbound commuters. Both inbound commuters (those commuting to jobs in the metro area from outside the two-county region) and outbound commuters (those living in the MSA but working elsewhere) were more likely to be younger and to earn less than $1,250 per month. Both groups were also less likely than internal job holders to work in service industries.

FIGURE 12. PLACE OF RESIDENCE, 2011
TOP 10 CITIES WHERE FARGO MSA'S WORKFORCE LIVES

	City	County	Count	Share
1	Fargo, ND	Cass	45,384	40.9%
2	Moorhead, MN	Clay	13,636	12.3%
3	West Fargo, ND	Cass	12,134	10.9%
4	Dilworth, MN	Clay	1,481	1.3%
5	Grand Forks, ND	Grand Forks	1,454	1.3%
6	Bismarck, ND	Burleigh	1,192	1.1%
7	Horace, ND	Cass	1,135	1.0%
8	Barnesville, MN	Clay	940	0.8%
9	Casselton, ND	Cass	807	0.7%
10	Jamestown, ND	Stutsman	727	0.7%
	All Other Locations		32,056	28.9%
	Total Fargo MSA		**110,946**	**100.0%**

Source: US Census Bureau, Local Employment Dynamics

FIGURE 13. SELECTED JOBHOLDER CHARACTERISTICS, 2011
SHARE OF WORKERS BY TYPE OF COMMUTING FLOW (INTERNAL, OUTBOUND, INBOUND)
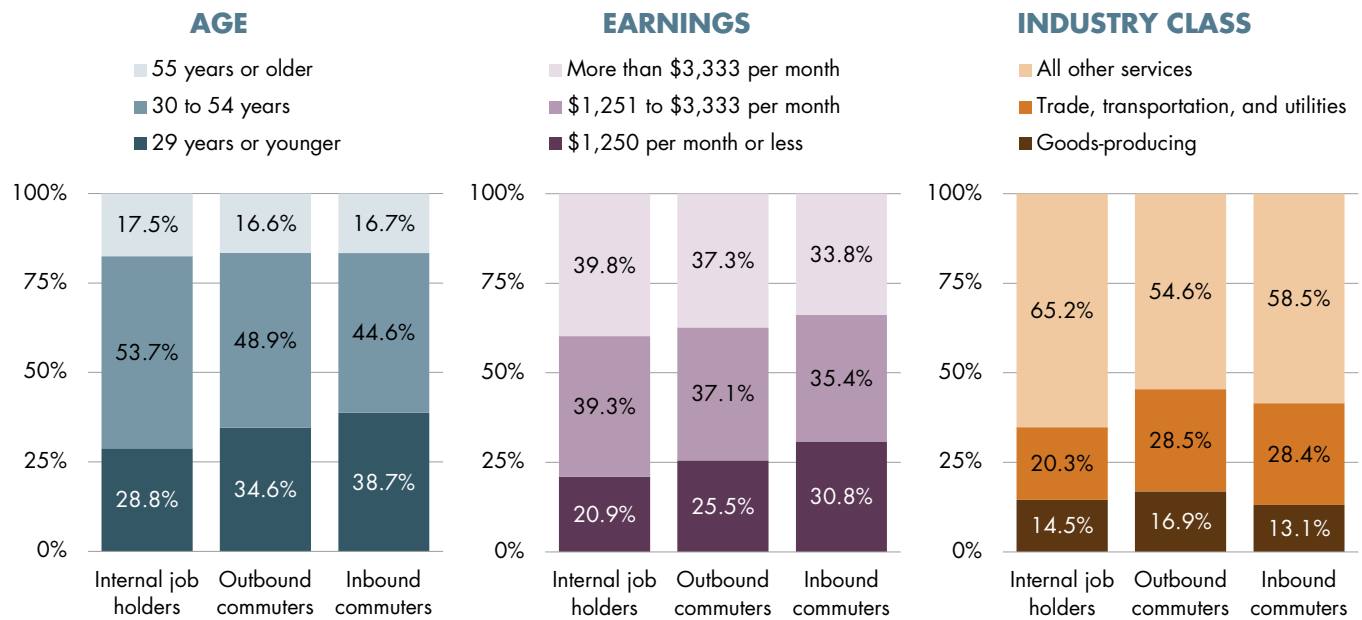
Source: US Census Bureau, Local Employment Dynamics

DEFINING THE LABORSHED. Based on the commuting patterns data, the laborshed for this study was defined as the two-county metropolitan area, plus nine additional counties: six counties in North Dakota (Barnes, Grand Forks, Richland, Steele, Stutsman, and Traill) and three in Minnesota (Becker, Otter Tail, and Wilkin). These counties were selected because of the circulation of workers, their proximity to the MSA, and the relationship to the transportation network; all but two of the nine counties are transected by Interstate 29 or Interstate 94.

Figure 15 (page 37) shows the annual net flow of workers between the Fargo MSA and each of the other laborshed counties. Net flows represent the difference between the number of workers the specified county sends to the Fargo MSA (inbound) and the number of metro area residents that travel to the specified county for work (outbound). Fargo has the largest net inflows from Richland, Becker, and Otter Tail Counties. Although the flows have been uneven over the past decade, particularly between Becker and Otter Tail, each of the three counties sends between 1,000 and 1,500 more workers to the MSA than it receives. Among the laborshed counties, only Grand Forks has a negative net flow. Although the gap closed rapidly during the last five years of the analysis, the Fargo MSA continues to send more workers out to Grand Forks County than commute in to either Cass or Clay Counties.

FIGURE 14. FARGO MSA 11-COUNTY LABORSHED
BASED ON SHARE OF COMMUTING FLOWS AND RELATIONSHIP TO TRANSPORTATION NETWORK
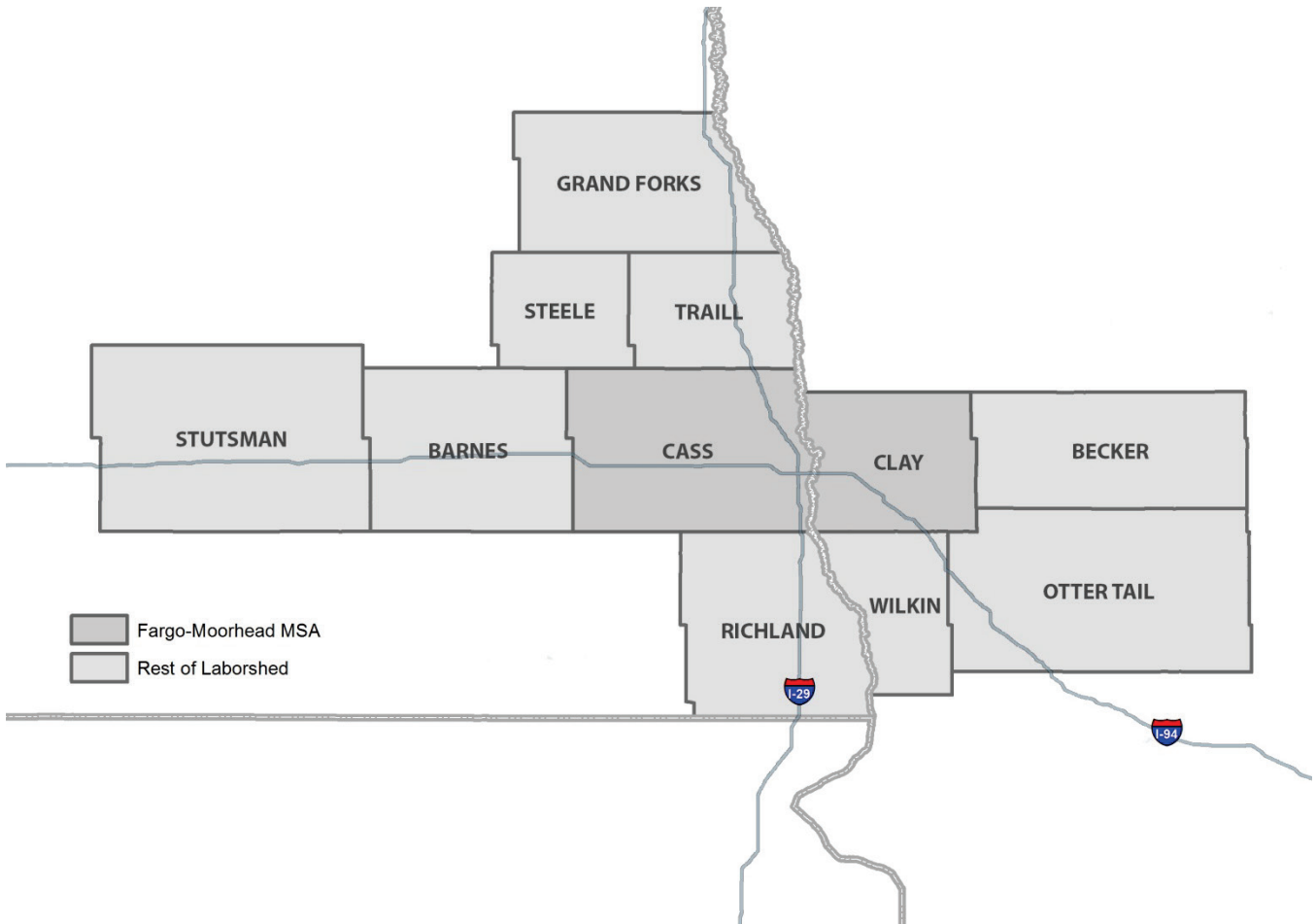
Source: TIP Strategies

FIGURE 15. NET COMMUTER FLOWS BETWEEN FARGO MSA AND SURROUNDING LABORSHED
NET = THE DIFFERENCE BETWEEN INBOUND AND OUTBOUND COMMUTER FLOWS
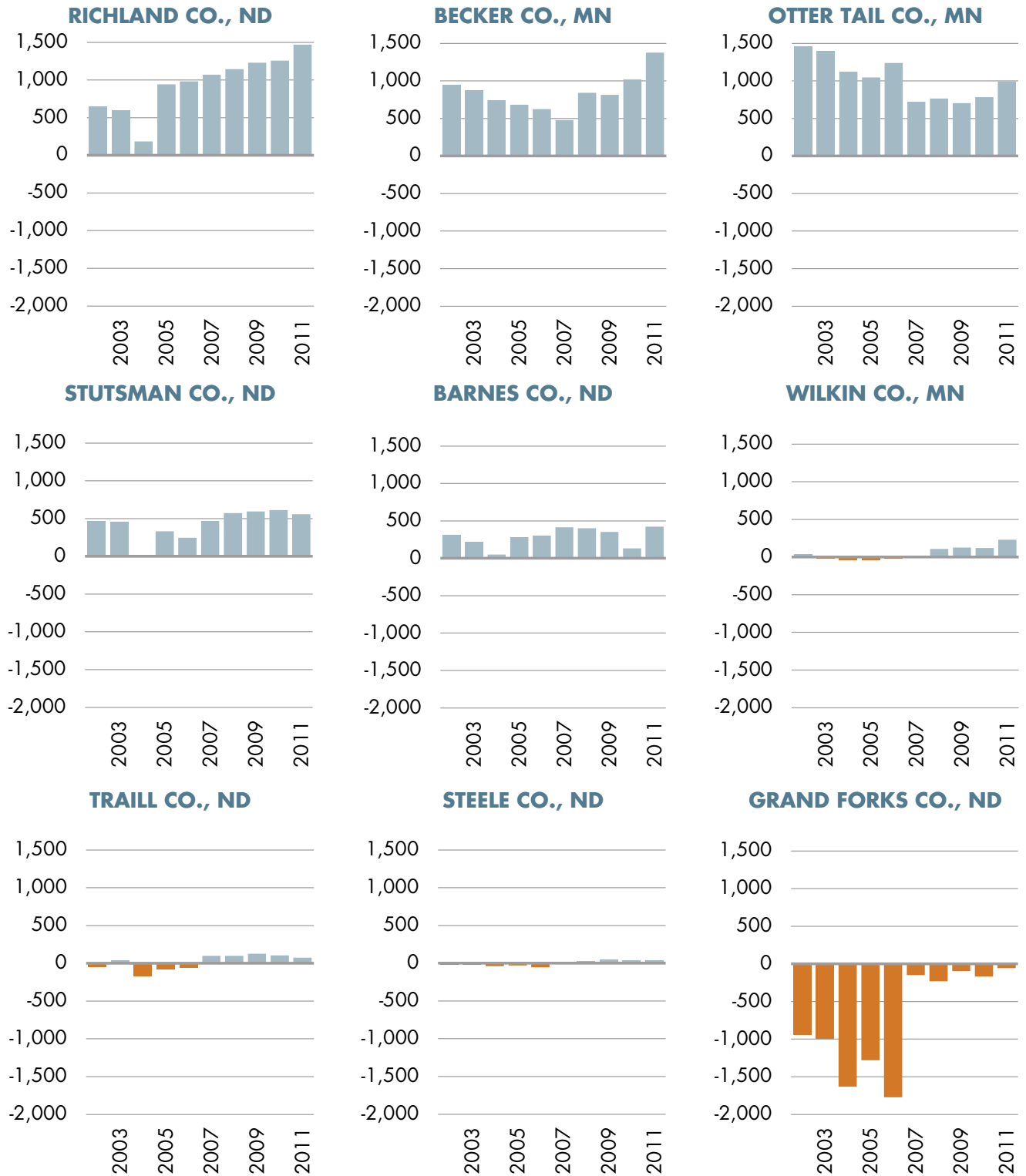
Source: US Census Bureau, Local Employment Dynamics.

LABOR FORCE CHARACTERISTICS

Within the 11-county laborshed, employers have access to a pool of nearly 250,000 workers, roughly one-half of which (51 percent) are located in the Fargo MSA. Within the MSA, Cass County, ND, accounts for the largest share of the workforce, with a civilian labor force of nearly 89,000 in November 2014.

A TIGHT LABOR MARKET. The Fargo MSA has consistently outpaced the United States in terms of its labor market performance, as have the states of North Dakota and Minnesota. In November

FIGURE 16. AVERAGE ANNUAL UNEMPLOYMENT RATES
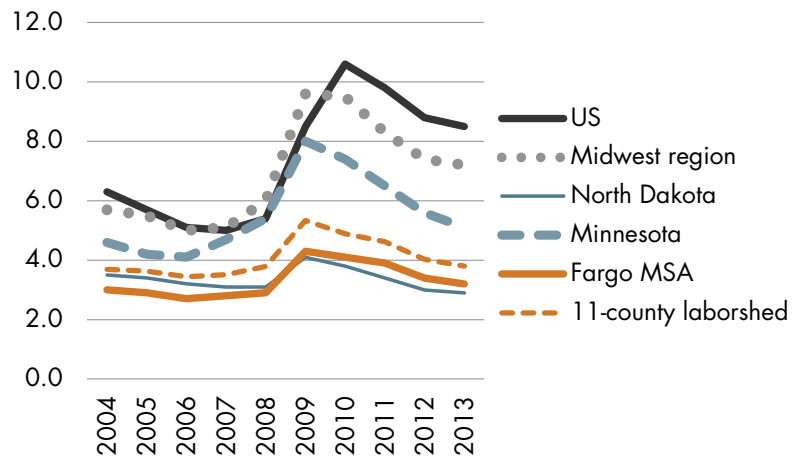
FIGURE 17. LABOR MARKET OVERVIEW
AS OF NOVEMBER 2014

Geography	Civilian labor force	Employed	Unemployed	Unemployment rate
United States	156,297,000	147,666,000	8,630,000	5.5
North Dakota	414,274	404,517	9,757	2.4
Minnesota	2,989,326	2,894,122	95,204	3.2
Fargo MSA	**124,586**	**121,844**	**2,742**	**2.2**
11-County Laborshed	243,882	237,711	6,171	2.5
Barnes County, ND	5,776	5,639	137	2.4
Becker County, MN	17,956	17,299	657	3.7
Cass County, ND	88,751	86,791	1,960	2.2
Clay County, MN	35,835	35,053	782	2.2
Grand Forks County, ND	36,384	35,513	871	2.4
Otter Tail County, MN	30,954	29,900	1,054	3.4
Richland County, ND	8,221	7,994	227	2.8
Steele County, ND	1,095	1,072	23	2.1
Stutsman County, ND	11,208	10,953	255	2.3
Traill County, ND	3,803	3,694	109	2.9
Wilkin County, MN	3,899	3,803	96	2.5

Source (both figures): US Bureau of Labor Statistics, Local Area Unemployment Statistics (state and county labor market data); US Census Bureau, Current Population Survey (national labor market data). Note: State and local figures for November 2014 are preliminary.

2014, the most recent period for which data were available at the time of this analysis, unemployment in the metropolitan area was 2.2 percent, compared with 5.5 nationally (Figure 17). Rates within the 11-county laborshed varied only slightly, with Steele County reporting the lowest rate (2.1 percent) and Becker County having the highest rate (3.7 percent).

With few exceptions, labor force participation rates (LFPRs) in the region are well above the US average. These rates are typically influenced by a number of factors, including socioeconomic characteristics of the population and unemployment rates. A low LFPR can be an indicator that pools of available labor remain in an area. Both North Dakota and Minnesota have above-average rates, with roughly 70 percent of the population age 16 years and over participating in the civilian labor force (a figure which includes both employed workers and those actively looking for work). The Fargo MSA has an unusually high LFPR, suggesting that few sources of untapped workers remain.

EVIDENCE OF UNDEREMPLOYMENT? A comparison of the educational requirements of the MSA's job base and the educational attainment of the civilian labor force (defined here as those between the ages of 25 and 64) suggests a mismatch. Though 39 percent of the population has a bachelor's degree or higher, only 20 percent of the jobs typically require a four-year degree. This type of mismatch can be an indicator of underemployment. It suggests that, while the supply of labor is stretched, there is a significant segment of the Fargo MSA labor force that is underutilized.

FIGURE 18. LABOR FORCE PARTICIPATION RATES
SHARE OF POPULATION AGE 16 YEARS AND OVER
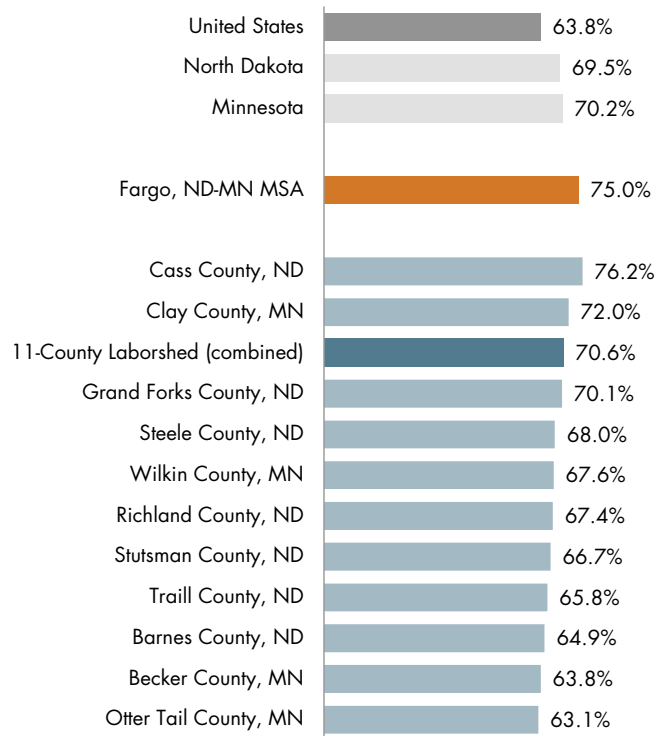
Source: Rough estimates calculated by TIP Strategies using 2009-2013 American Community Survey 5-Year Estimates (DP-03)

FIGURE 19. COMPARISON: JOBS VS. LABOR FORCE
TYPICAL EDUCATION REQUIREMENTS OF FARGO MSA JOBS COMPARED TO EDUCATIONAL ATTAINMENT OF POP. 16-64
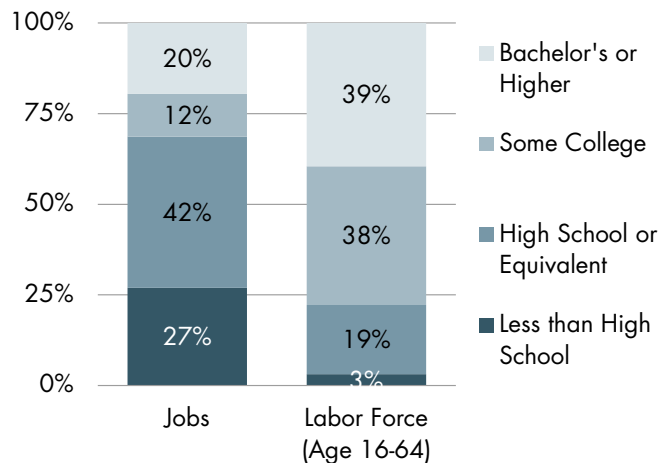
Source: (jobs) EMSI 2014.3 – QCEW Employees, Non-QCEW, and Self-Employed; (labor force) 2009-2013 American Community Survey 5-Year Est.

A YOUNG, EDUCATED WORKFORCE. Fargo's population has increased steadily over the past several decades, with the total population of the two-county metropolitan area approaching 225,000 in 2013 according to US Census Bureau estimates. The MSA has an above-average share of young adults, with 28 percent of the population in this category (defined here as ages 20 to 34), compared with just 20 percent nationally. Fargo residents are also more likely to have attended college, with more than one-third (35 percent) of residents age 25 years or older having at least a four-year degree. Nationally this figure is 29 percent.

FIGURE 20. DEMOGRAPHIC SNAPSHOT, FARGO MSA

POPULATION

AGE STRUCTURE

EDUCATIONAL ATTAINMENT (POP. 25+)
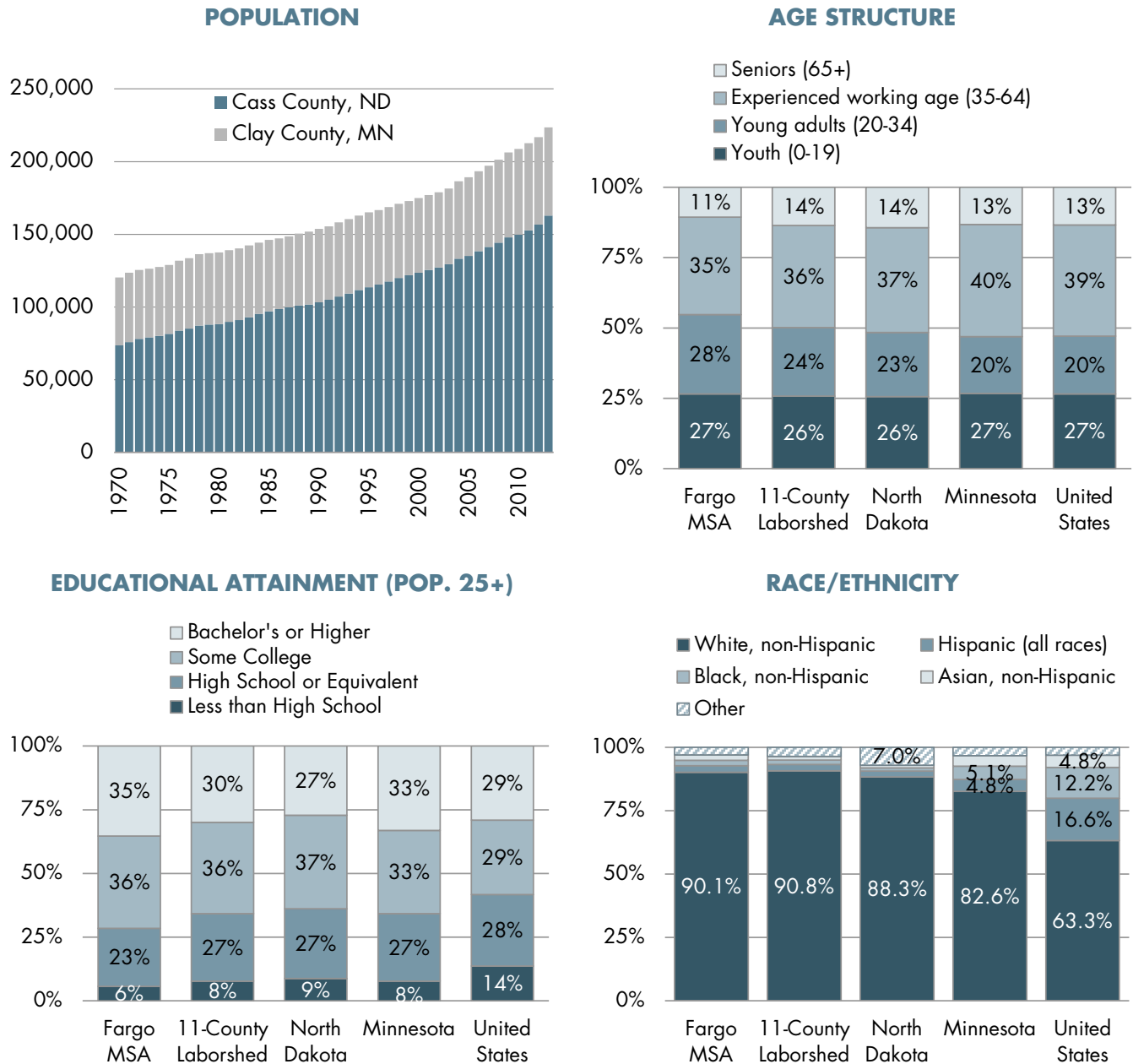
RACE/ETHNICITY

Source: (population) US Census Bureau, Population Estimates Program Figures represent sum of population for Cass County, ND, and Clay County, MN;. (age, educational attainment, race/ethnicity) 2009-2013 American Community Survey 5-Year Estimates

MIGRATION PATTERNS. Data compiled by the Internal Revenue Service from year-over-year address changes on federal tax returns provides important information about the movement of the US population. Figure 21 shows migration flows of tax returns (which are used as a proxy for households) averaged over a three-year period for Cass and Clay Counties. Not surprisingly, the highest level of migration is between the two counties. Over the period analyzed, the two counties have exchanged an average of roughly 700 households annually. Within this exchange, Clay County has had a slight edge, drawing roughly a dozen more households from Cass County than it sends across the border. Beyond the intra-metropolitan-area circulation, counties in the state of North Dakota and Minnesota comprise the 10 largest flows. Within the top 10, the two counties share several common "trading partners": Grand Forks County, ND, and three counties in Minnesota (Becker, Hennepin, and Otter Tail). The region's cross-state circulation contributes to the larger number of flows recorded as movers to a "different state."

FIGURE 21. HOUSEHOLD MIGRATION PATTERNS, THREE-YEAR AVERAGE
CASS COUNTY, ND *(Avg. household flows: inbound = 4,830; outbound = 4,283; non-migrants = 56,204)*

Gross migration flows — *Circulation with Clay County, MN and top 10 non-MSA counties*
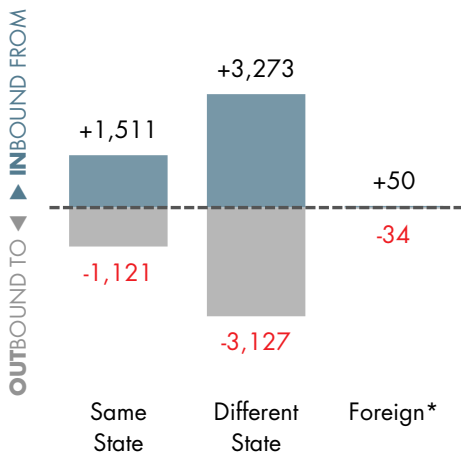
County	State	Inbound from	Outbound to		Net Loss/Gain
Clay County	MN	715	728		-13
Grand Forks County	ND	238	148		+90
Burleigh County	ND	185	189		-3
Richland County	ND	161	102		+60
Hennepin County	MN	159	196		-37
Otter Tail County	MN	142	92		+50
Becker County	MN	107	87		+20
Stutsman County	ND	91	71		+20
Ward County	ND	84	80		+4
Barnes County	ND	79	61		+17
Traill County	ND	62	35		+27

CLAY COUNTY, MN *(Avg. household flows: inbound = 1,783; outbound = 1,703; non-migrants = 19,642)*

Gross migration flows — *Circulation with Cass County, ND and top 10 non-MSA counties*
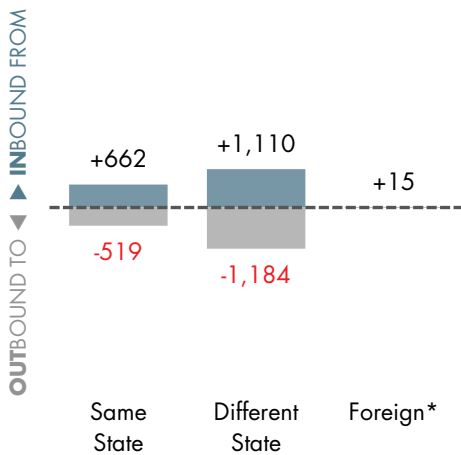
County	State	Inbound from	Outbound to		Net Loss/Gain
Cass County	ND	728	715		+13
Otter Tail County	MN	99	63		+36
Becker County	MN	78	74		+4
Hennepin County	MN	52	85		-33
Polk County	MN	33	20		+13
Norman County	MN	29	24		+5
Grand Forks County	ND	23	22		+1
Douglas County	MN	21	10		+11
Ramsey County	MN	19	23		-4
Stearns County	MN	18	15		+3
St Louis County	MN	17	15		+2

Source: Internal Revenue Service, County-to-County Migration Data; TIP Strategies. Figures represent three-year average of data for Cass and Clay Counties for the three most recent years available (2008-2009, 2009-2010, 2010-2011). *Foreign migration was significantly higher in the initial year of the analysis. Figures reflect the effect of averaging across subsequent years where data were suppressed and/or no migration was shown.

INDUSTRY & WORKFORCE ALIGNMENT

While the prior section examined characteristics of the labor force, this section looks at the occupational and industrial composition of the Fargo MSA economy, with comparisons where applicable to the 11-county laborshed, the states of North Dakota and Minnesota, and the United States. This analysis, coupled with findings from the employer survey (see Appendix C: Employer Survey), forms the basis for the identification of key occupations that will be required to support Fargo's existing and future employers. This section relies on three federal classification systems—the North American Industrial Classification System (NAICS), the Standard Occupational Classification System (SOC), and the Classification of Instructional Programs (CIP)—which are described in Appendix D: Data & Methodology.

DISTRIBUTION & CONCENTRATION

Like the state and the United States, healthcare and social assistance is the largest source of employment in the Fargo MSA, accounting for nearly 14 percent of the total. Jobs in retail trade and lodging and restaurants round out the top three, further highlighting Fargo's role as a regional center.

FIGURE 22. DISTRIBUTION OF EMPLOYMENT BY INDUSTRY, 2014
SHARE OF TOTAL EMPLOYMENT BY MAJOR SECTOR
Shading indicates three largest sectors for each geography

NAICS	Code & Description	Fargo MSA	11-County Laborshed	North Dakota	Minnesota	US
62	Healthcare & social assistance	**13.6%**	**13.8%**	**11.4%**	**15.0%**	**12.4%**
44-45	Retail trade	**11.0%**	**11.6%**	**10.5%**	9.7%	**10.5%**
72	Lodging, restaurants, & bars	**8.3%**	8.0%	7.3%	7.1%	8.3%
31-33	Manufacturing	7.1%	**8.4%**	5.0%	**10.4%**	8.0%
23	Construction	6.9%	6.5%	7.7%	4.6%	5.1%
42	Wholesale trade	6.3%	5.0%	5.6%	4.5%	3.9%
903	Local govt. (incl. pub. ed. & hospitals)	6.0%	7.6%	**7.9%**	8.7%	**9.2%**
52	Finance & insurance	5.8%	4.3%	3.7%	4.8%	4.0%
56	Administrative & support services	4.8%	3.8%	3.3%	4.9%	6.3%
902	State govt. (incl. higher ed./hospitals)	4.7%	5.7%	4.6%	3.3%	3.4%
54	Professional services	4.6%	3.6%	3.5%	5.2%	6.3%
81	Personal & other services	4.4%	4.3%	3.8%	4.7%	4.8%
48-49	Transportation & warehousing	3.3%	3.2%	5.1%	2.9%	3.2%
55	Corporate & regional offices	2.4%	1.4%	1.0%	2.6%	1.4%
51	Information	2.2%	1.6%	1.4%	1.8%	1.8%
61	Educational services (private)	2.0%	1.5%	0.9%	2.5%	2.5%
9011	Federal govt., civilian	1.6%	1.6%	1.8%	1.0%	1.9%
11	Agriculture & forestry	1.5%	3.8%	4.2%	1.8%	1.2%
53	Property sales & leasing	1.4%	1.1%	1.3%	1.6%	1.7%
71	Arts, entertainment, & recreation	1.1%	1.1%	0.9%	1.6%	1.7%
22	Utilities	0.1%	0.4%	0.7%	0.4%	0.4%
21	Mining (incl. oil & gas)	0.0%	0.1%	6.1%	0.2%	0.6%

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed)
Note: Figures for the 11-county laborshed include Cass and Clay Counties which comprise the Fargo MSA.

INDUSTRY STRENGTHS. A look at location quotients reveals strengths in several important sectors, most notably corporate and regional offices. This sector includes holding companies, headquarters operations, and regional offices and is typically a source of well-paying jobs. Likewise, the MSA has an above-average concentration of employment in finance- and insurance-related activities. The high LQ for construction in Fargo, and in North Dakota more broadly, reflects the impact of oil and gas exploration in the state.

Although it falls just below the 1.25 threshold used for this analysis, the region also exhibits above-average employment in the information sector. This sector, which includes data processing, hosting, and related services, plays an important supporting role in a range of industries.

> **ABOUT LOCATION QUOTIENTS (LQs)**
>
> Location quotient analysis is a statistical technique used to suggest areas of relative advantage based on a region's employment base. LQs are calculated as an industry's share of total local employment divided by the same industry's share of employment at the national level:
>
> *(local employment in industry x /*
> *total local employment -all industries)*
> *(national employment in industry x /*
> *total national employment-all industries)*
>
> If the local industry and national industry are perfectly proportional, the LQ will be 1.00. LQs greater than 1.25 are presumed to indicate a comparative advantage; those below 0.75 suggest areas of weakness but also point to opportunities for expansion or attraction.

FIGURE 23. CONCENTRATION OF EMPLOYMENT BY INDUSTRY, 2014 (US = 1.00)
LOCATION QUOTIENTS (LQS) OF 1.25 OR GREATER (SHADED) SUGGEST AREAS OF RELATIVE ADVANTAGE

NAICS Code & Description		Fargo MSA	11-County Laborshed	North Dakota	Minnesota	US
55	Corporate & regional offices	**1.74**	1.03	0.72	**1.86**	1.00
42	Wholesale trade	**1.61**	**1.27**	**1.42**	1.14	1.00
52	Finance & insurance	**1.45**	1.06	0.93	1.20	1.00
23	Construction	**1.34**	**1.26**	**1.51**	0.89	1.00
11	Agriculture & forestry	1.22	**3.10**	**3.43**	**1.45**	1.00
51	Information	1.22	0.88	0.75	0.98	1.00
62	Healthcare & social assistance	1.10	1.11	0.92	1.21	1.00
44-45	Retail trade	1.05	1.11	1.00	0.93	1.00
48-49	Transportation & warehousing	1.01	0.99	**1.56**	0.90	1.00
72	Lodging, restaurants, & bars	0.99	0.97	0.88	0.85	1.00
81	Personal & other services	0.91	0.91	0.79	0.98	1.00
31-33	Manufacturing	0.88	1.05	0.63	**1.30**	1.00
53	Property sales & leasing	0.83	0.67	0.78	0.95	1.00
61	Educational services (private)	0.79	0.62	0.35	1.01	1.00
56	Administrative & support services	0.76	0.60	0.52	0.77	1.00
54	Professional services	0.73	0.58	0.56	0.82	1.00
71	Arts, entertainment, & recreation	0.65	0.67	0.56	0.99	1.00
22	Utilities	0.27	1.07	**1.95**	1.21	1.00
21	Mining (incl. oil & gas)	0.08	0.23	**10.72**	0.37	1.00

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed)
Note: Figures exclude government and unclassified employment. LQs of 1.25 or greater are highlighted and are suggestive of a competitive advantage relative to the US.

Fargo's occupational structure generally mirrors the United States, with office and administrative support jobs accounting for the largest share of total employment (15.9 percent), followed by sales-related positions which represent 11 percent of the MSA's job base. The dominance of these two major occupational groups is in keeping with the concentrations of industry employment found in Figure 23 (page 43). All three of the MSA's top-ranking sectors—corporate management, wholesale trade, and financial services and insurance-related industries—employ workers that fall into these groups, including general office clerks, secretaries, business analysts, customer service workers, and sales representatives.

THE INFLUENCE OF OIL & GAS. Of the geographies shown in Figure 24, North Dakota's occupational distribution exhibits the greatest variance from the national pattern, due primarily to distortions related to oil and gas exploration in the state. Construction and extraction occupations accounted for 1 in 10 jobs in 2014 (compared with 1 in 20 just 10 years earlier). This occupational group encompasses two important pieces of employment tied to oil and gas exploration: the extraction workers that perform drilling and related activities and the trades workers needed to support the associated construction. The state's above-average share of transportation workers is also likely to be related to oil and gas exploration, as trucking plays a significant role in the movement of oil produced by drilling and in the delivery of needed equipment and services to support drilling operations.

FIGURE 24. DISTRIBUTION OF EMPLOYMENT BY OCCUPATIONAL GROUP, 2014

SHARE OF TOTAL EMPLOYMENT BY MAJOR OCCUPATIONAL GROUP

Shading indicates three largest sectors for each geography

SOC Code & Description	Fargo MSA		11-County Laborshed		North Dakota		Minnesota		US	
43-0000 Office & Administrative Support	**15.9%**		**14.7%**		**13.2%**		**14.6%**		**15.3%**	
41-0000 Sales & Related	**11.0%**		**10.4%**		**9.6%**		**9.9%**		**10.5%**	
35-0000 Food Prep. & Serving Related	**8.1%**		**8.2%**		7.2%		**7.6%**		**8.2%**	
53-0000 Transportation & Material Moving	7.0%		7.1%		9.1%		5.8%		6.4%	
51-0000 Production	5.7%		6.3%		5.0%		7.3%		6.0%	
47-0000 Construction & Extraction	5.6%		5.4%		**10.4%**		3.8%		4.4%	
29-0000 Healthcare Practitioners & Technical	5.5%		5.4%		4.7%		5.4%		5.4%	
11-0000 Management	5.3%		6.7%		7.3%		6.9%		5.3%	
25-0000 Education, Training, & Library	5.3%		5.5%		4.7%		5.3%		5.8%	
13-0000 Business & Financial Operations	4.9%		4.0%		3.5%		5.5%		4.9%	
39-0000 Personal Care & Service	4.7%		4.5%		3.4%		5.0%		3.9%	
49-0000 Installation, Maintenance, & Repair	3.9%		4.1%		4.9%		3.4%		3.8%	
37-0000 Building/Grounds Cleaning & Maint.	3.9%		4.1%		3.7%		3.4%		3.8%	
31-0000 Healthcare Support	2.6%		3.0%		2.5%		3.3%		2.8%	
15-0000 Computer & Mathematical	2.3%		1.7%		1.4%		2.9%		2.6%	
17-0000 Architecture & Engineering	1.4%		1.3%		1.4%		1.7%		1.7%	
27-0000 Arts, Entertainment, & Media	1.4%		1.2%		1.1%		1.8%		1.7%	
21-0000 Community & Social Service	1.4%		1.4%		1.2%		2.0%		1.6%	
33-0000 Protective Service	1.3%		1.3%		1.3%		1.5%		2.3%	
19-0000 Life, Physical, & Social Science	0.7%		0.7%		0.7%		0.9%		0.8%	
45-0000 Farming, Fishing, & Forestry	0.6%		1.0%		1.0%		0.6%		0.8%	
23-0000 Legal	0.5%		0.4%		0.4%		0.7%		0.8%	

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed) Note: Figures exclude military and unclassified employment.

The influence of the oil and gas industry in North Dakota can also be seen from an industry perspective, both in terms of the share the mining sector comprises of total employment (Figure 22, page 42) and its concentration relative to expected norms, as evidenced by the high location quotient shown in Figure 23 (page 43).

When viewed in terms of each occupational group's relative concentration, few occupational groups have significantly higher concentrations than would be expected. Within the two-county Fargo MSA, only construction and extraction workers are more concentrated than national norms, as shown by the occupational group's LQ of 1.29—still well below the state's LQ of 2.36. Within the 11-county laborshed, agricultural and forestry workers have the highest LQ, followed by management occupations. While these two groups might seem an unlikely pair, the concentration in management occupations is likely to have a direct connection to the region's agricultural base; under the federal occupational classification system, farmers and ranchers are categorized as management positions. (For additional information on the Standard Occupational Classification System, see Appendix D: Data & Methodology.)

FIGURE 25. CONCENTRATION OF EMPLOYMENT BY OCCUPATIONAL GROUP, 2014 (US = 1.00)
LOCATION QUOTIENTS (LQS) OF 1.25 OR GREATER (SHADED) SUGGEST AREAS OF RELATIVE ADVANTAGE

SOC Code & Description	Fargo MSA	11-County Laborshed	North Dakota	Minnesota	US
47-0000 Construction & Extraction	**1.29**	1.23	**2.36**	0.86	1.00
39-0000 Personal Care & Service	1.20	1.15	0.88	**1.29**	1.00
53-0000 Transportation & Material Moving	1.09	1.10	**1.41**	0.91	1.00
41-0000 Sales & Related	1.05	1.00	0.92	0.94	1.00
43-0000 Office & Administrative Support	1.04	0.96	0.86	0.95	1.00
49-0000 Installation, Maintenance, & Repair	1.04	1.09	**1.28**	0.90	1.00
29-0000 Healthcare Practitioners & Technical	1.02	1.01	0.88	1.00	1.00
37-0000 Building/Grounds Cleaning & Maint.	1.01	1.06	0.96	0.87	1.00
11-0000 Management	1.01	**1.26**	**1.39**	**1.29**	1.00
13-0000 Business & Financial Operations	1.00	0.82	0.72	1.13	1.00
35-0000 Food Prep. & Serving Related	0.99	1.01	0.88	0.93	1.00
51-0000 Production	0.94	1.05	0.84	1.22	1.00
25-0000 Education, Training, & Library	0.92	0.96	0.82	0.93	1.00
31-0000 Healthcare Support	0.91	1.06	0.90	1.17	1.00
15-0000 Computer & Mathematical	0.88	0.63	0.52	1.11	1.00
17-0000 Architecture & Engineering	0.87	0.76	0.84	1.02	1.00
21-0000 Community & Social Service	0.86	0.87	0.73	**1.27**	1.00
19-0000 Life, Physical, & Social Science	0.86	0.81	0.87	1.04	1.00
27-0000 Arts, Entertainment, & Media	0.83	0.72	0.61	1.03	1.00
45-0000 Farming, Fishing, & Forestry	0.74	**1.39**	**1.27**	0.86	1.00
33-0000 Protective Service	0.57	0.57	0.58	0.69	1.00
23-0000 Legal	0.56	0.51	0.51	0.85	1.00

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed) Note: Figures exclude military and unclassified employment. LQs of 1.25 or greater are highlighted and are suggestive of a competitive advantage relative to the US.

TRENDS BY SKILL LEVEL. Education and training requirements can provide an indication of skill levels found within a given occupation. Data on entry-level requirements by occupation prepared by the US Bureau of Labor Statistics were used to categorize Fargo's employment by skill level using the following categories:

- **Low-skill jobs.** Positions requiring a high school diploma or less and minimal or no training

- **Middle-skill jobs.** Positions requiring more than a high school diploma but less than a four-year degree

- **High-skill jobs.** Positions requiring a four-year degree or above.

Using this framework, 44 percent of the MSA's job base is comprised of low-skill jobs (Figure 26), a figure that mirrors the national rate. In numeric terms, low-skill occupations represented the largest share of the MSA's employment growth since the recession, with roughly 6,400 new jobs added between 2008 and 2014. The MSA saw similar gains in the number of middle-skill positions—a group of workers that has garnered significant attention in recent years due to the role these jobs play in supporting a wide range of industries—adding approximately 5,900 jobs. By comparison, slightly less than 3,200 jobs requiring a bachelor's or higher were added during the same period.

Openings represent the anticipated demand for workers resulting from both new jobs and the replacement of existing workers (i.e., the number of openings expected from workers exiting the occupation due to retirement, career advancement, general turnover, etc.). The Fargo-Moorhead MSA is expected to have just over 30,000 openings between 2014 and 2019. Low-skill jobs are expected to account for the greatest number of openings, with nearly 14,000 openings anticipated. Demand for high-skill jobs is expected to be lower, with slightly more than 6,000 openings projected. Almost two-thirds of the total openings between 2014 and 2019 are replacement jobs. While some of the 19,000 replacement jobs will be general churn and not require a new worker, many of the replacement jobs, particularly in the middle- and high-skill positions, are due to retirements and will require additional workers.

FIGURE 26. JOBS BY SKILL LEVEL
BASED ON ENTRY-LEVEL EDUCATION AND TRAINING REQUIREMENTS
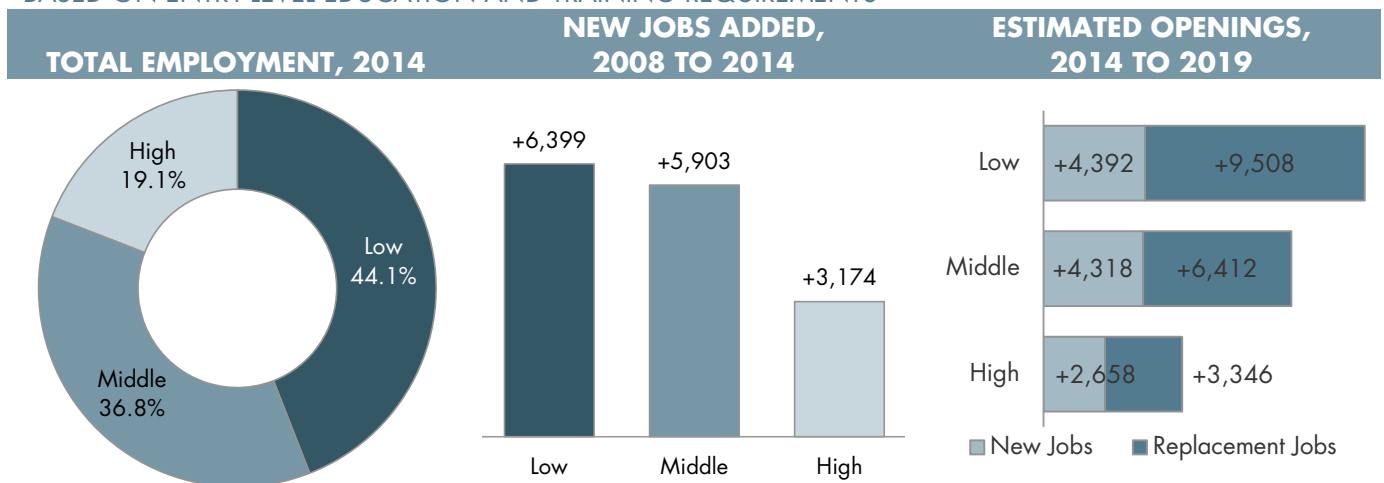
Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed) Note: Skill levels determined for individual occupations based on typical entry-level education and training requirements. "Openings" reflect new growth and replacement demand.

"TOP" OCCUPATIONS. While the prior figures have illustrated the region's occupational structure by major occupational group, the next group of figures present data at the detailed occupation level. In Figure 27 (page 47), top occupations among those typically requiring some college, but less than a four-year degree, were ranked based on size (number of jobs in 2014), growth since 2008 (in both numeric and percentage terms), and wages. Figure 28 (page 48) ranks occupations requiring a bachelor's degree or higher on the same indicators.

FIGURE 27. TOP OCCUPATIONS TYPICALLY REQUIRING SOME COLLEGE, LESS THAN FOUR YEARS
TOP 10 OCCUPATIONS RANKED ON FACTOR SHOWN

Jobs, 2014	◄LARGEST	Median hourly earnings
2,806	Heavy and Tractor-Trailer Truck Drivers	$18.24
2,566	Registered Nurses	$27.42
1,591	Nursing Assistants	$13.31
1,249	Licensed Practical and Licensed Vocational Nurses	$18.26
926	Teacher Assistants	$12.64
833	Computer User Support Specialists	$22.95
586	First-Line Supervisors of Production and Operating Workers	$21.22
554	Hairdressers, Hairstylists, and Cosmetologists	$11.15
382	Preschool Teachers, Except Special Education	$11.18
344	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	$18.95

Net change	◄FASTEST-GROWING, 2008-2014 (#)	Median hourly earnings
+332	Licensed Practical and Licensed Vocational Nurses	$18.26
+277	Heavy and Tractor-Trailer Truck Drivers	$18.24
+211	Registered Nurses	$27.42
+135	Nursing Assistants	$13.31
+129	Computer User Support Specialists	$22.95
+77	Teacher Assistants	$12.64
+58	Medical Records and Health Information Technicians	$15.94
+56	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	$18.95
+48	Massage Therapists	$19.87
+45	First-Line Supervisors of Production and Operating Workers	$21.22

% change	◄FASTEST-GROWING, 2008-2014 (%)	Median hourly earnings
+109%	Insurance Appraisers, Auto Damage	$21.05
+48%	Massage Therapists	$19.87
+40%	Web Developers	$20.15
+36%	Veterinary Technologists and Technicians	$13.86
+36%	Licensed Practical and Licensed Vocational Nurses	$18.26
+35%	Civil Engineering Technicians	$20.35
+34%	Medical Records and Health Information Technicians	$15.94
+34%	Medical Transcriptionists	$15.06
+33%	Manicurists and Pedicurists	$8.74
+30%	Industrial Engineering Technicians	$18.71

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed)
Note: Based on typical entry-level education and training requirements for the occupation as determined by the US Bureau of Labor Statistics.

FIGURE 28. TOP OCCUPATIONS TYPICALLY REQUIRING FOUR-YEAR DEGREE OR ABOVE
TOP 10 OCCUPATIONS RANKED ON FACTOR SHOWN

Jobs, 2014	◄LARGEST	Median hourly earnings
2,315	Postsecondary Teachers	$26.97
1,991	General and Operations Managers	$42.17
1,492	Accountants and Auditors	$24.11
1,401	Elementary School Teachers, Except Special Education	$23.79
785	Secondary School Teachers, Except Special and Career/Tech. Education	$23.28
560	Software Developers, Applications	$27.54
463	Personal Financial Advisors	$28.68
452	Software Developers, Systems Software	$29.86
424	Sales Managers	$42.39
421	Human Resources Specialists	$24.22

Net change	◄FASTEST-GROWING, 2008-2014 (#)	Median hourly earnings
+249	Accountants and Auditors	$24.11
+245	General and Operations Managers	$42.17
+232	Elementary School Teachers, Except Special Education	$23.79
+130	Nurse Practitioners	$38.94
+113	Postsecondary Teachers	$26.97
+92	Civil Engineers	$32.80
+82	Personal Financial Advisors	$28.68
+78	Secondary School Teachers, Except Special and Career/Tech. Education	$23.28
+74	Family and General Practitioners	$78.00
+59	Market Research Analysts and Marketing Specialists	$22.90

% change	◄FASTEST-GROWING, 2008-2014 (%)	Median hourly earnings
+83%	Mental Health Counselors	$19.51
+74%	Nurse Practitioners	$38.94
+70%	Surgeons	$91.73
+70%	Nurse Anesthetists	$78.14
+65%	Physician Assistants	$44.74
+56%	Family and General Practitioners	$78.00
+54%	Mental Health and Substance Abuse Social Workers	$19.87
+51%	Marriage and Family Therapists	$20.23
+43%	Civil Engineers	$32.80
+38%	Physical Therapists	$33.82

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed)

Note: Based on typical entry-level education and training requirements for the occupation as determined by the US Bureau of Labor Statistics.

WAGE RATES. Figure 29 compares wage rates for major occupational groups in Fargo with US rates. The line shows the outer ends of the national distribution (the 10th and 90th percentile) while the marker shows the median or mid-point. In the majority of cases, median wages are below the national median and are in the lower end of the range. Many of the largest gaps appear in the STEM occupations—science, technology, engineering, and mathematics. The latter category also includes computer-related occupations. As a group, median wage rates for these occupations are roughly three-quarters of the national median. While lower wage rates can be a boon for employers, they can be an obstacle to employee recruitment.

At the other end of the spectrum, a number of service-related occupational groups in Fargo have median wage rates that are slightly above the US median. These include personal care occupations, building maintenance and grounds workers, healthcare support, and food preparation and serving workers. For agricultural workers, the MSA's median wage rate is roughly 25 percent above the national rate ($13.49 compared with the US median of $10.68). This wage pressure suggests that workers in these positions are hard to find and/or retain.

FIGURE 29. MEDIAN HOURLY WAGE RATES BY MAJOR OCCUPATIONAL GROUP
FARGO MSA WAGES PRESENTED IN THE CONTEXT OF US WAGE RANGE

Line = US wage range from 10th to 90th percentile; Markers = Median hourly wage rates for US (x) and Fargo MSA (dot)
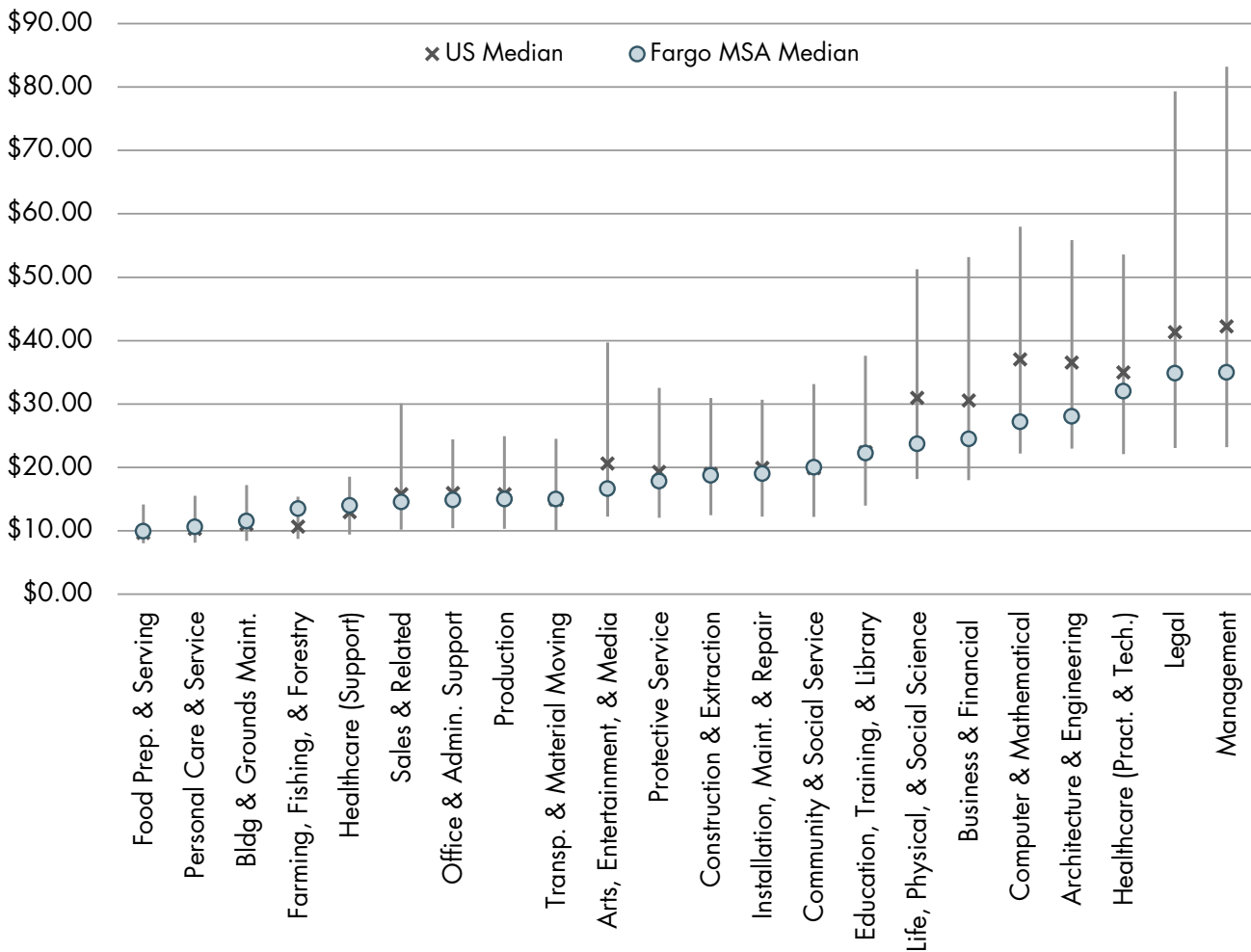
Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed)

HIGH-DEMAND OCCUPATIONS

Along with documenting leading occupations within the targeted sectors, we also identified Fargo's high-demand occupations. This analysis considered a range of factors, including anticipated demand (from both new growth and replacement needs), wage rates relative to the United States (as an indication of wage pressure), and the occupation's role in supporting the retention and attraction of the target sectors.

First, industry staffing patterns were used to understand how Fargo's workforce aligns with its broad economic development targets: **healthcare**, **manufacturing**, and **information technology**. Staffing patterns data are compiled by EMSI from the National Employment Matrix prepared by the US Bureau of Labor Statistics every other year as part of its ongoing Employment Projections program. The most recent matrix shows US employment levels for 2012 and projected employment for 2022 for approximately 300 detailed industries and 750 occupations. The matrix can be used to conduct analyses by occupation (identifying all industries in which plumbers are employed, for example) or by industry (identifying the detailed occupations employed in the construction industry).

The top 25 occupations resulting from this analysis are shown in Figure 30 (page 51). The occupations were ranked based on their share of employment in multiple sectors, as well as their average employment across sectors. Only office clerks (SOC 43-9061) comprised at least 1 percent of total employment in all three sectors. With more than 3,600 jobs in the MSA in 2014, it was also the largest of the top occupations. Several other administrative and management occupations reached the 1 percent employment threshold for two of the three sectors, including customer service representatives (SOC 43-4051) and general managers (SOC 11-1021). With a median hourly wage of $42.17, the latter was among the highest paying occupations in the group, second only to computer and information system managers (SOC 11-3021). Profiles of each target sector are provided as Appendix B: Industry Profiles.

Next, occupations with 100 jobs or more were analyzed to identify areas likely to be in demand over the next five years. Occupations were identified that have a large number of projected openings over the next five years, a high wage premium, and a high percentage of workers older than 55 years of age. The results are presented by skill level on pages 52 to 54.

FIGURE 30. TOP 25 OCCUPATIONS IN TARGET SECTORS
RANKED BY NUMBER OF SECTORS WHERE OCCUPATION COMPRISES 1 PERCENT OR MORE OF TOTAL EMPLOYMENT AND BY AVERAGE SHARE OF EMPLOYMENT ACROSS TARGET SECTORS

LEGEND: Share each occupation represents of total employment in the target sector:

▫ Less than 2.0%   ◼ 2.0% to 4.9%   ■ 5% or more

SOC Code	Description	2014 Jobs	Median Hourly Wage	Healthcare	IT Services	Manufacturing	# of Targets Where Occupation ≥ 1.0%	Average Share of Total Emp.
43-9061	Office Clerks, General	3,629	$12.33	◼	◼	▫	3	1.90%
43-4051	Customer Service Representatives	2,661	$14.00	▫	◼	▫	2	2.05%
11-1021	General & Operations Managers	1,991	$42.17	▫	◼	▫	2	1.71%
43-3031	Bookkeeping, Accounting, & Auditing Clerks	2,580	$16.74	▫	◼	▫	2	1.44%
41-4012	Sales Reps., Whls. & Mfg., Exc. Tech. & Scientific	1,889	$23.20	▫	▫	▫	2	1.09%
43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	2,098	$15.45	▫	▫	▫	2	0.93%
43-1011	First-Line Supvsr., Office & Admin. Support	1,327	$21.76	▫	▫	▫	2	0.84%
29-1141	Registered Nurses	2,566	$27.42	◼	▫	▫	1	4.53%
51-2092	Team Assemblers	1,463	$13.20		▫	■	1	3.57%
15-1132	Software Developers, Applications	560	$27.54	▫	■	▫	1	3.09%
15-1151	Computer User Support Specialists	833	$22.95	▫	■	▫	1	3.04%
31-1014	Nursing Assistants	1,591	$13.31	■			1	3.00%
15-1133	Software Developers, Systems Software	452	$29.86	▫	■	▫	1	2.33%
29-2061	Licensed Practical/Vocational Nurses	1,249	$18.26	■	▫		1	2.26%
43-4171	Receptionists & Information Clerks	1,304	$12.73	◼	▫	▫	1	1.55%
51-4121	Welders, Cutters, Solderers, & Brazers	660	$16.51		▫	◼	1	1.41%
41-3099	Sales Reps., Services, All Other	715	$17.65	▫	◼	▫	1	1.40%
39-9021	Personal Care Aides	1,864	$11.64	◼			1	1.38%
51-1011	First-Line Supvsr., Production & Operating Workers	586	$21.22	▫	▫	◼	1	1.35%
13-2011	Accountants & Auditors	1,492	$24.11	▫	◼	▫	1	1.23%
15-1121	Computer Systems Analysts	281	$29.30	▫	◼	▫	1	1.20%
15-1131	Computer Programmers	192	$23.50	▫	◼	▫	1	1.08%
51-2022	Electrical & Electronic Equip. Assemblers	381	$11.97		▫	◼	1	1.02%
11-3021	Computer & Info. Systems Managers	248	$47.54	▫	◼	▫	1	0.87%
15-1152	Computer Network Support Specialists	236	$27.13	▫	◼	▫	1	0.84%

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed); TIP Strategies

FIGURE 31. HIGH-DEMAND OCCUPATIONS: HIGH SKILL*

LEGEND: Median hourly earnings: ● Within +/- 10% of US median   ● 10% below US   ● <12.5% of workforce

% of workers >55 years old: ● Between 12.5% and 25%   ● 10% above US   ● >25% of workforce

SOC Code & Description	2014 Jobs	Annual Openings thru 2019	New Growth	Replacement	% of openings due to: New growth / Replacement		Median Hourly Earnings		% of Workers >55	
25-1099 Teachers, Postsecondary	2,315	69	32	37	47%	53%	$26.97	●	28%	●
11-1021 General & Operations Managers	1,991	78	38	40	49%	51%	$42.17	●	18%	●
13-2011 Accountants & Auditors	1,492	68	21	46	32%	68%	$24.11	●	19%	●
25-2021 Teachers, Elementary (Except Special Ed.)	1,401	51	18	33	36%	64%	$23.79	●	27%	●
25-2031 Teachers, Secondary (Exc. Special Ed. & CTE)	785	28	6	23	20%	80%	$23.28	●	27%	●
15-1132 Software Developers, Applications	560	27	19	8	70%	30%	$27.54	●	10%	●
15-1133 Software Developers, Systems Software	452	21	15	6	70%	30%	$29.86	●	10%	●
13-1161 Market Research Analysts & Mktng. Specialists	402	19	13	6	68%	32%	$22.90	●	16%	●
13-1111 Management Analysts	402	13	5	8	37%	63%	$26.75	●	19%	●
25-2022 Teachers, Middle School (Exc. Spec. Ed. & CTE)	320	13	5	8	41%	59%	$23.78	●	27%	●
29-1171 Nurse Practitioners	306	18	11	7	63%	37%	$38.94	●	19%	●
15-1121 Computer Systems Analysts	281	19	14	5	72%	28%	$29.30	●	13%	●
41-4011 Sales Reps., Whls. & Mfg., Tech. & Scientific	273	12	6	6	53%	47%	$36.64	●	16%	●
25-2052 Special Educ. Teachers, Kinder & Elementary	257	6	2	5	28%	72%	$23.88	●	26%	●
11-3021 Computer & Info. Systems Managers	248	11	7	4	65%	35%	$47.54	●	14%	●
15-1142 Network & Computer Systems Admin.	241	10	6	4	59%	41%	$31.98	●	14%	●
21-1021 Child, Family, & School Social Workers	207	9	4	5	45%	55%	$22.71	●	20%	●
15-1131 Computer Programmers	192	13	7	6	55%	45%	$23.50	●	11%	●
21-2011 Clergy	168	5	2	4	30%	70%	$20.24	●	38%	●
29-1069 Physicians & Surgeons, All Other	158	15	10	5	67%	33%	$106.95	●	20%	●
25-2054 Special Educ. Teachers, Secondary School	128	3	1	2	25%	75%	$25.09	●	25%	●
11-9033 Education Administrators, Postsecondary	102	4	1	3	34%	66%	$41.10	●	27%	●

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed); TIP Strategies *See definition page 46.

FIGURE 32. HIGH-DEMAND OCCUPATIONS: MIDDLE SKILL*

LEGEND:　　Median hourly earnings:　● Within +/- 10% of US median　● 10% below US　● <12.5% of workforce

% of workers >55 years old:　● Between 12.5% and 25%　● 10% above US　● >25% of workforce

SOC Code & Description	2014 Jobs	Annual Openings thru 2019	New Growth	Replacement	% of openings due to: New growth / Replacement	Median Hourly Earnings	% of Workers >55
53-3032 Heavy & Tractor-Trailer Truck Drivers	2,806	94	43	51	47% / 54%	$18.24 ●	25% ●
43-3031 Bookkeeping, Accounting, & Auditing Clerks	2,580	61	37	25	60% / 40%	$16.74 ●	20% ●
29-1141 Registered Nurses	2,566	91	39	52	43% / 57%	$27.42 ●	18% ●
41-4012 Sales Reps., Whls. & Mfg., Exc. Tech. & Sci.	1,889	64	25	39	40% / 60%	$23.20 ●	20% ●
31-1014 Nursing Assistants	1,591	59	22	37	37% / 63%	$13.31 ●	17% ●
51-2092 Team Assemblers	1,463	63	38	25	60% / 40%	$13.20 ●	16% ●
11-9013 Farmers, Ranchers, & Other Agricultural Mgrs.	1,451	21	(40)	62	100%	$14.97 ●	26% ●
43-1011 First-Line Supvsr., Office & Admin. Support	1,327	61	27	34	44% / 56%	$21.76 ●	18% ●
29-2061 Licensed Practical/Vocational Nurses	1,249	62	29	33	47% / 53%	$18.26 ●	20% ●
49-9071 Maintenance & Repair Workers, General	1,036	37	16	21	44% / 56%	$15.84 ●	23% ●
15-1151 Computer User Support Specialists	833	31	17	14	55% / 45%	$22.95 ●	14% ●
43-6011 Exec. Secretaries/Admin. Assistants	785	13	3	10	20% / 80%	$20.69 ●	20% ●
51-4121 Welders, Cutters, Solderers, & Brazers	660	32	15	18	46% / 54%	$16.51 ●	15% ●
51-1011 First-Line Supvsr., Production & Operating Workers	586	17	9	9	50% / 50%	$21.22 ●	17% ●
41-9022 Real Estate Sales Agents	550	15	10	6	63% / 37%	$14.10 ●	30% ●
43-5061 Production, Planning, & Expediting Clerks	370	14	4	9	30% / 70%	$17.33 ●	17% ●
33-3051 Police & Sheriff's Patrol Officers	362	15	4	12	24% / 76%	$28.17 ●	27% ●
51-9111 Packaging & Filling Machine Workers	343	9	0	9	1% / 99%	$11.45 ●	16% ●
43-6013 Medical Secretaries	306	25	20	5	82% / 18%	$14.30 ●	21% ●
37-1011 First-Line Supvsr., Housekeeping & Janitorial	291	12	5	7	38% / 62%	$18.51 ●	18% ●
31-9097 Phlebotomists	273	10	4	6	44% / 56%	$13.55 ●	15% ●
31-9091 Dental Assistants	271	12	6	6	50% / 50%	$19.12 ●	15% ●
51-2099 Assemblers & Fabricators, All Other	268	12	8	5	63% / 37%	$14.67 ●	14% ●
51-4041 Machinists	253	15	8	7	57% / 43%	$17.50 ●	17% ●
15-1152 Computer Network Support Specialists	236	6	3	4	41% / 59%	$27.13 ●	14% ●
11-9051 Food Service Managers	219	6	0	6	1% / 99%	$23.98 ●	9% ●
51-4031 Cutting, Punching, & Press Machine, Metal/Plastic	206	5	3	2	63% / 37%	$15.93 ●	16% ●
49-2011 Computer, ATM, & Office Machine Repairers	191	7	2	4	36% / 64%	$18.33 ●	16% ●
49-3041 Farm Equip. Mechanics & Service Technicians	188	11	5	6	44% / 56%	$19.17 ●	20% ●
47-4051 Highway Maintenance Workers	160	4	1	2	35% / 65%	$21.14 ●	24% ●
51-9199 Production Workers, All Other	158	8	4	4	45% / 55%	$16.29 ●	16% ●
13-1022 Wholesale & Retail Buyers, Except Farm Prods.	152	7	3	4	40% / 60%	$27.34 ●	18% ●
31-9011 Massage Therapists	148	8	6	2	78% / 22%	$19.87 ●	11% ●
11-9141 Property, Real Estate, & Community Assoc. Mgrs.	147	7	3	3	49% / 51%	$19.06 ●	28% ●
15-1134 Web Developers	138	8	6	3	69% / 31%	$20.15 ●	14% ●
33-2011 Firefighters	137	6	2	4	29% / 71%	$18.48 ●	25% ●
49-9052 Telecomm. Line Installers & Repairers	132	3	(1)	4	0% / 100%	$23.09 ●	14% ●
49-9098 Helpers–Install./Maint./Repair Workers	111	6	2	4	37% / 63%	$14.38 ●	18% ●
51-2091 Fiberglass Laminators & Fabricators	102	3	1	2	35% / 65%	$15.62 ●	16% ●
25-4031 Library Technicians	102	7	1	6	18% / 82%	$14.42 ●	26% ●

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed); TIP Strategies *See definition page 46.

FIGURE 33. HIGH-DEMAND OCCUPATIONS: LOW SKILL*

LEGEND:　Median hourly earnings:　● Within +/- 10% of US median　● 10% below US　● <12.5% of workforce
　　　　　% of workers >55 years old:　● Between 12.5% and 25%　● 10% above US　● >25% of workforce

SOC Code & Description	2014 Jobs	Annual Openings thru 2019	New Growth	Replacement	% of openings due to: New growth / Replacement	Median Hourly Earnings		% of Workers >55	
41-2031 Retail Salespersons	4,608	204	41	163	47% / 80%	$10.81	●	15%	●
43-9061 Office Clerks, General	3,629	115	36	79	32% / 68%	$12.33	●	21%	●
41-2011 Cashiers	3,465	167	14	153	9% / 91%	$8.77	●	14%	●
37-2011 Janitors & Cleaners, Exc. Maids & Housekeepers	2,877	98	41	57	42% / 58%	$11.66	●	21%	●
35-3031 Waiters & Waitresses	2,813	154	12	142	8% / 92%	$9.10	●	5%	●
43-4051 Customer Service Representatives	2,661	92	18	74	20% / 80%	$14.00	●	16%	●
35-3021 Combined Food Prep. & Servers, Incl. Fast Food	2,351	142	46	96	32% / 68%	$8.70	●	6%	●
53-7062 Laborers/Freight, Stock, & Material Movers, Hand	2,248	109	35	73	33% / 67%	$11.57	●	18%	●
43-6014 Secretaries/Admin. Asst., Exc. Legal, Med., & Exec	2,098	66	39	27	59% / 41%	$15.45	●	22%	●
39-9011 Childcare Workers	2,006	116	52	64	45% / 55%	$8.49	●	12%	●
39-9021 Personal Care Aides	1,864	72	57	15	79% / 21%	$11.64	●	16%	●
43-5081 Stock Clerks & Order Fillers	1,735	55	1	54	2% / 98%	$11.01	●	17%	●
37-2012 Maids & Housekeepers	1,631	63	28	34	45% / 55%	$9.45	●	18%	●
43-4171 Receptionists & Information Clerks	1,304	68	30	38	44% / 56%	$12.73	●	19%	●
35-2021 Food Preparation Workers	969	32	4	28	11% / 89%	$11.49	●	10%	●
41-3099 Sales Reps., Services, All Other	715	31	11	21	34% / 66%	$17.65	●	15%	●
13-1199 Business Operations Specialists, All Other	694	21	11	10	53% / 47%	$26.21	●	20%	●
43-3021 Billing & Posting Clerks	659	31	18	13	57% / 43%	$15.16	●	19%	●
43-5071 Shipping, Receiving, & Traffic Clerks	634	26	8	17	32% / 68%	$14.50	●	17%	●
53-3031 Driver/Sales Workers	526	14	5	9	38% / 62%	$14.28	●	16%	●
35-3041 Food Servers, Nonrestaurant	518	22	3	19	15% / 85%	$9.63	●	15%	●
53-3022 Bus Drivers, School or Special Client	393	15	7	8	49% / 51%	$15.89	●	36%	●
51-2022 Electrical & Electronic Equip. Assemblers	381	13	8	5	63% / 37%	$11.97	●	13%	●
31-1011 Home Health Aides	361	28	18	9	66% / 34%	$11.19	●	16%	●
41-2022 Parts Salespersons	356	14	5	9	34% / 66%	$16.71	●	21%	●
35-2012 Cooks, Institution & Cafeteria	355	13	3	10	22% / 78%	$13.41	●	19%	●
51-9198 Helpers–Production Workers	316	14	8	6	57% / 43%	$11.63	●	14%	●
43-5052 Postal Service Mail Carriers	229	8	(4)	11	0% / 10…	$25.89	●	27%	●
51-7042 Woodworking Machine, Except Sawing	171	8	7	1	86% / 14%	$13.43	●	17%	●
41-9099 Sales & Related Workers, All Other	152	6	3	3	48% / 52%	$15.28	●	29%	●
39-9099 Personal Care & Service Workers, All Other	123	7	3	4	43% / 57%	$11.91	●	15%	●
51-6031 Sewing Machine Operators	117	4	3	1	76% / 24%	$11.93	●	20%	●
45-2091 Agricultural Equipment Operators	117	4	0	4	8% / 92%	$18.50	●	21%	●

Source: EMSI 2014.3 Class of Worker (QCEW Employees, Non-QCEW Employees & Self-Employed); TIP Strategies *See definition page 46.

EDUCATION AND TRAINING

To understand the supply of potential graduates in the region, data on <u>for-credit</u> completions were compiled from the National Center for Education Statistics' Integrated Postsecondary Data System (IPEDS) for all schools in the 11-county laborshed. For more information on IPEDS and this analysis, see Appendix E.

The 12 institutions included in the analysis conferred an average of slightly more than 11,000 for-credit awards annually during the three-year period analyzed. The majority of these awards (roughly three-quarters) were issued at the four-year level or above (Figure 34), reflecting the relatively large number of four-year institutions in the region. The top 25 fields of study (based on the Classification of Instructional Program code) in which these awards were made are shown in Figure 36 (page 56). Data for selected occupations is presented as part of the profiles in Appendix B.

FIGURE 34. COMPLETIONS BY YEAR AND AWARD LEVEL
SHARE OF DEGREES/AWARDS CONFERRED BY REGIONAL INSTITUTIONS, 2011-2013
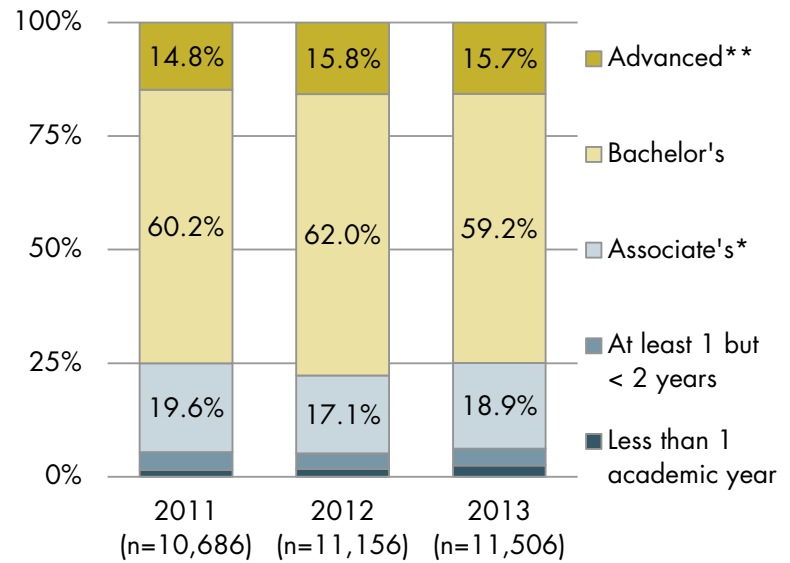
Source: Natl. Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). Note: IPEDS data include only schools eligible to participate in federal financial aid programs. Figures shown include first and second majors. *Associate's-degree-level completions include awards categorized by IPEDS as "Award of at least two but less than four academic years." **Advanced-level completions represent all awards above the bachelor's-degree level.

FIGURE 35. SCHOOLS INCLUDED IN THE ANALYSIS

School	City	State	Type	Level
Concordia College at Moorhead	Moorhead	MN	Private not-for-profit	4-year or above
Minnesota State Community and Tech. College	Fergus Falls	MN	Public	2-year
Minnesota State University Moorhead	Moorhead	MN	Public	4-year or above
Rasmussen College-North Dakota	Fargo	ND	Private for-profit	4-year or above
University of Jamestown	Jamestown	ND	Private not-for-profit	4-year or above
Mayville State University	Mayville	ND	Public	4-year or above
University of North Dakota	Grand Forks	ND	Public	4-year or above
North Dakota State College of Science	Wahpeton	ND	Public	2-year
North Dakota State University-Main Campus	Fargo	ND	Public	4-year or above
Valley City State University	Valley City	ND	Public	4-year or above
Minnesota School of Business-Moorhead	Moorhead	MN	Private for-profit	4-year or above
Lynnes Welding Training	Fargo	ND	Private for-profit	less-than 2-year

Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS); TIP Strategies

FIGURE 36. TOP 25 FIELDS OF STUDY (CIP CODES) BY AWARD LEVEL

AVERAGE ANNUAL AWARDS/DEGREES CONFERRED FOR CREDIT BY REGIONAL INSTITUTIONS, 2011-2013

Field of Study	Value
Registered Nursing/Registered Nurse (51.3801)	571
Business Admin. and Mgmt. General (52.0201)	496
Liberal Arts and Sciences/Liberal Studies (24.0101)	466
Elementary Education and Teaching (13.1202)	309
Psychology, General (42.0101)	308
Biology/Biological Sciences, General (26.0101)	253
Accounting (52.0301)	249
Criminal Justice/Safety Studies (43.0104)	230
Licensed Practical/Vocational Nurse (51.3901)	200
Social Work (44.0701)	191
Mechanical Engineering (14.1901)	160
English Language and Literature, General (23.0101)	127
Civil Engineering, General (14.0801)	125
Clinical Lab./Medical Tech. (51.1005)	122
Marketing/Marketing Mgmt. General (52.1401)	121
Communication, General (9.01)	117
Human Dev. and Family Studies, General (19.0701)	115
Electrical and Electronics Engineering (14.1001)	109
Construction Management (52.2001)	108
Art/Art Studies, General (50.0701)	102
Computer Science (11.0701)	100
Special Education and Teaching, General (13.1001)	99
Kinesiology and Exercise Science (31.0505)	98
Multi-/Interdisciplinary Studies, Other (30.9999)	97
Airline Pilot and Flight Crew (49.0102)	95

Legend:
- ■ Award of <1 academic year
- ■ Award of at least 1 but <2 yrs.
- □ Associate's degree*
- ■ Bachelor's degree
- ■ Advanced degree**

Source: Natl. Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). Note: IPEDS data include only schools eligible to participate in federal financial aid programs. Figures shown include first and second majors. *Associate's-degree-level completions include awards categorized by IPEDS as "Award of at least two but less than four academic years." **Advanced-level completions represent all awards above the bachelor's-degree level.

APPENDIX B: INDUSTRY PROFILES

Organizing around industry sectors has proven to be one of the most effective ways to address workforce challenges. Three sectors in the Fargo-Moorhead region have been identified as primary economic drivers for the region. Organizing around these sectors will provide the region with a mechanism to facilitate employer engagement as well as provide a vehicle for interfacing with the region's workforce training intermediaries, community colleges, school districts, and the many community-based organizations that offer workforce services. This structure can help the region better align its workforce and education assets with industry needs.

The priority sectors identified for this work are:

HEALTHCARE

MANUFACTURING

IT (SOFTWARE)

The industry profiles that follow provide a base of knowledge and a common language to support a sector-based approach. Each profile includes a description of how the sector is defined, an overview of employment trends, a list of major employers in the region, key occupations and staffing patterns, demographics (age), regional education and training programs, and regional initiatives and resources.

In addition, real-time labor market information was compiled for each sector and for selected occupations. This labor market information provides insight into the types of job openings that employers are seeking to fill through online recruitment tools. This section documents the top employers posting in the region, the top occupations, the top skills, and the top certifications.

In order to supplement our quantitative analysis, we worked with the project team to conduct an online survey of regional employers. The survey asked questions about current head count, hiring and training needs, and impressions of the regional workforce. In each of the profiles that follow, we present relevant survey data for that industry. The employer survey is presented in more detail in Appendix C.

HEALTHCARE

OVERVIEW. The healthcare industry employed about 30,000 workers in 2014 in the 11-county laborshed. The sector is composed of three primary categories—ambulatory health care services, hospitals, and nursing and residential care facilities—each of which account for about one-third of the overall employment. Sanford Health and Essentia, which are regional hospital systems, serve as the anchors of the sector.

Employment in the sector has increased 21 percent over the last 10 years. This growth has been driven by a rise in ambulatory health care services, which increased by 48 percent over this time period.

The 11-county healthcare sector outperformed the national and regional economy overall. It also outperformed the national healthcare sector slightly. The regional sector averaged 2.1 percent growth between 2004 and 2014 while the national healthcare sector averaged 2.0 percent.

FIGURE 37. EMPLOYMENT TRENDS, 2004 TO 2014
TOTAL EMPLOYMENT IN RELATED OCCUPATIONS
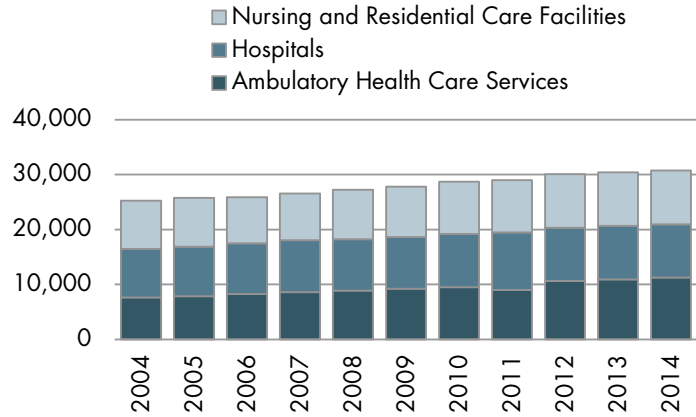
GAINS/LOSSES BY GROUP (2004 = 1.00)
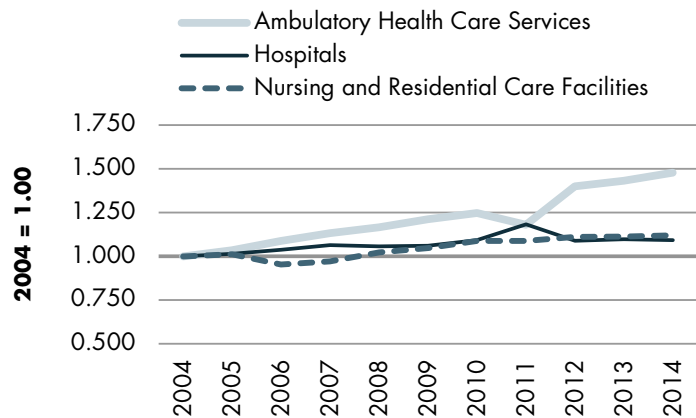
FIGURE 38. SELECTED EMPLOYERS

Organization/Company
Bethany Retirement Living
Catholic Health Initiatives
DaVita
Essentia Health
Eventide Senior Living Communities
Fargo VA Medical Center
Lake Region Healthcare
Perham Health
Prairie St. Johns
Sanford Health

GAINS/LOSSES: REGION VERSUS US (2004 - 14)
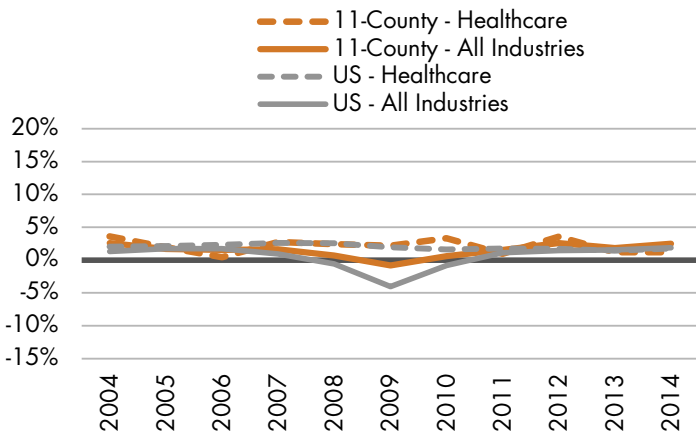
Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

HEALTHCARE CONT.

KEY OCCUPATIONS. Figure 39 provides an overview of the occupations that support the regional healthcare industry. Registered nursing accounts for the largest healthcare-related occupational group across the sub-sectors, particularly in hospitals. Nursing assistants, LVNs, and personal care aides play more vital roles in the residential care sector.

FIGURE 39. SHARE OF EMPLOYMENT IN SELECTED INDUSTRIES – HEALTHCARE OCCUPATIONS
INCLUDES 2014 LOCATION QUOTIENT (LQ) AND WAGE RATE COMPARISON RELATIVE TO US

			Jobs (11-county labor shed)	LQ (US=1.00)	Median Hourly Earnings	Relative to US (US=1.00)		Occupation's share of total employment in selected industry	
HDO	SOC Code	Description					Outpatient Services NAICS 621	Hospitals NAICS 622	Residential Care NAICS 623
✓	29-1141	Registered Nurses	4,707	0.95	27.67	0.87	8.8%	31.5%	4.9%
✓	31-1014	Nursing Assistants	3,771	1.40	12.63	1.06	1.3%	7.3%	24.2%
✓	29-2061	Licensed Practical/Vocational Nurses	2,454	1.83	17.89	0.89	6.1%	3.8%	10.7%
✓	39-9021	Personal Care Aides	3,289	1.13	11.49	1.19 ●	1.5%	0.2%	12.7%
✓	43-4171	Receptionists & Information Clerks	1,958	1.03	12.74	1.00	8.0%	0.7%	0.6%
✓	37-2012	Maids & Housekeepers	3,262	1.20	9.63	1.03	0.2%	3.0%	3.7%
✓	35-3041	Food Servers, Nonrestaurant	866	1.90	10.01	1.04	0.0%	1.9%	5.0%
✓	43-9061	Office Clerks, General	6,828	1.16	12.06	0.89	3.4%	1.3%	0.6%
	39-9041	Residential Advisors	574	2.80	11.95	1.01	0.0%	0.1%	4.7%
✓	31-1011	Home Health Aides	1,329	0.76	11.52	1.15 ●	0.8%	0.1%	3.8%
✓	31-9097	Phlebotomists	331	1.66	13.44	0.93	2.6%	1.9%	0.0%
✓	29-1171	Nurse Practitioners	388	1.81	39.55	0.89	3.3%	0.9%	0.1%
✓	43-3021	Billing & Posting Clerks	974	1.02	15.28	0.93	3.5%	0.7%	0.1%
✓	43-6013	Medical Secretaries	476	0.49	14.56	0.95	3.2%	0.6%	0.1%
✓	31-9091	Dental Assistants	479	0.83	18.20	1.08	3.4%	0.0%	0.0%
	11-9111	Medical & Health Services Managers	500	0.87	36.99	0.86	1.2%	1.6%	0.6%
✓	37-2011	Janitors & Cleaners, Exc. Maids & Housekeepers	5,308	1.15	11.51	1.05	0.8%	1.5%	1.0%
	29-2021	Dental Hygienists	391	1.09	30.04	0.87	3.2%	0.0%	0.0%
	29-2071	Medical Records & Health Info. Technicians	424	1.25	16.22	0.96	1.5%	1.2%	0.3%
✓	43-1011	First-Line Supvsr., Office & Admin. Support	2,101	0.81	21.10	0.87	2.0%	0.5%	0.2%
✓	43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	3,841	0.81	15.59	0.99	1.5%	0.8%	0.3%
✓	43-3031	Bookkeeping, Accounting, & Auditing Clerks	4,827	1.48	15.98	0.93	1.5%	0.5%	0.4%
✓	11-1021	General & Operations Managers	3,512	0.93	40.02	0.87	0.6%	0.2%	0.5%
✓	49-9071	Maintenance & Repair Workers, General	1,977	0.78	16.33	0.95	0.1%	0.5%	0.7%
✓	43-4051	Customer Service Representatives	4,073	0.90	13.84	0.93	0.7%	0.6%	0.0%

Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

Notes: ✓ Indicates occupation was identified as a high demand occupation (HDO), see page 52. LQs greater than 1.25 are highlighted, as are wage rates above the regional average ($17.57). Marker indicates median hourly wages ≥110% of US (●) or ≤80% of US (✗)

HEALTHCARE CONT.

DEMAND. Figure 40 details occupational demand and selected demographic characteristics for each of the key occupations that support the healthcare sector. Among the health-related professions, registered nurses, nursing assistants, personal care aides, and LVNs are the highest in demand with more than 500 openings expected annually. Among professional occupations, office clerks, customer service representatives, and operations managers will be in high demand. Janitors, housekeepers, and maintenance workers will be the facilities support occupations in highest demand.

FIGURE 40. DEMAND FACTORS & DEMOGRAPHICS – HEALTHCARE OCCUPATIONS
INCLUDES ESTIMATED ANNUAL OPENINGS, 2014 TO 2019

HDO	SOC Code	Description	Jobs (11-county laborshed)	Est. Annual Openings (2014-2019)	% of openings due Net change	% of openings due Replacement	% of the workforce: Age 55+ Years	% of the workforce: Age 65+ Years
✓	43-9061	Office Clerks, General	6,828	203	26%	74%	23% ◄	5% ◄
✓	29-1141	Registered Nurses	4,707	198	50%	50%	22% ◄	3%
✓	37-2011	Janitors & Cleaners, Exc. Maids & Housekeepers	5,308	175	39%	61%	23% ◄	6% ◄
✓	43-4051	Customer Service Representatives	4,073	159	28%	72%	17%	3%
✓	11-1021	General & Operations Managers	3,512	132	47%	53%	20%	4%
✓	37-2012	Maids & Housekeepers	3,262	130	45%	55%	19%	5% ◄
✓	31-1014	Nursing Assistants	3,771	128	34%	66%	21% ◄	5% ◄
✓	39-9021	Personal Care Aides	3,289	117	76%	24%	20%	6% ◄
✓	29-2061	Licensed Practical/Vocational Nurses	2,454	113	43%	57%	23% ◄	4%
✓	43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	3,841	109	53%	47%	24% ◄	6% ◄
✓	43-3031	Bookkeeping, Accounting, & Auditing Clerks	4,827	108	57%	43%	23% ◄	5% ◄
✓	43-1011	First-Line Supvsr., Office & Admin. Support	2,101	95	44%	56%	20% ◄	4%
✓	43-4171	Receptionists & Information Clerks	1,958	93	39%	61%	21% ◄	4%
✓	31-1011	Home Health Aides	1,329	80	59%	41%	21% ◄	5% ◄
✓	49-9071	Maintenance & Repair Workers, General	1,977	71	43%	57%	25% ◄	6% ◄
✓	43-3021	Billing & Posting Clerks	974	44	56%	44%	20% ◄	3%
✓	35-3041	Food Servers, Nonrestaurant	866	40	26%	74%	17%	4%
	39-9041	Residential Advisors	574	39	31%	69%	19%	5% ◄
✓	43-6013	Medical Secretaries	476	34	79%	21%	24% ◄	4%
	11-9111	Medical & Health Services Managers	500	26	48%	52%	23% ◄	4%
	29-2071	Medical Records & Health Info. Technicians	424	22	45%	55%	22% ◄	4%
✓	29-1171	Nurse Practitioners	388	22	61%	39%	21% ◄	3%
✓	31-9091	Dental Assistants	479	20	43%	57%	16%	1%
	29-2021	Dental Hygienists	391	20	42%	58%	17%	1%
✓	31-9097	Phlebotomists	331	13	48%	52%	15%	2%

Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed
Notes: ★ Indicates occupation was identified as a high demand occupation (HDO), see page 52. Annual openings are an estimate of job openings due to net change in employment and replacement needs (e.g., turnover, retirement). ◄ Indicates significant share of workforce is reaching retirement age (defined here as ≥ 25% age 55+ and/or ≥ 5% age 65+).

HEALTHCARE CONT.

REAL-TIME LABOR MARKET INFORMATION. Figure 41 shows a summary of online job postings in the region. Currently, there are 1,005 unique job postings for the healthcare industry posted by 101 employers. Essentia is the top employer with over 1,000 postings over the last three months. It should be noted that the postings by employer reflect both demand and differences in recruiting practices. For example, Sanford has 4 postings for LPNs but Essentia has 105 postings for LPNs.

FIGURE 41. SUMMARY FOR JOB POSTINGS IN HEALTHCARE SECTOR

HIRING SCALE

▼ 41 nationally

Easy   Difficult

▲ 41 locally
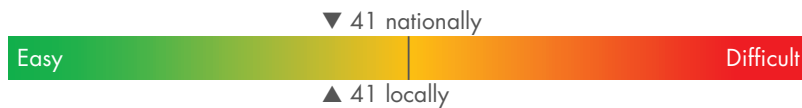
OPENINGS

Current job openings:	1,005
Direct employers competing:	101
Average posting duration (in days):	46
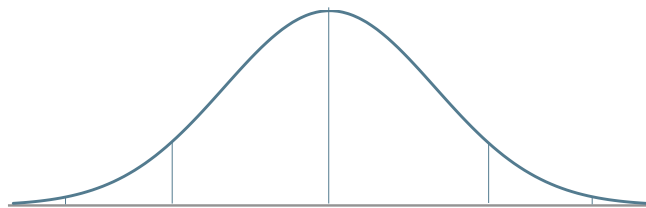
SALARY RANGE

Percentile	10th	25th	Median	75th	90th
Local	$43,900	$59,450	**$76,750**	$94,050	$109,650
National	$39,400	$52,600	**$67,250**	$81,900	$95,100
US=1.00	1.11	1.13	**1.14**	1.15	1.15

GEOGRAPHIC DISTRIBUTION

Share of postings by county (past four months)

- Cass County, ND: 1357
- Becker County, MN: 260
- Otter Tail County, MN: 142
- Clay County, MN: 68
- Stutsman County, ND: 68
- Wilkin County, MN: 52
- Grand Forks County, ND: 40
- Barnes County, ND: 30
- Richland County, ND: 24
- Traill County, ND: 3
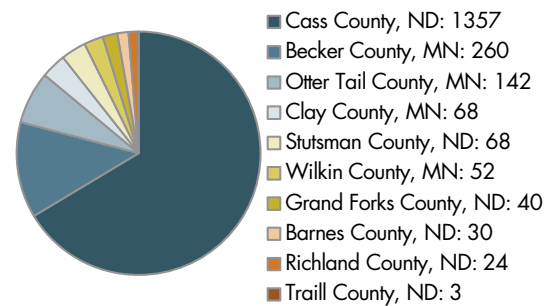
TOP 10 COUNTS *(based 2,499 postings past three months)*

Employers	# postings
Essentia Health	1,182
Catholic Health Initiatives	214
SMDC Health System	111
Sanford Health	101
PRAIRIE ST. JOHN's	69
Lake Region Healthcare	54
Senior Living Communities	48
Lutheran Social Services	45
White Earth Tribal Council	38
Department of Veterans Affairs	37

Occupations	# postings
Registered Nurses	529
Social and Human Service Assistants	207
Licensed Practical and Licensed Vocational Nurses	159
Nursing Assistants	103
Physician Assistants	73
Physicians and Surgeons, All Other	68
Maids and Housekeeping Cleaners	55
Medical Secretaries	49
Personal Care Aides	42
Medical and Health Services Managers	40

Hard skills	# postings
Pediatrics	150
Geriatrics	123
Critical Care	105
Behavioral health	81
Quality Assurance	67
Quality Control	58
Food Preparation	57
Presentation Software	48
Instrumentation	44
Patient Electronic Medical Record	27

Certifications	# postings
Certified Registered Nurse	672
Basic Life Support	340
Driver's License	287
Licensed Practical Nurse	257
Certification in Cardiopulmonary Resuscitation	216
Advanced Cardiac Life Support	141
Certified in Nursing Administration	122
Pediatric Advanced Life Support	86
Certified Practical Nurse, Long-term care	70
Patient Care Technician	54

Source: Wanted Analytics; TIP Strategies

HEALTHCARE CONT.

FIGURE 42. REAL-TIME LMI, SELECTED HEALTHCARE OCCUPATIONS

29-1141 REGISTERED NURSES

HIRING SCALE

▼ 46 nationally

Easy · · · · · · Difficult

▲ 36 locally

OPENINGS

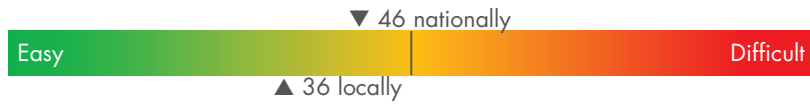|	
Current job openings:	397
Direct employers competing:	70
Average posting duration (in days):	46

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$54,440	$60,250	$66,750	$73,200	$79,050
National	$58,550	$64,750	$71,700	$78,600	$84,800
US=1.00	0.93	0.93	0.93	0.93	0.93

TOP SKILLS

Pediatrics |Critical care | Geriatrics | Behavioral health| Patient EMR | Medical information | 20/20 software | Cath lab | Epic software | Quality assurance

21-1093 SOCIAL AND HUMAN SERVICE ASSISTANTS

HIRING SCALE

63 nationally ▼

Easy · · · · · · Difficult

64 locally▲

OPENINGS

Current job openings:	127
Direct employers competing:	52
Average posting duration (in days):	41
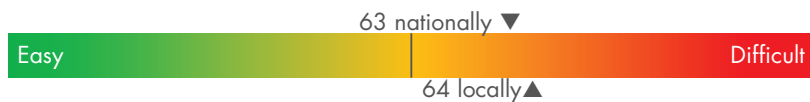
SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$20,800	$23,700	$26,850	$30,050	$32,950
National	$22,050	$26,100	$30,600	$35,100	$39,150
US=1.00	0.94	0.91	0.88	0.86	0.84

TOP SKILLS

Food preparation | Ability to measure | Service design | Crisis intervention techniques | Autism spectrum disorders | Behavioral health| Administering medication | Pediatrics

29-2061 LICENSED PRACTICAL AND LICENSED VOCATIONAL NURSES

HIRING SCALE

▼20 nationally

Easy · · · · · · Difficult

▲ 29 locally

OPENINGS

Current job openings:	144
Direct employers competing:	47
Average posting duration (in days):	52

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$31,600	$35,850	$40,600	$45,350	$49,600
National	$37,000	$41,050	$45,600	$50,100	$54,150
US=1.00	0.85	0.87	0.89	0.91	0.92

TOP SKILLS

Geriatrics | ICD-10/ICD-9 | Pediatrics | Presentation software | IV Therapy | Quality assurance | Patient EMR | Sterilization

31-1014 NURSING ASSISTANTS

HIRING SCALE

▼ 9 nationally

Easy · · · · · · Difficult

▲ 6 locally

OPENINGS

Current job openings:	102
Direct employers competing:	38
Average posting duration (in days):	42

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$22,450	$23,650	$25,000	$26,350	$27,600
National	$20,400	$22,650	$25,100	$27,550	$29,800
US=1.00	1.10	1.04	1.00	0.96	0.93

TOP SKILLS

Geriatrics | Food preparation | Pediatrics | Ambulatory surgery | Optical character recognition | Video teleconferencing | Electronic health record | Patient EMR

Source: Wanted Analytics; TIP Strategies

HEALTHCARE CONT.

SURVEY. Seven healthcare employers participated in the employer survey. These employers employ almost 10,000 full-time and part-time workers in the region. Of these participants, six plan to hire additional employees over the next two years. These employers estimated that they will add 176 workers. The majority of these workers will be in professional/technical and unskilled positions.

Respondents indicated that most positions are filled within three months. Management positions take four to six months for some employers.

FIGURE 43. FINDINGS FROM EMPLOYER SURVEY – HEALTHCARE FIRMS

Do you plan to hire additional employees at your Fargo-Moorhead location(s) in the next 12 to 24 months?

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

Category	Workers
Professional/Technical	82
Unskilled/Laborers	59
Management	15
Clerical/Administrative	15
Sales/Marketing	3
Skilled Labor	2

No 1

Yes 6

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

Legend: Not applicable | Less than 2 weeks | 2 to 4 weeks | 1 to 3 months | 4 to 6 months | More than 6 months

Classification	Not applicable	Less than 2 weeks	2 to 4 weeks	1 to 3 months	4 to 6 months	More than 6 months
Management			40%	40%		20%
Professional/Technical			75%	25%		
Sales/Marketing			67%	33%		
Skilled Labor	50%		25%	25%		
Unskilled/Laborers	25%	25%	25%	25%		
Clerical/Administrative		20%	80%			
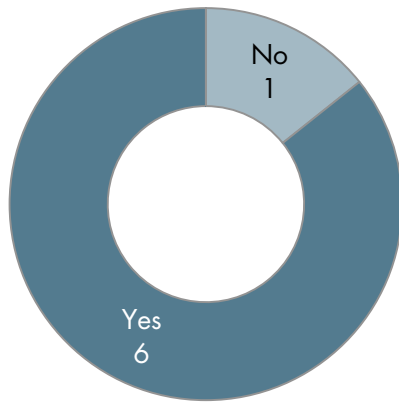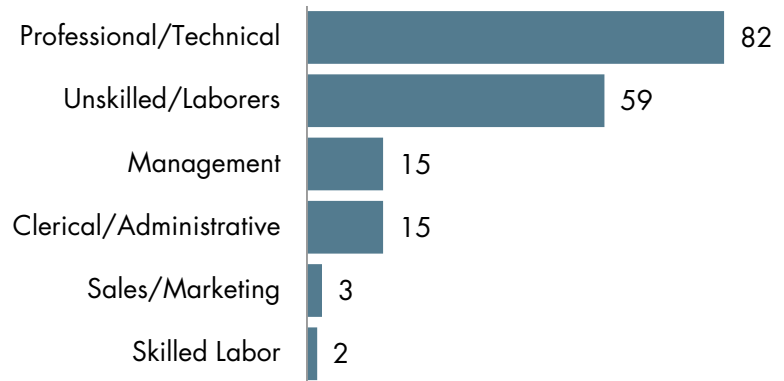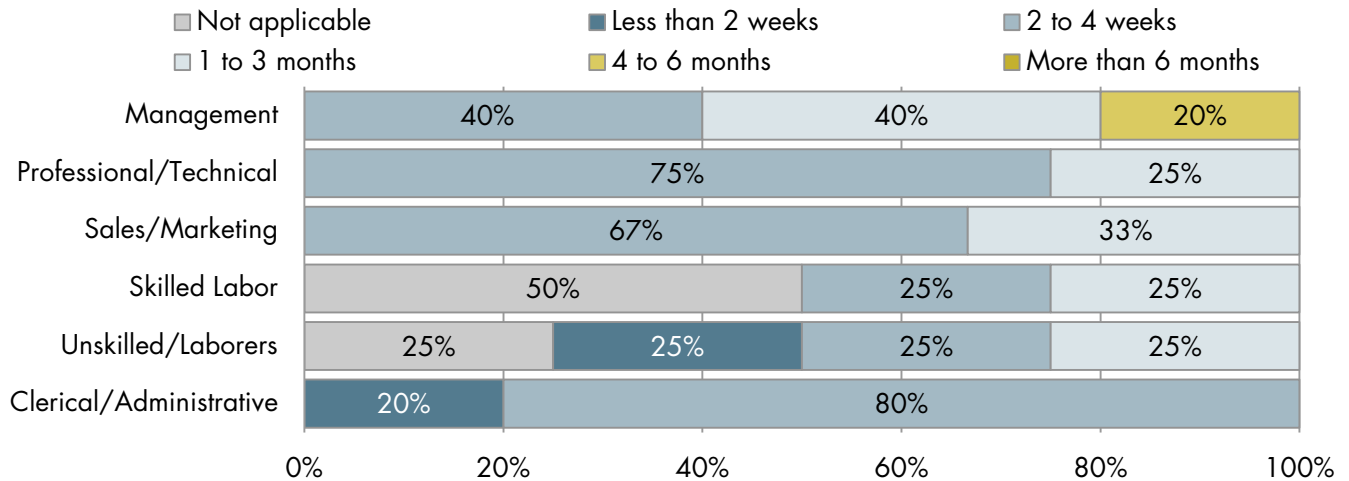
HEALTHCARE CONT.

FIGURE 44. FINDINGS FROM EMPLOYER SURVEY– HEALTHCARE FIRMS

Two respondents indicated that there have been specific positions that they have been unable to fill at all, but they did not indicate what the positions were. Overall, respondents listed various occupations that are difficult to recruit for. More than one employer listed coding specialists, environmental services, licensed practical nurse, nursing assistant, and registered nurse.

The respondents indicated that they can fill most of their positions from the local labor pool. Some respondents reported extending their search outside of Cass and Clay Counties when searching for management, skilled labor, unskilled labor, and clerical/administrative positions. Half of the respondents reported recruiting outside of the Red River Valley for professional/technical positions.

Are there specific positions which you have been unable to fill at all?
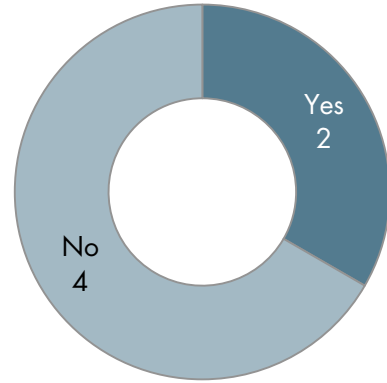
Which occupations are difficult to recruit in your industry?

Coding Specialist	Massage Therapist
Environmental Services	Medical Laboratory Technician
LPN	Pharmacist
Nurse Assistant	Registration
Registered Nurse	Respiratory Therapist
Histo Techs	Xray Techs
IT	

When hiring, which geographic area is typically used to recruit workers?
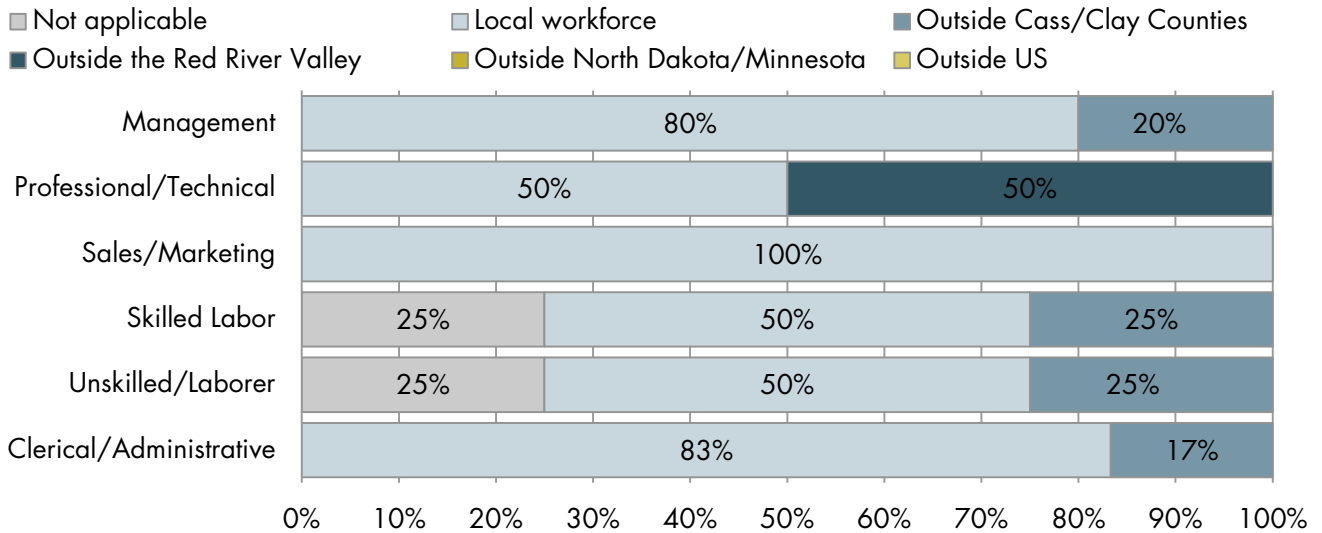
HEALTHCARE CONT.

EDUCATION & TRAINING. Figure 45 shows the wages and the typical requirements for entry into specific occupations.

Most of the occupations that support the healthcare industry require at least a high school diploma. Of those, the allied health and administrative support occupations require the full range of postsecondary award levels, from a non-degree award to an advanced degree. This occupational structure offers opportunities to individuals with a wide range of skill levels.

FIGURE 45. EDUCATION & TRAINING REQUIREMENTS – HEALTHCARE OCCUPATIONS
WITH HOURLY EARNINGS FOR SELECTED PERCENTILES, INCLUDING MEDIAN (50TH)

HDO	SOC Code	Description	Hourly Earnings (percentiles)			Typical requirements for entry into occupation:		Training Required For Competency
			10th	50th	90th	Edu.	Exp.	
✓	43-9061	Office Clerks, General	$8.34	$9.62	$17.40	HS or equiv.	None	Short-term OJT
✓	29-1141	Registered Nurses	$21.51	$24.31	$36.01	Associate's	None	None
✓	37-2011	Janitors & Cleaners, Exc. Maids & Housekeepers	$8.49	$9.78	$17.21	Less than HS	None	Short-term OJT
✓	43-4051	Customer Service Representatives	$10.19	$12.06	$21.13	HS or equiv.	None	Short-term OJT
✓	11-1021	General & Operations Managers	$23.75	$30.17	$75.83	Bachelor's	< 5 yrs.	None
✓	37-2012	Maids & Housekeepers	$7.91	$8.61	$13.04	Less than HS	None	Short-term OJT
✓	31-1014	Nursing Assistants	$10.11	$11.24	$16.36	Non-deg. award	None	None
✓	39-9021	Personal Care Aides	$9.23	$10.26	$15.05	Less than HS	None	Short-term OJT
✓	29-2061	Licensed Practical/Vocational Nurses	$14.15	$15.73	$22.18	Non-deg. award	None	None
✓	43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	$11.44	$13.17	$21.59	HS or equiv.	None	Short-term OJT
✓	43-3031	Bookkeeping, Accounting, & Auditing Clerks	$11.04	$13.17	$22.62	HS or equiv.	None	Mod-term OJT
✓	43-1011	First-Line Supvsr., Office & Admin. Support	$13.68	$16.85	$34.19	HS or equiv.	< 5 yrs.	None
✓	43-4171	Receptionists & Information Clerks	$8.85	$10.43	$17.39	HS or equiv.	None	Short-term OJT
✓	31-1011	Home Health Aides	$9.00	$10.22	$15.02	Less than HS	None	Short-term OJT
✓	49-9071	Maintenance & Repair Workers, General	$10.63	$13.20	$24.80	HS or equiv.	None	Long-term OJT
✓	43-3021	Billing & Posting Clerks	$11.55	$13.15	$20.79	HS or equiv.	None	Short-term OJT
✓	35-3041	Food Servers, Nonrestaurant	$8.06	$8.95	$12.97	Less than HS	None	Short-term OJT
	39-9041	Residential Advisors	$8.43	$9.89	$22.49	HS or equiv.	None	Short-term OJT
✓	43-6013	Medical Secretaries	$11.36	$12.82	$19.21	HS or equiv.	None	Mod-term OJT
	11-9111	Medical & Health Services Managers	$24.30	$30.40	$56.45	Bachelor's	None	None
	29-2071	Medical Records & Health Info. Technicians	$11.40	$13.28	$21.97	Non-deg. award	None	None
✓	29-1171	Nurse Practitioners	$31.24	$34.38	$54.25	Advanced degree	None	None
✓	31-9091	Dental Assistants	$14.53	$16.11	$26.11	Non-deg. award	None	None
	29-2021	Dental Hygienists	$23.14	$26.18	$36.11	Associate's	None	None
✓	31-9097	Phlebotomists	$10.32	$11.45	$18.88	Non-deg. award	None	None

Source: TIP Strategies

HEALTHCARE CONT.

Figure 46 shows the for-credit completions from regional postsecondary institutions in fields of study relevant to the healthcare industry's key occupations. More than 500 students, on average, are awarded a degree in registered nursing, and 200 students earn a LVN. In programs related to medical coding, health information technician, and medical secretary, more than 40 students graduate on average. Other programs offered in the region that graduate students include dental hygiene, dental assisting, medical office assistant, health services administration, hospitals facilities administration, family practice nursing, and medical office management.

FIGURE 46. RELEVANT COMPLETIONS – HEALTHCARE OCCUPATIONS
THREE-YEAR ANNUAL AVERAGE OF DEGREES/AWARDS CONFERRED, 2011-2013

| | | Degrees/awards by level | | | | | |
CIP Code	Field of Study	Certificate (<1 year)	Certificate (≥1 yr., <2 yr.)	Associate's*	Bachelor's	Advanced**	Annual average degrees/awards conferred (all levels)
51.3801	Registered Nursing/Registered Nurse	0	0	159	338	74	571
52.0201	Business Admin. & Mgmt., General	0	0	73	346	77	496
51.3901	Licensed Practical/Voc. Nurse Training	0	15	185	0	0	200
52.0801	Finance, General	0	0	0	82	0	82
52.0701	Entrepreneurship/Entrepreneurial Studies	25	4	5	27	0	60
51.0713	Med. Insurance Coding Specialist/Coder	8	42	0	0	0	50
52.0302	Acct. Tech./Technician & Bookkeeping	22	4	21	0	0	47
51.0707	Health Info./Records Tech./Technician	0	5	41	0	0	46
52.0402	Executive Asst./Executive Secretary	37	8	0	0	0	45
51.0716	Med. Admin./Exec. Asst. & Med.Sec.	0	0	42	0	0	43
51.0602	Dental Hygiene/Hygienist	0	0	40	0	0	40
51.0601	Dental Assisting/Asst.	0	22	10	0	0	32
44.0401	Public Admin.	0	0	0	5	23	29
52.0401	Admin.Asst. & Secretarial Science, General	1	5	20	0	0	26
51.071	Med.Office Asst./Specialist	0	16	0	0	0	16
51.2211	Health Services Admin.	0	0	0	15	0	15
51.0702	Hosp. & Health Facilities Admin./Mgmt.	0	0	0	15	0	15
52.0204	Office Mgmt. & Supervision	0	0	13	1	0	14
52.0101	Business/Commerce, General	0	0	13	0	0	13
51.3805	Family Practice Nurse/Nursing	0	0	0	0	11	11
51.0705	Med.Office Mgmt./Admin.	0	0	11	0	0	11

Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) surveys; National Crosswalk Service Center; TIP Strategies. IPEDS data include only schools eligible to participate in federal financial aid programs. Figures shown include first and second majors. *Associate's-degree-level completions include awards categorized by IPEDS as "Award of at least two but less than four academic years." **Advanced-level completions represent all awards above the bachelor's-degree level.

HEALTHCARE CONT.

RESOURCES. The resources listed below support the regional healthcare industry.

North Dakota Long Term Care Association (NDLTCA). NDLTCA is an advocacy organization for assisted living, basic care, and nursing facilities in North Dakota. The Association represents not-for-profit and propriety facilities that care for approximately 14,000 elderly and disabled individuals. Along with acting as an advocate, the organization enhances the lives of people they serve through collaboration and education.

LeadingAge Minnesota. LeadingAge Minnesota is the state affiliate of the Assisted Living Federation of America. The organization works to support caregivers and service providers in proving high quality care to aging citizens. In June 2015, the group is hosting the LeadingAge Minnesota Workforce Solutions Conference to zero in on the recruitment, retention, and development of the sector's workforce.

North Dakota Hospital Association (NDHA) and **Minnesota Hospital Association (MHA).** NDHA and MHA have acted as an advocate for public policy on behalf of North Dakota's and Minnesota's licensed hospitals and health-related organizations. The organization's aim is to promote public health and the development of strong, healthy communities. Along with policy and advocacy, member resources include information and tools to help with collections, education programming, group purchasing, peer reviewing, and recruitment.

Community HealthCare Association of the Dakotas (CHAD). CHAD serves as the Primary Care Association for North and South Dakota, supporting Community Health Centers (CHCs) through training and technical assistance. They also provide public policy advocacy at the state and federal level and work with community leaders to find solutions to health care access for vulnerable populations and high need areas of the Dakotas, with the mission of enhancing access to quality primary care through services to members.

Minnesota Association of Community Health Centers (MNACHC). MNACHC works on behalf of its members and their patients to promote the cost-effective delivery of affordable, quality primary health care services. The organization provides training and education programs, formal and informal networking opportunities, team mentoring, telephone assistance, and quality improvement data aggregation and reporting.

Sector Breakfasts (Minnesota State University Moorhead). For the past five years, MSUM and the Greater Fargo-Moorhead Economic Development Corporation have hosted breakfasts to provide business leaders an opportunity to network and collaborate about preparing graduates for the workforce. The breakfasts are centered on specific sectors, such as healthcare, finance, technology, manufacturing, STEM, and K-12 education.

Health, Tech, and Trades Career Expo. This expo provides students interested in the fields of health, technology, and trades an opportunity to take part in hands-on demonstrations and be exposed to career opportunities. The event is targeted to 9th graders in Fargo, Moorhead, West Fargo, and area rural, public and private schools, although older students are also invited.

⚙ MANUFACTURING

OVERVIEW. The manufacturing industry in the 11-county laborshed employed just over 20,000 workers in 2014. The largest segments of the industry are food manufacturing, machinery manufacturing, fabricated metal product manufacturing, and transportation equipment. Together, these four segments accounted for 63 percent of the regional manufacturing industry.

The manufacturing sector, as a whole, grew almost 9 percent between 2004 and 2014. This strong growth was led by the machinery manufacturing segment, which grew 49 percent over the 10 year period. Though the metal products and transportation equipment segments suffered during the recession, these segments have since recovered and shown strong growth.

Employment in the national manufacturing sector has declined for years, with the exception of a recent resurgence. In the Fargo-Moorhead laborshed, however, the sector has consistently gained employment. Even during the recession, the sector only shed employment for two years.

FIGURE 47. EMPLOYMENT TRENDS, 2004 TO 2014
TOTAL EMPLOYMENT IN RELATED OCCUPATIONS
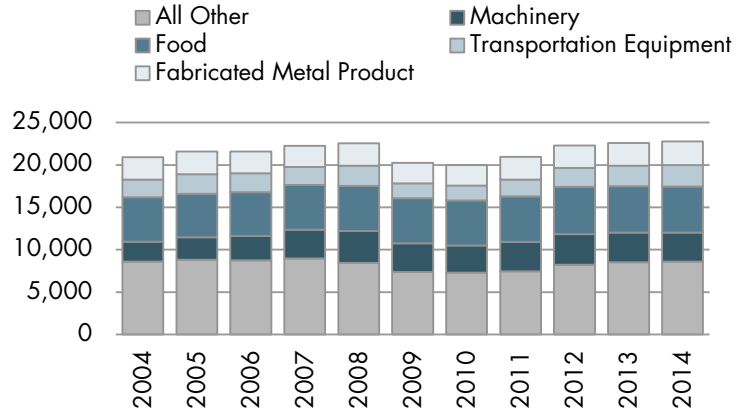
GAINS/LOSSES BY GROUP (2004 = 1.00)

GAINS/LOSSES: REGION VERSUS US (2004 - 14)

Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

FIGURE 48. SELECTED EMPLOYERS

Organization/Company
American Crystal Sugar Company
Caterpillar Reman Drivetrain
Cardinal IG Company
Case New Holland
Crary Industries
Fargo Assembly Company
Integrity Windows by Marvin
John Deere Electronic Solutions
MidAmerica Steel
Tecton Products

MANUFACTURING CONT.

KEY OCCUPATIONS. Figure 49 provides an overview of the occupations that support the regional manufacturing industry. Team assemblers are the largest occupational group in terms of share of total employment across the region's key manufacturing segments. Welders hold the next-highest share of employment. First-line supervisors, packaging and filling machine workers, and machinists are also important occupations to the industry.

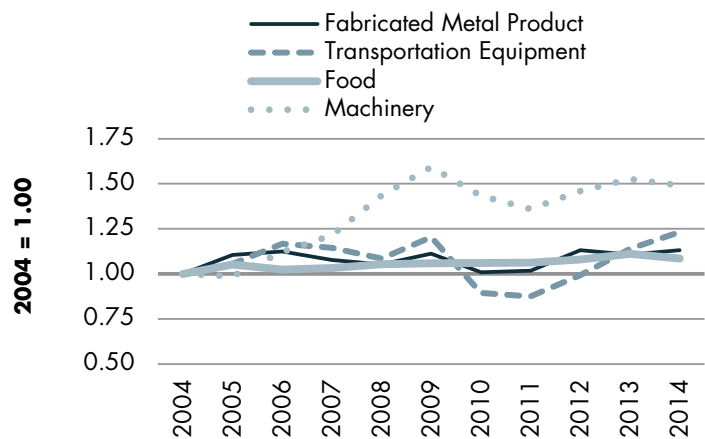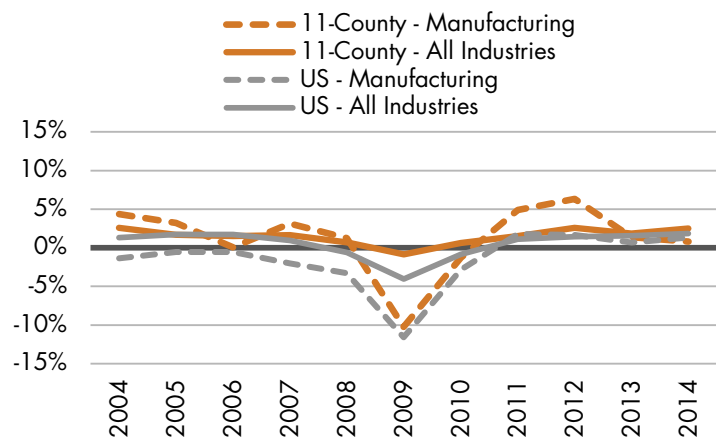### FIGURE 49. SHARE OF EMPLOYMENT IN SELECTED INDUSTRIES – MANUFACTURING OCCUPATIONS

INCLUDES 2014 LOCATION QUOTIENT (LQ) AND WAGE RATE COMPARISON RELATIVE TO US

						Occupation's share of total employment in selected industry segments			
HDO	SOC Code	Description	Jobs (11-county labor shed)	LQ (US= 1.00)	Median Hourly Earnings	Relative to US (US=1.00)	Food NAICS 311	Fabricated Metals NAICS 332	Machinery NAICS 33	Transportation Equipment NAICS 336
✓	51-2092	Team Assemblers	2,158	1.08	14.06	1.04	1.9%	7.3%	**16.9%**	**25.4%**
✓	51-4121	Welders, Cutters, Solderers, & Brazers	1,336	1.90	16.95	0.96	0.0%	**14.0%**	11.0%	5.1%
✓	51-1011	First-Line Supvsr., Production & Operating Workers	1,123	1.03	22.40	0.86	4.3%	4.6%	3.4%	3.6%
✓	51-9111	Packaging & Filling Machine Workers	825	1.19	13.20	1.04	**9.7%**	0.8%	0.0%	0.4%
✓	51-4041	Machinists	544	0.74	18.00	0.95	0.1%	3.7%	4.4%	2.3%
✓	51-4031	Cutting, Punching, & Press Machine, Metal/Plastic	551	1.60	15.77	1.10	0.0%	4.2%	2.4%	3.0%
✓	53-7062	Laborers/Freight, Stock, & Material Movers, Hand	4,051	0.92	12.11	1.05	3.0%	1.8%	2.1%	2.3%
✓	51-9198	Helpers–Production Workers	622	0.78	12.75	1.15 ●	3.3%	2.6%	1.0%	1.3%
	49-9041	Industrial Machinery Mechanics	627	1.05	21.27	0.93	2.4%	1.5%	2.2%	1.3%
✓	41-4012	Sales Reps., Whls. & Mfg., Exc. Tech. & Scientific	2,657	0.97	23.51	0.91	1.0%	2.0%	2.1%	1.1%
	51-2031	Engine & Other Machine Assemblers	198	2.69	18.42	1.03	0.0%	0.1%	3.4%	2.4%
	51-3011	Bakers	284	0.87	12.23	1.11 ●	5.7%	0.0%	0.0%	0.0%
✓	11-1021	General & Operations Managers	3,512	0.93	40.02	0.87	1.3%	1.9%	1.4%	1.0%
	51-2041	Structural Metal Fabricators & Fitters	115	0.80	16.48	0.94	0.0%	3.7%	1.1%	0.6%
✓	43-5071	Shipping, Receiving, & Traffic Clerks	1,111	0.88	14.22	1.01	1.1%	1.3%	1.3%	1.6%
✓	49-9071	Maintenance & Repair Workers, General	1,977	0.78	16.33	0.95	1.7%	1.2%	0.9%	1.2%
	51-4122	Welding, Soldering, & Brazing Machine	144	1.46	17.58	1.07	0.0%	1.6%	1.8%	1.6%
	17-2112	Industrial Engineers	354	0.83	31.90	0.83	0.5%	0.7%	1.7%	2.0%
✓	51-2022	Electrical & Electronic Equip. Assemblers	479	1.30	12.17	0.87	0.0%	0.1%	1.6%	3.0%
	17-2141	Mechanical Engineers	355	0.73	34.59	0.88	0.0%	0.9%	2.3%	1.4%
✓	51-2099	Assemblers & Fabricators, All Other	592	1.22	14.16	1.14 ●	0.0%	0.9%	1.3%	2.4%
	51-3092	Food Batchmakers	299	1.48	15.26	1.19 ●	4.6%	0.0%	0.0%	0.0%
	47-2211	Sheet Metal Workers	436	1.65	17.07	0.82	0.0%	3.8%	0.4%	0.3%
	53-7051	Industrial Truck & Tractor Operators	762	0.80	15.53	1.05	1.4%	0.8%	1.1%	1.1%
	53-7064	Packers & Packagers, Hand	837	0.65	9.72	1.01	3.6%	0.4%	0.2%	0.3%

Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

Notes: ✓ Indicates occupation was identified as a high demand occupation (HDO), see page 52. LQs greater than 1.25 are highlighted, as are wage rates above the regional average ($17.57). Marker indicates median hourly wages ≥110% of US (●) or ≤80% of US (✗).

MANUFACTURING CONT.

DEMAND. Figure 50 details occupational demand and selected demographic characteristics for each of the key occupations that support the manufacturing sector. Note that many of the occupations are components of other industries as well; thus, the number of annual openings is for that occupation across all industries, not just in manufacturing. The high replacement needs of these occupations, particularly in the low-wage positions, reflect the tight labor market and high rates of turnover. Sales representatives, maintenance and repair workers, and industrial machinery mechanics have particularly high shares of their workforce aged 55 and older.

FIGURE 50. DEMAND FACTORS & DEMOGRAPHICS – MANUFACTURING OCCUPATIONS
INCLUDES ESTIMATED ANNUAL OPENINGS, 2014 TO 2019

HDO	SOC Code	Description	Jobs (11-county laborshed)	Est. annual openings (2014-2019)	% of openings due to: Net change	% of openings due to: Replacement	% of the workforce: Age 55+ Years	% of the workforce: Age 65+ Years
✓	53-7062	Laborers/Freight, Stock, & Material Movers, Hand	4,051	194	32%	68%	19%	4%
✓	11-1021	General & Operations Managers	3,512	132	47%	53%	20%	4%
✓	41-4012	Sales Reps., Whls. & Mfg., Exc. Tech. & Scientific	2,657	94	42%	58%	20% ◄	4%
✓	51-2092	Team Assemblers	2,158	90	56%	44%	17%	2%
✓	49-9071	Maintenance & Repair Workers, General	1,977	71	43%	57%	25% ◄	6% ◄
✓	51-4121	Welders, Cutters, Solderers, & Brazers	1,336	61	38%	62%	17%	2%
✓	43-5071	Shipping, Receiving, & Traffic Clerks	1,111	49	36%	64%	18%	3%
	49-9041	Industrial Machinery Mechanics	627	40	50%	50%	21% ◄	3%
	53-7064	Packers & Packagers, Hand	837	36	36%	64%	18%	4%
✓	51-1011	First-Line Supvsr., Production & Operating Workers	1,123	34	49%	51%	19%	3%
✓	51-4041	Machinists	544	30	54%	46%	19%	3%
	53-7051	Industrial Truck & Tractor Operators	762	26	30%	70%	19%	3%
✓	51-9198	Helpers–Production Workers	622	25	54%	46%	16%	3%
✓	51-9111	Packaging & Filling Machine Workers	825	25	11%	89%	20%	3%
	17-2141	Mechanical Engineers	355	24	45%	55%	17%	1%
✓	51-2099	Assemblers & Fabricators, All Other	592	21	50%	50%	17%	3%
	17-2112	Industrial Engineers	354	20	45%	55%	19%	1%
✓	51-2022	Electrical & Electronic Equip. Assemblers	479	15	47%	53%	16%	4%
	47-2211	Sheet Metal Workers	436	13	30%	70%	13%	1%
✓	51-4031	Cutting, Punching, & Press Machine, Metal/Plastic	551	12	57%	43%	14%	1%
	51-3092	Food Batchmakers	299	11	1%	99%	19%	2%
	51-4122	Welding, Soldering, & Brazing Machine	144	10	59%	41%	18%	3%
	51-3011	Bakers	284	10	7%	93%	17%	4%
	51-2041	Structural Metal Fabricators & Fitters	115	9	41%	59%	19%	4%
	51-2031	Engine & Other Machine Assemblers	198	8	55%	45%	17%	3%

Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

Notes: ★ Indicates occupation was identified as a high demand occupation (HDO), see page 52. Annual openings are an estimate of job openings due to net change in employment and replacement needs (e.g., turnover, retirement). ◄ Indicates significant share of workforce is reaching retirement age (defined here as ≥ 25% age 55+ and/or ≥ 5% age 65+).

MANUFACTURING CONT.

REAL-TIME LABOR MARKET INFORMATION. Figure 51 shows a summary of online job postings in the region. Currently, there are 379 unique job postings for the manufacturing industry posted by 67 employers. The majority are for production workers in Stutsman. The average salary posted is 66 percent of the US average.

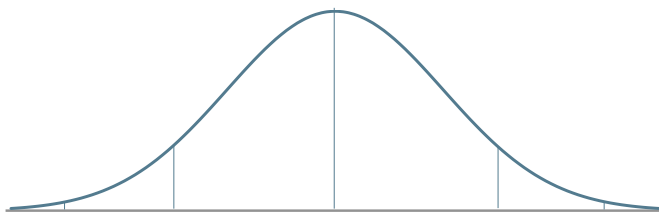## FIGURE 51. SUMMARY FOR JOB POSTINGS IN MANUFACTURING SECTOR

HIRING SCALE

▼ 50 nationally

| Easy | | Difficult |

▲ 48 locally
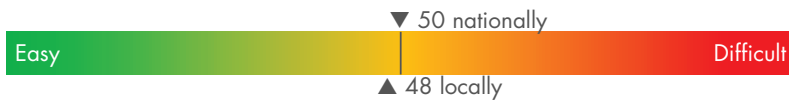
OPENINGS

Current job openings:	379
Direct employers competing:	67
Average posting duration (in days):	47

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$28,050	$35,950	**$44,750**	$53,500	$61,450
National	$39,600	$52,900	**$67,700**	$82,450	$95,750
US=1.00	0.71	0.68	**0.66**	0.65	0.64

GEOGRAPHIC DISTRIBUTION
Share of postings by county (past four months)

- Stutsman County, ND: 252
- Cass County, ND: 63
- Grand Forks County, ND: 27
- Becker County, MN: 20
- Otter Tail County, MN: 13
- Barnes County, ND: 7
- Richland County, ND: 6
- Clay County, MN: 2
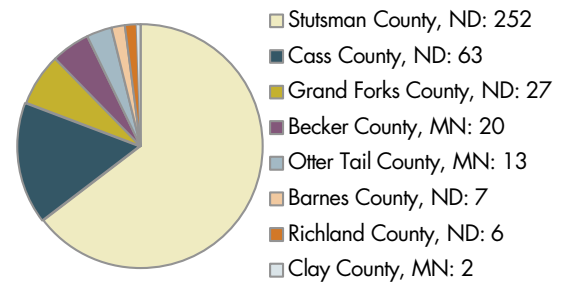
TOP 10 COUNTS *(based 891 postings past three months)*

Employers	# postings
United Technologies	158
UTC Corporation	89
American Crystal Sugar Company	47
Appareo Systems	46
Aggregate Industries	44
Pepsico	41
TrueNorth Steel	23
Fabricators Unlimited	19
Advanced Drainage Systems, Inc.	18
Philadelphia Macaroni Company	17

Occupations	# postings
First-Line Supervisors of Production Workers	75
Industrial Engineers	59
Heavy and Tractor-Trailer Truck Drivers	32
Stock Clerks and Order Fillers	31
Laborers and Freight, Stock, and Material Movers	28
Mechanical Engineers	26
Maintenance and Repair Workers, General	23
Team Assemblers	21
Driver/Sales Workers	21
Machinists	20

Hard skills	# postings
Computer Aided Design	40
Software Development	38
Technical Support	37
Quality Control	26
Instrumentation	25
Quality Assurance	25
Design Verification	25
Work Order	24
Preventative Maintenance Inspections	24
Preventive Maintenance	20

Certifications	# postings
Driver's License	76
Commercial Driver's License	61
DOT Medical Card	35
OSHA Certification	21
HAZMAT	17
Food Safety Pprograms	12
Project Management Professional	10
EPA Certification	9
American Society of Mechanical Engineers	7
Mining Safety & Health Administration Certification	5

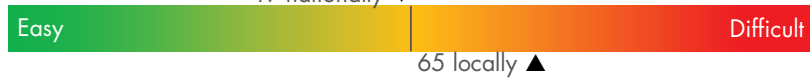Source: Wanted Analytics; TIP Strategies

MANUFACTURING CONT.

FIGURE 52. REAL-TIME LMI, SELECTED MANUFACTURING OCCUPATIONS

51-1011 FIRST-LINE SUPERVISORS OF PRODUCTION WORKERS

HIRING SCALE

49 nationally ▼

Easy | Difficult

65 locally ▲

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$33,650	$37,650	$42,150	$46,600	$50,650
National	$34,550	$45,350	$57,300	$69,300	$80,100
US=1.00	0.97	0.83	0.74	0.67	0.63

OPENINGS

Current job openings:	39
Direct employers competing:	16
Average posting duration (in days):	44

TOP SKILLS

Quality systems | Inventory control systems | Lean manufacturing | Good manufacturing practice | Environmental safety | Quality control | Plant maintenance

17-2112 INDUSTRIAL ENGINEERS

HIRING SCALE

82 nationally ▼

Easy | Difficult

84 locally ▲

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$35,800	$48,400	$61,900	$75,350	$87,950
National	$58,400	$67,350	$77,300	$87,250	$96,200
US=1.00	0.61	0.72	0.80	0.86	0.91

OPENINGS

Current job openings:	17
Direct employers competing:	8
Average posting duration (in days):	47

TOP SKILLS

Geometric dimensioning and tolerancing | Work order | Siemens Teamcenter | Quality assurance | Technical support | CAD | Quality management system

53-3032 HEAVY AND TRACTOR-TRAILER TRUCK DRIVERS

HIRING SCALE

▼ 69 nationally

Easy | Difficult

79 locally ▲

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$29,000	$32,000	$45,900	$54,000	$61,300
National	$30,550	$37,800	$35,850	$42,550	$48,550
US=1.00	0.95	0.85	1.28	1.27	1.26

OPENINGS

Current job openings:	14
Direct employers competing:	6
Average posting duration (in days):	59

TOP SKILLS

Commercial driver's license | DOT medical card | Tanker and HAZMAT endorsement | HAZMAT

43-5081 STOCK CLERKS AND ORDER FILLERS

HIRING SCALE

▼ 9 nationally

Easy | Difficult

▲ 29 locally

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$21,650	$22,400	$23,200	$24,000	$24,750
National	$20,450	$21,800	$23,300	$24,850	$26,200
US=1.00	1.06	1.03	1.00	0.97	0.94

OPENINGS

Current job openings:	14
Direct employers competing:	10
Average posting duration (in days):	49

TOP SKILLS

Production control | Security administration | ERP software | Cost accounting | Work order

Source: Wanted Analytics; TIP Strategies

MANUFACTURING CONT.

SURVEY. Twenty-eight manufacturers participated in the survey. These participants employ more than 4,000 full-time workers. Of these participants, 17 plan to hire additional employees over the next two years. These employers estimated that they will add about 300 workers. The majority of these workers (76 percent) will be in unskilled and skilled occupations.

Respondents indicated that most positions can be filled within three months. Management and skilled labor positions take the longest to fill. Some respondents reported taking more than six months to fill positions in all categories except clerical.

FIGURE 53. FINDINGS FROM EMPLOYER SURVEY – MANUFACTURING FIRMS

Do you plan to hire additional employees at your Fargo-Moorhead location(s) in the next 12 to 24 months?
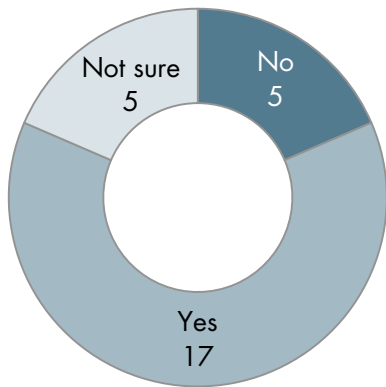
If you plan to hire additional employees in the Fargo-Moorhead region in the next 12 to 24 months, approximately how many workers do you plan to add in each of the following categories?
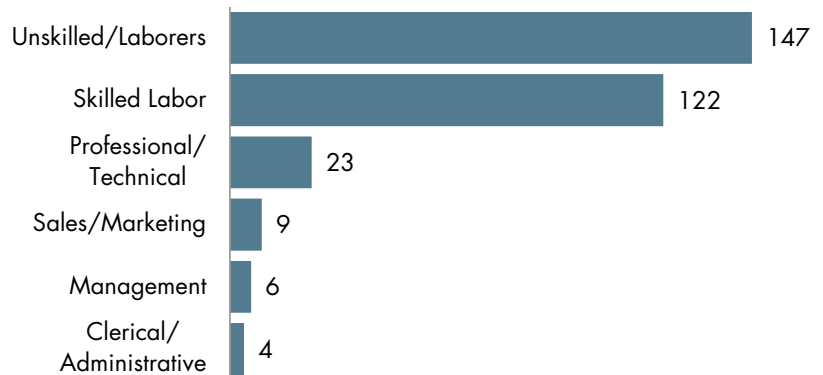
Approximately how long does it typically take to fill a vacancy for each of the following classifications of workers?
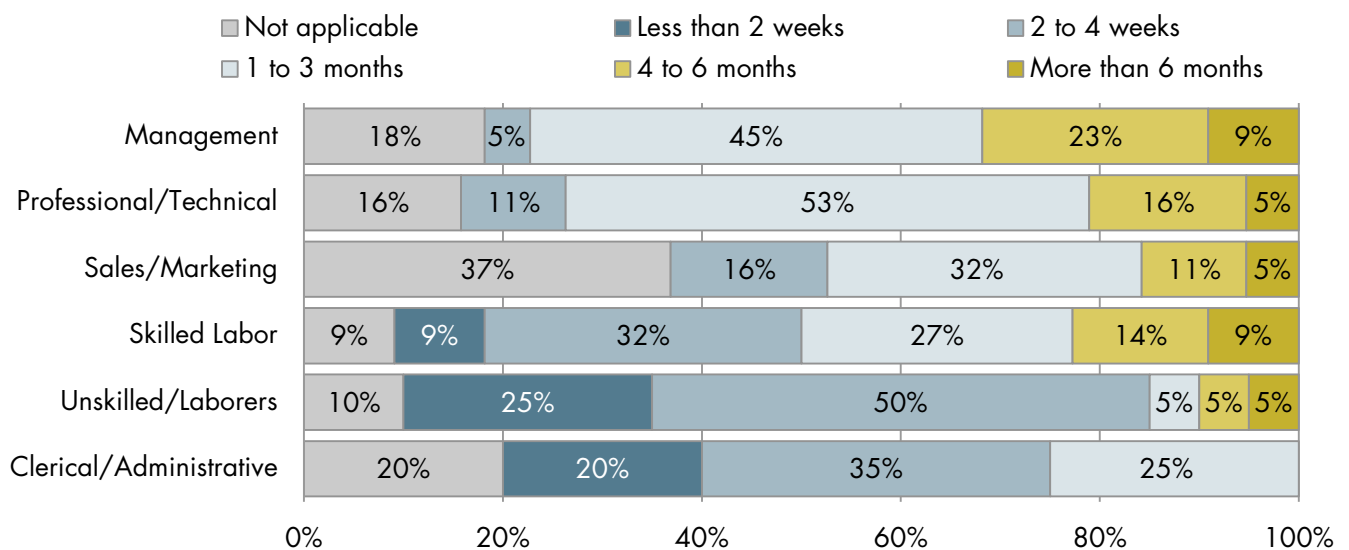
MANUFACTURING CONT.

FIGURE 54. FINDINGS FROM EMPLOYER SURVEY– MANUFACTURING FIRMS

Seven respondents had positions that they could not fill. These positions ranged from assemblers to operations managers.

Most respondents reported difficulty recruiting for certain occupations. Welders, engineers, and assembly workers were most commonly cited.

Respondents report that they most often rely on the local workforce for recruiting workers across skill levels. More respondents indicated recruiting outside of the region for management positions than any other type of position. Some respondents reported recruiting outside the state for professional/technical, sales/marketing, and skilled labor. Unskilled and clerical positions are largely filled with workers from the region, though a few employers reported looking outside the metro area for clerical/administrative workers.

Are there specific positions which you have been unable to fill at all?


Yes 7
No 18
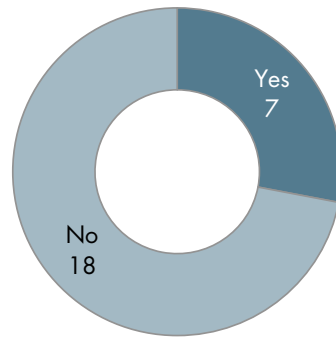
| Assemblers |
| Electrician |
| Licensed Boiler Operator |
| Mechanic |
| Maintenance Process Operators |
| Maintenance Technicians |
| Moldsetters |
| Operations Manager/ General Manager |

Which occupations are difficult to recruit in your industry?

Welder	6
Engineer	4
Unskilled Production/Assembly	4
Electrician	2
Maintenance	2
Painters	2
Sales	2

When hiring, which geographic area is typically used to recruit workers?

■ Not applicable   ■ Local workforce   ■ Outside Cass/Clay Counties
■ Outside the Red River Valley   ■ Outside North Dakota/Minnesota

	Not applicable	Local workforce	Outside Cass/Clay Counties	Outside the Red River Valley	Outside North Dakota/Minnesota
Management	14%	38%	10%	24%	14%
Professional/Technical	10%	52%	14%	19%	5%
Sales/Marketing	30%	50%	5%	10%	5%
Skilled Labor	9%	73%	5%	9%	5%
Unskilled/Laborer	10%	90%			
Clerical/Administrative	16%	79%		5%	

MANUFACTURING CONT.

EDUCATION & TRAINING. Figure 55 shows the wages and the typical requirements for entry into specific occupations. Occupations that support the manufacturing industry are, for the most part, relatively low-wage occupations, with the majority of occupations with hourly earnings below the regional average of $17.57. Most of these are considered to be middle- or high-skill occupations. Middle-skill occupations are those that require a high school diploma and some training but less than a bachelor's degree. High-skill occupations require a bachelor's degree or higher. Even those jobs that do not require a high school diploma require on-the-job training.

FIGURE 55. EDUCATION & TRAINING REQUIREMENTS – MANUFACTURING OCCUPATIONS
WITH HOURLY EARNINGS FOR SELECTED PERCENTILES, INCLUDING MEDIAN (50TH)

HDO	SOC Code	Description	Hourly Earnings (percentiles)			Typical requirements for entry into occupation:		Training required for competency
			10th	50th	90th	Edu.	Exp.	
✓	53-7062	Laborers/Freight, Stock, & Material Movers, Hand	$8.52	$9.90	$18.73	Less than HS	None	Short-term OJT
✓	11-1021	General & Operations Managers	$23.75	$30.17	$75.83	Bachelor's	< 5 yrs.	None
✓	41-4012	Sales Reps., Whls. & Mfg., Exc. Tech. & Scientific	$14.82	$18.31	$42.33	HS or equiv.	None	Mod-term OJT
✓	51-2092	Team Assemblers	$10.49	$12.04	$18.14	HS or equiv.	None	Mod-term OJT
✓	49-9071	Maintenance & Repair Workers, General	$10.63	$13.20	$24.80	HS or equiv.	None	Long-term OJT
✓	51-4121	Welders, Cutters, Solderers, & Brazers	$12.61	$14.62	$24.23	HS or equiv.	None	Mod-term OJT
✓	51-1011	First-Line Supvsr., Production & Operating Workers	$14.83	$18.40	$36.73	Non-deg. award	< 5 yrs.	None
✓	43-5071	Shipping, Receiving, & Traffic Clerks	$10.09	$12.01	$20.39	HS or equiv.	None	Short-term OJT
	53-7064	Packers & Packagers, Hand	$7.92	$8.70	$13.02	Less than HS	None	Short-term OJT
✓	51-9111	Packaging & Filling Machine Workers	$10.00	$11.35	$18.28	HS or equiv.	None	Mod-term OJT
	53-7051	Industrial Truck & Tractor Operators	$11.81	$13.32	$21.03	Less than HS	None	Short-term OJT
	49-9041	Industrial Machinery Mechanics	$15.15	$17.42	$29.67	HS or equiv.	None	Long-term OJT
✓	51-9198	Helpers–Production Workers	$9.16	$10.65	$16.90	Less than HS	None	Short-term OJT
✓	51-2099	Assemblers & Fabricators, All Other	$9.88	$11.49	$19.11	HS or equiv.	None	Mod-term OJT
✓	51-4031	Cutting, Punching, & Press Machine, Metal/Plastic	$11.37	$13.26	$20.15	HS or equiv.	None	Mod-term OJT
✓	51-4041	Machinists	$13.28	$15.62	$25.07	HS or equiv.	None	Long-term OJT
✓	51-2022	Electrical & Electronic Equip. Assemblers	$8.35	$9.57	$18.95	HS or equiv.	None	Short-term OJT
	47-2211	Sheet Metal Workers	$11.53	$13.28	$25.42	HS or equiv.	None	Apprenticeship
	17-2141	Mechanical Engineers	$24.20	$29.18	$50.77	Bachelor's	None	None
	17-2112	Industrial Engineers	$20.03	$25.09	$46.53	Bachelor's	None	None
	51-3092	Food Batchmakers	$9.61	$12.56	$21.05	HS or equiv.	None	Mod-term OJT
	51-3011	Bakers	$8.82	$10.18	$19.89	Less than HS	None	Long-term OJT
	51-2031	Engine & Other Machine Assemblers	$12.92	$15.75	$25.12	HS or equiv.	None	Short-term OJT
	51-4122	Welding, Soldering, & Brazing Machine	$13.25	$15.18	$21.72	HS or equiv.	None	Mod-term OJT
	51-2041	Structural Metal Fabricators & Fitters	$12.70	$14.09	$24.70	HS or equiv.	None	Mod-term OJT

Source: TIP Strategies

MANUFACTURING CONT.

Figure 56 shows the <u>for-credit</u> completions from regional postsecondary institutions in fields of study relevant to the manufacturing industry's key occupations. Regional postsecondary institutions are graduating students with a range of awards in fields of study that support the manufacturing industry. Engineering fields of study include mechanical, industrial, and manufacturing. On the technical training side, students graduated with certificates and associate's degrees in welding as well as machine tool technicians/machinist. General business, finance, sales, and management courses support business and operations functions in the manufacturing sector.

FIGURE 56. RELEVANT COMPLETIONS – MANUFACTURING OCCUPATIONS
THREE-YEAR ANNUAL AVERAGE OF DEGREES/AWARDS CONFERRED, 2011-2013

CIP Code	Field of Study	Certificate <1 year)	Certificate (≥1 yr., <2 yr.)	Associate's*	Bachelor's	Advanced**	Annual average degrees/awards conferred (all levels)
52.0201	Business Admin./Mgmt., Gen.	0	0	73	346	77	496
14.1901	Mechanical Engineering	0	0	0	140	20	160
48.0508	Welding Tech./Welder	54	36	13	0	0	103
52.0801	Finance, General	0	0	0	82	0	82
52.0701	E-ship/Entrepreneurial Studies	25	4	5	27	0	60
52.1801	Sales & Marketing Operations, Gen.	0	2	39	0	0	41
14.3501	Industrial Engineering	0	0	0	34	6	40
52.0205	Operations Mgmt. & Supervision	0	0	0	30	0	30
48.0501	Machine Tool Tech./Machinist	0	13	9	0	0	22
52.0101	Business/Commerce, General	0	0	13	0	0	13
14.3601	Manufacturing Engineering	0	0	0	10	0	10

Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) surveys; National Crosswalk Service Center; TIP Strategies. IPEDS data include only schools eligible to participate in federal financial aid programs. Figures shown include first and second majors. *Associate's-degree-level completions include awards categorized by IPEDS as "Award of at least two but less than four academic years." **Advanced-level completions represent all awards above the bachelor's-degree level.

MANUFACTURING CONT.

RESOURCES. The resources listed below support the regional manufacturing industry.

Minn-Dak Manufacturers. The Minn-Dak Manufacturers Association (MDMA) represents a variety of regional manufacturing companies and service bureaus. The organizations mission is to contribute to the growth and prosperity of regional manufacturing. It provides members an opportunity to network as well as share information, tools, and techniques.

Impact Dakota/Dakota Manufacturers Extension Program. Impact Dakota partners with manufacturers to act as an advocate on their behalf. The organization's areas of focus are providing members with public and private resources, helping them improve processes and productivity as well as helping them develop their leadership capabilities and a skilled workforce. Since 2001, they have been involved in more than 675 improvement projects and contributed to $118 million in new investments.

Enterprise Minnesota. Enterprise Minnesota acts as an advocate on behalf of the manufacturing industry and is 1 of 60 federal Manufacturing Extension Partnerships (MEP) organizations. MEP's were chartered to help medium and small manufacturers compete and grow. Enterprise Minnesota is also part of a coalition of industry leaders, economic development entities, policy-makers, and grant organizations, which support the interests of manufacturers.

GFMEDC's Manufacturing Committee. The Manufacturing Committee is comprised of business leaders and representatives from K-12 education, higher education, and Job Service ND. The committee focuses on manufacturing trends and issues within manufacturing. The committee has planned annual Manufacturing Day tours since 2013. This event has allowed high school students to tour a diverse group of manufacturing companies in the region. The event also exposes students to the educational opportunities connected with manufacturing careers.

Sector Breakfasts (Minnesota State University Moorhead). For the past five years, MSUM and the Greater Fargo-Moorhead Economic Development Corporation have hosted breakfasts to provide business leaders an opportunity to network and collaborate about preparing graduates for the workforce. The breakfasts are centered on specific sectors, such as healthcare, finance, technology, manufacturing, STEM, and K-12 education.

Health, Tech, and Trades Career Expo. This expo provides students interested in the fields of health, technology, and trades an opportunity to take part in hands-on demonstrations and be exposed to career opportunities. The event is targeted to 9th graders in Fargo, Moorhead, West Fargo, and area rural, public and private schools, although older students are also invited.

Minnesota High Tech Association (MHTA). MHTA offers programs, educational opportunities, and events that bring together technology professionals and students to help them network and advance their careers. Their over 350 member companies, organizations, educational institutions, and government agencies represent the IT, advanced manufacturing, bio and life sciences, and clean/green/edutech sectors. Their mission is to make Minnesota one of the country's top-five technology states.

INFORMATION TECHNOLOGY

OVERVIEW. The information technology sector in the 11-county laborshed employed just under 5,000 in 2014. The sector includes two subsectors—a software and computer-related services segment and a telecommunications segment. The software segment accounts for 84 percent of the total sector.

The information technology sector grew 32 percent between 2004 and 2014. This increase was largely driven by explosive growth (51 percent) in the software sector. In contrast, the telecommunications sector contracted by almost 20 percent.

Between 2004 and 2014, the 11-county region's IT sector outperformed the regional and national economy with an average growth rate of 3.3 percent annually. The sector lagged the US IT sector, which averaged an annual growth rate of 4.2 percent annually.

The region's IT sector is anchored by Microsoft's third largest campus and includes a range of companies from healthcare IT to embedded systems.

FIGURE 58. SELECTED EMPLOYERS

Organization/Company
Appareo Systems
CoreLink Administrative Solutions
Evolution1
FBS Data Systems
Intelligent InSites
Microsoft
Myriad Mobile
Nokia HERE
Sundog
Tech Mahindra Americas

FIGURE 57. EMPLOYMENT TRENDS, 2004 TO 2014
TOTAL EMPLOYMENT IN RELATED OCCUPATIONS
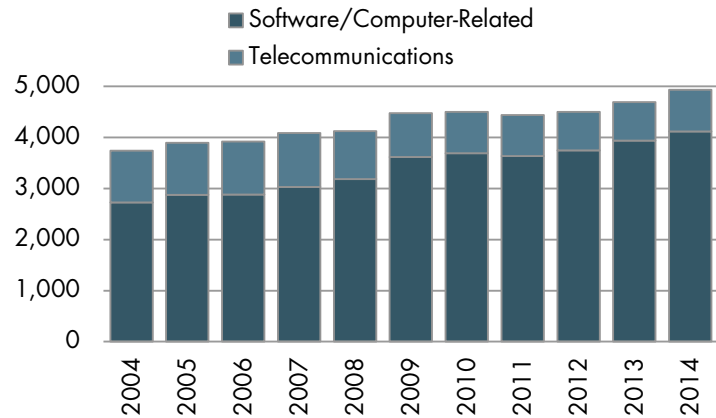
GAINS/LOSSES BY GROUP (2004 = 1.00)
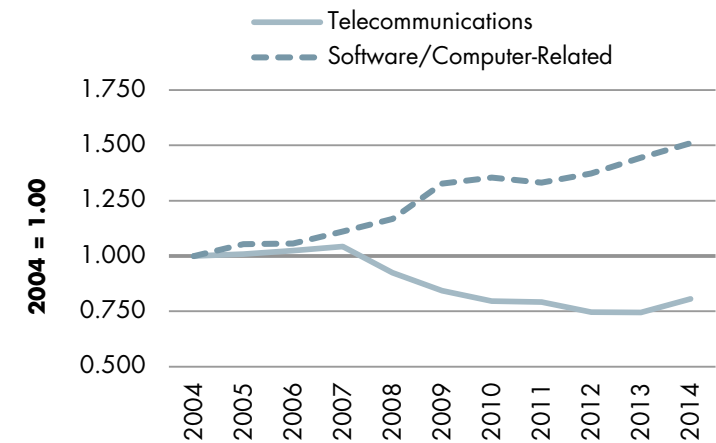
GAINS/LOSSES: REGION VERSUS US (2004 - 14)
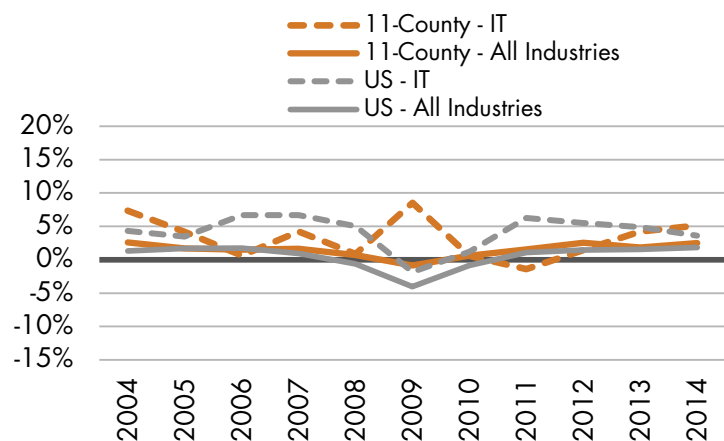
Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed.

INFORMATION TECHNOLOGY CONT.

KEY OCCUPATIONS. Figure 59 provides an overview of the occupations that support the regional information technology industry. Customer service representatives, computer user support specialists, and applications developers are the occupations with the largest share of employment in the IT sector. All but five of the occupations have median hourly earnings above the regional average.

FIGURE 59. SHARE OF EMPLOYMENT IN SELECTED INDUSTRIES – IT OCCUPATIONS
INCLUDES 2014 LOCATION QUOTIENT (LQ) AND WAGE RATE COMPARISON RELATIVE TO US

| HDO	SOC Code	Description	Jobs (11-county labor shed)	LQ (US=1.00)	Median Hourly Earnings	Relative to US (US=1.00)		Publishing NAICS 511	Telecom NAICS 517	Data Hosting NAICS 518	Computer Systems Design NAICS 5415
✓	43-4051	Customer Service Representatives	4,073	0.90	13.84	0.93		3.1%	11.6%	**10.2%**	2.7%
✓	15-1151	Computer User Support Specialists	1,115	0.99	22.20	0.99		7.6%	2.1%	7.5%	**9.1%**
✓	15-1132	Software Developers, Applications	675	0.55	27.96	0.63	×	**9.5%**	0.7%	4.1%	8.9%
✓	41-3099	Sales Reps., Services, All Other	990	0.62	18.12	0.75	×	1.7%	9.1%	4.6%	3.9%
✓	15-1133	Software Developers, Systems Software	517	0.72	30.36	0.63	×	5.2%	1.4%	3.3%	7.5%
✓	49-9052	Telecomm. Line Installers & Repairers	246	1.07	20.50	0.82		0.0%	**15.0%**	0.0%	0.1%
✓	11-1021	General & Operations Managers	3,512	0.93	40.02	0.87		2.8%	1.4%	2.8%	3.3%
✓	15-1121	Computer Systems Analysts	379	0.38	30.22	0.78	×	1.3%	0.4%	3.2%	5.4%
✓	43-9061	Office Clerks, General	6,828	1.16	12.06	0.89		2.2%	1.6%	3.2%	2.9%
✓	15-1152	Computer Network Support Specialists	314	0.95	26.39	0.91		1.1%	2.9%	2.6%	2.7%
✓	43-3031	Bookkeeping, Accounting, & Auditing Clerks	4,827	**1.48**	15.98	0.93		2.1%	1.8%	2.6%	2.3%
	49-2022	Telecomm. Equip. Install./Repair, Exc. Line Install.	149	0.37	25.22	0.96		0.0%	8.3%	0.0%	0.1%
✓	13-2011	Accountants & Auditors	2,284	0.94	24.26	0.79	×	3.4%	1.3%	1.8%	1.8%
✓	15-1131	Computer Programmers	299	0.49	25.26	0.70	×	2.3%	0.1%	1.1%	4.4%
✓	15-1142	Network & Computer Systems Admin.	365	0.53	30.97	0.87		1.0%	1.6%	2.6%	2.7%
	43-9021	Data Entry Keyers	456	1.12	13.65	0.96		0.3%	0.1%	6.5%	0.6%
✓	11-3021	Computer & Info. Systems Managers	345	0.56	46.08	0.78	×	1.9%	0.6%	1.9%	2.7%
✓	13-1199	Business Operations Specialists, All Other	1,281	0.72	25.53	0.80	×	1.2%	2.8%	1.5%	1.3%
✓	15-1134	Web Developers	194	0.71	19.37	0.70	×	0.8%	0.1%	1.7%	3.1%
✓	43-1011	First-Line Supvsr., Office & Admin. Support	2,101	0.81	21.10	0.87		0.9%	1.5%	2.5%	0.7%
✓	13-1161	Market Research Analysts & Mktng. Specialists	548	0.64	22.66	0.78	×	2.3%	0.7%	1.0%	1.4%
✓	43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec	3,841	0.81	15.59	0.99		1.2%	0.8%	1.2%	1.5%
✓	41-4011	Sales Reps., Whls. & Mfg., Tech. & Scientific	377	0.54	35.10	0.99		2.3%	0.4%	0.6%	1.4%
✓	43-5061	Production, Planning, & Expediting Clerks	547	1.02	18.01	0.84		0.6%	1.7%	1.7%	0.4%
✓	13-1111	Management Analysts	579	0.43	27.81	0.76	×	1.3%	0.5%	1.2%	1.4%

Note: *Occupation's share of total employment in selected industry segments* spans the Publishing, Telecom, Data Hosting, and Computer Systems Design columns.

Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

Notes: ✓ Indicates occupation was identified as a high demand occupation (HDO), see page 52. LQs greater than 1.25 are highlighted, as are wage rates above the regional average ($17.57). Marker indicates median hourly wages ≥110% of US (●) or ≤80% of US (×).

INFORMATION TECHNOLOGY CONT.

DEMAND. Figure 60 details occupational demand and selected demographic characteristics for each of the key occupations that support the IT sector. The IT-specific occupations that are highest in demand are computer user support specialists, applications software developers, computer systems analysts, systems software developers, and computer programmers. None of the IT-specific occupations are facing the issue of an aging workforce. However, the business and operations occupations that support the sector are in high demand and many are facing an aging workforce.

FIGURE 60. DEMAND FACTORS & DEMOGRAPHICS – IT OCCUPATIONS
INCLUDES ESTIMATED ANNUAL OPENINGS, 2014 TO 2019

HDO	SOC Code	Description	Jobs (11-county laborshed)	Est. Annual Openings (2014-2019)	% of openings due to: Net change	Replacement	% of the workforce: Age 55+ Years	Age 65+ Years
✓	43-9061	Office Clerks, General	6,828	203	26%	74%	23% ◄	5% ◄
✓	43-4051	Customer Service Representatives	4,073	159	28%	72%	17%	3%
✓	11-1021	General & Operations Managers	3,512	132	47%	53%	20%	4%
✓	43-6014	Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	3,841	109	53%	47%	24% ◄	6% ◄
✓	43-3031	Bookkeeping, Accounting, & Auditing Clerks	4,827	108	57%	43%	23% ◄	5% ◄
✓	13-2011	Accountants & Auditors	2,284	105	31%	69%	21% ◄	4%
✓	43-1011	First-Line Supvsr., Office & Admin. Support	2,101	95	44%	56%	20% ◄	4%
✓	41-3099	Sales Reps., Services, All Other	990	46	37%	63%	16%	3%
✓	15-1151	Computer User Support Specialists	1,115	41	54%	46%	16%	3%
✓	13-1199	Business Operations Specialists, All Other	1,281	37	50%	50%	23% ◄	4%
✓	15-1132	Software Developers, Applications	675	34	71%	29%	11%	2%
✓	13-1161	Market Research Analysts & Mktng. Specialists	548	27	69%	31%	16%	3%
✓	15-1121	Computer Systems Analysts	379	25	73%	27%	14%	1%
✓	15-1133	Software Developers, Systems Software	517	25	70%	30%	11%	1%
✓	43-5061	Production, Planning, & Expediting Clerks	547	22	35%	65%	19%	3%
✓	13-1111	Management Analysts	579	20	39%	61%	20%	4%
✓	15-1131	Computer Programmers	299	18	52%	48%	12%	2%
✓	41-4011	Sales Reps., Whls. & Mfg., Tech. & Scientific	377	18	53%	47%	17%	3%
✓	11-3021	Computer & Info. Systems Managers	345	15	65%	35%	15%	1%
✓	15-1142	Network & Computer Systems Admin.	365	15	57%	43%	15%	1%
✓	15-1134	Web Developers	194	12	71%	29%	13%	3%
✓	49-9052	Telecomm. Line Installers & Repairers	246	9	25%	75%	14%	2%
✓	15-1152	Computer Network Support Specialists	314	9	38%	62%	15%	2%
	43-9021	Data Entry Keyers	456	5	-	100%	18%	3%
	49-2022	Telecomm. Equip. Install./Repair, Exc. Line Install.	149	4	39%	61%	20% ◄	3%

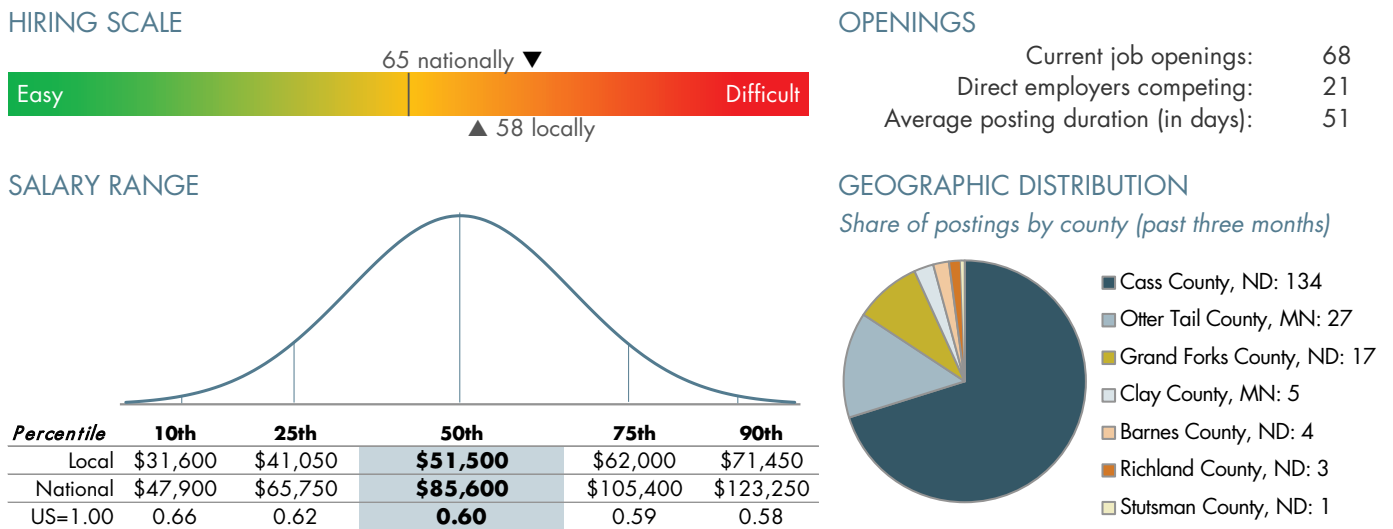Source: EMSI 2014.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

Notes: ★ Indicates occupation was identified as a high demand occupation (HDO), see page 52. Annual openings are an estimate of job openings due to net change in employment and replacement needs (e.g., turnover, retirement). ◄ Indicates significant share of workforce is reaching retirement age (defined here as ≥ 25% age 55+ and/or ≥ 5% age 65+).

INFORMATION TECHNOLOGY CONT.

REAL-TIME LABOR MARKET INFORMATION. Figure 61 shows a summary of online job postings in the region for information technology jobs. Currently, there are 68 unique job postings for the industry posted by 21 employers. The vast majority are for engineering jobs in Cass County. The average salary posted is 60 percent of the US average. Structured Query Language, technical support, and quality assurance are the top skills listed.

FIGURE 61. SUMMARY FOR INFORMATION TECHNOLOGY JOB POSTINGS

HIRING SCALE

65 nationally ▼

Easy — Difficult

▲ 58 locally

OPENINGS

Current job openings:	68
Direct employers competing:	21
Average posting duration (in days):	51

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$31,600	$41,050	**$51,500**	$62,000	$71,450
National	$47,900	$65,750	**$85,600**	$105,400	$123,250
US=1.00	0.66	0.62	**0.60**	0.59	0.58

GEOGRAPHIC DISTRIBUTION

Share of postings by county (past three months)

- Cass County, ND: 134
- Otter Tail County, MN: 27
- Grand Forks County, ND: 17
- Clay County, MN: 5
- Barnes County, ND: 4
- Richland County, ND: 3
- Stutsman County, ND: 1

TOP 10 COUNTS *(based 191 postings past three months)*

Employers	# postings
Microsoft	31
Arvig Enterprises	23
Evolution1	21
Verizon	20
Midcontinent Communications	15
Kronos	14
CoreLink Administrative Solutions	9
NAVTEQ	7
SEI	5
Eagle Creek Software Services	4

Occupations (SOC-code based)	# postings
Retail Salespersons	20
Computer User Support Specialists	18
Software Developers, Applications	18
Network and Computer Systems Administrators	13
Computer Occupations, All Other	12
Customer Service Representatives	11
Computer Systems Analysts	11
First-Line Supv. of Office & Admin. Support Workers	6
Computer and Information Systems Managers	5
General and Operations Managers	4

Hard skills	# postings
Structured Query Language	30
Technical Support	27
Quality Assurance	17
C-Sharp	16
Software Development	15
Microsoft .NET Framework	13
Microsoft SQL Server	13
Application Development	11
Java	10
Management Information Systems	10

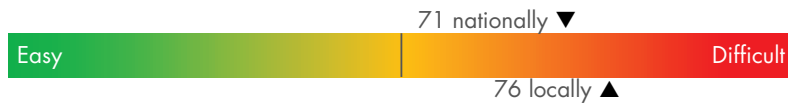| Certifications	# postings
Driver's License	10
Microsoft Certified Systems Engineer	6
Microsoft Certified Professional Developer	3
Telecommunications	3
ITIL Foundation Certification (v3)	2
Society of Cable Telecommunication Engineers	2
OSHA Certification	2
Cisco CCDA	1
Cisco Certified Network Associate	1
Microsoft Certified Professional	1

Source: Wanted Analytics; TIP Strategies

INFORMATION TECHNOLOGY CONT.

FIGURE 62. REAL-TIME LMI, SELECTED IT OCCUPATIONS

15-1151 COMPUTER USER SUPPORT SPECIALISTS

HIRING SCALE

71 nationally ▼

Easy — Difficult

76 locally ▲

OPENINGS

Current job openings:	163
Direct employers competing:	71
Average posting duration (in days):	44

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$22,450	$28,200	$34,650	$41,050	$46,850
National	$27,150	$34,700	$43,050	$51,450	$59,000
US=1.00	0.83	0.81	0.80	0.80	0.79

TOP SKILLS

Technical support | Preventative maintenance inspections | Structured query language | WordPress | Firewall | File transfer protocol | Adobe LifeCycle ES | Linux | PHP

15-1132 SOFTWARE DEVELOPERS, APPLICATIONS

HIRING SCALE

74 nationally ▼

Easy — Difficult

55 locally ▲

OPENINGS

Current job openings:	53
Direct employers competing:	21
Average posting duration (in days):	51
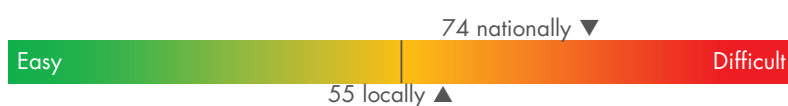
SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$60,950	$70,700	$81,550	$92,350	$102,150
National	$80,650	$93,050	$106,850	$120,600	$133,050
US=1.00	0.76	0.76	0.76	0.77	0.77

TOP SKILLS

Structured query language | Software development | Relational database management system | Linux | Application development | Python | Java EE | SDLC | Hadoop

15-1142 NETWORK AND COMPUTER SYSTEMS ADMINISTRATORS

HIRING SCALE

81 nationally ▼

Easy — Difficult

84 locally ▲

OPENINGS

Current job openings:	52
Direct employers competing:	31
Average posting duration (in days):	47

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
Local	$43,800	$50,800	$58,650	$66,450	$73,500
National	$57,900	$70,250	$83,950	$97,700	$110,050
US=1.00	0.76	0.72	0.70	0.68	0.67

TOP SKILLS

UNIX | Transmission Control Protocol | Network engineering | Firewall | Dynamic Host Configuration Protocol | VMware | Network security | Wireshark | Network routing protocol

15-1199 COMPUTER OCCUPATIONS, ALL OTHER

HIRING SCALE

89 nationally ▼

Easy — Difficult

78 locally ▲

OPENINGS

Current job openings:	93
Direct employers competing:	27
Average posting duration (in days):	41

SALARY RANGE

Percentile	10th	25th	50th	75th	90th
	$59,700	$70,000	$81,400	$92,850	$103,100	$59,700
	$72,850	$87,850	$104,500	$121,150	$136,150	$72,850
	0.82	0.80	0.78	0.77	0.76	0.82

TOP SKILLS

Enterprise resource planning software | Management information systems | Multilingual | Epicor | Web services | Service-oriented architecture | Project management lifecycle
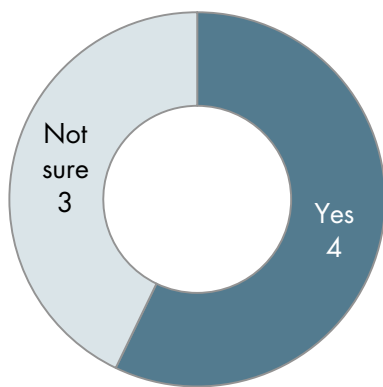
Source: Wanted Analytics; TIP Strategies
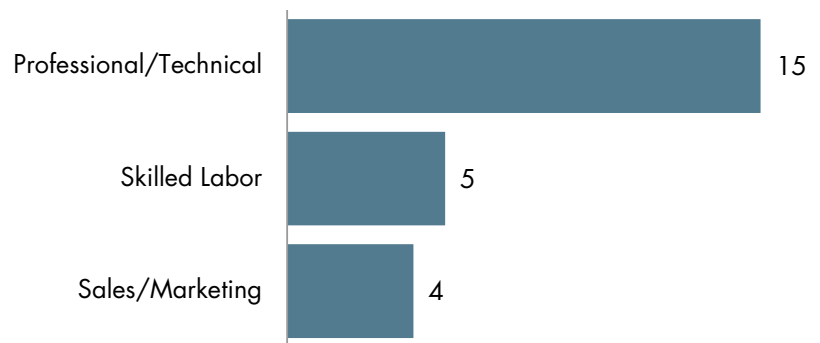
INFORMATION TECHNOLOGY CONT.

SURVEY. Seven information technology firms participated in the survey. These employers reported about 2,100 full-time and contract employees. Of these participants, four plan to hire additional employees over the next two years. These employers estimated that they will add about 24 workers total. Most respondents reported being able to fill positions within three months, though sales/marketing, professional/technical, and management take four to six months for some employers.

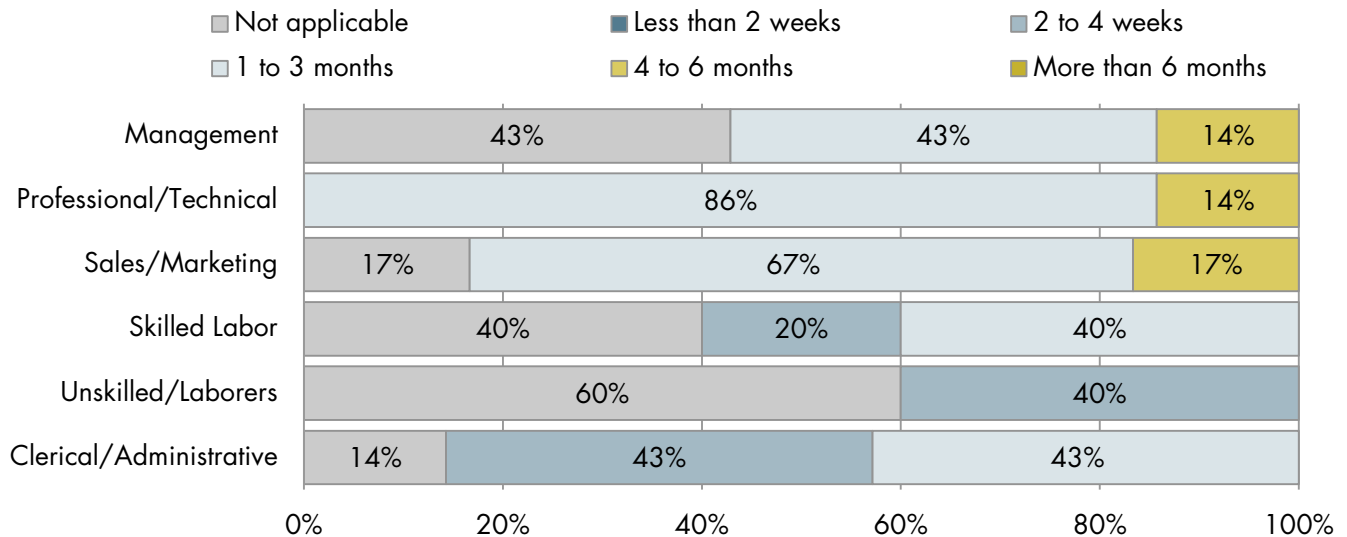### FIGURE 63. FINDINGS FROM EMPLOYER SURVEY – IT FIRMS

Do you plan to hire additional employees at your Fargo-Moorhead location(s) in the next 12 to 24 months?

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

Not sure 3

Yes 4

Professional/Technical 15

Skilled Labor 5

Sales/Marketing 4

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

Legend: Not applicable | Less than 2 weeks | 2 to 4 weeks | 1 to 3 months | 4 to 6 months | More than 6 months

| Classification		
Management	43% / 43% / 14%	
Professional/Technical	86% / 14%	
Sales/Marketing	17% / 67% / 17%	
Skilled Labor	40% / 20% / 40%	
Unskilled/Laborers	60% / 40%	
Clerical/Administrative	14% / 43% / 43%	

INFORMATION TECHNOLOGY CONT.

FIGURE 64. FINDINGS FROM EMPLOYER SURVEY– INFORMATION TECHNOLOGY FIRMS

Four respondents had positions that they could not fill. These positions included an IT infrastructure architect, skilled installers, and general technical skills.

Most respondents reported difficulty recruiting for certain occupations. These occupations included various sales positions, middle management positions, and technical skills such as Cobol, Ruby on Rails, and Web Systems.

Respondents report that they most often rely on the local workforce for recruiting workers for clerical and skilled labor positions. For management positions, most respondents recruit outside of the state. For professional/technical positions, most employers can find the talent they need locally, but one-third reported recruiting outside of the metro area.

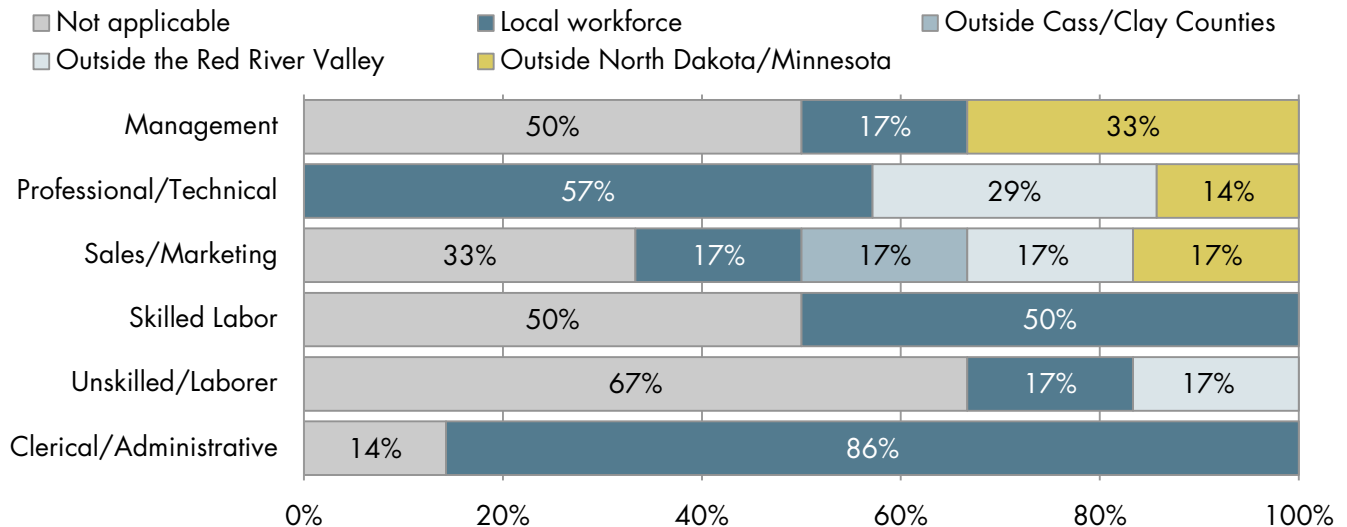*Are there specific positions which you have been unable to fill at all?*
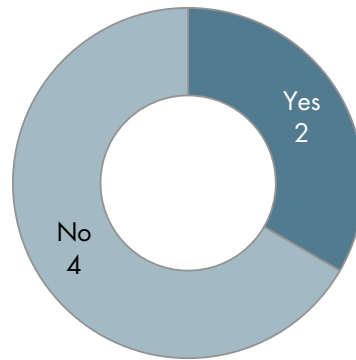
| IT Infrastructure Architect |
| Technical Skills |
| Skilled Installer |

Yes 2 / No 4

Which occupations are difficult to recruit in your industry?

Account Managers/Sales	Principal Solutions Engineer
Cobol Developers	Project Managers
Engineering Managers	Sales/Technical
Engineering Systems Designers	Software: Ruby on Rails
Experienced Installation & Support Engineers	Software: Web Systems
Outside Sales	Technician/Communications

When hiring, which geographic area is typically used to recruit workers?

Legend:
- Not applicable
- Local workforce
- Outside Cass/Clay Counties
- Outside the Red River Valley
- Outside North Dakota/Minnesota

Management	50%	17%			33%
Professional/Technical	57%			29%	14%
Sales/Marketing	33%	17%	17%	17%	17%
Skilled Labor	50%	50%			
Unskilled/Laborer	67%	17%	17%		
Clerical/Administrative	14%	86%			

INFORMATION TECHNOLOGY CONT.

EDUCATION & TRAINING. Figure 65 shows the wages, and the typical requirements for entry into specific occupations. For the most part, occupations that support the IT industry are relatively high wage, with even the bottom 10th percentile making hourly earnings more than the regional median of $17.57. Almost all of these are considered to be middle- or high-skill occupations. Middle-skill occupations are those that require a high school diploma and some training but less than a bachelor's degree. High-skill occupations require a bachelor's degree or higher. Even those jobs that do not require a high school diploma require short to moderate-term on-the-job training.

FIGURE 65. EDUCATION & TRAINING REQUIREMENTS – IT OCCUPATIONS
WITH HOURLY EARNINGS FOR SELECTED PERCENTILES, INCLUDING MEDIAN (50TH)

HDO	SOC Code Description	Hourly Earnings (percentiles)			Typical requirements for entry into occupation:		Training Required For Competency
		10th	50th	90th	Edu.	Exp.	
✓	43-9061 Office Clerks, General	$8.34	$9.62	$17.40	HS or equiv.	None	Short-term OJT
✓	43-4051 Customer Service Representatives	$10.19	$12.06	$21.13	HS or equiv.	None	Short-term OJT
✓	11-1021 General & Operations Managers	$23.75	$30.17	$75.83	Bachelor's	< 5 yrs.	None
✓	43-6014 Secretaries/Admin. Asst., Exc. Legal, Med., & Exec.	$11.44	$13.17	$21.59	HS or equiv.	None	Short-term OJT
✓	43-3031 Bookkeeping, Accounting, & Auditing Clerks	$11.04	$13.17	$22.62	HS or equiv.	None	Mod-term OJT
✓	13-2011 Accountants & Auditors	$16.31	$19.57	$37.80	Bachelor's	None	None
✓	43-1011 First-Line Supvsr., Office & Admin. Support	$13.68	$16.85	$34.19	HS or equiv.	< 5 yrs.	None
✓	41-3099 Sales Reps., Services, All Other	$11.79	$13.43	$38.54	HS or equiv.	None	Short-term OJT
✓	15-1151 Computer User Support Specialists	$15.51	$18.31	$30.79	Some college	None	Mod-term OJT
✓	13-1199 Business Operations Specialists, All Other	$15.39	$20.09	$40.34	HS or equiv.	None	None
✓	15-1132 Software Developers, Applications	$19.93	$23.67	$43.21	Bachelor's	None	None
✓	13-1161 Market Research Analysts & Mktng. Specialists	$14.67	$18.41	$35.09	Bachelor's	None	None
✓	15-1121 Computer Systems Analysts	$22.52	$25.90	$42.48	Bachelor's	None	None
✓	15-1133 Software Developers, Systems Software	$16.84	$24.77	$43.38	Bachelor's	None	None
✓	43-5061 Production, Planning, & Expediting Clerks	$11.30	$15.25	$26.35	HS or equiv.	None	Mod-term OJT
✓	13-1111 Management Analysts	$19.69	$23.46	$41.53	Bachelor's	< 5 yrs.	None
✓	15-1131 Computer Programmers	$17.76	$20.98	$35.46	Bachelor's	None	None
✓	41-4011 Sales Reps., Whls. & Mfg., Tech. & Scientific	$17.58	$24.58	$64.16	Bachelor's	None	Mod-term OJT
✓	11-3021 Computer & Info. Systems Managers	$32.60	$38.58	$71.15	Bachelor's	5+ yrs.	None
✓	15-1142 Network & Computer Systems Admin.	$21.72	$25.67	$43.47	Bachelor's	None	None
✓	15-1134 Web Developers	$14.23	$16.47	$31.45	Associate's	None	None
✓	49-9052 Telecomm. Line Installers & Repairers	$14.28	$16.95	$30.92	HS or equiv.	None	Long-term OJT
✓	15-1152 Computer Network Support Specialists	$16.59	$19.89	$38.08	Associate's	None	None
	43-9021 Data Entry Keyers	$9.93	$11.48	$19.53	HS or equiv.	None	Mod-term OJT
	49-2022 Telecomm. Equip. Install./Repair, Exc. Line Install.	$17.07	$20.58	$31.35	Non-deg. award	None	Mod-term OJT

Source: TIP Strategies

INFORMATION TECHNOLOGY CONT.

Figure 66 shows the for-credit completions from regional postsecondary institutions in fields of study relevant to the IT industry's key occupations. Among the IT-specific fields of study, computer science is the most popular, with 100 students, on average, earning a bachelor's or advanced degree in the field. Just over 40 students graduate on average with an associate's or bachelor's degree in general computer and information sciences. About 30 students, on average, graduate with a certificate or associate's degree in computer systems networking and telecommunications. Less than 20 students, on average, graduate from programs in information technology, web design, computer software engineering, information sciences, and general computer engineering.

FIGURE 66. RELEVANT COMPLETIONS – IT OCCUPATIONS
THREE-YEAR ANNUAL AVERAGE OF DEGREES/AWARDS CONFERRED, 2011-2013

CIP Code	Field of Study	Certificate <1 year)	Certificate (≥1 yr., <2 yr.)	Associate's*	Bachelor's	Advanced**	Annual average degrees/awards conferred (all levels)
52.0201	Business Admin. & Mgmt., General	0	0	73	346	77	496
52.0301	Accounting	0	1	39	208	2	251
52.1401	Marketing/Marketing Mgmt., General	0	1	4	117	0	122
11.0701	Computer Science	0	0	0	63	37	100
52.0801	Finance, General	0	0	0	82	0	82
52.0701	E-ship/Entrepreneurial Studies	25	4	5	27	0	60
52.1201	Mgmt. Info. Systems, General	3	1	14	37	0	55
52.0302	Acct. Tech./Technician & Bookkeeping	22	4	21	0	0	47
52.0402	Executive Asst./Executive Secretary	37	8	0	0	0	45
11.0101	Computer & Info. Sciences, General	2	2	11	26	0	41
11.0901	Comp. Systems Networking & Telecomms.	17	4	10	0	0	31
52.0205	Operations Mgmt. & Supervision	0	0	0	30	0	30
44.0401	Public Admin.	0	0	0	5	23	29
52.0401	Adm. Asst. & Secretarial Science, General	1	5	20	0	0	26
11.0103	Info. Tech.	0	0	20	5	0	25
11.0801	Web & Digital/Multimedia & Info. Design	0	8	17	0	0	25
14.0903	Computer Software Engineering	0	0	0	0	16	16
11.0401	Info. Science/Studies	0	0	0	15	0	15
52.0204	Office Mgmt. & Supervision	0	0	13	1	0	14
52.0101	Business/Commerce, General	0	0	13	0	0	13
51.0705	Medical Office Mgmt./Admin.	0	0	11	0	0	11
14.0901	Computer Engineering, General	0	0	0	11	0	11

Source: National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) surveys; National Crosswalk Service Center; TIP Strategies. IPEDS data include only schools eligible to participate in federal financial aid programs. Figures shown include first and second majors. *Associate's-degree-level completions include awards categorized by IPEDS as "Award of at least two but less than four academic years." **Advanced-level-completions represent all awards above the bachelor's-degree level.

INFORMATION TECHNOLOGY CONT.

RESOURCES. The resources listed below support the regional information technology industry.

Information Technology Council of North Dakota (ITCND). Founded in 2000, the ITCND was created by business, government, and education leaders with the goal of improving the use, growth, and development of information technology in the state. The Council represents nearly 100 IT-related software developers, telecommunications companies, Internet providers and content developers, systems integrators, educational institutions, state agencies, and manufacturers. ITCND is the leading advocate for the information technology sector in the state. They promote the sector through industry publications and career awareness efforts, working with economic development professionals and government leaders, and providing networking opportunities.

Heartland Technology Alliance (HTA). HTA is a resource to business, chambers, nonprofits, consumers, and policy makers. The Alliance focuses on technology-related issues, particularly as they relate to job creation, innovation, educational opportunities, entrepreneurship, and the business climate. HTA's area of focus is the Upper Midwest, working on behalf of 11 million citizens in five states: North Dakota; South Dakota; Nebraska; Minnesota; and Iowa.

Minnesota High Tech Association (MHTA). MHTA offers programs, educational opportunities, and events that bring together technology professionals and students to help them network and advance their careers. Their over 350 member companies, organizations, educational institutions, and government agencies represent the IT, advanced manufacturing, bio and life sciences, and clean/green/edutech sectors. Their mission is to make Minnesota one of the country's top-five technology states.

Emerging Prairie. Emerging Prairie provides entrepreneurs with news, editorials, resources, and events via digital-media, focusing on the greater Fargo, North Dakota area. Their online platform provides resources to help entrepreneurs grow and their events are geared toward using connectivity and creativity to strengthen the community.

Sector Breakfasts (Minnesota State University Moorhead). For the past five years, MSUM and the Greater Fargo-Moorhead Economic Development Corporation have hosted breakfasts to provide business leaders an opportunity to network and collaborate about preparing graduates for the workforce. The breakfasts are centered on specific sectors, such as healthcare, finance, technology, manufacturing, STEM, and K-12 education.

Health, Tech, and Trades Career Expo. This expo provides students interested in the fields of health, technology, and trades an opportunity to take part in hands-on demonstrations and be exposed to career opportunities. The event is targeted to 9th graders in Fargo, Moorhead, West Fargo, and area rural, public and private schools, although older students are also invited.
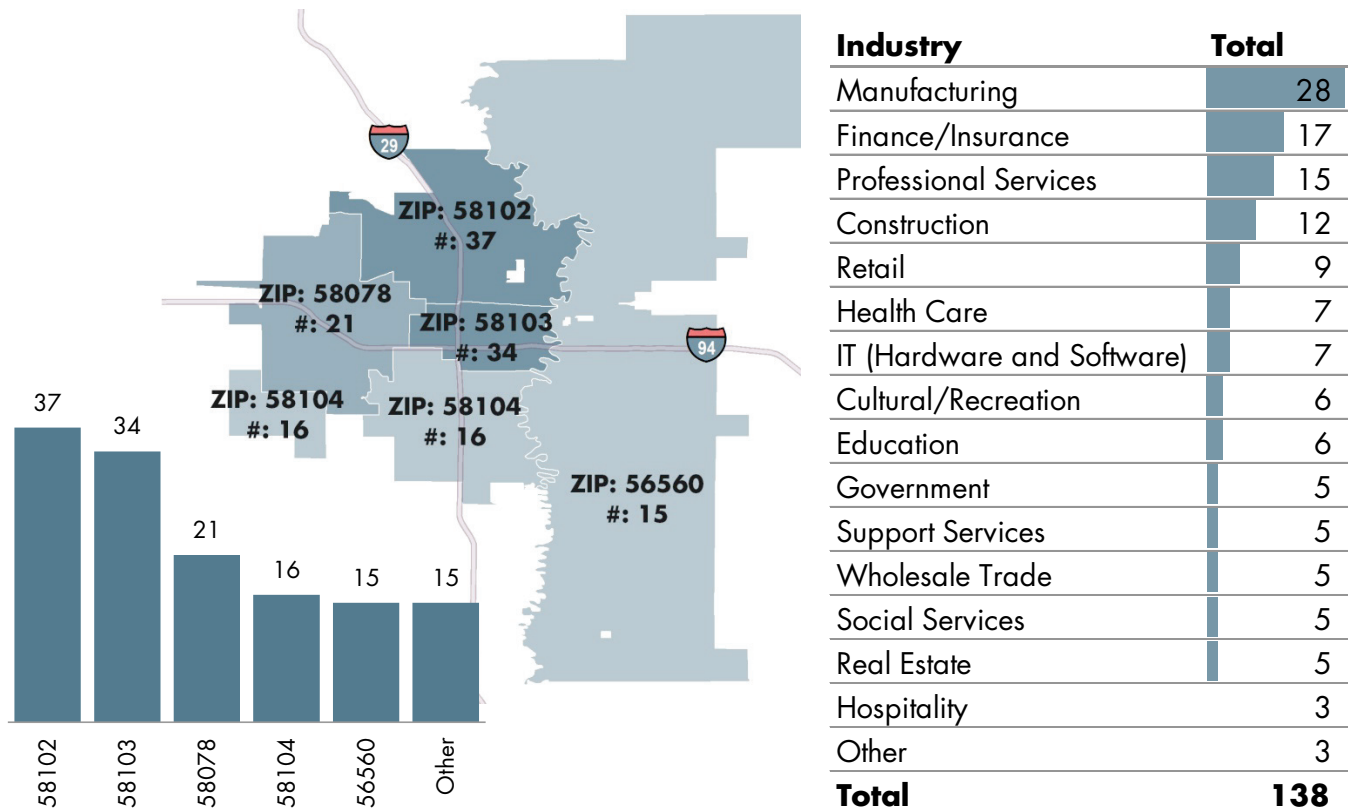
APPENDIX C: EMPLOYER SURVEY

In order to further understand employer's hiring concerns, TIP conducted an online survey of the region's employers in the spring of 2015. In all, 138 employers responded, representing over 30,000 workers. They were asked to describe their business and workforce, their hiring plans and recruiting methods, and their employee training sources. At the same time, they were also asked to provide feedback about the region's talent pool and training programs.

RESPONDENT PROFILE, EMPLOYMENT, & WAGES. The majority of respondents (87) were from the primary zip codes in Fargo. However, 21 respondents were located in West Fargo and 15 in Moorhead. Fifteen respondents (other) were from outlying zip codes, with the most distant including one company each near Fergus Falls, Wahpeton, and Hunter. All respondents fell within the defined laborshed.

Over fifteen different industries were represented by respondents and over a fifth described themselves as manufacturers. The next highest represented industries were finance/insurance, professional services, and construction, making up around 10 percent of respondents each.

FIGURE 67. SURVEY RESPONDENTS BY ZIP CODE AND BY INDUSTRY

Industry	Total
Manufacturing	28
Finance/Insurance	17
Professional Services	15
Construction	12
Retail	9
Health Care	7
IT (Hardware and Software)	7
Cultural/Recreation	6
Education	6
Government	5
Support Services	5
Wholesale Trade	5
Social Services	5
Real Estate	5
Hospitality	3
Other	3
Total	**138**

Source: TIP Strategies Employer Survey

Of over 30,000 total employees, over 30 percent were employed in the healthcare sector and over half of those were reported by a single medical facility. Manufacturing represented over 20 percent of companies and 14 percent of workers. The finance/insurance and cultural/recreation industries each had workers representing more than 10 percent of the total.

Two industries, professional services and construction, had a relatively high number of firms (over 10) and a lower number of employees (between 500 and 1000); indicating a smaller average firm size. One support services organization specializing in providing temporary staff and contract labor reported 1,500 contract/temporary staff. IT (Hardware and Software) was another industry with a high level of contract/temporary workers (over 40 percent).

FIGURE 68. NUMBER OF WORKERS REPORTED

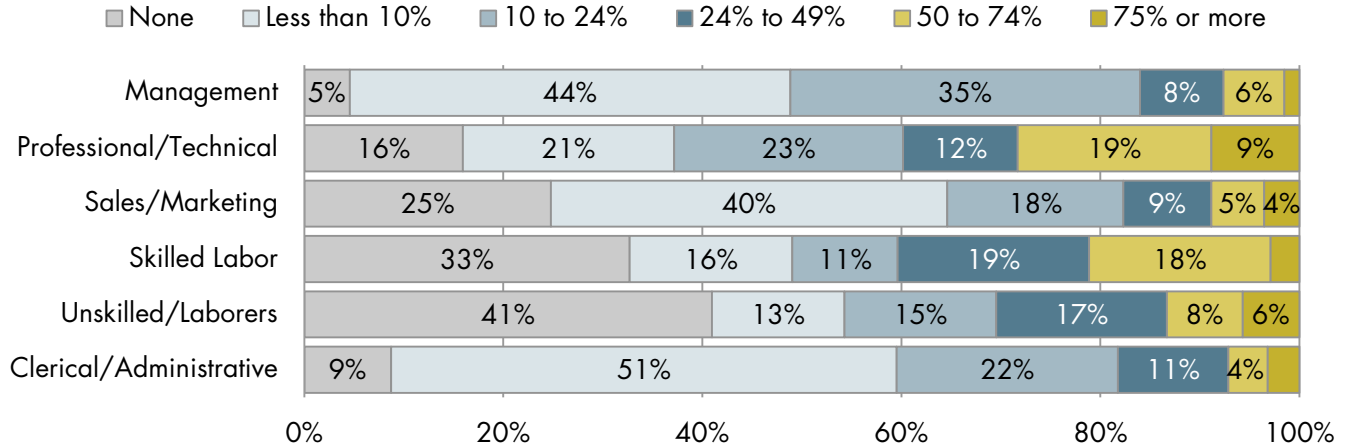| Industry	Companies	Full-time	Part-time	Contract/ Temporary	Employees
Healthcare	7	7,720	2,240	39	9,999
Manufacturing	28	4,064	159	183	4,406
Finance/Insurance	17	2,661	206	278	3,145
Cultural/Recreation	6	354	2,780	6	3,140
IT (Hardware and Software)	7	1,275	3	882	2,160
Government	5	1,326	105	124	1,555
Hospitality	3	231	1,320	-	1,551
Support Services	5	45	5	1,500	1,550
Education	6	727	309	200	1,236
Professional Services	15	737	32	197	966
Construction	12	538	23	1	562
Wholesale Trade	5	300	68	30	398
Retail	9	247	60	12	319
Utilities	1	86	4	5	95
Social Services	5	39	15	-	54
Real Estate	5	32	13	-	45
Other	2	38	2	-	40
Total	**138**	**20,420**	**7,344**	**3,457**	**31,221**

Source: TIP Strategies Employer Survey

The employment categories most represented are professional/technical and skilled labor. Almost a third of respondents described at least half of their workforce as being represented by the professional/technical category.

Almost half of respondents described at least a quarter of their workforce as being management staff. Management staff were more likely to be represented by a lower share of the workforce, although 95 percent of companies reported having at least some management positions. The sales/marketing, clerical/administrative and unskilled labor categories were less prevalently reported. Over 60 percent of firms reported that less than a tenth of their

workforce was in sales/marketing, and the same applied to clerical/administration. Forty-one percent of firms reported having no unskilled/laborer employees.
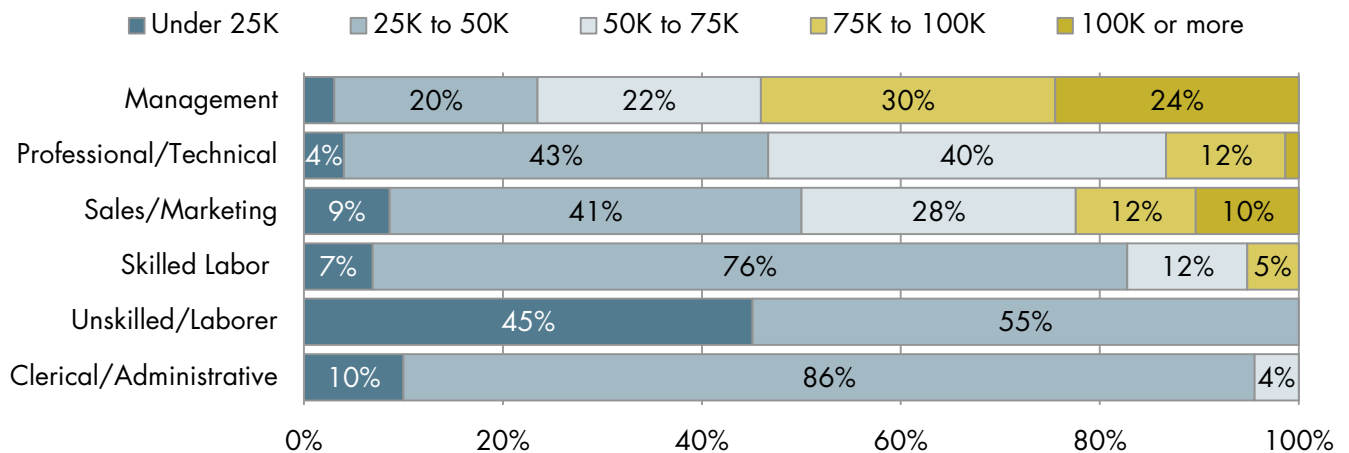
FIGURE 69. EMPLOYMENT CATEGORIES

Legend: None | Less than 10% | 10 to 24% | 24% to 49% | 50 to 74% | 75% or more

Category	None	Less than 10%	10 to 24%	24% to 49%	50 to 74%	75% or more
Management	5%	44%	35%	8%	6%	
Professional/Technical	16%	21%	23%	12%	19%	9%
Sales/Marketing	25%	40%	18%	9%	5%	4%
Skilled Labor	33%	16%	11%	19%	18%	
Unskilled/Laborers	41%	13%	15%	17%	8%	6%
Clerical/Administrative	9%	51%	22%	11%	4%	

Source: TIP Strategies Employer Survey

Respondents were more likely to report management and sales/marketing staff as having the highest salaries, with over half of firms stating that their management staff earned over $75,000 per year. Professional/technical and sales/marketing were similar, in that over half of firms reported salary levels of at least $50,000 per year.

A large majority of respondents (over 95 percent) put labor (skilled and unskilled) and clerical/administrative salaries as under $75,000 per year. Salary levels were most likely to be lowest for unskilled/laborer positions.

FIGURE 70. AVERAGE SALARIES PAID BY CLASSIFICATION

Legend: Under 25K | 25K to 50K | 50K to 75K | 75K to 100K | 100K or more

Category	Under 25K	25K to 50K	50K to 75K	75K to 100K	100K or more
Management		20%	22%	30%	24%
Professional/Technical	4%	43%	40%	12%	
Sales/Marketing	9%	41%	28%	12%	10%
Skilled Labor	7%	76%	12%	5%	
Unskilled/Laborer	45%	55%			
Clerical/Administrative	10%	86%	4%		

Source: TIP Strategies Employer Survey

RECRUITING & HIRING. Nearly two-thirds of firms planned on hiring additional employees in the next 12 to 24 months, a trend that was largely consistent across the industries. Sectors which indicated otherwise include construction and healthcare, for which all but a single respondent planned to hire additional employees. Overall, about a fourth of respondents did not plan on hiring additional employees.

FIGURE 71. HIRING PLANS FOR NEXT 12 TO 24 MONTHS
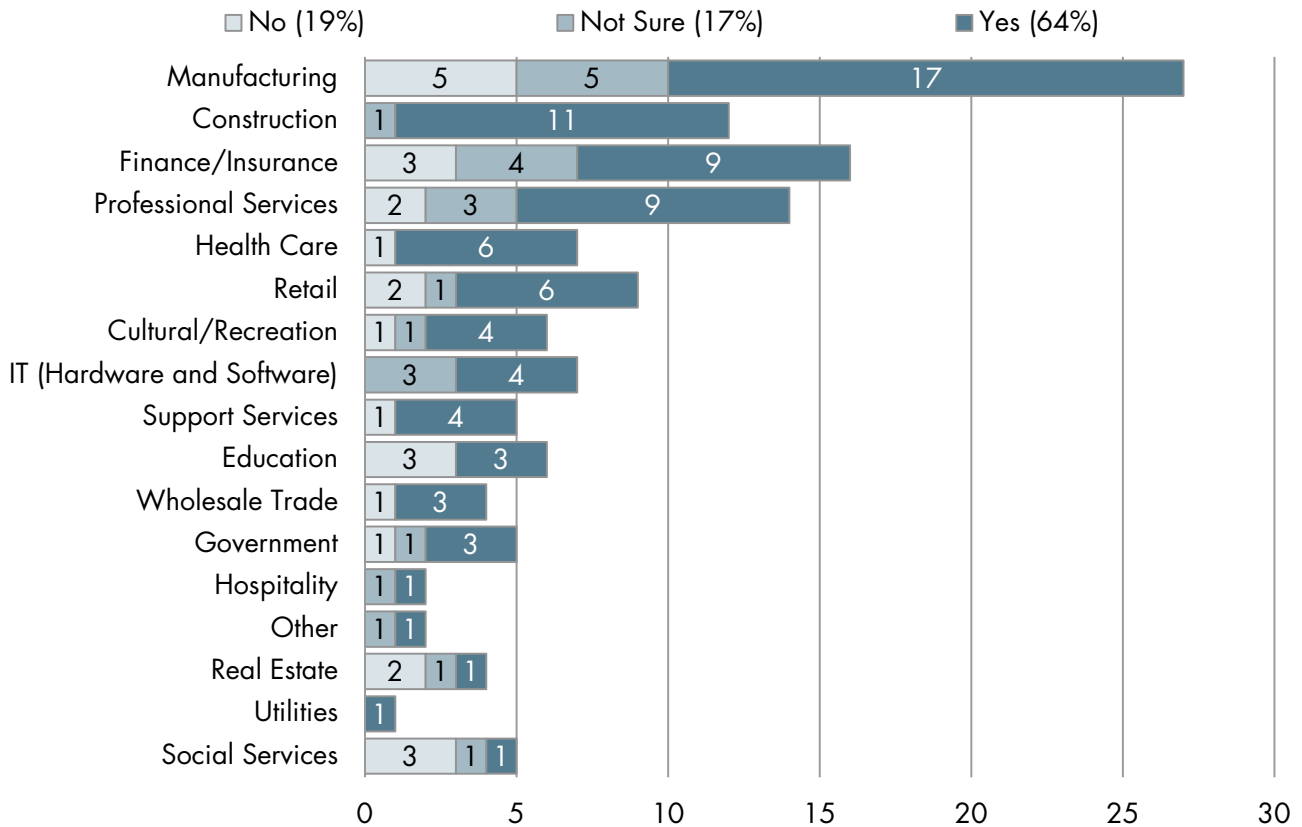
Source: TIP Strategies Employer Survey

When asked about the total number of staff respondents planned on hiring, the two categories with the highest anticipated future demand were unskilled/laborer and skilled labor positions. The third classification with at least 100 anticipated future hires was professional/technical.

FIGURE 72. NEW HIRE WORKER COUNT BY CATEGORY
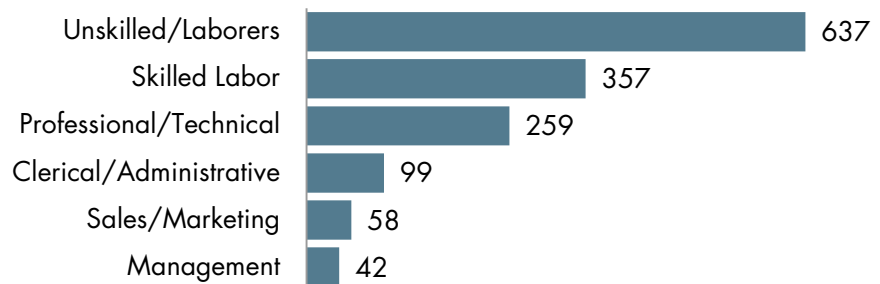
Source: TIP Strategies Employer Survey

Turnover is defined as the number of total workers who leave divided by the average annual employment. This can help pinpoint areas which have a less stable workforce. This may contribute to higher employee demand, therefore contributing to a more competitive job market. Unskilled/laborer is one classification for which a third of respondents reported an average annual turnover of more than 24 percent. This is also the classification for which firms anticipated requiring the most new hires in the next 12 to 24 months. Otherwise, half of respondents reported less than 10 percent turnover in the remaining categories.

FIGURE 73. AVERAGE ANNUAL TURNOVER

Legend: ☐ Not applicable ■ Less than 10% ☐ 10 to 24% ☐ 24 to 49% ☐ 50% or more

Category	Not applicable	Less than 10%	10 to 24%	24 to 49%	50% or more
Management	23%	72%			
Professional/Technical	28%	57%	12%		
Sales/Marketing	34%	55%	6%		
Skilled Labor	38%	38%	17%	7%	
Unskilled/Laborers	41%	25%	13%	16%	5%
Clerical/Administrative	22%	65%	8%		
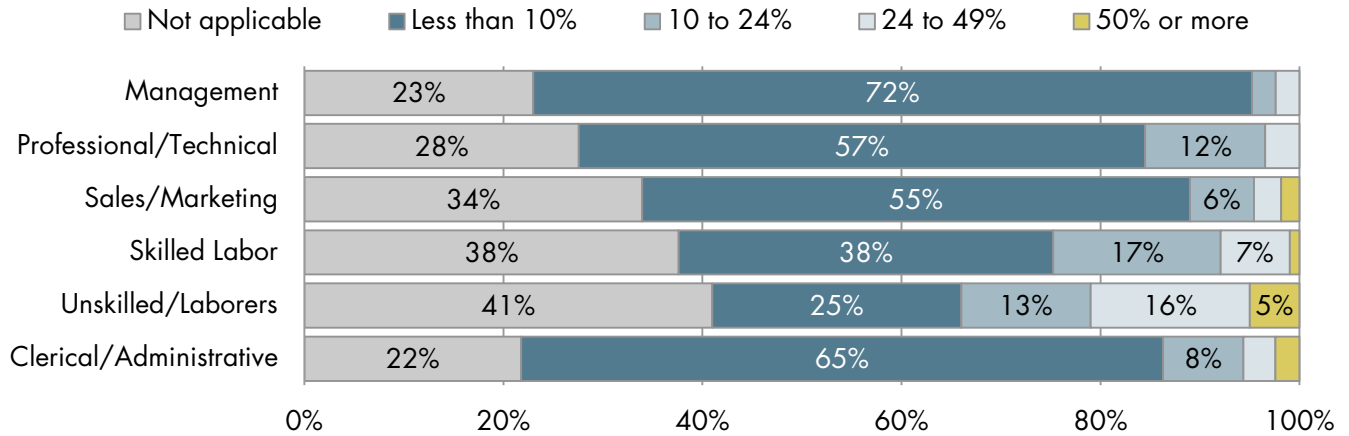
Source: TIP Strategies Employer Survey

The time it takes for firms to fill vacancies may also indicate classifications that have worker shortages. In this case, the higher-wage roles (which typically require higher levels of education) in the management and professional/technical categories were described as being the most difficult to fill. Most respondents considered unskilled/laborer and clerical/administrative positions as easiest to fill.

FIGURE 74. TIME TO FILL VACANCIES

Legend: ☐ Not applicable ■ Less than 2 weeks ☐ 2 to 4 weeks ☐ 1 to 3 months ☐ 4 to 6 months ■ More than 6 months

Category	Not applicable	Less than 2 weeks	2 to 4 weeks	1 to 3 months	4 to 6 months	More than 6 months
Management	25%	4%	15%	36%	15%	7%
Professional/Technical	23%	5%	13%	47%	9%	4%
Sales/Marketing	30%		26%	33%	5%	
Skilled Labor	33%	5%	28%	22%	5%	8%
Unskilled/Laborers	37%	21%	29%	8%	4%	
Clerical/Administrative	16%	14%	39%	30%		
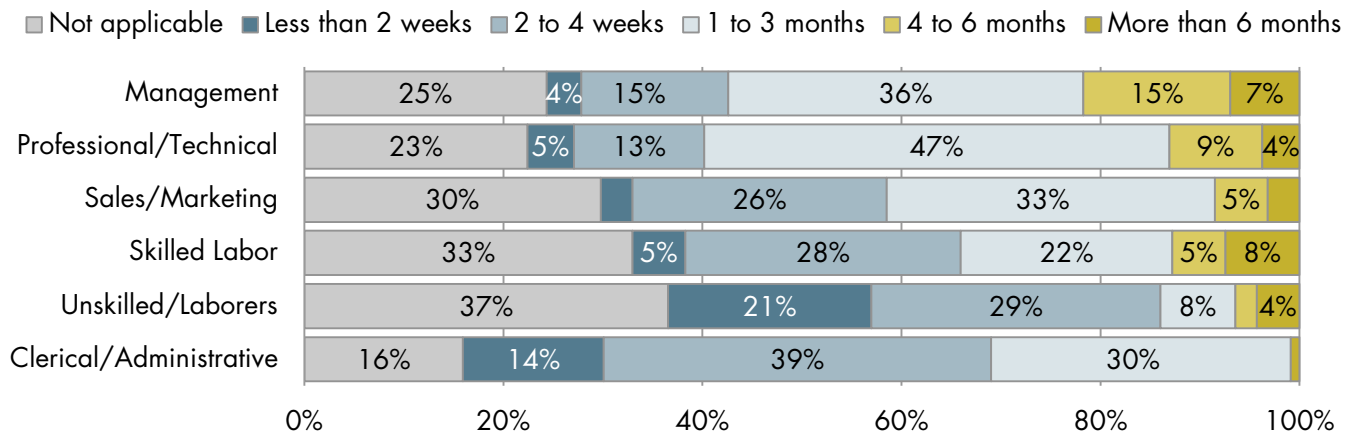
Source: TIP Strategies Employer Survey.

Over two-thirds of respondents had positions that they had been unable to fill. When asked to describe the positions, vacancy period, and reason, a variety of positions were described with many indicating vacancy periods of longer than six months and the lack of applications and/or the quality of applications as the reason.

**FIGURE 75. HAVE THERE BEEN SPECIFIC POSITIONS RESPONDENTS HAVE BEEN UNABLE TO FILL**

Response	Count
No	87
Yes	34
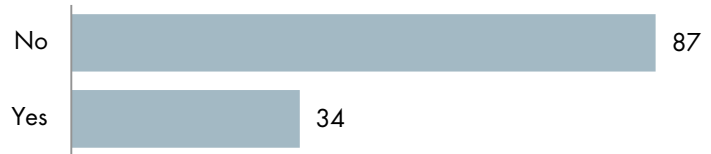
Source: TIP Strategies Employer Survey

FIGURE 76. SPECIFIC POSITIONS RESPONDENTS HAVE BEEN UNABLE TO FILL

Position	Length of Vacancy	Reason
Assemblers		
Assembly	Years	No applicants
Concrete Construction Crew Laborers	Months	
Cooks	6 Months	Few applicants of poor quality
Designer/Technical Director		
Diesel Mechanic, CNC Machinists		
Electrician	6 to 12 Months	
Mechanic	6 to 12 Months	
Licensed Boiler Operator	6 to 12 Months	
Carpenters, framers, electricians, plumbers		
IT Infrastructure Architect	12 Months	
Lead Custodian (nights)	3 Weeks	
Lot Specialist	3 Months	Few applicants
Quality Control	5 Months	Few applicants
Drivers		Few applicants that pass background checks and drug tests
Maintenance Process Operators		
Maintenance Technicians		
Moldsetters		Poor quality of applicants
Office Assistant	4 Weeks	Poor quality of applicants
Operations Manager/General Manager		
Production Workers	12 Months +	Few applicants, many of which are poor quality
Professional and Skilled Labor Positions	12 Months +	Cannot get qualified applicants
Programmer		Applicants not interested in location
Writers		Poor quality of applicants
Project Manager/Estimator	12 Months	No qualified applicants
Retread Tire Technicians	4 Weeks	Poor quality applicants that can't pass drug tests
Seasoned Commercial Lender		
Shelter Advocates	4 Months	Few applicants of poor quality
Skilled labor		
Skilled labor	Years	High turnover of people in position
Substitute Licensed and Non-Licensed Staff		
Technical Sales	3 Months +	
Skilled Installer	3 Months +	
Veterinarian	3 Months +	Applicants do not have enough experience
Customer service		Not enough applicants
Web Developer	12 Months	Applicants do not have enough experience or skill
Child care	12 Months	
CPA	6 Months	

Source: TIP Strategies Employer Survey

Recruiters were more likely to look outside the local workforce for higher-wage positions, such as those in the management and professional/technical categories; a fourth of respondents said they would look outside the Red River Valley for management staff. For the remainder of classifications, at least half of respondents filled positions from within the local workforce. Clerical/administrative staff was always filled from within the Red River Valley and no respondents considered international recruitment for any category.

FIGURE 77. GEOGRAPHIES FOR RECRUITMENT
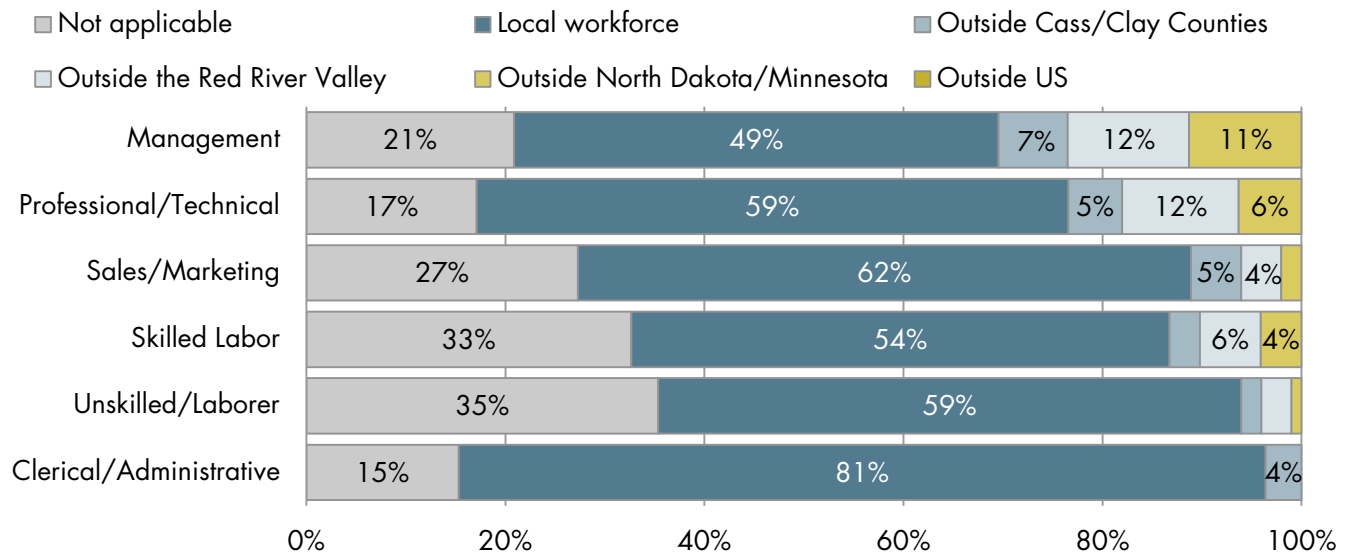
Source: TIP Strategies Employer Survey

Referrals were the most likely to be utilized for recruitment, as well as being the highest-rated tool, with an average rating of 3.66 out of 5. Online job boards had the next-highest rating for effectiveness which, when combined with social media and Craigslist, indicates the popularity of internet-based recruitment.

FIGURE 78. EFFECTIVE RESOURCES FOR IDENTIFYING QUALITY CANDIDATES
WHERE "1" IS THE LEAST EFFECTIVE RESOURCE AND "5" IS THE MOST EFFECTIVE.

	% use resource	Average rating
Referrals/word-of-mouth	98%	3.66
Colleges/trade schools	82%	3.05
Internet job boards (e.g., Indeed, Monster)	82%	3.32
Newspaper advertising	76%	2.35
Local jobs center	68%	2.30
Staffing/temp agency	64%	2.90
Professional publications	58%	2.41

OTHER:
- Social media - LinkedIn, etc. (5)
- Craigslist (4)
- Head hunter
- Help wanted sign
- Marquee Sign
- Radio (2)
- Required to hire from MN Merit System

Source: TIP Strategies Employer Survey

Respondents were asked to provide specific occupations or skills they found difficult to recruit. Those that came up more than once included: engineers, sales staff, web developers, carpenters, electrical workers, maintenance technicians, and CDL or truck drivers. These occupations/skills (out of almost 200 provided) were then categorized in Figure 79. Skilled trades/technicians was one area that was commonly listed as hard to recruit and that respondents anticipated needing in the future.

FIGURE 79. OCCUPATIONS/SKILLS NEEDS

Occupations/skills	Hard to recruit		Future skills req
Skilled Trades/Technicians	30%		26%
Engineering/Science	10%		8%
Creative/Hospitality	9%		3%
Finance/Business/Legal	9%		4%
Unskilled Labor	8%		13%
IT	7%		13%
Sales/Marketing/Cust. Support	7%		9%
Healthcare	5%		4%
Management/Supervision	5%		6%
Business Support/Administration	4%		8%
Education/Public Sector	4%		4%
Transportation	3%		3%

Source: TIP Strategies Employer Survey

JOB TRAINING

Respondents were asked to provide their opinion of the region's workforce based on selected characteristics. Many characteristics received strong ratings with at least half of respondents giving them a Good or Excellent rating. Characteristics that received lower ratings were entry-level skills, flexibility, math skills, and communication skills. Half of respondents rated the region's workforce as Fair or Poor in regards to those characteristics.

FIGURE 80. EMPLOYER RATING OF REGIONAL WORKFORCE ON SELECTED CHARACTERISTICS
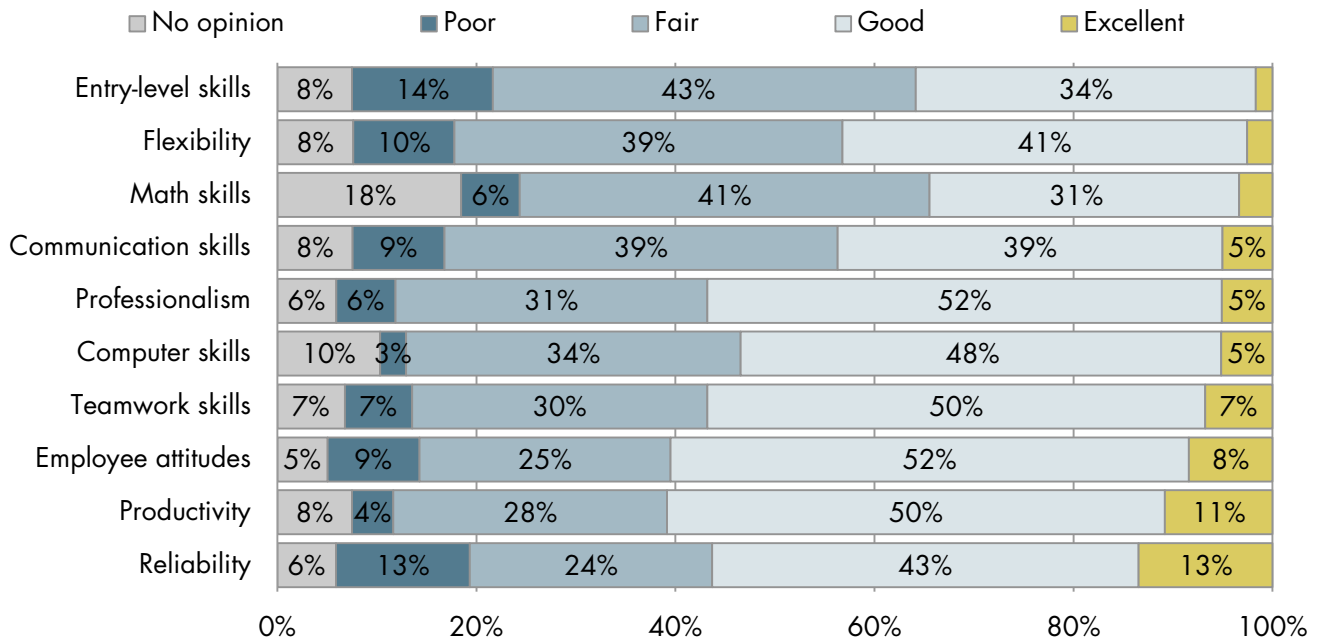
Source: TIP Strategies Employer Survey

Respondents were significantly more likely to utilize in-house or on-the-job training than outside options. Twenty percent of respondents utilized four-year colleges or universities for at least a quarter or more of their training needs. The remaining training sources were unlikely to be used for more than 25 percent of the firms' employee training.

FIGURE 81. SOURCES FOR EMPLOYEE TRAINING
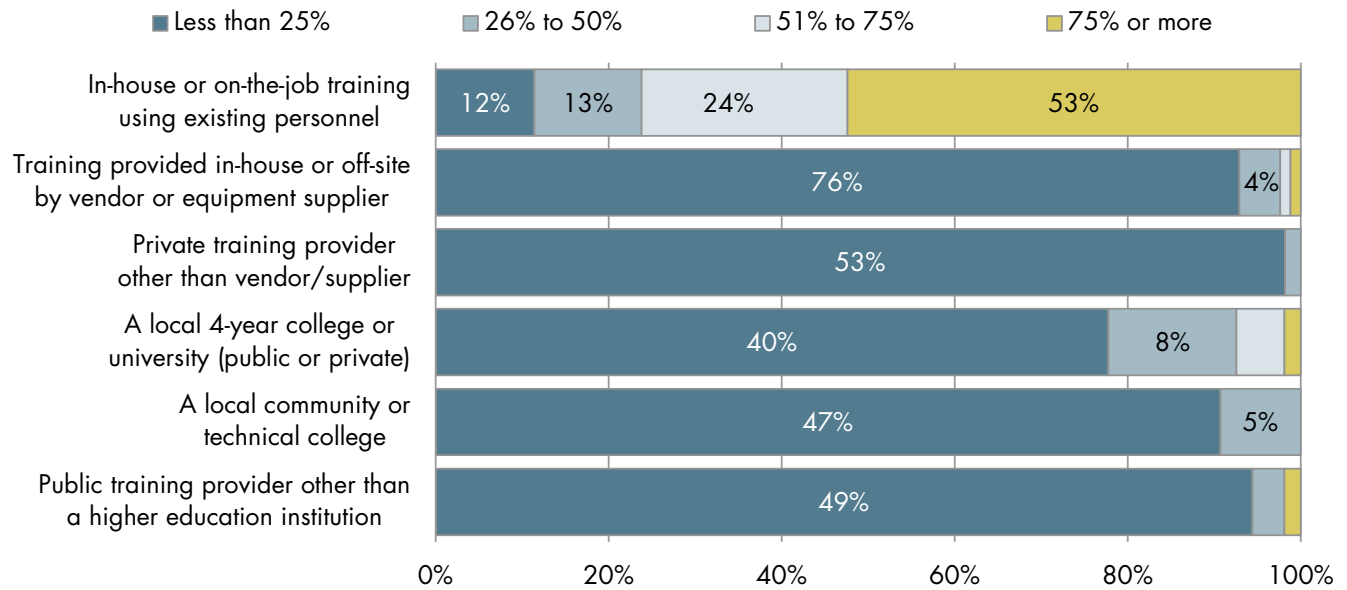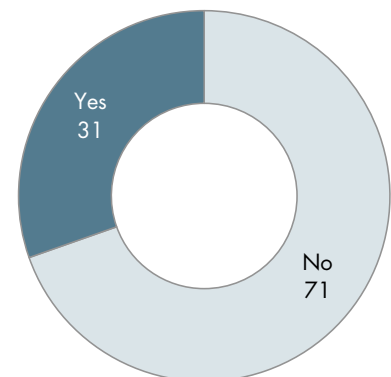

Source: TIP Strategies Employer Survey

Because most respondents conduct training in-house, they did not report training programs that were particularly useful or that were absent. Of those that did report useful training providers, they included the Chamber of Commerce, the Dakota MEP, Dale Carnegie, the North Dakota College of Science, and North Dakota State University. Of the suggested programs, many included general employment skills such as resume writing and interviewing skills, conflict resolution, cultural diversity training, and general customer service. Specific skills included maintenance technicians, PLC programming, COBOL, business analyst, blow moldings, welding, and purchasing.

FIGURE 82. ARE THERE TRAINING PROGRAMS IN THE AREA THAT HAVE BEEN PARTICULARLY HELPFUL?
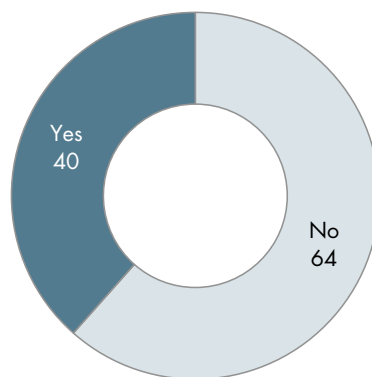
Source: TIP Strategies Employer Survey

FIGURE 83. ARE THERE TRAINING PROGRAMS LACKING IN THE AREA THAT ARE CRITICAL TO YOUR TRAINING NEEDS?

Source: TIP Strategies Employer Survey

APPENDIX D: 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.
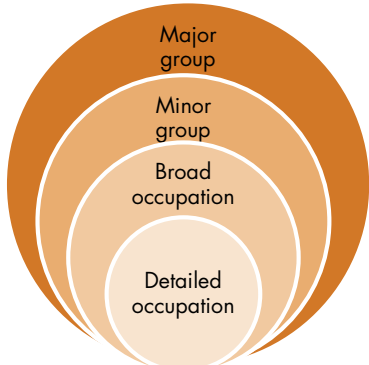
The **Standard Occupational Classification (SOC)** system is used by federal statistical agencies to classify workers into categories for the purpose of collecting, calculating, or disseminating data. This system groups all occupations in which work is performed for pay or profit according to the type 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.
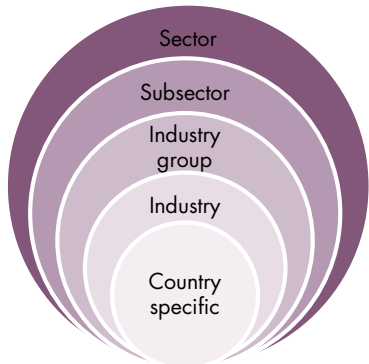
The version of NAICS currently in wide use was released in 2007 and classifies industries into 20 sectors based on production processes. These sectors are broken into subsectors, industry groups, and individual industries. An additional level of detail is
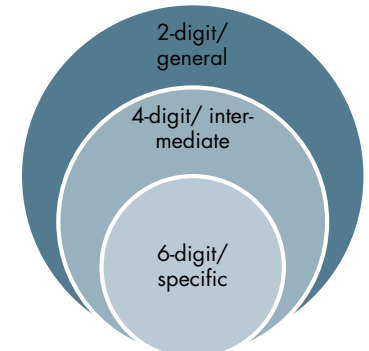
STANDARD OCCUPATIONAL CLASSIFICATION SYSTEM

SOC STRUCTURE

Major group
Minor group
Broad occupation
Detailed occupation

SOC 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

NORTH AMERICAN INDUSTRIAL CLASS. SYSTEM

NAICS STRUCTURE

Sector
Subsector
Industry group
Industry
Country specific

NAICS 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

CLASSIFICATION OF INSTRUCTIONAL PROGRAMS

CIP STRUCTURE

2-digit/ general
4-digit/ inter-mediate
6-digit/ specific

CIP EXAMPLE

General 14. Engineering

Intermediate 14.08 Civil engineering

Specific 14.0802 Geotechnical engineering

Source: US Bureau of Labor Statistics (SOC); US Census Bureau (NAICS); National Center for Education Statistics; TIP Strategies.

provided to accommodate industry codes specific to the three countries. The classification system is updated every five years. The 2012 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

EMPLOYMENT

The industry and occupational data presented in this report were prepared using EMSI's Complete Employment series. EMSI gathers and integrates economic, labor market, demo-graphic, 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 United States.

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 United States. EMSI data are annual averages of jobs (not workers); full- and part-time jobs

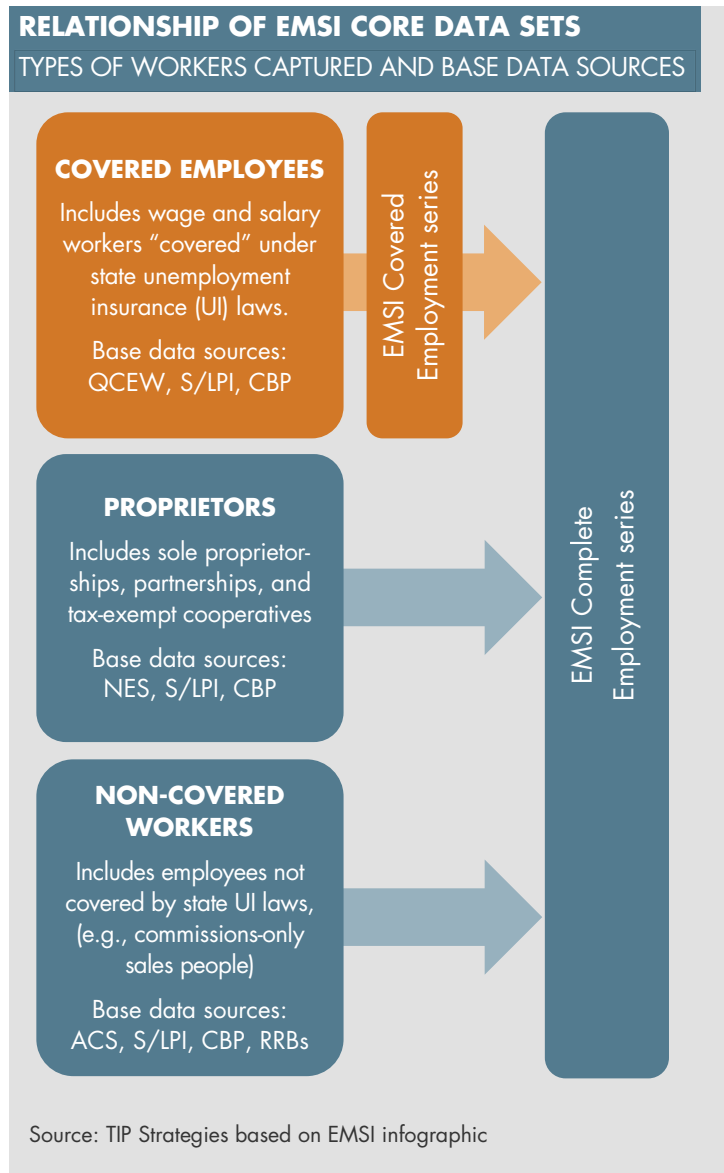| PRIMARY INDUSTRY/OCCUPATION DATA SOURCES MAJOR SOURCES USED FOR EMSI'S 2013.2 DATA RELEASE			
DATA SOURCE	ABBRV.	AGENCY	VERSION USED*
State Personal Income	SPI	BEA	2011
Local Area Personal Income	LPI	BEA	2010
Industry Economic Accounts	IEA	BEA	2002-2011
American Community Survey	ACS	Census	2005-2011
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
LEHD/Quarterly Workforce Indicators	QWI	Census	varies

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

are counted equally.

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.

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

COVERED EMPLOYEES
Includes wage and salary workers "covered" under state unemployment insurance (UI) laws.
Base data sources: QCEW, S/LPI, CBP

EMSI Covered Employment series

PROPRIETORS
Includes sole proprietor-ships, partnerships, and tax-exempt cooperatives
Base data sources: NES, S/LPI, CBP

NON-COVERED WORKERS
Includes employees not covered by state UI laws, (e.g., commissions-only sales people)
Base data sources: ACS, S/LPI, CBP, RRBs

EMSI Complete Employment series

Source: TIP Strategies based on EMSI infographic

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

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 two to three 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.

REAL-TIME LABOR MARKET INFORMATION / JOB POSTING ANALYTICS

Data on real-time job postings used in this report was prepared by Wanted Technologies (Wanted). Since 2002, Wanted has maintained detailed data on online hiring demand. Wanted is the exclusive data provider for The Conference Board's Help-Wanted OnLine Data Series™, the monthly economic indicator of hiring demand in the United States. The company's database of more than one million unique job listings is accessible via Wanted Analytics, an online subscription service.

According to the company's website, more than 80 percent of job postings in their database have cities associated with them. This information is then used to filter postings within recognized geographies, including county, metropolitan statistical area, and state.

Industries are assigned based on the employer's name, which is matched to Dun & Bradstreet to obtain the associated NAICS code. As a result, only postings that include the employer's name are represented in the counts

by NAICS code. The rest are listed as unclassified or unknown. The company estimates that 60 percent of postings in the Wanted Analytics database have been matched to a NAICS code.

Wanted's real-time data include a hiring scale which estimates the relative difficulty to fill a given position based on market conditions. This proprietary index considers a range of factors, including the number of postings (demand), the supply of workers in the occupation in the region, salaries, and unemployment rates.

In the example below for Industrial Engineers (SOC 17-2112), the **bottom** figure shows the relative ease or difficulty of hiring this position *in the local market* relative to the same job in the United States. When this indicator approaches the "Difficult" end of the scale it means hiring for this occupation will be more difficult in the chosen market than in the United States generally. The **top** figure provides an indicator of the ease or difficulty in hiring an Industrial Engineer *across the United States* relative to all other occupations nationally. A score approaching the "Difficult" side of the scale suggests the position is hard to fill generally and that hiring challenges extend beyond the local market.

82 nationally ▼

Easy | Difficult

84 locally▲

For hiring scales where no specific occupation is listed, the figures show the relative ease of hiring more broadly. A higher score on the bottom indicates greater difficulty in the local market relative to national conditions.

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 the region 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.

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.