

2017

BusinessFirst! VERIFIED LABOR FORCE Report



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Verified Labor Force Report

Produced for the Business First! For a Greater Dayton Region in Southwest Ohio

BusinessFirst! For a Greater Dayton Region is an award-winning business retention and expansion program designed to connect businesses with resources and partner agencies to help grow the Dayton region. As a continuous advocate of the Dayton region, BusinessFirst! has teamed up with long-time resource partner Wright State University's Applied Policy Research Institute (APRI) to provide a verified labor force report as a benefit for the entire Dayton region. The intent of this report is to use verifiable government records to specify the available workforce in the designated BusinessFirst! region. This verified labor force report begins with an analysis of workforce trends across the BusinessFirst! region of Darke, Greene, Montgomery, Miami and Preble counties. The analysis moves beyond an aggregate labor force report by also providing detailed reports for two industries critical to this BusinessFirst! Region: (1) Transportation-Warehousing-E-commerce and (2) Manufacturing.

The analysis was conducted by Wright State University's Applied Policy Research Institute. Data sources used for this analysis include: United States Census Bureau Longitudinal Employer-Household Dynamics databases (Quarterly Workforce Indicators (QWI), Origin-Destination Employment Statistics (LODES), Job-to-Job Flows, and the American Community Survey Public Use Microdata Sample (PUMS) data).

Labor Force Overview

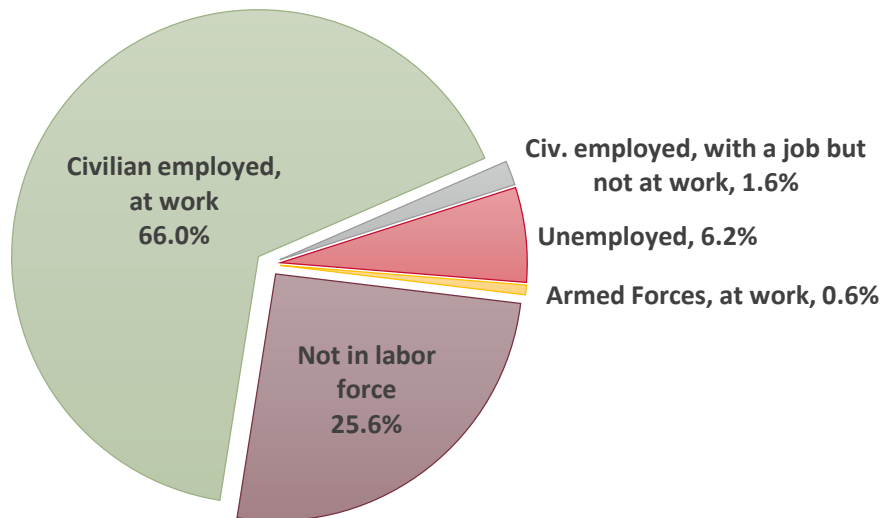
For this analysis, the core data source to be used is the U.S. Census Bureau's American Community Survey (ACS) Public Use Microdata Sample (PUMS). The PUMS files allow data users to conduct a custom analysis of the ACS data using a sample of actual responses to the American Community Survey (ACS). They are much more flexible than the aggregate data available on public websites, though the PUMS files also tend to be more complicated to use. Working with PUMS data generally involves downloading large datasets onto a local computer and analyzing the data using statistical software such as R, SPSS, Stata, or SAS.

The geography for the PUMS analysis is the Darke/Preble/Shelby, Greene, Montgomery, and Miami counties and the sample size is 39,102 individuals ages 16-64, which is used to weight up to the total population. The PUMS data are organized by units of geography that sum to at least 100,000+, which are called PUMAs. In urban areas a single county will be comprised of multiple PUMAs (e.g., Montgomery County is comprised of four PUMAs). Likewise, in less populous areas a single PUMA will be comprised of multiple counties (e.g., the Darke/Preble/Shelby PUMA). The timing of the PUMS data is a five-year estimate from 2011 to 2015; these data were released on January 19, 2017.

Employment Status

Across the BusinessFirst! region, there are 475,893 people between the ages of 16 and 64. Two-thirds (66%) are in the civilian labor force, 0.6% are in the armed forces, 1.6% are employed but are not currently working, and 6.2% are unemployed. This results in a labor force participation rate for the BusinessFirst! region of 74.4%.

Figure 1: Employment Status of the Working Age Population (Ages 16-64)



Educational Attainment

Among working aged adults in the BusinessFirst! region, 32% have a college degree, whether an associate's degree, bachelor's degree, master's degree, or more. The reader should note that, in national journals, educational attainment rates are presented for the population 25 years of age and over. For the BusinessFirst! region, the educational attainment rate presented is for those 16 to 64, which will result in a lower rate than the rate for the population over age 25. The region has many higher education assets, including having six institutions of higher education in just one of its counties (one of which is a Historically Black University with land grant status), not to mention other nationally renowned colleges such as Sinclair College with an enrollment of 32,000 students in Montgomery County along with nearby University of Dayton with 10,828 students and cited by the National Science Foundation as the number 1 university in the nation in federally sponsored materials research.

Work Status

The government database specifies the number of workers who are not currently working by category of their readiness to work. The table below presents the totals for the BusinessFirst! region by these categories.

Table 1: Available Workforce, Ages 16-64, 2011-2015

| Readiness to Work | Number |
|----------------------------------|---------------|
| Available for Work | 35,398 |
| Looking for Work | 32,380 |
| On Layoff | 6,728 |
| Total Workforce Available | 74,506 |

Available Workforce Currently Enrolled in School

There are 19,509 working age people in the BusinessFirst! region who are enrolled in school and NOT working. This is a sizable labor pool from which to draw. Furthermore, there are 63,492 working age people in the BusinessFirst! region who are enrolled in school AND working, demonstrating initiative, drive, and an enhanced skill set positioning them for career advancement.

Occupations

Occupational groups are classifications of occupations with similar functions and the following table presents workers in the BusinessFirst! region by Standard Occupational Classification (SOC) Major Group. Office and Administrative Support Occupations account for one out of every seven employed residents (13.5%) in the BusinessFirst! region. The following table presents the number of workers in each of the SOC Major Groups.

Table 2: BusinessFirst! Workers by Standard Occupational Classification (SOC) Major Group, 2011-2015

| Standard Occupational Classification (SOC) by Major Groups | Frequency | Percent |
|---|-----------|---------|
| 11-0000 Management Occupations | 34,178 | 8.5% |
| 13-0000 Business Operations Occupations | 8,865 | 2.2% |
| 13-0000 Financial Operations Occupations | 5,859 | 1.5% |
| 15-0000 Computer and Mathematical Occupations | 9,540 | 2.4% |
| 17-0000 Architecture and Engineering Occupations | 8,766 | 2.2% |
| 19-0000 Life, Physical, and Social Science Occupations | 2,259 | 0.6% |
| 21-0000 Community and Social Services Occupations | 5,978 | 1.5% |
| 23-0000 Legal Occupations | 2,776 | 0.7% |
| 25-0000 Education, Training, and Library Occupations | 21,861 | 5.4% |
| 27-0000 Arts, Design, Entertainment, Sports, and Media Occupations | 5,092 | 1.3% |
| 29-0000 Healthcare Practitioners and Technical Occupations | 24,131 | 6.0% |
| 31-0000 Healthcare Support Occupations | 12,914 | 3.2% |
| 33-0000 Protective Service Occupations | 7,400 | 1.8% |
| 35-0000 Food Preparation and Serving Related Occupations | 28,971 | 7.2% |
| 37-0000 Building and Grounds Cleaning and Maintenance Occupations | 15,480 | 3.8% |
| 39-0000 Personal Care and Service Occupations | 14,433 | 3.6% |
| 41-0000 Sales and Related Occupations | 38,778 | 9.6% |
| 43-0000 Office and Administrative Support Occupations | 54,141 | 13.5% |
| 45-0000 Farming, Fishing, and Forestry Occupations | 1,115 | 0.3% |

| Standard Occupational Classification (SOC) by Major Groups | Frequency | Percent |
|--|-----------|---------|
| 47-0000 Construction Occupations | 17,285 | 4.3% |
| 47-0000 Extraction Occupations | 163 | 0.0% |
| 49-0000 Installation, Maintenance, and Repair Occupations | 13,011 | 3.2% |
| 51-0000 Production Occupations | 39,193 | 9.7% |
| 53-0000 Transportation and Material Moving Occupations | 28,682 | 7.1% |
| 55-0000 Military Specific Occupations | 1,355 | 0.3% |
| | 402,226 | 100.0% |

Demographics

Working Age Population Demographics

- The working age population in the BusinessFirst! region is almost equally distributed across five age categories.

Table 3: BusinessFirst! Region - Working Age Population by Age Cohort, 2011-2015

| Age Cohort | Frequency | Percent |
|--------------|-----------|---------|
| 16-24 | 91,236 | 19.2% |
| 25-34 | 93,224 | 19.6% |
| 35-44 | 87,207 | 18.3% |
| 45-54 | 102,911 | 21.6% |
| 55-64 | 101,315 | 21.3% |
| Total | 475,893 | 100.0% |

- The working age population is well-distributed across males (49%) and females (51%).
- Most of the working age population has no disability status (87.4%).
- The racial composition of the working age population in the BusinessFirst! region is White (82%), Black or African American (14%), Asian (2%), or two or more races (2%).
- Most households speak only English (95%).
- Most of the working age population who are in the labor force have a car, truck, or van as transportation to work (92%).
- Most of the working age population has health insurance coverage (87%).

Working Age Population Receiving Retirement Income

A total of 28,720 people in the working age population receive retirement income. This population is predominantly ages 55-64 (72%), male (58%), and not in the labor force¹ (57% or 16,434 people). This cohort represents another source of available workforce.

¹ According to the Bureau of Labor Statistics, persons who are neither employed nor unemployed are not in the labor force and includes retired persons, students, those taking care of children or other family members, and others who are neither working nor seeking work. Information is collected on their desire for and availability for work, job search activity in the prior year, and reasons for not currently searching. (Source: Labor Force Statistics from the Current Population Survey, Labor force characteristics. www.bls.gov/cps/lfcharacteristics.htm#nlf)

Workforce Indicators

The Quarterly Workforce Indicators (QWI) series is used to analyze worker flows – hires, separations, and turnover – as well as net employment growth. As most hiring activity is the consequence of worker turnover rather than employment growth, a focus on employment growth alone could misrepresent employment opportunity in the local labor market.² Key terminology used in this section is highlighted in the text box.

QWI Glossary of Terms

- **Hire (or Accession)** – A hire is indicated when an individual reports earnings for an employer in one quarter, but did not report earnings in the previous quarter.
- **Separation** – A separation is indicated when a job is present in one quarter, but is not present in the following quarter. Voluntary separations (retirement, new job) and involuntary separations (layoff, firing) cannot be separately identified.
- **Turnover** – The rate at which stable jobs begin and end. It is calculated by summing the number of stable hires in the reference quarter and stable separations in the next quarter, and dividing by the average full-quarter employment.
- **Average Monthly Earnings** – For measures that are reported as averages, earnings are aggregated across all individuals who match the job history required, and the mean is calculated.
- **Job Gains (Job Creation)** – A job gain is the number of jobs gained at firms during a quarter. This measure counts total employment increase throughout a quarter.
- **Job Loss (Job Destruction)** – A job loss is the number of jobs lost at firms during a quarter. This measure counts total employment decrease throughout a quarter.
- **Job Change (Net Change)** – A job change is calculated by subtracting beginning of quarter employment from end of quarter employment.
- **Job-to-Job Flows** - Job-to-job flows are the movement of workers across employers, industries, and labor markets. Workers often build their careers through job-hopping and job-to-job moves are the primary means by which workers move to better-paying employers and from dead-end jobs to new career ladders. In 2015, approximately 43% of hires and 52% separations in the United State (Q2 2015) were from job-to-job movement.

Workforce Trends

Across the BusinessFirst! region, the average workforce turnover rate—the rate at which jobs begin and end—remained relatively consistent (about 8% per year) between 2011 and 2015. The average monthly earnings for the BusinessFirst! region have steadily increased over the past five years. The average monthly earnings for 2015 were \$3,902, which means the average annual earnings were \$46,824.*

Workforce Sex and Age

Job gains for women in the BusinessFirst! region have consistently outpaced job loss. Employment turnover for women in the BusinessFirst! region was about 7.5% between 2011 and 2013, and then began to increase between 2013 and 2015. Currently, the turnover rate for women is 8.4%. Average

² Quarterly Workforce Indicators 101: Local Employment Dynamics, Longitudinal Employer-Household Dynamics (LEHD), U.S. Census Bureau.

*This is calculated from the average monthly earnings.

monthly earnings for women in the BusinessFirst! region have steadily increased over the study period (2011-2015). The average monthly earnings for women in 2015 were \$3,132, which equates to average annual earnings of \$37,584.* The average **monthly** earnings for women is \$770 less than the average monthly earnings for the BusinessFirst! region overall.

The number of women employed in the manufacturing industry has increased steadily between 2011 and 2015; the growth rate is 6.1% over that time period. As a result, the manufacturing industry has one of the fastest growth rates for adding women to their workforce among all industries in the BusinessFirst! region.

The total number of jobs held by people ages 19-24 in the BusinessFirst! region has been increasing across all years from 2011 to 2016 to a total of 40,935 in the 2016 workforce. The turnover rate for this age group is higher than for other age groups, primarily due to the fact that they work in high turnover industries such as food service and retail. The turnover rate has increased for this group from 2011 to 2015 from 17.9% to 19.6%.

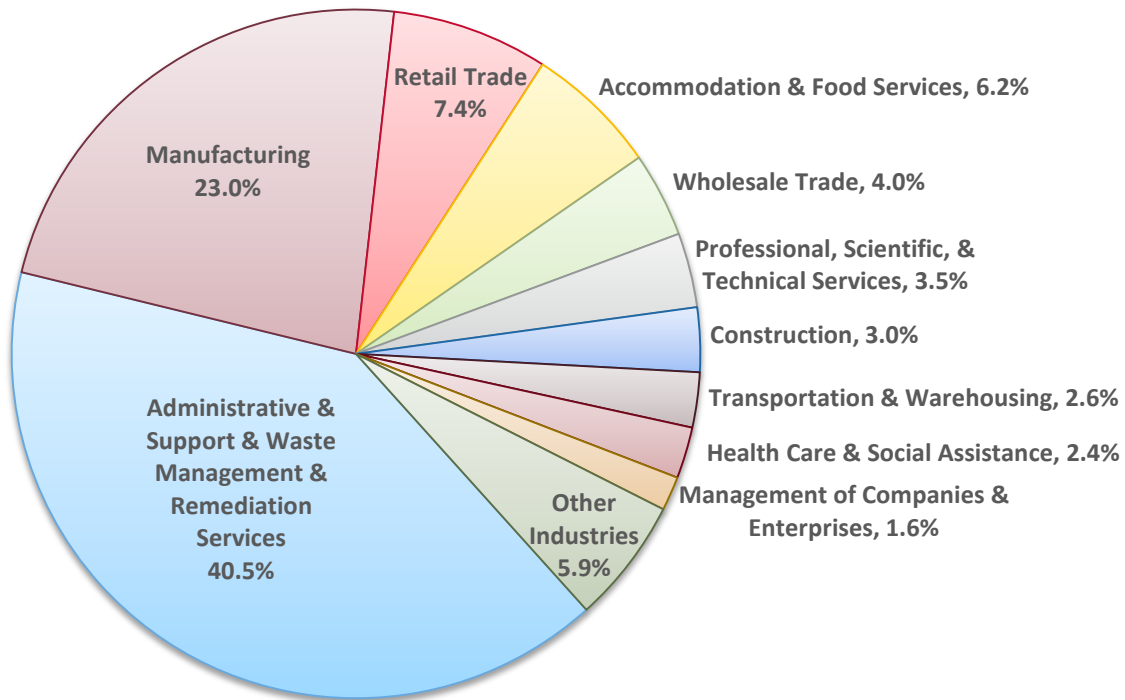
People over the age of 65 held 21,461 jobs in 2016. The number of people 65+ who are working in the BusinessFirst! region has increased every year from 2011 to 2016, resulting in an overall percentage increase of 29%. The turnover rate for these workers has remained stable from 2011 to 2015 at about 6.3%.

Industry Workforce Trends

Manufacturing Job-to-Job Flows

Aggregating all industries together over the last five years, job gains have outpaced job losses for the BusinessFirst! region. In Ohio, over the past six years, the largest proportion (40.5%) of new hires to the manufacturing industry come from the administrative and support and waste management and remediation services industry. In that same time period, one-quarter of new hires (23%) are workers that were already in the manufacturing industry. Refer to the pie chart below for other industries.

Figure 2: Job-to-Job Flows from 11 Industries in Ohio to Manufacturing in Ohio

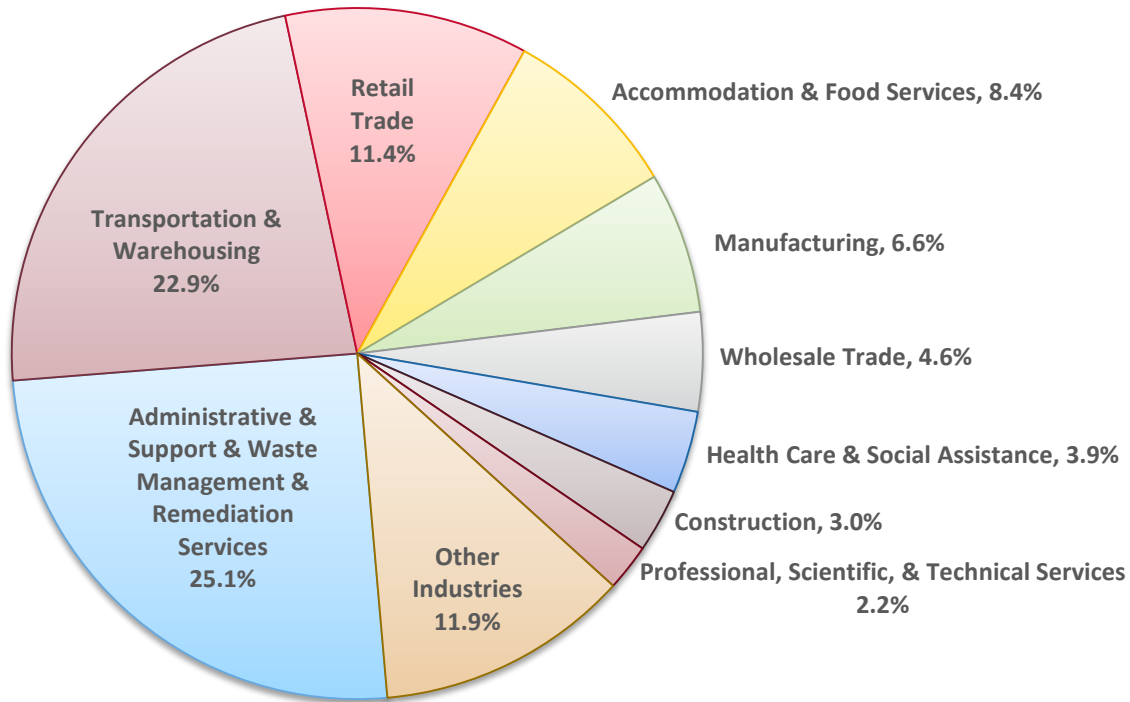


In 2016, the distribution of jobs by industry shows that the manufacturing industry employs 47,000 and the wholesale trade/transportation/warehousing industries employ about 70,000 workers. Nationally, the manufacturing and transportation industries are considered economic drivers because they sustain and fuel an economy's growth, with manufacturing contributing 12% to the nation's GDP and transportation contributing 8.5%. Growth in the manufacturing industry leads to growth in the transportation industry, and the manufacturing industry is growing, both nationally and regionally.

Transportation and Warehousing Job-to-Job Flows

Aggregating all industries together over the last five years, job gains have outpaced job losses for the BusinessFirst! region. In Ohio, over the past six years, the largest proportion (25%) of new hires to the transportation and warehousing industry come from the administrative and support and waste management and remediation services industry. In that same time period, one-quarter of new hires (22.9%) are workers that were already in the transportation and warehousing industry. Refer to the pie chart below for other industries.

Figure 3: Job-to-Job Flows from 10 Industries in Ohio to Transportation and Warehousing in Ohio



Commuting Patterns

Organizing industries into three groupings—the goods producing industries, the trade/transportation-warehousing/utilities industries, and the service industries — generates interesting themes. The first table below presents the total number of jobs in each of these groupings, with about 60,000 goods producing workers, 70,000 trade/transportation workers, and 200,000 workers in a broad array of service industries.

Table 4: BusinessFirst! Region – Total Number for Industry Clusters

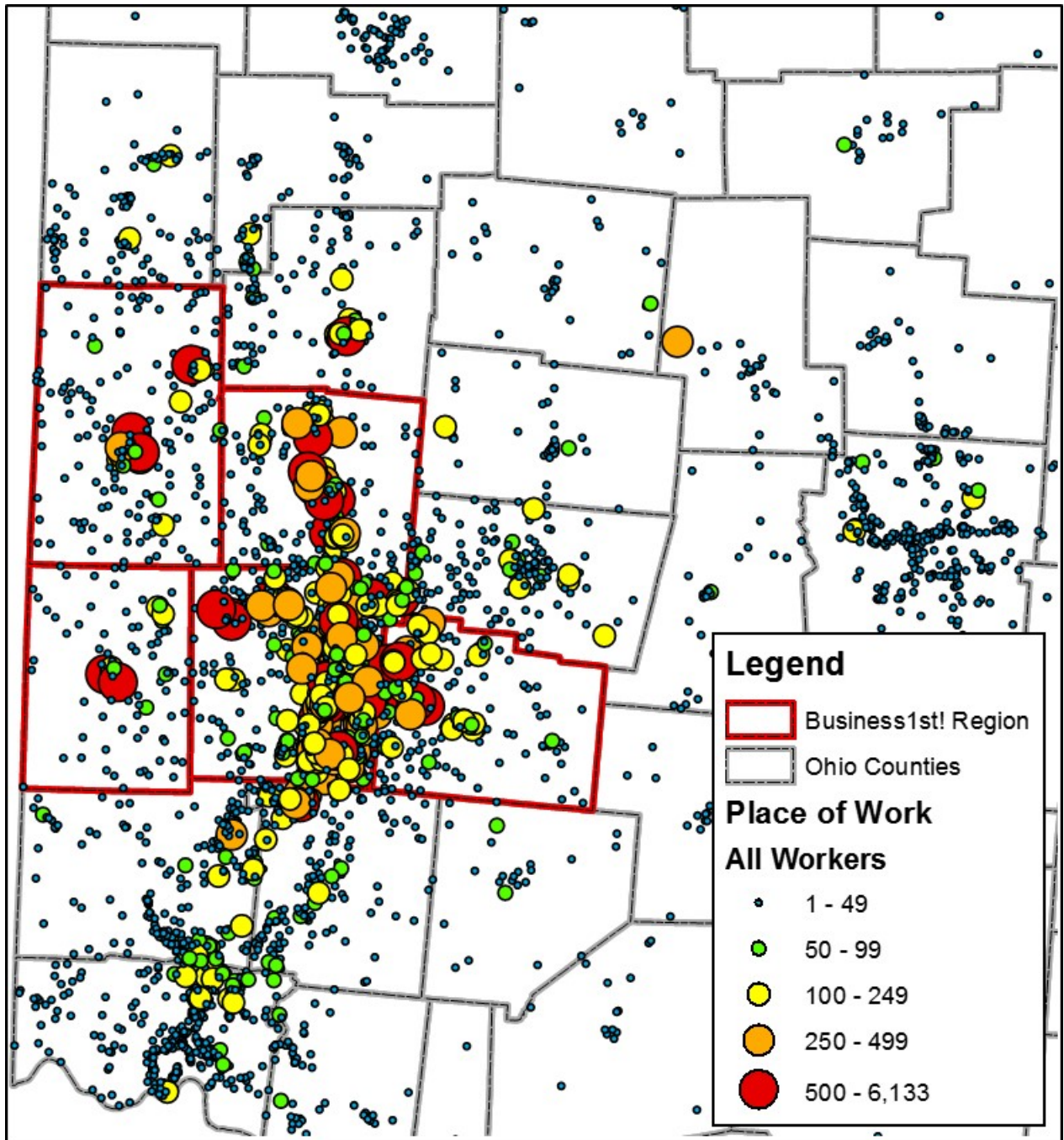
| Goods Producing | Total Jobs |
|--|-------------|
| Manufacturing | 46,686 |
| Construction | 13,023 |
| Agriculture, Forestry, Fishing and Hunting | Suppressed* |
| Mining, Quarrying, and Oil and Gas Extraction | Suppressed* |
| Trade, Transportation, Utilities | |
| Trade | 57,320 |
| Transportation & Warehousing | 13,126 |
| Utilities | Suppressed* |
| Services | |
| Health Care and Social Assistance | 62,778 |
| Educational Services | 30,707 |
| Accommodation and Food Services | 30,548 |

| | |
|---|-------------|
| Professional, Scientific, and Technical Services | 22,202 |
| Administrative and Support and Waste Management and Remediation Services | 21,011 |
| Finance and Insurance | 12,123 |
| Other Services (except Public Administration) | 9,475 |
| Public Administration | 9,397 |
| Information | Suppressed* |
| Real Estate and Rental and Leasing | Suppressed* |
| Management of Companies and Enterprises | Suppressed* |
| Arts, Entertainment, and Recreation | Suppressed* |

** In order to protect the confidentiality of company-specific information, not all data collected by the government are released to the public. Data suppression refers to the various methods or restrictions that are applied to estimates to limit the disclosure of information about individual respondents and to reduce the number of estimates with unacceptable levels of statistical reliability.*

County-to-county commuting patterns, in the maps below, demonstrate a near equal number of workers commuting into the BusinessFirst! region for work (98,085) as the number that leave the BusinessFirst! region for work (99,409).

Figure 4: Where BusinessFirst! Workers Work, 2015



Manufacturing Briefing

For the Business First! Geography Surrounding Dayton, Ohio

The federal government defines the manufacturing industry as “establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products.” This definition was used in order to extract statistics about this industry.

“Establishments in the Manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and material handling equipment. However, establishments that transform materials or substances into new products by hand or in the worker's home and those engaged in selling to the general public products made on the same premises from which they are sold, such as bakeries, candy stores, and custom tailors, may also be included in this sector. Manufacturing establishments may process materials or may contract with other establishments to process their materials for them. Both types of establishments are included in manufacturing.”³

Overview

The Manufacturing Industry in the Business First! region is comprised of 64,000 people⁴ who are working or have worked in the industry, and 211 different occupational titles.⁵ The most common occupations in the Dayton area have higher concentrations than the U.S. distribution of occupations (see Table below).

Table 5: Top Ten BusinessFirst! Production Occupations, 2011-2015

| Top Ten Occupations | Number | Percent | U.S. |
|--|--------|---------|------|
| Miscellaneous Assemblers and Fabricators | 5,827 | 9.1% | 4.1% |
| Other Production Workers, Including Semiconductor | 4,695 | 7.3% | 4.1% |
| First-Line Supervisors of Production and Operating | 2,964 | 4.6% | 3.2% |
| Laborers and Freight, Stock, and Material Movers, Hand | 2,790 | 4.3% | 2.4% |
| Miscellaneous Metal Workers and Plastic Workers | 2,530 | 3.9% | 1.9% |
| Machinists | 2,478 | 3.9% | 1.4% |
| Miscellaneous Managers, Including Funeral Service | 2,317 | 3.6% | 4.4% |
| Welding, Soldering, and Brazing Workers | 1,825 | 2.8% | 1.4% |
| Inspectors, Testers, Sorters, Samplers, and Weighers | 1,718 | 2.7% | 2.3% |
| Industrial Truck and Tractor Operators | 1,336 | 2.1% | 1.1% |

³ United States Census, North American Industry Classification System. 2017 NAICS Definition of Sector 31-33 – Manufacturing, <https://www.census.gov/cgi-bin/sssd/naics/>, last accessed Sept 29, 2017.

⁴ Based on PUMA geography. This figure includes Shelby County workers.

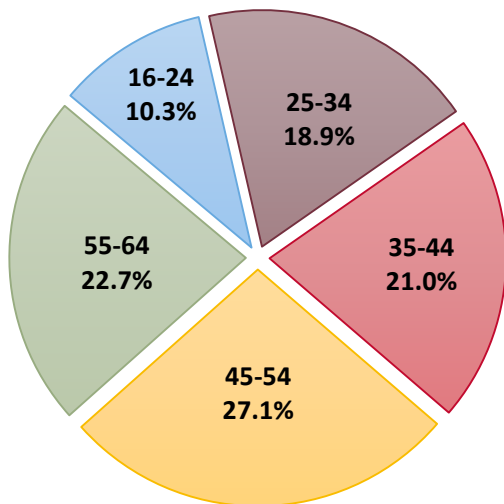
⁵ American Community Survey Public Use Microdata Sample (PUMS)

Beginning in 2011, the number of new hires outpaced the number of separations every year in the manufacturing industry.⁶ Furthermore, job gains for the manufacturing industry have also outpaced job losses for the BusinessFirst! region.⁷

For the manufacturing industry, turnover was about 5% in 2014 and 2015 which is substantially lower than the average for all industries. The average monthly earnings for an employee of the manufacturing industry in 2015 were \$4,529, which is higher than the monthly earnings for the BusinessFirst! region overall. The average annual earnings in the manufacturing industry equate to \$54,348.*

The demographic composition of workers in this Industry is 71% male and predominantly Caucasian and English speaking. The age of workers is well distributed across the prime working age population (see chart below).

Figure 5: BusinessFirst! Manufacturing Workers by Age Cohort, 2011-2015



Among those with relevant experience working in this Industry, 84% are currently working (or 54,174 people) and nearly all of these workers have health insurance benefits. Another 3,108 are unemployed, 6,027 are not currently in the labor force, and 908 are employed but are not currently at work.

Available Workforce

Within this industry alone, 3,927 people are working part-time,⁸ 3,596 are looking for work, and 1,108 are laid off for a **total of 8,631 available workers**.⁹ Furthermore, multiple industries employ people with the same occupational titles and similar skill sets as are found in the Manufacturing Industry. The

⁶ Hire (or Accession) – A hire is indicated when an individual reports earnings for an employer in one quarter, but did not report earnings in the previous quarter. Separation – A separation is indicated when a job is present in one quarter, but is not present in the following quarter.

⁷ Job Gains (Job Creation) – A job gain is the number of jobs gained at firms during a quarter. This measure counts total employment increase throughout a quarter. Job Loss (Job Destruction) – A job loss is the number of jobs lost at firms during a quarter. This measure counts total employment decrease throughout a quarter.

⁸ <https://www.bls.gov/cps/lfcharacteristics.htm> for the BLS definition of part-time status (1 to 34 hours per week)

⁹ American Community Survey Public Use Microdata Sample (PUMS)

number of people in the Business First! region with these similar occupations and skill sets who are available to work but are NOT currently working in the Manufacturing Industry include:

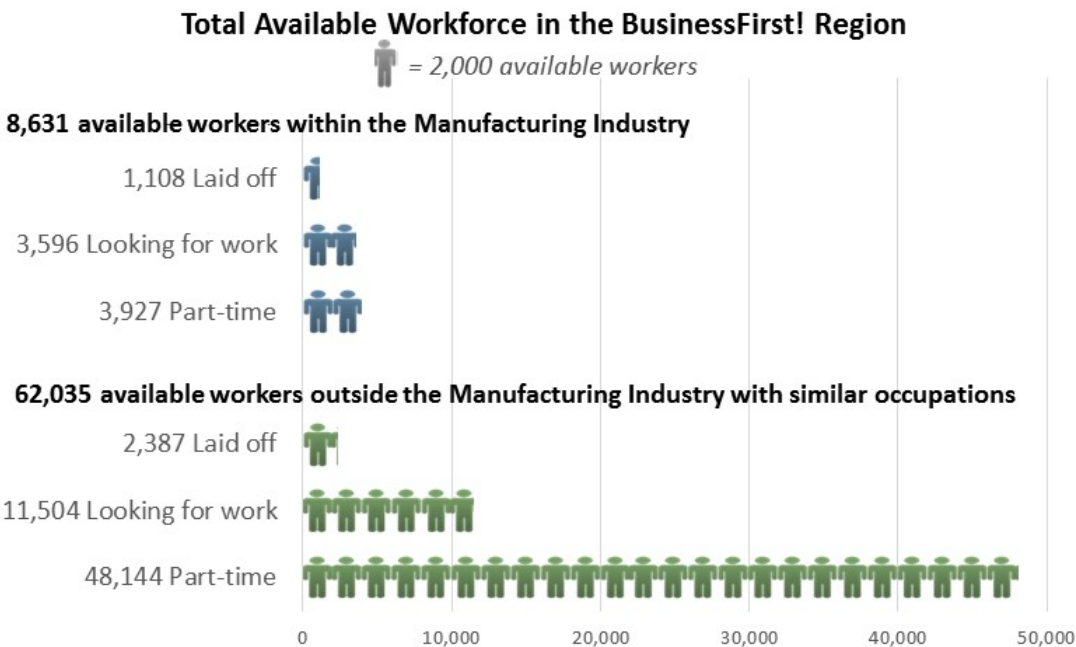
- 48,144 Part-time workers
- 2,387 Laid off and looking for work (e.g., motivated unemployed)
- 11,504 Temporarily Absent and Looking for Work

62,035 Total Available Workforce outside of the Manufacturing Industry but who have similar occupational titles and skill sets.

8,631 Total Available Workforce in the Manufacturing Industry

There is a grand total of 70,666 total available workforce in the Business First! region.

Figure 6: Total BusinessFirst! Available Workforce Available to Fill Manufacturing Occupations



The categories of workers in this total include: Sales 13,972; Office workers 13,077; Building and grounds cleaning and maintenance workers 7,346; Transportation 5,873; and Production workers 3,402 among others.¹⁰

Residence and Workplace of BusinessFirst! Production Workers

Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) provide an annual snapshot of where workers live and work. With these data, researchers are able to characterize how many workers are employed by competitive establishments in other jurisdictions, counties, and even states. The following figures illustrate where BusinessFirst! workers live and where BusinessFirst! workers travel in Ohio for employment. However, for the purposes of this analysis, data

¹⁰ Ibid

are not available to represent manufacturing workers alone, but instead include all production workers. The production industries include: Agriculture, Forestry, Fishing and Hunting; Mining, Quarrying, and Gas Extraction; Construction; and Manufacturing.

According to the 2015 LODES estimates, approximately 48,500 individuals who reside in one of the BusinessFirst! counties (Darke, Greene, Miami, Montgomery, or Preble Counties) also work within the BusinessFirst! region in one of the production industries.

In the goods producing industries, about 17,000 workers leave the BusinessFirst! region to go to jobs outside of the region. These workers are available to work in the BusinessFirst! region via attraction to viable jobs. At the same time, about 12,500 workers commute into the BusinessFirst! region from outside, thus demonstrating the willingness of production workers to travel to work to the BusinessFirst! region.

Figure 7: Where BusinessFirst! Production Workers Work, 2015

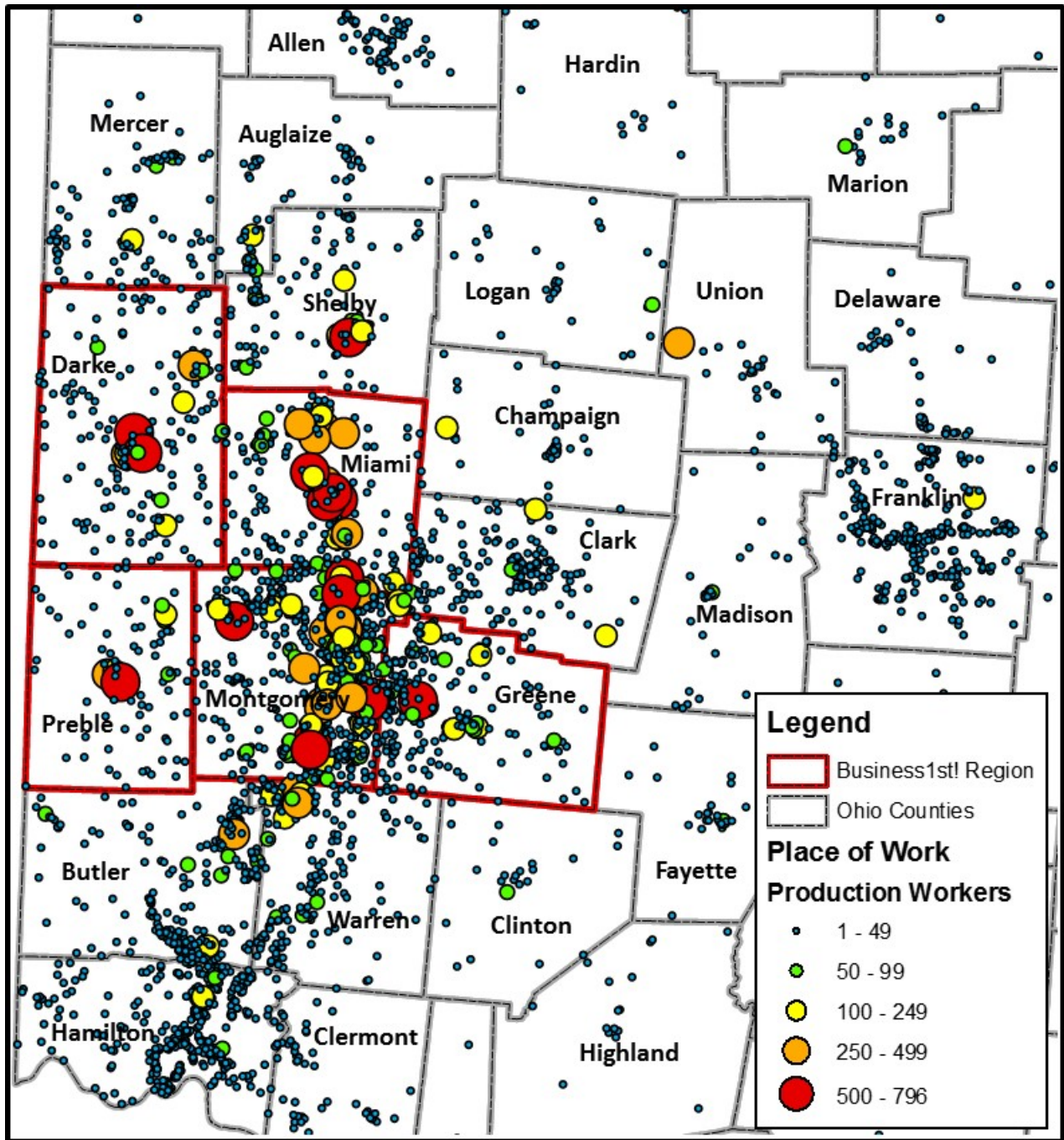
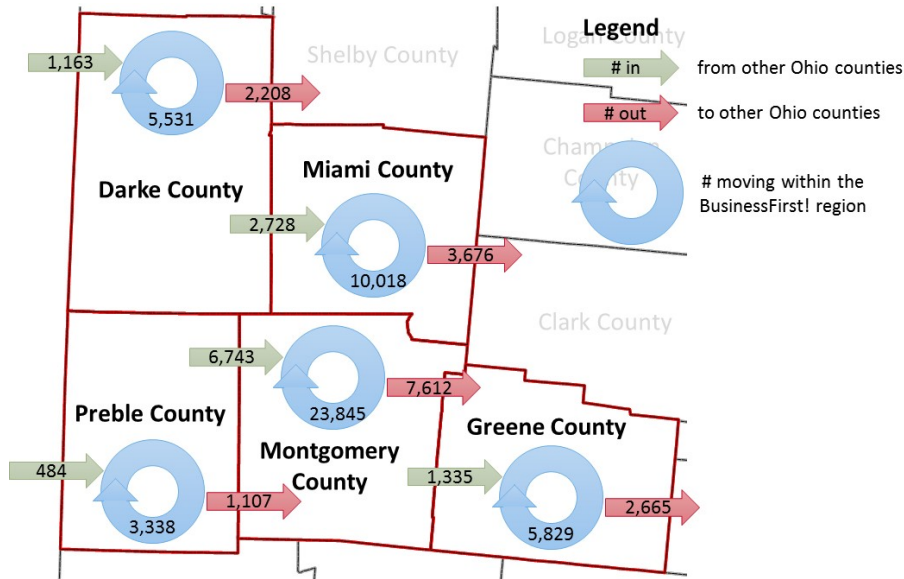


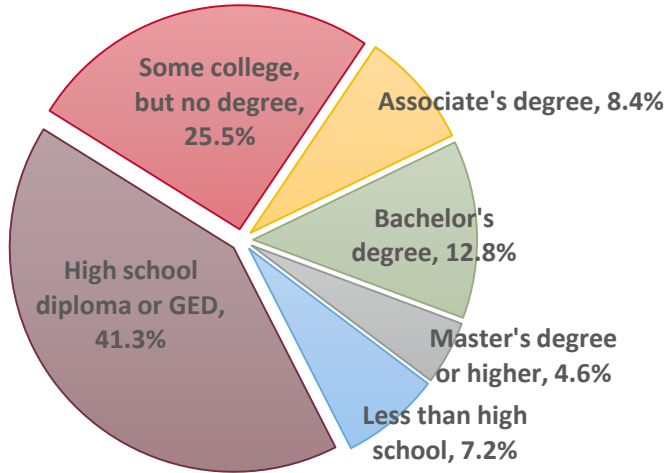
Figure 8: Manufacturing Workers and the BusinessFirst! Region, 2015



Educational Attainment, Enrollment, and Occupational Skill Sets

Educational Attainment: Most workers in the Manufacturing Industry have a high school diploma (41%) or more (51%). See the chart for more detail.

Figure 9: Level Educational Attainment for the BusinessFirst! Manufacturing Workers, 2011-2015



College Enrollment: 5,095 people who are working or have worked in the Manufacturing Industry are enrolled in school, and the vast majority are enrolled in College (4,135 of 5,095 or 81%) and 11% are pursuing education beyond a bachelor’s degree.

Occupational Skill Sets: For this analysis, technological skills and soft skills are considered. The technological skills for the most common occupations are presented in the following table, which shows that database software, office suite software, enterprise resource planning (ERP) software, and computer aided design (CAD) software are common skill requirements across occupations.

Table 6: Technology Skills for Most Common Manufacturing Occupations

| TECHNOLOGY SKILLS FOR MOST COMMON OCCUPATIONS ¹¹ | Database* | Office Suite | ERP | CAD | Spreadsheet | Analytical or Scientific | Other Occupation-specific |
|---|--------------------|--------------|-----|-----|-------------|--------------------------|---------------------------|
| | | | | | | | |
| First-Line Supervisors of Production and Operating Workers | X ^{a,c,e} | X | X | | | | X |
| Laborers and Freight, Stock, and Material Movers, Hand | X ^{c,d} | X | X | | X | | X |
| Machinists | | | | X | X | X | X |
| Welding, Soldering, and Brazing Workers | X ^c | X | | | X | | X |
| Inspectors, Testers, Sorters, Samplers, and Weighers | X ^{b,c,e} | | | X | | X | X |
| Industrial Truck and Tractor Operators | | X | X | | X | | X |
| *Database Type: | | | | | | | |
| a. Microsoft Total Quality Control Management | | | | | | | |
| b. FileMaker Pro | | | | | | | |
| c. Data entry software | | | | | | | |
| d. Oracle | | | | | | | |
| e. Microsoft Access | | | | | | | |

Readers should note that of the most common occupations -- miscellaneous assemblers and fabricators, other production workers, miscellaneous metal workers and plastic workers, and miscellaneous managers -- are not included in the above table. These occupations are too diverse to accurately choose specific technology skills and some do not require technology skills.

Top Soft Skills

Real-time data from CareerBuilder and Indeed.com¹² show that the most common soft skills required of workers in the Manufacturing Industry, in the Business First! region are:

- **Critical Thinking**
- **Active Listening**
- **Operation and Control**
- **Operation Monitoring**
- **Coordination**

¹¹ The Occupational Information Network (O*NET) is developed under the sponsorship of the U.S. Department of Labor/Employment and Training Administration (USDOL/ETA).

¹² Economic Modeling Specialists International, 2017

Transportation, Warehousing, and E-Commerce Briefing

For the Business First! Geography Surrounding Dayton, Ohio

The federal government defines the logistics, warehousing and e-commerce industry as “Freight Transportation Arrangement, Warehousing and Storage, and Electronic Shopping and Mail-Order Houses.” This definition was used in order to extract statistics about this industry.

Logistics is the management of supply chain, covering customer service, warehousing, transport, purchasing, materials handling, strategic planning, and so on. Logistics is the backbone of the economy, providing the efficient, cost effective flow of goods on which other commercial sectors depend.

Overview

The Transportation/Warehousing/E-commerce Industry in the Business First! region is comprised of 11,000 people who are working or have worked in the industry, and 63 different occupational titles.¹³ The most common occupations in the Dayton area are similar to the U.S. distribution of occupations (see Table below).

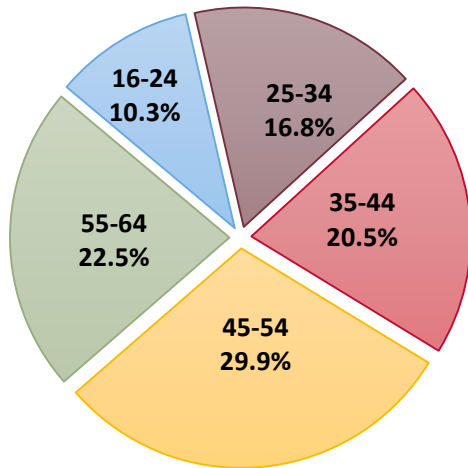
Table 7: Top Ten BusinessFirst! Transportation Occupations, 2011-2015

| Top Ten Occupations | Number | Percent | U.S. |
|---|--------|---------|-------|
| Driver/Sales Workers and Truck Drivers | 5,309 | 48.5% | 30.5% |
| Laborers And Freight, Stock, and Material Movers, Hand | 1,029 | 9.4% | 8.6% |
| Couriers and Messengers | 425 | 3.9% | 3.2% |
| Industrial Truck and Tractor Operators | 301 | 2.8% | 3.2% |
| Packers and Packagers, Hand | 301 | 2.8% | 1.5% |
| Customer Service Representatives | 256 | 2.3% | 1.6% |
| Dispatchers | 230 | 2.1% | 1.3% |
| Stock Clerks and Order Fillers | 216 | 2.0% | 1.3% |
| Top Management Occupations | 188 | 1.7% | 1.5% |
| Shipping, Receiving, and Traffic Clerks | 187 | 1.7% | 1.5% |

The demographic composition of workers in this Industry is 84% male and predominantly native born and English speaking. The age of workers is well distributed across the prime working age population (see chart below).

¹³ American Community Survey Public Use Microdata Sample (PUMS)

Figure 10: BusinessFirst! Transportation, Warehousing, and E-commerce Workers by Age Cohort, 2011-2015



Among those with relevant experience working in this Industry, 81% are currently working (or 8,849 people) and nearly all of these workers have health insurance benefits. Another 819 are unemployed, 1,046 are not currently in the labor force, and 224 are employed but are not currently at work.

Available Workforce

Within this industry alone, 1,605 people are working part-time,¹⁴ 838 are looking for work, and 385 are laid off for a **total of 2,828 available workers**.¹⁵ Furthermore, multiple industries employ people with the same occupational titles and similar skill sets as are found in the Transportation/Warehousing/E-commerce Industry. The number of people in the Business First! region with these similar occupations and skill sets who are available to work but are NOT currently working in the Transportation/Warehousing/E-commerce Industry include:

- 21,986 Part-time workers
- 1,380 Laid off and looking for work (e.g., motivated unemployed)
- 7,444 Temporarily Absent and Looking for Work

30,810 Total Available Workforce outside of the Transportation/Warehousing/E-commerce Industry but who have similar occupational titles and skill sets.

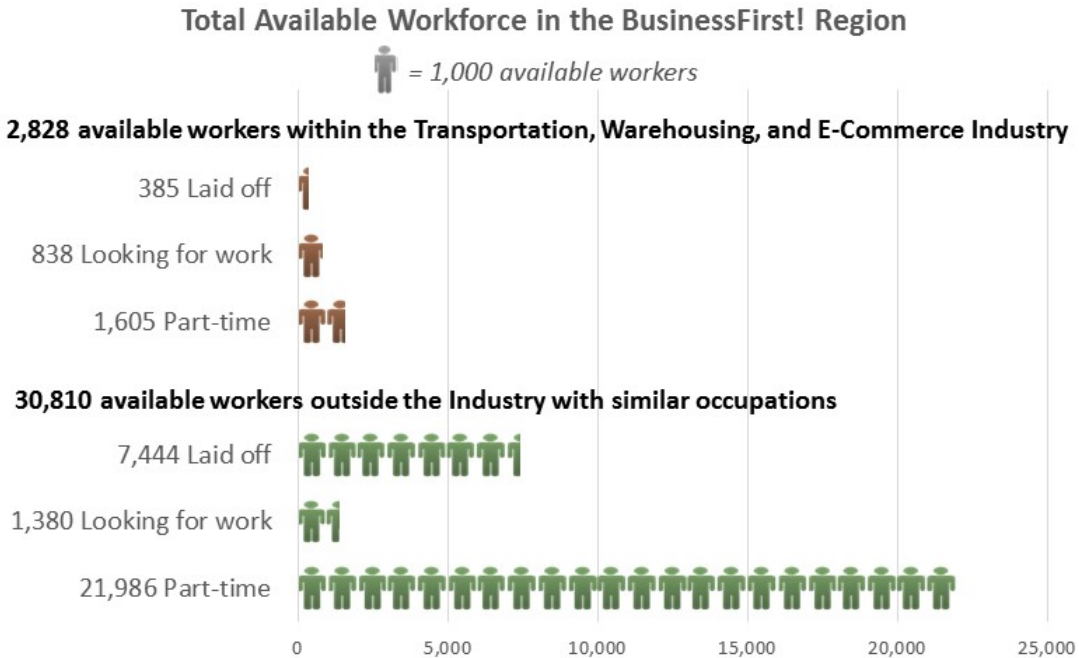
2,828 Total Available Workforce in the Transportation/Warehousing/E-commerce Industry

There is a grand total of 33,638 total available workforce in the BusinessFirst! region.

¹⁴ <https://www.bls.gov/cps/lfcharacteristics.htm> for the BLS definition of part-time status (1 to 34 hours per week)

¹⁵ American Community Survey Public Use Microdata Sample (PUMS)

Figure 11: Total BusinessFirst! Available Workforce Available to Fill Transportation, Warehousing, E-commerce Industry Occupations



The categories of workers in this total include: Office workers 12,595; Sales 6,366; Transportation 5,326; Production workers 2,503; Management 1,750; and Repair workers 615, among others.¹⁶

Residence and Workplace of BusinessFirst! Trade, Transportation, and Utilities Workers

Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) provide an annual snapshot of where workers live and work. With this data, researchers are able to characterize how many workers are employed by competitive establishments in other jurisdictions, counties, and even states. The following figures illustrate where BusinessFirst! workers live and where BusinessFirst! workers travel in Ohio for employment. However, for the purposes of this analysis, data are not available to represent transportation, warehousing, and e-commerce workers, but instead include all trade, transportation, and utilities workers.

According to the 2015 LODES estimates, 43,427 individuals who reside in one of the BusinessFirst! counties (Darke, Greene, Miami, Montgomery, or Preble Counties) also work within the BusinessFirst! region in one of the trade, transportation, and utilities industries. Another 27,023 travel in from other Ohio areas, while 27,972 residents who are working within these industries travel outside the region to work.

In the trades and transportation industries, about 28,000 workers commute to jobs outside of the BusinessFirst! region and 27,000 commute into the BusinessFirst! region. Again, attraction of those out-commuting workers to the BusinessFirst! region is a viable strategy, as is attraction of workers from outside the region, evidenced by these data.

¹⁶ Ibid

Figure 12: Trade, Transportation, and Utilities Workers and the Business1st! Region, 2015

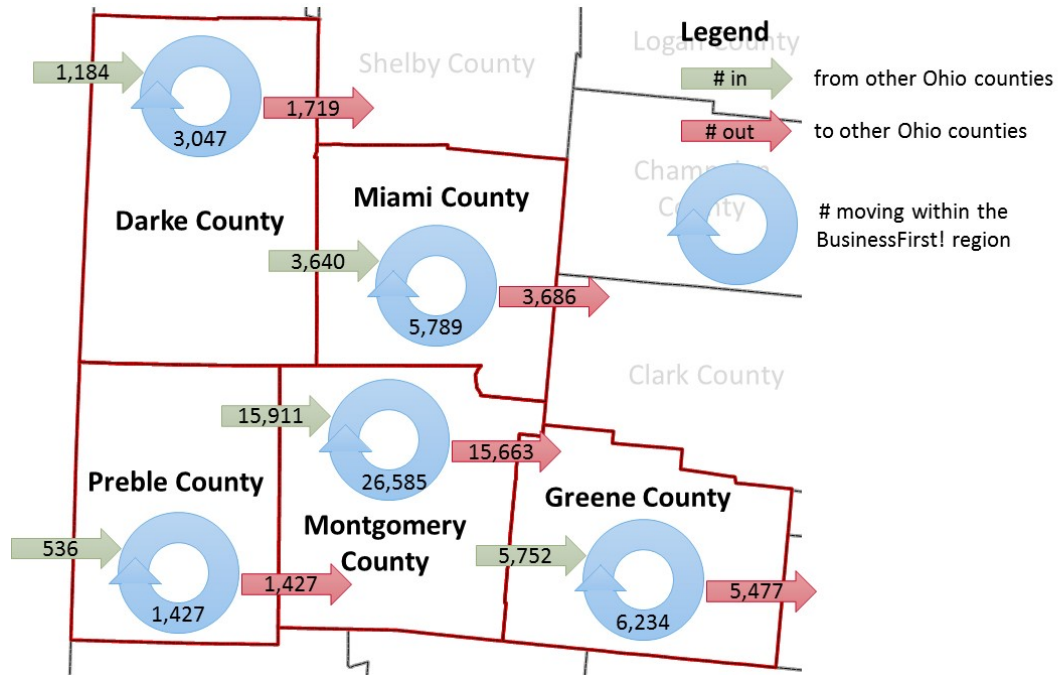
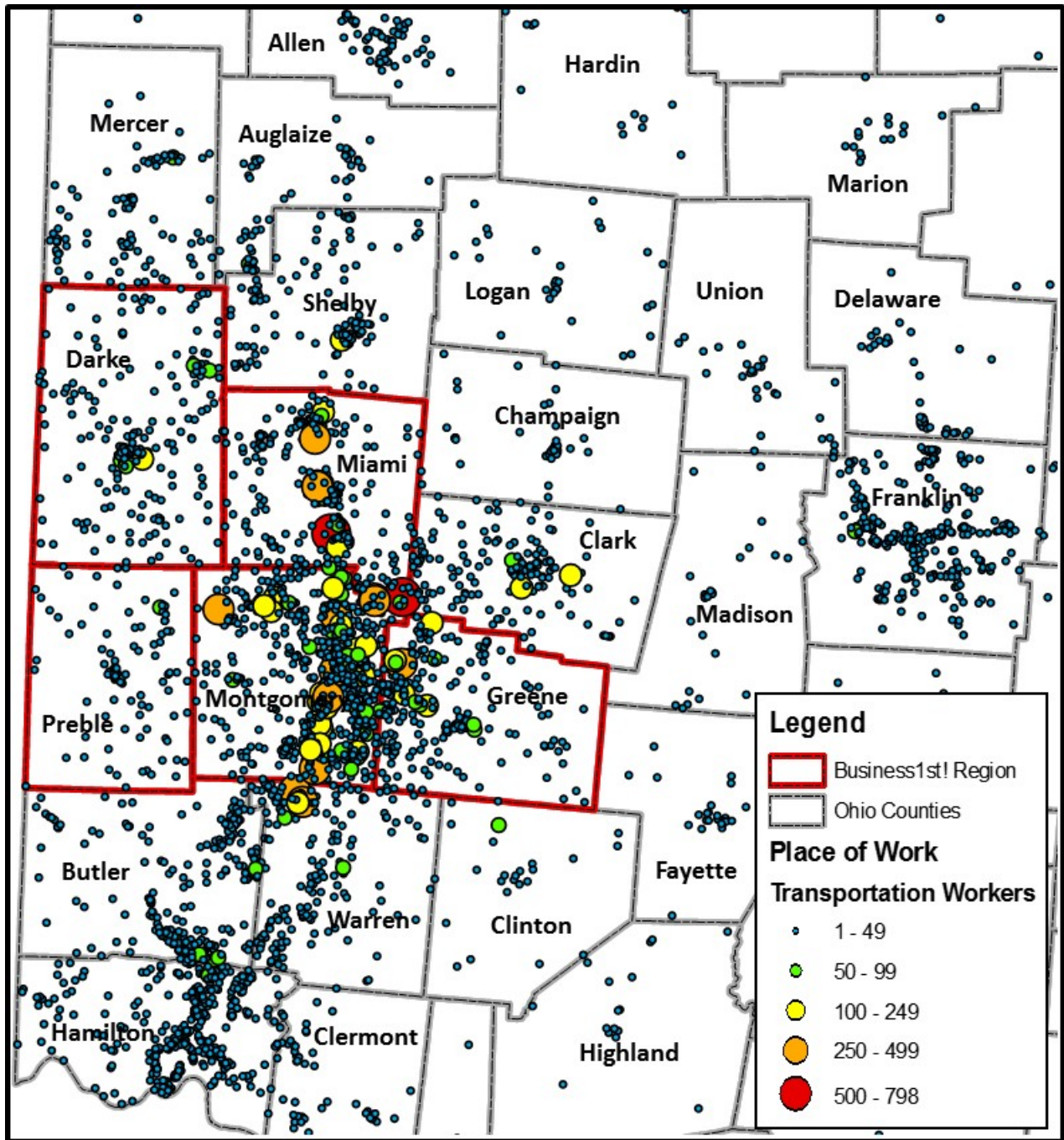


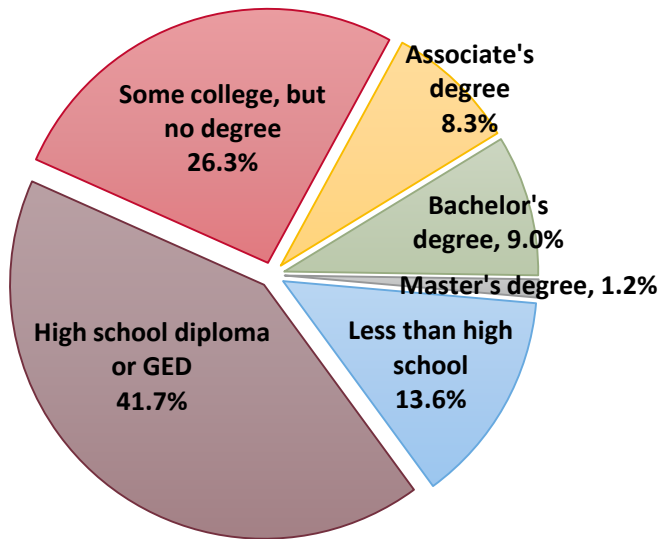
Figure 13: Where BusinessFirst! Trade, Transportation, and Utilities Workers Work, 2015



Educational Attainment, Enrollment, and Occupational Skill Sets

Educational Attainment: Most workers in the Industry have a high school diploma (42%) or more (45%). See the chart for more detail.

Figure 14: Level Educational Attainment for the BusinessFirst! Transportation, Warehousing, and E-commerce Workers, 2011-2015



College Enrollment: 653 people who are working or have worked in this Transportation/Warehousing/E-commerce Industry are enrolled in school, and the vast majority are enrolled in College (512 of 653 or 78%) and 9% are pursuing education beyond a bachelor's degree.

Occupational Skill Sets: For this analysis, technological skills and soft skills are considered. The technological skills for the most common occupations are presented in the following table, which shows that database software, office suite software, and enterprise resource planning (ERP) software are common skill requirements across occupations.

Table 8: Technology Skills for Most Common Transportation, Warehousing, and E-commerce Occupations

| TECHNOLOGY SKILLS FOR MOST COMMON OCCUPATIONS ¹⁷ | Database* | Office Suite | ERP | Route Navigation | Spreadsheet | Operating System | Other Occupation-specific |
|---|--------------------|--------------|-----|------------------|-------------|------------------|---------------------------|
| Heavy and Tractor-Trailer Truck Drivers | X ^a | X | | X | X | X | |
| Driver/Sales Workers (aka Delivery Drivers) | X ^b | X | | | | | X |
| Industrial Truck and Tractor Operators | | X | X | | X | | X |
| Hand Laborers and Freight, Stock, and Material Movers | X ^{c,d} | X | X | | X | X | X |
| Hand Packers and Packagers | X ^c | X | X | | X | | X |
| Customer Service Representatives | X ^{c,f,g} | | X | | | | X |
| Dispatchers | X ^{c,e} | | | | | | X |
| Stock Clerks- Stockroom, Warehouse, or Storage Yard | X ^{c,f} | X | X | | | | X |
| *Database Type: | | | | | | | |
| a. Daily Log Program, Easy Trucking & Fog Line Software | | | | | | | |
| b. MobTech Systems Route Sales Trakker, etc. | | | | | | | |
| c. Data entry software | | | | | | | |
| d. Oracle | | | | | | | |
| e. Tangier Sky Scheduler View, etc. | | | | | | | |
| f. Microsoft Access | | | | | | | |
| g. customer service knowledge generation software | | | | | | | |

Top Soft Skills

Real-time data from CareerBuilder and Indeed.com¹⁸ show that the most common soft skills required of workers in the Transportation/Warehousing/E-commerce Industry, in the Business First! region are:

- Sales
- Communications
- Leadership
- Problem Solving
- Innovation

¹⁷ The Occupational Information Network (O*NET) is developed under the sponsorship of the U.S. Department of Labor/Employment and Training Administration (USDOL/ETA).

¹⁸ Economic Modeling Specialists International, 2017

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Works Cited

1. U.S. Census Bureau. (2017). Job-to-Job Flows Data (Beta) (2000-2016) [computer file]. Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program [distributor], last accessed Sep 2017 at https://lehd.ces.census.gov/data/j2j_beta.html. R2017Q2.
2. U.S. Census Bureau. (2017). LEHD Origin-Destination Employment Statistics Data (2002-2015) [computer file]. Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program [distributor], last accessed Sep 2017 at <https://lehd.ces.census.gov/data/#lodes>. LODES 7.3 2015.
3. U.S. Census Bureau. (2017). Public Use Microdata Sample (PUMS) (2011-2015) [computer file]. Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program [distributor], last accessed Sep 2017 at <https://www.census.gov/programs-surveys/acs/data/pums.html>. 2015.
4. U.S. Census Bureau. (2017). Quarterly Workforce Indicators (1998-2016) [computer file]. Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program [distributor], last accessed Sep 2017 at <https://lehd.ces.census.gov/data/#qwi>. 101 QWISA_F OH 39 2000:1-2016:4 V4.1.2 R2017Q3.

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Addendum A: Additional Figures

Figure 15: Where BusinessFirst! Workers Work in Ohio, 2015

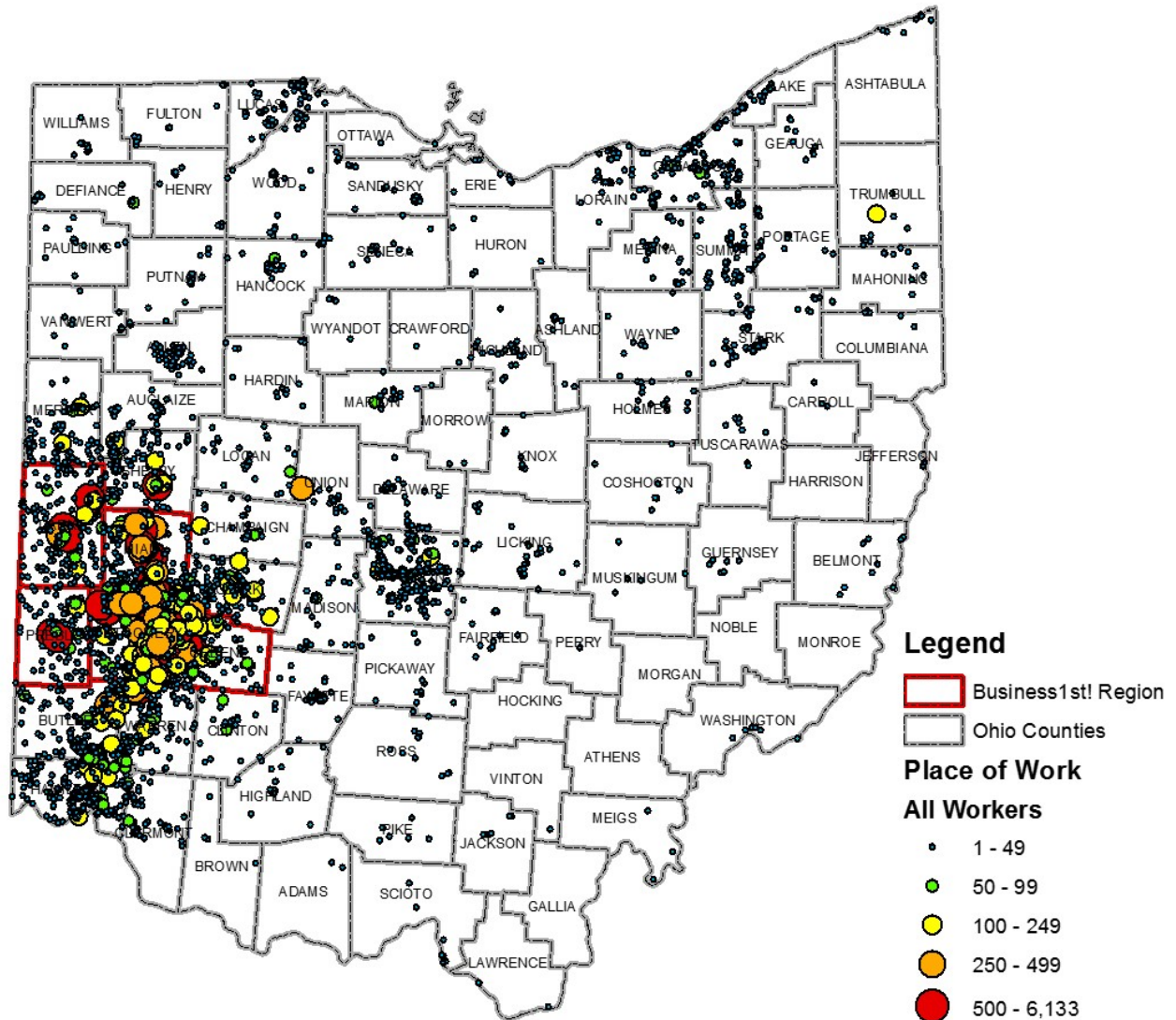


Figure 16: Where BusinessFirst! Production Workers Live, 2015

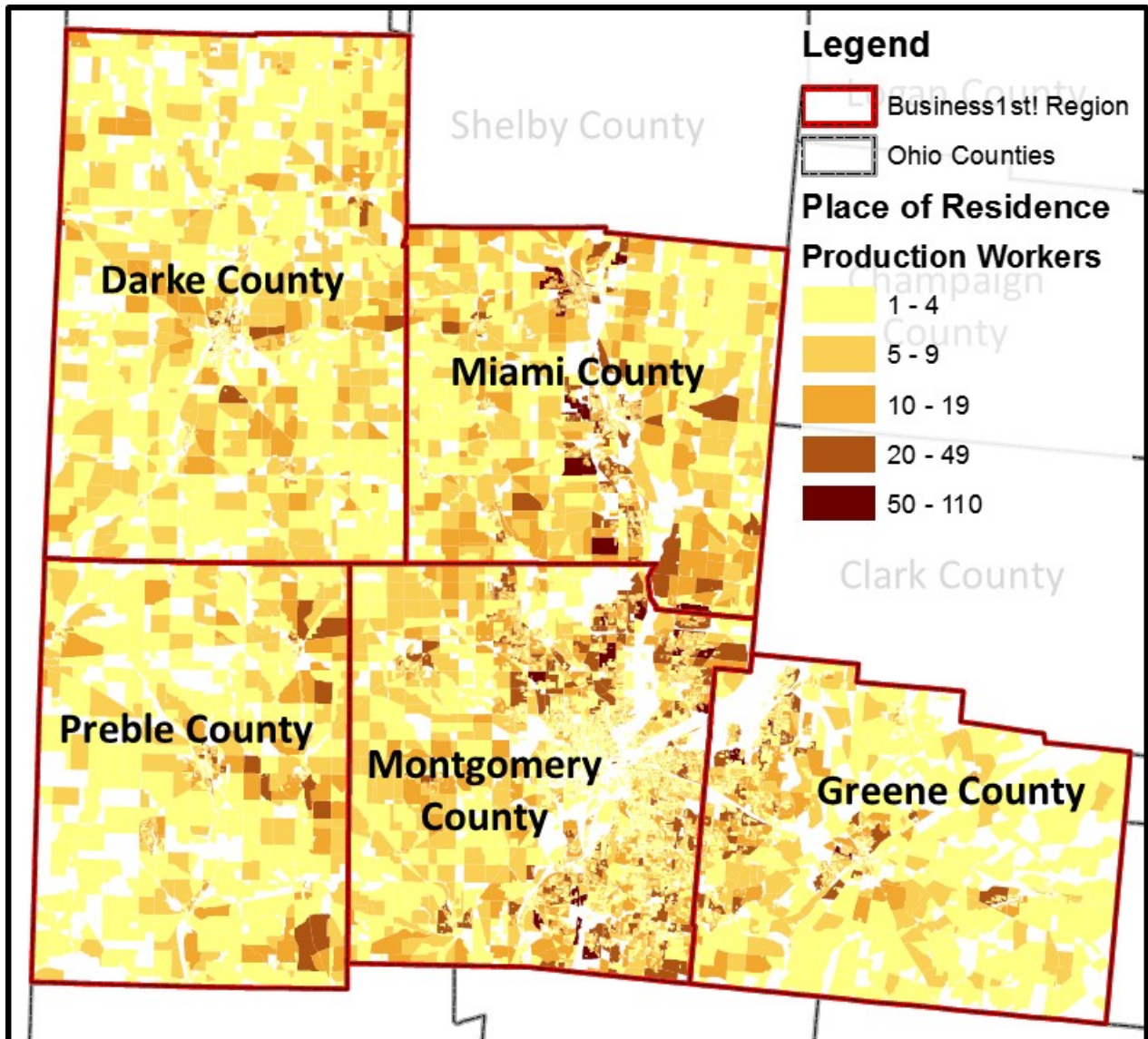


Figure 17: Where BusinessFirst! Production Workers Work in Ohio, 2015

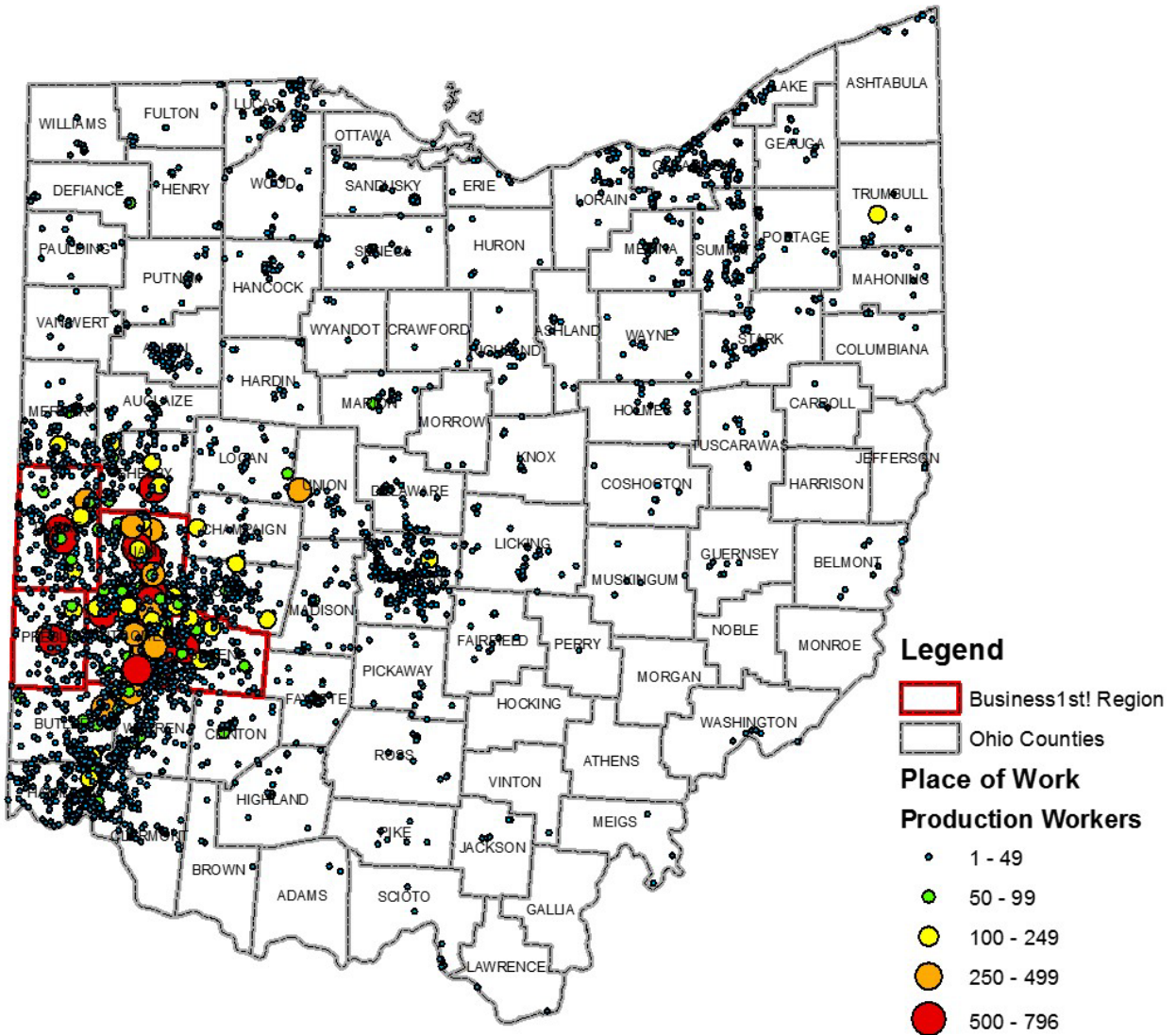


Figure 18: Where BusinessFirst! Trade, Transportation, and Utilities Workers Live, 2015

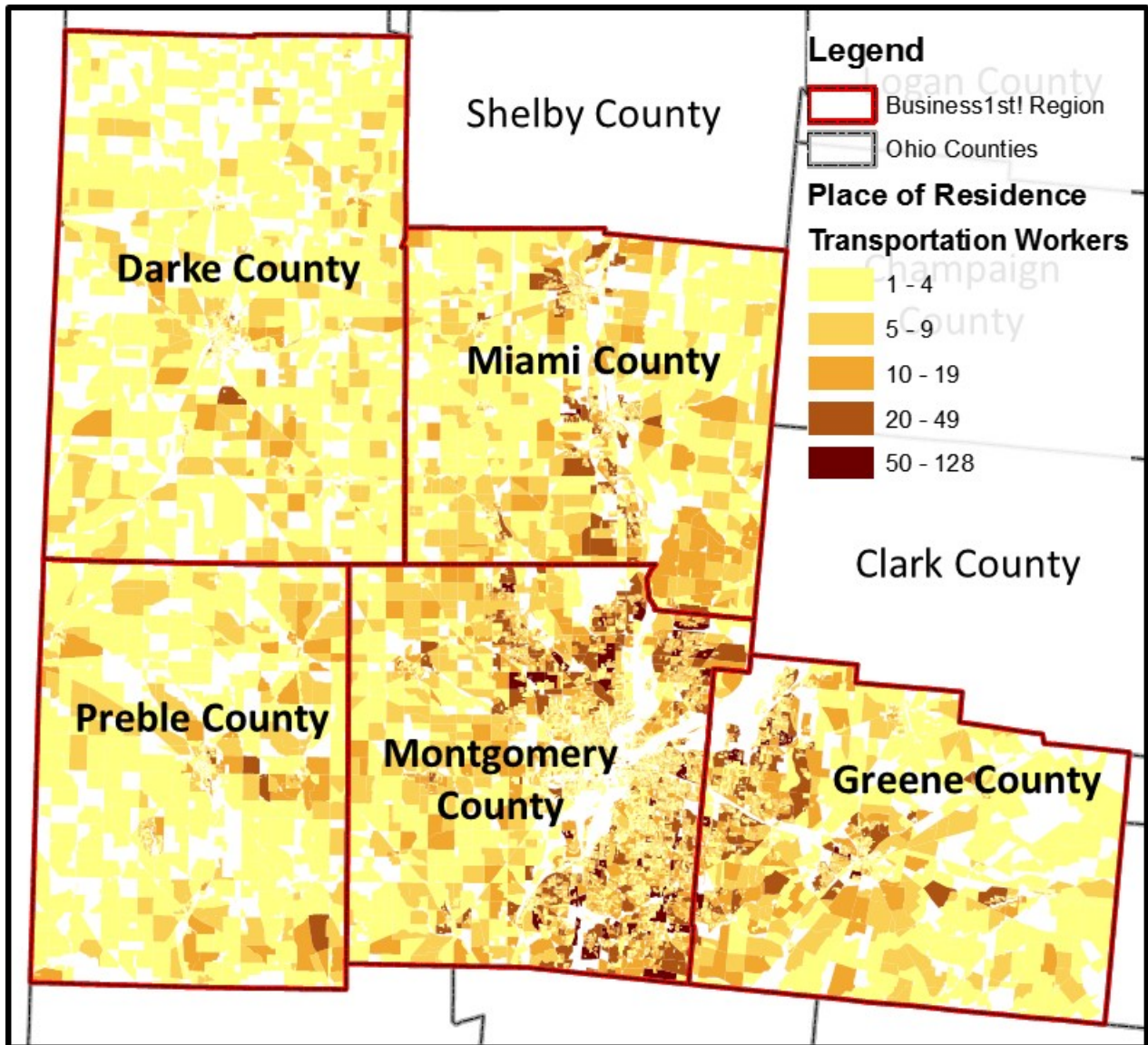
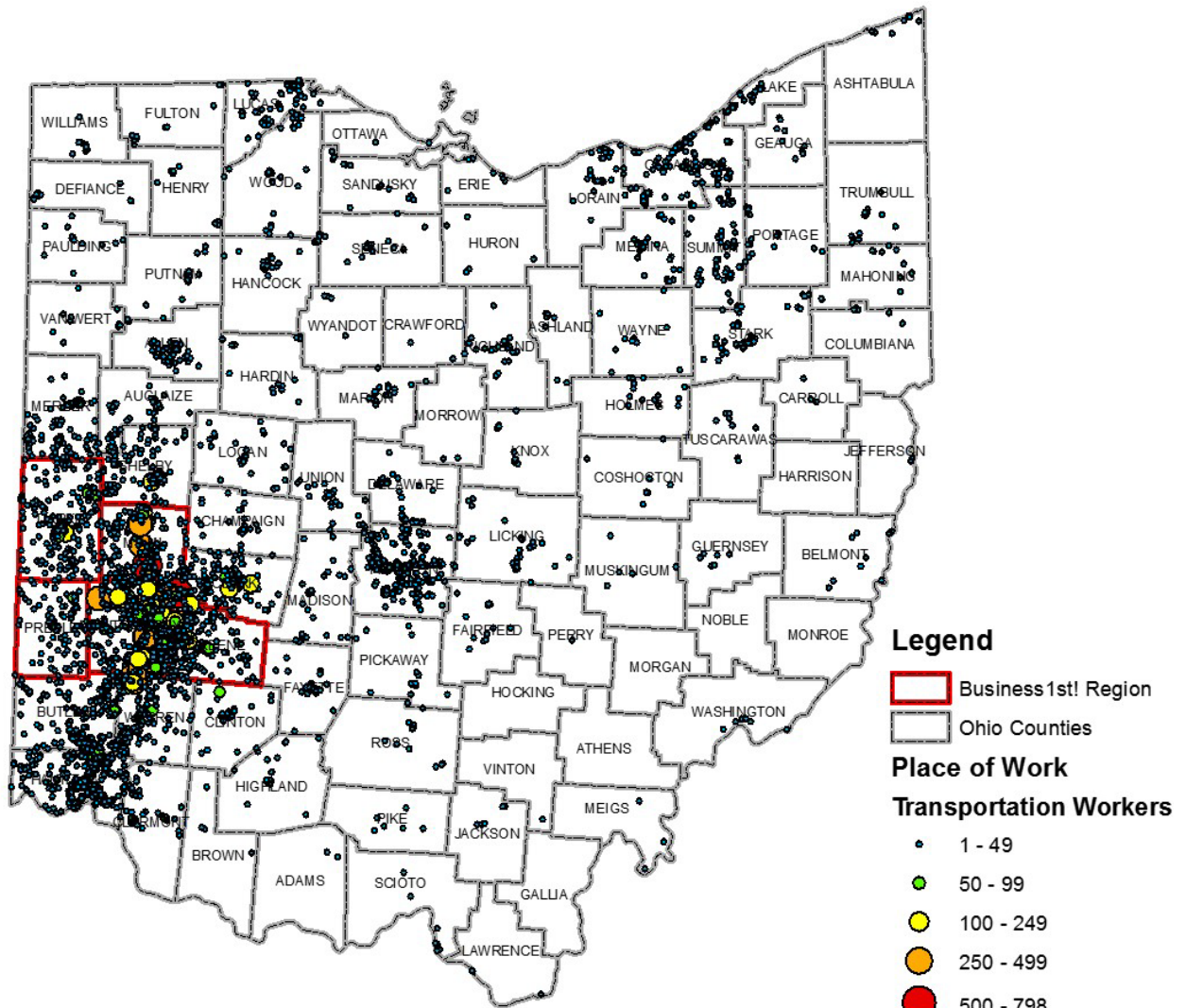


Figure 19: Where BusinessFirst! Trade, Transportation, and Utilities Workers Work in Ohio, 2015



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