MICHIGAN **AGRICULTURE**

2019 INDUSTRY CLUSTER WORKFORCE ANALYSIS

STATE OF MICHIGAN
Department of Technology, Management and Budget
Bureau of Labor Market Information and Strategic Initiatives

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2019 INDUSTRY CLUSTER WORKFORCE ANALYSIS

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IT'S BIGGER THAN DATA.

The Bureau of Labor Market Information and Strategic Initiatives is your one-stop shop for information and analysis on Michigan's population, labor market, and more.

- Our Federal-State Programs division runs the state's cooperative agreements with the U.S. Bureau of Labor Statistics and the U.S. Census Bureau, making us the official source for this information.
- Our Research and Evaluation division conducts workforce research and program evaluation, giving you the insight you need to make smarter decisions.

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Dear Colleagues,

The Michigan Department of Labor and Economic Opportunity partners with businesses to help them find the talent they need to be successful. To assist with this process, we worked with the Bureau of Labor Market Information and Strategic Initiatives to produce a series of workforce analysis reports, each focusing on a key industry cluster in the Michigan economy. These reports are loaded with useful information on talent, including an analysis of employment, wages, key occupations, demand jobs, talent pipelines, and career pathways. We hope these reports will help our business partners make data-driven workforce decisions and help our state grow a talent system that is second to none.

STEPHANIE BECKHORN
DIRECTOR, WORKFORCE DEVELOPMENT
Michigan Department of Labor
and Economic Opportunity

Dear Colleagues,

The Michigan Bureau of Labor Market Information and Strategic Initiatives is your one-stop shop for information and analysis on Michigan's population, labor market, and more. These reports provide traditional labor market information, but also discuss important topics such as talent pipelines and career pathways. These reports give our workforce partners, employers, and job seekers the insight they need to make smarter decisions. We would like to thank the Department of Labor and Economic Opportunity for partnering with us on these reports.

JASON PALMER
DIRECTOR
Michigan Bureau of Labor Market
Information and Strategic Initiatives

Key Findings

- Agriculture is one of the few sectors that added jobs through the Great Recession. Employment in this cluster improved by 2.2 percent (+1,800) between 2007 and 2010, while total Michigan employment dropped by 10.5 percent (-373,300) over this period. The Agriculture cluster expanded employment by almost 18 percent between 2012 and 2017, with much of the growth coming from the subsectors of *Animal and crop production and support activities* (+5,500) and in *Food processing* (+7,500).

- Based on payroll employment reported to the Unemployment Insurance Agency (UIA), 47 percent of jobs in the Agriculture cluster are in *Food processing manufacturing*, followed by *Farming*. However, many small farmers are not required to report to the UIA unless their payroll exceeds $20,000 per quarter. As such, this source does not capture self-employed or unpaid family members working on farms. If these were to be included, *Farming* would be the largest subsector.

- Nominal wages in the Agriculture cluster are noticeably lower than the Michigan average. Between 2000 and 2017, wages in this cluster were below the statewide wage each year by at least $6,500. Since 2014, the gap has widened to about $9,900.

- Many key careers in the Agriculture cluster do not require more than a high school diploma or equivalent. For instance, all of the 15 top key occupations in the cluster require a high school diploma or less.

- The pay for occupations in the Agriculture cluster is among the lowest of all industry clusters in Michigan. The top 15 key occupations in the Agriculture cluster display a narrow range of pay, from $9 to $12 for *Graders and sorters of agricultural products* and for *Farmworkers and laborers* to $25 to $39 for *Farmers, ranchers, and other agricultural managers*.

- Michigan's Agriculture cluster presents many advantages, including relatively consistent job growth (even through the Great Recession) and being a key source of exports. However, the cluster faces the same challenges it has dealt with in the past, such as shortages of migrant workers, low pay, and aging farm operators.

An **industry cluster** is a geographic concentration of related employers, industry suppliers, and support institutions in a product or service field.

In a practical sense, industry clusters are an organizing framework to permit the selection of significant industry sectors for which in-depth knowledge and expertise on workforce issues are developed by service providers that convene employers. An industry cluster leverages the knowledge and resources of all involved, decreases duplication of effort, and often achieves cost savings for recruitment and training.

The Agriculture cluster is critical to the Michigan economy in terms of the production and the revenues it generates. It is also a major source of exports to other states and around the world.

There are a variety of estimates of the number of agricultural jobs in Michigan. These employment estimates vary because of 1) the definition of the sector used, 2) the type of jobs counted, and 3) the data source and methodologies used. For example, information on jobs in this study comes primarily from employers' tax records filed with the Michigan Unemployment Insurance Agency. This source does not reflect many small farmers, unless their payroll is in excess of $20,000 per quarter. These tax records capture only paid workers and not self-employed or unpaid family members working on farms. The USDA Census of Agriculture does attempt to count jobs of all types (full or part-time, seasonal and migrant, paid and unpaid including self-employed).

The Agriculture cluster as defined in this study comprises not only direct activities in *Crop and animal production and support,* but also includes *Food processing manufacturing (including soft drinks, bottled water, breweries and distilleries, and wineries)*, as well as *Retail and wholesale services* that deal exclusively with agricultural produce. For example, *Wholesalers of farm and garden equipment*, *Wholesalers of dairy products, meat, fruits and vegetables, etc.* are included. We have also relaxed our prior definition to encompass the manufacturing of inputs to Agriculture such as *Fertilizers, pesticides, and machinery*. However, this study excludes jobs in *Restaurants and grocery stores*. Other studies show higher job counts by expanding the scope of industries covered. For example, a 2018 Michigan State University (MSU) study includes direct and indirect jobs in *Food wholesale and retail service* (565,900 jobs), and indirect and induced jobs in *Agriculture and food processing* (125,400 jobs)[1].

Four subclusters highlight the diverse array of activities composing this facet of Michigan's economy.

- Food Processing Manufacturing
- Crop and Animal Production Farming and Support Activities
- Wholesale and Retail Trade
- Agricultural Inputs Manufacturing

[1]Knudson, William A., et al., 2018, "The Economic Impact of Michigan's Food and Agriculture System", Michigan State University Working Paper No. 01-0518

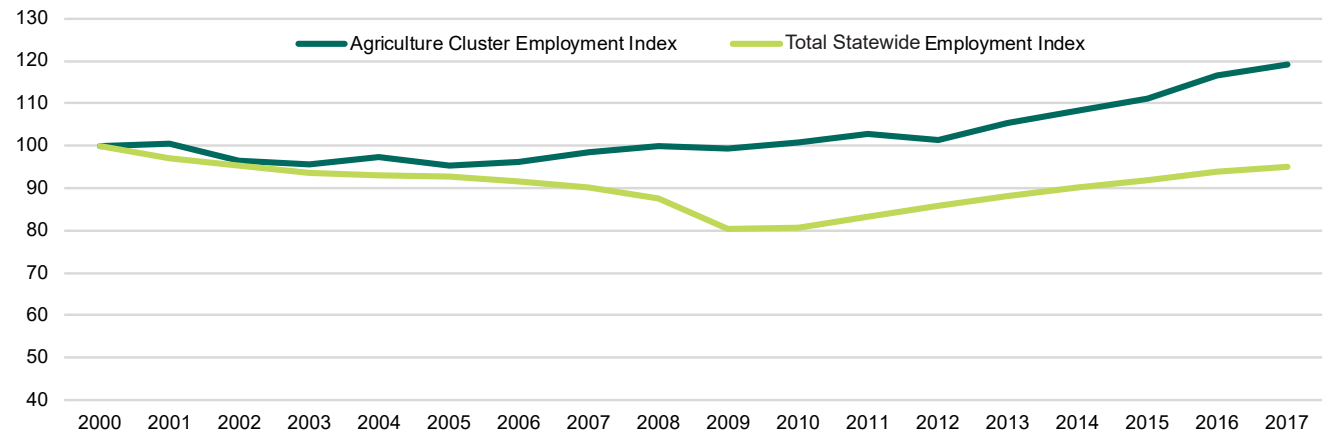
Agriculture Employment and Wages Analysis

Employment in the Michigan Agriculture cluster fell following the 2000 economic downturn, but picked back up in 2003 before continuing a steady rise through 2017. Overall, jobs in the Agriculture cluster expanded by 19 percent between 2000 and 2017, and even increased by 1,800 jobs through the Great Recession.

In recent years, employment in this cluster has experienced even more significant growth, expanding by almost 18 percent (+14,400) between 2012 and 2017. Most of this growth was attributed to the subsectors of *Animal and crop production and support activities* (+5,500) and *Food processing* (+7,500), but *Agricultural wholesale and retail trade activities* also added 1,800 jobs over the period. Contrary the trend of the rest of the cluster, jobs in the subsector of *Agricultural inputs* fell by 400.

Nominal wages in the Agriculture cluster are noticeably lower than the Michigan average. In 2017, the average nominal wage in the Agriculture cluster was $42,443, which was about $10,000 below the statewide average pay in all private industries. Between 2000 and 2017, wages in this cluster were below the statewide average wage each year by at least $6,500. Since 2014, the gap has widened to about $9,900. Despite this, wages in the Agriculture cluster have generally been rising faster than the Michigan average wage since 2001.

FIGURE 1: **EMPLOYMENT INDEX, MICHIGAN AGRICULTURE CLUSTER**



Source: Quarterly Census of Employment and Wages, Michigan Bureau of Labor Market Information and Strategic Initiatives

FIGURE 2: **NOMINAL WAGE INDEX*, MICHIGAN AGRICULTURE CLUSTER**

Source: Quarterly Census of Employment and Wages, Michigan Bureau of Labor Market Information and Strategic Initiatives

*Nominal wages are not adjusted for inflation.

Analysis of Agriculture Subclusters

Food Processing (44,995 jobs)

Animal Food Manufacturing
Grain and Oilseed Manufacturing
Sugar and Confectionery Product Manufacturing
Fruit and Vegetable Preserving and Specialty Food Manufacturing
Dairy Product Manufacturing
Animal Slaughtering and Processing
Seafood Product Preparation and Packaging
Bakeries and Tortilla Manufacturing
Other Food Manufacturing
Soft Drink Manufacturing
Bottled Water Manufacturing
Ice Manufacturing
Breweries
Distilleries

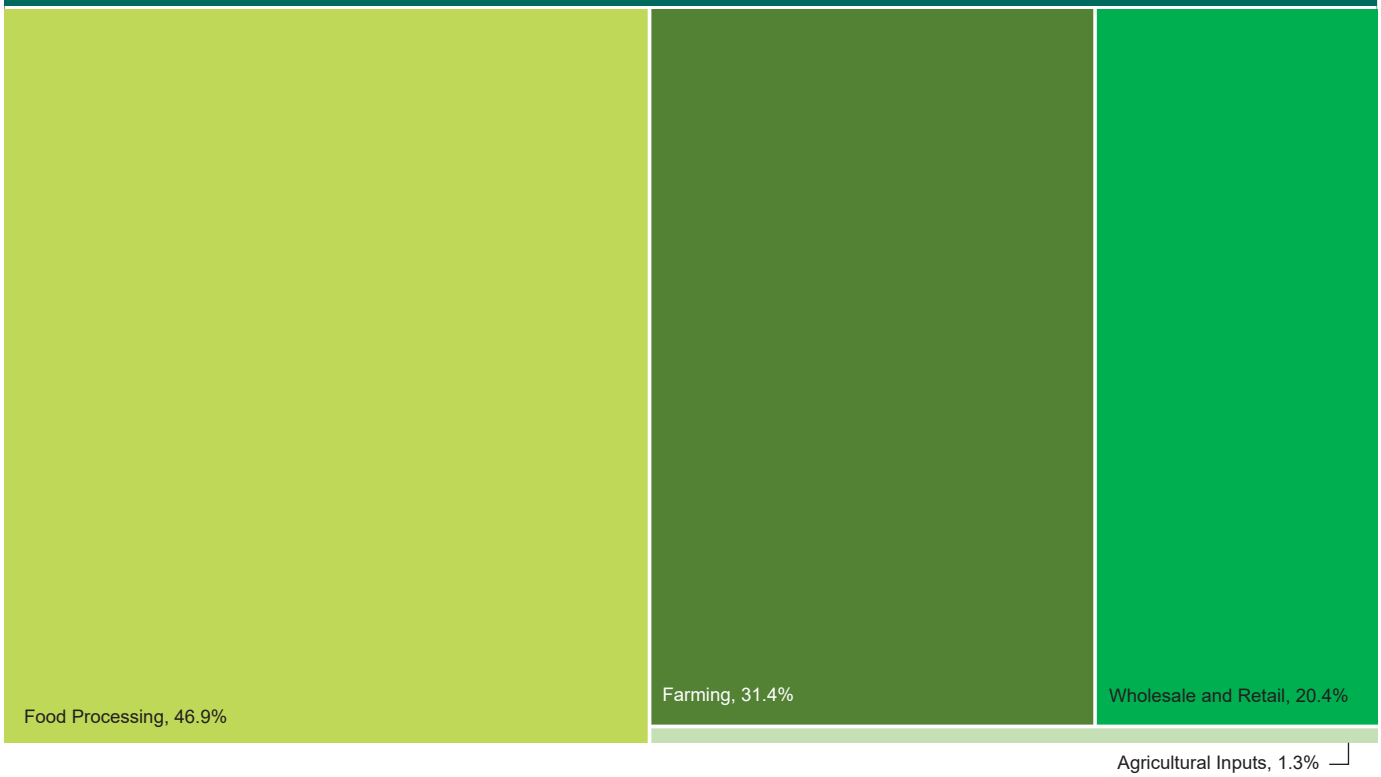
About 47 percent of jobs in the Agriculture cluster are found in the subsector of *Food processing*. Employment in this subsector expanded significantly during the 2000-2017 period (+5,000 or 12 percent). Employment declined slightly during the Great Recession (-1,700 or 4 percent) but has substantially improved since then (+6,700 or 18 percent).

Farming (30,163 jobs)

Crop Production
Animal Production
Support Activities for Crop Production
Support Activities for Animal Production
Wineries

Farming is the second largest employer in the Agriculture cluster with close to a third of total cluster employment in 2017. This industry group includes *Animal and crop production*, as well as *Support activities*. As mentioned in the introduction, data reported to the Unemployment Insurance Agency (UIA) undercount the number of farm workers, because state laws do not require small farms with less than $20,000 in payroll to report. The 2017 Census of Agriculture conducted by the U.S. Department of Agriculture reported that in 2017, 11,907 farms hired 77,475 workers, 828 farms employed 19,602 migrant workers, and 23,260 farms had 54,839 unpaid workers. According to this source, the total of farm employees was therefore about 151,900 in 2017. Jobs in the *Farming* subsector have shown steady improvement over the past two decades (even during the Great Recession).

FIGURE 3: **AGRICULTURE SUBCLUSTER DISTRIBUTION 2017**



Source: Quarterly Census of Employment and Wages, Michigan Bureau of Labor Market Information and Strategic Initiatives

Wholesale and Retail Services to Agriculture (19,565 jobs)

Farm and Garden Equipment Merchant Wholesalers
Dairy Product Merchant Wholesalers
Poultry Product Merchant Wholesalers
Meat and Meat Product Merchant Wholesalers
Fruit and Vegetable Merchant Wholesalers
Farm Product Raw Material Merchant Wholesalers
Farm Supplies Merchant Wholesalers
Nursery, Garden, and Farm Supply Stores
Meat Markets
Fruit and Vegetable Markets
Farm Product Warehousing and Storage

The subsector of *Wholesale and retail services to agriculture* accounted for about a fifth of the cluster's employment in 2017. Jobs in this industry edged higher by 5 percent (+1,000) between 2000 and 2017. After a drop of 11 percent (-2,000) during the Great Recession, employment in the subsector has expanded by 3,000 (+18 percent) to reach 19,500 in 2017. However, the number of businesses operating in this subsector has progressively declined over the past two decades. In 2017, there were 287 fewer establishments in the subsector than there were in 2000.

Manufacturing of Agricultural Inputs and Machineries (1,236 jobs):

Nitrogenous Fertilizer Manufacturing
Phosphatic Fertilizer Manufacturing
Fertilizer (Mixing Only) Manufacturing
Pesticide and Other Agricultural Chemical Manufacturing
Farm Machinery and Equipment Manufacturing
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing
Food Product Machinery Manufacturing

This subsector employs just a little over 1 percent of the workforce in the Agriculture cluster, but has continuously added jobs in the state over the past two decades. Employment in 2017 was 13 percent (+140) above the level attained in 2000. The number of establishments has also expanded slightly over the 2000-2017 period (+28).

Key Agriculture Occupations

Occupations are an important level of analysis within the Agriculture cluster. The top 15 key occupations in the cluster (featured in Table 1) are determined by two criteria: the occupation's share of the cluster's total employment and the occupation's share of the state's employment for that occupation. Because the volume of these jobs in the cluster is large, they are fairly representative of the typical wages, education, skills, and demand for the cluster.

Table 1 includes a column that measures the talent gap for each occupation, meaning the difference between the talent supply and employer demand for that occupation. The occupations were each given a separate score for supply and demand based on composite indexes. Shortages or surpluses were then determined based on the differences between the supply and demand scores. Some occupations were not scored due to their small size or a lack of available data, and are marked N/A. More information on Michigan's Occupational Supply and Demand and the Talent Gap variable can be found in *Michigan's Labor Market News*, vol. 74, issue 10.

TABLE 1: **KEY OCCUPATIONS, MICHIGAN AGRICULTURE CLUSTER**

KEY OCCUPATION	CLUSTER EMPLOYMENT	MICHIGAN EMPLOYMENT	CLUSTER WAGE RANGE	ANNUAL OPENINGS	TYPICAL EDUCATION AND TRAINING	TALENT GAP
Agricultural Equipment Operators	2,215	2,280	$14–$19	370	No Formal Educational Credential	Balanced
Bakers	1,548	5,560	$10–$14	870	No Formal Educational Credential	Balanced
Farm Equipment Mechanics and Service Technicians	690	1,180	$15–$22	130	High School Diploma or Equivalent	Balanced
Farmers, Ranchers, and Other Agricultural Managers	36,130	36,130	$25–$39	2,660	High School Diploma or Equivalent	N/A
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	10,456	20,020	$9–$13	3,060	No Formal Educational Credential	Balanced
Farmworkers, Farm, Ranch, and Aquacultural Animals	6,420	9,320	$9–$12	1,570	No Formal Educational Credential	N/A
Food Batchmakers	3,736	4,160	$12–$19	660	High School Diploma or Equivalent	Balanced
Food Cooking Machine Operators and Tenders	947	1,010	$14–$22	160	High School Diploma or Equivalent	Balanced
Graders and Sorters, Agricultural Products	1,100	1,120	$9–$12	150	No Formal Educational Credential	Balanced
Industrial Truck and Tractor Operators	1,779	16,910	$13–$20	2,040	No Formal Educational Credential	Balanced
Meat, Poultry, and Fish Cutters and Trimmers	1,052	1,890	$11–$15	260	No Formal Educational Credential	Shortage
Mixing and Blending Machine Setters, Operators, and Tenders	1,001	4,520	$14–$23	520	High School Diploma or Equivalent	Surplus
Packaging and Filling Machine Operators and Tenders	5,231	13,980	$12–$20	1,780	High School Diploma or Equivalent	Surplus
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	1,013	1,430	$14–$21	170	High School Diploma or Equivalent	Balanced
Slaughterers and Meat Packers	929	970	$11–$15	140	High School Diploma or Equivalent	Balanced

Sources: Cluster employment, Michigan employment, and Wage range: Occupational Employment Statistics, Michigan Bureau of Labor Market Information and Strategic Initiatives (2017); Annual Openings: Long-term Occupational Projections (2016–2026), Michigan Bureau of Labor Market Information and Strategic Initiatives; Typical Education and Training: Bureau of Labor Statistics; Michigan's Occupational Supply and Demand and the Talent Gap: Linskey, Evan. 2018. "An Analysis of Occupational Supply and Demand in the Michigan Labor Market." Michigan's Labor Market News, Vol. 74, Issue 10.

- The key occupations in the Agriculture cluster are a good mix in terms of wage range, projected total annual openings, current job postings, and the labor demand-supply situation.

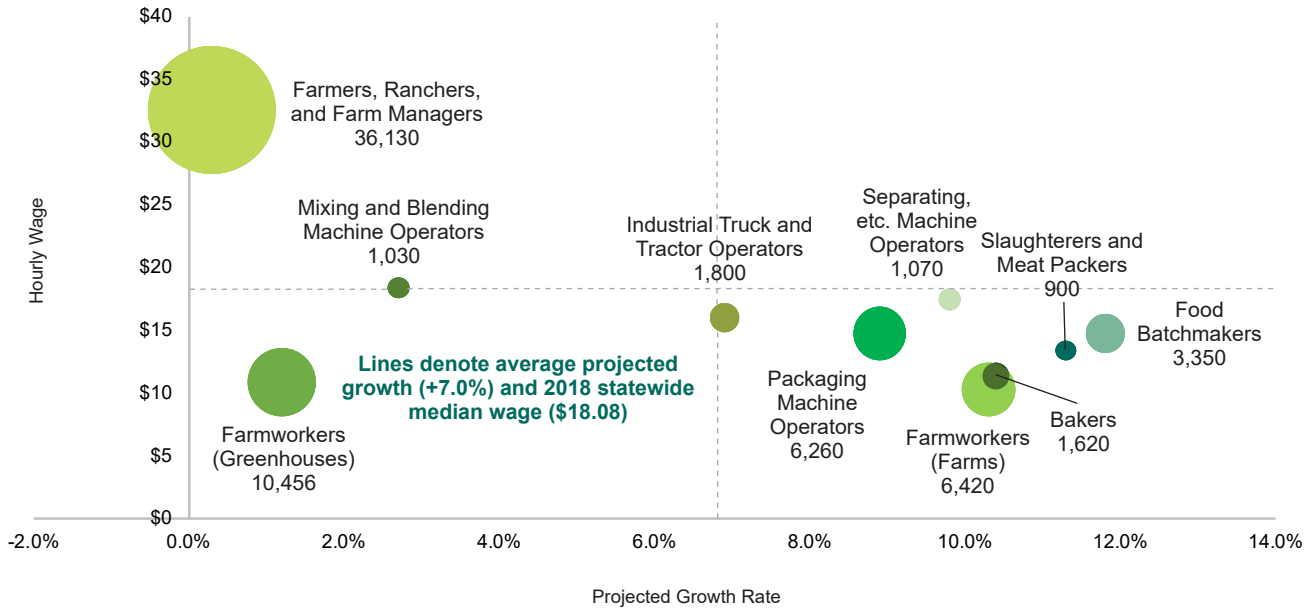
- Many key careers in the Agriculture cluster do not require more than a high school diploma or equivalent. For instance, all 15 top key occupations in the cluster require a high school diploma or less.

- The pay in the Agriculture cluster is among the lowest in Michigan. The top 15 key occupations in the Agriculture cluster display a narrow range of pay, from $9 to $13 for *Graders and sorters of agricultural products* and for *Farmworkers and laborers* to $25-$39 for *Farmers, ranchers, and other agricultural managers.* However, there is a clear relationship between education, trade skills, experience, and wage. For instance, the lowest-paying occupations among the top 15 key occupations require no formal education, no experience, and short-term on-the-job training. In contrast, key agricultural careers that require a high school diploma and/or a trade skill (such as mechanics, machine operation, etc.), tend to pay more.

- Key occupations in the Agriculture cluster are projected to create 14,540 job openings annually over the next decade (until 2026). These openings will come from the need to replace workers who are retiring or leaving the occupation for other economic reasons, such as moving into other careers or to other states. Some openings will also become available due to the cluster expanding and needing more workers.

- The talent gap is calculated from variables representing supply and demand such as current employment and projected growth, among others. This measure is a snapshot of current job markets. The majority of the top 15 key occupations in the Agriculture cluster display a balanced demand-supply situation. Only one of these occupations show a shortage, namely *Meat, poultry, and fish cutters and trimmers.* Two show a surplus: *Packaging and filling machine operators and tenders,* and *Mixing and blending machine setters, operators, and tenders.* The demand-supply analysis could not be determined for two occupations because of a lack of adequate information: *Farmers, ranchers, and other agricultural managers*; and, *Farmworkers, farm, ranch, and aquacultural animals*.

FIGURE 4: **HIGH-DEMAND OCCUPATIONS, MICHIGAN AGRICULTURE CLUSTER**



Sources: Wages: Occupational Employment Statistics, Michigan Bureau of Labor Market Information and Strategic Initiatives; Projected Growth Rate: Long-term Occupational Projections (2016–2026), Michigan Bureau of Labor Market Information and Strategic Initiatives; Michigan's Occupational Supply and Demand and the Talent Gap: Linskey, Evan. 2018. "An Analysis of Occupational Supply and Demand in the Michigan Labor Market." Michigan's Labor Market News, Vol. 74, Issue 10.

High-demand

This figure includes occupations that show a favorable mix of projected long-term job growth, projected annual job openings, and median wages. It does not reflect current hiring demand. Wages displayed are median wages for 2018. Circle size denotes average projected annual openings.

High-demand occupations are particularly important to workforce developers as they represent careers which display a high projected growth and a large number of job openings over the next decade.

Half of the top 10 high-demand occupations display large employment bases (above 3,000) and are projected to grow at above average rates. One occupation in this category, *Farmers, ranchers, and other agricultural managers*, has an employment level of over 36,000 and the highest range of wages ($25–$39). However, jobs in this career are projected to stay virtually flat over the next decade, inching up by 0.3 percent.

Only one of these occupations shows employment levels that are below 1,000 (*Slaughterers and meat packers*) but is projected to grow in double digits (11.3 percent).

Two occupations that are crucial to Agriculture even though they are not projected to show high rates of employment are: 1) *Farmers, ranchers, and other farm managers* (virtually flat over the next 10 years); and 2) *Farmworkers and laborers, Crop, nursery, and greenhouse* (1.2 percent projected growth rate).

Only two of the top 10 high-demand occupations (*Farmers, ranchers, and other farm managers* and *Mixing and blending machine setters, operators, and tenders*) are paid above the statewide average. The hourly pay for *Separating, filtering, clarifying, precipitating*, and *Still machine setters, operators, and tenders* was average.

Agriculture Career Pathway

Farmworkers and Laborers, Crop, Nursery, and Greenhouse

$22,589
High School Diploma or Less
No Experience
Short-term On-the-job Training

Farmers, Ranchers, and Other Agricultural Managers

$67,662
High School Diploma or Equivalent
Five Years or More of Experience

General and Operations Managers

$102, 232
Bachelor's Degree
Five Years or More of Experience

Source: Occupational Employment Statistics, (2018 Annual Wages), Michigan Bureau of Labor Market Information and Strategic Initiatives

Career pathways identify the career opportunities in an industry, entry-level to advanced, and show how an individual can grow his/her career in the industry.
"A Practical Guide to Developing Career Pathways," May 2018, Talent and Economic Development of Michigan

High School Diploma or Less, Short to Long-term On-the-job Training, No Experience

Graders and Sorters, Agricultural Products
Agricultural Equipment Operators
Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders
Slaughterers and Meat Packers
Food Cooking Machine Operators and Tenders
Food Batchmakers
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders
Farmworkers, Farm, Ranch, and Aquacultural Animals
Farm Equipment Mechanics and Service Technicians
Meat, Poultry, and Fish Cutters and Trimmers

These are usually entry-level jobs, requiring no more than a high school diploma or equivalent. The pay is low, ranging from $10 an hour ($20,800 annually) for *Graders and sorters of agricultural products* to $19 or $39,520 annual pay (*Farm equipment mechanics* and *Service technicians*). With five or more years of experience, a worker can move up to *Farmers, ranchers, and other agricultural managers*.

High School Diploma, Short to Long-term On-the-job Training, Some Experience

First-Line Supervisors of Production and Operating Workers
First-Line Supervisors of Retail Sales Workers
First-Line Supervisors of Mechanics, Installers, and Repairers
First-Line Supervisors of Food Preparation and Serving Workers
First-Line Supervisors of Office and Administrative Support Workers
First-Line Supervisors of Non-Retail Sales Workers
Cooks, Restaurant
Transportation, Storage, and Distribution Managers

Between one and six percent of employment in these occupations is found in the Agriculture cluster in Michigan. The pay in these occupations can be as low as $11 an hour ($22,880 a year) and as high as $47 per hour ($97,760 annually). With a bachelor's degree and at least five years of experience, a worker can qualify for a *General and operations management* position.

Bachelor's Degree or Higher

Animal Scientists
Industrial Production Managers
Accountants and Auditors
Industrial Engineers
Food Scientists and Technologists
Human Resources Specialists
Logisticians
Market Research Analysts and Marketing Specialists
Sales Managers
Financial Managers
Business Operations Specialists, All Other

Although this share of employment in the Agriculture cluster is low (one percent or less), these occupations are necessary for the operations of commercial farms and food processing plants. Most of these occupations do not require experience or on-the-job training in agriculture. They can be obtained through formal higher education training. These occupations usually pay well with a median range of $29 to $60 an hour ($60,320–$124,800 annually).

Real-time Demand for Agriculture Employment

In 2017, there were over 8,100 job ads for the top 15 key occupations in the Agriculture cluster. Three occupations accounted for over half of these postings: *Industrial truck and tractor operators* (2,040), *Packaging and filling machine operators and tenders* (1,780), and *Bakers* (870).

Based on data from Talent Neuron, in 2017, the top advertisers of jobs related to the top 15 key occupations in the Agriculture cluster included Spartan Nash (a food distributor headquartered in Byron Center, Michigan), Clemens Food Group (based in Hatfield, Pennsylvania, with a pork-processing plant in Coldwater, Branch County, Michigan), Panera Bread restaurants with multiple locations, Bob Evans Farms, Inc., and others. The same database shows that there were about 2,700 online ads for full-time Agriculture jobs in 2017; 2,800 permanent positions advertised; 450 part-time; 130 internships, 80 temporary, and six ads for contracted work.

Top skills in postings for key occupations include:

Enterprise Resource Planning (ERP) Software
Spreadsheet Software
Operation Monitoring
Database User Interface and Query Software
Word Processing Software
Critical Thinking
Electronic Mail and Web Browser Software

Source: The Conference Board, Help Wanted Online® (HWOL)

Real-time demand is measured as the number of job advertisements posted online for an occupation.

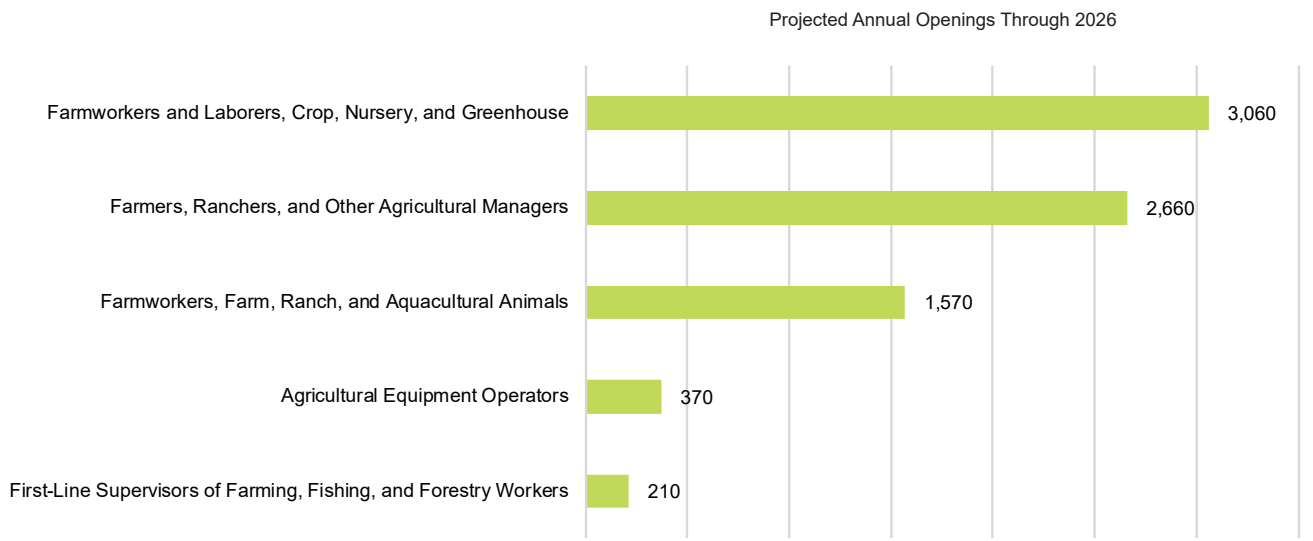
Agriculture Employment Projections

- Employment projections do not exist for clusters, but projections through 2026 do exist for many industries and occupations that make up the Agriculture cluster. The total, all occupations projected change from 2016 to 2026 sits at 7.0 percent.

- *Farming, fishing, and forestry* occupations are projected to expand by only 4.4 percent from 2016 to 2026, creating about 1,600 new positions in Michigan. This group of occupations is also projected to create 5,700 jobs annually over the next decade (until 2026). About a quarter of these openings (1,400 annually) will come from the need to replace workers who are retiring or leaving the workforce for other reasons, such as taking care of a dependent individual (child, elderly, sick, etc.); about three-fourths (4,200) will be to replace workers changing careers or employers inside or outside of the state. The remaining openings (about 3 percent) will be due to cluster expansion.

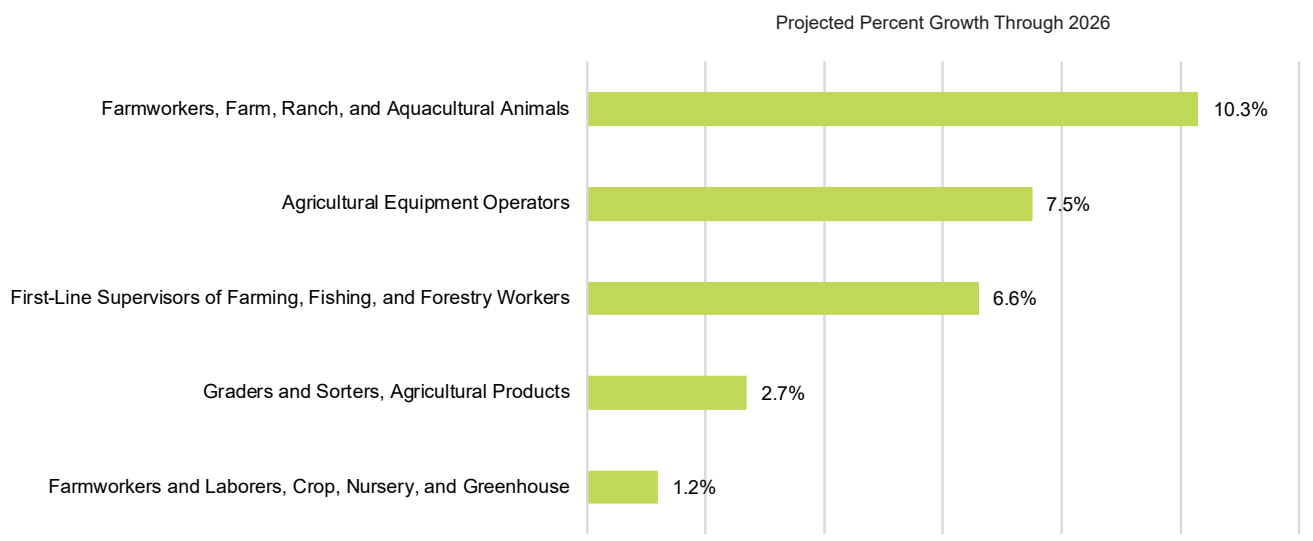
- The detailed *Farming, fishing, and forestry* occupations that are projected to grow the fastest, employing at least 1,000 individuals, include *Farmworkers, farm, ranch, and aquacultural animals* at 10.3 percent (+960), *Agricultural equipment operators* at 7.5 percent (+170), and *First-Line supervisors of farming, fishing, and forestry workers* at 6.6 percent (+100).

FIGURE 5: **OCCUPATIONS WITH THE MOST PROJECTED ANNUAL OPENINGS THROUGH 2026, MICHIGAN AGRICULTURE CLUSTER**



Source: Industry and Occupational Employment Projections (2016–2026), Michigan Bureau of Labor Market Information and Strategic Initiatives

FIGURE 6: **OCCUPATIONS WITH THE MOST PROJECTED PERCENT GROWTH THROUGH 2026, MICHIGAN AGRICULTURE CLUSTER**

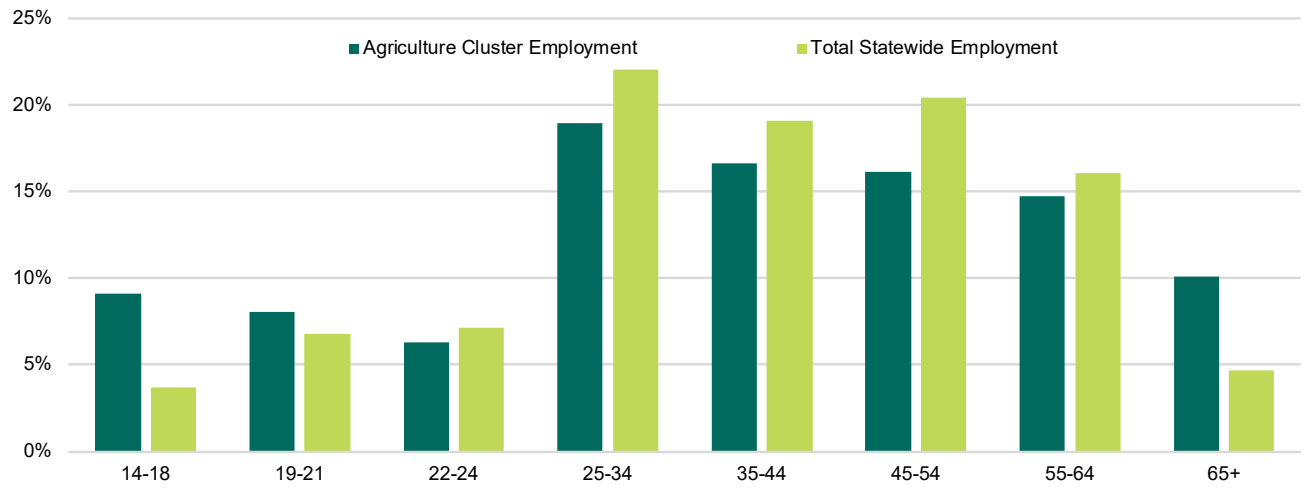


Source: Industry and Occupational Employment Projections (2016–2026), Michigan Bureau of Labor Market Information and Strategic Initiatives

Agriculture Workforce Demographics

Demographic and educational attainment information is useful in identifying workforce characteristics and evaluating potential workforce disparities. Gaps in education, skills, or training may result in impediments to economic growth if left unresolved. Maintaining the employment of a young workforce may require employers to adapt to the interests those workers value. The following figures display characteristics of the Agriculture workforce in Michigan.

FIGURE 7: **EMPLOYMENT BY AGE, MICHIGAN AGRICULTURE CLUSTER**



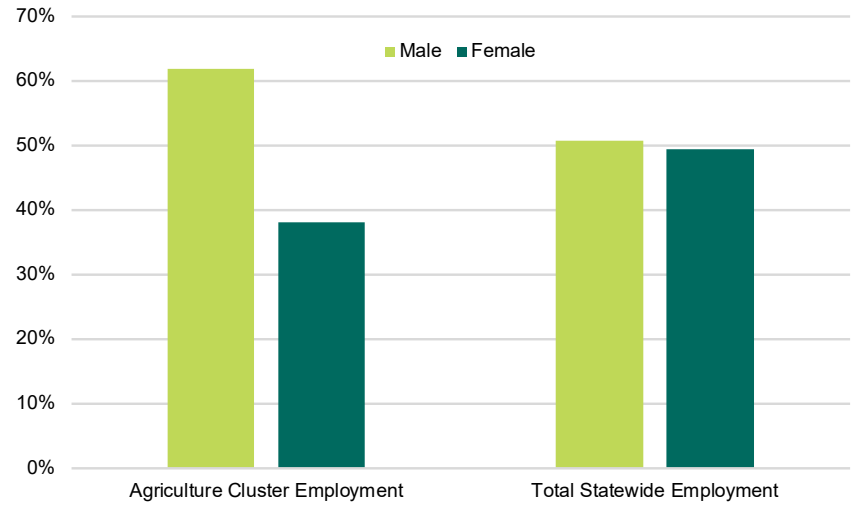
Source: Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

Many states, including Michigan, allow the legal minimum age to work in Agriculture to be younger than 16 years old. In Michigan, the age is set at 13 years, except for operations involving detasseling, roguing, hoeing, or similar in production of seed.[2] This can partially explain the higher-than-average percentage of younger workers (younger than 22 years of age) in Agriculture. Data from the U.S. Census Bureau's Quarterly Workforce Indicators series show that the share of workers in the 14-18 age group is higher in Agriculture than the statewide average by about five percentage points. Similarly, the portion of workers 65 years old and higher in Agriculture is also five percentage points higher than the statewide average, reflecting the aging of farm owners in Michigan. A 2012 Michigan State University study[3] found that approximately 35 percent of all Michigan farmers were expected to retire within the next 10 years.

[2] U.S. Department of Labor, Wage and Hour Division (2018). State Child Labor Laws Applicable to Agricultural Employment, https://www.dol.gov/whd/state/agriemp2.htm#Michigan, retrieved 11/05/2018

[3] Miller, Steve and Susan Cocciarelli, April 2012, "The Michigan Farm Succession Study: Findings and Implications", Center for Economic Analysis, College of Agriculture and Natural Resources, Michigan State University (USDA Grant).

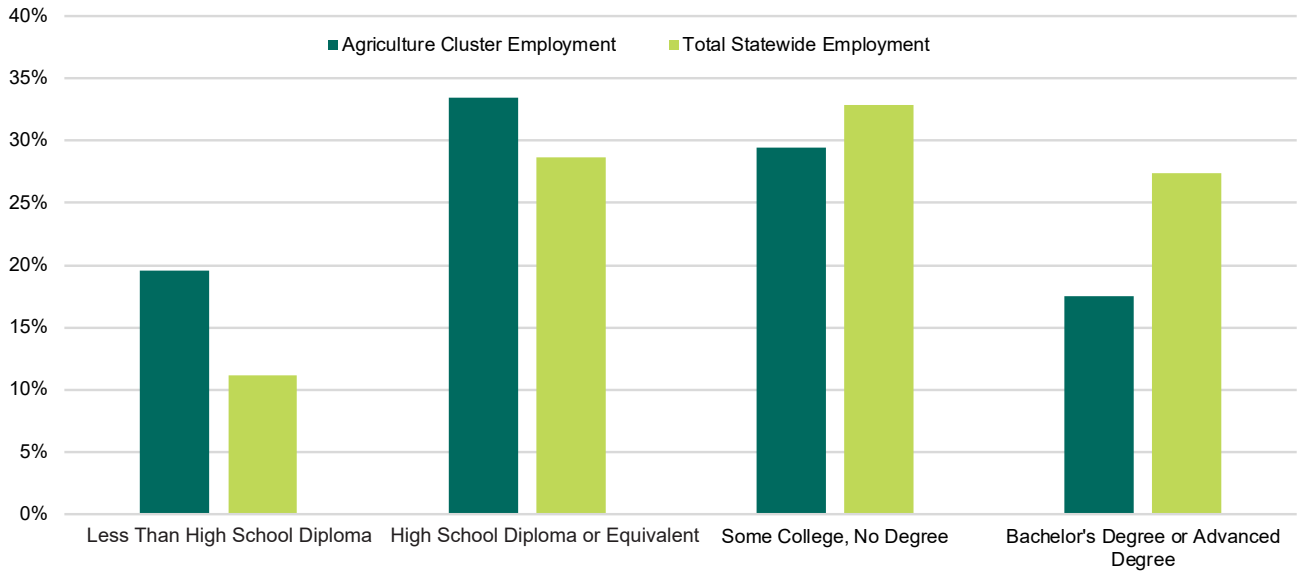
FIGURE 8: **EMPLOYMENT, ALL AGES (14-99), MICHIGAN AGRICULTURE CLUSTER**



Source: Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

While employment across all industries in Michigan is evenly distributed among males and females, Agriculture is majority male, with a little over 60 percent of the industry's workers being men.

FIGURE 9: **EMPLOYMENT BY EDUCATION, MICHIGAN AGRICULTURE CLUSTER**



Source: Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

Most careers in the Agriculture cluster require a high school diploma or less, which explains why the shares of Agriculture workers in these two categories are 13 percentage points above the all-industry proportion. In contrast, the share of workers with a bachelor's degree or more in the Agriculture cluster is 9 percentage points below the share of this group in the all-industry labor force.

Agriculture Talent Pipeline

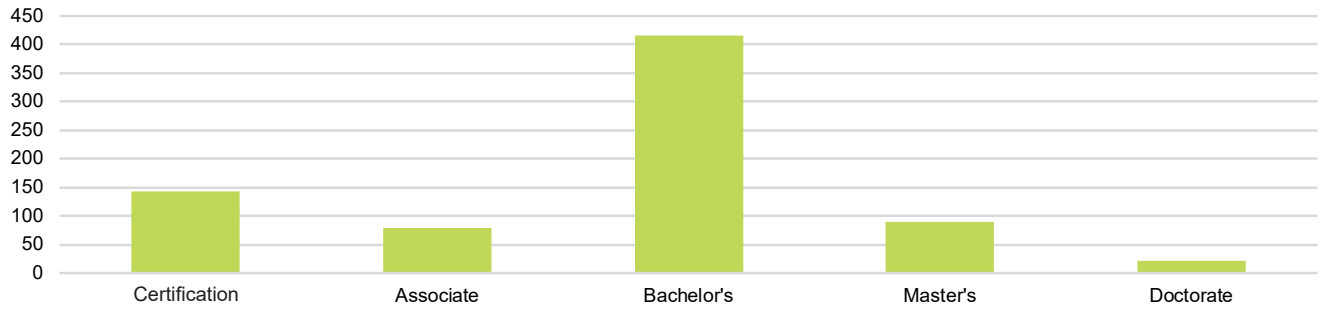
Data for education program completers of instructional programs is available from the National Center for Education Statistics. This data can be used to estimate ever-changing levels of supply for some occupations in the labor market. Total educational program completers are counted for programs that are known to lead students into agriculture-related occupations. A number of factors can shift completers, such as changing typical requirements for an occupation or an increase in students during periods of high unemployment.

- About two-thirds of all agricultural jobs only require work experience in a related occupation or on-the-job training. The relatively low numbers of completers in academic fields directly related to agriculture can be partially explained by the fact that most occupations requiring formal training (a postsecondary vocational degree or higher) in the Agriculture cluster tend to be support occupations (financial analysts, accountant and auditors, business operations specialists, industrial engineers, etc.). Direct agricultural degrees requiring a bachelor's degree or higher are generally in animal and crop sciences. In 2017, these programs accounted for a little over 70 percent of all agricultural education completers.

- In 2017, a little over a third of total program completers in agriculture-related fields were in *Food, plant, and soil sciences*. About a fifth of program completers were in animal sciences, landscaping, horticulture, and turf fields of study accounted for about 13 percent of all completers. It is important to note once again that about two thirds of careers in agriculture, such as *Farm workers and laborers* do not require formal education or training beyond high school.

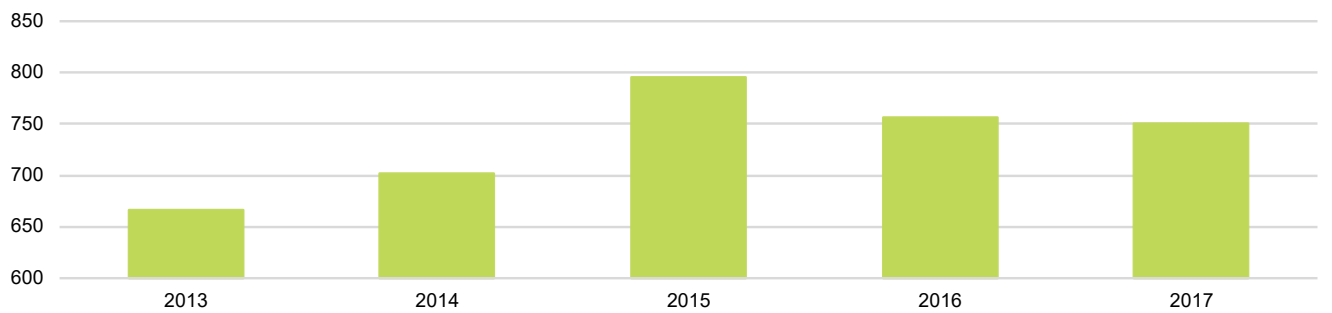
- Like other sectors of the economy, education program completers in the Agriculture cluster were negatively affected by the Great Recession. Their number dropped by about 200 in 2008, from a level of 685 in 2007. The number of education program completers in the Agriculture cluster has steadily risen each year, reaching 796 in 2015. The count of completers stabilized at around 750 in 2016 and 2017.

FIGURE 10: **AGRICULTURE-RELATED PROGRAM COMPLETERS BY AWARD LEVEL, MICHIGAN, 2017**



Source: National Center for Education Statistics (NCES), Integrated Postsecondary Education Data System (IPEDS)

FIGURE 11: **AGRICULTURE-RELATED PROGRAM COMPLETERS TREND, MICHIGAN**



Source: National Center for Education Statistics (NCES), Integrated Postsecondary Education Data System (IPEDS)

Conclusion

Strengths

Relatively Consistent Job Growth

The Agriculture sector was among the few sectors of the Michigan economy that recorded job growth throughout the Great Recession and beyond.

Diverse and Competitive Sector for Michigan

Michigan is among the most agriculturally diverse states in the nation, producing over 300 commodities, ranking second behind California (Farm Bureau). It is a big producer of soybeans, dry beans, cherries, and blueberries.

Key Source of Exports for the Michigan Economy

Michigan's agricultural products continue to be a primary source of exports to other states and other countries. Michigan is ranked among the top exporting states of fruits, vegetables, sugar, and nursery and greenhouses products.

Challenges

Shortages of Migrant Workers and Recruiting Difficulties Among Local Workers

The issue of the changing demographics of migrant workers in Michigan still persists. It was once the case that whole families would migrate from state to state and would establish annual working relationships with specific farmers. Today, migrant workers are increasingly single men and women, and do not form the long-term ties with farmers that they once did. Farmers now rely more on local connections and family members for their employment needs. Mechanization has increasingly become a factor. The result is that crops that are hard to mechanize (such as asparagus, strawberries, berries, etc.) are at a disadvantage because of the difficulty in attracting the needed migrant workforce.

Increasing Production Costs

As the shortage of migrant workers persists, a shift in the industry from migrant to domestic workers might increase production costs for farmers, and would impact their profitability. Indeed, domestic workers typically prefer hourly rates of pay that are subject to labor law. There is also increasing pressure on farmers to raise the pay and other benefits (e.g., housing) for migrant workers.

Aging Farm Operators

In 2012, an Michigan State University study (Miller, S. et al.) found that approximately 35 percent of all Michigan farmers expected to retire within the following 10 years. Our current analysis revealed that the portion of workers age 65 and older in Agriculture was five percentage points higher than the statewide average, reflecting the aging of farm owners in Michigan.

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