



# MICHIGAN AGRICULTURE

## INDUSTRY CLUSTER WORKFORCE ANALYSIS



STATE OF MICHIGAN

Department of Technology, Management & Budget

Michigan Center for Data and Analytics

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INDUSTRY CLUSTER  
WORKFORCE ANALYSIS

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## TABLE OF CONTENTS

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4	Key Findings
5	Introduction
6	Employment and Wages
8	Subclusters
10	Key Occupations
13	Career Pathway
15	Apprenticeships
16	Real-Time Demand
20	Employment Projections
21	Workforce Demographics
24	Talent Pipeline
25	Conclusion



## ABOUT THIS REPORT

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This report is the product of a partnership between the Michigan Center for Data and Analytics and the Michigan Department of Labor and Economic Opportunity. It is designed to explore the Agriculture industry cluster in Michigan through a variety of data sources, including key occupations, education and training requirements, real-time online job ad demand, labor force projections, workforce demographics, the talent pipeline and more. The intention of this report is to support workforce development across the state and to highlight the position of Agriculture in Michigan.



## Key Findings

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- Employment in the Agriculture cluster has grown 17.6 percent since 2011. Agriculture employment was largely on an upward trend until 2020, when employment levels dropped across the state at the start of the COVID-19 pandemic. Since then, employment in the cluster has more than recovered and now Agriculture employs just over 98,000 people in Michigan.
- The Agriculture cluster is largely made up of occupations with minimal to no education requirements such as *Farmworkers and laborers*, *Food preparation workers*, and *Industrial machinery mechanics*. Each of these occupations have high projected annual openings and at most, require a high school diploma and on-the-job training.
- Online job advertisements in Agriculture have increased a considerable amount since 2015. Prior to the COVID-19 pandemic, many job openings in this industry cluster were likely distributed by word-of-mouth or local postings. COVID-19 caused a virtual push for many things, including online job advertisements.
- The statewide employment growth rate is expected to be 8.8 percent from 2020 to 2030. This is partly due to a base year where employment levels were historically low. Agriculture, however, has a handful of occupations that are expected to grow by even more. *Farm equipment mechanics and service technicians* have a projected growth rate of 13.5 percent, nearly 5 percentage points higher than that of the state.
- For every one woman working in Agriculture, there are two men. Women also earn far less at every level of educational attainment, on average, compared to their male counterparts in the industry cluster.



## Introduction

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An **industry cluster** is a strong concentration of related industries in one location.

These clusters consist of related employers, suppliers, and support institutions in a product or service field. Industry clusters that are heavily prevalent in a particular region fuel the regional economy, generate payrolls, and create innovation by leveraging the knowledge and resources of all involved.

The Agriculture cluster directly and indirectly impacts many industries across the state and the global economies, making it an integral part of Michigan's labor market. According to the Michigan Department of Agriculture and Rural Development, Michigan's food and agriculture industries contribute an estimated \$104.7 billion annually to the state economy.\*

The cluster provides many different career opportunities outside of the expected farm laborers or meat processors. Occupations such as shipping coordinators or delivery drivers are valuable to the cluster, but do not directly influence the production of agricultural products.

### The Agriculture cluster consists of five subclusters:

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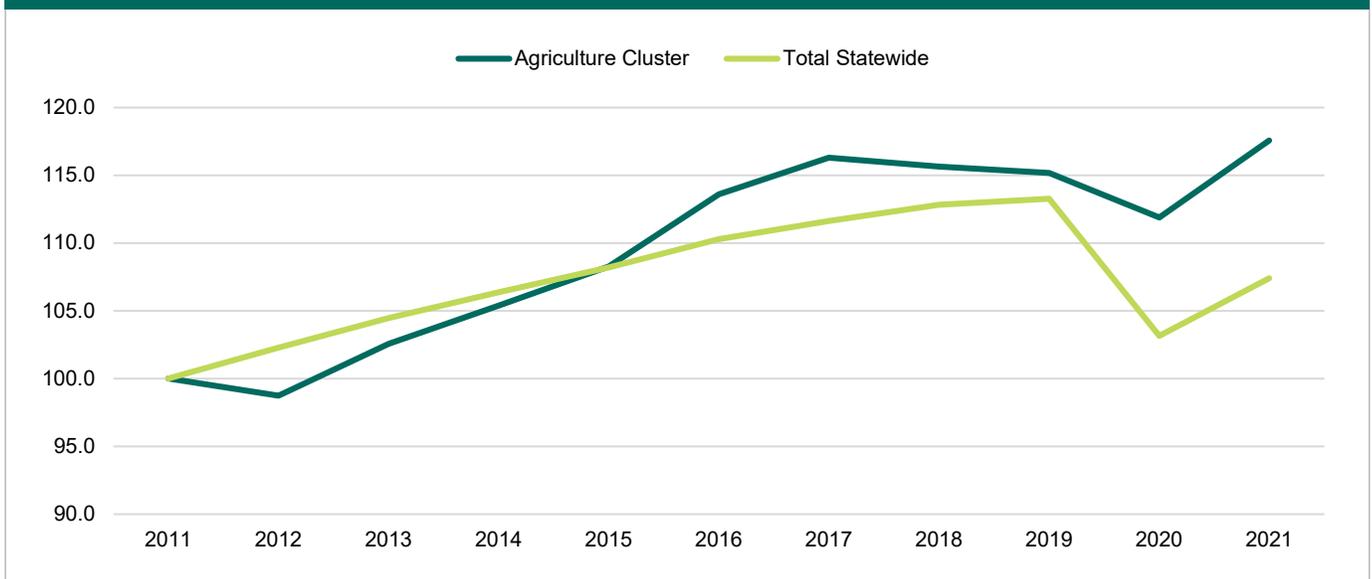
- Food Processing
- Farming
- Agriculture Wholesale and Retail
- Input Supplies to Agriculture
- Other

\*Michigan Department of Agriculture & Rural Development. 2019. *Michigan Agriculture Facts & Figures*. [michigan.gov/mdard/about/mi-agriculture/michigan-agriculture-resources](https://michigan.gov/mdard/about/mi-agriculture/michigan-agriculture-resources)



## Employment and Wages

FIGURE 1: EMPLOYMENT INDEX, MICHIGAN AGRICULTURE CLUSTER (INDEX YEAR: 2011)

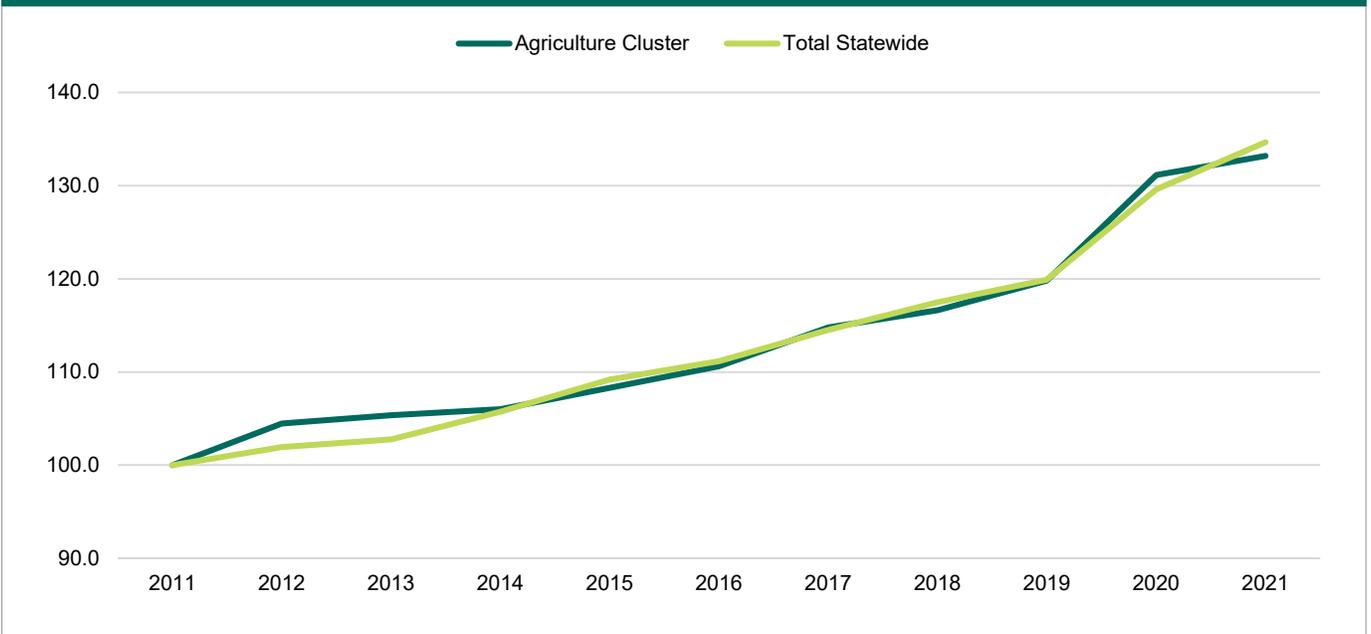


Source: Quarterly Census of Employment and Wages, Michigan Center for Data and Analytics

Employment in the Agriculture cluster has been growing over the past decade. In Figure 1, employment is indexed to 2011. This means that employment was set equal to 100 in 2011 and percent changes were calculated from there. Between 2011 and 2021, Agriculture employment grew by 17.6 percent from 83,700 workers to 98,400. The state also grew in total employment during this time period by just over 7 percent, from 3.8 million individuals to 4.1 million. As can be expected, there was a noticeable drop in employment levels for both Agriculture and Michigan in 2020. Since then, the Agriculture cluster has surpassed its total employment level from before COVID-19, while the state has struggled to reach pre-pandemic employment.



**FIGURE 2: NOMINAL WAGE\* INDEX, MICHIGAN AGRICULTURE CLUSTER (INDEX YEAR: 2011)**

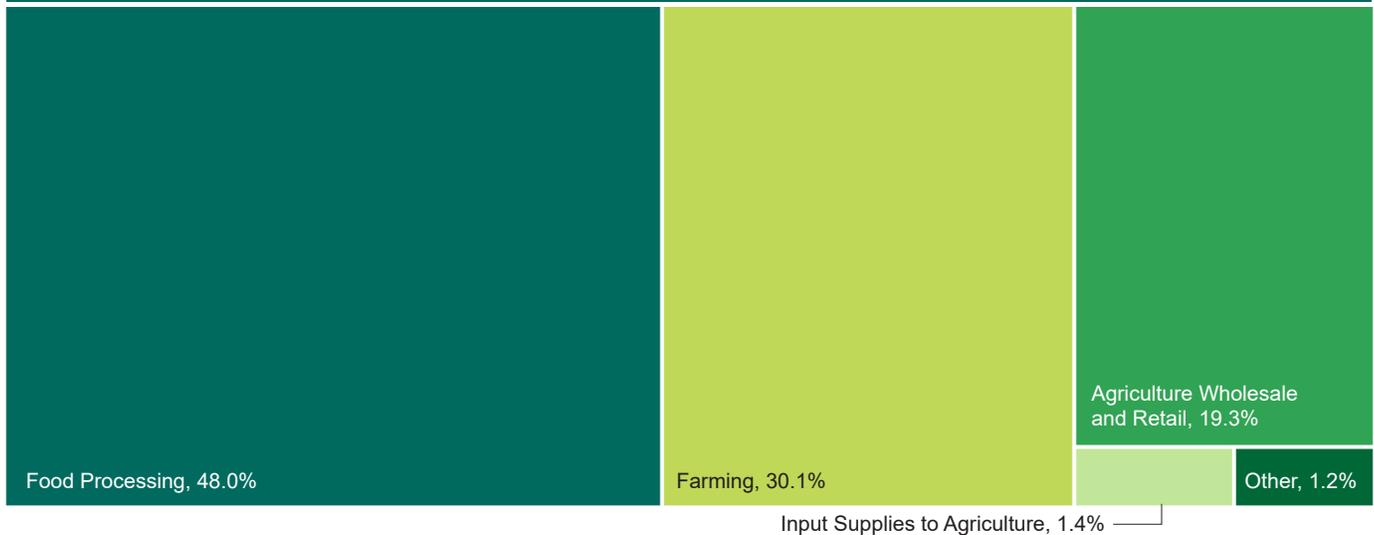


Source: Quarterly Census of Employment and Wages, Michigan Center for Data and Analytics  
 \*Nominal wages are not adjusted for inflation.

Wages at the statewide level and in the Agriculture cluster have grown by more than 30 percent since 2011. Although the cluster shows steady growth in wages and is on par with statewide trends, the cluster still has average earnings much lower than that of the state. In 2011, average annual earnings for Agriculture workers were \$37,200. By 2021, this increased by just over \$12,000 to an annual earnings average of \$49,600. In contrast, the average annual earnings across the state in 2021 were \$61,700.

# Subclusters

FIGURE 3: SUBCLUSTER EMPLOYMENT DISTRIBUTION, MICHIGAN AGRICULTURE CLUSTER, 2021



Source: Quarterly Census of Employment and Wages, Michigan Center for Data and Analytics

## Food Processing

- Beverage and Tobacco Products
- Food Manufacturing

*Food processing* makes up the largest share of Agriculture employment (48.0 percent) with 47,200 individuals employed in 2021. Most of the employment is concentrated in the *Food manufacturing* industry, holding 82 percent of the subcluster employment. The average salary among workers in *Food processing* is \$55,600, slightly above the Agriculture cluster average of \$49,600.

## Farming

- Animal Production
- Crop Production
- Support Activities for Agriculture and Forestry

*Farming* holds just over 30 percent of the employment within Agriculture with 29,600 workers. Of the three industries that make up the subcluster, *Crop production* makes up more than half of the employment with just under 17,000 workers. The average annual salary in *Farming* is considerably lower than the average for Agriculture as a whole. As of 2021, those in *Farming* earn an average of \$38,200. Although this subcluster has the lowest average annual earnings within Agriculture, it is essential to the success of the industry cluster overall.



## Agriculture Wholesale and Retail

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

Employment distribution is nearly even throughout the industries that make up the *Agriculture wholesale and retail* subcluster. Most industries have between 1,000 to 2,000 employees. *Nursery, garden, and farm supply stores* is the largest industry (5,500 employees), accounting for nearly one-third of the 19,000 workers in this subcluster. The average earnings in *Agriculture wholesale and retail* are in line with the average for Agriculture overall at \$49,000.

## Input Supplies to Agriculture

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Farm Machinery and Equipment Manufacturing  
 Food Product Machinery Manufacturing  
 Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing  
 Pesticide, Fertilizer and Other Agricultural Chemical Manufacturing

*Input supplies to agriculture* employed just under 1,400 individuals in 2021. Although it is one of the smaller subclusters in Agriculture, it pays an average annual salary of \$73,500, well above the cluster average. The highest-paid industry within this area is *Pesticide, fertilizer and other agricultural chemical manufacturing* at \$94,600. However, this industry has far lower employment than many others with only 400 workers in 2021.

## Other

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### Regulation of Agricultural Marketing and Commodities

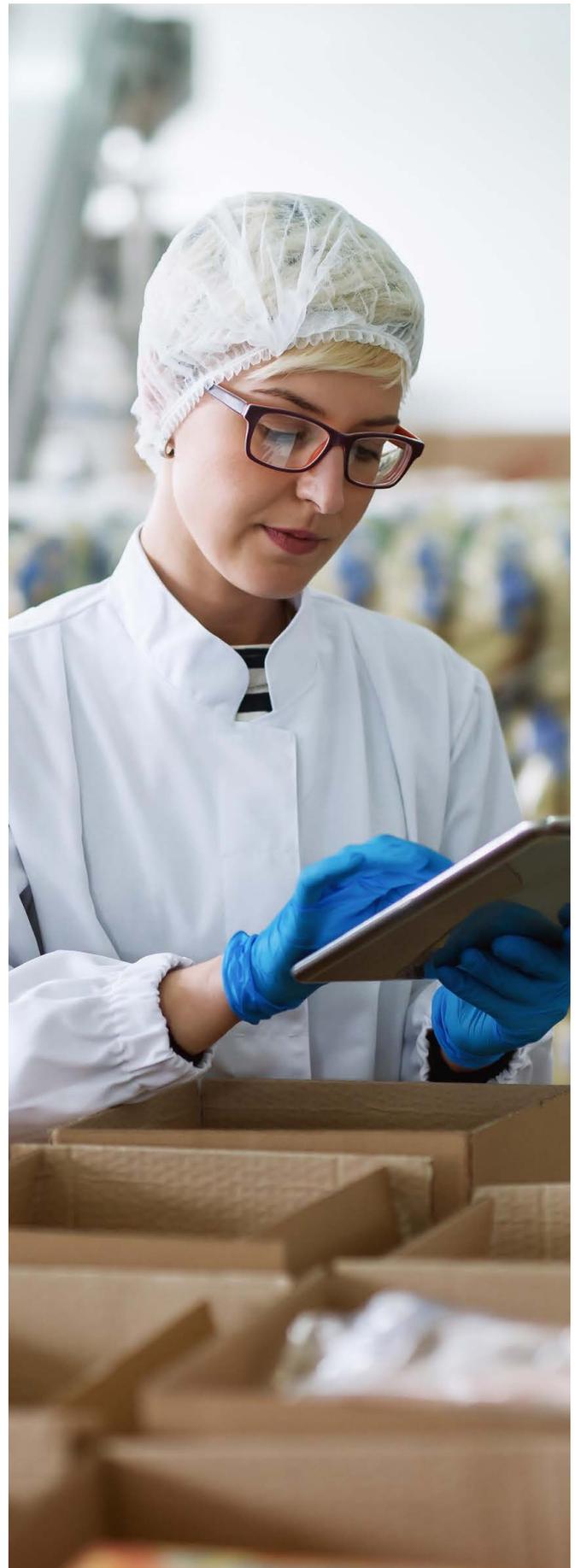
Only one industry makes up the *Other* category for Agriculture. Employment is just 1,200 as of 2021 for the industry. Its pay is higher than both the cluster (\$49,600) and statewide (\$61,700) averages with an average annual salary of \$74,600.

# Key Occupations

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Occupational analysis is important to understanding an industry cluster. Key occupations are chosen by a favorable mix of criteria that include the occupation's share of the cluster's total employment, the concentration within the cluster, and the projected outlook for that occupation. Due to the occupations having large volumes within the cluster, they are generally representative of the expected wages, education, and skills within the industry cluster.

- Key Agriculture cluster occupations typically do not require above a high school diploma, and some jobs may have no educational requirements. This presents many opportunities for individuals who are not seeking to further their formal education and prefer to learn on the job.
- Although Agriculture occupations are typically low-paying positions, with training and experience, many key occupations can offer wages that either meet or exceed the cluster median of \$17.80.
- Annual openings for an occupation occur for a variety of reasons; retirements and labor force exits, career transfers, or expansion within the occupation. The key occupations in Agriculture are expected to offer just under 70,000 average annual openings through 2030. A small part of this number can be attributed to increased openings in the cluster, but an additional component is the base year of 2020, where employment levels were historically low.



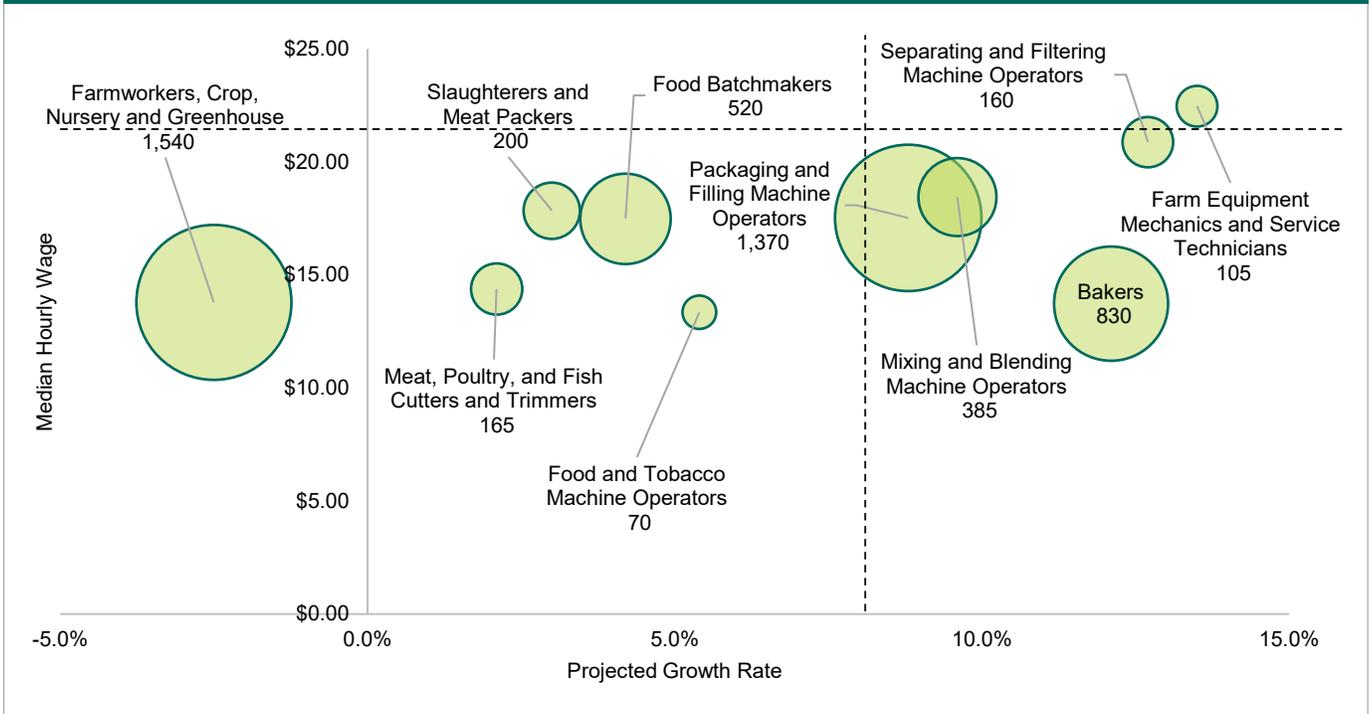
**FIGURE 4: KEY OCCUPATIONS, MICHIGAN AGRICULTURE CLUSTER, 2021**

KEY OCCUPATION	CLUSTER EMP.	MICHIGAN EMP.	CLUSTER WAGE RANGE (HOURLY)	ANNUAL OPENINGS	TYPICAL EDUCATION AND TRAINING OJT: ON-THE-JOB TRAINING
Packaging and Filling Machine Operators	5,380	10,710	\$14–\$18	1,370	High School Diploma or Equivalent and Moderate-term OJT
Retail Salespersons	4,190	108,170	\$11–\$15	17,325	Short-term OJT
Food Batchmakers	3,830	4,540	\$14–\$22	520	High School Diploma or Equivalent and Moderate-term OJT
Laborers and Freight, Stock and Material Movers	3,380	71,760	\$14–\$22	12,540	Short-term OJT
Bakers	3,070	6,650	\$11–\$14	830	Long-term OJT
Sales Reps., Except Tech. and Scientific Products	2,490	48,610	\$22–\$39	5,230	High School Diploma or Equivalent and Moderate-term OJT
Packers and Packagers, Hand	2,010	13,030	\$13–\$16	2,225	Short-term OJT
Supervisors of Production and Operating Workers	1,930	28,250	\$22–\$36	3,190	High School Diploma or Equivalent
Farmworkers, Crop, Nursery and Greenhouse	1,580	3,150	\$11–\$14	1,540	Short-term OJT
Industrial Truck and Tractor Operators	1,530	26,150	\$17–\$22	2,735	Short-term OJT
Industrial Machinery Mechanics	1,360	22,120	\$23–\$30	2,650	High School Diploma or Equivalent and Long-term OJT
Shipping, Receiving, and Inventory Clerks	1,200	23,350	\$14–\$21	2,090	High School Diploma or Equivalent and Short-term OJT
Inspectors, Testers, Sorters, Samplers, and Weighers	1,040	29,270	\$15–\$23	3,130	High School Diploma or Equivalent and Moderate-term OJT
Light Truck Drivers	900	24,630	\$14–\$19	3,465	High School Diploma or Equivalent and Short-term OJT
Slaughterers and Meat Packers	900	900	\$14–\$18	200	Short-term OJT
Bartenders	880	12,580	\$11–\$22	3,295	Short-term OJT
Mixing and Blending Machine Operators	820	3,950	\$15–\$23	385	High School Diploma or Equivalent and Moderate-term OJT
Separating and Filtering Machine Operators	690	1,280	\$15–\$24	160	High School Diploma or Equivalent and Moderate-term OJT
Industrial Production Managers	640	13,470	\$37–\$61	930	Bachelor's Degree
Farm Equipment Mechanics and Service Technicians	590	790	\$18–\$24	105	High School Diploma or Equivalent and Long-term OJT
Food Preparation Workers	580	13,370	\$14–\$18	3,070	Short-term OJT
Supervisors of Transportation and Material-Moving Workers	560	13,810	\$23–\$36	1,510	High School Diploma or Equivalent
Food and Tobacco Machine Operators	550	560	\$12–\$15	70	Moderate-term OJT
Merchandise Displayers and Window Trimmers	550	6,220	\$14–\$17	530	High School Diploma or Equivalent and Short-term OJT
Meat, Poultry, and Fish Cutters and Trimmers	540	700	\$14–\$18	165	Short-term OJT

Source: Cluster employment, Michigan employment, and Wage range: Occupational Employment and Wage Statistics, Michigan Center for Data and Analytics (2021); Annual Openings: 2020–2030 Long-term Occupational Projections, Michigan Center for Data and Analytics; Typical Education and Training: U.S. Bureau of Labor Statistics

Note: Cluster employment is the total count of the occupation within the defined industry cluster, while Michigan employment is the total count of that occupation in the state across all industries.

**FIGURE 5: KEY OCCUPATIONS, MICHIGAN AGRICULTURE CLUSTER, 2021**



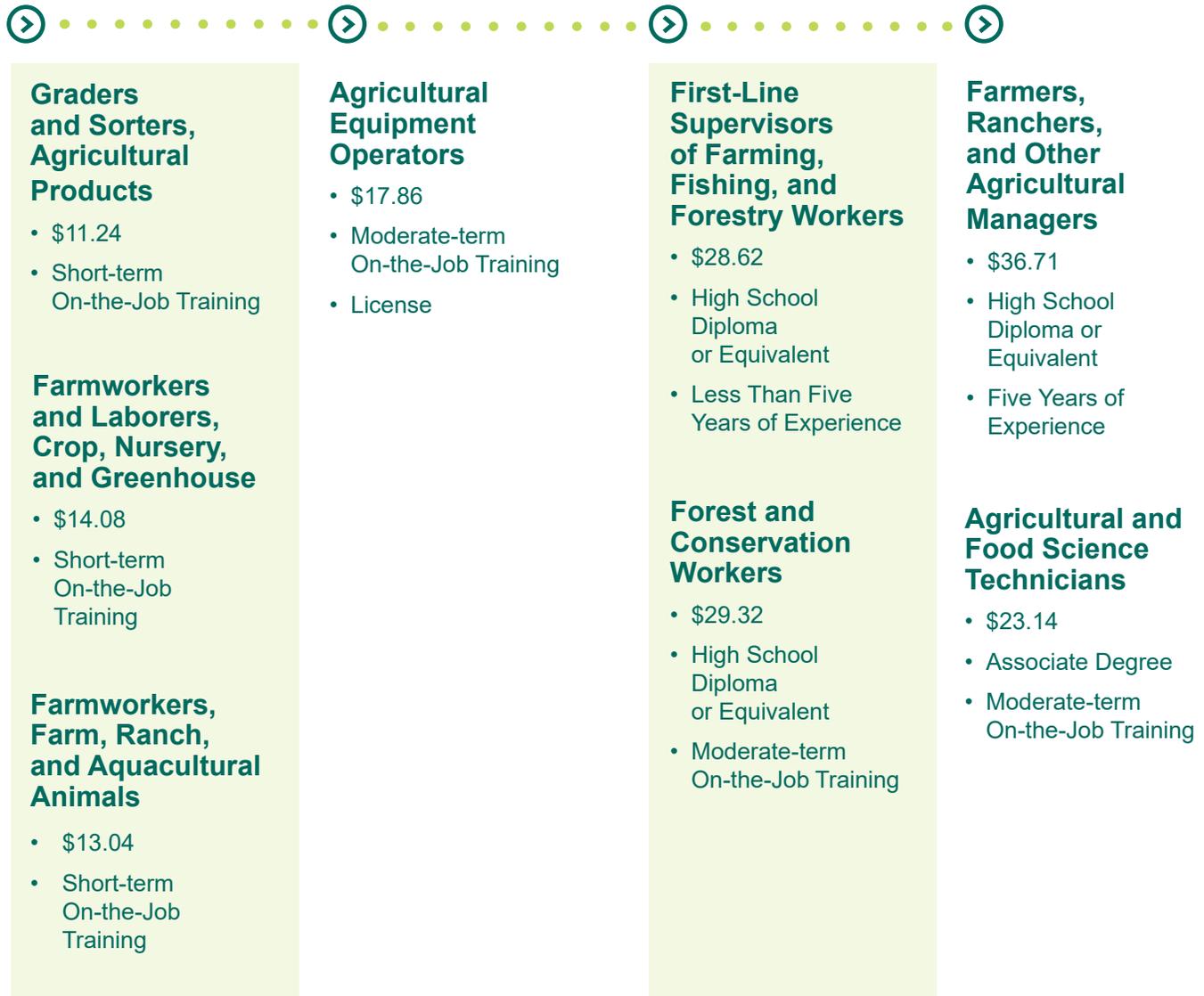
Source: 2021 Occupational Employment and Wage Statistics, Michigan Center for Data and Analytics (Wages); 2020–2030 Long-term Occupational Projections, Michigan Center for Data and Analytics (Projected Growth Rate and Annual Openings)

The key Agriculture occupations displayed in Figure 5 show a mix of projected long-term growth, projected annual openings, and statewide median wages. The circle sizes are determined by projected annual openings. The lines at 8.8 percent and \$21.73 indicate statewide projected employment growth through 2030 and the statewide median wage from 2021.

All but one of the occupations display positive projected growth rates in employment through 2030. As mentioned previously, this can be partly explained by the 2020 base year. However, it can also indicate actual growth in Agriculture regardless of the base year. Four occupations in the cluster have projected growth rates exceeding the statewide average of 8.8 percent.

The median wages for occupations in Figure 5 do not have much variation and are lower than the statewide median, indicating the low-paid nature of this industry cluster. This is to be expected with minimal to no educational requirements for the occupations serving Agriculture. Only one occupation outpaces the statewide median wage: *Farm equipment mechanics and service technicians*. This occupation offers a median wage of \$22.47 and has an expected growth rate of 13.5 percent. However, the occupation’s average annual openings are on the lower end at 105 from 2020 to 2030.

# Potential Agriculture Career Pathway



Pathway Source: <https://careerwise.minnstate.edu/careers/transportation-systems-infrastructure-pathway.html>  
 Wage Range: 2021 Occupational Employment and Wage Statistics, Michigan Center for Data and Analytics  
 Typical Education and Training: U.S. Bureau of Labor Statistics

## High School Diploma or Equivalent and Short-term Training

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Farmworkers and Laborers, Crop, Nursery, and Greenhouse

Landscaping and Groundskeeping Workers

Meat, Poultry, and Fish Cutters and Trimmers

Slaughterers and Meat Packers

Shipping, Receiving, and Inventory Clerks

Most occupations in Agriculture only require a high school diploma and/or some training. This makes it a great option for those seeking to enter the workforce rather than further their formal education beyond high school. The five occupations highlighted have median hourly wages ranging from \$13 to \$18.

## Postsecondary Certificate or Moderate-term Training

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Agricultural Equipment Operators

Bookkeeping, Accounting, and Auditing Clerks

Food Batchmakers

Food Processing Workers, All Other

Pesticide Handlers, Sprayers, and Applicators, Vegetation

In addition to a high school diploma, some occupations in Agriculture require moderate-term training (more than one month, but less than 12) or a certificate. These occupations may be good opportunities for someone in the Agriculture cluster to advance their skills and expertise, especially if they entered the cluster with no prior experience. These occupations have a median hourly wage from \$17 to \$19.

## Associate Degree or Long-term Training or Apprenticeships

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Bakers

Butchers and Meat Cutters

Farm Equipment Mechanics and Service Technicians

Industrial Machinery Mechanics

Occupations in this group all require long-term on-the-job training which typically takes at least 12 months. Each of them, except *Butchers and meat cutters*, are also part of the key occupations for the cluster. These occupations do not have high employment levels within the cluster, making them potentially more difficult to move into as a career advancement plan. These occupations have median hourly wages ranging from \$14 for *Bakers* to \$29 for *Industrial machinery mechanics*.

## Bachelor's Degree or Higher

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Accountants and Auditors

Food Scientists and Technologists

General and Operations Managers

Industrial Production Managers

Soil and Plant Scientists

Not many careers in Agriculture require a bachelor's degree or higher, however, the ones that do are valuable to the cluster. These occupations typically do not have high employment within the cluster but do have above-average wages. These occupations have median hourly earnings from \$28 for *Soil and plant scientists* to \$48 for *Industrial production managers*.



## Apprenticeships

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The Agriculture cluster had 123 active registered apprentices in 2021. Over two-thirds of these were in *Food manufacturing*. Overall, the cluster is not as diverse compared to active apprentices statewide. Just 2.4 percent of active apprentices in Agriculture are women compared to 11.6 percent statewide. People of color are also underrepresented in the industry cluster's active apprentices at just 2.4 percent, far less than the 12.2 percent registered statewide. Of the 123 active apprentices, nearly 70 percent were part of programs in West Michigan. East Central Michigan had the second most at 20.3 percent.

There has not been a clear trend among new registered apprentices in Agriculture. There were 40 new apprentices in the cluster in 2008 and less than 30 new apprentices each year until 2019. In 2021, there were 55 new registered apprentices in the cluster, the most on record. In terms of completers in the cluster, there was a dip in the middle part of the last decade where there were less than 10 completers each year. But there have been more than 10 each year since 2018.

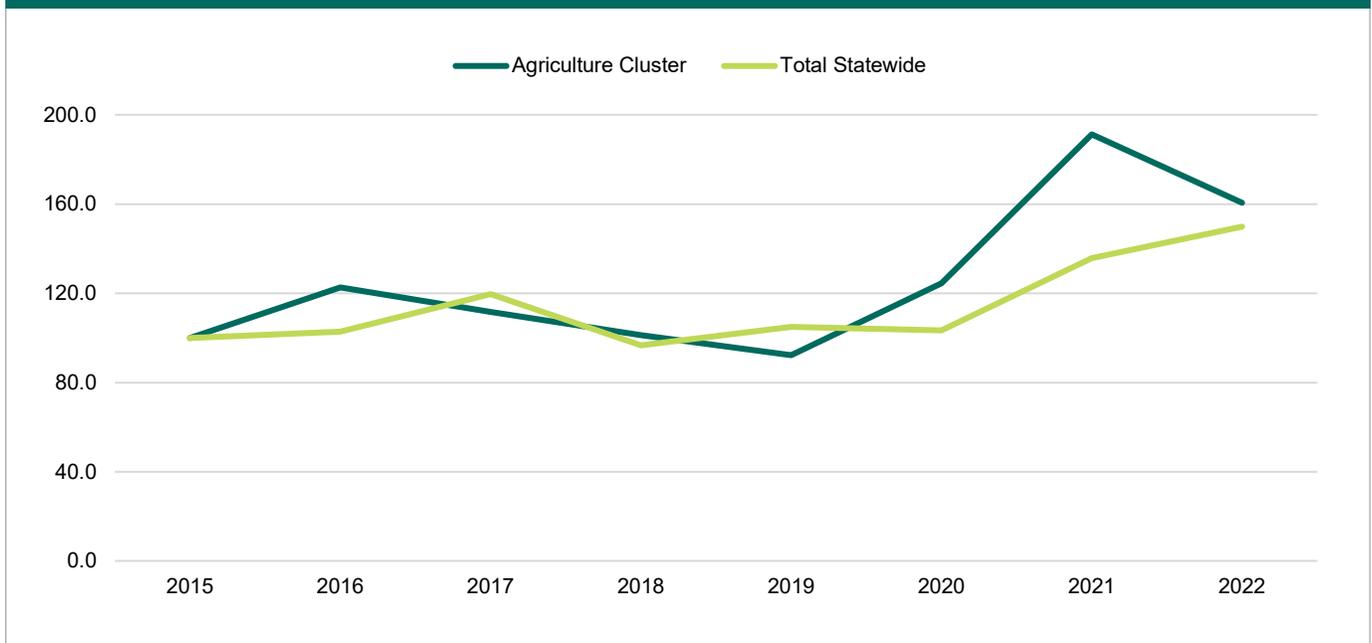
# Real-Time Demand

Real-time demand is measured as the number of job advertisements posted online for an occupation or industry. The data is provided by Burning Glass Technologies, The Conference Board Help Wanted Online. Over time, online job advertisements have become more prevalent as technology becomes a more prominent method of communication. The use of online job postings still varies by industry, with some areas of the economy being more reliant on methods such as word-of-mouth or local advertisements. Online job advertisements, however, can provide a mix of information about an industry cluster such as total available ads, top requested skills and certifications, minimum education requirements, and more.

Online job advertisements within the Agriculture cluster were on a slow decline between 2016 and 2019 but rose a sizeable amount in 2020 and 2021. It is important to note that the majority of the increase was observed at the end of 2020 and the beginning of 2021, after the initial shocks from the COVID-19 pandemic. There was a slight decrease in 2022 advertisements for Agriculture, however, they are still up by 61 percent since the index year of 2015. Statewide, ads have increased by 50 percent between 2015 and 2022.

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

**FIGURE 6: ONLINE JOB ADVERTISEMENTS INDEX, MICHIGAN AGRICULTURE CLUSTER (INDEX YEAR: 2015)**



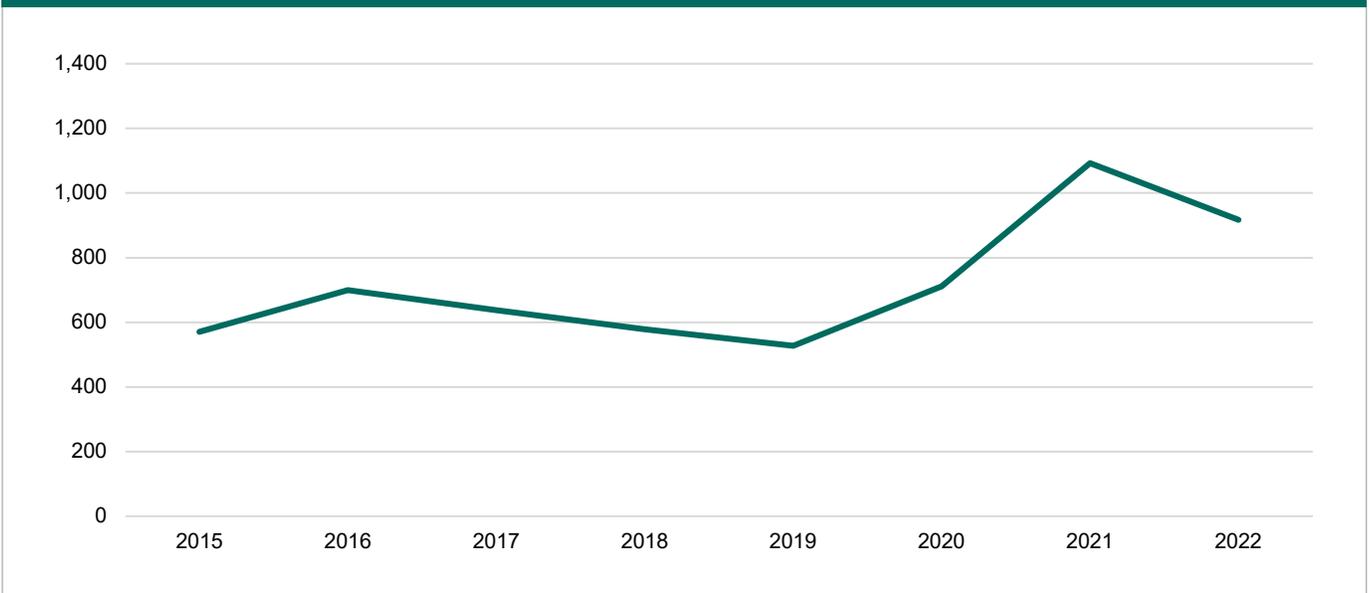
Source: The Conference Board Help Wanted OnLine, Burning Glass Technologies



Figure 7 displays the total number of annual online job advertisements in the Agriculture cluster. In 2022, there were 1.6 online job advertisements for every one in 2015. Over the time period, online ads in Agriculture have generally been increasing. This not only suggests an increased demand for workers in the Agriculture cluster, but also the shift toward online advertising in the industry cluster from methods such as word-of-mouth.

Similar to the key occupations for the Agriculture cluster, the majority of online job advertisements in Agriculture require a minimum of a high school diploma or equivalent. The next most prevalent job ad requirement is for those with a bachelor's degree, while just over seven percent of ads require a minimum of any other degree level.

**FIGURE 7: ONLINE JOB ADVERTISEMENTS, MICHIGAN AGRICULTURE CLUSTER**



Source: The Conference Board Help Wanted OnLine, Burning Glass Technologies



The top 10 certifications and baseline or specialized skills are determined from the number of times the skill or certification is listed in an online job advertisement for the specific time period (July 2021 to June 2022). Certifications are designated credentials earned by an individual to verify skills or knowledge gained to perform a job. Baseline skills are often called foundational skills and are defined as the common, nonspecialized skills that cut across a broad range of occupations. Lastly, specialized skills include professional and job-specific skills requested in job advertisements.

## Certifications and Skills Requested in Michigan Agriculture Cluster Online Job Ads

### Top 10 Certifications

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- CDL Class A
- CDL Class B
- Certified Materials and Resource Professional (CMRP)
- Certified Pest Control
- Certified Public Accountant (CPA)
- Hazard Analysis and Critical Control Point (HACCP) Certification
- OSHA Forklift Certification
- Project Management Certification
- ServSafe
- Six Sigma Certification

Note: Driver's license is not listed here but did appear in the top 10 certifications for every industry cluster.

### Top 10 Baseline Skills

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- Communication Skills
- Detail-Oriented
- English
- Microsoft Excel
- Microsoft Office
- Organizational Skills
- Physical Abilities
- Planning
- Teamwork/Collaboration
- Troubleshooting

### Top 10 Specialized Skills

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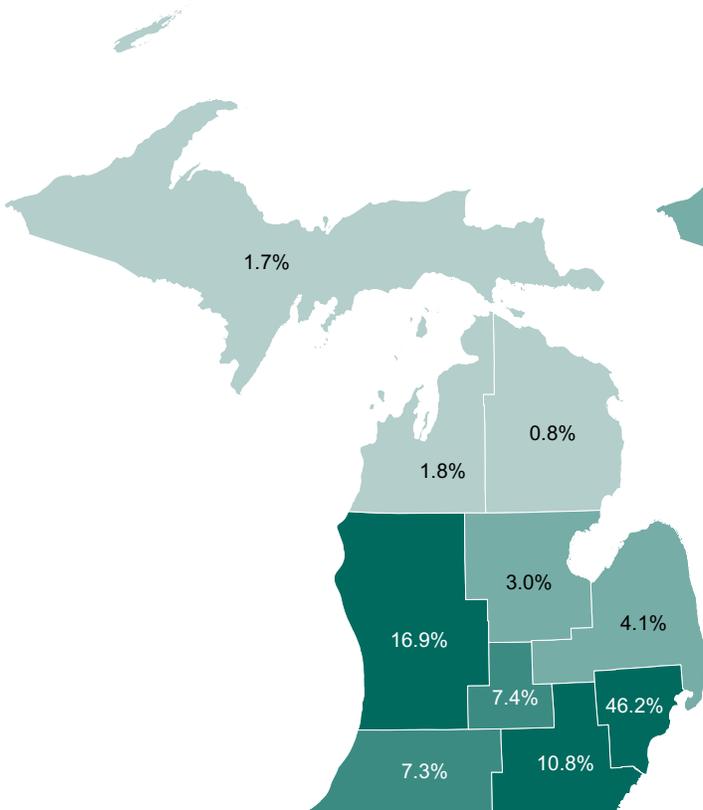
- Basic Mathematics
- Customer Service
- Environmental Health and Safety
- Food Safety
- Good Manufacturing Practices (GMP)
- Hazard Analysis Critical Control Point (HACCP)
- Lifting Ability
- Packaging
- Retail Industry Knowledge
- Sales

Source: The Conference Board Help Wanted OnLine, Burning Glass Technologies

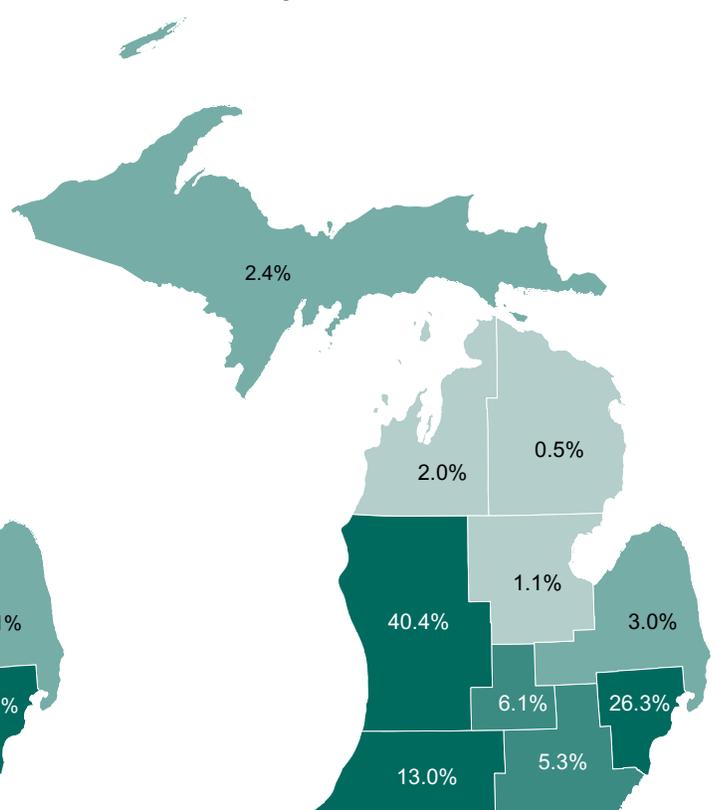


Just under 80 percent of all online job advertisements in the cluster are in the West, Southwest, and Detroit Metro prosperity regions. Over 40 percent of online job ads from the Agriculture cluster are in West Michigan. This is a much greater representation than West Michigan's share of all online job ads in the state (17 percent). Comparatively, the Detroit Metro region holds the second-highest share of Agriculture cluster online job advertisements at 26 percent, however, this share is much less than the region's nearly 50 percent overall statewide share.

**Share of Total Job Advertisements by Michigan Prosperity Region, July 2021 to June 2022**



**Share of Agriculture Cluster Job Advertisements by Michigan Prosperity Region, July 2021 to June 2022**



Source: The Conference Board Help Wanted OnLine, Burning Glass Technologies

# Employment Projections

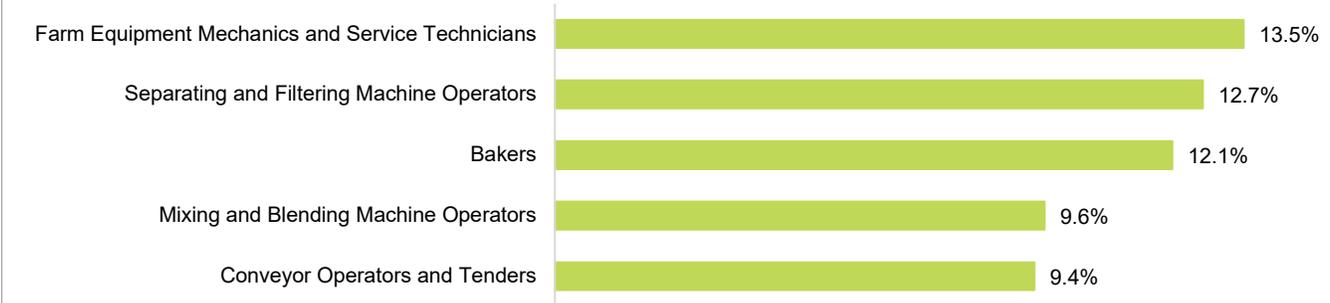
Projections do not exist for industry clusters as a whole but they do exist for industries and occupations that make up the industry cluster. Although projections through 2030 show nearly 9 percent growth in total statewide employment, it is important to remember that these projections begin with a base year of 2020, where total employment was down compared to prior years.

Figure 8 shows the occupations with the highest projected growth rates within the Agriculture cluster. All of them, except *Conveyer operators and tenders*, are also among the cluster’s key occupations. Together, these top five occupations are expected to add over 1,300 jobs by 2030. Each occupation requires on-the-

job training but no more education than a high school diploma or equivalent.

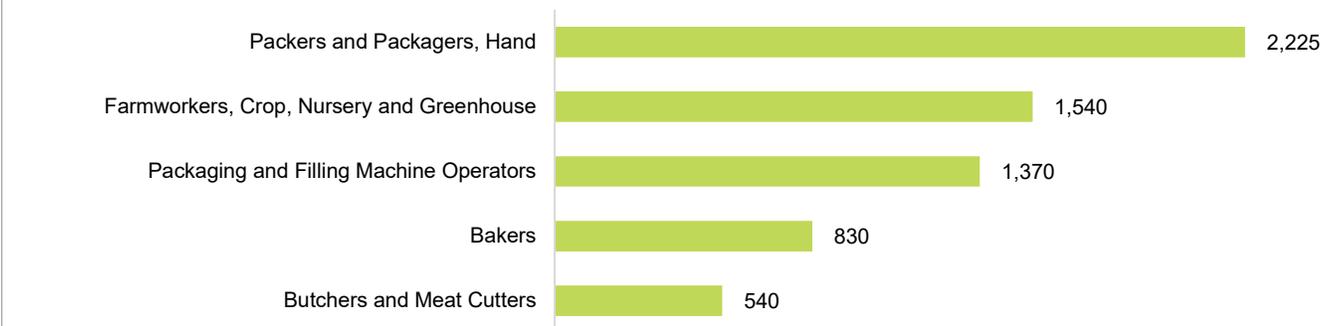
Agriculture occupations with the most projected annual openings through 2030 are shown in Figure 9. Similar to the occupations with the highest projected growth, all but *Butchers and meat cutters* are on the list of key occupations. The only occupation requiring formal education is *Packaging and filling machine operators and tenders*. The remaining four occupations only require on-the-job training. For individuals who are working toward completing their high school education, or never obtained their degree, occupations in the Agriculture cluster can offer various opportunities for employment.

**FIGURE 8: MICHIGAN AGRICULTURE CLUSTER OCCUPATIONS WITH THE MOST PROJECTED GROWTH THROUGH 2030**



Source: 2020–2030 Occupational Employment Projections, Michigan Center for Data and Analytics

**FIGURE 9: MICHIGAN AGRICULTURE CLUSTER OCCUPATIONS WITH THE MOST PROJECTED ANNUAL OPENINGS THROUGH 2030**



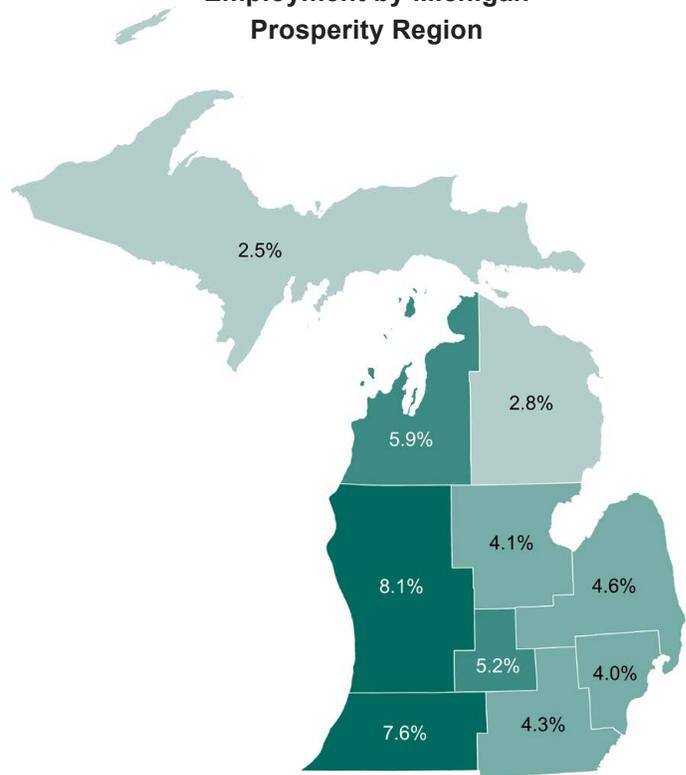
Source: 2020–2030 Occupational Employment Projections, Michigan Center for Data and Analytics

# Workforce Demographics

Data on workforce demographics such as gender, age, education, and race and ethnicity are important to identifying industry cluster characteristics and evaluating potential disparities. Understanding and addressing gaps in education and skills across demographic groups can aid in the growth of an industry cluster. In order to maintain a young workforce across an industry cluster, employers may need to acclimate to what their workforce values, such as opportunities for financial and professional gain. The following section displays characteristics of the Agriculture cluster workforce in Michigan. These data analyses rely on the Longitudinal Employer-Household Dynamics and may vary slightly from industry data published by the Quarterly Census of Employment and Wages due to limitations in data availability and differences in collection time periods.

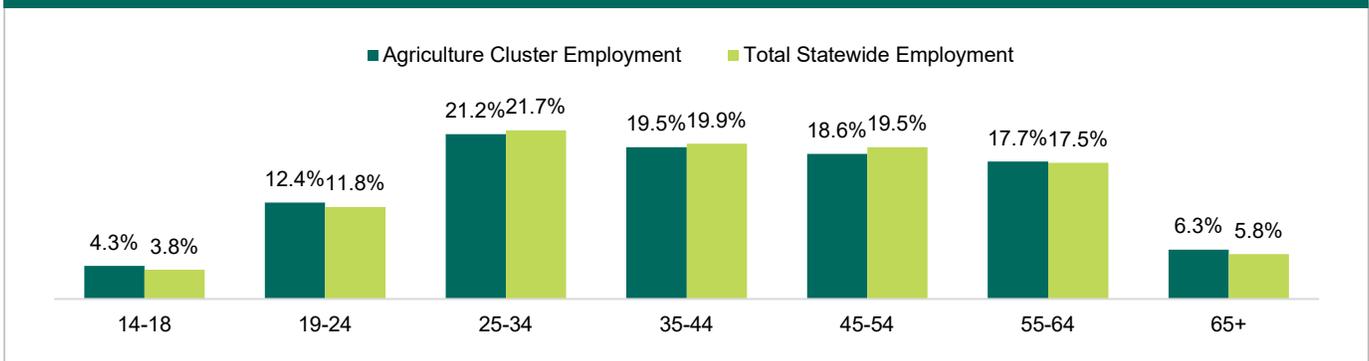
Agriculture is heavily concentrated along the west coast of the state, making up larger employment shares in Northwest, West, and Southwest Michigan prosperity regions. These regions all have considerably higher shares of their employment in Agriculture compared to the state.

**Agriculture Cluster Share of Total Employment by Michigan Prosperity Region**



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

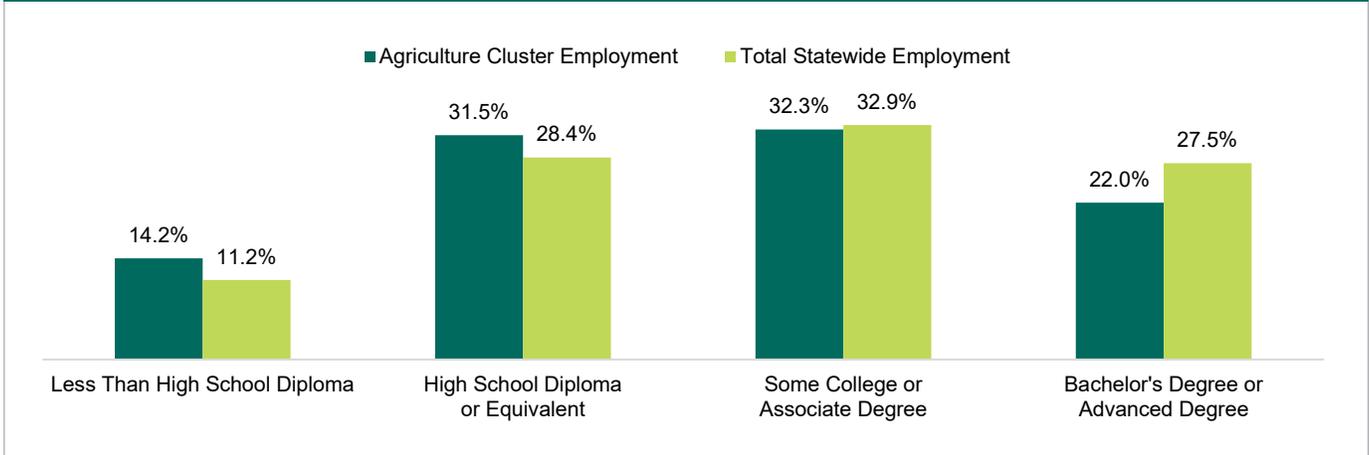
**FIGURE 10: MICHIGAN AGRICULTURE CLUSTER EMPLOYMENT BY AGE, THIRD QUARTER 2021**



Source: Third Quarter 2021 Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

Agriculture employment by age is closely aligned with statewide shares. Each age group differs from the state by less than one percentage point. The cluster has a slightly higher concentration of young workers (those under 25) than the state as a whole. This could be because of the lower educational requirements within the cluster.

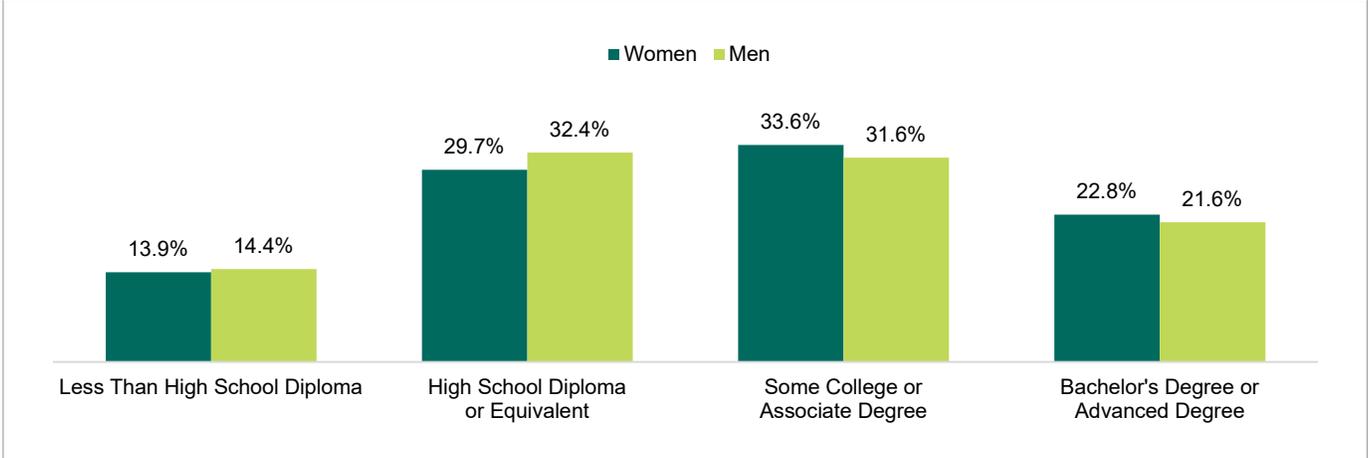
**FIGURE 11: MICHIGAN AGRICULTURE CLUSTER EMPLOYMENT BY EDUCATION, THIRD QUARTER 2021**



Source: Third Quarter 2021 Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

Having less than a high school diploma is not uncommon in Agriculture and will not prevent an individual from finding work in this industry cluster. Unsurprisingly, educational attainment shares in Agriculture are typically lower than the overall statewide level. Only a small number of careers in the cluster require a bachelor's degree or more, and at the same time, many opportunities exist for those with a high school diploma or less.

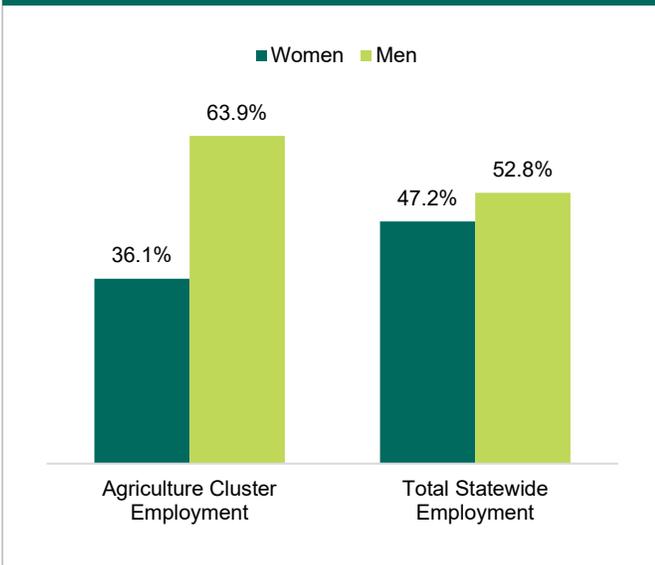
**FIGURE 12: MICHIGAN AGRICULTURE CLUSTER EMPLOYMENT BY EDUCATION AND GENDER, THIRD QUARTER 2021**



Source: Third Quarter 2021 Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

Despite nearly equivalent levels of educational attainment by men and women in the cluster, earnings are distinctly different. At every level of educational attainment, a man in Agriculture makes roughly 1.5 times more than female counterparts. In order to earn what a man with a high school diploma earns, a woman in Agriculture typically needs to have obtained a bachelor's degree or higher.

**FIGURE 13: MICHIGAN AGRICULTURE CLUSTER EMPLOYMENT BY GENDER, THIRD QUARTER 2021**

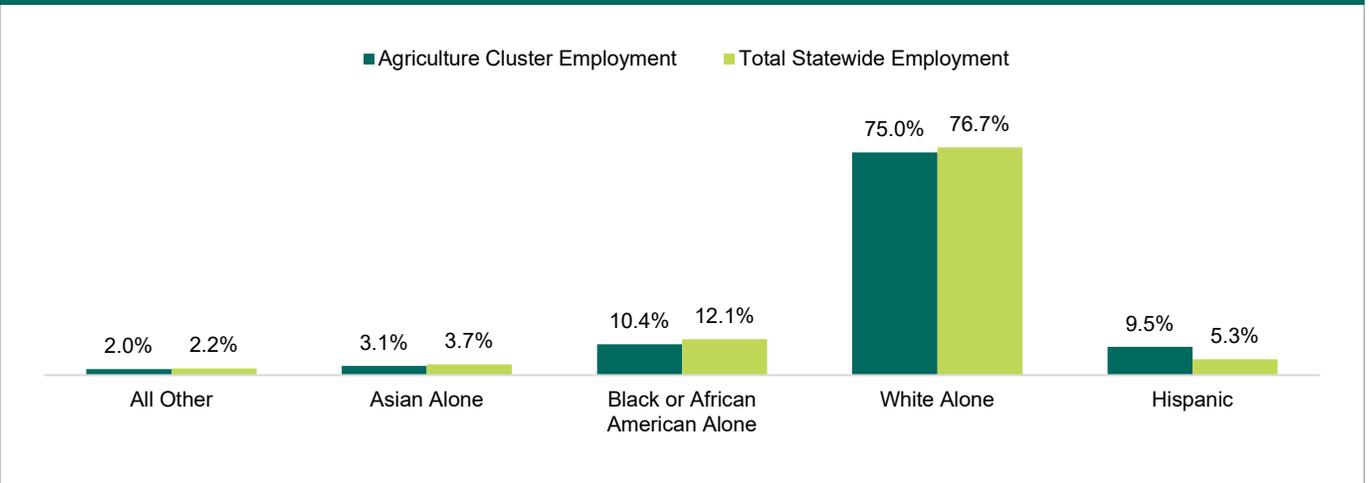


Source: Third Quarter 2021 Longitudinal Employer-Household Dynamics program, U.S. Census Bureau



The shares of men and women employed at the statewide level are nearly equal. At the Agriculture cluster level, there is a stark contrast. For every one woman employed in the cluster, there are two men. This is not uncommon as many other industry clusters, such as Information Technology, have similar ratios of men to women.

**FIGURE 14: MICHIGAN AGRICULTURE CLUSTER EMPLOYMENT BY RACE AND ETHNICITY, THIRD QUARTER 2021**



Source: Third Quarter 2021 Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

Employment by race and ethnicity do not have prominent differences at the state and Agriculture cluster levels. Each group in Agriculture has slightly lower employment shares than the overall statewide averages, except for Hispanics. This group has a share of employment that is over 4 percentage points higher than their general statewide share.

# Talent Pipeline

Data for education program completers of instructional programs are available from the National Center for Education Statistics. These data can be used to estimate ever-changing levels of supply for some occupations in the labor market. There are no officially defined programs for clusters. Certain programs are more likely to lead to work in the Agriculture cluster than others, but there are opportunities across the educational spectrum including business, social work, and manufacturing programs to name a few. This section will highlight only a few of hundreds of possible programs that can lead to a job in the Agriculture cluster. Many factors can shift completers, such as an increase in student enrollment during periods of high unemployment or difficulties attending school during a pandemic. For example, demand for workers may be causing upward pressures on programs while other factors such as a lack of instructors are causing the number of total completers to decrease.

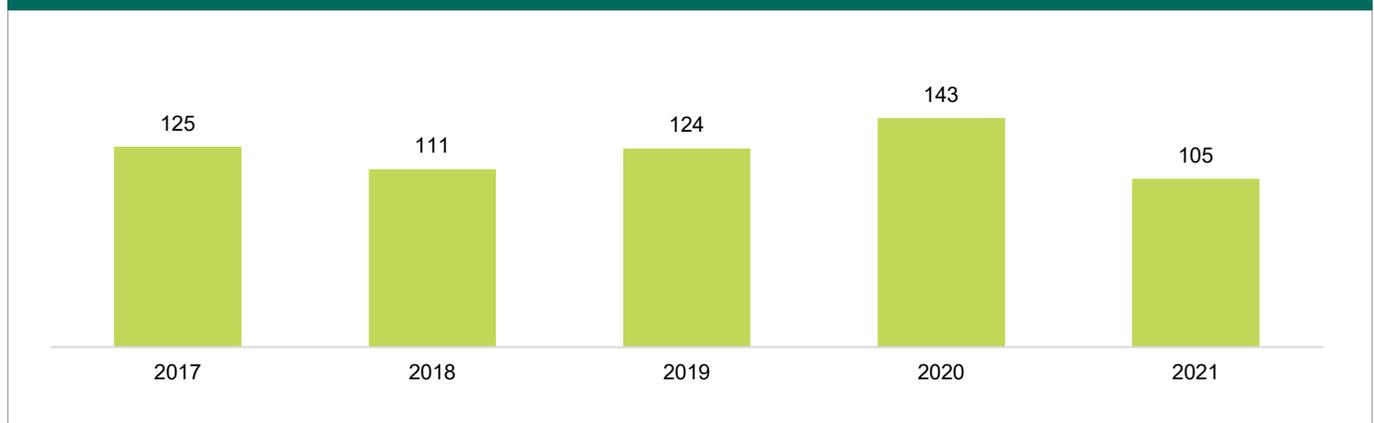
Within the Agriculture cluster, most higher education graduates have obtained a bachelor's degree. These graduates typically fulfill degree requirements in fields that are not typically thought of in Agriculture, like *Finance*, but remain important to the cluster. This data does not capture anything less than a postsecondary award or certificate, meaning that many traditional

Agriculture fields may not show up in the data due to their low education requirements.

Many completers related to the Agriculture cluster obtain a postsecondary certificate or associate degree. The top programs for postsecondary certificate completers are *Lineworker*, *Industrial mechanics and maintenance technology/technician*, and *Truck and bus driver/commercial vehicle operator and instructor*. These three programs are led in total completions by Alpena Community College, MIAT College of Technology, and Wayne County Community College District, respectively. Among associate degree completers, some of the top programs are *Business administration and management*, *Business/commerce, general*, and *Culinary arts/chef training*. The highest total number of graduates from these three programs come from Oakland Community College, Macomb Community College, and Schoolcraft College.

A number of bachelor's degree programs related to Agriculture contribute to the possibility of becoming an *Industrial production manager*, which is the only bachelor's degree-level occupation on the key occupations list for the cluster. Overall, the total number of bachelor's degree completions related to Agriculture has little variation from year to year, consistently remaining above 8,000.

FIGURE 15: MICHIGAN LINEWORKER POSTSECONDARY CERTIFICATE COMPLETERS



Source: National Center for Education Statistics, Integrated Postsecondary Education Data System

# Conclusion

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The Agriculture industry cluster is a small, but important part of Michigan's economy. Employment, wages, and online job advertisement presence are growing within the industry cluster. Agriculture provides employment opportunities for a variety of education and training backgrounds. Its occupations vary in size and present a range of required skill sets for this cluster.

## Strengths

### Young Workforce

Agriculture has a similar age breakdown of its workforce compared to Michigan overall. The cluster has a slightly higher concentration of workers ages who are under 25, which is good news for Agriculture. As its older workforce begins to retire, there are younger workers that could be able to fill those gaps.

### Low Education Requirements

The Agriculture industry cluster holds many opportunities for those with a high school diploma or less. For individuals who are not looking to further their formal education and do not mind manual labor, Agriculture can provide quick employment.

### Growing Employment

The industry cluster has generally been experiencing employment growth. Despite a decline in 2020, total employment in Agriculture was still above its 2015 level. Employment in 2021 for the cluster was 17.6 percent greater than it was in 2011 at 98,400 workers.

### Online Advertising

One result of the COVID-19 pandemic was a push for virtual access to many things, including job advertisements. This is a new strength for an industry cluster that may have previously depended more on word-of-mouth and local advertising for open positions. Now, individuals seeking entry to the Agriculture cluster can more readily find information on a position from anywhere in the state and determine whether they need to relocate or if opportunities exist where they are.





## Challenges

### Below-Average Pay

Although Agriculture is an accessible cluster for those with lower education, it does present lower-than-average pay to its workers. The overall average salary in 2021 for Agriculture was \$49,600 compared to \$61,700 statewide. In order to access higher salaries, individuals in Agriculture likely need to seek careers with higher education requirements, like *Industrial production managers*.

### Low Concentration

Despite growing employment in Agriculture over the years, it still is not as concentrated in employment as some other industry clusters. The nearly 100,000 employees in Agriculture for 2021 represent just 2.4 percent of all employment statewide. This means that there will not always be local opportunities for individuals interested in entering the industry cluster and they may need to seek relocation to reach a desirable position.

### Limited Upward Mobility

With an industry cluster that provides an abundance of opportunity at low education levels, challenges for those seeking upward mobility in the cluster exist. Typically, career growth in Agriculture comes from time on the job and may not always come with a new title attached, but a slight wage increase. In order to reach above-average pay and above entry-level titles, one would need to seek higher education. The downfall of this, is that these occupations are lower in employment than the most prevalent occupations in Agriculture.



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