



MICHIGAN CONSTRUCTION

2019 INDUSTRY CLUSTER WORKFORCE ANALYSIS

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WORKFORCE ANALYSIS

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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.

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- 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

- Between 2000 and 2010, employment in the Construction cluster fell faster (42 percent or 125,200 jobs) than total private jobs in Michigan, which dropped by 19 percent. However, since then, Construction has been one of the fastest-growing industry clusters in Michigan, expanding by 45 percent—an addition of 79,200 jobs.
- The pay in the Construction cluster has historically been significantly higher than the statewide average. Nominal annual wages in the Construction cluster surpassed the Michigan average by \$7,000 in 2004 and \$16,000 in 2017.
- Over 62 percent of jobs in the Construction cluster are found in the subsector, comprising the industries of *Construction of buildings*, *Heavy and civil engineering construction* (e.g., engineering projects such as highways and dams), and *Specialty trade contractors* (performing specific activities such as pouring concrete, site preparation, plumbing, painting, and electrical work).
- Most key careers in the Construction cluster do not require more than a high school diploma or equivalent. In fact, 11 of the top 15 key occupations in this cluster fall into this category. Close to half of the Construction workforce has a high school diploma or less.
- Between 2016 and 2026, *Construction and extraction* occupations are projected to expand by 8.8 percent, about two percentage points above the all-occupation average growth rate. They are projected to create about 17,780 job openings annually, with more than three in four of these jobs coming from the need to replace workers.
- Construction in Michigan is overwhelmingly male at just under 87 percent. The cluster also carries a higher than average share of workers in the prime working-age group of 35 to 54.
- Over half of program completers in Construction-related careers require moderate postsecondary training or an apprenticeship plus certification. These include *Carpenters*, *Electricians*, *Plumbers*, *Pipefitters*, *Steamfitters*, and others.



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 definition of industry clusters in Michigan was done by grouping industries that produce similar or related products, use similar processes, or are in direct supply chains. It is important to note that broader sectors were avoided. Consequently, the Construction cluster comprises industries directly involved in the construction of things, including *Construction of buildings* (NAICS 236), *Heavy and civil engineering construction*, and *Specialty trade contractors*. The cluster also comprises industries involved in the manufacturing of construction materials such as plywood, machineries, and others. Businesses in the wholesale of construction materials (for example, lumber), in *Construction engineering services*, and in *Maintenance services* have also been included in the cluster.

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

- Construction of Buildings and Structures
- Construction Professional and Business Services
- Wholesale Construction Materials
- Construction Material Manufacturing
- Construction Other Services
- Logging
- Mining
- Lending and Leasing



Construction Employment and Wages Analysis

Employment in the Construction cluster in Michigan experienced steady declines following the 2000 economic downturn. Cluster employment fell faster and deeper than the decline in the statewide total, but has risen faster in the period following the Great Recession.

Figure 1 shows four distinct periods in the pattern of payroll employment in the Construction cluster over the past 16 years. The first period (2000–2003) directly follows the 1999–2000 economic downturn, which heavily affected the Manufacturing sector. The loss of high-paying jobs from Manufacturing negatively impacted other sectors, including the Construction cluster. Employment in the cluster fell by 14 percent.

However, building permits for housing starts rose from 52,500 annually in 2000 to about 54,700 in 2004, and employment in the cluster stabilized between 2003 and 2004 (second period).

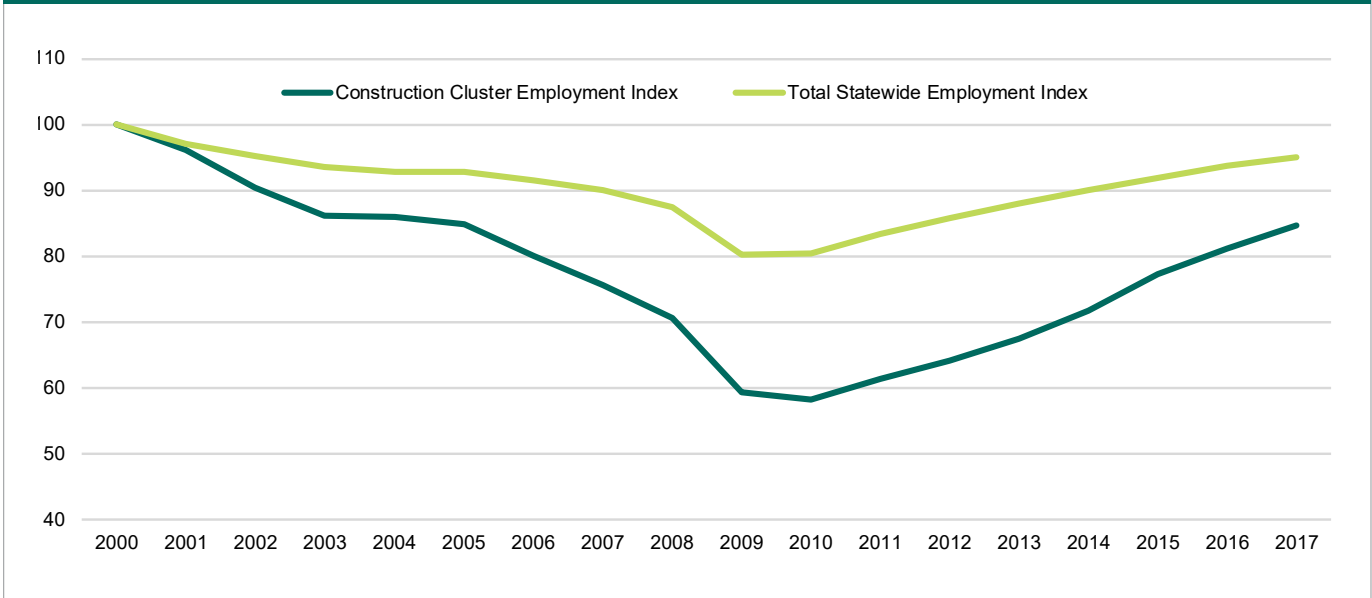
Building permits for housing starts declined in 2005, with only 45,300 issued. The housing and financial crisis that preceded the Great Recession forced permits for new buildings to a new low of 6,900 in 2009. Employment in the Construction cluster plunged by 30 percent (-76,700 jobs) between 2005 and 2009, with a loss of over 34,000 Construction jobs recorded in 2009 alone.

The number of building permits bounced back following the Great Recession but have yet to reach levels seen in 2000. Permits reached a total of 15,900 by the end of 2014, then jumped to 18,200 in 2015 and to 20,400 in 2016. Employment in the Construction cluster followed the same trend. Since 2010, jobs in the cluster have expanded by 45 percent (+79,250), but the cluster is still 15 percent below employment levels reached in the year 2000.

The pay in the Construction cluster has historically been significantly higher than the statewide average. Nominal annual wages in the Construction cluster surpassed the Michigan average by \$7,000 in 2004 and \$16,000 in 2017.

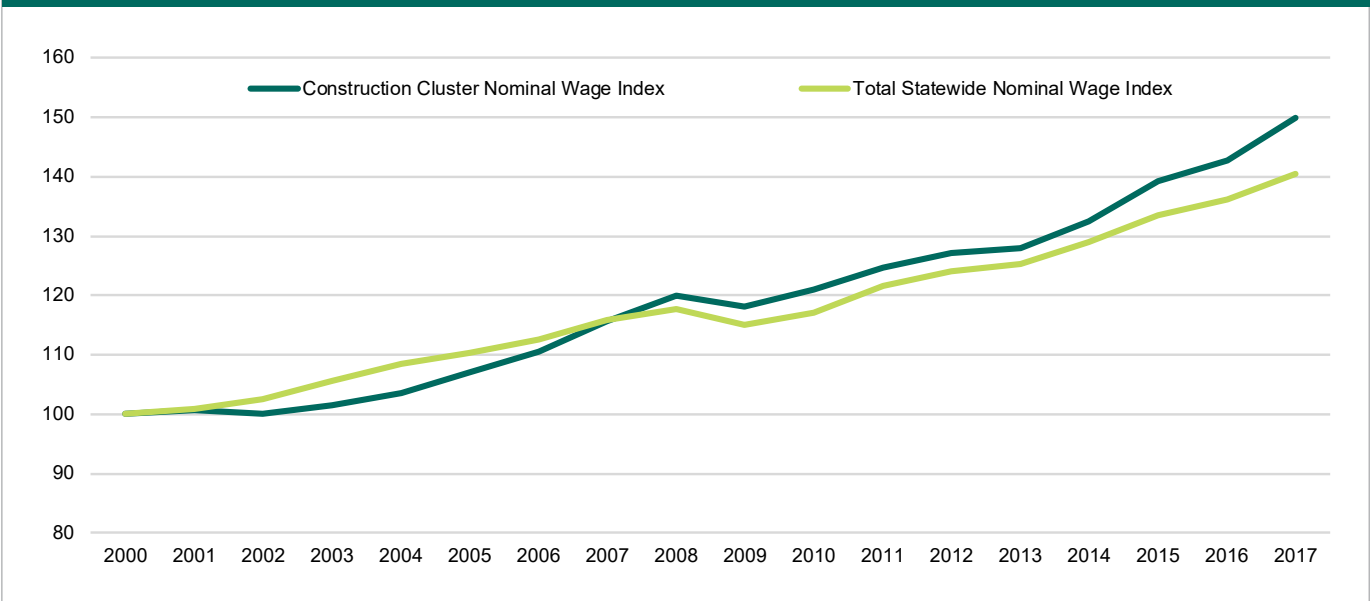
Wages in the Construction cluster were somewhat stable between 2000 and 2003 at around \$46,000. Wages steadily increased to reach \$54,855 in 2008 and declined slightly during the Great Recession before quickly bouncing back in 2010. Construction cluster wages continued to grow significantly in the post-recessionary recovery period, outpacing Michigan total wage growth between 2013 and 2017 as Construction employment was pushed 26 percent higher due to increased housing demand.

FIGURE 1: EMPLOYMENT INDEX, MICHIGAN CONSTRUCTION CLUSTER



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

FIGURE 2: NOMINAL WAGE* INDEX, MICHIGAN CONSTRUCTION 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 Construction Subclusters

Construction of Buildings and Structures (161,903 jobs)

Construction of Buildings
 Heavy and Civil Engineering Construction
 Specialty Trade Contractors

Over 62 percent of jobs in the Construction cluster are found in this subsector, comprising the industries of *Construction of buildings*, *Heavy and civil engineering construction* (engineering projects such as highways and dams), and *Specialty trade contractors* (performing specific activities such as pouring concrete, site preparation, plumbing, painting, and electrical work).

Jobs in this subsector have declined steadily between 2000 and 2010, falling by 43 percent (-89,200) during the 2009 recession. Employment in *Construction of buildings and structures* has expanded by 35 percent (+42,100) since the recession, but this was not enough to reach the levels attained in 2000.

Construction Professional and Business Services (66,532 jobs)

Architectural Services
 Construction Engineering Services
 Surveying Services
 Estimating Services

The subsector of *Construction professional and business services* is the second largest employer in the cluster with a little over a quarter of total Construction cluster employment. Jobs in this subsector dropped by 38 percent (-21,900) during the Great Recession but have substantially expanded since then to surpass 2000 levels by 14 percent (+8,200).

Wholesale of Construction Supplies (12,518 jobs)

Lumber
 Metallic Minerals (Except Precious and Semiprecious Stones and Minerals Used in Construction, Such as Sand and Gravel)
 Nonelectrical Materials for Construction
 Construction Machinery and Equipment

Jobs in this industry have expanded by 42 percent (+3,700) since 2010, after a fall of 38 percent (-5,300) during the 2009 recession. Employment in the subsector is still 11 percent below the levels attained in 2000. The number of businesses operating in this industry group has continued to decline.

Manufacturing of Construction Materials and Machineries (9,310 jobs)

Plywood (Wood and Non-Wood)
 Pails and Reels
 Concrete Crushing and Grinding Machines
 Drills and Other Handheld Power-Driven Tools

Businesses in this subsector employed about 3.5 percent of the Construction cluster workforce in 2017. Jobs in this group dropped by 50 percent (-7,100) between 2000 and 2010 but have shown some recovery since then (+2,200 or 31 percent). About 158 more businesses have opened since the end of the 2009 recession.

FIGURE 3: SUBCLUSTER DISTRIBUTION, MICHIGAN CONSTRUCTION CLUSTER, 2017



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

Logging, Including Timber Tract Operations, 0.7%
 Mining of Gravel and Sand, 0.5%
 Lending and Leasing Activities, 0.3%

Other Subsectors of the Construction Cluster (about 10,000 employees)

- Other Private Services (6,000 jobs)
- Logging, Including Timber Tract Operations (1,750 jobs)
- Mining of Gravel and Sand (1,330 jobs)
- Lending and Leasing Activities Related to Construction (900 jobs)

The subsector of *Other private services* is the largest employer in this group. It comprises businesses such as *Repair and maintenance of construction machineries and equipment*. After falling by 24 percent (-1,450) between 2000 and 2010, employment in this subsector has grown to almost reach the 2000 level in 2017. Close to 150 more businesses have opened in this subsector since 2010.

Key Construction Occupations

Occupations are an important level of analysis within the Construction 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 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. 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 CONSTRUCTION CLUSTER

KEY OCCUPATION	CLUSTER EMPLOYMENT	MICHIGAN EMPLOYMENT	CLUSTER WAGE RANGE	ANNUAL OPENINGS	TYPICAL EDUCATION AND TRAINING	TALENT GAP
Brickmasons and Blockmasons	1,800	1,860	\$18–\$28	250	High School Diploma or Equivalent	Shortage
Carpenters	17,330	19,400	\$16–\$28	2,600	High School Diploma or Equivalent	Balanced
Cement Masons and Concrete Finishers	4,640	4,880	\$16–\$27	500	No Formal Educational Credential	Surplus
Civil Engineers	6,440	8,230	\$30–\$45	860	Bachelor's Degree	Balanced
Construction Laborers	20,250	21,850	\$14–\$22	3,340	No Formal Educational Credential	Balanced
Construction Managers	3,560	4,210	\$33–\$56	540	Bachelor's Degree	Balanced
Cost Estimators	3,560	6,640	\$22–\$39	710	Bachelor's Degree	Surplus
Electricians	15,100	22,780	\$20–\$35	2,580	High School Diploma or Equivalent	Balanced
First-Line Supervisors of Construction Trades and Extraction Work	9,730	11,550	\$24–\$38	1,410	High School Diploma or Equivalent	Balanced
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	6,690	8,970	\$17–\$29	1,020	Postsecondary Nondegree Award	Balanced
Operating Engineers and Other Construction Equipment Operators	5,770	7,260	\$19–\$29	920	High School Diploma or Equivalent	Surplus
Painters, Construction and Maintenance	3,730	4,300	\$15–\$22	620	No Formal Educational Credential	Balanced
Plumbers, Pipefitters, and Steamfitters	9,490	12,250	\$22–\$36	1,620	High School Diploma or Equivalent	Shortage
Roofers	3,220	3,240	\$15–\$24	360	No Formal Educational Credential	Balanced
Sheet Metal Workers	2,210	3,210	\$19–\$32	420	High School Diploma or Equivalent	Shortage

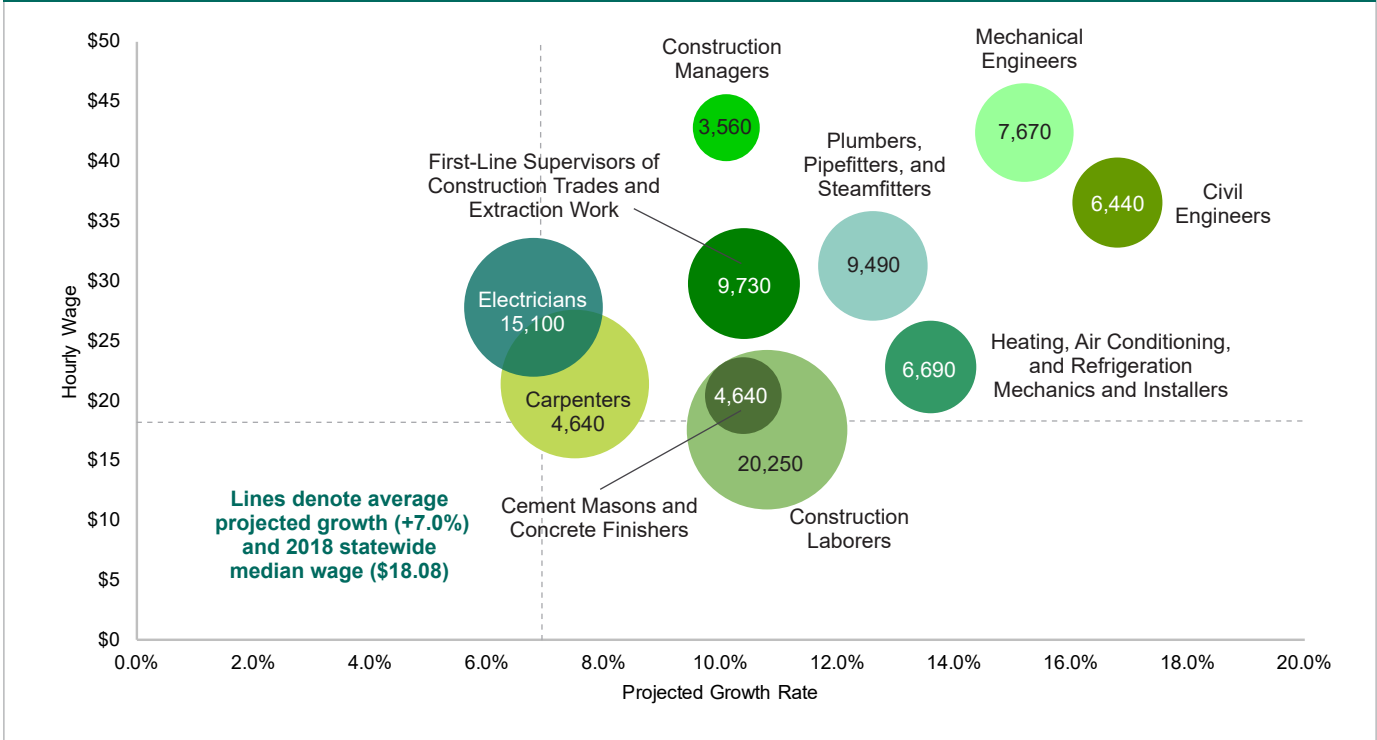
Sources: Cluster employment, Michigan employment, and Wage range: Occupational Employment Statistics, Michigan Bureau of Labor Market Information and Strategic Initiatives (2017); Annual Openings: Long-term Occupational Projections (2016-2026), Michigan Bureau of Labor Market Information and Strategic 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 Construction cluster are a good mix in terms of wage range, projected total annual openings, current job postings, and the labor demand-supply situation.
- Most key careers in the Construction cluster do not require more than a high school diploma or equivalent. Of the top 15 key occupations, 11 require a high school diploma or less, one demands some postsecondary training but no degree, and three require at least a bachelor's degree. However, a third of these occupations require an apprenticeship, and six demand moderate on-the-job training.
- The top 15 key occupations in the Construction cluster display a wide range of pay, from \$14–\$22 for *Construction laborers* to \$33–\$56 for *Managers*. However, there is a clear relationship between education, training beyond high school, experience, and wage. For instance, the lowest-paying occupation among the top 15 key occupations, *Construction laborers*, requires no formal education, no experience, and short-term on-the-job training. In contrast, the highest-paying Construction key career, *Construction managers*, requires a bachelor's degree and a moderate on-the-job training.
- Key occupations in the Construction cluster are projected to create a number of 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 measure 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 Construction cluster (9 of 15) display a balanced demand-supply situation. However, three of these occupations show a shortage, including *Plumbers, pipefitters, and steamfitters, Sheet metal workers, and Brickmasons and blockmasons*. Another set of three show a surplus: *Operating engineers and other construction equipment operators, Cement masons and concrete finishers, and Cost estimators*.



FIGURE 4: HIGH-DEMAND OCCUPATIONS, MICHIGAN CONSTRUCTION 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.

Between 2016 and 2026, *Construction and extraction* occupations are projected to expand by 8.8 percent, adding about 13,800 new jobs. This is about two percentage points above the all-occupation average growth rate. Each year, *Construction and extraction* occupations are projected to create about 17,780 job openings, with 5,730 openings due to labor force exits such as retirement, school, full-time parenting, etc.; 10,670 jobs related to occupation transfers such as a job-to-job move, and 1,380 positions due to industry growth.

The top 10 high-demand occupations in the Construction cluster represent a good mix in terms of education, training, and work-related experience requirements. Three of them require a bachelor's degree or more (*Civil and mechanical engineers*, as well as *Construction managers*). Four occupations demand some training and/or apprenticeship beyond high school

(*Carpenters, Electricians, HVAC mechanics and installers, and Plumbers, pipefitters, and steamfitters*). *First-line supervisors* require five or more years of experience. Only two of these careers require no formal education or experience (*Cement masons and concrete finishers, and Construction laborers*).

The hourly pay for the top 10 high-demand occupations in the Construction cluster range from \$17.61 for *Construction laborers* to \$42.84 for *Construction managers*. Wages are positively correlated with education and work experience. These occupations also display high projected growth rates. Eight of the 10 top high-demand construction careers are projected to expand in double digits between 2016 and 2026, and only two (*Carpenters and Electricians*) will grow below the projected all-occupation average rate of 7 percent.

Construction Career Pathway

<p>Construction Helper \$36,670 High School Diploma</p>	<p>Construction Laborer (Craftsperson) \$37,530 Minimum of four years of experience</p> <p>First-Line Supervisors of Construction Trades and Extraction Workers (Craft Leaderman) \$63,310 ABC School/On-the-job Training</p>	<p>Construction and Building Inspector (Project Controller) \$55,810 Bachelor's Degree (Construction Management)</p> <p>Construction Manager/Supervisor \$93,010 Bachelor's Degree (Construction Management)</p>	<p>Upper Level Manager \$122,870 Bachelor's Degree (Construction Management) and Experience</p>
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Source: Occupational Employment Statistics (2018 Statewide Median Annual Wage), 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, with Short-term On-the-job Training, No Experience or Apprenticeship

- Carpet Installers
- Construction Laborers
- Insulation Workers, Floor, Ceiling, and Wall Pipelayers
- Helpers-Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters
- Helpers-Carpenters
- Helpers-Electricians
- Helpers-Painters, Paperhangers, Plasterers, and Stucco Masons
- Helpers-Pipelayers, Plumbers, Pipefitters, and Steamfitters
- Helpers-Roofers
- Helpers, Construction Trades, All Other
- Landscaping and Groundskeeping Workers

These are usually entry-level jobs, with an hourly pay range of about \$12.66 to \$18.56 (or \$26,330–\$38,600 annually).

With an experience of four or more years of work in the above occupations, a worker is qualified for *First-line supervisors of construction trades* and *Extraction workers* or of *Landscaping, lawn service, and groundskeeping* workers, with a pay ranging from \$45,700 to \$61,900 annually.

High School Diploma or less, with Moderate to Long-term On-the-job Training (Excluding Apprenticeship)

- Floor Layers, Except Carpet, Wood, and Hard Tiles
- Tile and Marble Setters
- Cement Masons and Concrete Finishers
- Paving, Surfacing, and Tamping Equipment Operators
- Operating Engineers and Other Construction Equipment Operators
- Drywall and Ceiling Tile Installers
- Tapers
- Painters, Construction and Maintenance
- Plasterers and Stucco Masons
- Roofers
- Construction and Building Inspectors
- Fence Erectors
- Hazardous Materials Removal Workers
- Highway Maintenance Workers
- Rail-Track Laying and Maintenance Equipment Operators
- Septic Tank Servicers and Sewer Pipe Cleaners
- Construction and Related Workers, All Other
- Service Unit Operators, Oil, Gas, and Mining
- Earth Drillers, Except Oil and Gas
- Continuous Mining Machine Operators
- Roustabouts, Oil and Gas

Because of the on-the-job training requirement, the pay range for this group of careers rises slightly to \$15–\$26. Note that in order to be a *Construction and building inspector*, a worker needs five or more years of experience in related occupations.



High School Diploma or Less, with Apprenticeships

Boilermakers
Brickmasons and Blockmasons
Stonemasons
Carpenters
Electricians
Glaziers
Insulation Workers, Mechanical
Plumbers, Pipefitters, and Steamfitters
Sheet Metal Workers
Structural Iron and Steel Workers
Elevator Installers and Repairers

Some of these Construction careers specifically require a formal apprenticeship and pay even higher, with a minimum of \$17 in 2017 for *Stonemasons* to as high as \$42 an hour (or \$87,400 a year) for *Elevator installers and repairers*.

Bachelor's Degree or More

Architects, Except Landscape and Naval
Landscape Architects
Construction Managers

The pay range for these Construction careers with a bachelor's degree or more is between \$31 and \$43 an hour (\$65,300 to \$89,100 annually).

Real-time Demand for Construction Employment

The Construction cluster is currently one of the fastest growing sectors in Michigan. Consequently, the cluster needs an expanding workforce. Every year, new positions are created in the cluster's key careers. For example, in 2017, there were over 7,000 job ads for *First-line supervisors of construction trades and extraction work*; over 6,700 ads for *Construction laborers*; and over 6,600 ads for *Carpenters*.

The majority of job ads online in the Construction cluster are concentrated in Wayne, Oakland, and Kent counties. In 2017 for example, these three counties accounted for over 42 percent of the 4,934 job postings for *Construction laborers*, close to 46 percent of the 5,065 openings for *Carpenters*, and about 45 percent of the 2,304 new ads for *Electricians*. Based on data from Talent Neuron, in 2017, the top advertisers of jobs related to the top 15 key occupations in the Construction cluster included Team Bob's Heating from Traverse City; HNTB Corporation, an architecture and civil engineering consulting company with multiple locations in Michigan; Rooter MD Plumbing and Heating located in

Top skills in postings for key occupations include:

Building and Construction
Mathematics
Mechanical
English Language
Design
Computer Aided Design (CAD) Software
Spreadsheet Software
Word Processing Software
Project Management Software
Enterprise Resource Planning (ERP) Software

Livonia; Team Elmer's with multiple locations; and others. The same database shows that there were about 9,600 online ads for full-time construction jobs in 2017; 9,500 permanent positions advertised; 940 part-time; 410 internships, 340 temporary, and 110 ads for contracted work.

Source: The Conference Board, Help Wanted Online® (HWOL) and O*Net Online

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

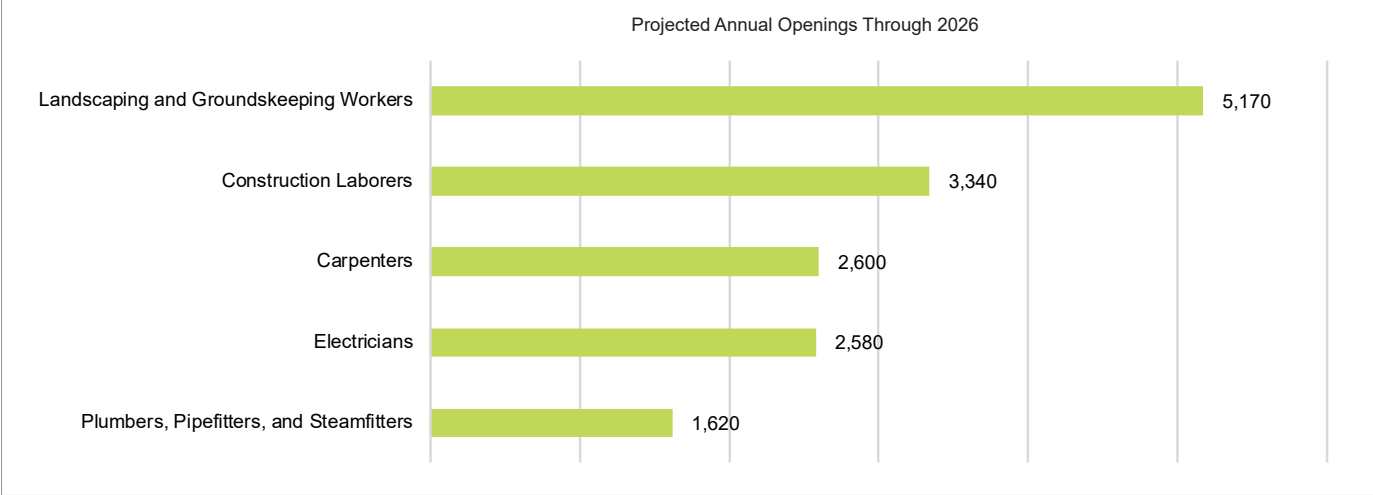
Construction Employment Projections

Employment projections do not exist for clusters, but projections through 2026 do exist for many industries and occupations that make up the Construction cluster.

- The total, all occupations projected change from 2016 to 2026 sits at 7.0 percent. *Construction and extraction* occupations are projected to expand by 8.8 percent over the same period, creating about 13,800 new positions in Michigan. This group of occupations is also projected to create 17,800 jobs annually through 2026, with about a third of these openings (5,700 annually) coming from the need to replace workers retiring or leaving the workforce for other reasons such as taking care of a dependent individual (child, elderly, sick, etc.). Sixty percent (10,700) will be to replace workers changing careers or employers in and outside the state. The remaining openings (about 8 percent) will be due to the cluster expanding and needing more workers.
- The detailed *Construction and extractions* occupations projected to grow the fastest and employing at least 1,000 individuals include *Plumbers, pipefitters, and steamfitters* at 12.6 percent (+1,670), *Construction and building inspectors* at 11.6 percent (+320), *Structural iron and steel workers* at 11.3 percent (+170), and *Construction laborers* at 10.8 percent (+3,080).

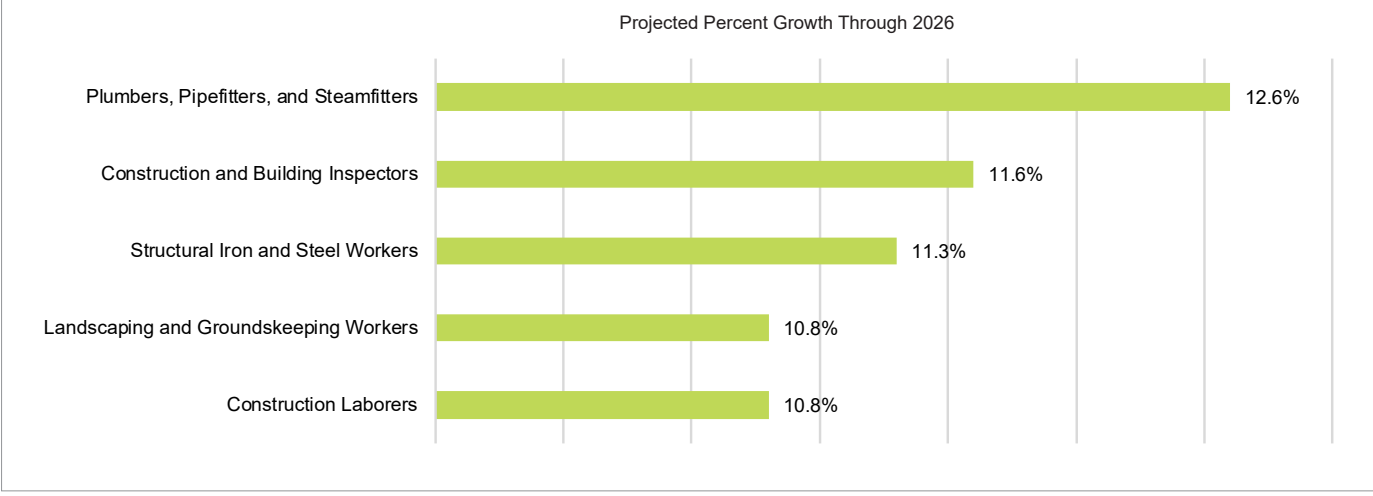


FIGURE 5: OCCUPATIONS WITH THE MOST PROJECTED ANNUAL OPENINGS THROUGH 2026, MICHIGAN CONSTRUCTION CLUSTER



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 CONSTRUCTION CLUSTER

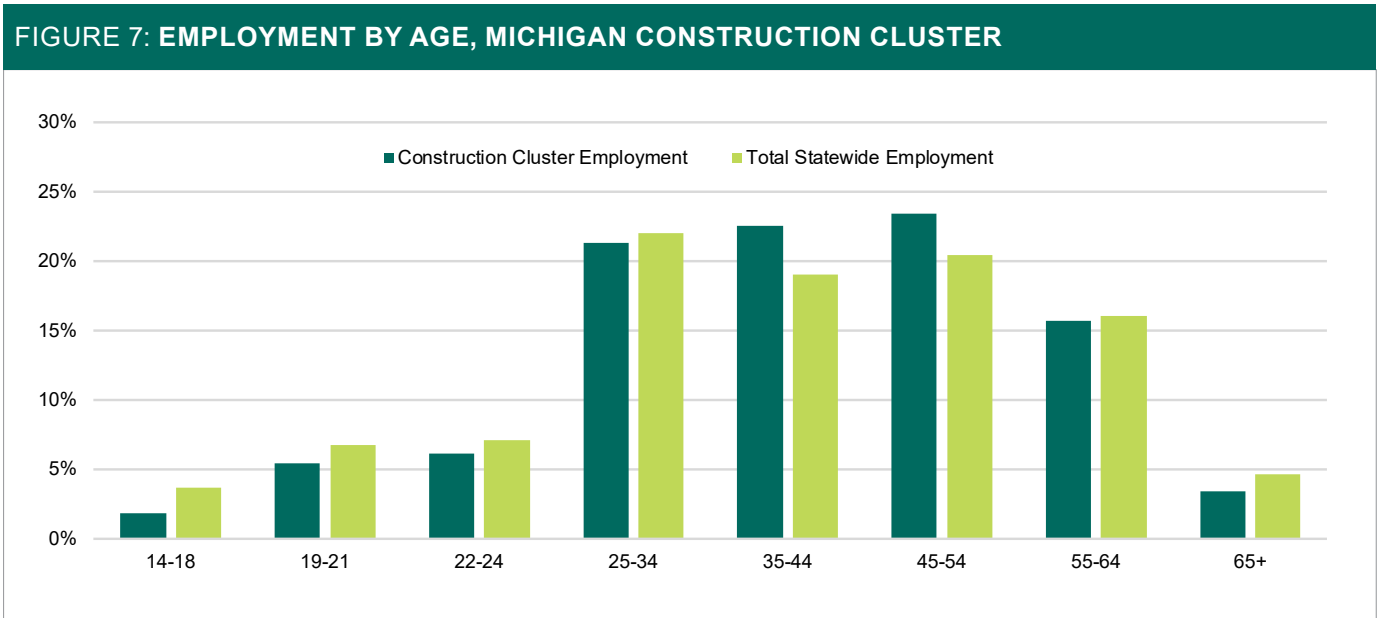


Source: Industry and Occupational Employment Projections (2016–2026), Michigan Bureau of Labor Market Information and Strategic Initiatives



Construction 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 Construction workforce in Michigan.

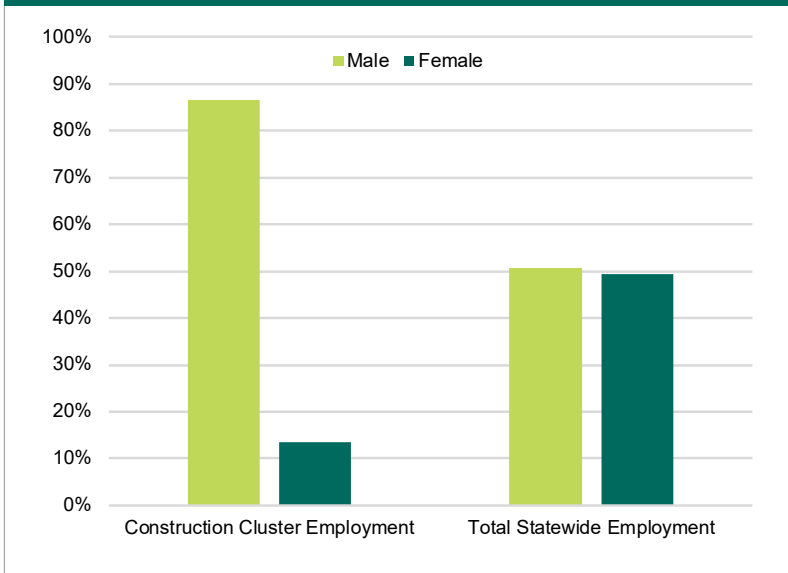


Source: Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

The demographic and educational attainment information is available at four-digit industry details from the Longitudinal Employer-Household Dynamic program (LEHD), maintained by the U.S. Census Bureau. In the Construction cluster, that includes establishments in the *Timber tract operations, Logging, Construction of buildings, Heavy and civil engineering construction, Specialty trade contractors, and Lumber and other construction materials merchant wholesalers*. Excluded are construction-related activities in *Manufacturing, lending and leasing, Professional and business services, and Other private services*.

Construction is a cluster of industries that contain a high ratio of skilled trade occupations. Such skills require many years of on-the-job experience, which can partially explain the higher-than-average percentage of workers in the prime age groups of 35 to 54. Data from the U.S. Bureau of Census Quarterly Workforce Indicators series show that the share of workers in the 35–44 and 45–54 age groups is higher in Construction than the statewide average. The shares of Construction workers in all other age groups considered are below the all-industry averages

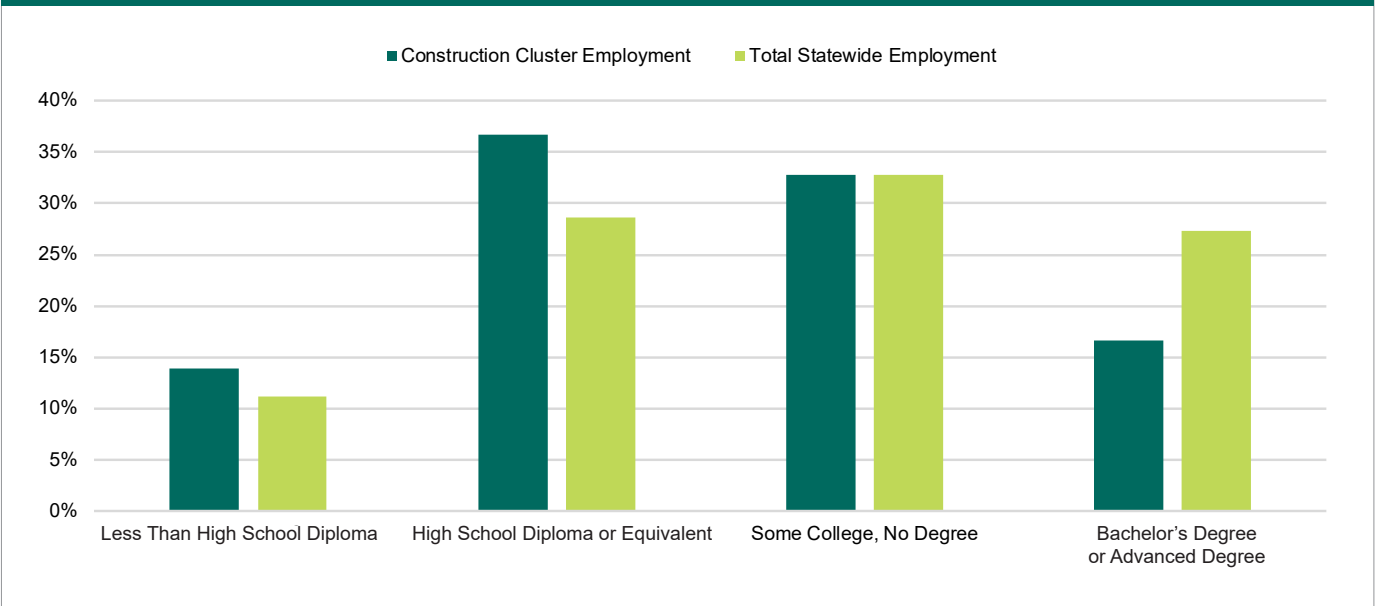
FIGURE 8: EMPLOYMENT, ALL AGES (14–99), MICHIGAN CONSTRUCTION CLUSTER



Construction in Michigan is overwhelmingly male. While employment across all industries in Michigan is evenly distributed between males and females, Construction is predominantly male, with about 87 percent of the industry’s workers being men.

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

FIGURE 9: EMPLOYMENT BY EDUCATION, MICHIGAN CONSTRUCTION CLUSTER



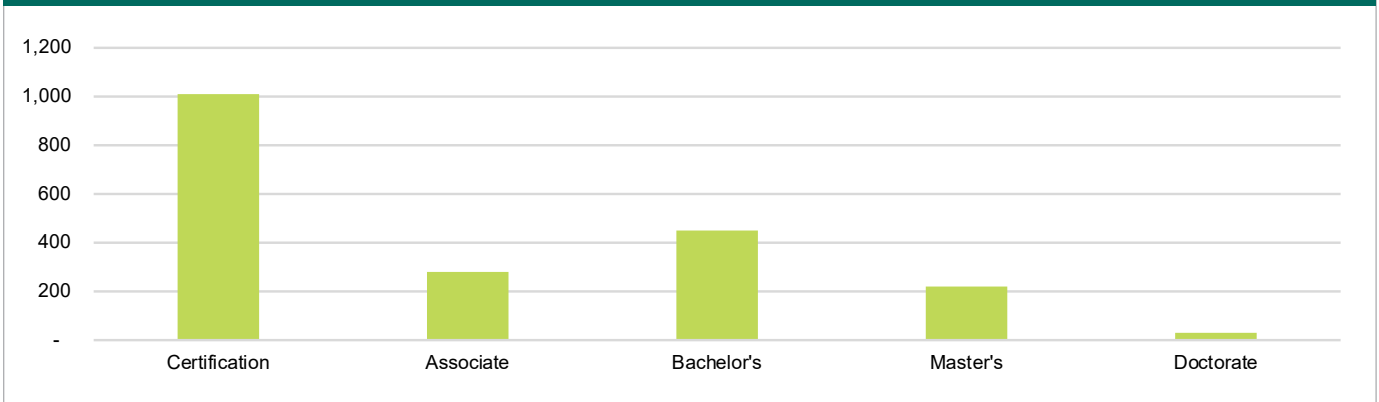
Source: Longitudinal Employer-Household Dynamics program, U.S. Census Bureau

In terms of the educational attainment of the workforce, Construction displays an above average share of workers with a high school diploma or less. Around 51 percent of the workforce in the Construction cluster has a high school diploma or less, which is about 11 percentage points above the share of this group in all-industry employment. In contrast, the share of workers with a bachelor’s degree or more in the Construction cluster is 10 percentage points below the share of this group in the all-industry labor force.

Construction Talent Pipeline

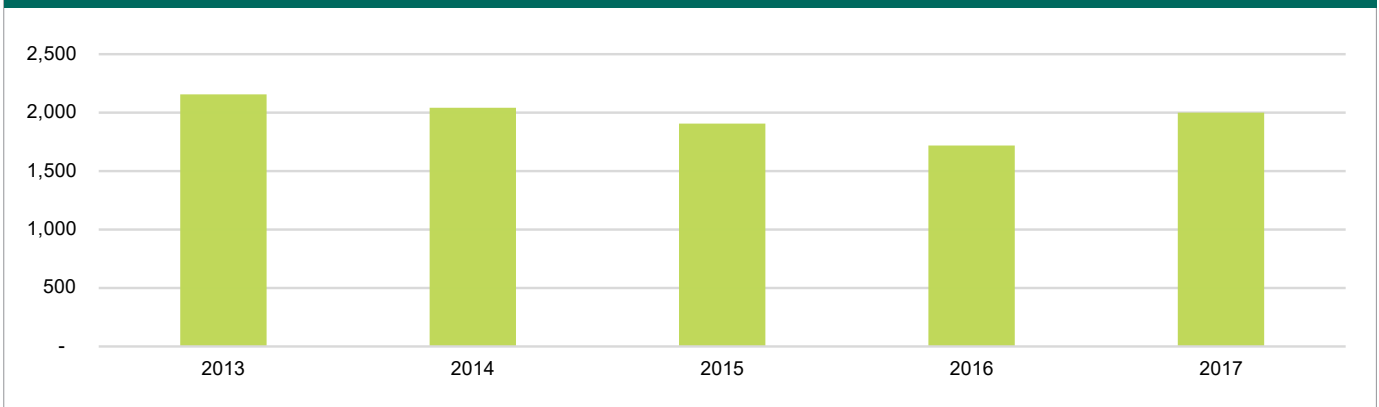
- Over half of program completers in construction-related careers require moderate postsecondary training or an apprenticeship plus certification. These include such careers as *Carpenters, Electricians, Plumbers, pipefitters, and steamfitters, HVAC Mechanics and repairers, Cement masons and concrete finishers, Painters, Roofers, Sheet metal workers, and Brickmasons and blockmasons*. However, some construction jobs require an associate or bachelor's degree and above (example: *Civil engineers, Cost estimators, and Construction managers*). During the 2016-2017 academic year, almost a quarter of construction related program completers obtained a bachelor's degree, while the education levels of associate degree and doctorate degree each accounted for one-eighth of total completers.
- In 2017, close to half of total program completers in construction related fields were in *Engineering services (Engineers and Technicians)*. About one-fifth of program completers were in construction trades. It is important to note, though, that many of construction trade careers such as *Construction Laborers* do not require formal education or training beyond high school.
- The total number of construction-related program completers fell by 400 between 2013 and 2016. The number jumped by 300 in 2017. With the decline in construction jobs to record lows during the 2009 recession, careers in Construction became less attractive. However, the recent noticeable growth in the cluster employment and a deliberate government policy to increase training in construction-related careers (registered apprenticeships, etc.) are starting to produce more graduates.

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



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

FIGURE 11: CONSTRUCTION-RELATED PROGRAM COMPLETERS TREND, MICHIGAN



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





Conclusion

Strengths

Opportunities for Self-Employment

Construction ranks first in Michigan in terms of the percentage of self-employed. Nationwide, Construction comes third in self-employment, presenting fewer barriers to entry for potential entrepreneurs. In some cases, all that is needed to start a business is skills and a few tools. Self-employment is also good for the economy. Through it, new businesses are created and job opportunities open.

Strong Post-Recession Job Growth

While it is a cluster that is impacted by downturns in the business cycle, Construction has been one of the fastest-growing industry clusters in Michigan in terms of job creation, since the end of the Great Recession.

High-Wage

The pay in the Construction cluster is significantly higher than average. Since the state is unlikely to recover many of the lost Manufacturing jobs since 2000, Construction has become a good alternative to employing skilled trade workers with above-average earnings.

Apprenticeship Support and Completion

The Construction cluster had the highest number of completing registered apprentices each year between 2008 and 2015. Many jobs in the Construction cluster require only a high school diploma and some level of postsecondary training in specific skills. Government-supported apprenticeship programs exist to help able and willing individuals get training in Michigan.

State Support for Addressing Workforce Challenges

While the Construction cluster has challenges in terms of finding trained workers for some of its key occupations, highly visible statewide initiatives such as Michigan's Going PRO campaign (which includes a number of Construction occupations) are aimed at supporting employers in helping to fill some of these gaps. Three of the top key occupations in the Construction cluster are included in the Going PRO Campaign: *Electricians, Heating, air conditioning, and refrigeration mechanics and installers, and Plumbers, pipefitters, and steamfitters.*

Challenges

Shortage of Workers

One of the most cited challenges in the Michigan's Construction cluster is the shortage of trained and experienced workers in the industry. With a prolonged job employment decline (2009 to 2010), former Construction workers either retired, changed careers, or moved to other states.

According to an article by Todd Bryant from the "Construction Executive" website in March of 2018,¹ to cope with labor shortage and the rising cost of construction materials, businesses are increasingly relying on "modular or prefab work," as well as automation (such as 3D printing). The tendency could displace and hurt Construction workers in the future.

¹Bryant, Todd (March 14, 2018), Trends and Challenges for the Construction Industry in 2018, <https://constructionexec.com/article/trends-and-challenges-for-the-construction-industry-in-2018>



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