

# Construction Apprenticeships as a Career Development Alternative in Michigan

*Enrollment, Diversity, Hours, Completion Rates, and Earnings in Registered Apprenticeship Programs*

August 3, 2023



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## Executive Summary

Registered apprenticeships are training programs in which participants “earn while they learn” with tuition costs covered by employers or joint labor-management organizations, who gain access to a stable pool of skilled workers. Apprenticeship training is particularly important to combatting skilled labor shortages in construction.

### **Joint labor-management apprenticeship programs account for the vast majority of registered apprentices in Michigan’s construction industry.**

- Joint labor-management programs are cooperatively administered and have standards, wages, and “cents per hour” contributions that are negotiated privately between contractors and unions.
- Between 2010 and 2020, nearly 24,000 construction apprentices (75 percent) were enrolled in joint labor-management programs compared to about 8,000 in employer-only programs (25 percent)—despite construction industry unionization averaging just 22 percent since 2010.
- Joint construction programs enrolled 87 percent of all women, 87 percent of all Black apprentices, 85 percent of all Hispanic apprentices, and 75 percent of all military veterans.

### **Joint construction apprenticeship programs require 8 percent more hours of training to graduate than bachelor’s degree programs and 117 percent more hours than associate degree programs.**

- On average, apprentices in joint construction programs are required to complete more than 6,200 hours of on-the-job and classroom training.
- By contrast, a bachelor’s degree at Michigan’s two largest public universities requires about 5,800 hours and a two-year degree from the state’s community colleges requires about 2,900 hours.
- The Black and Hispanic share of enrollment is higher in joint construction programs (20 percent) than among non-international undergraduate students at Michigan’s two largest public universities (13 percent).

### **Joint construction programs leave graduates free of debt and have higher completion rates than both employer-only construction programs and community colleges in the state.**

- Joint construction programs have a 39 percent completion rate compared to just 24 percent in employer-only construction programs—a difference of 15 percentage points.
- Graduation rates are just 36 percent at community colleges in the state.
- Six-in-ten graduates of four-year universities in Michigan have student loan debt averaging \$31,000 and the average debt for graduating students from community colleges in Michigan is \$11,700.

### **Joint labor-management apprenticeship programs deliver middle-class careers in the construction trades.**

- The average exit wage for journeyworkers completing registered apprenticeship programs was \$30 per hour from joint construction programs versus \$20 per hour from employer-only programs, a 48 percent difference.
- Union journeyworkers who graduated from joint construction programs earned between \$29 per hour and \$30 per hour regardless of gender, racial identification, or ethnic background.
- Union journeyworkers earned 33 percent more than workers with associate degrees (\$22 per hour) and only 8 percent less than workers with bachelor’s degrees (\$32 per hour).

### **Registered apprenticeship programs could be expanded to address labor shortages in the construction industry.**

- Apprenticeship readiness programs could be expanded in Michigan’s high schools.
- Construction firms could be encouraged to become union contractors to expand the most successful model of training and gain access to apprentices who meet industry standards of safety and craftsmanship.
- Michigan could educate students, teachers, parents, and counselors about apprenticeship programs to remove any perceived stigma associated with choosing trade schools as viable alternatives to college.
- Michigan could expand access to childcare programs, a significant barrier for women in the trades.
- By reinstating a prevailing wage law and repealing the so-called “right-to-work” law, Michigan will increase apprenticeship training investments and decrease fatalities in the construction industry.

Joint labor-management apprenticeship programs in construction have rigorous programs with training hours, graduation rates, diversity outcomes, and competitive earnings that rival institutions of higher education in Michigan.

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## Introduction

Economic and social science research finds that investing in infrastructure and education are the most effective public policies at boosting employment and growing the economy. For every dollar increase in infrastructure spending, the U.S. economy grows by between \$1.57 and \$2.20 (Zandi, 2010; Arnon et al., 2020). Similarly, an extra year of education increases an individual's earnings by up to 10 percent and boosts economic growth (Stevens & Weale, 2003; Barro, 1997).

However, additional education through four-year college degrees is not the only option for young people. Registered apprenticeships are training programs that help businesses in Michigan find skilled workers who are in high demand. Participating apprentices get the opportunity to “earn while they learn” with minimal or no out-of-pocket costs. Employers, joint labor-management organizations, and unions all sponsor apprenticeship programs, covering tuition costs and offering structured, on-the-job training and certified classroom instruction tailored to meet the needs of employers. In return for this significant investment, businesses in Michigan gain access to a stable pool of skilled workers who meet industry standards for productivity and safety. By developing workers with in-demand skills, apprenticeship programs create pathways into middle-class careers for young adults while combatting skilled labor shortages. There are currently more than 18,000 active apprentices in Michigan (DOLETA, 2022).

Economic research finds that registered apprenticeship programs have positive economic impacts. Countries that have more widespread usage of apprenticeship programs are more successful at transitioning young workers into stable jobs, resulting in lower unemployment rates (Bertschy et al., 2009; Ryan, 2001; Ryan, 1998). In Germany, where these programs are especially prevalent, apprenticeships have been found to increase a worker's wages by 8 percent per year (Clark & Fahr, 2002). In the United States, participants in registered apprenticeship programs earn about \$124,000 more in wages and fringe benefits over their careers than similar non-participants (Reed et al., 2012).

Apprenticeship training is particularly important in the construction industry (Olinsky & Ayres, 2013). Construction apprenticeship programs are sponsored either jointly by labor unions and employers who are signatories to collective bargaining agreements (joint labor-management programs) or solely by employers. Joint labor-management programs are cooperatively administered with standards, trainee wages, and apprentice-to-worker ratios established in collective bargaining agreements (CBAs). Funding for training in joint labor-management apprenticeship programs is financed by “cents per hour” contributions that are part of the total wage and fringe benefits package negotiated with signatory contractors. Under this system, investments in training the next generation of skilled tradespeople are institutionalized, included in project bids, and paid for by project owners. By contrast, employer-only programs are sponsored by an employer or a trade association who unilaterally determines program content, set entry requirements, and monitor trainee progress. Funding for employer-only programs relies on voluntary contributions from contractors, who often have incentives to forgo long-term workforce training investments and slash labor costs in order to win project bids. Since 2010, Michigan's private construction industry has averaged a unionization rate of 22 percent, with annual estimates ranging between 18 and 26 percent (Hirsch, Macpherson, & Even, 2023).

Through registered apprenticeship programs, the construction industry operates “the largest privately-financed system of higher education in the country” (Philips, 2014). Nearly all of this investment, however, comes from joint labor-management programs cooperatively administered by labor unions and signatory employers due to the lack of institutionalized training investments in the nonunion segment of the industry. Nationally, joint labor-management programs accounted for 75 percent of all construction apprenticeship registrations between 1999 and 2019, including 85 percent of all female apprentices, 79 percent of all Black apprentices, and 79 percent of all Hispanic apprentices (Bilginsoy et al., 2022). Joint programs account for 97

percent of all active construction apprentices in Illinois, 93 percent in Minnesota, 92 percent in California, 85 percent in Pennsylvania, 82 percent in Ohio, 81 percent in Wisconsin, 79 percent in Kentucky, 63 percent in Oregon, and 55 percent in Iowa (Manzo & Bruno, 2020; Calamuci, 2020; Herzenberg et al., 2018; Manzo & Duncan, 2018; Onsarigo et al., 2017; Manzo et al., 2021; Philips, 2015; Duncan & Manzo, 2016; Bilginsoy, 2017; Stepick & Manzo, 2021; Manzo & Gigstad, 2021).

A 2017 study analyzed the performance of registered apprenticeship programs in Michigan from 2000 through 2016 (Bilginsoy, 2017). The report found that joint labor-management apprenticeship programs trained 79 percent of all construction apprentices and graduated 88 percent of all construction apprentices in Michigan. This is despite unions only representing 24 percent of the private construction industry workforce from 2000 to 2016 (Hirsch, Macpherson, & Even, 2023). By contrast, employer-only registered apprenticeship programs affiliated with the Associated Builders and Contractors enrolled just 4 percent of all construction apprentices and graduated just 2 percent of all construction apprentices in the state. Registered apprentices from joint construction programs also had 17 percent higher graduation rates, 22 percent lower cancellation rates, and 92 percent higher exit wages than their counterparts from ABC-sponsored programs (Bilginsoy, 2017).

This report, authored by researchers at the Midwest Economic Policy Institute (MEPI) and the Project for Middle Class Renewal (PMCR) at the University of Illinois evaluates enrollment, training requirements, completion rates, and average earnings for construction apprentices in Michigan. These outcomes are contrasted with public universities and community colleges to compare apprenticeship as an alternative post-secondary option in Michigan. Joint labor-management programs are also compared to employer-only programs in construction. Lastly, the report discusses potential policy considerations for Michigan before a concluding section recaps key findings.

## Data and Methodology

The Registered Apprenticeship Partners Information Management Data System (RAPIDS) is a database of information on apprenticeship programs from participating states—including Michigan—that is collected and released by U.S. Department of Labor Employment and Training Administration (DOLETA). Apprenticeship programs are registered with the U.S. Department of Labor, which sets quality standards. DOLETA provides employers and unions with technical assistance in establishing and operating effective training programs.

This report evaluates RAPIDS apprenticeship data for construction apprentices who started their training from the beginning of 2010 through the end of 2020 (DOLETA, 2022). This report also utilizes other educational statistics and economic statistics for comparative purposes. For example, MLive.com of Booth Newspapers has released data on student completion rates from public universities and community colleges (Mack & Levin, 2021). In addition, this report utilizes data from the *Current Population Survey Outgoing Rotation Groups* (CPS ORG), which is conducted and released by the Bureau of Labor Statistics (BLS) at the U.S. Department of Labor. The CPS ORG data reports individual-level information on 25,000 respondents nationwide each month. The records include data on wages, hours worked, industry, and occupation as well as other demographic, geographic, education, and work variables (EPI, 2023). CPS ORG information is used to compare the wages of construction apprentices to the comparable earnings for workers with associate degrees and bachelor's degrees in Michigan.

**Enrollment in Apprenticeship Programs and Public Universities in Michigan**

Joint labor-management registered apprenticeship programs train more than 7-in-10 construction apprentices in Michigan (Figure 2). From 2010 through 2020, joint labor-management programs enrolled 75 percent of all registered apprentices in the construction trades. Joint labor-management programs accounted for approximately 75 percent of male apprentices in construction and 87 percent of all female apprentices in construction. Joint labor-management programs registered 76 percent of all white apprentices, 87 percent of all Black and African American apprentices, and 85 percent of all Hispanic and Latinx apprentices. In fact, nearly 5,000 Black and Hispanic apprentices were registered in joint construction programs compared with fewer than 900 in employer-only construction programs. Joint construction programs also trained 75 percent of military veterans (Figure 1).

**FIGURE 1: DEMOGRAPHIC CHARACTERISTICS OF CONSTRUCTION APPRENTICES IN MICHIGAN, BY PROGRAM TYPE, 2010-2020**

Enrollment of Construction Apprentices, 2010-2020	Joint Labor-Management Programs	Employer-Only Programs	Total for All Programs	Joint Share
<b>Total (All Apprentices)</b>	<b>24,724</b>	<b>8,069</b>	<b>32,793</b>	<b>75.4%</b>
Gender: Male	23,584	7,897	31,481	<b>74.9%</b>
Gender: Female	1,140	172	1,312	<b>86.9%</b>
Race: White	17,110	5,444	22,554	<b>75.9%</b>
Race: Black or African American	3,078	480	3,558	<b>86.5%</b>
Race: Hispanic or Latinx	1,868	335	2,023	<b>84.8%</b>
Status: Military Veteran	1,523	500	505	<b>75.3%</b>

Source(s): RAPIDS data for Michigan from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022).

These numbers show that joint labor-management programs have an outsized impact on workforce development. Since 2010, Michigan’s construction industry has averaged a unionization rate of 22 percent, including a 25 percent union membership rate in 2022 (Hirsch, Macpherson, & Even, 2023). Despite representing about one-quarter of the industry’s workforce, union-affiliated programs train three-quarters of all registered apprentices in Michigan (Figure 1).

Joint labor-management construction programs in Michigan are more diverse than employer-only programs (Figure 2). The share of registered apprentices who are women is over 2 percentage points higher in joint construction programs. The share who are Black or African American is 7 percentage points higher and the share who are Latinx or Hispanic is 3 percentage points higher, while the share who are white alone is about 2 percentage points lower.

**FIGURE 2: DEMOGRAPHIC SHARES OF CONSTRUCTION APPRENTICES IN MICHIGAN, BY TYPE OF PROGRAM, 2021**

Diversity of Construction Apprentices, 2010-2020	Share of Apprentices in Joint Labor-Management Programs	Share of Apprentices in Employer-Only Programs	Joint Difference
Gender: Male	95.4%	97.9%	<b>-2.5%</b>
Gender: Female	4.6%	2.1%	<b>+2.5%</b>
Race: White	69.2%	67.5%	<b>+1.7%</b>
Race: Black or African American	12.5%	5.9%	<b>+6.5%</b>
Race: Hispanic	7.6%	4.2%	<b>+3.4%</b>
Status: Military Veteran	6.2%	6.2%	<b>-0.0%</b>

Source(s): RAPIDS data for Michigan from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022).

Although joint labor-management apprenticeship programs in construction can take steps to improve the diversity of their apprenticeship classes, their racial and ethnic diversity is generally on par with public universities in Michigan (Figure 3). The Black and African American share of apprentices in joint construction programs (12 percent) is nearly 6 percentage points higher than the Black and African American share of students enrolled the University of Michigan and Michigan State University, two of the state’s largest universities (7 percent). The share of Hispanic apprentices in joint construction programs (8 percent) is 1 percentage point higher than Hispanic enrollment at the two largest state universities in Michigan (7 percent). The share of white enrollees in joint construction programs (69 percent) is on par as well (68 percent). The share of enrollees from all other racial and ethnic backgrounds—most notably, Asians and Pacific Islanders—is higher in the two large public universities (19 percent) than joint construction programs (11 percent). However, across Michigan, racial and ethnic diversity in joint construction programs rivals public universities and is significantly more inclusive than employer-only construction programs (Figure 3).

**FIGURE 3: TOTAL NUMBER AND SHARES OF ENROLLED PARTICIPANTS BY HIGHER EDUCATION PROGRAM IN MICHIGAN, 2010-2020, 2019**

Diversity of Participants Enrolled in Higher Education Classes by Program	Apprentices in Joint Labor-Management Programs in Construction (2010-2020)		Non-International Students at the University of Michigan and Michigan State University (2021)	
	Number	Share	Number	Share
<b>Total Enrollment</b>	<b>24,724</b>	<b>100.0%</b>	<b>60,040</b>	<b>100.0%</b>
White	17,110	69.2%	40,998	68.3%
Black or African American	3,078	12.4%	3,943	6.6%
Hispanic	1,868	7.6%	3,941	6.6%
Other Race (or Unknown)	2,668	10.8%	11,158	18.5%

Source(s): RAPIDS data for Michigan from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022) and 2021 data on undergraduate enrollment by race or ethnicity for the University of Michigan – Ann Arbor and Michigan State University from College Factual (College Factual, 2022a; College Factual, 2022b).

### Hours, Graduation Rates, and Debt Compared to Universities and Colleges in Michigan

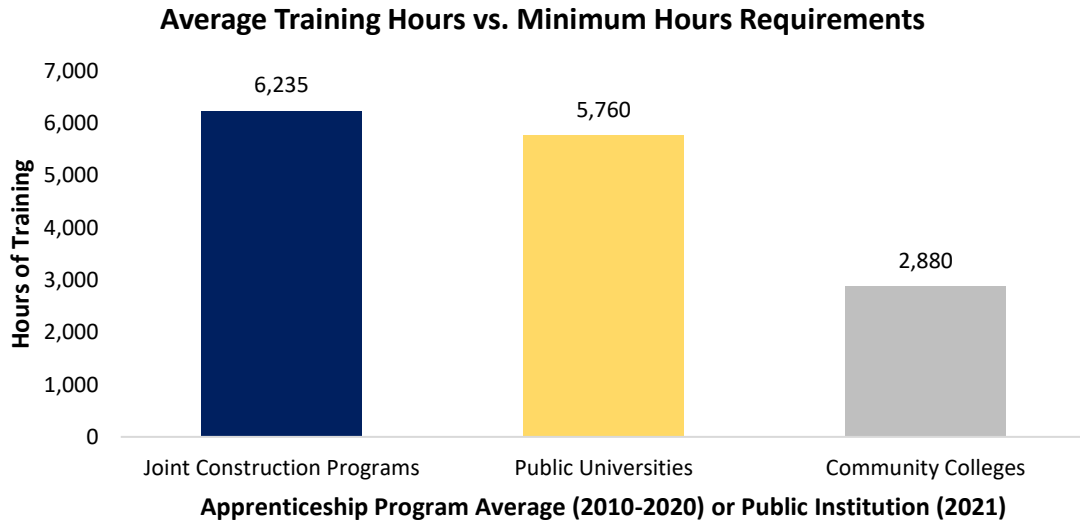
Building high-quality infrastructure that is both safe and durable requires a skilled workforce. Accordingly, many registered apprenticeship programs are very rigorous in Michigan, providing thousands of hours of classroom and on-the-job training to boost workers’ skills. On average, registered apprentices enrolled in joint labor-management programs in construction are required to complete over 6,200 hours of classroom and on-the-job training (Figure 4). By contrast, the typical 120-credit hour bachelor’s degree at public universities in Michigan—such as Michigan State University requires a minimum of 5,760 hours of faculty instruction, study, and preparation hours and a general associate degree at two-year community colleges—such as Macomb Community College—requires 2,880 total hours (MSU, 2022a; MSU, 2022b; MCC, 2022).<sup>1</sup> Joint labor-management apprenticeship programs in construction thus require 8 percent more hours of training to graduate than four-year universities and 117 percent more hours than two-year colleges.

Joint labor-management construction programs have a completion rate of 39 percent (Figure 5). This completion rate is lower than the six-year graduation rate of Michigan’s public universities (77 percent) but exceeds the graduation rate reported Michigan’s community colleges (36 percent). By contrast, employer-

<sup>1</sup> At Michigan State University, “[t]he earning of a credit requires, as a minimum, one instructor-student contact hour per week per semester plus two hours of study per contact hour; OR two hours of laboratory contact hours per week per semester, plus one additional hour spent in report writing and study” and students must “complete a minimum of 120 credits with at least a 2.00 grade-point average” (MSU, 2022a; MSU, 2022b). Three total hours multiplied by 120 credits over 16 weeks equals 5,760 total hours.

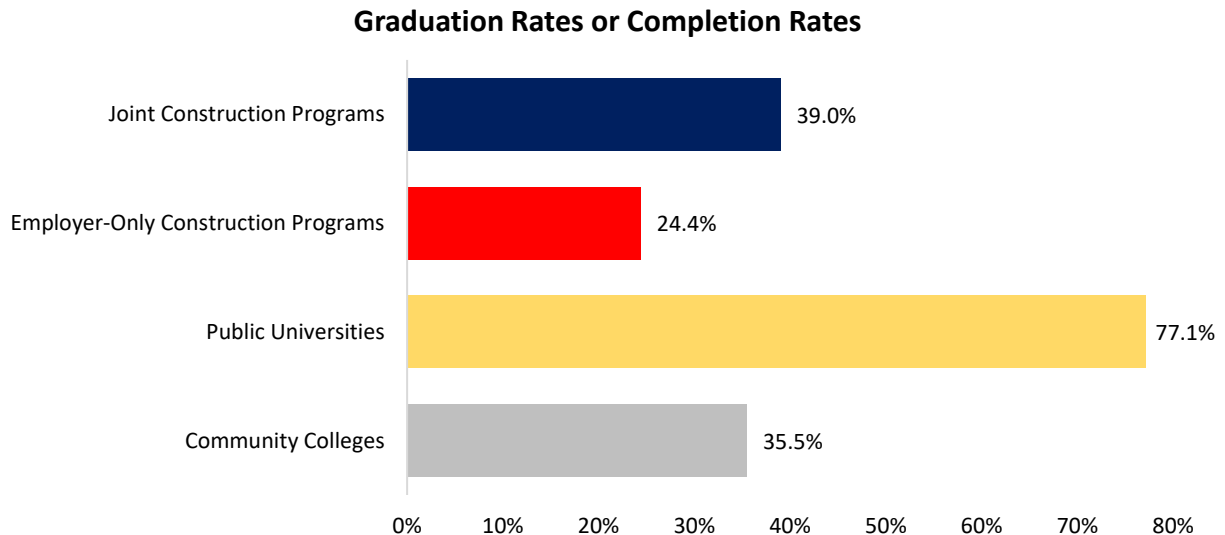
only construction programs recorded a lower completion rate than joint construction programs. Employer-only construction programs only graduate 24 percent of their apprentices, about 10 percent lower than Michigan community colleges. Joint labor-management programs graduate 4 percent more than community colleges and 15 percent more than their employer-only colleagues.

**FIGURE 4: HOURS OF APPRENTICESHIP TRAINING VS. MINIMUM REQUIREMENTS TO GRADUATE FROM PUBLIC INSTITUTIONS**



Source(s): RAPIDS data for Michigan from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022); “Graduation Requirements for a Bachelor’s Degree” and “General Procedures and Regulations – Credits” at Michigan State University (MSU, 2022a; MSU, 2022b); and “Awarding of Associate Degrees and Academic Certificates” at Macomb Community College in Warren, Michigan (MCC, 2022).

**FIGURE 5: GRADUATION RATES OF 2010-2015 APPRENTICESHIP COHORTS, 2014-2015 UNIVERSITY COHORTS, AND 2017-2018 COMMUNITY COLLEGE COHORTS**



Source(s): RAPIDS data for Michigan 2010 to 2015 apprentice cohorts by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022); “See College Success Rates for Michigan’s 15 Public Universities and 28 Community Colleges” for six-year undergraduate graduation rates and three-year community college graduation rates from MLive.com (Mack & Levin, 2021).

The data exposes a contrast between joint labor-management programs and employer-only programs in construction. Completion rates are a measure of performance because registered apprentices gain



journeyworker-level recognition for their hard work and their study in the form of pay increases. High completion rates also mean that apprenticeship programs have successfully expended resources to train skilled workers. Low completion rates, on the other hand, represent an inefficient use of resources, with programs not recruiting, screening, and admitting committed trainees and not adequately delivering qualified craft employees for employers. For both workers and contractors, the data shows that joint programs are more successful than employer-only programs and outperform the state’s community colleges.

A college degree remains one of the best ways that young people can invest in themselves, with college graduates earning an average of \$830,000 (adjusted for inflation to 2022 dollars) more over the course of their lifetimes than those with high school degrees (Pew, 2011; BLS, 2022). However, most college students today also graduate with student loan debt, with total student loan debt reaching \$1.6 trillion across the United States (FRBNY, 2022). In Michigan, about six-in-ten students attending four-year universities graduate with student loan debt. This debt averages about \$31,000 per student, hampering individuals from buying homes, starting families, and making other integral purchases (Figure 6). The average community college debt for graduating students in Michigan is \$11,700 (Community College Review, 2023).

**FIGURE 6: COLLEGE GRADUATES WITH STUDENT LOAN DEBT AND AVERAGE DEBT OF GRADUATES WITH LOANS IN MICHIGAN**

Student Debt at Four-Year Universities in Michigan		
Year	Percent of Graduates with Debt	Average Debt of Graduates
2018-19	59%	\$30,677
2017-18	59%	\$32,158
2016-17	58%	\$31,289
2015-16	63%	\$30,806
2014-15	63%	\$30,045
2013-14	62%	\$29,450

Source(s): The Institute for College Access & Success (College Insight, 2022). “Percent of Graduates with Debt” is the share who were estimated to have borrowed from any source at any time to finance their undergraduate educations and “Average Debt of Graduates” is the student loan amount borrowed by those graduates with debt.

While this alone should not dissuade many young people from enrolling in universities, it does mean that alternatives like joint labor-management apprenticeship programs in construction can be viewed as cost-free alternatives to investing in one’s future. Joint construction apprentices in Indiana typically graduate from their programs without incurring any student loan debt. In fact, construction apprentices “earn while they learn,” getting paid for every hour during their apprenticeship training.

**Earnings of Construction Apprentices Compared with College-Educated Workers**

Registered apprentices in joint labor-management construction programs earn higher wages than apprentices in employer-only construction programs (Figure 7). At the time of entry, the average registered apprentice in joint construction programs earned \$18 per hour between 2010 and 2015. First-year apprentices in joint construction programs earned 32 percent more than their counterparts in employer-only construction programs (\$13 per hour). The earnings growth potential is also higher for registered apprentices in joint construction programs. Upon completion, the average worker graduating from a joint labor-management construction program earned \$30 per hour, a 69 percent increase over the entry wage. By contrast, the average exit wage of an apprentice enrolled in an employer-only construction program was only \$20 per hour, a wage growth of 51 percent (Figure 7).

**FIGURE 7: AVERAGE WAGES FOR MICHIGAN APPRENTICES BY PROGRAM TYPE, 2015-2020 COMPLETERS**

Average Hourly Income by Construction Apprenticeship Program	Starting Wage (First Year)	Exit Wage (Journeyworker)	Wage Increase
Joint Labor-Management Construction Apprentices	\$17.67	\$29.82	+68.8%
Employer-Only Construction Apprentices	\$13.39	\$20.16	+50.6%

Source(s): RAPIDS data for Michigan from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022). Data are for apprentices with start dates between 2010 and 2015 who completed their programs. This allows for at least 5 years to complete the program. Most completers finished their programs between 2015 and 2020.

Union journeyworkers earn 48 percent more per hour than those who graduate from employer-only programs, creating a strong financial incentive for high-quality candidates to apply for and complete the more rigorous joint labor-management construction programs (Figure 8). The union wage advantage is most significant for Black and African American journeyworkers in construction. Black and African American graduates earn 74 percent more after completing joint labor-management programs (\$29 per hour) than their counterparts from employer-only programs (\$17 per hour).

**FIGURE 8: AVERAGE WAGES FOR MICHIGAN APPRENTICES BY TYPE AND DEMOGRAPHICS, 2015-2020 COMPLETERS**

Average Hourly Income by Construction Apprenticeship Program and Demographics	Joint Labor-Management Apprentices	Employer-Only Apprentices	Union Wage Advantage
<b>Total (All Apprentices)</b>	<b>\$29.82</b>	<b>\$20.16</b>	<b>+47.9%</b>
Gender: Male	\$29.85	\$20.16	+48.1%
Gender: Female	\$29.24	\$20.41	+43.2%
Race: White	\$30.04	\$20.64	+45.5%
Race: Black or African American	\$29.43	\$16.94	+73.7%
Race: Hispanic or Latinx	\$29.31	\$19.77	+48.3%
Status: Military Veteran	\$30.62	\$22.72	+34.7%

Source(s): RAPIDS data for Michigan from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022). Data are for apprentices with start dates between 2010 and 2015 who completed their programs. This allows for at least 5 years to complete the program. Most completers finished their programs between 2015 and 2020.

Joint labor-management apprenticeship programs play an important role in reducing inequality in the construction industry. Not only are they more diverse than employer-only programs, but union journeyworkers who complete their apprenticeships, perform the same trade, and operate the same equipment in the same local market all earn the same wage, per their collective bargaining agreements. All able-bodied journeyworkers who have proven that they have mastered their crafts earn the same hourly income, resulting in middle-class wages of between \$29 per hour to \$30 per hour—regardless of gender, racial identification, ethnic background, or any other characteristic unique to an individual.

Joint labor-management programs in construction offer an alternative for skilled workers in Michigan to earn a competitive wage (Figure 9). On average, construction workers who graduated from a joint labor-management apprenticeship program earned \$30 per hour. In comparison, average wages were \$22 per hour for workers with associate degrees and \$32 per hour for workers with bachelor’s degrees between 2011 and 2022. Union journeyworkers thus earned 33 percent more than workers with associate degrees and about 8 percent less than workers with bachelor’s degrees in Michigan. By contrast, the average wage for construction workers who graduated from employer-only programs (\$20 per hour) was closer to the average for workers with only high school degrees (\$19 per hour) than those with associate degrees (\$22 per hour) in Michigan. Construction apprentices in joint labor-management programs across Michigan are able to earn comparable wages to those with bachelor’s degrees without incurring any of the student loan debt.

**FIGURE 9: AVERAGE WAGES FOR MICHIGAN’S APPRENTICESHIP COMPLETERS AND WORKERS BY EDUCATIONAL DEGREE**

Average Hourly Income by Construction Apprenticeship Program or Level of Educational Attainment	Average Hourly Wage
<i>Construction Apprenticeship Programs</i>	
<b>Joint Labor-Management Apprentices</b>	<b>\$29.82</b>
All Employer-Only Apprentices	\$20.16
<i>All Workers by Level of Educational Attainment</i>	
Workers without High School Degrees	\$13.91
Workers with High School Degrees or Equivalent (e.g., GED)	\$19.09
Workers with Associate Degrees	\$22.43
Workers with Bachelor’s Degrees	\$32.26
Workers with Master’s Degrees	\$39.29
Workers with Professional or Doctorate Degrees	\$45.11

Source(s): RAPIDS data for Michigan from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration for apprentices with start dates between 2010 and 2015 who completed their programs (DOLETA, 2022); inflation-adjusted hour wage data from the 2011 to 2020 *Current Population Survey Outgoing Rotation Groups* (CPS ORG) from the U.S. Department of Labor and U.S. Census Bureau (EPI, 2023).

### Policy Implications for Michigan

Expanding U.S. Department of Labor-approved registered apprenticeship programs is one way to address the skilled labor shortage in construction. Not all young people are able or willing to earn college degrees. For many, the path to upward economic mobility is through registered apprenticeship programs in the construction trades. Registered apprenticeship programs enhance worker skills, improve productivity and safety, raise wages, and reduce construction worker poverty and reliance on food stamps, Medicaid, and other public assistance programs (Manzo & Thorson, 2021).

First, apprenticeship readiness programs and pre-apprenticeship programs could be both encouraged and expanded across Michigan. The State of Michigan could partner with existing pre-apprenticeship programs to increase training course offerings in apprentice-able occupations at public high schools and community colleges, especially in low-income communities (Olinsky & Ayers, 2013). For example, across the border in Wisconsin, Destinations Career Academy of Wisconsin is an online public charter school that includes both traditional academics and career readiness education, with state-licensed teachers who teach both full-time and part-time high school students (DCAWI, 2022). Upon graduation, students achieve applicable skills required to transition into positions in registered apprenticeship programs. In Illinois, the Illinois Department of Transportation (IDOT) has operated the Highway Construction Careers Training Program (HCCTP) at 12 community colleges since 2011. The goal of this program is to increase the participation of women, people of color, and disadvantaged individuals in the highway construction industry (IDOT, 2021). The 14-week program includes math curriculum for the trades and technical skills training such a tool usage, and helps place certified graduates in jobs on IDOT project sites. In total, more than 3,000 students have completed the program and nearly 1,200 have been placed in registered apprenticeship programs across Illinois. Michigan could consider offering similar apprenticeship readiness programs to bolster apprenticeship completion.

Contractors can become signatories to collective bargaining agreements to expand the most successful model of registered apprenticeship training and gain access to apprentices who meet industry standards of safety and craftsmanship. Research shows that skilled labor shortages are far less severe for union contractors than for nonunion contractors because they invest in apprenticeship training and job quality. A national survey of more than 5,000 construction firms showed that union contractors are 21 percent less likely to experience delays in project completion times due to shortages of workers, 16 percent less likely to

report workforce supply problems, and half as likely to lose their workers to other industries during tight labor markets (Manzo, Petrucci, & Bruno, 2022). Union construction workers are also 14 percent more productive and have one-third lower turnover, which results in union labor reducing the total cost of projects by an average of 4 percent compared to the nonunion alternative (McFadden, Santosh, and Shetty, 2022).

As part of any expansion in apprenticeship readiness and pre-apprenticeship programs, Michigan should work to remove any perceived stigma associated with choosing trade schools over college (St-Esprit, 2019). Educating students, parents, teachers, and counselors about apprenticeship programs and addressing misconceptions about the trades can help residents understand that vocational training may be a better path to stable jobs for many workers than college degrees. Creating mentoring programs within apprenticeship programs and retaining counselors to address challenges unique to people of color can also help improve racial diversity within the state's private apprenticeship programs (Bruno et al., 2016).

Increased access to affordable childcare and early childhood education programs would increase female participation in the construction trades. Women report that the lack of access to affordable child care is a significant barrier to participating in registered apprenticeship programs (Reed et al., 2012). In construction, apprentices often wake up very early to travel to a worksite, receive on-the-job training all day, and then attend classroom instruction after work. Expanding early childhood education programs has also been found to boost employment overall, especially among women (Schocet, 2019).

Finally, Michigan recently reinstated its prevailing wage law and became the first state in 58 years to repeal a so-called "right-to-work" statute (Cappelletti, 2023; Hendrickson, 2023). The laws will go into effect on March 30, 2024 (Mikula & Stuart, 2023). Michigan's prevailing wage law supported skilled construction workers on public works projects until its recent repeal in June 2018. The law established minimum wages for different types of skilled construction workers on taxpayer-funded projects based on wages, benefits, and training investments that were actually paid in local communities. Prevailing wages level the playing field for all construction contractors by ensuring that public expenditures reflect local market standards of compensation and craftsmanship. Economic research has shown that prevailing wage laws increase apprenticeship training in construction (Duncan & Ormiston, 2017). The number of apprentices, as a share of the overall construction workforce, is 8 percent higher in states with prevailing wage laws (Bilginsoy, 2005). Apprentices have also been found to complete graduation requirements at a faster rate in states with prevailing wage laws (Bilginsoy, 2005). That is why apprenticeship training has been found to fall by as much as 40 percent—and construction injury rates to rise by 14 percent—following repeal of state prevailing wage laws (Philips et al., 1995; Manzo, Bruno, & Petrucci, 2023).

Additionally, Michigan became a "right-to-work" state in March 2013 (NRTWC, 2023). "Right-to-work" laws have been found to decrease unionization by between 2 and 9 percentage points, weakening worker bargaining power and causing worker earnings to decrease by between 2 and 4 percent on average (Fortin, Lemieux, & Lloyd, 2022; Manzo & Bruno, 2017; Hogler, Shulman, & Weiler, 2004; Gould & Kimball, 2015; Shierholz & Gould, 2011; Stevans, 2009). By weakening unions, "right-to-work" laws have negative consequences for apprenticeship training in construction. States with "right-to-work" laws have 31 percent fewer registered apprentices than those that protect workers' rights (Manzo & Bruno, 2021). "Right-to-work" laws also result in an underfunding of union safety training and accident prevention programs that increase the construction fatality rate by as many as 0.7 deaths per 100 workers (Zullo, 2011). Michigan voted to repeal "right-to-work" in 2023 and it will go into effect in March 2024 (Cappelletti, 2023; Mikula & Stuart, 2023). Combined with the reintroduction of prevailing wage, these two policy changes will likely strengthen Michigan's system of privately-funded apprenticeship training and reduce on-the-job fatalities in Michigan's construction industry.

## Conclusion

As an alternative for young individuals seeking to build an in-demand skillset upon graduating high school, joint labor-management construction apprenticeship programs are the “gold standard.” These programs account for the majority of registered apprentices in Michigan’s construction industry, training 75 percent of all active construction apprentices. Joint labor-management apprenticeship programs are also very rigorous, requiring almost 500 more hours of training than a bachelor’s degree. Journeyworkers graduating from joint labor-management construction programs earn about \$30 per hour, resulting in incomes that parallel the average for workers with bachelor’s degrees. These outcomes are achieved without incurring over \$30,000 in student loan debt.

For many young people, the path to the middle class is through registered apprenticeships. To address the skilled labor shortage in construction, Michigan could expand registered apprenticeships, promote apprenticeship readiness programs at public high schools and community colleges, encourage nonunion contractors to consider becoming union contractors, improve access to childcare programs to increase women in the construction trades, and take steps to remove any perceived stigma associated with choosing trade schools over college. Reinstating a state prevailing wage law and repealing the so-called “right-to-work” law are also likely to combat the labor shortage and strengthen apprenticeship training in Michigan. Registered apprenticeship programs can be promoted as viable alternatives to college.

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