# Construction Apprenticeships as a Career Development Alternative in Indiana

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

August 15, 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 most apprentices in Indiana'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 25,000 construction apprentices (77 percent) were enrolled in joint labor-management programs compared to fewer than 8,000 in employer-only programs (23 percent).
- Joint construction programs enrolled 93 percent of all women, 85 percent of all Black apprentices, 83 percent of all Hispanic apprentices, and 78 percent of all military veterans.
- Joint construction programs account for 96 percent of all workforce training investments, spending $54.4 million annually compared to just $2.5 million per year by employer-only programs.

**Joint construction apprenticeship programs require 30 percent more hours of training to graduate than bachelor's degree programs and 160 percent more hours than associate degree programs.**

- On average, apprentices in joint construction programs must complete more than 7,000 hours of training.
- By contrast, a bachelor's degree at Indiana's two largest public universities requires 5,400 hours and a two-year degree from an Ivy Tech Community College requires about 2,700 hours.
- The Black and Hispanic share of enrollment is higher in joint construction programs (17 percent) than among non-international undergraduate students at Indiana's two largest public universities (11 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 43 percent completion rate compared to just 37 percent in employer-only construction programs—a difference of 6 percentage points.
- Graduation rates are just 37 percent at community colleges in the state.
- The program affiliated with the nonunion Associated Builders and Contractors (ABC) of Indiana and Kentucky has just a 27 percent completion rate.
- Six-in-ten graduates of four-year universities in Indiana have student loan debt averaging $29,000 and the average debt for graduating students from community colleges in Indiana is $12,000.

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

- The average exit wage for journeyworkers completing registered apprenticeship programs was $31 per hour from joint construction programs versus $17 per hour from employer-only construction programs, including just $14 per hour from the nonunion ABC of Indiana and Kentucky.
- Union journeyworkers who graduated from joint construction programs earned between $28 per hour and $32 per hour regardless of gender, racial identification, or ethnic background.
- Union journeyworkers earned 38 percent more than workers with associate degrees ($23 per hour) and 5 percent more than workers with bachelor's degrees ($30 per hour).

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

- Apprenticeship readiness programs could be expanded in Indiana's high schools.
- Construction firms could be encouraged to become union contractors.
- Indiana could educate students, parents, and counselors about apprenticeships as viable alternatives to college.
- Indiana could expand access to childcare programs, a significant barrier for women in the trades.
- Indiana could reinstitute a prevailing wage law and repeal the so-called "right-to-work" law, which have been found to increase apprenticeship training and decrease fatalities in construction.

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 Indiana.

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## About the Authors

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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 Indiana 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 Indiana 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 nearly 18,600 active apprentices in Indiana (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 employers or trade associations 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.

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, 79 percent in Michigan, 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; Bilginsoy, 2017; Philips, 2015; Duncan & Manzo, 2016; Bilginsoy, 2017; Stepick & Manzo, 2021; Manzo & Gigstad, 2021).

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 Indiana. These outcomes are contrasted with public universities and community colleges to compare apprenticeship as an alternative post-secondary option in Indiana. Joint labor-management programs are also compared to employer-only programs in construction. Lastly, the report discusses potential policy considerations for Indiana 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 Indiana—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, economic, and fiscal statistics for comparative purposes. For example, the Indiana Commission for Higher Education annually releases reports on student completion rates from public universities and community colleges (IN CHE, 2020). Additionally, this report uses annual Form 990 reports with the Internal Revenue Service (IRS) by registered apprenticeship programs to assess apprenticeship revenue and expenditure totals by joint labor-management programs and employer-only programs. Finally, 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 Indiana.

## Enrollment in Apprenticeship Programs and Public Universities in Indiana

Joint labor-management programs train nearly 8-in-10 registered construction apprentices in Indiana (Figure 1). From 2010 through 2020, joint labor-management programs enrolled 77 percent of all registered apprentices in the construction trades, even though unions have only represented 24 percent of the construction industry's workforce since 2010 (Hirsch, Macpherson, & Even, 2023). Joint labor-management programs accounted for approximately 77 percent of male apprentices in construction and 93 percent of all female apprentices in construction. Joint labor-management programs registered 76 percent of all white apprentices, 85 percent of all Black and African American apprentices, and 83 percent of all Hispanic and Latinx apprentices. In fact, nearly 4,500 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 78 percent of military veterans (Figure 1).

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

| Enrollment of Construction Apprentices, 2010-2020 | Joint Labor-Management Programs | Employer-Only Programs | Total for All Programs | Joint Share |
|---|---|---|---|---|
| **Total (All Apprentices)** | **26,408** | **7,683** | **34,091** | **77.5%** |
| Gender: Male | 24,991 | 7,574 | 32,565 | **76.7%** |
| Gender: Female | 1,417 | 109 | 1,526 | **92.9%** |
| Race: White | 20,655 | 6,442 | 27,097 | **76.2%** |
| Race: Black or African American | 2,587 | 444 | 3,031 | **85.4%** |
| Race: Hispanic or Latinx | 1,873 | 395 | 2,268 | **82.6%** |
| Status: Military Veteran | 2,291 | 664 | 2,955 | **77.5%** |

Source(s): RAPIDS data for Indiana from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022). Of the apprentices in employer-only programs, 3,757 were in the program sponsored by the Associated Builders and Contractors of Indiana and Kentucky.

Joint labor-management construction programs in Indiana are more diverse than employer-only programs, such as those affiliated with the Associated Builders and Contractors (ABC) of Indiana and Kentucky (Figure 2). The share of registered apprentices who are women is 4 percentage points higher in joint construction programs. The share who are Black or African American is 4 percentage points higher and the share who are Latinx or Hispanic is 2 percentage points higher, while the share who are white alone is 6 percentage points lower. In addition, the share of enrolled apprentices who are military veterans is slightly higher in joint construction programs than in employer-only programs.

**FIGURE 2: DEMOGRAPHIC SHARES OF CONSTRUCTION APPRENTICES IN INDIANA, BY TYPE OF PROGRAM, 2010-2020**

| 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 | 94.6% | 98.6% | **-3.9%** |
| Gender: Female | 5.4% | 1.4% | **+3.9%** |
| Race: White | 78.2% | 83.8% | **-5.6%** |
| Race: Black or African American | 9.8% | 5.8% | **+4.0%** |
| Race: Hispanic | 7.1% | 5.1% | **+2.0%** |
| Status: Military Veteran | 8.7% | 8.5% | **+0.2%** |

Source(s): RAPIDS data for Indiana 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 Indiana (Figure 3). The Black and African American share of apprentices in joint construction programs (10 percent) is significantly higher than the Black and African American share of non-international undergraduate students enrolled at Indiana University-Bloomington and Purdue University-Main Campus (4 percent), two of the state's largest universities. The share of Hispanic apprentices in joint construction programs (7 percent) is on par with Hispanic enrollment at the two largest state universities in Indiana (7 percent). The share of white enrollees is higher in joint construction programs (78 percent) than public universities (74 percent), but that is partially because 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 (15 percent) than joint construction programs (5 percent). Across Indiana, joint construction programs are about as diverse as public universities but are more diverse than employer-only construction programs (Figure 3).

**FIGURE 3: TOTAL NUMBER AND SHARES OF ENROLLED PARTICIPANTS BY HIGHER EDUCATION PROGRAM IN INDIANA, 2021**

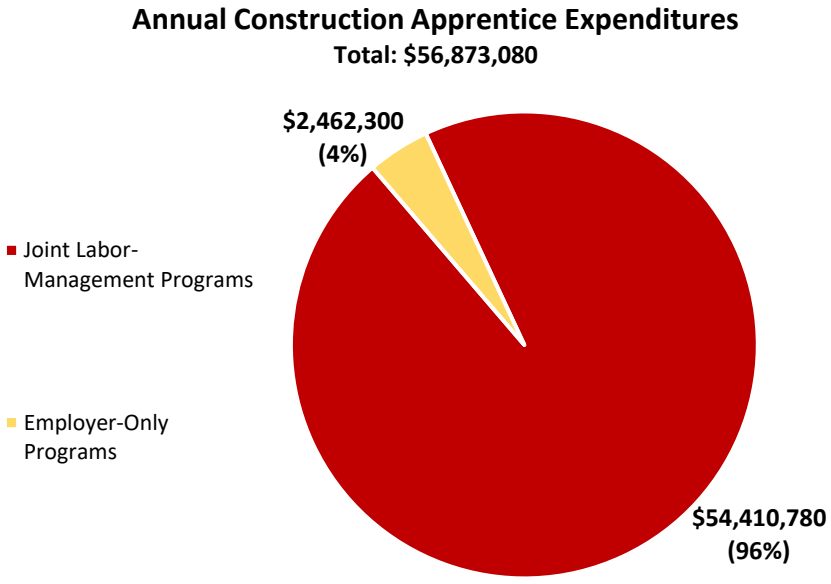
| Diversity of Participants Enrolled in Higher Education Classes by Program | Apprentices in Joint Labor-Management Programs in Construction (2010-2020) | | Non-International Students at Indiana University-Bloomington and Purdue University-Main Campus (2021) | |
|---|---|---|---|---|
| | Number | Share | Number | Share |
| **Total Enrollment** | **26,408** | **100.0%** | **56,246** | **100.0%** |
| White | 20,655 | 78.2% | 42,550 | 74.0% |
| Black or African American | 2,597 | 9.8% | 2,345 | 4.1% |
| Hispanic or Latinx | 1,873 | 7.1% | 4,113 | 7.2% |
| Other Race (or Unknown) | 1,283 | 4.9% | 7,238 | 14.7% |

Source(s): RAPIDS data for Indiana 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 Indiana University-Bloomington and Purdue University-Main Campus from College Factual (College Factual, 2022a; College Factual, 2022b).

## Annual Training Investments of Construction Apprenticeship Programs in Indiana by Type

Registered apprenticeship programs and other tax-exempt organizations, nonexempt charitable trusts, and section 527 political organizations must file annual Form 990 reports with the Internal Revenue Service (IRS). RAPIDS data on registered apprenticeship programs can be cross-referenced with these Form 990 reports to assess apprenticeship revenue and expenditure totals. The most recent year for which Form 990 reports are publicly available on multiple online databases is either 2018 or 2019 for every registered apprenticeship program in Indiana's construction industry (ProPublica, 2023; Candid, 2023).

**FIGURE 4: ANNUAL PROGRAM EXPENDITURES OF CONSTRUCTION APPRENTICESHIP PROGRAMS BY TYPE, 2018 OR 2019**




Source(s): RAPIDS data for Indiana from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022); Form 990 reports submitted to the Internal Revenue Service for tax years 2018 or 2019 and released publicly by ProPublica or Candid (ProPublica, 2023; Candid, 2023).

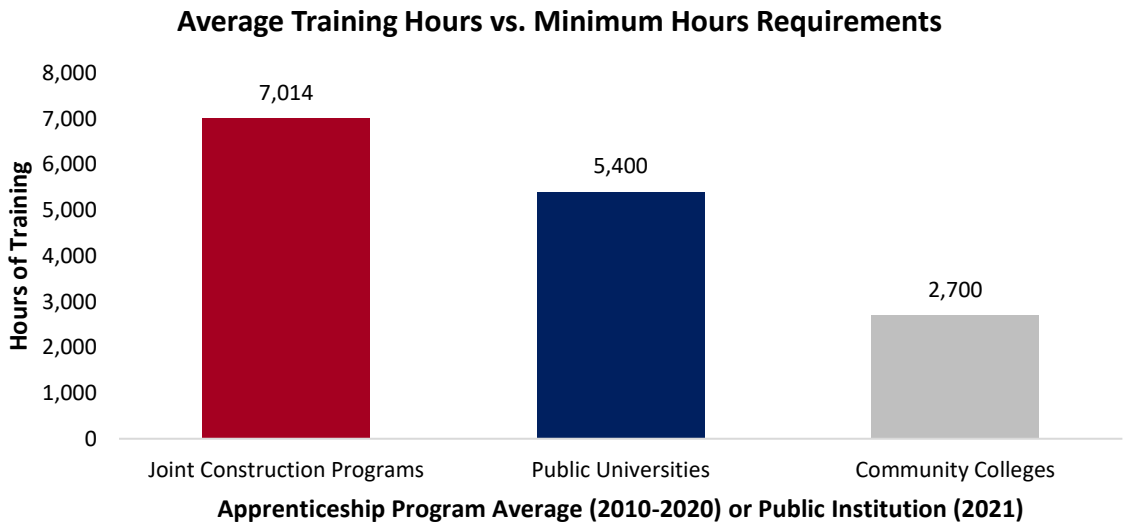
Apprenticeship training for construction workers is dominated by joint labor-management programs in Indiana (Figure 4). The analysis of Form 990s finds that construction apprenticeship programs spend of total of $56.9 million on apprenticeship training. Joint labor-management programs in construction invest $54.4

million annually, accounting for 96 percent of all training on the next generation of skilled tradespeople. By contrast, the employer-only segment of the industry spends an annual total of $2.5 million (4 percent). Additionally, there are five union-affiliated registered apprenticeship programs that each invest more per year in workforce development than all employer-only programs combined: the Indiana-Kentucky-Ohio Regional Council of Carpenters Joint Apprentices and Training Fund ($11.4 million), the Indiana Laborers Training Trust Fund ($6.0 million), the Sheet Metal Workers Local No 20 Apprenticeship and Training Trust ($3.4 million), the Operating Engineers Local 103 Apprenticeship and Training Program ($2.7 million), and the Evansville Plumbers Apprentice Training Trust Fund ($2.5 million) (ProPublica, 2023; Candid, 2023).

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

Building high-quality infrastructure that is both safe and durable requires a skilled workforce. Accordingly, many registered apprenticeship programs are very rigorous in Indiana, 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 about 7,000 hours of classroom and on-the-job training (Figure 5). By contrast, the typical 120-credit hour bachelor's degree at public universities in Indiana—such as the University of Indiana-Bloomington or Purdue University-Main Campus—requires a minimum of 5,400 hours of faculty instruction, study, and preparation hours and a general associate degree at Ivy Tech Community College—the state's public community college system—requires 2,700 total hours (IU, 2012; PU, 2022; Ivy Tech, 2017).[1] Joint labor-management apprenticeship programs in construction thus require 30 percent more hours of training to graduate than four-year universities and 160 percent more hours than two-year colleges.

**FIGURE 5: HOURS OF APPRENTICESHIP TRAINING VS. MINIMUM REQUIREMENTS TO GRADUATE FROM PUBLIC INSTITUTIONS**

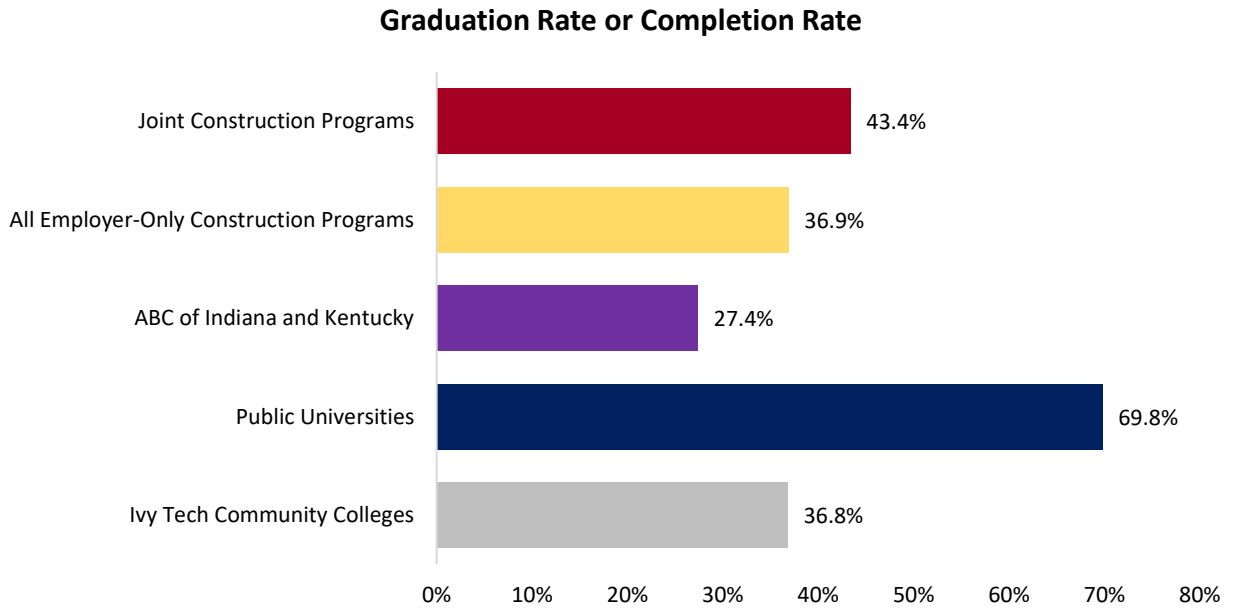



Source(s): RAPIDS data for Indiana from 2010 to 2020 by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022); "Indiana University Bloomington Campus Credit Hour Definition" (IU, 2012); "Degree Requirements " at Purdue University (PU, 2022); and "Ratio Of Contact to Credit Hours" at Ivy Tech Community College of Indiana (Ivy Tech, 2017).

[1] In Indiana, a credit hour "is defined as one hour of faculty instruction and two hours or more of additional work or study each week for approximately 15 weeks (an academic-year semester) or the equivalent amount of instruction and studying over a different amount of time" and students must complete a minimum of 120 credits with at least a 2.00 grade-point average (IU, 2012; PU, 2022). Three total hours multiplied by 120 credit hours over 15 weeks equals 5,400 total hours.

Joint labor-management construction programs have a completion rate of 43 percent (Figure 6). This completion rate is lower than the six-year graduation rate of Indiana's public universities (70 percent) but exceeds the graduation rate reported by Ivy Tech Community Colleges for first-time, full-time students enrolling in associate degree programs or long-term certificate programs lasting 1 to 2 years (37 percent). By contrast, employer-only construction programs recorded a lower completion rate than joint construction programs. Employer-only construction programs only graduate 37 percent of their apprentices, about on par with community colleges. Some employer-only construction programs fare even worse. The Associated Builders and Contractors of Indiana and Kentucky, for example, only graduated 27 percent of their construction apprentices enrolled from 2010 through 2015.

**FIGURE 6: GRADUATION RATES OF 2010-2015 APPRENTICESHIP COHORTS AND FALL 2013 UNIVERSITY COHORTS**




Source(s): RAPIDS data for Indiana's 2010 to 2015 apprentice cohorts by the U.S. Department of Labor Employment and Training Administration (DOLETA, 2022); six-year graduation rates for Fall 2013 undergraduate cohorts from *Indiana College Completion Report 2020* from the Indiana Commission for Higher Education (IN CHE, 2020).

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, 2023). In Indiana, about six-in-ten students attending four-year universities graduate with student loan debt. This debt averages about $29,000 per student, hampering individuals from buying homes, starting families, and making other integral purchases (Figure 7). The average community college debt for graduating students in Indiana is $12,000 (Community College Review, 2023).

**FIGURE 7: COLLEGE GRADUATES WITH STUDENT LOAN DEBT AND AVERAGE DEBT OF GRADUATES WITH LOANS IN INDIANA**

| Student Debt at Four-Year Universities in Indiana | | |
|---|---|---|
| **Year** | **Percent of Graduates with Debt** | **Average Debt of Graduates** |
| 2018-19 | 59% | $28,112 |
| 2017-18 | 57% | $29,064 |
| 2016-17 | 59% | $29,561 |
| 2015-16 | 59% | $29,562 |
| 2014-15 | 61% | $29,022 |
| 2013-14 | 61% | $29,222 |

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 8). At the time of entry, the average registered apprentice in joint construction programs earned $17 per hour between 2010 and 2015. First-year apprentices in joint construction programs earned 47 percent more than their counterparts in employer-only construction programs ($12 per hour). Apprentices in the Associated Builders and Contractors of Indiana and Kentucky's program started out at just $9 per hour on average.

The earnings growth potential is also higher for registered apprentices in joint construction programs (Figure 8). Upon completion, the average worker graduating from a joint labor-management construction program earned $31 per hour, an 80 percent increase over the entry wage. By contrast, the average exit wage of an apprentice enrolled in an employer-only construction program was only about $17 per hour, a wage growth of 49 percent. Moreover, the entry wage of an apprentice in a joint labor-management apprenticeship program on "day one" ($17 per hour) rivals the final wage of an apprentice from an employer-only program after they had completed the program ($17 per hour) and is more than $3 per hour higher than the average wage of a completer from the nonunion ABC program. When a union apprentice finishes their program, they earn $13 more per hour than employer-only apprentices and $17 more per hour than ABC program apprentices (Figure 8)

**FIGURE 8: AVERAGE WAGES FOR INDIANA 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 | $17.36 | $31.28 | +80.1% |
| All Employer-Only Construction Apprentices | $11.79 | $17.47 | +48.7% |
| ABC of Indiana/Kentucky Construction Apprentices | $8.98 | $14.22 | +58.4% |

Source(s): RAPIDS data for Indiana 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 79 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 9). The union wage advantage is even higher for some workers. Women graduates earn 82 percent more after completing joint labor-management programs than their counterparts from employer-only programs. Black and African American journeyworkers earn 100 percent more as union journeyworkers than their equivalents in the nonunion segment of the industry. Military veterans earn 84 percent more upon graduating from joint construction programs.

**FIGURE 9: AVERAGE WAGES FOR INDIANA APPRENTICES BY PROGRAM TYPE AND DEMOGRAPHICS, 2015-2020 COMPLETERS**

| Average Hourly Income by Construction Apprenticeship Program and Demographics | Joint Labor-Management Apprentices | All Employer-Only Apprentices | Union Wage Advantage |
|---|---|---|---|
| **Total (All Apprentices)** | **$31.28** | **$17.47** | **+79.0%** |
| Gender: Male | $31.38 | $17.51 | +79.2% |
| Gender: Female | $28.35 | $15.61 | +81.6% |
| Race: White | $31.40 | $17.45 | +79.9% |
| Race: Black or African American | $29.81 | $14.92 | +99.8% |
| Race: Hispanic or Latinx | $30.11 | $17.06 | +76.5% |
| Status: Military Veteran | $31.62 | $17.18 | +84.1% |

Source(s): RAPIDS data for Indiana 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 $28 per hour and $32 per hour—regardless of gender, racial identification, ethnic background, or any other characteristic unique to an individual (Figure 9).

**FIGURE 10: AVERAGE WAGES FOR INDIANA'S APPRENTICESHIP COMPLETERS AND WORKERS BY EDUCATIONAL DEGREE**

| Average Hourly Income by Construction Apprenticeship Program or Level of Educational Attainment | Average Hourly Wage |
|---|---|
| *Construction Apprenticeship Programs* | |
| **Joint Labor-Management Apprentices** | **$31.28** |
| All Employer-Only Apprentices | $17.47 |
| ABC of Indiana/Kentucky Apprentices | $14.22 |
| *All Workers by Level of Educational Attainment* | |
| Workers without High School Degrees | $14.19 |
| Workers with High School Degrees or Equivalent (e.g., GED) | $18.87 |
| Workers with Associate Degrees | $22.67 |
| Workers with Bachelor's Degrees | $29.85 |
| Workers with Master's Degrees | $35.01 |
| Workers with Professional or Doctorate Degrees | $45.85 |

Source(s): RAPIDS data for Indiana 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).

Joint labor-management programs in construction offer an alternative for skilled workers in Indiana to earn a competitive wage (Figure 10). On average, construction workers who graduated from a joint labor-management apprenticeship program earned $31 per hour. In comparison, average wages were $23 per hour for workers with associate degrees and $30 per hour for workers with bachelor's degrees between 2011 and 2020. Union journeyworkers thus earned 38 percent more than workers with associate degrees and 5 percent more than workers with bachelor's degrees in Indiana. Union journeyworkers also only earned 11 percent less than Indiana's workers with master's degrees ($35 per hour). By contrast, the average wage for construction workers who graduated from employer-only programs ($17 per hour) was less than the average for workers with only high school degrees ($19 per hour) in Indiana. In fact, in one employer-only program, the nonunion Associated Builders and Contractors of Indiana and Kentucky, earnings for completers ($14 per hour) were only on par with similar Indiana workers without high school degrees ($14 per hour).

## Policy Implications for Indiana

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 Indiana. The State of Indiana 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, in neighboring 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 10-to-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. Indiana 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, Indiana 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, Indiana could reinstitute prevailing wage and repeal its so-called "right-to-work" law. Indiana's common construction wage law supported skilled construction workers on public works projects in Indiana for eight decades between 1935 and 2015. The law established prevailing wages, which were 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). After Indiana repealed the common construction wage law in 2015, construction worker earnings fell by more than 8 percent, construction worker productivity growth slowed, and relative worker turnover increased—all without affecting bid competition or saving taxpayers any money (Manzo & Duncan, 2018b). A June 2021 study by the Indiana Department of Labor also found that "project costs for similar types of work have continued to increase since the repeal" and that "any effect the repeal may have had on the cost of projects was likely negligible," leading to the conclusion that repeal had "no significant impact" on project costs (IN DOL, 2021).

Additionally, Indiana became a "right-to-work" state in February 2012 (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).

Reversing these negative effects by passing a new common construction wage law and repealing "right-to-work" would improve labor market outcomes for blue-collar construction workers and strengthen Indiana's system of privately-funded apprenticeship training. Neighboring Michigan recently passed legislation to reinstate its prevailing wage law and repeal "right-to-work" (Cappelletti, 2023; Hendrickson, 2023). The laws will go into effect on March 30, 2024 (Mikula & Stuart, 2023).

## 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 Indiana's construction industry, training 77 percent of all active construction apprentices. Joint labor-management apprenticeship programs are also very rigorous, requiring nearly 1,600 more hours of training than a bachelor's degree. Journeyworkers graduating from joint labor-management construction programs earn well over $30 per hour, resulting in incomes that parallel the average for workers with bachelor's degrees. These outcomes are achieved without incurring any 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, Indiana could expand registered apprenticeships, encourage apprenticeship readiness programs at public high schools and community colleges, improve access to childcare programs to increase women in the construction trades, reinstate the common construction wage law, repeal the so-called "right-to-work" law, and take steps to remove any perceived stigma associated with choosing trade schools over college. Registered apprenticeship programs can be promoted as viable alternatives to college.

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