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Union Apprenticeships: The Bachelor's Degrees of the Construction Industry

Data for the United States, 2010-2020

Frank Manzo IV
Erik Thorson

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Executive Summary

Graduating college is not the only pathway to economic security and upward mobility for American workers. Through registered apprenticeship programs, the construction industry enables blue-collar workers to achieve middle class lifestyles. However, not all construction apprenticeship programs operate the same way. While outcomes for participants in joint labor-management (or union) apprenticeship programs rival those for college graduates and the programs account for the vast majority of construction apprentices in the United States, employer-only (or nonunion) apprenticeship programs generally produce labor market outcomes that are on par with national averages for high school graduates.

Registered apprenticeships are training programs in which participants get the opportunity to "earn while they learn," with no out-of-pocket expenses. In construction, joint labor-management (union) programs:

- Account for the vast majority of construction apprentices in the United States.
- Are more racially diverse than employer-only (nonunion) apprenticeship programs.
- Typically require 27 to 41 percent more hours of training than public four-year universities.

The labor market outcomes of union construction workers are competitive with workers with college degrees, while nonunion construction workers are only on par with workers with high school diplomas.

- Union construction workers earn $58,000 per year on average, 46 percent more than nonunion construction workers ($39,700).
- 89 percent of union construction workers have private health insurance coverage compared with just 55 percent of nonunion construction workers, a 34 percent difference.
- Among all workers with associate degrees and bachelor's degrees, average incomes range from $48,200 to $68,200 and private health insurance coverage ranges from 84 percent to 90 percent.

The social outcomes of union construction workers are also similar to workers with college degrees.

- 4 percent of union construction workers are in poverty, 4 percent rely on Medicaid, and 60 percent are married.
- 10 percent of nonunion construction workers live in poverty, 10 percent rely on Medicaid, and 48 percent are married.
- 2 percent of workers with bachelor's degrees are in poverty, 3 percent rely on Medicaid, and 56 percent are married.

Union construction workers have positive impacts on public budgets.

- Union construction workers annually contribute $5,600 in federal income taxes, $4,200 in payroll taxes, and $1,700 in state income taxes.
- Union construction workers contribute 68 percent more in federal income taxes, 49 percent more in payroll taxes, and 61 percent more in state income taxes than their nonunion counterparts.
- Union construction workers contribute more in income taxes, payroll taxes, and state income taxes than all workers with associate degrees but less than all workers with bachelor's degrees.

Joint labor-management apprenticeship programs are the bachelor's degrees of the construction industry, delivering training hours, diversity outcomes, competitive earnings, and positive social and fiscal effects that rival universities and community colleges. These outcomes are achieved without incurring $39,000 in debt, which is the average loan burden for student borrowers across the United States. For young workers, the unionized building trades' registered apprenticeship programs offer excellent alternatives to achieving financial stability and upward economic mobility.

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About the Authors

Frank Manzo IV, MPP is the Policy Director of the Illinois Economic Policy Institute (ILEPI). He earned a Master of Public Policy from the University of Chicago Harris School of Public Policy and a Bachelor of Arts in Economics and Political Science from the University of Illinois at Urbana-Champaign.

Erik Thorson is a Researcher at the Illinois Economic Policy Institute (ILEPI). He earned a Bachelor of Arts in Business Administration with a Minor in Psychology from Illinois Wesleyan University. He is pursuing his Master of Human Resources and Industrial Relations from the University of Illinois at Urbana-Champaign.

Introduction

Employment is the primary means of enabling individuals and families to achieve economic mobility and middle-class lifestyles. Economic mobility, or the opportunity to rise above one's current economic status, depends on rising wages and good fringe benefits which stem from employment and enable individuals and families to advance economically (SPUR, 2014; Langberg & Polk, 2010). The middle class is also defined by various measures, including income, consumption, education, wealth, and stability. Homeownership has also long been considered an important part of both the middle-class lifestyle and the American Dream because it helps families to build wealth (Reeves & Pulliam, 2018).

In recent years, the American middle class has shrunk. Homeownership has become increasingly untenable, with as many as 38 million Americans living in housing they cannot afford and many young Americans relying heavily on renting (JCHS, 2018). Being unable to pay for the necessity of housing forces many Americans to divert their income away from other necessities such as food, medicine, and education (Hoopes et al., 2017). Additionally, middle-class households are receiving less income relative to wealthy Americans. The Pew Research Center defines "middle-income" households as those with an income that is two-thirds to double that of the U.S. median household income, after adjusting for household size. In 1970, 62 percent of aggregate U.S. income was earned by middle-income households. This decreased to just 43 percent in 2014, indicating that wages are not rising in ways that facilitate economic mobility (Pew Research Center, 2015). The State of Illinois has seen its portion of middle-income households shrink from 59 percent in 1970 to 49 percent in 2017 (Habans, 2017).

Historically, collective bargaining and labor unions have expanded access to the American middle class. Collective bargaining is the freedom of workers to join together and negotiate contracts with their employers to establish the terms and conditions of employment. Numerous studies have found that collective bargaining boosts wages for workers, particularly for low-income employees and for People of Color (Callaway & Collins, 2017; Bivens et al., 2017; Long, 2013; Mishel & Walters, 2003). On average, union households earn between 10 percent and 20 percent more than nonunion households—an income premium that has been consistent since the 1930s (Farber et al., 2018). In addition, workers covered by collective bargaining agreements have better fringe benefits. 95 percent of union workers have access to health care coverage, 94 percent have access to retirement plans, and 91 percent have access to paid sick leave compared with just 68 percent health care access, 67 percent retirement plan access, and 73 percent paid sick leave access for nonunion workers (BLS, 2019). Unions have also been found to reduce poverty, lower worker turnover, and reduce reliance on taxpayer-funded government assistance programs (Nunn et al., 2019; Sojourner & Pacas, 2018).

One industry that has consistently offered pathways into the middle class for blue-collar workers is construction, primarily because the industry has a relatively higher rate of unionization. While the national union membership rate is 11 percent, construction has a union membership rate of 13 percent, a rate that has held steady for the past three years (Hirsch & Macpherson, 2021). Union representation allows workers to collectively bargain for wages, hours, and benefits to support their families and achieve upward economic mobility. As a result, entering the union segment of the construction industry can be attractive to young people who aspire to homeownership, financial stability, and economic security.

This report assesses how the prevalence of unions in the construction industry contributes to workers achieving these objectives. It first examines the impact of union construction on apprenticeship training programs and how they offer a comparable alternative to post-secondary education in terms of diversity

and hours requirements. Then, it examines economic and social outcomes in the construction industry relative to higher education, which is generally perceived as the primary means of achieving upward economic mobility in the United States. A concluding section recaps key findings.

The Impact of Joint Labor-Management Apprenticeship Training Programs

While higher education is often seen as the main route into the American middle class, it is accompanied by the high cost of tuition and fees, as well as enduring student loan debt for the majority of students (APLU, 2020). Across the United States, the average student borrower has more than $39,000 in student loan debt (Hanson, 2021). This financial barrier prevents many Americans from pursuing higher education at colleges and universities. An estimated 95 percent of American colleges are unaffordable to students from low-income and middle-class households (Bidwell, 2017).

An alternative to college exists in registered apprenticeship programs. Unlike higher education, registered apprenticeships have little to no upfront cost. Registered apprentices get the opportunity to "earn while they learn" and obtain portable, nationally-recognized credentials while being compensated for their time and labor. This offers apprentices financial stability while becoming skilled tradespeople, allows them to make connections in the construction industry that will assist in finding future employment, and provides construction employers with a supply of skilled labor. Across all industries, participation in registered apprenticeship programs has risen, with 252,000 new apprentices entering in 2019. Since 2009, this represents growth of 128 percent in the U.S. apprenticeship system (DOLETA, 2020).

The economic benefits of registered apprenticeship programs have been documented in academic research. Countries with robust registered apprenticeship programs have proven to be effective at transitioning young workers into stable careers, lowering the youth unemployment rate (Bertschy et al., 2009; Ryan, 2001; Ryan, 1998). Apprenticeships are especially prevalent in Germany, where they have been found to increase a worker's wages by 8 percent per year (Clark & Fahr, 2002). In the United States, research has shown that apprenticeship programs significantly increase earnings over the course of a career. One study performed a cost-benefit analysis of registered apprenticeship programs in 10 states that differed across labor market characteristics, including usage of apprenticeship programs and level of unionization, and found that apprenticeship participants earned more in wages and fringe benefits than similarly employed non-participants. Participants earned a $124,000 more over the course of their careers and had lower chances of suffering unemployment (Reed et al., 2012).

Apprenticeship training is particularly important to the construction industry, where specialized, skilled labor is constantly in demand (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 by project owners. Conversely, employer-only apprenticeship programs are sponsored by an employer or group of employers—usually through a trade association—who unilaterally determine the content, length, and standards for their apprenticeship programs. Funding for employer-only programs relies on

voluntary contributions from contractors, who often have an incentive to forgo long-term workforce training investments in order to win project bids.

The ubiquity of registered apprenticeship programs in construction has led to it being called "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. Joint labor-management programs account for 97 percent of all active construction apprentices in Illinois, 94 percent in Indiana, 93 percent in Minnesota, 82 percent in Ohio, 82 percent in Wisconsin, 79 percent in Kentucky, 78 percent in Michigan, 63 percent in Oregon, and 55 percent in Iowa (Manzo & Bruno, 2020; Philips, 2015a; Manzo & Duncan, 2018; Onsarigo et al., 2017; Philips, 2015b; Duncan & Manzo, 2016; Bilginsoy, 2017; Stepick & Manzo, 2021; Manzo & Gigstad, 2021). Research also indicates that joint labor-management programs tend to have higher standards for apprentices, resulting in better training and fewer on-the-job injuries (Stepick & Manzo, 2021).

At public universities, diverse environments provide advancement opportunities for individuals from disenfranchised communities and give individuals from non-minority groups exposure to people with different backgrounds, experiences, and viewpoints. Groups that are more racially diverse have been found to communicate better than racially-homogenous groups, improving decision-making (Phillips et al., 2006). Additionally, a study examining the effect of diversity on firm performance found that racial diversity improves performance and innovation (Richard, 2000). Because of these positive work-related outcomes, higher education is often praised for exposing students to diverse groups of peers.

FIGURE 1: RACIAL DIVERSITY IN CONSTRUCTION APPRENTICESHIP PROGRAMS AND UNIVERSITIES, SELECTED STATES

Type of Apprenticeship Program or Higher Education Institution	Illinois	Wisconsin	Minnesota	Oregon	Iowa
Black or African American					
% in Joint (Union) Construction Programs	**8.9%**	**4.4%**	**6.7%**	**4.3%**	**3.5%**
% in Employer-Only Construction Programs	5.2%	2.3%	7.2%	5.3%	2.0%
% in Public Universities	9.9%	3.2%	6.1%	2.5%	5.3%
Latinx or Hispanic					
% in Joint (Union) Construction Programs	**17.9%**	**4.7%**	**6.4%**	**18.7%**	**6.4%**
% in Employer-Only Construction Programs	10.8%	3.2%	4.4%	12.5%	4.7%
% in Public Universities	11.7%	5.9%	4.2%	13.2%	6.9%
White, non-Latinx					
% in Joint (Union) Construction Programs	**69.4%**	**89.6%**	**80.3%**	**72.5%**	**80.7%**
% in Employer-Only Construction Programs	78.9%	93.2%	86.9%	78.1%	84.6%
% in Public Universities	60.4%	82.3%	76.5%	63.5%	74.4%
Year of Study	2020	2021	2021	2021	2021

Source(s): Manzo & Bruno, 2020; Stepick & Manzo, 2021; Manzo et al., 2021a; Manzo et al., 2021b; Manzo & Gigstad, 2021.

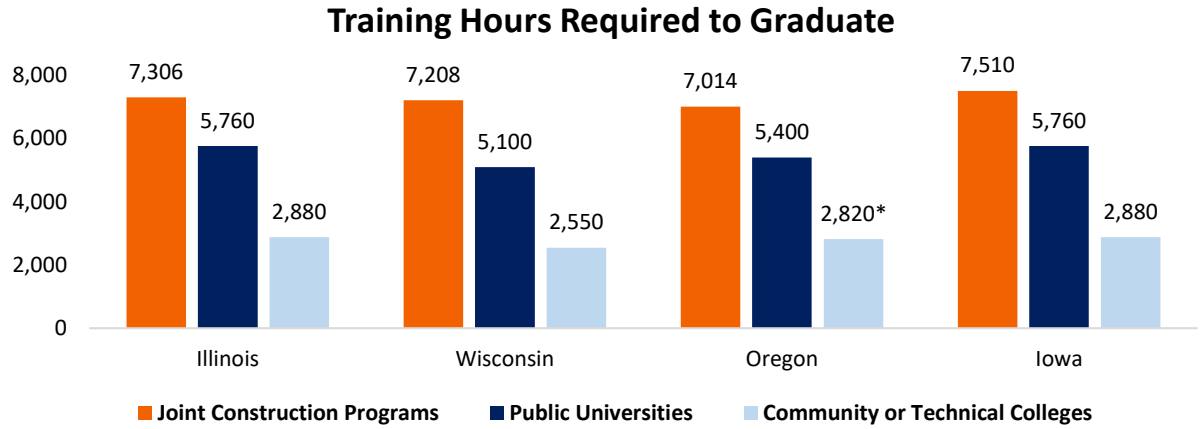
Recent studies find that joint labor-management apprenticeship programs in the construction industry have rates of racial and ethnic diversity that rival public universities (Figure 1). In Illinois, Wisconsin, Minnesota, Oregon, and Iowa, researchers have compared the relative shares of major racial categories (White, Black or African American, and Latinx or Hispanic) in public universities to those in joint labor-management construction apprenticeship programs. Three of the five states saw higher representation of Black and African American trainees in joint construction apprenticeships than in public universities. Compared with public universities, the Black and African American share of enrollees in joint construction programs ranged 2 percent lower in Iowa to 2 percent higher in Oregon. Three of the five states also had

better rates of Latinx or Hispanic representation in joint construction apprenticeships than in public universities. While the share of White apprentices was higher than the share of White students at that public universities in all five states, this is primarily because enrollees from all other racial and ethnic backgrounds is higher in public universities than joint construction programs.

Not only do joint (union) construction apprenticeship programs tend to have racial diversity outcomes that rival public four-year universities, they are also significantly more diverse than employer-only (nonunion) construction apprenticeship programs (Figure 1). In all five states, employer-only construction programs have higher shares of White apprentices than joint construction programs. Employer-only apprenticeship programs have 9 percent fewer People of Color in Illinois, 7 percent fewer in Minnesota, 6 percent fewer in Oregon, 4 percent fewer in Iowa, and 4 percent fewer in Wisconsin.

Apprenticeship programs raise the human capital of workers, instilling general and specific skills that are in high demand by employers. This training model boosts the future earnings of workers and provides portable skills, giving workers mobility (Veum, 1999). One important metric is the number of hours required to complete an apprenticeship program. In construction, joint labor-management programs require more hours of classroom and on-the-job training than college education (Figure 2). Recent studies of apprenticeship programs in Illinois, Wisconsin, Oregon, and Iowa have all found that the joint construction programs require an average of between 7,000 and 7,500 hours of on-the-job and classroom training. By contrast, public universities in these four states require between 5,100 and 5,800 "contact hours" (e.g., lectures and lab times) and "preparation hours" (e.g., homework and fieldwork) to graduate. The typical 60-credit hour associate degree at community colleges requires between 2,500 and 2,900 total hours. As a result, joint labor-management apprenticeship programs in construction require between 27 percent and 41 percent more hours of training to graduate than four-year universities and between 149 percent and 183 percent more hours to graduate than two-year colleges. Additionally, it is important to remember that training hours for registered apprentices are compensated, unlike credit hours at universities, and come without debt for tuition and fees.

FIGURE 2: HOURS REQUIRED IN CONSTRUCTION APPRENTICESHIP PROGRAMS AND UNIVERSITIES, SELECTED STATES



Source(s): Manzo & Bruno, 2020; Stepick & Manzo, 2021; Manzo et al., 2021b; Manzo & Gigstad, 2021. *The hours required to graduate from a community college in Oregon are calculated using the Construction Management associate degree from Portland Community College, which requires 94 credits, and Portland Community College's guidelines, which state that one credit hour is equivalent to a minimum of 30 hours of academic engagement through in-class or out-of-class work (PCC, 2021a; PCC, 2021b). 94 credit hours multiplied by 30 engagement hours equals 2,820 total hours. Note that it takes over 7,000 hours of training to become a union journeyworker in construction but about 2,800 hours of training to become a construction manager in Oregon.

Union Construction and Middle-Class Economic, Social, and Tax Outcomes

This report utilizes data from the *Current Population Survey Annual Social and Economic Supplement* (CPS-ASEC) from 2010 through 2020 (Flood et al., 2021). The CPS-ASEC is collected, analyzed, and released jointly by the Bureau of Labor Statistics (BLS) at the U.S. Department of Labor and the U.S. Census Bureau. The dataset reports individual-level information on about 98,000 households nationwide every March. The records include data on wages, unionization, hours worked, sector, industry, and occupation, as well as other demographic, geographic, education, and work variables. All data are weighted to match the U.S. population using sampling weights provided by the U.S. Census Bureau and all income and tax data are adjusted for inflation using the Consumer Price Index for All Urban Consumers (CPI-U) (Census, 2021).

On average, union construction workers are better educated than their nonunion counterparts in the United States (Figure 3). Fully 92 percent of blue-collar construction workers who are union members have graduated high school compared to just 74 percent of nonunion construction workers, a difference of 18 percent. The share of the blue-collar workforce who have earned associate, bachelor's, or advanced degrees is 19 percent in the union segment of the construction industry and 14 percent in the nonunion segment, a difference of 5 percent. However, the majority of blue-collar construction workers have high school diplomas or their equivalents. Including workers that have some college experience, 73 percent of union construction workers have graduated high school but not college and 60 percent of nonunion construction workers have only high school degrees.

FIGURE 3: LEVEL OF EDUCATIONAL ATTAINMENT OF CONSTRUCTION WORKERS, BY UNION MEMBERSHIP, 2010-2020

Level of Educational Attainment	Union Construction Workers	Nonunion Construction Workers
Less than High School Degree	**8.2%**	25.7%
High School Degree	**51.4%**	44.5%
Some College, No Degree	**21.5%**	15.7%
Associate Degree	**11.6%**	7.0%
Bachelor's Degree or More	**7.3%**	7.2%
Any College Degree	**18.8%**	14.1%

Source(s): Authors' analysis of 2010-2020 data from the *Current Population Survey Annual Social and Economic Supplement* (CPS-ASEC) (Flood et al., 2021). Construction workers are defined by those in blue-collar construction occupations, such as carpenters, electricians, laborers, operating engineers, and plumbers. Union Construction *N*= 996 and Nonunion Construction *N*= 4,365, In a standard poll, the equivalent margins of error would be ±3.1 percent for Union Construction and ±1.5 percent for Nonunion Construction.

While most union construction workers in America have only attained high school diplomas, their registered apprenticeship training—which requires more hours of training than universities—delivers labor market outcomes that are competitive with workers with college degrees (Figure 4). Union construction workers earn an average income of about $58,000 per year, almost halfway between all workers with associate degrees ($48,200) and all workers with bachelor's degrees ($68,600). Union construction workers also have a private health insurance coverage rate of 89 percent, above workers with associate degrees (84 percent) and on par with those with bachelor's degrees (90 percent). Union construction workers do, however, have greater retirement security than the average American worker, regardless of educational attainment. Fully 68 percent of union construction workers have access to a pension plan compared with 54 percent of workers with associate degrees, 57 percent of workers with bachelor's degrees, and 65 percent of workers with master's, professional, or doctoral degrees. The data show that union construction provides pathways to long-term economic security.

On the other hand, labor market outcomes for nonunion construction workers significantly underperform their union counterparts (Figure 4). Nonunion construction workers take home an average of $39,700 in annual wages, have a private health insurance coverage rate of 55 percent, and have a pension access rate of just 25 percent.

Overall, union construction workers earn an average of 46 percent more, are 34 percent more likely to have private health insurance coverage, and are 44 percent more likely to have access to pension plans. While union construction workers have labor market outcomes that are similar to college-educated workers, nonunion construction workers are at or below levels for workers with only high school diplomas. Compared to all workers with high school degrees, nonunion construction workers earn an average of just 4 percent more but are 18 percent less likely to have private health insurance coverage and 20 percent less likely to have access to pension plans.

FIGURE 4: LABOR MARKET OUTCOMES OF CONSTRUCTION WORKERS VS. ALL WORKERS BY EDUCATION, 2010-2020

Construction Workers by Union Status vs. All Workers by Educational Attainment	Inflation-Adjusted Income from Wages and Salaries	Rate of Private Health Insurance Coverage	Rate of Pension Plan Access at Work
Union Construction	**$58,040**	**88.7%**	**68.2%**
Nonunion Construction	$39,733	54.9%	24.6%
Less than High School Degree	$23,728	50.9%	22.4%
High School Degree	$38,081	73.3%	44.4%
Some College, But No Degree	$39,865	78.1%	46.3%
Associate Degree	$48,152	83.7%	54.3%
Bachelor's Degree	$68,610	89.6%	57.4%
Advanced Degree	$96,940	92.7%	65.4%

Source(s): Authors' analysis of 2010-2020 data from the *Current Population Survey Annual Social and Economic Supplement* (CPS-ASEC) (Flood et al., 2021). Construction workers are defined by those in blue-collar construction occupations, such as carpenters, electricians, laborers, operating engineers, and plumbers. Union Construction *N*= 996, Nonunion Construction *N*= 4,365, Less than High School Degree *N*= 11,401, High School Degree *N*= 38,216, Some College, But No Degree *N*= 26,034, Associate Degree *N*= 15,407, Bachelor's Degree *N*= 33,686, Advanced Degree *N*= 19,009. In a standard poll, the equivalent margins of error would be ±3.1 percent for Union Construction, ±1.5 percent for Nonunion Construction, and less than ±1.0 percent for all levels of educational attainment.

The data show that greater levels of educational attainment produce better economic and social outcomes. On average, as workers become better educated, their annual incomes increase and they become more likely to have good fringe benefits (Figure 4). As workers become better educated, they become less likely to live in poverty, less likely to rely on government assistance programs, and more likely to be married (Figure 5). Being above the official poverty line and independent from Medicaid are markers of financial stability and marriage is associated with social stability and is a significant predictor of a family's ability to become homeowners (Reid, 2005). Marriage is also traditionally associated with the American middle class: more than 6-in-10 middle-class Americans are married compared with less than 4-in-10 low-income adults (Reeves & Pulliam, 2020).

On these social outcomes, union construction workers outperform nonunion construction workers significantly (Figure 5). Nationally, 4 percent of union construction workers live below the official poverty line and 4 percent rely on Medicaid health coverage. In comparison, 10 percent of nonunion construction workers live in poverty and 10 percent rely on Medicaid. Union construction workers are thus 6 percent

less likely to live in poverty and rely on Medicaid than their nonunion counterparts. Additionally, 60 percent of union construction workers are married, 11 percent higher than the marriage rate among nonunion construction workers (48 percent).

Once again, union construction workers are most similar to all workers with college degrees while nonunion construction workers are most similar to those with only high school diplomas (Figure 5). The 4 percent union construction worker poverty rate and 4 percent union construction worker Medicaid coverage rate are both within the comparable rates for workers with associate degrees and bachelor's degrees. The 60 percent marriage rate for union construction workers is higher than both the 55 percent of workers with associate degrees who are married and the 56 percent of workers with bachelor's degrees who are married. By contrast, the rates of poverty (10 percent), Medicaid reliance (10 percent), and marriage (48 percent) for nonunion construction workers are all within 3 percent of the equivalent shares of workers with only high school degrees who are in poverty (7 percent), enrolled in Medicaid (9 percent), and married (50 percent).

FIGURE 5: SOCIAL OUTCOMES OF CONSTRUCTION WORKERS VS. ALL WORKERS BY EDUCATION, 2010-2020

Construction Workers by Union Status vs. All Workers by Educational Attainment	Rate Below the Official Poverty Line	Rate of Medicaid Health Insurance Coverage	Marriage Rate
Union Construction	**3.8%**	**3.6%**	**59.6%**
Nonunion Construction	10.3%	9.6%	48.2%
Less than High School Degree	16.9%	16.3%	41.2%
High School Degree	7.4%	9.1%	50.2%
Some College, But No Degree	6.2%	7.4%	42.2%
Associate Degree	3.8%	6.2%	55.1%
Bachelor's Degree	2.3%	3.2%	55.5%
Advanced Degree	1.4%	2.2%	67.5%

Source(s): Authors' analysis of 2010-2020 data from the *Current Population Survey Annual Social and Economic Supplement* (CPS-ASEC) (Flood et al., 2021). Construction workers are defined by those in blue-collar construction occupations, such as carpenters, electricians, laborers, operating engineers, and plumbers. Union Construction *N*= 996, Nonunion Construction *N*= 4,365, Less than High School Degree *N*= 11,401, High School Degree *N*= 38,216, Some College, But No Degree *N*= 26,034, Associate Degree *N*= 15,407, Bachelor's Degree *N*= 33,686, Advanced Degree *N*= 19,009. In a standard poll, the equivalent margins of error would be ±3.1 percent for Union Construction, ±1.5 percent for Nonunion Construction, and less than ±1.0 percent for all levels of educational attainment.

Tax outcomes offer another meaningful comparison for both the American public and elected officials. In general, as labor market outcomes such as income improve, tax obligations for individuals and families increase as well. Due to the progressive nature of the federal income tax code and most state income tax systems, as income rises with educational attainment, tax contributions increase considerably (Figure 6). For example, while workers with bachelor's degrees earn 80 percent more on average ($68,600) than workers with high school degrees ($38,100), they contribute 198 percent more in federal income taxes ($9,800 compared to $3,300) and 134 percent more in state income taxes (nearly $2,400 compared to $1,000).

Tax outcomes are no different in the construction industry (Figure 6). According to data from the *Current Population Survey Annual Social and Economic Supplement*, union construction workers earn $58,000 per year and contribute $5,600 per year in federal income taxes, $4,200 per year in payroll taxes to fund Medicare, Medicaid, and Social Security, and $1,700 per year in state income taxes on average. Nonunion

construction workers earn $39,700 per year and pay just $3,400 in federal income taxes, $2,800 in payroll taxes, and $1,000 in state income taxes. Accordingly, although union construction workers earn 46 percent more than their nonunion counterparts, they contribute 68 percent more in federal income taxes, 49 percent more in payroll taxes, and 61 percent more in state income taxes.[1]

FIGURE 6: TAX OUTCOMES OF CONSTRUCTION WORKERS VS. ALL WORKERS BY EDUCATION, 2010-2020

Construction Workers by Union Status vs. All Workers by Educational Attainment	Inflation-Adjusted Federal Income Taxes, After Credits	Inflation-Adjusted Payroll Taxes	Inflation-Adjusted State Income Taxes, After Credits
Union Construction	**$5,645**	**$4,209**	**$1,660**
Nonunion Construction	$3,361	$2,831	$1,033
Less than High School Degree	$942	$1,693	$455
High School Degree	$3,286	$2,707	$1,005
Some College, But No Degree	$4,340	$2,764	$1,148
Associate Degree	$5,538	$3,378	$1,458
Bachelor's Degree	$9,784	$4,568	$2,355
Advanced Degree	$15,966	$5,939	$3,587

Source(s): Authors' analysis of 2010-2020 data from the *Current Population Survey Annual Social and Economic Supplement* (CPS-ASEC) (Flood et al., 2021). Construction workers are defined by those in blue-collar construction occupations, such as carpenters, electricians, laborers, operating engineers, and plumbers. Union Construction *N*= 996, Nonunion Construction *N*= 4,365, Less than High School Degree *N*= 11,401, High School Degree *N*= 38,216, Some College, But No Degree *N*= 26,034, Associate Degree *N*= 15,407, Bachelor's Degree *N*= 33,686, Advanced Degree *N*= 19,009. In a standard poll, the equivalent margins of error would be ±3.1 percent for Union Construction, ±1.5 percent for Nonunion Construction, and less than ±1.0 percent for all levels of educational attainment.

The data again shows that union construction workers have tax outcomes that rival workers with college degrees while nonunion construction workers are most analogous to workers with high school diplomas (Figure 6). Union construction workers contribute more in income taxes ($5,600 per year), payroll taxes ($4,200 per year), and state income taxes ($1,700 per year) than all workers with associate degrees ($5,500 per year, $3,400 per year, and $1,500 per year, respectively) but less than all workers with bachelor's degrees ($9,800 per year, $4,600 per year, and $2,400 per year, respectively). In comparison, nonunion construction workers' federal income tax payments ($3,400 per year), payroll taxes ($2,800 per year), and state income tax obligations ($1,000 per year) are statistically indistinguishable from all workers with only high school degrees ($3,300 per year, $2,700 per year, and $1,000 per year, respectively).

[1] State income taxes are an imperfect measure of tax outcomes because income tax rates vary by state and some states have no income tax at all (Loughead, 2021). Of the eight states with no income tax, three (Alaska, Nevada, and Washington) have construction unionization rates that exceed the national average while the five others (including Texas and Florida) fall below the national average (Hirsch & Macpherson, 2021).

Conclusion

Joint labor-management apprenticeship programs are the bachelor's degrees of the construction industry, delivering training hours, diversity outcomes, competitive earnings and benefits, and positive social and fiscal impacts that rival universities and community colleges. Joint labor-management apprenticeship programs do not just strengthen the talent pool in construction, they deliver middle-class lifestyles for blue-collar workers. While nonunion construction workers experience economic, social, and tax outcomes that are similar to high school graduates, union construction workers who complete joint labor-management apprenticeship programs earn pathways into the middle class. For young workers, the unionized building trades' registered apprenticeship programs continue to offer excellent alternatives to achieving upward mobility and economic security.

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