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The Impact of Unions on Construction Worksite Health and Safety

Evidence from OSHA Inspections

ILEPI
ILLINOIS ECONOMIC POLICY INSTITUTE

I ILLINOIS LABOR & EMPLOYMENT
RELATIONS
PROJECT FOR MIDDLE CLASS RENEWAL

Frank Manzo IV, MPP

Michael Jekot

Robert Bruno, PhD

Executive Summary

Construction consistently ranks as one of the most dangerous industries in the United States. This report assesses whether there are differences in safety outcomes between union and nonunion construction worksites by analyzing Occupational Safety and Health Administration (OSHA) violations in the industry.

Prior research has found that the unionized construction sector delivers higher wages, finances most of the industry’s skilled craft training, and has fewer occupational fatalities than the nonunion alternative.

- Union construction workers earn 10 to 20 percent more than nonunion workers.
- Joint labor-management (union) apprenticeship programs train the vast majority of all construction apprentices in the United States, including 97 percent in Illinois.
- Previous research has found that a 1 percent increase in unionization is linked with a 3 percent decrease in occupational fatalities.

An analysis of over 37,000 OSHA inspections in the construction industry in 2019—including more than 2,800 at union worksites and nearly 34,200 at nonunion worksites—reveals that union worksites have significantly fewer health and safety violations.

- Inspections at union worksites are more likely to occur due to referrals while inspections at nonunion worksites are more likely to occur due to employee complaints.
- Nationally, union worksites are 19 percent less likely to have an OSHA violation and have 34 percent fewer violations per inspection. Even though unions represent 14 percent of construction industry workers, union worksites only account for 5 percent of OSHA violations in construction.
- In each of the major construction sectors, union worksites are less likely to have an OSHA violation (100 percent). They have fewer violations per inspection in all but one sector (88 percent).
- In each of the 10 OSHA regions, union worksites are less likely to have an OSHA violation (100 percent). They have fewer violations per inspection in all but one region (90 percent). The share of OSHA violations occurring at union worksites is also smaller than the share of all construction industry workers represented by unions in each of the 10 regions (100 percent).
- In Illinois, union worksites are 13 percent less likely to have an OSHA violation and have 52 percent fewer violations per inspection. Despite unions representing 34 percent of construction industry workers in Illinois, union worksites only account for 8 percent of all OSHA violations in the state.
- After accounting for construction sector and the scope, type, region, and month of inspection, union worksites average 31 percent fewer health and safety violations (0.5 fewer per inspection).

The unionized construction industry attracts, develops, and retains skilled workers through a rigorous system of registered apprenticeship training, family-sustaining wages and benefits, and high levels of standards for craftsmanship and safety. By ensuring safer worksites, the union construction industry improves productivity, reduces burdens on state workers’ compensation systems, and promotes healthier communities.

Because union worksites are safer than nonunion worksites in the construction industry, policies could be enacted to promote more unionization in sectors and states where no such policies currently exist. These include passing or strengthening state prevailing wage laws, expanding the use of project labor agreements, and enacting responsible bidder criteria as well as repealing so-called “right-to-work” laws—which weaken unions and have been shown to result in fewer apprentices, lower levels of worker productivity, and more on-the-job fatalities.

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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.

Michael Jekot is a Researcher at the Illinois Economic Policy Institute (ILEPI). He is pursuing his Bachelor of Arts in Economics from the University of Notre Dame.

Robert Bruno, PhD is a Professor at the University of Illinois at Urbana-Champaign School of Labor and Employment Relations and is the Director of the Project for Middle Class Renewal (PMCR). He also directs the Labor Education Program (LEP) at the University of Illinois at Urbana-Champaign. He earned a Doctor of Philosophy in Political Theory from New York University, a Master of Arts from Bowling Green State University, and a Bachelor of Arts from Ohio University.

Introduction

Construction consistently ranks as one of the most dangerous industries in the United States. The Occupational Safety and Health Administration (OSHA) designates construction as a high-hazard industry due to its wide range of activities involving building, alteration, and repair. While the rate of construction-related injuries industrywide has declined over recent decades, almost half of all workers in construction occupations are still subject to hazardous machinery and unsafe conditions on a weekly basis.

Federal law dictates that all workers are guaranteed the right to safe workplaces, and employers are required to take steps to reduce the risk of on-the-job injuries, illnesses, and death. In order to ensure a safe work environment, the Occupational Safety and Health Administration at the U.S. Department of Labor, conducts inspections of worksites throughout the country to ensure compliance with federal safety standards. OSHA investigators research their selected worksite, enter and tour the worksite, and interview employees and staff before announcing the results of the investigation (OSHA, 2016). Worksites that fail to comply with federal health and safety standards can receive violations and fines. Depending on the severity of the violation, fines can reach a maximum of \$136,532 for willful or repeated violations. Higher and more frequent occurrences of violations are signs of an unsafe workplace.

This report, conducted jointly by researchers at the Illinois Economic Policy Institute and the Project for Middle Class Renewal at the University of Illinois at Urbana-Champaign, assesses the frequency and quantity of OSHA violations among union and nonunion worksites in the construction industry in 2019, when a total of 14 percent of private sector construction industry workers were represented by unions (BLS, 2021). The economic research on the value of unions and collective bargaining are first presented before data on OSHA violations are shown. The analysis is expanded further by exploring specific sectors of construction as well as specific geographic areas, including Illinois. Results from a statistical technique called a “regression” are reported before a concluding section recaps key findings and offers potential policy options.

Economic Research on the Value of Unions and Collective Bargaining

Collective bargaining enables workers to assemble into unions and associate with their colleagues to negotiate contracts with their employers that establish the terms and conditions of employment. Collective bargaining is a method for formalizing labor-management relations, with workplace decisions made jointly by employers and employees, rather than unilaterally by one party. This process fosters democratic workplaces, with workers having a voice in decisions over working conditions and having the ability to elect representatives to bargain on their behalf.

The Impact of Unions on Worker Wages and Benefits

Numerous studies have found that collective bargaining boosts wages for workers, particularly for low-income employees, middle-class workers, and People of Color (Callaway & Collins, 2017; Bivens et al., 2017; Long, 2013; Walters & Mishel, 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). Perhaps even more striking than the pay gap between union and non-union workers is the difference in benefits received between the two. Union members are much more likely to have access to health insurance, retirement plans, and sick leave. Fully 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 taxpayer costs for government assistance programs (Nunn et al., 2019; Sojourner & Pacas, 2018).

Conversely, a recent study that compared states with so-called “right-to-work” laws—which effectively weaken unions—found that average worker wages were 3 percent lower, health insurance coverage was 5 percent lower, and worker productivity was 17 percent lower than in states with free collective-bargaining laws (Manzo & Bruno, 2021). The pay penalty associated with so-called “right-to-work” laws is even larger for essential workers, including 11 percent lower wages for construction and extraction workers.

While union membership has declined nationally since the late 1970s, construction remains one of the most unionized private-sector industries in the United States and continues to offer pathways into the middle class for blue-collar workers. For example, in Minnesota, union construction workers earn 32 percent more than nonunion construction workers, on average. However, the union wage premium is highest for the lowest-income construction workers. Unions boost wages by between 44 percent and 50 percent for the lowest-earning construction workers and by just 15 percent for the highest-earning construction workers. Additionally, only 3 percent of union construction workers earn less than \$15 per hour compared with 14 percent of nonunion construction workers (Manzo et al., 2021).

The Impact of Unions on Apprenticeship Training in Construction

Registered apprenticeships are industry-driven programs in which employers and unions train and develop skilled workers who are in high demand. Participating apprentices get the opportunity to “earn while they learn” and obtain portable, nationally-recognized credentials at minimal or no out-of-pocket cost. Employers, unions, joint labor-management programs, and governments all sponsor apprenticeship programs, which cover tuition costs and offer structured, on-the-job training and certified classroom instruction tailored to meet the needs of employers. In return for these investments, businesses across the country gain access to pools of skilled workers who meet industry standards for productivity and safety. Robust registered apprenticeship programs have proven to be effective at lowering the youth unemployment rate and raising wages (Bertschy et al., 2009; Ryan, 2001; Ryan, 1998; Clark & Fahr, 2002). One study performed a cost-benefit analysis of registered apprenticeship programs in 10 U.S. states that differed across labor market characteristics and found that apprenticeship participants earned \$124,000 more in wages and fringe benefits over the course of their careers than similar non-participants (Reed et al., 2012).

Apprenticeship training is particularly important in the construction industry (Olinsky & Ayres, 2013). Registered apprenticeship programs in construction include health and safety courses, such as how to identify and report health and safety standards, use scaffolding, work safely with hazardous materials, operate machinery and forklifts, prevent silica exposure, and prevent burns on construction and demolition projects (e.g., CLDC, 2021; ASIP, 2019).

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.

By contrast, employer-only programs are sponsored by an employer or group of employers—usually through a trade association—who unilaterally determine program content, set entry requirements, and monitor trainee progress. 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 slash labor costs in their effort 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. Joint labor-management programs account for 97 percent of all active construction apprentices in Illinois, 94 percent in Indiana, 82 percent in Ohio, 82 percent in Wisconsin, 79 percent in Kentucky, 78 percent in Michigan, and 63 percent in Oregon (Manzo & Bruno, 2020; Philips, 2015a; Manzo & Duncan, 2018; Onsarigo et al., 2017; Philips, 2015b; Duncan & Manzo, 2016; Bilginsoy, 2017; Stepick & Manzo, 2021). Research also indicates that joint labor-management programs tend to have high standards, requiring about 30 percent more average hours of training than the typical bachelor’s degree at public universities in order to produce skilled construction workers who are significantly less likely to suffer on-the-job injuries (Manzo & Bruno, 2020; Stepick & Manzo, 2021).

The Impact of Unions on Workplace Safety

Unions have historically played a prominent role in the enactment of a broad range of labor laws and programs covering areas as diverse as overtime pay, minimum wage, health and retirement coverage, unemployment insurance, workers’ compensation, leave for care of newborns and sick family members, and occupational health and safety rules. The intent of these policies has been to protect workers by implementing standards and by ensuring that workers can access support in times of need (Weil, 2003).

Union members are more likely to have a safer work environment in part because the protection of the union enables workers to speak up about safety violations without fearing whistleblower retaliation. Union contracts can also include language on purchasing personal protective equipment (PPE) and reducing excessive shifts, promoting safer jobsites. Previous studies have found that unions greatly improve OSHA enforcement because workers in unionized settings are much more likely to exercise their “walkaround” rights, accompanying an OSHA inspector to point out potential violations. Unions raise the probability of OSHA inspections by 10 percent and increase the length of the inspection (Walters & Mishel, 2003). Despite a higher chance of being inspected by OSHA, research has found that a 1 percent increase in unionization is associated with a 3 percent decline in the rate of occupational fatalities (Zoorob, 2018). Another 2011 report concluded that states with low construction union density have a fatality rate that is higher by between 3 and 7 deaths per 1,000 construction workers compared to states with high construction union density (Zullo, 2011). Furthermore, 86 percent of construction fatalities occur at nonunion worksites in New York and nonunion workers account for 87 percent of all construction deaths in Massachusetts (Obernauer, 2020; Laing et al., 2019).

Union Worksites Have Significantly Fewer OSHA Violations than Nonunion Worksites

In 2019, OSHA conducted more than 37,000 inspections at construction worksites throughout the country—including 2,855 at union jobsites and 34,186 at nonunion jobsites. The data comes directly from OSHA and includes information on the location of the worksite, the union status of the worksite, the scope of the inspection, whether the inspection was planned or was the result of a complaint or referral, the number of

violations determined during the inspection, and the specific sector of construction (OSHA, 2021a).¹ Compared with the nonunion segment of the industry, inspections at union worksites were more likely to occur due to referrals, including from government agencies, whistleblowers, or authorized representatives of employee bargaining units. Nonunion worksites were slightly more likely to be inspected as a result of an employee complaint or a planned inspection by OSHA (Figure 1).

Figure 1: OSHA Inspections at U.S. Construction Jobsites by Union Status and Type of Inspection, 2019

Type of Inspections	Union Worksites		Nonunion Worksites		Union Difference
	Number of Inspections	Share of Inspections	Number of Inspections	Share of Inspections	
Inspections	2,855	100.0%	34,186	100.0%	--
Complaint	317	11.1%	4,378	12.8%	-1.7%
Planned	1,282	44.9%	18,140	53.1%	-8.2%
Referral	430	15.1%	4,378	12.8%	+2.3%
All Other Types	826	28.9%	7,290	21.3%	+7.6%

Source: Authors' analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a). All union differences are statistically significant at $***p \leq |0.01|$.

Results are analyzed by four-digit and three-digit North American Industry Classification System (NAICS) codes, which are used by federal agencies to classify businesses in the United States (Census, 2021). The eight construction sectors with at least 1,000 inspections are:

- residential building construction;
- nonresidential building construction, which includes the construction of schools and shopping malls;
- utility system construction, which includes the construction of water lines and power lines;
- highway, street, and bridge construction;
- foundation, structure, and building exterior contractors, such as roofers and siding contractors;
- building equipment contractors, such as electrical and plumbing contractors;
- building finishing contractors, such as painters and flooring contractors; and
- other specialty trade contractors, including those primarily engaged in site preparation activities.

National Results

The data offer direct evidence that union worksites are safer and healthier for construction workers in the United States of America (Figure 2). During the 2,855 visits to union worksites, OSHA investigators found at least one health and safety violation on 1,314 occasions, or 46 percent of the time. Union worksites averaged 1.0 total violations per OSHA inspection. By contrast, visits to nonunion jobsites resulted in at least one health and safety violation 65 percent of the time and an average of 1.6 violations per OSHA inspection. Accordingly, union worksites are 19 percent less likely to have an OSHA violation and have 34 percent fewer violations per inspection. Furthermore, in 2019, a total of 14 percent of workers in the construction industry were represented by unions, including both blue-collar construction workers and white-collar employees such as architects and engineers (BLS, 2021). Even though unions represent 14 percent of workers in the construction industry, union worksites only account for 5 percent of all health and safety violations in construction.

Construction worksites with OSHA violations are more likely to suffer workplace injuries, which can impose costs on businesses and taxpayers. Workplace fatalities, injuries, and illnesses cost the industry billions of dollars per year. Employers that take preventative and proactive steps to lower the risk of injuries and illnesses experience fewer lost-time days off by employees, greater levels of output, and decreased medical

¹ The data does not include information on the number of employees at each location. Firm size is correlated with union density, meaning that unions are more likely to be present in larger companies (Buchmueller et al., 2002).

expenses. Safer workplaces also reduce the burden on state’s workers’ compensation systems, saving money for both businesses and taxpayers (OSHA, 2021b). By promoting safer worksites, the union construction industry improves productivity and promotes healthier communities.

Figure 2: OSHA Inspections and Violations at U.S. Construction Jobsites by Union Status, 2019

Geography	Union Worksites			Nonunion Worksites			Union Difference	
	Total Count	Violations Rate	Average Violations	Total Count	Violations Rate	Average Violations	Violations Rate	Average Violations
United States	2,855	46.0%	1.04	34,186	64.6%	1.59	-18.6%	-34.4%

Source: Authors’ analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a).

Results by Construction Sector

The results are generally consistent when dividing the data into specific construction sectors (Figure 3). Union worksites are less likely to have an OSHA violation in all eight of these major construction sectors (100 percent), ranging from 1 percent less likely in highway, street, and bridge construction to 23 percent less likely for foundation, structure, and building exterior contractors. Union worksites also have fewer violations per inspection in seven of the eight construction sectors (88 percent), ranging from 17 percent fewer violations in nonresidential construction to 47 percent fewer violations for foundation, structure, and building exterior contractors.

Figure 3: OSHA Inspections and Violations at Construction Jobsites by Union Status and Sector, 2019

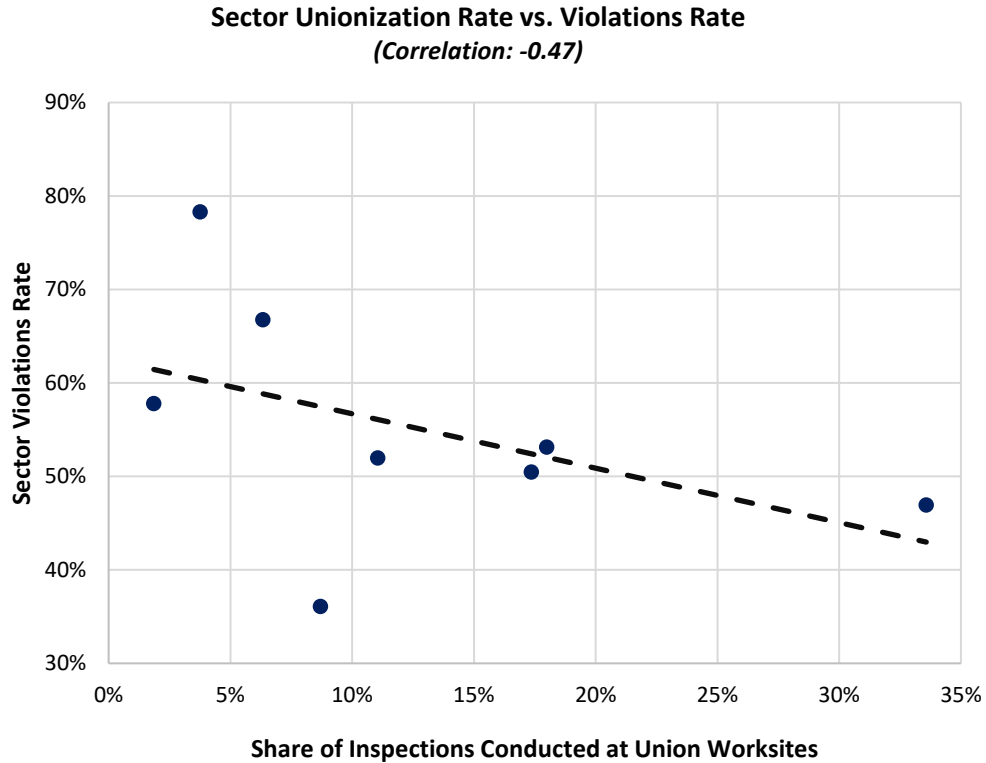
Construction or Contractors	Union Worksites			Nonunion Worksites			Union Difference	
	Total Count	Violations Rate	Average Violations	Total Count	Violations Rate	Average Violations	Violations Rate	Average Violations
Residential Building	83	51.8%	1.16	4,374	57.8%	1.45	-6.0%	-20.2%
Nonresidential Building	408	35.0%	0.61	4,283	36.2%	0.74	-1.1%	-17.3%
Utility System	312	51.6%	1.04	1,422	53.4%	1.25	-1.8%	-17.4%
Highway, Street, and Bridge	464	46.6%	1.86	915	47.2%	1.42	-0.7%	+30.4%
Foundation, Structure, Exterior	603	55.7%	1.07	15,993	79.2%	2.03	-23.4%	-47.0%
Building Equipment	544	40.6%	0.71	2,590	52.6%	1.02	-12.0%	-30.9%
Building Finishing	156	48.1%	1.02	2,307	68.1%	1.62	-20.0%	-36.9%
Other Specialty Trades	280	41.8%	0.88	2,255	53.3%	1.23	-11.5%	-28.8%

Source: Authors’ analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a).

The sectors with the lowest levels of unionization also have the highest rates of health and safety violations (Figure 4). The share of inspections that occur at union worksites is lowest amongst residential building contractors (2 percent), foundation, structure, and building exterior contractors (4 percent), and building finishing contractors (6 percent). The violations rate in these three sectors ranges from 58 percent to 78 percent. On the other hand, the share of inspections that occurred at union worksites is highest in the highway, street, and bridge (34 percent), utility system (18 percent), and building equipment (17 percent) construction sectors. The violations rate in these three sectors ranges from 47 percent to 53 percent. Overall,

the correlation between the sectoral rate of unionization and the sector rate of violations is 0.5, a moderate association that indicates that greater levels of unionization are linked with fewer workplaces with at least one health and safety violation (Figure 4).

Figure 4: Sector Violations Rate by Share of Inspections Conducted at Union Jobsites, 2019

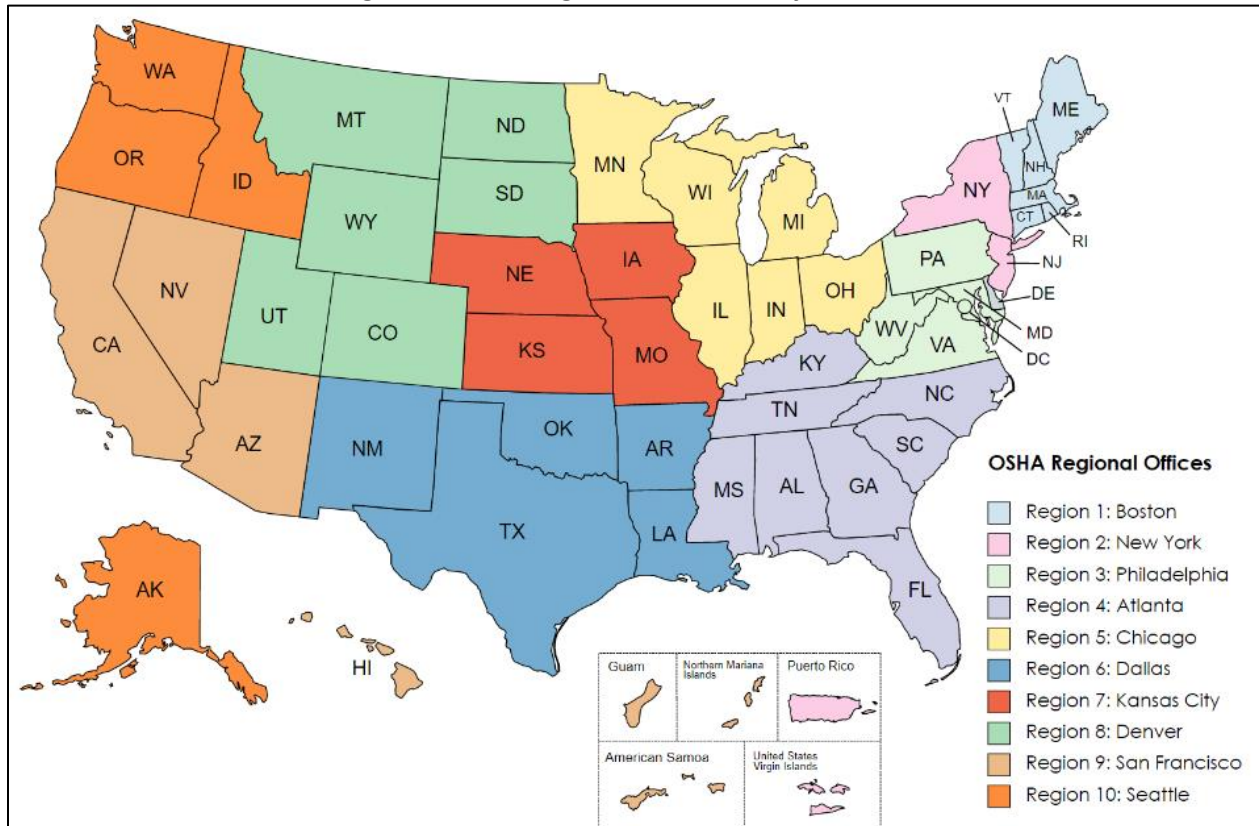


Source: Authors’ analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a).

Results by Region

The data can be broken down geographically using OSHA’s 10 regional offices (Figure 5). In all 10 regions (100 percent), union worksites are less likely to have an OSHA violation, ranging from 4 percent less likely in Region 8—which covers Colorado, Montana, South Dakota, North Dakota, Utah, and Wyoming—to 25 percent less likely in Region 10—which covers Alaska, Idaho, Oregon, and Washington (Figure 5). Similarly, in nine of the 10 regions (90 percent), union worksites have fewer violations per inspection, ranging from 5 percent fewer in Region 8 to 62 percent fewer in Region 3—which covers Delaware, Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia (Figure 6).

Figure 5: OSHA Regions and Offices by U.S. State



Source: "OSHA Offices by State" (OSHA, 2021c).

Figure 6: OSHA Inspections and Violations at Construction Jobsites by Union Status and Region, 2019

OSHA Geography	Union Worksites			Nonunion Worksites			Union Difference	
	Total Count	Violations Rate	Average Violations	Total Count	Violations Rate	Average Violations	Violations Rate	Average Violations
United States	2,855	46.0%	1.04	34,186	64.6%	1.59	-18.6%	-34.4%
Region 1	128	48.4%	1.16	1,846	63.1%	1.35	-14.6%	-13.8%
Region 2	359	49.0%	2.23	2,748	69.5%	1.67	-20.5%	+33.4%
Region 3	217	41.9%	0.67	4,391	61.4%	1.74	-19.4%	-61.6%
Region 4	74	51.4%	0.91	6,004	68.0%	1.63	-16.6%	-44.4%
Region 5	1,175	42.6%	0.76	6,120	62.1%	1.64	-19.5%	-53.6%
Region 6	26	61.5%	0.96	3,017	68.3%	1.36	-6.8%	-29.2%
Region 7	116	45.7%	1.04	1,296	64.0%	1.55	-18.4%	-32.8%
Region 8	15	53.3%	0.87	1,905	57.1%	0.91	-3.8%	-5.2%
Region 9	459	55.6%	1.16	3,138	65.5%	1.77	-9.9%	-34.6%
Region 10	286	39.9%	0.77	3,721	64.4%	1.67	-24.5%	-54.0%

Source: Authors' analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a).

Across the board, the share of OSHA violations that occur at union worksites is smaller than the share of construction industry workers who are represented by unions (Figure 7). Nationally, 14 percent of both blue-collar workers and white-collar employees in the construction industry are represented by unions but just 5 percent of all health and safety violations occur at union worksites. In Region 5—which is the most unionized area and includes Illinois, Indiana, Ohio, Michigan, Wisconsin, and Minnesota—24 percent of construction industry workers are represented by unions and union workplaces account for just 8 percent of all health and safety violations. Even in Region 6—which is the least unionized area and includes Texas, Louisiana, Arkansas,

Oklahoma, and New Mexico—unions represent nearly 4 percent of construction industry workers but union workplaces account for less than 1 percent of all health and safety violations (Figure 7).

Figure 7: Shares of Union Construction Workers and of OSHA Violations at Union Jobsites by Region, 2019

OSHA Geography	Construction Industry Workers Represented by Unions, 2019	Share of Inspections at Union Construction Worksites, 2019	Share of Violations at Union Construction Worksites, 2019
United States	13.6%	7.7%	5.2%
Region 1	15.2%	6.5%	5.6%
Region 2	24.1%	11.6%	14.9%
Region 3	11.4%	4.7%	1.9%
Region 4	5.4%	1.2%	0.7%
Region 5	24.1%	16.1%	8.2%
Region 6	3.7%	0.9%	0.6%
Region 7	19.3%	8.2%	5.7%
Region 8	8.0%	0.8%	0.7%
Region 9	18.5%	12.8%	8.7%
Region 10	22.7%	7.1%	3.4%

Source: Authors' analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a) and Current Population Survey Outgoing Rotation Groups (CPS-ORG) data for 2019 (EPI, 2021).

Results for Illinois and Neighboring Midwest States

Results are similar when only investigating Illinois and surrounding Midwest states (Figure 8). In 2019, OSHA inspected 1,405 construction worksites in Illinois, including 206 union worksites and 1,199 nonunion worksites. Union worksites experienced at least one violation 60 percent of the time and averaged 1.0 violations per inspection while nonunion worksites were cited with a violation 73 percent of the time and averaged 2.1 violations per inspection. As a result, union worksites are 13 percent less likely to have an OSHA violation and have 52 percent fewer violations per inspection in Illinois.

Figure 8: OSHA Inspections and Violations at Construction Jobsites by Union Status in the Midwest, 2019

Geography	Union Worksites			Nonunion Worksites			Union Difference	
	Total Count	Violations Rate	Average Violations	Total Count	Violations Rate	Average Violations	Violations Rate	Average Violations
Illinois	206	60.2%	1.00	1,199	73.1%	2.09	-13.0%	-52.2%
Iowa	31	58.1%	0.94	193	49.7%	1.13	+8.3%	-17.6%
Indiana	134	32.1%	0.78	453	56.7%	2.19	-24.6%	-64.2%
Kentucky	19	31.6%	0.47	306	49.7%	1.12	-18.1%	-57.9%
Michigan	463	34.8%	0.71	2,177	49.2%	1.40	-14.4%	-49.1%
Minnesota	198	47.5%	0.71	573	53.1%	1.18	-5.6%	-39.9%
Missouri	61	50.8%	1.34	571	71.6%	1.78	-20.8%	-24.5%
Ohio	108	50.0%	0.68	1,202	77.3%	1.73	-27.3%	-60.9%
Wisconsin	66	37.9%	0.59	516	70.7%	1.44	-32.9%	-59.0%

Source: Authors' analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a).

Of the nine Midwest states analyzed, union worksites are less likely to have a violation in eight states (89 percent) and have fewer violations in all nine states (100 percent). In particular, Indiana and Wisconsin are states where union construction worksites are significantly safer than nonunion construction worksites. In Indiana, union worksites are 25 percent less likely to have an OSHA violation and have 64 percent fewer violations per inspection. In Wisconsin, union worksites are 33 percent less likely to have an OSHA violation and have 59 percent fewer violations per inspection. Unions have *at least* 50 percent fewer violations per inspection in Illinois, Indiana, Kentucky, Ohio, and Wisconsin (Figure 8).

Furthermore, union construction worksites account for a disproportionately smaller share of all health and safety violations in eight of the nine Midwest states analyzed (89 percent). Only in Iowa is the share of OSHA violations on union worksites (12 percent) higher than the share of construction industry workers represented by unions (10 percent). On the other hand, in Illinois, 34 percent of construction industry workers are represented by unions and just 8 percent of all health and safety violations occur at union worksites.

Figure 9: Shares of Union Construction Workers and of OSHA Violations at Union Jobsites by State, 2019

Geography	Construction Industry Workers Represented by Unions, 2019	Share of Inspections at Union Construction Worksites, 2019	Share of Violations at Union Construction Worksites, 2019
Illinois	34.1%	14.7%	7.6%
Iowa	10.1%	13.8%	11.8%
Indiana	25.5%	22.8%	9.5%
Kentucky	11.8%	5.8%	2.5%
Michigan	24.2%	17.5%	9.7%
Minnesota	20.2%	25.7%	17.2%
Missouri	30.7%	9.7%	7.4%
Ohio	18.1%	8.2%	3.4%
Wisconsin	18.0%	11.3%	5.0%

Source: Authors’ analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a) and Current Population Survey Outgoing Rotation Groups (CPS-ORG) data for 2019 (EPI, 2021).

Regression Results

Finally, this analysis uses a “regression” to parse out the unique impact of union workplaces. An advanced but common technique, a regression describes “how much” a variable is responsible for a change in the outcome. Consequently, a regression can help determine how much union workplaces reduce health and safety violations in the construction industry. After accounting for major construction sector, whether the inspection was complete or partial, whether the inspection was a complaint or planned or a referral, the region where the inspection was held, and the month of the inspection, union worksites average 0.5 fewer violations (Figure 10). This finding is statistically significant at the 99-percent level of confidence. Since nonunion worksites average 1.6 violations per inspection, this means that union worksites have 31 percent fewer OSHA violations, on average, after controlling for other observable factors.

Figure 10: Regression Impact of Being a Union Worksite on Average Violations Per OSHA Inspection, 2019

Impact on the Number of Violations During an OSHA Inspection	Robust Ordinary Least Squares Regression	
	Average Effect	(Standard Error)
Union Worksite	-0.496***	(0.038)
OSHA Region: 2	+0.208***	(0.052)
OSHA Region: 3	+0.192***	(0.045)
OSHA Region: 4	+0.013	(0.041)
OSHA Region: 5	-0.011	(0.042)
OSHA Region: 6	-0.158***	(0.042)
OSHA Region: 7	-0.067	(0.055)
OSHA Region: 8	-0.549***	(0.042)
OSHA Region: 9	+0.546***	(0.049)
OSHA Region: 10	+0.195***	(0.047)
2362: Nonresidential Building	-0.673***	(0.035)
2371: Utility System	-0.125**	(0.051)
2372: Land Subdivision	-0.640**	(0.260)
2373: Highway, Street, and Bridge	+0.299***	(0.082)
2379: Other Heavy and Civil Engineering	+0.190	(0.361)
2381: Foundation, Structure, and Exterior	+0.557***	(0.033)
2382: Building Equipment	-0.438***	(0.039)
2383: Building Finishing	+0.154***	(0.046)
2389: Other Specialty Trade	-0.154***	(0.043)
Scope: Complete	+1.692***	(0.026)
Scope: Partial	+1.452***	(0.017)
Type: Complaint	+0.337***	(0.032)
Type: Planned	+0.448***	(0.023)
Type: Referral	+0.309***	(0.031)
Month: February	+0.051	(0.050)
Month: March	-0.029	(0.046)
Month: April	-0.016	(0.045)
Month: May	-0.032	(0.047)
Month: June	-0.005	(0.045)
Month: July	-0.030	(0.045)
Month: August	-0.039	(0.045)
Month: September	-0.111**	(0.046)
Month: October	-0.010	(0.046)
Month: November	-0.000	(0.046)
Month: December	-0.049	(0.061)
Constant Term	-0.358***	(0.056)

Source: Authors' analysis of Occupational Safety and Health Administration inspection data at establishments with construction industry NAICS codes (230000 to 239999) in 2019 (OSHA, 2021a). *** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.10$. $N = 37,041$. $R^2 = 0.12$.

Conclusion and Potential Policy Options

Across the United States, union construction worksites are safer than nonunion construction worksites. This is in part because the union construction industry trains its workforce in rigorous joint labor-management apprenticeship programs that prioritize safety and productivity. Not only does the union construction industry attract, develop, and retain skilled workers who are productive and safe, its workers are more aware of and more empowered to exercise their labor rights to promote safer workplaces. The result is that union jobsites are less likely to incur health and safety violations.

Steps could be taken to promote unionization in sectors and states where no such policies currently exist. This includes passing, strengthening, or expanding state *prevailing wage laws*, which are minimum wages for

different types of skilled construction work on taxpayer-funded and ratepayer-funded construction projects which have been found to boost apprenticeship training, boost construction worker earnings, and increase the chances that work is performed by in-state contractors (Bilginsoy, 2005; Philips, 2014; Manzo & Duncan, 2018). Using more *project labor agreements* (PLAs), which are local pre-hire agreements covering all crafts on large, complex construction projects that establish comprehensive employment terms and safe working conditions, would also promote access to skilled labor and uniform work rules that improve efficiency and safety (Kotler, 2009). Enacting *responsible bidder provisions* based on objective criteria and verifiable standards for contractors bidding on infrastructure projects can not only serve as an “insurance policy” for project owners and taxpayers, but also support apprenticeship training programs (Waddoups & May, 2014; Sonn & Gebreselassie, 2010). Finally, repealing so-called “right-to-work” laws which weaken unions and produce lower wages for workers, fewer active apprentices and less-productive workers for contractors, and more on-the-job fatalities and lower life expectancies would also tend to improve safety at construction worksites (Manzo & Bruno, 2021).

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