

**THE COST OF CONSTRUCTION
INJURIES AND FATALITIES IN
ILLINOIS, INDIANA, AND IOWA**
Economic Commentary



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ILEPI Economic Commentary #28

Executive Summary

This Illinois Economic Policy Institute (ILEPI) Economic Commentary estimates the economic burden of occupational injuries and fatalities in three Midwestern states from 2011 through 2013. The report finds stark differences in the construction labor markets of Illinois, Indiana, and Iowa.

- **Illinois:** had the highest construction worker union membership rate in the nation, a “strong” prevailing wage law, a very high productivity per worker, and a higher share of construction work completed by local contractors. In addition, 6.6 percent of Illinois’ construction worksites are visited by (Federal) OSHA inspectors per year.
- **Indiana:** construction worker unionization was 6th in the nation and the state had an “average” prevailing wage law (now repealed), a productivity per worker that was slightly higher than the national average, and a medium share of construction work completed by local contractors. 7.6 percent of Indiana’s construction worksites are visited by (State Plan) OSHA inspectors per year.
- **Iowa:** construction worker unionization was 13th in the nation, but the state did not have a prevailing wage law, productivity per worker was below the national average, and Iowa had the lowest share of construction work completed by local contractors of the three states. Just 6.1 percent of Iowa’s construction worksites are visited by (State Plan) OSHA inspectors per year.

As a result, construction-related fatalities and injuries were lower in both Illinois and Indiana than in Iowa.

- **Illinois:** there were 1.39 on-the-job workplace fatalities per 10,000 construction workers. The rate of nonfatal injuries and illness was 152.4 per 10,000 full-time construction workers in Illinois. The total estimated economic cost from construction-related deaths and injuries is approximately *\$270 million per year* in Illinois.
- **Indiana:** there were 1.67 on-the-job workplace fatalities per 10,000 construction workers. The rate of nonfatal injuries and illness was 117.4 per 10,000 full-time construction workers in Indiana. The total estimated economic cost from construction-related deaths and injuries is over *\$150 million per year* in Indiana.
- **Iowa:** there were 2.23 on-the-job workplace fatalities per 10,000 construction workers. The rate of nonfatal injuries and illness was 266.2 per 10,000 full-time construction workers in Iowa. The total estimated economic cost from construction-related deaths and injuries is about *\$125 million per year* in Iowa.

Four policy approaches that states have taken to ensure safe working conditions for construction workers are: 1) increasing resources to conduct OSHA inspections, 2) maintaining state prevailing wage laws, 3) introducing local responsible bidder ordinances, and 4) avoiding the attack on construction trades unions.

A “high road” approach to the construction industry improves worker training, boosts worker productivity, and minimizes injury risks at minimal or no additional cost to taxpayers. Illinois, Indiana, Iowa, and states around the country should enact legislation that creates a “high road” construction industry.

Introduction

The Occupational Safety & Health Administration classifies construction as a high-hazard industry comprising a wide range of activities involving building, alteration, and repair. While the rate of construction-related injuries and illnesses has been on the decline over recent decades, roughly half of all workers in construction occupations are still exposed to hazardous tools and machinery on a weekly basis. Federal law guarantees that all workers, including construction workers, have the right to a safe workplace. Accordingly, construction employers are required to take steps to reduce the risk of on-the-job injuries, illnesses, and deaths.

Many different issues lead to fatal and nonfatal injuries in the construction industry. The Occupational Safety & Health Administration notes that the leading causes of worker deaths on construction sites were falls (39.9 percent), electrocutions (8.5 percent), workers being struck by an object (8.4 percent), and “caught in-between” hazards such as cave-ins during excavations (1.4 percent). These causes have been called Construction’s “Fatal Four” because they are responsible for more than half of all construction worker deaths (OSHA, 2015a). Unfortunately, oversight agencies have been unable to reduce the frequency of such injuries in large part due to a lack of sufficient resources (Wrightson, 2012).

The consequences of these construction-related injuries and fatalities have a significant negative impact on state economies. When workers miss work due to injury or illness, their employers lose productivity, the worker loses wage income, and local businesses lose consumer spending. Taxpayers may also foot the bill for added workers’ compensation and public insurance costs. In addition, workplace deaths devastate families and result in pain and suffering costs. Ultimately, occupational injuries and fatalities in construction can cost states hundreds of millions of dollars in lost economic output every year.

This Illinois Economic Policy Institute (ILEPI) Economic Commentary highlights the economic burden of occupational injuries and fatalities in the construction labor markets of Illinois, Indiana, and Iowa. The report begins with a review of a related policy paper (Wrightson, 2012) and the data utilized. Then, the construction labor markets of the three Midwestern states are compared and contrasted before data on construction injuries and fatalities are presented. Estimates on the economic costs of construction-related injuries and deaths are subsequently calculated. Finally, this report offers policy recommendations to guide states in addressing the needs of both the construction industry and its workers before recapping key findings in the conclusion.

Review and Data

This report is a replication of *The Price of Inaction: A Comprehensive Look at the Costs of Injuries and Fatalities in Maryland's Construction Industry*, applied to three Midwestern states using recent data (Wrightson, 2012). The three selected Midwestern states— Illinois, Indiana, and Iowa— were chosen to represent interconnected economies with three distinct construction labor market frameworks from 2011 through 2013.

The majority of the data used in this paper draws from:

- *Costs of Occupational Injury and Illness Across States* by Dr. Waehrer, Dr. Leigh, Dr. Cassidy, and Dr. Miller (Waehrer et al., 2004);
- The *Census of Fatal Occupational Injuries* by the Bureau of Labor Statistics of the U.S. Department of Labor for 2011, 2012, and 2013 (BLS, 2015a);
- The “Nonfatal cases involving days away from work: selected characteristics” data tool by the Bureau of Labor Statistics of the U.S. Department of Labor for 2011, 2012, and 2013 (BLS, 2015a);
- The “Inspections within Industry” data tool by the Occupational Safety & Health Administration of the U.S. Department of Labor for January 1, 2011 through December 31, 2013 (OSHA, 2015b);
- The *Current Population Survey* Outgoing Rotation Groups by the U.S. Census Bureau for 2011, 2012, and 2013 (CEPR, 2015);
- The 2012 *Economic Census of Construction* by the U.S. Census Bureau (Census, 2015); and
- *County Business Patterns* by the U.S. Department of Commerce for 2011, 2012, and 2013 (CBP, 2015).

The findings adjust Waehrer et al. (2004) evaluations on the costs of workplace fatalities and injuries in each state to current 2015 dollars using the Consumer Price Index (CPI-U). Cost estimates are then multiplied by recent data in Illinois, Indiana, and Iowa to provide estimates on the economic burden of construction-related injuries and deaths. Waehrer et al. (2004) determined total state costs by adding up direct costs, indirect costs, and quality of life costs.¹ The inflation adjustment from 1993 to 2015 is 1.6467. That is, \$100 in 1993 has the same buying power as \$164.67 in 2015 (BLS, 2015b).

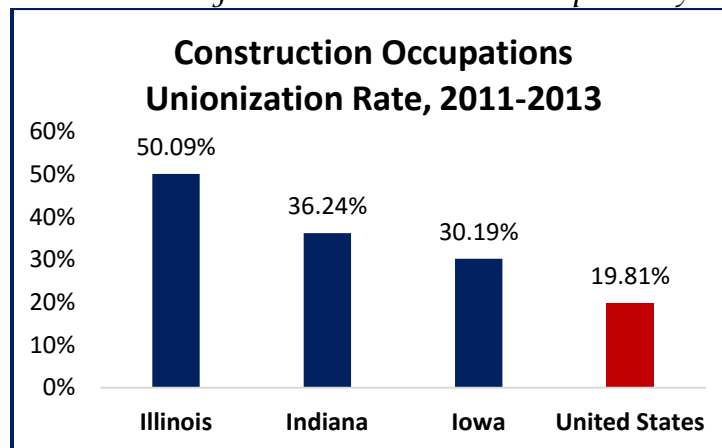
¹ Direct costs include payments for hospital services, rehabilitation, burial costs, insurance administrative costs, property damage, etc. Indirect costs include productivity losses, wage losses, and administrative costs. Quality of life costs include the pain and suffering of victims and their families.

The Construction Labor Markets of Illinois, Indiana, and Iowa

Though interconnected, construction workers experience distinct labor market frameworks in Illinois, Indiana, and Iowa. Data from the *Current Population Survey* conducted by the U.S. Census Bureau for 2011, 2012, and 2013 in Figure 1 (CEPR, 2015) and classifications of state prevailing wage laws provided by Duncan et al. (2015) are utilized to illustrate the differences. A state prevailing wage law establishes minimum hourly compensation rates for construction workers employed on publicly-funded projects based on local market wages and conditions. Prevailing wage laws are intended to ensure that government bodies are not able to use their massive purchasing power to undercut privately-established wage rates in a community. A state's prevailing wage law may be classified as "strong," "average," or "weak" based on contract coverage thresholds, the type of work included or excluded from coverage, and the determination of wage rates— following a methodology outlined by Thieblot (1995).

- **Illinois:** the union membership rate among construction workers (50.1 percent) was the highest in the country from 2011 through 2013 and workers employed on publicly-funded projects were covered by a "strong" state prevailing wage law. On average, there were 130,700 blue-collar construction workers employed in Illinois (2.2 percent of total state employment).
- **Indiana:** the union membership rate among construction workers (36.2 percent) was the 6th-highest in the country from 2011 through 2013 and workers employed on publicly-funded projects were covered by an "average" state prevailing wage law. Indiana's prevailing wage law (Common Construction Wage) was repealed in 2015. On average, there were 81,900 blue-collar construction workers employed in Indiana (2.8 percent of total state employment).
- **Iowa:** the union membership rate among construction workers (30.2 percent) was the 13th-highest in the country from 2011 through 2013 and workers employed on publicly-funded projects were not covered by a state prevailing wage law. On average, there were 35,000 blue-collar construction workers employed in Iowa (2.2 percent of total state employment).
- **United States:** the union membership rate among construction workers was 19.8 percent from 2011 through 2013 and workers employed on publicly-funded projects were covered by a "strong" or "average" prevailing wage law in 25 states. Blue-collar construction workers comprised 2.7 percent of the nation's workforce.

Figure 1: Unionization Rates of Workers in Construction Occupations by State, 2011-2013

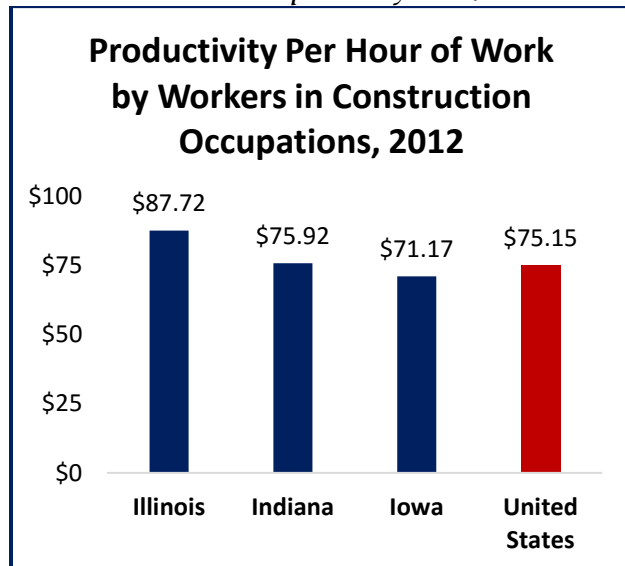


*Source(s): CEPR, 2015.

Construction workers are more productive and better compensated in Illinois than the comparison states, partly as a result of higher unionization and a stronger prevailing wage law. Figures 2 and 3 utilize information from the 2012 *Economic Census of Construction* conducted by the U.S. Census Bureau (Census, 2015). Productivity is measured by “value added” per hour worked by blue-collar construction employees. “Value added” measures worker productivity over one year through business revenues minus the costs for materials, components, supplies, fuels, and subcontract work. Hourly compensation is the annual payroll of blue-collar construction workers plus their share of fringe benefits divided by the total number of construction worker labor hours reported in the *Economic Census of Construction*.

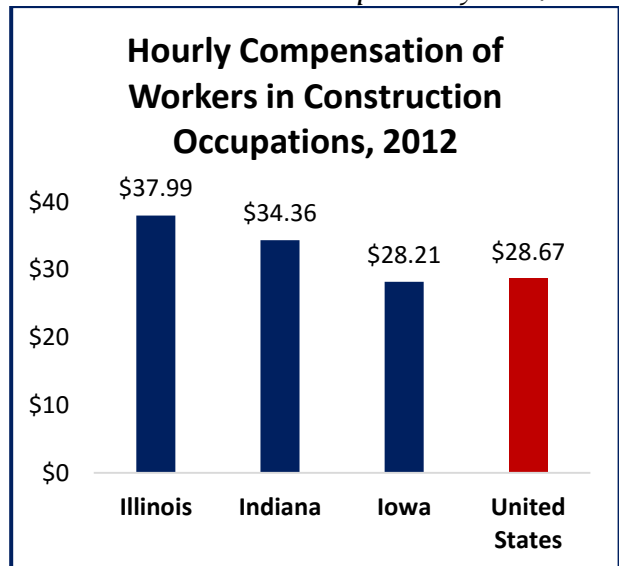
- **Illinois:** blue-collar construction workers added \$87.72 in value per hour worked to the economy in 2012, the 5th-highest productivity in the nation. As a reward for their high productivity, Illinois’ blue-collar construction workers earned \$37.99 per hour in total compensation, the 2nd-highest wage plus benefits average in the country.
- **Indiana:** blue-collar construction workers added \$75.92 in value per hour worked to the economy in 2012, the 16th-highest productivity in the nation. For this level of productivity, Indiana’s blue-collar construction workers earned \$34.36 per hour in total compensation, the 7th-highest wage plus benefits average in the country.
- **Iowa:** blue-collar construction workers added \$71.17 in value per hour worked to the economy in 2012, the 28th-highest productivity in the nation. For this lower productivity, Iowa’s blue-collar construction workers earned just \$28.21 per hour in total compensation, the 24th-highest wage plus benefits average in the country.
- **United States:** blue-collar construction workers added an average of \$75.15 in value per hour worked in 2012, lower than in Illinois and Indiana but higher than in Iowa. Blue-collar construction workers “captured” \$28.67 of this contribution in total hourly compensation, lower than in Illinois and Indiana but higher than in Iowa.

Figure 2: Hourly Productivity of Workers in Construction Occupations by State, 2012



*Source(s): Census, 2015.

Figure 3: Hourly Compensation (Incl. Benefits) of Workers in Construction Occupations by State, 2012

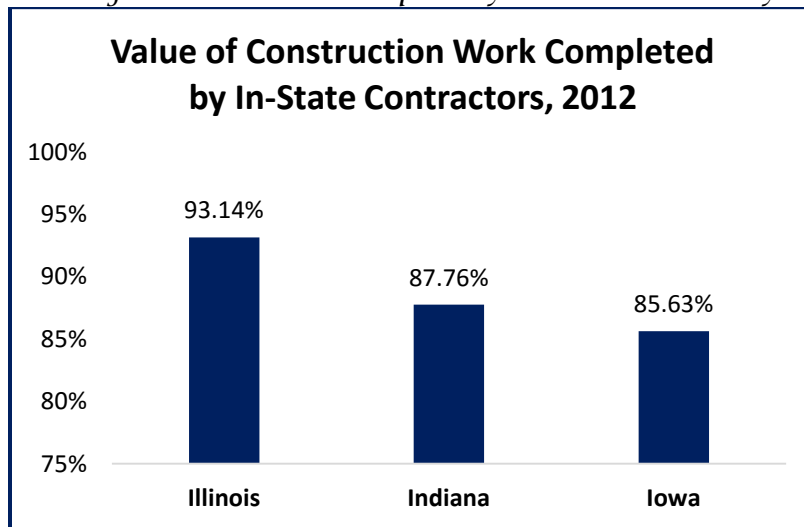


*Source(s): Census, 2015.

Each construction labor market influences the share of construction value in a state that is completed by in-state contractors. Figure 4 also uses information from the 2012 *Economic Census of Construction* to evaluate the percentage of construction work done by in-state businesses.

- **Illinois:** in-state contractors completed 93.1 percent of all construction work. Most of the money expended on construction projects stayed local and remained in the Illinois economy.
- **Indiana:** in-state contractors completed 87.8 percent of all construction work. While most of the money expended on construction projects remained in the Indiana economy, the state's policies were less favorable to local businesses in Indiana than the construction labor market of Illinois.
- **Iowa:** in-state contractors completed 85.6 percent of all construction work. While most of the money expended on construction projects remained in the Iowa economy, the state's policies were less favorable to local businesses in Iowa than the construction labor markets of both Illinois and Indiana.

Figure 4: Value of Construction Work Completed by In-State Contractors by State, 2012



*Source(s): Census, 2015.

Construction Fatalities and Injuries in Illinois, Indiana, and Iowa

Construction is one of the most dangerous occupations in the United States. Across the country, a total of 2,513 construction workers lost their lives at work from 2011 through 2013. Blue-collar construction workers in Illinois, Indiana, and Iowa accounted for 171 of these construction-related fatalities (or 6.8 percent). The safety records of two of these states, however, were better than the national average, while the third state performed worse and has serious room for improvement.

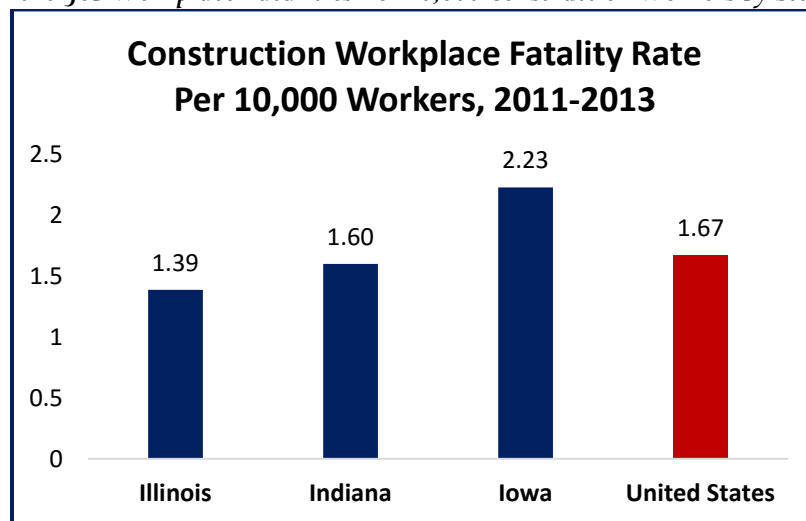
Data on Construction Fatalities from 2011 through 2013

This section investigates *fatal* injuries in construction only. Fatality rates actually provide the most accurate assessment of worker risks. Simply put, on-the-job deaths of workers cannot be concealed, so the data is reliable. On the other hand, workplace injuries and illnesses suffer from an underreporting problem, as discussed in the next section.

The following data provide a general overview of construction-related fatalities in the three analyzed Midwestern states. *NOTE:* Illinois had the largest construction market of the three states, with 130,700 blue-collar construction workers employed on average from 2011 through 2013. Indiana had the second largest construction market, with 81,900 employed blue-collar construction workers. Iowa had the smallest construction market, with 35,000 employed blue-collar construction workers.

Figure 5 depicts construction fatalities relative to each state's construction workforce. The graph illustrates the annual number of fatalities per 10,000 construction workers. Of the three Midwestern states analyzed, the fatality rate was lowest in Illinois, where there were 1.39 deaths per 10,000 workers in construction occupations. By contrast, the comparable fatality rates were 1.60 deaths per 10,000 in Indiana, 2.23 deaths per 10,000 in Iowa, and 1.67 deaths per 10,000 nationally. Thus, the Illinois and Indiana construction labor markets were both safer than the national average while the Iowa construction labor market was much more dangerous.

Figure 5: On-the-Job Workplace Fatalities Per 10,000 Construction Workers by State, 2011-2013



*Source(s): BLS, 2015a; CEPR, 2015.

These fatality rates translate into the resulting statistics for the three Midwestern states.

- **Illinois:** from 2011 through 2013, fatal work injuries in all Illinois industries totaled 499, or an average of 166.3 per year. 79 of those workers (26.3 per year) were employed in construction occupations, representing 15.8 percent of all workplace deaths.
- **Indiana:** from 2011 through 2013, fatal work injuries in all Indiana industries totaled 367, or an average of 122.3 per year. 53 of those workers (17.7 per year) were employed in construction occupations, representing 14.4 percent of all workplace deaths.
- **Iowa:** from 2011 through 2013, fatal work injuries in all Iowa industries totaled 169, or an average of 87.3 per year. 39 of those workers (13.0 per year) were employed in construction occupations, representing 23.1 percent of all workplace deaths.
- **United States:** fatal work injuries in all American industries totaled 13,906, or an average of 4,635.3 per year. 2,513 of those workers (837.7 per year) were employed in construction occupations, representing 18.1 percent of all workplace deaths.

Another way to look at the frequency of work-related fatalities in construction is to evaluate deaths using work hours provided by the 2012 *Economic Census of Construction*. Figure 6 considers the fact that construction workers tend to work longer hours in some states than others. For construction workers, annual labor hours may vary for a number of reasons. The winter season limits the number of hours available to work more in some states than others. Public works— which typically accounts for 20 to 30 percent of total construction (Philips, 2014)— may support more construction work in states that are in better financial positions or where the federal government has prioritized projects. In addition, contractors in states with less skilled, less productive workers may need to extract more hours per employee in order to get jobs done on time. In states where construction worker hourly wages are relatively lower, the blue-collar employees may also face a “labor-leisure” tradeoff, choosing to work more hours in an effort to “catch up” to the annual incomes earned by their counterparts in other states. Whatever the case may be, Figure 6 accounts for these differences.

By the labor hours metric, Illinois once again had the safest construction labor market of the three states analyzed. A construction worker lost his or her life on-the-job every 10.6 million labor hours in Illinois. Note that Figure 6 is based on the total number of hours worked by *all* blue-collar construction workers. That is, the state went 10.6 million work hours put in by all construction employees without suffering a construction worker death. In comparison, construction worker deaths occur more frequently in Indiana, Iowa, and the United States. The equivalent figures were 9.7 million labor hours in Indiana, 7.5 million labor hours in Iowa, and 9.8 million labor hours in the United States. Illinois’ construction workers go the longest without suffering a workplace fatality while Iowa’s see a worker die on-the-job the most often of the three states.

Figure 6: Total Construction Worker Labor Hours without a Construction-Related Fatality, 2011-2013



*Source(s): BLS, 2015a; Census, 2015.

Data on Construction Injuries from 2011 through 2013

This section investigates all *nonfatal injuries and illnesses* in construction. While fatality rates actually provide a more accurate assessment of worker risks as discussed in the previous section, data on workplace injuries and illness is still important. However, a major problem with injury and illness data is that it suffers from underreporting. A 2009 report conducted by the Government Accountability Office found that many employers did not report workplace injuries and illnesses because they did not want to increase workers' compensation costs and also feared that it would have a negative impact on their chances of winning a bid on a project. Fully 53 percent of doctors and other health practitioners said that they experienced pressure from companies to downplay injuries or illnesses. In addition, many workers also did not report on-the-job injuries out of fear that they might be disciplined or even terminated by their employers (GAO, 2009).

With this caveat in mind, the following data provide a general overview of construction-related injuries and illnesses in the three Midwestern states. *NOTE:* Illinois had the largest construction market of the three states, with 130,700 blue-collar construction workers employed on average from 2011 through 2013. Indiana had the second largest construction market, with 81,900 employed blue-collar construction workers. Iowa had the smallest construction market, with 35,000 employed blue-collar construction workers.

- **Illinois:** from 2011 through 2013, there were 8,750 reported nonfatal occupational injury and illness cases requiring days away from work, job transfer, or restriction among Illinois construction workers. This equates to an average of 2,916.7 per year. The weighted injury and illness rate per 10,000 full-time construction workers was 152.4 in Illinois.
- **Indiana:** from 2011 through 2013, there were 3,630 reported nonfatal occupational injury and illness cases requiring days away from work, job transfer, or restriction among Indiana construction workers. This equates to an average of 1,210.0 per year. The weighted injury and illness rate per 10,000 full-time construction workers was 117.4 in Indiana.
- **Iowa:** from 2011 through 2013, there were 3,980 reported nonfatal occupational injury and illness cases requiring days away from work, job transfer, or restriction among Iowa construction workers. This equates to an average of 1,326.7 per year. The weighted injury and illness rate per 10,000 full-time construction workers was 266.2 in Iowa.
- **United States:** from 2011 through 2013, there were 262,320 reported nonfatal occupational injury and illness cases requiring days away from work, job transfer, or restriction among United States construction workers. This equates to an average of 87,440.0 per year. The weighted injury and illness rate per 10,000 full-time construction workers was 182.3 nationally.

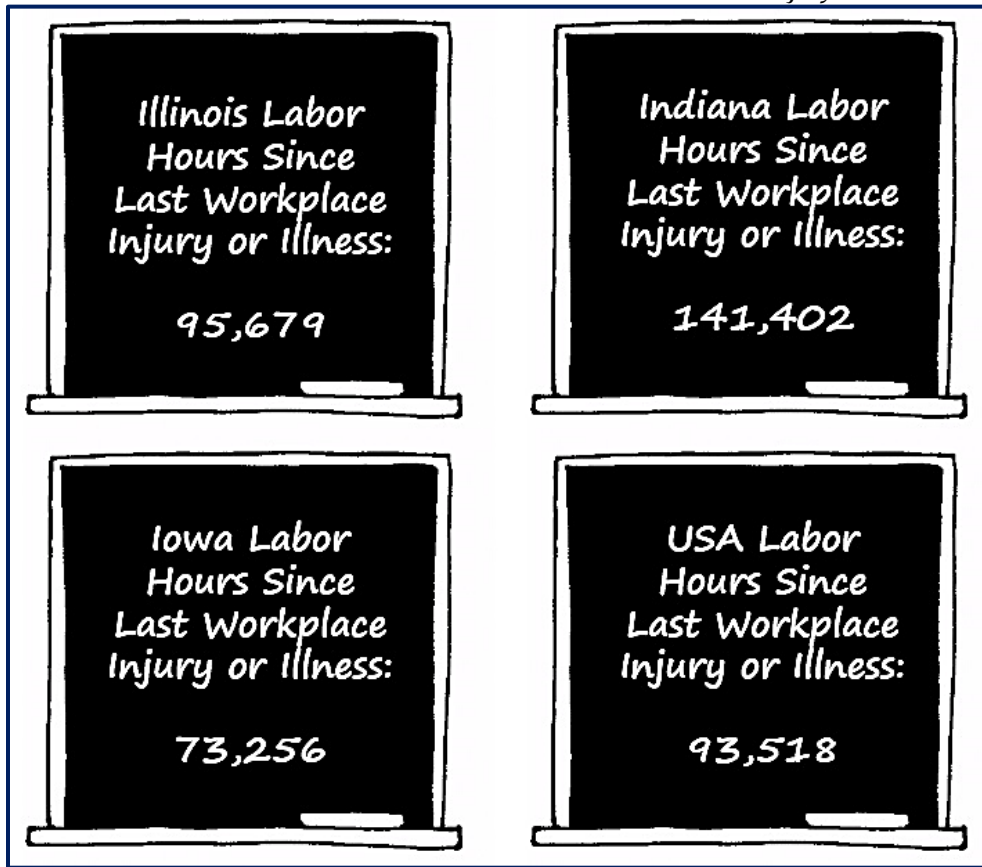
As discussed previously in the workplace fatality statistics, annual labor hours varies from state to state. Figure 7 once again presents data that accounts for incidence rates per total hours worked by *all* blue-collar construction workers. By this metric, Indiana was the safest construction labor market of the three states analyzed. A construction worker reported a workplace injury or illness approximately every 141,000 labor hours in Indiana. By contrast, on-the-job injury or illness frequencies were about 96,000 labor hours in Illinois, approximately 73,000 labor hours in Iowa, and about 94,000 hours in the larger United States. In other words, Indiana construction workers go the longest without reporting a workplace injury or illness while Iowa construction workers see workers get injured on-the-job the most often of the three states.

Summary

Despite only accounting for about 2 to 3 percent of the overall employment in each state, blue-collar construction workers comprised 14 to 23 percent of all workplace fatalities in the three Midwestern states. Combined, an average of 57.0 construction workers suffered a workplace fatality and an average of 5,453.3 construction workers suffered an on-the-job injury or illness every year. This means that at least one construction worker dies and over 100 others get injured at work every week in Illinois, Indiana, or Iowa.

Within the three-state area, however, blue-collar construction workers were generally safer in Illinois and Indiana. The construction fatality rate per 10,000 workers was lowest in Illinois and the number of labor hours without a construction workplace death was longest in Illinois. Meanwhile, the weighted injury and illness rate per 10,000 full-time workers was lowest in Indiana and the number of labor hours without a reported construction injury or illness was longest in Indiana. The Iowa construction labor market, on the other hand, was relatively more dangerous by every objective standard.

Figure 7: Total Construction Worker Labor Hours without a Construction Injury or Illness, 2011-2013



*Source(s): BLS, 2015a; Census, 2015.

The Economic Costs of Construction Injuries and Fatalities

The Occupational Safety and Health Act of 1970 states “that personal injuries and illnesses arising out of work situations impose a substantial burden upon, and are a hindrance to, interstate commerce in terms of lost production, wage loss, medical expenses, and disability compensation payments” (OSHA, 1970). When workers in Illinois, Indiana, and Iowa miss work due to occupational injuries, their employers and the owner of the project being constructed lose due to the drops in productivity. Other businesses such as restaurants and grocery stores also lose due to the fall in worker incomes. In both cases— especially if the project uses public funds— injuries and illnesses also cost taxpayers.

Workplace deaths result in each of these losses and more. As noted by Wrightson (2012), “[w]orkplace deaths are tragedies that devastate families and their surrounding communities.” For families, on-the-job fatalities result in a loss in lifetime earnings, in pain and suffering costs, and in a reduced quality of life.

To assess the economic costs of construction-related injuries and fatalities, estimates from a 2004 study by Waehrer et al. are utilized and adjusted to constant 2015 dollars.

- **Illinois:** adjusted to today’s dollars, Waehrer et al. found that the cost of fatal occupational injuries was \$5.10 million per fatality across Illinois’ private industry occupations. In addition, the cost of nonfatal injuries and illnesses in Illinois was \$46,418 per injury.
- **Indiana:** adjusted to today’s dollars, Waehrer et al. found that the cost of fatal occupational injuries was \$5.82 million per fatality across Indiana’s private industry occupations. In addition, the cost of nonfatal injuries and illnesses in Indiana was \$40,817 per injury.
- **Iowa:** adjusted to today’s dollars, Waehrer et al. found that the cost of fatal occupational injuries was approximately \$5.43 million per fatality across Iowa’s private industry occupations. In addition, the cost of nonfatal injuries and illnesses in Iowa was \$41,460 per injury.

Multiplying these assessments by the average number of workplace fatalities and on-the-job injuries from the previous section yields the following estimates.

- **Illinois:** Illinois’ 26.3 construction worker fatalities annually cost the state \$134.42 million and Illinois’ 2,916.7 construction worker injuries and illnesses per year cost the state \$135.39 million.
- **Indiana:** Indiana’s 17.7 construction worker fatalities annually cost the state \$102.75 million and Indiana’s 1,210.0 construction worker injuries and illnesses per year cost the state \$49.39 million.
- **Iowa:** Iowa’s 13.0 construction worker fatalities annually cost the state \$70.64 million and Iowa’s 1,326.7 construction worker injuries and illnesses per year cost the state \$55.00 million.

Combining the above figures, the total annual cost from construction-related deaths and injuries is approximately **\$269.80 million** for Illinois, **\$152.14 million** for Indiana, and **\$125.65 million** for Iowa.

On the one hand, these estimates likely understate actual costs because many of the factors considered by Waehrer et al. (2004)— especially health care costs— have risen at a faster rate than inflation. On the other hand, the overall decline in workplace injury and fatality rates across the country may continue, which could lead these estimates to be overstatements going forward.

How States Try to Combat the Problem

There are at least four policy approaches that states can and do take to ensure safe working conditions in the construction industry. First, increasing resources to conduct inspections can reduce workplace risks. However, given budget constraints and the political climate of all three states, the allocation of additional resources to worker safety programs may not be likely. Thus, the second, third, and fourth approaches are indirect ways to address the problem without increasing state expenditures. Second, maintaining a prevailing wage law is an effective policy that increases productivity and reduce the number of workplace disabilities, according to economic research. Third, local responsible bidder ordinances have been implemented to ensure that contractors who construct public projects meet acceptable safety standards. Finally, avoiding politically-motivated attacks on construction trades unions has reduced injury and fatality rates in construction for some states.

Approach #1: Increasing Resources to Conduct OSHA Inspections

Figure 8 presents data from the Occupational Safety & Health Administration (OSHA) of the U.S. Department of Labor and the *County Business Patterns* (CBP) survey by the U.S. Department of Commerce. OSHA data on inspections per year are based on the total number of recorded State Plan and/or Federal inspections in each jurisdiction from January 1, 2011 through December 31, 2013 (OSHA, 2015). CBP data on average construction worksites are based on information for 2011 through 2013 (CBP, 2015).

From 2011 through 2013, OSHA inspectors visited over 4,500 workplaces in Illinois, over 1,500 workplaces in Indiana, and more than 1,100 workplaces in Iowa. Construction worksites disproportionately accounted for a large share of these inspections—40.8 percent in Illinois, 63.6 percent in Indiana, and 45.4 percent in Iowa (Figure 8).

Despite accounting for a relatively high share of all OSHA visits, however, only a small fraction of construction worksites are inspected every year. The state with the highest share of construction worksites investigated was Indiana, where only 7.6 percent were visited every year. Only 6.6 percent of construction worksites in Illinois were visited per year from 2011 through 2013. In Iowa, just 6.1 percent of construction worksites were visited annually (Figure 8).

Figure 8: Average OSHA Inspections and Construction Worksites Inspected Per Year, 01/01/11-12/31/13

State (2011- 2013) [A]	Total Inspections Per Year [B]	Construction Inspections Per Year [C]	Average Construction Worksites [D]	Construction Industry Share of OSHA Inspections [C ÷ B]	Construction Worksites Visited Per Year [C ÷ D]
Illinois	4,532.7	1,849.3	28,179.0	40.8%	6.6%
Indiana	1,556.7	990.0	13,079.7	63.6%	7.6%
Iowa	1,144.7	519.7	8,477.3	45.4%	6.1%
USA	101,320.0	45,698.0	656,374.3	45.1%	7.0%

**Source(s): BLS, 2015a; Census, 2015.*

It is no surprise that the state where the highest fraction of construction worksites were inspected (Indiana) was also the state with the lowest occupational injury and illness rate among construction workers. The

state with the lowest share of construction worksites visited (Iowa) had the highest incidence of both on-the-job injuries and illnesses and on-the-job fatalities. More resources to conduct more investigations could save states millions of dollars in added productivity and in reduced medical and workers' comp costs.

Approach #2: Maintaining or Introducing State Prevailing Wage Laws

State prevailing wage laws increase apprenticeship training, which improves worker productivity and reduces injuries and fatalities in construction. Prevailing wage laws moderately increase a construction worker's earnings (Manzo et al., 2015; Kelsay, 2015; Philips, 2014). Higher wages change incentives for both potential workers and their employers. The higher income in construction occupations encourages more potential workers to seek employment in the industry, which increases the available labor supply from which employers can find the best talent. On the other side, the higher wage entices more employers to invest in worker training so that enhanced productivity per worker offsets any increase in labor cost.

The net result is that apprenticeship training is higher in states that have prevailing wage laws. From 1991 through 2011, an estimated 14.4 percent of the construction labor force was an apprentice in states with prevailing wage law compared to just 7.7 percent in states without a prevailing wage law (Dickson Quesada et al., 2013). In addition, after nine states repealed their prevailing wage laws between 1979 and 1988, registered construction apprenticeship training in those states fell by roughly 40 percent— even after controlling for a downward trend in construction training, variations in state unemployment rates, and regional differences in training availability (Philips et al., 1995).

Because prevailing wage laws statistically increase worker training, the higher-skilled workforce is also more productive and safer. Worker productivity on both private and public projects is 14 percent higher in construction for states with prevailing wage laws. In public construction alone, blue-collar construction worker productivity is between 21 percent and 33 percent higher in states that have prevailing wage legislation. Moreover, construction workers in states without prevailing wage laws report 12 percent more disabilities than their counterparts in states with the policy (Philips, 2014). The increase in worker productivity combines with other effects to offset increases in labor costs. Thus, the preponderance of economic research actually finds that prevailing wage laws do not increase total construction costs (Duncan et al., 2015; Duncan, 2011; Mahalia, 2008; Philips, 2001; Prus, 1999).

It is no surprise, therefore, that the state with a “strong” prevailing wage law (Illinois) was also the state with the lowest fatality rate among construction workers. Indiana— which had an “average” prevailing wage law from 2011 through 2013 but has since repealed the legislation— also had a fatality rate lower than the national average. Iowa, the only analyzed state without a prevailing wage law, had the highest incidences of both on-the-job injuries and on-the-job fatalities. Maintaining or reintroducing state prevailing wage laws could reduce construction injury and fatality rates at no additional cost to the taxpayer.

Approach #3: Introducing Local Responsible Bidder Ordinances

A responsible bidder ordinance (also called a “responsible contractor policy”) establishes criteria for all contractors and subcontractors bidding on a publicly-funded project. The requirements often stipulate that a bidder must comply with various state laws, participate in a registered apprenticeship program, and

provide evidence that they have not been debarred from public contracts. Local responsible bidder ordinances can also ensure that contractors who construct public projects meet acceptable safety standards and that “low-road” or unscrupulous employers do not receive public funds. Similar to the research on prevailing wage laws, Waddoups and May (2014) evaluate 319 projects in Ohio— 63 that were covered by a responsible bidder ordinance and 256 that were not— and find that the policies had no statistically significant impact on total construction costs.

Local responsible bidder ordinances have particularly become a solution for jurisdictions that are unwilling or unable to implement a strong state-level prevailing wage law. By ensuring that taxpayer dollars go to the lowest *responsible* bidder who pays a middle-class wage and has a proven track record of safety and investment in worker training, responsible bidder ordinances can help to lower the economic costs associated with construction injury and fatality rates.

Approach #4: Avoiding the Attack on Construction Trades Unions

Economic research finds that trades unions increase apprenticeship training and raise construction worker productivity. Joint labor-management apprenticeship programs play a significant role in the construction industry. In Indiana, for example, 94 percent of annual apprenticeship training spending is provided by union contractors. Only 6 percent of the annual investment in apprentice training comes from nonunion programs (Philips, 2015). In addition, there is a moderate correlation between a state’s private construction industry unionization rate and its share of apprentices in the construction labor force (Manzo & Bruno, 2015a). As union membership has dropped nationally, the number of joint labor-employer apprenticeship programs has also declined (Olinsky & Ayres Steinberg, 2013).

As a result of a larger commitment to worker training, there is a strong positive relationship between unionization and productivity in the construction industry. Across the country, a 1 percentage-point increase in a state’s construction unionization rate tends to boost worker productivity by \$0.81 per hour per worker (Manzo, 2015). The linear relationship indicates that, if Illinois’ construction unions were to suddenly vanish, the state would lose over \$7 billion in economic output. This data aligns with the finding that union productivity in the construction sector is 17 percent to 22 percent higher than nonunion output (Allen, 1984).

It is no surprise, therefore, that the state with the highest union density among construction workers (Illinois) was also the state with the lowest fatality rate among construction workers. The second-highest by union membership (Indiana) had the second-lowest fatality rate. The state with the lowest unionization rate (Iowa) had the highest incidences of both on-the-job injuries and on-the-job fatalities.

Politically-motivated attacks to weaken labor unions are occurring across both the region and the country. In 2012, Indiana joined Iowa in becoming a “right-to-work” state, despite the fact that the policy lowers worker wages and has no proven record of stimulating the economy (Collins, 2014). Current Illinois Governor Bruce Rauner has also supported the enactment of local right-to-work zones, which the Illinois Economic Policy Institute and University of Illinois School of Labor and Employment Relations find would have negative consequences for the Illinois economy (Manzo & Bruno, 2015b). In addition, many of the organizations across America that are warning of a skilled labor shortage are the same who are advocating “to weaken or destroy the building trades unions that actually train the greatest number of skilled

tradesmen” (Eisenbrey, 2014). Repealing state “right-to-work” laws or avoiding local “right-to-work” zones would improve private construction industry unionization rates in states, which in turn could improve apprenticeship training and enhance workplace safety.

Conclusion

This Economic Commentary has estimated the economic burden of occupational injuries and fatalities in three Midwestern states from 2011 through 2013.

- **Illinois:** there are 1.39 on-the-job workplace fatalities per 10,000 construction workers. Illinois goes 10.6 million total labor hours without a construction worker fatality. The rate of nonfatal injuries and illness is 152.4 per 10,000 full-time construction workers in Illinois. The total estimated economic cost from construction-related deaths and injuries is approximately *\$270 million per year* in Illinois.
- **Indiana:** there are 1.67 on-the-job workplace fatalities per 10,000 construction workers. Indiana goes 9.6 million total labor hours without a construction worker fatality. The rate of nonfatal injuries and illness is 117.4 per 10,000 full-time construction workers in Indiana. The total estimated economic cost from construction-related deaths and injuries is over *\$150 million per year* in Indiana.
- **Iowa:** there are 2.23 on-the-job workplace fatalities per 10,000 construction workers. Iowa only goes 7.5 million total labor hours without a construction worker fatality. The rate of nonfatal injuries and illness is 266.2 per 10,000 full-time construction workers in Iowa. The total estimated economic cost from construction-related deaths and injuries is about *\$125 million per year* in Iowa.

While construction remains one of the most dangerous occupations in the economy, steps can be taken to reduce the costs of construction-related fatalities and injuries. A “high road” approach to construction improves worker training, boosts worker productivity, and minimizes injury risks at minimal costs to taxpayers that are offset by these benefits. Four “high road” policy solutions that states have taken to ensure safe working conditions in construction are:

1. Increasing resources to conduct OSHA inspections,
2. Maintaining or introducing state prevailing wage laws,
3. Introducing local responsible bidder ordinances, and
4. Avoiding the attack on construction trades unions.

Illinois, Indiana, Iowa, and states across the country should enact legislation that creates a “high road” construction industry in their area.

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