The High Cost of Construction Injuries and Fatalities

A Case Study of Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin

February 9, 2017

By:

Jill Manzo

Frank Manzo IV

Midwest Economic Policy Institute
Executive Summary


- **Minnesota**: had the highest construction worker union membership rate among the five states analyzed at 39.6 percent, a “strong” prevailing wage law, a very high productivity per worker, and a high share of construction work completed by local contractors. In addition, 5.2 percent of Minnesota’s construction worksites are visited by (State Plan) OSHA inspectors per year.

- **Wisconsin**: construction worker unionization was 29.5 percent and the state has a “weak” prevailing wage law for only state projects, a productivity per worker that was slightly higher than the national average, and the highest share of construction work completed by local contractors among the five states compared. 5.1 percent of Wisconsin’s construction worksites are visited by (Federal) OSHA inspectors per year.

- **Iowa**: construction worker unionization was 25.1 percent, but the state did not have a prevailing wage law, productivity per worker was below the national average, and Iowa had the second-lowest share of construction work completed by local contractors of the five states. In addition, 5.7 percent of Iowa’s construction worksites are visited by (State Plan) OSHA inspectors per year.

- **North Dakota**: construction worker unionization was 10 percent, but the state did not have a prevailing wage law, productivity per worker was slightly above the national average, and North Dakota had the third-highest share of construction work completed by local contractors of the five states. Just 4.0 percent of North Dakota’s construction worksites are visited by (Federal) OSHA inspectors per year.

- **South Dakota**: construction worker unionization was 6.5 percent, but the state did not have a prevailing wage law, productivity per worker was below the national average, and South Dakota had the third-highest share of construction work completed by local contractors of the five states. Just 1.7 percent of South Dakota’s construction worksites are visited by (Federal) OSHA inspectors per year.

As a result, construction-related fatalities and injuries were lower in both Minnesota and Wisconsin than in Iowa, North Dakota, and South Dakota.

- **Minnesota**: there were 1.09 on-the-job workplace fatalities per 10,000 construction workers. The rate of nonfatal injuries and illness was 183.6 per 10,000 full-time construction workers in Minnesota. The total estimated economic cost from construction-related deaths is approximately $50 million per year in Minnesota.
• **Wisconsin**: there were 1.38 on-the-job workplace fatalities per 10,000 construction workers. The rate of nonfatal injuries and illness was 211.1 per 10,000 full-time construction workers in Wisconsin. The total estimated economic cost from construction-related deaths is over $68 million per year in Wisconsin.

• **Iowa**: there were 2.17 on-the-job workplace fatalities per 10,000 construction workers. The rate of nonfatal injuries and illness was 203.3 per 10,000 full-time construction workers in Iowa. The total estimated economic cost from construction-related deaths is about $73 million per year in Iowa.

• **North Dakota**: there were 4.21 on-the-job workplace fatalities per 10,000 construction workers. Data was not available for North Dakota’s injuries and illness rates among construction workers. The total estimated economic cost from construction-related deaths is over $84 million per year in North Dakota.

• **South Dakota**: there were 2.06 on-the-job workplace fatalities per 10,000 construction workers. Data was not available for South Dakota’s injuries and illness rates among construction workers. The total estimated economic cost from construction-related deaths is nearly $21 million per year in South Dakota.

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 or introducing 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 costs to taxpayers. Minnesota, Wisconsin, Iowa, North Dakota, South Dakota, and states around the country should enact legislation that creates a “high road” construction industry in their area.
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 (8.2 percent), workers being struck by an object (8.1 percent), and “caught-in/between” hazards such as cave-ins during excavations (4.3 percent). These causes have been called construction’s “Fatal Four” because they are responsible for more than half of all construction worker deaths (OSHA, 2017). 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 Midwest Economic Policy Institute (MEPI) Economic Commentary highlights the economic burden of occupational fatalities in the construction labor markets of Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota. The report begins with a review of a related policy paper (Wrightson, 2012) and the data utilized. Then, the construction labor markets of the five Midwestern states are compared and contrasted before data on construction injuries and fatalities are presented. Estimates on the economic costs of construction-related 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 five Midwestern states using recent data (Wrightson, 2012). The five selected Midwestern states—Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota—were chosen to represent interconnected economies with five distinct construction labor market frameworks from 2011 through 2015.

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. Cassady, and Dr. Miller (Waehrer et al., 2004);
- The 2012 *Economic Census of Construction* by the U.S. Census Bureau (Census, 2015);
- 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, 2014 (OSHA, 2017); and

The findings adjust Waehrer et al. (2004) evaluations on the costs of workplace fatalities in each state to current dollars using the Consumer Price Index (CPI-U). Cost estimates are then multiplied by recent data in Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota 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. The inflation adjustment from 1993 to 2016 is 1.6703. That is, $100 in 1993 had the same buying power as $167.03 today (BLS, 2017b).

---

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 Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota

Though interconnected, construction workers experience distinct labor market frameworks in Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota. Data from the Current Population Survey conducted by the U.S. Census Bureau for 2011, 2012, 2013, 2014, and 2015 in Figure 1 (CEPR, 2016) 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 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. Ultimately, a state's prevailing wage is a minimum wage for construction workers. 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).

- **Minnesota**: The union membership rate among construction workers was 39.6 percent in Minnesota in 2015. In 2015, there were approximately 96,000 blue collar construction and extraction workers employed in Minnesota. Workers employed on publicly-funded projects were covered by a “strong” state prevailing wage law.

- **Wisconsin**: The union membership rate among construction workers was 29.5 percent in Wisconsin in 2015. In 2015, approximately 96,000 blue collar construction and extraction workers were employed in Wisconsin. Workers employed on publicly-funded projects were covered by a “strong” state prevailing wage law, although Wisconsin partially repealed its prevailing wage law in 2015. As of January 2017, workers on publicly-funded projects are now covered by a “weak” state prevailing wage law.

- **Iowa**: The union membership rate among construction workers was 25.1 percent in Iowa in 2015. In 2015, approximately 67,000 blue collar construction and extraction workers were employed in Iowa. Iowa does not have a state prevailing wage law for construction workers on publicly-funded projects.

- **North Dakota**: The union membership rate among construction workers was 10 percent in North Dakota in 2015. In 2015, there were approximately 47,000 blue collar construction and extraction workers employed in North Dakota. North Dakota does not have state prevailing wage law.

- **South Dakota**: The union membership rate among construction workers was 6.5 percent in South Dakota in 2015. In 2015, there were approximately 22,000 construction and extraction workers employed in South Dakota. South Dakota does not have a state prevailing wage law.

- **United States**: The union membership rate among construction workers was 17.6 percent from 2011 through 2015 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 3.9 percent of the nation’s workforce from 2011 through 2015.
Construction workers are more productive and better compensated in Minnesota 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 subcontracted work. Hourly compensation is the annual payroll of blue-collar construction workers divided by the total number of construction worker labor hours reported in the Economic Census of Construction.

- **Minnesota**: Blue-collar construction workers added $86.14 in value per hour worked to the economy in 2012, the 7th highest productivity in the nation. As a reward for their high productivity, Minnesota’s blue-collar construction workers earned $36.90 per hour in wage compensation, the 10th-highest wage average in the country.

- **Wisconsin**: Blue-collar construction workers added $75.92 in value per hour worked to the economy in 2012, the 13th-highest productivity in the nation. For this level of productivity, Wisconsin’s blue-collar construction workers earned $35.51 per hour in wage compensation, the 16th-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 27th-highest productivity in the nation. For this lower productivity, Iowa’s blue-collar construction workers earned just $30.24 per hour in wage compensation, the 29th-highest wage average in the country.

- **North Dakota**: Blue-collar construction workers added $77.87 in value per hour worked to the economy in 2012, the 14th-highest productivity in the nation. For this lower productivity, North Dakota’s blue-collar construction workers earned just $31.48 per hour in wage compensation, the 25th-highest wage average in the country.
• **South Dakota**: Blue-collar construction workers added $60.24 in value per hour worked to the economy in 2012, the 42nd-highest productivity in the nation. For this lower productivity, South Dakota’s blue-collar construction workers earned just $25.87 per hour in total compensation, the 44th-highest wage average in the country.

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

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 completed by in-state businesses.

• **Minnesota**: In-state contractors completed 95.2 percent of all construction work. Most of the money expended on construction projects stayed local and remained in the Minnesotan economy.

• **Wisconsin**: In-state contractors completed 95.9 percent of all construction work. The state’s policies were slightly more favorable to local businesses in Wisconsin than the construction
labor market in Minnesota. A large portion of money expended on construction projects remained in the Wisconsin economy.

- **Iowa**: In-state contractors completed 85.2 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 Minnesota and Wisconsin.

- **North Dakota**: In-state contractors completed just 75.7 percent of all construction work. North Dakota has the lowest market share for in-state contractors of the five states sampled, with Minnesota contractors competing over 17.6 percent of construction work in North Dakota. The high presence of Minnesota contractors and Minnesota workers helped raise average wages and productivity in North Dakota.

- **South Dakota**: In-state contractors completed 85.6 percent of all construction work. While most of the money expended on construction projects remained in the South Dakota economy, the state’s policies were less favorable to local businesses in South Dakota than the construction labor markets of Iowa, Minnesota, and Wisconsin.

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

<table>
<thead>
<tr>
<th>State</th>
<th>Value of Work Competed by In-State Contractors, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minnesota</td>
<td>95.18%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>95.90%</td>
</tr>
<tr>
<td>Iowa</td>
<td>85.21%</td>
</tr>
<tr>
<td>North Dakota</td>
<td>75.73%</td>
</tr>
<tr>
<td>South Dakota</td>
<td>85.57%</td>
</tr>
</tbody>
</table>

*Source(s): Census, 2017.*
Construction Fatalities and Injuries in Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota

Construction is one of the most dangerous occupations in the United States. Across the country, a total of 4,339 construction workers lost their lives at work from 2011 through 2015. Blue-collar construction workers in Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin accounted for 281 of these construction-related fatalities (or 6.5 percent). The safety records of two of these states, however, were better than the national average, while three of these states performed worse and have serious room for improvement.

Data on Construction Fatalities from 2011 through 2015

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 five analyzed Midwestern states. Note that Wisconsin and Minnesota had the largest construction markets of the five states, with 88,200 and 86,400 blue-collar construction workers employed on average from 2011 through 2015, respectively. Iowa had the third-largest construction market, with 60,800 employed blue-collar construction workers. North Dakota had the fourth-largest construction market, with 40,900 blue-collar construction workers. South Dakota had the smallest construction market, with 20,400 employed blue-collar construction workers.

Figure 5: On-the-Job Fatalities Per 10,000 Construction Workers by State, 2011-2015

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 five Midwestern states analyzed, the fatality rate was lowest in Minnesota, where there were 1.09 deaths per 10,000 workers in construction occupations. By contrast, the comparable fatality rates were 1.38 deaths per 10,000 in Wisconsin, 2.17 deaths per 10,000 in Iowa, 2.06 deaths per 10,000 in South Dakota, and 4.21 deaths per 10,000 in North Dakota. Nationally, there were 1.68 deaths per 10,000 from 2011
through 2015. Thus, the Minnesota and Wisconsin construction labor markets were both safer than the national average while the Iowa, South Dakota, and North Dakota construction labor markets were much more dangerous.

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

- **Minnesota**: From 2011 through 2015, fatal work injuries in all Minnesota industries totaled 335, or an average of 67.0 per year. 47 of those workers (9.4 per year) were employed in construction occupations, representing 14.0 percent of all workplace deaths.

- **Wisconsin**: From 2011 through 2015, fatal work injuries in all Wisconsin industries totaled 503, or an average of 100.6 per year. 61 of those workers (12.2 per year) were employed in construction occupations, representing 12.1 percent of all workplace deaths.

- **Iowa**: From 2011 through 2015, fatal work injuries in all Iowa industries totaled 413, or an average of 82.6 per year. 66 of those workers (13.2 per year) were employed in construction occupations, representing 16.0 percent of all workplace deaths.

- **North Dakota**: From 2011 through 2015, fatal work injuries in all of North Dakota industries totaled 250, or an average of 50.0 per year. 86 of those workers (17.2 per year) were employed in construction occupations, representing 34.4 percent of all workplace deaths.

- **South Dakota**: From 2011 through 2015, fatal work injuries in all of South Dakota industries totaled 132, or an average of 26.4 per year. 21 of those (4.2 per year) were employed in construction occupations, representing 15.9 percent of all workplace deaths.

- **United States**: Fatal work injuries in all American industries totaled 23,563, or an average of 4,712.6 per year. 4,339 of those workers (867.8 per year) were employed in construction occupations, representing 18.4 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, Minnesota once again had the safest construction labor market of the five states analyzed. A construction worker lost his or her life on-the-job every 17.5 million labor hours in Minnesota. Note that Figure 6 is based on the total number of hours worked by all blue-collar
construction workers. That is, the state went 17.5 million work hours put in by all construction employees without suffering a construction worker death. In comparison, construction worker deaths occur much more frequently in Wisconsin, Iowa, North Dakota, South Dakota, and the United States. The equivalent figures were 11.7 million labor hours in Wisconsin, 7.4 million labor hours in Iowa, 2.3 million labor hours in North Dakota, 7.0 million labor hours in South Dakota, and 9.4 million labor hours in the United States. Minnesota’s construction workers go the longest without suffering a workplace fatality while North Dakota’s see a worker die on-the-job the most often of the five states.

Figure 6: Construction Worker Labor Hours without a Construction-Related Fatality, 2011-2015

Data on Construction Injuries from 2011 through 2015

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).
In addition, the Bureau of Labor Statistics only has data available on nonfatal workplace injuries in the construction industry for Minnesota, Wisconsin, and Iowa from 2011 through 2015. Data was not available for North Dakota or South Dakota. Nevertheless, with this underreporting caveat in mind, the following data provide a general overview of construction-related injuries and illnesses in three of the five Midwestern states analyzed in this report.

Note again that Wisconsin had the largest construction market of the five states, with 88,200 blue-collar construction workers employed on average from 2011 through 2015. Minnesota had the second-largest construction market, with 86,400 employed blue-collar construction workers. Iowa had the third-largest construction market, with 60,800 employed blue-collar construction workers.

- **Minnesota**: From 2011 through 2015, there were 7,860 reported nonfatal occupational injury and illness cases requiring days away from work, job transfer, or restriction among Minnesota construction workers. This equates to an average of 1,572 per year. The weighted injury and illness rate per 10,000 construction workers was 183.6 in Minnesota.

- **Wisconsin**: From 2011 through 2015, there were 9,280 reported nonfatal occupational injury and illness cases requiring days away from work, job transfer, or restriction among Wisconsin construction workers. This equates to an average of 1,856 per year. The weighted injury and illness rate per 10,000 construction workers was 211.1 in Wisconsin.

- **Iowa**: From 2011 through 2015, there were 6,150 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 1,230 per year. The weighted injury and illness rate per 10,000 construction workers was 203.3 in Iowa.

- **United States**: From 2011 through 2015, there were 436,440 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 87,288 per year. The weighted injury and illness rate per 10,000 construction workers was 169.5 nationally.

As discussed previously in the workplace fatality statistics, annual labor hours vary 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, Minnesota was the safest construction labor market of the three states with available data. A construction worker reported a workplace injury or illness approximately every 105,000 labor hours in Minnesota. By contrast, on-the-job injuries or illnesses occurred once every 79,000 labor hours in Iowa, once every 77,000 labor hours in Wisconsin, and once every 93,000 hours in the United States. In other words, Minnesota construction workers go the longest without reporting a workplace injury or illness while Wisconsin construction workers see workers get injured on-the-job the most often of the three states with available data.
Summary

Combined, an average of 56.2 construction workers suffered a workplace fatality every year in the five Midwestern states. This means that at least one construction worker dies every week in Minnesota, Wisconsin, Iowa, North Dakota, or South Dakota. Similarly, an average of 4,658 construction workers suffered an on-the-job injury or illness every year in Minnesota, Wisconsin, and Iowa. This means that approximately 90 other construction workers get injured at work every week in the three states with available data.

Within the five-state area, blue-collar construction workers were generally safer in Minnesota and Wisconsin. Both the construction fatality rate per 10,000 workers and the number of labor hours without a construction workplace death were best in Minnesota. Wisconsin has the second-least amount of fatalities per 10,000 workers, while Iowa has the second-least amount of workplace injuries or illnesses per 10,000 workers. South Dakota and North Dakota had the highest fatality rates out of the five states, with North Dakota experiencing a particularly high incidence of deaths at construction worksites.
The Economic Costs of Construction 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 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 fatalities, estimates from Waehrer et al. (2004) are utilized and adjusted to constant 2016 dollars.

- **Minnesota**: Adjusted to today’s dollars, Waehrer et al. found that the cost of fatal occupational injuries was $5.29 million per fatality across Minnesota’s private industry occupations.

- **Wisconsin**: Adjusted to today's dollars, Waehrer et al. found that the cost of fatal occupational injuries was $5.58 million per fatality across Wisconsin’s private industry occupations.

- **Iowa**: Adjusted to today’s dollars, Waehrer et al. found that the cost of fatal occupational injuries was $5.53 million per fatality across Iowa’s private industry occupations.

- **North Dakota**: Adjusted to today's dollars, Waehrer et al. found that the cost of fatal occupational injuries was $4.90 million per fatality across North Dakota's private industry occupations.

- **South Dakota**: Adjusted to today’s dollars, Waehrer et al. found that the cost of fatal occupational injuries was $4.90 million per fatality across South Dakota’s private industry occupations.

Multiplying these assessments by the average number of workplace fatalities from the previous section yields the following estimates.

- **Minnesota**: Minnesota’s 9.4 construction worker fatalities annually cost the state $49.7 million.

- **Wisconsin**: Wisconsin’s 12.2 construction worker fatalities annually cost the state $68.1 million.

- **Iowa**: Iowa’s 13.2 construction worker fatalities annually cost the state $73.0 million.
• **North Dakota**: North Dakota’s 17.2 construction worker fatalities annually cost the state $84.3 million.

• **South Dakota**: South Dakota’s 4.2 construction worker fatalities annually cost the state $20.6 million.

Note that these estimates only include the cost of construction fatalities and do not include estimates on the cost of nonfatal injuries, because nonfatal injury data are unavailable for North Dakota and South Dakota. Additionally, 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.
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 current political climate, 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. CBP data on average construction worksites are based on information for 2011 through 2014, the latest year for which data are available (CBP, 2017). Accordingly, OSHA data on inspections per year are based on the total number of recorded State Plan and/or Federal inspections in each jurisdiction over the four-year period from January 1, 2011 through December 31, 2014 (OSHA, 2017b).

From 2011 through 2014, OSHA inspectors annually visited over 2,700 workplaces in Minnesota, over 1,700 workplaces in Wisconsin, nearly 1,110 workplaces in Iowa, over 200 workplaces in North Dakota, and about 100 workplaces in South Dakota. Construction worksites disproportionately accounted for a large share of these inspections—30.6 percent in Minnesota, 39.8 percent in Wisconsin, 45.5 percent in Iowa, 49.4 percent in North Dakota, and 50.7 percent in South Dakota (Figure 8).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Minnesota</td>
<td>2,736.8</td>
<td>836.5</td>
<td>16,026.0</td>
<td>30.6%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>1,745.3</td>
<td>694.5</td>
<td>13,523.0</td>
<td>39.8%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Iowa</td>
<td>1,067.8</td>
<td>485.5</td>
<td>8,473.3</td>
<td>45.5%</td>
<td>5.7%</td>
</tr>
<tr>
<td>North Dakota</td>
<td>239.0</td>
<td>118.0</td>
<td>2,929.3</td>
<td>49.4%</td>
<td>4.0%</td>
</tr>
<tr>
<td>South Dakota</td>
<td>107.0</td>
<td>54.3</td>
<td>3,188.8</td>
<td>50.7%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Source(s): OSHA, 2017b; Census, 2015.

Despite accounting for a relatively high share of all OSHA visits, however, only a small fraction of construction worksites are inspected every year. The states with the highest shares of construction worksites investigated were those with State Plans: Iowa and Minnesota (OSHA, 2017c). In Iowa, an estimated 5.7 percent of construction worksites were visited per year; in Minnesota, an estimated 5.2 percent were visited every year. By contrast, Wisconsin, North Dakota, and South Dakota do not have State Plans and are covered by the federal government. The share of worksites visited annually...
was 5.1 percent in Wisconsin, 4.0 percent in North Dakota, and just 1.7 percent in South Dakota (Figure 8).

It is no surprise that the states where over 5 percent of construction worksites were inspected were also states with the lowest workplace fatality rates among construction workers. Meanwhile, North and South Dakota had lower shares of construction worksites visited and both had high on-the-job fatality rates. 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 (Minnesota) was also the state with the lowest fatality rate among construction workers. Wisconsin– which had a “strong” prevailing wage law but has since weakened the legislation– also had a fatality rate lower than the national average. Iowa, North Dakota, and South Dakota are states without a prevailing wage law, and had the highest incidences of on-the-job injuries and fatalities compared to Minnesota and Wisconsin. 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”) is a policy that sets minimal requirements for all contractors bidding on publicly-funded projects in a given political jurisdiction. Typically, these requirements include proof of participation in an apprenticeship training program, proof of certificates of insurance, evidence that a contractor has not been debarred from public contracts, and compliance with all local, state, and federal laws. A responsible bidder ordinance is a qualifications-based approach to contracting for public entities. The policies are a kind of “insurance policy” for taxpayers. The local ordinances establish clear, objective standards that contractors must meet in order to win bids and construct projects funded using taxpayer dollars.

The purpose of a responsible bidder ordinance is to ensure that local governments hire only professional, competent contractors that provide the highest-quality work to complete taxpayer-funded projects efficiently, safely, on time, and on budget. Local responsible bidder ordinances can also discourage “low-road” or unscrupulous employers from receiving 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, abides by local quality standards, 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 injuries and fatalities.

**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 Wisconsin, for example, 95 percent of annual apprenticeship training spending is provided by union contractors. Only 5 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, 2015). 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). 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 (Minnesota) is also the state with the lowest fatality rate among construction workers. The second-highest by union membership (Wisconsin) has the second-lowest fatality rate. Meanwhile, the states with the lowest unionization rates (North Dakota and South Dakota) had the highest incidences of on-the-job fatalities.
Politically-motivated attacks to weaken labor unions are occurring across both the region and the country. Despite the fact that “right-to-work” laws lower worker wages and has no proven record of stimulating the economy, Iowa, North Dakota, and South Dakota remain “right-to-work” states and Wisconsin recently passed “right-to-work” legislation (Collins, 2014). 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 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 five Midwestern states from 2011 through 2015.

- **Minnesota**: There are 1.09 on-the-job workplace fatalities per 10,000 construction workers. Minnesota goes 17.5 million total labor hours without a construction worker fatality. The rate of nonfatal injuries and illness is 183.6 per 10,000 full-time construction workers in Minnesota. The total estimated economic cost from construction-related deaths is approximately $50 million per year in Minnesota.

- **Wisconsin**: There are 1.38 on-the-job workplace fatalities per 10,000 construction workers. Wisconsin goes 11.7 million total labor hours without a construction worker fatality. The rate of nonfatal injuries and illness is 211.1 per 10,000 full-time construction workers in Wisconsin. The total estimated economic cost from construction-related deaths is over $68 million per year in Wisconsin.

- **Iowa**: There are 2.17 on-the-job workplace fatalities per 10,000 construction workers. Iowa goes 7.4 million total labor hours without a construction worker fatality. The rate of nonfatal injuries and illness is 203.3 per 10,000 full-time construction workers in Iowa. The total estimated economic cost from construction-related deaths is about $73 million per year in Iowa.

- **North Dakota**: There are 4.21 on-the-job workplace fatalities per 10,000 construction workers. North Dakota only goes 2.3 million total labor hours without a construction worker fatality. The total estimated economic cost from construction-related deaths is over $84 million per year in North Dakota.

- **South Dakota**: There are 2.06 on-the-job workplace fatalities per 10,000 construction workers. South Dakota only goes 7.0 million total labor hours without a construction worker fatality. The total estimated economic cost from construction-related deaths is nearly $21 million per year in South Dakota.

While construction remains one of the most dangerous occupations in the country, 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.

Iowa, Minnesota, North Dakota, South Dakota, Wisconsin, and states across the country should enact legislation that creates a “high road” construction industry in their area.
Sources


