

COMMON SENSE CONSTRUCTION:

THE ECONOMIC IMPACTS OF INDIANA'S COMMON CONSTRUCTION WAGE

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Frank Manzo IV, MPP
Midwest Economic Policy Institute

Robert Bruno, PhD
University of Illinois at Urbana-Champaign

Scott Littlehale
Smart Cities Prevail



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About the Authors

Frank Manzo IV, MPP is the Policy Director of the Midwest Economic Policy Institute. His research focuses on labor market policies, community and economic development, infrastructure investment, and public finance. He received his Master of Public Policy from The University of Chicago Harris School of Public Policy and his Bachelor of Arts in Economics and Political Science from the University of Illinois at Urbana-Champaign. He can be contacted at fmanzo@illinoisepi.org.



MIDWEST ECONOMIC POLICY INSTITUTE
ILLINOIS ECONOMIC POLICY INSTITUTE
La Grange, Illinois
www.illinoisepi.org

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 School's Labor Education Program. His research focuses broadly on working-class and union studies issues. He received his Doctor of Philosophy in Political Theory from New York University and his Master of Arts in Political Science from Bowling Green State University. He can be contacted at bbruno@illinois.edu.



UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
SCHOOL OF LABOR AND EMPLOYMENT RELATIONS
Chicago, Illinois
www.illinoislabored.org

Scott Littlehale is a Senior Research Analyst at Smart Cities Prevail. He specializes in public policy research, construction industry market research, labor standards setting and enforcement, social and environmental impacts of development, and human development. He completed graduate studies work at the University of North Carolina at Chapel Hill in Political Economy and received his Bachelor of Arts in Political Science from Stanford University. He can be contacted at slittlehale@smartcitiesprevail.org.



SMART CITIES PREVAIL
Sacramento, California
www.smartcitiesprevail.org

EXECUTIVE SUMMARY

Indiana's Common Construction Wage (CCW) promotes positive labor market outcomes for both construction workers and contractors. Findings from this Research Report have resulted in ten key takeaways:

1. **The Common Construction Wage keeps Hoosier jobs local.** In Indiana, 90.5 percent of all construction work was completed by in-state contractors. This compares favorably to nearby Iowa, which does not have a prevailing wage law, where the in-state share is just 88.1 percent. Indiana's in-state percentage is also higher than the 89.2 percent share for all states without a prevailing wage law. CCW repeal would hurt local businesses in Indiana.
2. **The Common Construction Wage does not increase total construction costs for public projects.** A thorough review of economic research finds no evidence that local, state, or federal prevailing wage laws increase construction costs. CCW repeal would not save money for the taxpayer.
3. **The Common Construction Wage promotes an upwardly-mobile, high-road economy for working families.** By paying living wages, CCW creates a pathway into the middle class for blue-collar workers where they can support a family and achieve the American Dream. CCW repeal would put thousands of construction workers onto government assistance programs.
4. **The Common Construction Wage supports almost 2,000 non-construction jobs and nearly \$250 million in total worker income throughout the state.** Industries that are indirectly affected by the policy include retail trade, health care, professional services, food and drinking services, and manufacturing. CCW repeal would come at the expense of job losses in these industries.
5. **The Common Construction Wage boosts the Indiana economy by about \$700 million.** The policy increases construction worker wages and, as a result, lifts consumer demand in the economy. CCW repeal would shrink the Indiana economy.
6. **The Common Construction Wage increases tax revenues for all levels of government.** Due to higher worker incomes and increased spending, the law supports \$21 million in total state and local tax revenues in Indiana. The policy also supports \$66 million in federal tax revenues. CCW repeal would fiscally restrain public sector budgets and decrease their ability to invest in infrastructure.
7. **The Common Construction Wage fosters safer workplaces for Indiana construction workers.** Injury rates are lower in states with a prevailing wage law than in states without such a law. In Indiana, CCW helped to prevent 5 worker deaths from 2008 to 2010. CCW repeal would result in more workers' compensation and temporary disabilities claims, which will cost the taxpayer.
8. **The Common Construction Wage increases the benefits package paid to workers by around 20 percent.** CCW repeal would generate unhealthy construction workers, thus reducing overall productivity.
9. **The Common Construction Wage produces a highly-skilled, highly-productive workforce.** There are nearly twice as many construction apprentices in states with a prevailing wage law as there are in states without a law. CCW repeal would lead to a poorly trained, low-skill workforce that would reduce the quality of Indiana's infrastructure.
10. **The Common Construction Wage does not favor union contractors over nonunion contractors.** After Indiana raised its threshold for CCW coverage, union contractors in fourteen northern counties were just as likely to be awarded a bid as the year before. CCW repeal would hurt *both* union and nonunion contractors in Indiana.

Ultimately, the Common Construction Wage for publicly-assisted construction projects provides substantial economic benefits for workers, contractors, and the overall Indiana economy. The Common Construction Wage supports a dynamic, high-road economy that promotes worker productivity and improves public safety.

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INTRODUCTION

Indiana's Common Construction Wage (CCW) is a "prevailing wage law." Prevailing wage laws (PWLs) establish local standards in labor markets such that the wage rates paid on public construction projects ensure that economic development is broadly shared. PWLs allow workers to support a family in the community where the project is built. Because states and localities typically have statutes which require them to accept the lowest bid on a project letting, contractors must structure their bids to minimize costs and meet minimum engineering and quality standards. Unfortunately, unscrupulous contractors have incentives to cut corners and game the system, with adverse impacts on project quality. The result is often longer-term issues which translate into increased maintenance and reconstruction costs.

Since public construction accounts for about one-fourth of the construction market nationwide, the low-bid model used by public bodies puts considerable downward pressure on wages, benefits, and working conditions. Wages are also pushed downward by the inherently seasonal and temporary nature of construction work. Construction workers are always working themselves out of a job, failing to win a bid can swiftly result in a contractor going out of business, and those waiting for another project are vulnerable to accepting reduced wages. Simultaneously, however, the skills required to complete jobs often require many years of experience and training. But the short-term relationship between contractors (or public bodies) and workers reduces the incentive for employers to invest in their employees.

As one of the oldest public policies to regulate labor markets, PWLs help to address these problems. PWLs prevent the government from using its immense purchasing power to undercut established wages and benefits in a community on public construction projects. Instead, PWLs compel the government to accept the wages and benefits packages in local labor markets that have already been agreed upon by contractors and workers for comparable work on similar projects. By setting compensation at the prevailing rate but maintaining the low-bid system, the downward pressure on wages is reduced and labor costs are effectively taken out of the competitive bidding equation. A Common Construction Wage thus encourages contractors to compete based on productivity, quality, materials costs, technology, management practices and logistics, and profit margins instead of a low-wage, low-skilled workforce. Additionally, keeping wages high encourages skilled workers to enter the construction industry, promotes stability in the labor market, and provides an incentive for firms to train workers to boost productivity in order to offset any increases in labor costs. Given that improved productivity has historically been more strongly related to economic growth than minimizing the price of labor, PWLs like the Common Construction Wage benefit the American economy.



This Research Report—conducted by academics and policy professionals at the University of Illinois, the Midwest Economic Policy Institute, and Smart Cities Prevail—analyzes the economic impact of the Common Construction Wage on the State of Indiana. The study is divided into seven chapters. Chapter 1 presents a brief history of prevailing wage laws across America and describes Indiana's Common Construction Wage. Chapter 2 provides a comprehensive overview of the extant academic research on the economic impacts of prevailing wage laws. Next, Chapter 3 concisely investigates the construction industry and labor market in Indiana before Chapter 4 outlines the methodology and assumptions of this economic impact analysis. Chapter 5 presents an economic impact analysis of CCW on the State of Indiana, including changes in employment, earnings, economic output, and tax revenues. In the subsequent Chapter 6, CCW's impacts on worker wellbeing and productivity are examined. The final Chapter 7 addresses a common misconception that prevailing wage laws simply mandate union wages and only help union contractors. The Research Report concludes by recapping ten facts about Indiana's Common Construction Wage.

CHAPTER 1: HISTORY OF PREVAILING WAGE LEGISLATION

Early Prevailing Wage Legislation

From the end of the Civil War to the start of World War I, the Industrial Revolution transformed the United States into an economic powerhouse. Rapid economic and population growth, however, was accompanied by social upheaval and so-called “labor problems,” which included child labor, workplace health and safety, low wages, labor unions, and social insecurity during economic recessions. Efforts to use public policy to improve economic conditions were limited by the doctrine of “freedom of contract” articulated by the Supreme Court in *Lochner v. New York* (1904). Exceptions to the doctrine for which government action was permissible were regulations on the working conditions of those not viewed as rational decision-makers at the time (such as women and children), regulations directly related to public safety, and regulations on money spent by the public sector. Early prevailing wage laws (PWLs) were a response to these exceptions.

Kansas enacted the first PWL in 1891. The law was part of larger effort by Populists and the state Federation of Labor to limit hours worked on public projects, regulate safety conditions, extend equal pay to women, provide a system of workers’ compensation, and end child labor. Following the example set by Kansas, six states (Oklahoma, Idaho, Arizona, New Jersey, Massachusetts, and Nebraska) enacted PWLs prior to 1924 (Whitaker, 1979; Vincent, 1990).

The Federal Prevailing Wage Law and Subsequent State Action

In the late 1920s, federal prevailing wage legislation “was supported by a broad coalition which included contractors and building trades unions” (Vincent, 1990). Efforts to pass a federal prevailing wage law were finally successful in March 1931 when President Hoover, a Republican, signed a bill cosponsored by Congressman Robert Bacon (R-NY) and a former Secretary of Labor and then-Senator, James Davis (R-PA). Although the original law was vague on the process of local wage determination and lacked an enforcement mechanism, President Hoover later resolved these issues in Executive Order 5778 (1932).

The federal legislation, called the Davis-Bacon Act (or DBA), mandates that local prevailing wages be paid for federally-assisted public works construction projects. The Davis-Bacon Act has been amended multiple times since its enactment in 1931. The Copeland Anti-Kickback Act of 1934 established penalties for contractors who forced workers to give back legally-required compensation, prevailing wages were changed to be pre-determined before a project rather than after the workforce was hired, debarment for noncompliant contractors was included to enforce the law, and the threshold for application of the Act was lowered from \$5,000 to \$2,000. The DBA has also been amended to cover both cash wages and fringe benefits and to include a Wage Appeals Board to hear administrative cases. The Davis-Bacon Act permits the President to suspend the payment of prevailing wages, but this executive power has only been exercised three times since 1931. Richard Nixon, George H.W. Bush, and George W. Bush are the only Presidents to temporarily suspend the Act– and no suspension lasted for more than five months (Dickson Quesada et al., 2013).

The movement for state prevailing wage laws (sometimes referred to as “mini Davis-Bacon Acts”) spread and intensified after 1931. Since the passage of the federal Davis-Bacon Act, state PWLs have been passed in 33 new states, including Indiana in 1935 (Vincent, 1990). There has, however, been a trend toward PWL repeal since Florida first abolished its law in 1979. States that have repealed or had a court strike down their PWL include Florida, Louisiana, Alabama, Colorado, Kansas (the first to enact the law), Utah, Idaho, Arizona, New Hampshire, and Oklahoma. In addition, nine states have never had a state PWL.

The Common Construction Wage in Indiana

In 1935, the Indiana Prevailing Wage Act was passed to establish wage rates paid to construction workers on public works projects in the state. The law was enacted as a direct response to the influx of out-of-state contractors from the South who were entering the market and undercutting the business of local contractors. Under the law, prevailing wages are determined by the wages of the *county* where the project is being completed. The Act, which has been amended many times since 1935, is now called the Common Construction Wage Act.

Wages are determined in public hearings of Common Construction Wage committees for each county. Each committee consists of five representatives from the local community: an industry representative appointed by the awarding agency, a labor representative appointed by the Indiana AFL-CIO, a contractor representative appointed by the Associated Builders and Contractors (ABC), and two taxpayer representatives appointed by the awarding agency and by the county-level legislative body. After being amended to become the Common Construction Wage (CCW), the determination of the applicable hourly wage is the “most commonly paid construction wages in the project county” (IDOL, 2013). In other words, the “modal” or most frequently occurring wage is considered the common rate to be paid on a publicly-assisted project. The same criterion applies in determining the per-hour fringe benefit amount required to be paid.

Various projects are exempted from CCW in Indiana. Prior to 2012, projects with an actual construction cost of less than \$150,000 were excluded from coverage under the law. The threshold was raised to \$250,000 on January 1, 2012. The exemption was again increased to projects costing less than \$350,000 on January 1, 2013, which is the current threshold (IDOL, 2011). CCW also does not apply to federally-funded projects, but the Davis-Bacon Act generally does. Additionally, the CCW does not apply to contracts awarded by the Indiana Department of Transportation for the construction of highways, streets, and bridges because this type of project is funded at least in part by the federal government and pays Davis-Bacon prevailing wages (IDOL, 2013). Finally, private firms who receive tax credits or economic development assistance from the state or from local governments are not required to pay employees a prevailing wage.



CHAPTER 2: FINDINGS FROM PREVIOUS RESEARCH

A review of existing economic research on the effects of common construction wages (CCWs) and prevailing wage laws (PWLs) finds mostly conclusive and recurring results. While the research approaches vary across the academic literature, prevailing wages are generally found to positively benefit economic outcomes for workers and contractors at costs that are either negligible or entirely offset. With benefits exceeding costs, it is typically concluded that prevailing wage laws should not be repealed, but rather should be enacted or strengthened.

Prevailing Wage Laws Do Not Increase Project Costs

An overwhelming majority of research on prevailing wage laws reveals that PWLs do not have a noticeable impact on the cost of publicly-assisted construction projects. Labor costs only comprise 25 to 30 percent of total construction costs, so any small increase in worker incomes due to PWLs would have an even smaller impact on total costs (Duncan, 2011). Those who argue that a reduction in labor costs will necessarily lead to lower total costs, however, are assuming that there is *no relationship* between the wages paid and the quality of work performed. Critics are making an implausible assumption that a “decline in prevailing wages has no effect on labor productivity, worker experience, worker skill sets, worker training, work ethic, or a worker’s willingness to assume responsibility for quality of work on-the-job” (Philips, 2014). In fact, higher labor costs are frequently offset by associated increases in skill level and productivity, contractor incentives to provide workers with more advanced equipment, on-time completion of projects, and better management practices.

Although a few studies have been cited to argue that prevailing wages raise the total costs of construction projects, these reports have received criticism from other researchers which call their conclusions into question (Dickson Quesada et al., 2013). One 1994 study, for example, found that rural projects subject to the Davis-Bacon Act were 26.1 percent more costly on average than private projects (Fraundorf & Farrell, 1994). But the study ascribed any and *all* cost increases to the prevailing wage regulations even though public sector projects are typically larger in size, serve different purposes, and require different materials than private projects. Put plainly, factors *other than* the prevailing wage law are more likely to be the reasons that public projects cost more (Mahalia, 2008). Another 2008 study concluded that prevailing wage determinations were, on average, 13 percent higher than the actual market rate (Glassman et al., 2008). The purportedly mismeasured differences in wages in this study, however, were biased by unrepresentative surveys (Mahalia, 2008). Overall, “first generation” studies focusing on wage comparisons generally found that PWLs increased costs by 1.5 to 3.0 percent, but they ignored changes in labor hours, productivity, substitution of capital for labor, and risks associated with low-skilled work (Duncan, 2011).

“Second generation” studies have used advanced statistical analyses to estimate the impact of PWLs and have found no evidence that prevailing wage regulations increase total project costs. After Utah repealed its PWL, increased cost overruns and change orders were found to offset any cost reductions of repeal (Philips et al., 1995). Prus (1996) analyzed 7,854 nonresidential construction projects and found that PWLs had no effect on total costs, although public projects are about 30 percent more expensive than private projects *regardless* of whether the state had a PWL. Furthermore, after Pennsylvania changed its law to lower prevailing wages between 1996 and 1998, there was no comparable statistical impact which lowered construction costs in the state (Wial, 1999). Taxpayer savings are “more likely to come from investments in worker training” than from eliminating or weakening state prevailing wage laws (Wial, 1999).

Research in the 21st Century also suggests that prevailing wage laws have no effect on total construction costs. Three studies from 2000 to 2002 focused on public school construction costs in British Columbia,

three Midwestern states (Kentucky, Ohio, and Michigan), and 4,974 newly-built schools across America. Each controlled for important factors that may influence construction costs such as firm size, type of school, urban status, time of year the project was constructed, regional effects, time trends, and the business cycle. All three studies found that PWLs did not lead to any increases in costs (Bilginsoy & Philips, 2000; Philips, 2001; Azari-Rad et al., 2002). Finally, a 2011 report accounted for worker productivity, changes in crew mix, labor-capital substitution, project type, project year, bid competition, and terrain type and found that federal prevailing wage projects do not statistically cost more than non-prevailing wage projects (Duncan, 2011).

Prevailing Wage Laws Keep Jobs Local

Prevailing wage laws tend to discourage the use of out-of-state contractors. After accounting for project size, project type, materials used, and population density, Prus (1999) found that being an out-of-state contractor lowered a firm's probability of winning a bid on a public school construction project by about 5.15 percent in PWL states. He also found that the vast majority of construction work in states with a PWL is completed by local bidders, with less than 10 percent of all school projects valued above \$750,000 done by out-of-state contractors. Moreover, in California, local governments are allowed by law to enact their own prevailing wage regulations. A recent study on the impacts of prevailing wage regulations in San Jose, a metropolitan area roughly the size of Indianapolis, found that application of the city's prevailing wage policy to municipal building projects supported 1,510 local jobs and \$164 million in economic output within Santa Clara County from 2007 to 2012. The study further concluded that removal of prevailing wage coverage from a publicly-assisted project would lead to about 6 percent of the project's value leaking out of the Santa Clara County economy (Working Partnership USA, 2011).

Prevailing Wage Laws Support an Upwardly-Mobile Economy for Working Families

Many studies have found that prevailing wage laws raise both the annual incomes and the skills of construction workers. After Utah repealed its PWL, the construction earnings premium was reduced by 2 percentage points and the rate of apprenticeship training for construction workers declined to historical lows (Azari-Rad et al., 1993). The quality of construction subsequently deteriorated because the reduced wages discouraged high-skilled workers in the state from seeking employment in the industry. Additionally, in an analysis of nine states that repealed their PWLs from 1979 to 1988, researchers found that repeal lowered construction worker earnings by an average of \$2,360 per year (converted to 2014 dollars), decreased training by 40 percent, reduced nonwhite employment in the construction workforce, and caused workplace injuries to rise by 15 percent (Philips et al., 1995). Further research concluded that workers in states with a PWL earned 15 percent higher wages and 53 percent more in health and pension benefits than those in states without a PWL (Peterson, 2000).

The preponderance of research, however, finds that repeal of a state prevailing wage law reduces construction worker incomes by between 2 and 8 percent. The difference between the wages of workers in states with a "strong" PWL and those with a "weak" PWL has been estimated at 8 percent (Philips et al., 1995). In 2001, researchers found that repealing PWLs led to 2 to 4 percent decreases in the relative wages of construction workers, borne primarily by Caucasian and union employees because lower-skilled workers entered the market (Kessler & Katz, 2001). Later, in 2004, academics reported a 5 percent decline in average annual worker earnings after PWL repeal (Kelsay et al., 2004). Evaluating data on 246,847 employed individuals in the construction industry from 2009 to 2011, prevailing wage regulations were found to increase total incomes by 1.6 percent to 3.5 percent on average for all workers, but had no positive or negative impact on the total annual incomes of construction CEOs. Because PWLs had no impact on contractor CEOs but raised the incomes of working-class employees, the policy was found to reduce income inequality by as much as 45.1 percent in the industry (Manzo & Bruno, 2014). Ultimately, Professor Peter Philips, a well-regarded economist specializing in the construction industry,

has concluded that “overall construction wages will fall from 4% to 8% after the repeal of a prevailing wage law” (Philips, 2014).

Repeal of Common Construction Wage and other prevailing wage laws threatens the blue-collar middle class. Through registered apprenticeship programs, the construction industry “operates the largest privately financed system of higher education in the country” (Philips, 2014). Apprenticeships boost workers’ skills, improve productivity, and allow workers to support a family through living wages. When prevailing wage regulations are weakened or repealed, the working class suffers losses in income, skills, productivity, safety, and purchasing power. In effect, PWL repeal equates to a repeal of the American Dream for working-class families (Philips, 2014).

Prevailing Wage Laws are Good for the Economy and for Taxpayers

The economy benefits substantially from well-paid, highly-skilled, healthy and productive construction workers who complete jobs on-time. Conversely, the costs of lower construction quality, out-of-state employment, higher injury and fatalities rates, and increased workers’ compensation claims have negative impacts on local public budgets. In 1995, the earliest PWL economic forecasting study found that Wisconsin would lose \$197 million in construction income and forgo \$18.6 million in sales and income tax revenues (both converted to 2014 dollars) if the state PWL was repealed (Belman & Voos, 1995). Incorporating a review of the research prior to 2006, a study estimating the effects of repealing Minnesota’s PWL found that tax revenues would fall by between \$38 million and \$178 million. The drop in government revenues would also be accompanied by an increase in injury rates, an increase in project cost overruns, and a decline in construction worker earnings in the state (Jordan et al., 2006).

While previous research used generally-accepted results from “the preponderance of available studies,” an updated 2011 paper on Missouri’s PWL was innovative in utilizing an economic impact analysis (Kelsay et al., 2011). The approach proved influential, providing original prospective estimates on the effects of repeal. The authors estimated that repeal of the prevailing wage statute would reduce the annual incomes of Missouri residents by \$300 million to \$452 million, including between \$160 million and \$241 million in lost earnings for the construction sector. Repeal would further reduce state sales and income tax revenues by \$24 million and \$36 million, lower female participation in apprenticeship programs, increase injury rates, and negatively impact worker productivity—outcomes that cause economic inefficiency (Kelsay et al., 2011).



Two recent economic impact analyses on PWLs in Illinois and Kentucky followed the lead of the Missouri study. PWL repeal in Illinois would bring about a \$365 million decline in construction worker earnings. Due to decreased consumer demand from reduced worker incomes and more projects being awarded to low-skilled contractors from other states, approximately 3,300 net jobs would be lost in the state economy, resulting in a \$701 million total drop in worker incomes across the state and a \$1.1 billion contraction in the state economy. State and local tax revenues would also fall by \$44 million annually, federal tax revenues would decline by \$116 million each year, and the number of apprentices working in construction would plummet (Dickson Quesada et al., 2013). Similarly, a repeal of Kentucky’s PWL is projected to annually lower the total earnings of blue-collar construction earnings by \$75 million to \$152 million, the total earnings of all Kentucky workers by \$125 million to \$252 million (due to the decrease in consumer spending), and state tax revenues by \$10 million to \$20 million. Ultimately, the state’s PWL promotes “world-class infrastructure and facilities brought to market when they are needed as they are needed” in a globalized economy (Philips, 2014).

CHAPTER 3: A SNAPSHOT INTO INDIANA'S CONSTRUCTION INDUSTRY

In 2013, the construction industry employed 5.8 million workers across America, or 4.1 percent of the national workforce. In Indiana, there were 123,700 construction workers on average over the same year, representing 4.2 percent of the state's employed population (BLS, 2014). Valued at \$11.3 billion, Indiana's construction industry accounts for 3.9 percent of the state's gross domestic product (GDP) and comprises just over 13,000 firms (BEA, 2012; SUSB, 2011).

The construction industry promotes an upwardly-mobile economy for working families. During the economic recovery over the past five years, workers in Indiana's construction sectors earned an average of \$23.22 per hour, 15.0 percent higher than the statewide average of \$20.20 (Figure 1). Furthermore, the difference between hourly wages in construction and per-hour incomes in the overall Indiana economy is greater for those at the lower-end of the income distribution. The bottom quarter of wage earners in construction earned 34.7 percent more than the bottom fourth of all Indiana workers from 2009 to 2013; the median construction worker (\$20.18 per hour) earned 25.3 percent more than his or her median counterpart in the overall Indiana economy (\$16.11 per hour). Construction wages are 16.9 percent higher for the 75th percentile and 9.3 percent higher for the 90th percentile, but 13.0 percent *lower* for the Top 1 Percent. Combined, the larger per-hour benefits to working in construction for the lower end of the wage distribution and the higher median and average hourly incomes reveal that the construction industry promotes a middle-class lifestyle for working families and reduces wage inequality. Indeed, every hour the Top 1 Percent earns 5 *times* the income of the median Hoosier worker, but the comparable "99-50 ratio" is just 3.5 times for the construction industry.

Figure 1: Hourly Income of Indiana Workers by Income Percentile, 2009-2013

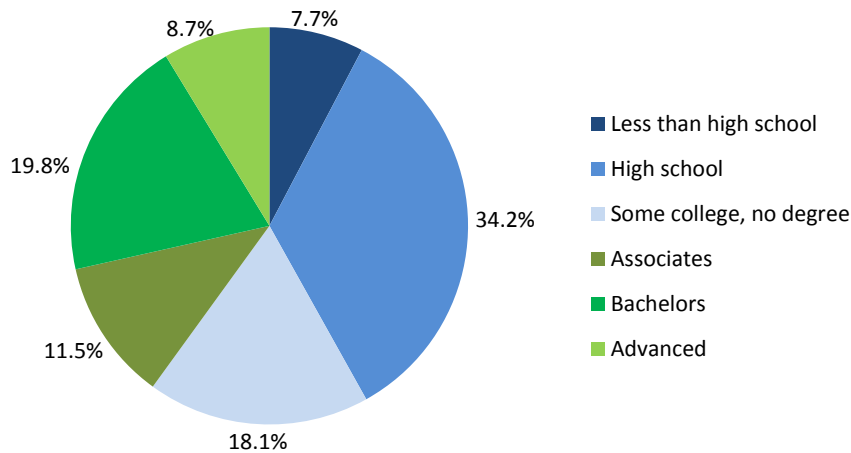
Hourly Income Percentile	Construction Industry	Total State Workforce	Construction Difference, %
10 th Percentile	\$10.53	\$8.42	25.0%
25 th Percentile	\$14.70	\$10.91	34.7%
Median Worker	\$20.18	\$16.11	25.3%
75 th Percentile	\$29.00	\$24.80	16.9%
90 th Percentile	\$39.40	\$36.06	9.3%
Top 1 Percent	\$70.00	\$80.45	-13.0%
<i>Average</i>	\$23.22	\$20.20	15.0%
75-25 Ratio	1.97	2.27	
99-50 Ratio	3.47	4.99	

Source: United States Department of Labor, Bureau of Labor Statistics, Data from the Current Population Survey Outgoing Rotation Groups (CPS ORG). Data include 8,794 observations of Indiana residents with a job over the five full years from 2009 to 2013. Estimates are weighted to match the actual state population.

Similarly, the construction industry also promotes upward socioeconomic mobility for less-educated Indiana workers. Figure 2 displays the educational attainment of the Indiana workforce that is between 25 and 55 years old from 2009 to 2013. Those aged 25 to 55 are used to investigate working-age individuals who are not currently in school (24 and under) and who are not early retirees re-entering the labor force. Data over the past five years shows that only 28.5 percent of the Indiana labor force has a bachelor's degree or more. An additional 11.5 percent of the state's labor market has earned an associate's degree. On the other hand, fully 60.0 percent of the labor force has a high school degree or below, including 7.7 percent who have not attained a high school degree or equivalent and 18.1 percent who have attended college in some fashion but did not receive a degree (Figure 2).

Figure 2: Educational Attainment of Persons Aged 25-55 in the Indiana Labor Force, 2009-2013

Educational Attainment of Persons Aged 25-55 in Indiana Labor Force, 2009-2013



Source: United States Department of Labor, Bureau of Labor Statistics, Data from the Current Population Survey Outgoing Rotation Groups (CPS ORG). Data include 10,408 observations of Indiana residents aged 25-55 in the labor market over the five full years from 2009 to 2013. Estimates are weighted to match the actual state population.

The construction industry most helps the three-fifths of the Hoosier labor force who has not earned a college degree (Figure 3). The average per-hour wage benefit to working in construction– compared to the larger Indiana economy– ranges from 31.3 percent to 35.3 percent for those with a high school degree or less. The construction difference is positive but smaller for those who hold both an associate's degree (19.7 percent) and a bachelor's degree (9.7 percent), but negative for advanced degree recipients (-7.8 percent). Again, this finding indicates that the construction industry both raises incomes for lesser- and middle-educated workers *and* reduces wage inequality. Since state prevailing wage laws have been found to reduce income inequality by about 45 percent, Indiana's Common Construction Wage law is likely to be a significant contributor to this increase in and compression of hourly wages (Manzo & Bruno, 2014).

Figure 3: Hourly Income of Indiana Workers Aged 25-55 by Educational Attainment, 2009-2013

Educational Attainment of Employed Persons	Construction Industry	Total State Workforce	Construction Difference, %
Less than High School	\$17.28	\$13.13	31.69%
High School	\$23.53	\$17.92	31.29%
Some College, No Degree	\$25.22	\$18.63	35.33%
Associate's	\$25.52	\$21.32	19.70%
Bachelor's	\$30.02	\$27.37	9.71%
Advanced	\$28.71	\$33.50	-7.79%

Source: United States Department of Labor, Bureau of Labor Statistics, Data from the Current Population Survey Outgoing Rotation Groups (CPS ORG). Data include 8,794 observations of Indiana residents with a job over the five full years from 2009 to 2013. Estimates are weighted to match the actual state population.

CHAPTER 4: ECONOMIC IMPACT ANALYSIS EXPLAINED

The Basics of an Economic Impact Analysis

Economic impact analyses are used by policy experts and government budget offices to evaluate the impact of a policy, project, or program on the regional economy. Economic impact analyses allow researchers to determine effects on everyone who benefits or loses as a result of the policy, parsing out the impact from what would have otherwise occurred in the absence of the policy.

The primary approach to perform a regional economic impact analysis is to use an input-output (IO) model. The IO model accounts for the interrelationship between industries in a regional economy, following a dollar as it cycles through the economy until it is expended in another region (or state). The IO approach quantifies recurring inter-industry spending in *multipliers*, which estimate how much an extra dollar spent on a project will add to the local economy. Through multipliers, the IO model provides estimates to policymakers on the effect of a change in policy on economic output (gross domestic product), worker incomes, employment, and tax revenues. To measure these outcomes, this report uses IMPLAN, an input-output modeling software which captures all transactions in Indiana while also accounting for business and household taxes. In IMPLAN, the implied multiplier is 1.76 for construction of both new nonresidential structures (commercial, health care, manufacturing, and government facilities) and maintenance and repair of nonresidential structures.

The estimates which follow are itemized by direct and non-direct impacts. In this study, *direct impacts* measure the effect of repealing Indiana's Common Construction Wage (CCW) on construction workers. On the one hand, construction worker incomes fall, so the effect on per-worker income is negative; on the other hand, contractors may be able to hire more workers, so total incomes could rise. The interplay between these changes affects the *non-direct impacts*. Non-direct impacts measure both the effects of inter-industry purchases by firms which receive direct expenditures from the construction industry and the additional consumer spending by those who are employed as a result of repealing Indiana's CCW. Together, direct and non-direct impacts are reported as *total changes*.

Inputs and Assumptions of the Economic Impact Analysis

This study performs input-output analyses to estimate the impact of repealing Indiana's Common Construction Wage. Classical economic theory forecasts that worker wages should decrease following a repeal of a state prevailing wage law (PWL) *as long as* the established wage rates exceed what they would be in an unregulated market environment. As discussed in the previous chapter, the preponderance of economic research finds that PWLs raise overall construction worker incomes by between 4 and 8 percent (Philips, 2014).

To predict effects of repealing Indiana's CCW on construction worker incomes, three advanced analyses are performed which hold constant other factors that could influence worker wages and benefits (Figure 4). Factors that are accounted for include unionization status, occupation, hours worked per week, weeks worked per year, demographics, educational attainment and school attendance, immigrant status, veteran status, urban status, yearly trends, and state effects. The models respectively yielded average income effects of 4.54 percent, 8.42 percent, and 10.70 percent (Figure 4). For more information on these advanced analyses, please see Table A in the Appendix.

As a result of a 4.5 percent to 10.7 percent fall in average construction worker wages, it is likely that the construction industry will employ more workers. That is, since contractors now face lower labor costs, they decide to hire new employees. On the other hand, labor costs account for just 24.6 percent of total

construction costs, so the reduction in per-worker income would not stimulate significant employment growth (Kelsay et al., 2011).

Figure 4: Regressions of the Impact of Prevailing Wage Laws on Worker Incomes, Appendix Table A

American Community Survey	Total Income Model A	Total Income Model B	Wage and Salary Income Model A
PWL Impact	4.54%	8.42%	10.70%
R ² =	0.408	0.417	0.340

Source: United States Census, Data from the American Community Survey, provided by the Integrated Public Use Microdata Series for the five full years from 2007 to 2011. Estimates are weighted to match the actual state population. Please see Appendix Table A for more information.

To determine how much construction employment will increase as a result of CCW repeal, this report utilizes estimates by academic researchers on the “elasticity of labor demand” for comparable workers. The elasticity of labor demand is an economic ratio of the change in employment to a change in wages. For example, and elasticity of -0.5 means that a 1.0 percent *drop* in wages would be associated with a 0.5 percent *increase* in employment. The more negative the elasticity (e.g., -1.0 instead of -0.5), the more willing businesses are to hire workers as wages decline. It is important to note that economic research has found that elasticities for high-skilled labor are smaller (or less negative) than for low-skill labor, because fewer workers have the ability to do the job efficiently so one employee is not easily replaced by another. Given that construction work requires high-skilled workers, is labor-intensive, and in effect cannot be outsourced to other countries, elasticities of labor demand are expected to be close to zero for construction workers.



Elasticity of labor demand estimates used by this study include bounds of -0.2 and -0.6, with a middle-of-the-road -0.4 estimate. The lower bound of -0.2 is derived from the elasticity used in an influential 2011 study on the impact of repealing Missouri’s prevailing wage law (Kelsay et al., 2011). This assumed elasticity was based on a range of “between -0.07 and -0.44” but lowered to -0.2 due to “the skill craftsman working in the construction sector” (Kelsay et al., 2011). Another 2014 analysis of the impact of repealing Kentucky’s prevailing wage law also utilized an elasticity of -0.2. The upper bound stems from estimates of comparable occupations with high-skilled workers who are not necessarily white-collar or highly-educated, such as German manufacturing workers (-0.69) and American registered nurses (between -0.59 and -0.65) (Addison et al., 2007; Burkett, 2004). The -0.4 elasticity is the midpoint between the two bounds and is consistent with a 1983 study on the elasticity for American mining and construction (-0.36), a 2004 study for the construction industry in Tunisia (-0.40), and the -0.44 upper limit in the aforementioned 2011 Missouri study (Hamermesh, 1983; Haous & Yagoubi, 2004; Kelsay et al., 2011).

Combined, the range of estimated changes in worker earnings and the range of labor demand elasticities provide a three-by-three matrix of predicted employment effects as a result of repealing Indiana’s CCW (Figure 5). Repealing Indiana’s Common Construction Wage law is only expected to have a small impact

on construction worker employment for publicly-funded projects, with job increases ranging from 0.9 percent to 6.4 percent. However, as discussed below, a considerable portion of this new employment is likely to go to out-of-state workers from poorer states. The impact of repealing CCW on the Indiana economy depends on the combination of decreases in income and increases in employment.

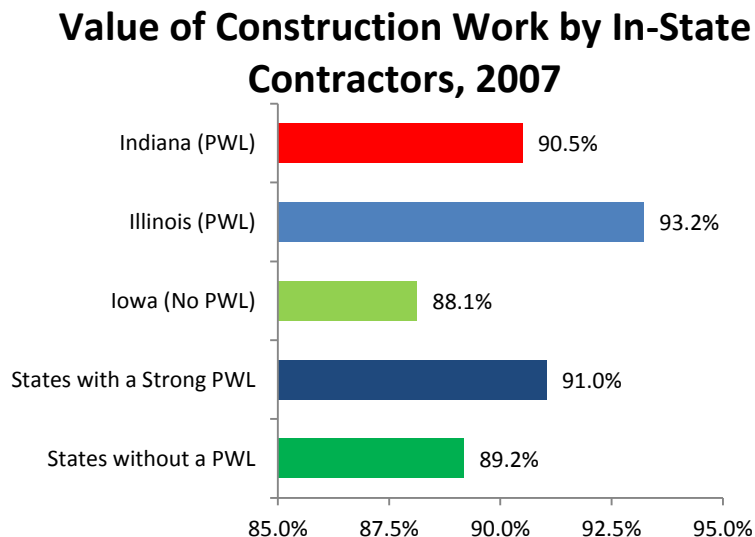
Figure 5: Scenario Matrix of Estimated Changes in Construction Employment from CCW Repeal

IMPLAN Scenarios	Income: -4.54%	Income: -8.42%	Income: -10.70%
Elasticity: -0.2	+0.91% Employment	+1.68% Employment	+2.14% Employment
Elasticity: -0.4	+1.81% Employment	+3.37% Employment	+4.28% Employment
Elasticity: -0.6	+2.72% Employment	+5.05% Employment	+6.42% Employment

Predicted changes in employment are the product of the change in income multiplied by the elasticity of labor demand in each cell. Please see the text above for sources associated with the assumed range of elasticities and please see Appendix Table A for the range of earnings changes.

This study also addresses two unfortunate mistakes made by researchers who employ economic impact analyses. First, all expenditures by construction firms and workers in Indiana are not spent exclusively in the Hoosier state. Many economic impact analyses overstate the effects of a policy change by assuming that 100 percent of all new revenue generated by a policy is spent in the state. While the majority of construction spending does in fact occur within-state, some contractors from other states win bids and travel to Indiana to complete projects. Those workers then typically go back to their home states where they spend the money. Out-of-state contractors may also purchase the materials, machinery, and supplies necessary to build a project in their own states, resulting in more money which leaks out of the Indiana economy. On the other hand, out-of-state firms may buy supplies in Indiana and their employees will purchase goods and services while they work in Indiana, offsetting some of the money that spills out of the economy. To address the concern of purchases from external states, this study incorporates information from the 2007 Economic Census, which reports that 90.5 percent of all construction work in Indiana was completed by Indiana contractors (Figure 6).

Figure 6: Value of Construction Work Completed by In-State Contractor by Presence of a PWL, 2007



Source: 2007 Economic Census of the United States for the Construction Industry. The Economic Census is conducted jointly by the U.S. Census Bureau and the U.S. Department of Labor. In-state shares for “states with a strong PWL” and for “states without a PWL” are state-level averages.

States with a prevailing wage law have higher shares of construction activity that are performed by in-state contractors than states without a PWL (Figure 6). The average share of work completed by in-state

firms was 93.2 percent in neighboring Illinois, a PWL state. In non-PWL Iowa, the in-state share of construction work was just 88.1 percent, 2.4 percentage points lower than the Indiana level. Additionally, “the average share of the work done by in-state firms in states without PWLs is 89.17 percent, 1.85 percentage points lower than the 91.03 percent average for states with strong PWLs” (Dickson Quesada et al., 2013). One study also found suggestive evidence that “prevailing wage laws do discourage the use of out-of-state contractors” because an out-of-state firm’s probability of winning a bid for a school construction project was 5.15 percent lower than a comparable in-state contractor (Prus, 1999).

This Research Report assumes that out-of-state contractors would have an increased chance of winning a bid if Indiana repealed its CCW law and that the “local purchasing percentage” would fall by a conservative 1.85 percentage points, which is the difference between strong PWL states and non-PWL states but is smaller than the Indiana-to-Iowa difference. In estimating economic impacts, Indiana’s predicted “local purchasing percentage” would fall from 90.5 percent to 88.6 percent.

The second unfortunate assumption made by some researchers is that reduced labor income due to repeal of a PWL simply disappears entirely from the economy. The first-order effect of repealing CCW in Indiana would be a reduction in worker earnings. Then, in a second-order activity, contractors respond by using a portion of this labor income savings to hire a small amount of new employees. This study conservatively assumes that the remainder of the change in total earnings which is *not used* to hire new workers is a transfer of income directly to the owners of construction firms (in the form of new “proprietor income”). Although other studies have erroneously assumed that this loss in worker earnings disappears from the state economy (Kelsay et al., 2011; Philips, 2014), the money does go somewhere, even if it is to other workers who are needed to repair or reconstruct poor-quality infrastructure by contractors without CCW. Holding total project costs constant, a decrease in labor costs would increase owner profit. It is thus reasonable to presume that a repeal of CCW in Indiana would effectively be, at least in part, a redistribution of wealth from construction workers to the owners of construction firms (Manzo & Bruno, 2014).

CHAPTER 5: ECONOMIC IMPACTS OF INDIANA’S COMMON CONSTRUCTION WAGE

Statewide Economic Impacts: Jobs, Worker Incomes, and Economic Output

Applying the earnings and elasticity estimates from the previous chapter provides a forecast of anticipated changes to the Indiana economy if the Common Construction Wage (CCW) is repealed. Figure 7 displays the range of economic impact analyses to the state from the nine combinations of expected changes in earnings and jobs. To predict the impact of CCW repeal, the *average* of the nine evaluations is calculated and presented.

The direct impacts of CCW repeal are a 4.5 to 10.7 percent reduction in construction worker incomes and a corresponding change in construction employment. As contractors face lower labor costs, approximately 1,300 new construction jobs will be created across the state due to repeal. Any direct increase in construction employment, however, is severely offset by losses in other jobs across the economy. Given that construction workers would have lower incomes and that more non-Indiana construction firms would enter the market and perform more work, the state economy would suffer a decrease in consumer demand. The consequence would be a loss of almost 2,000 non-construction jobs that are tied to a strong construction industry.

Figure 7: Economic Impacts of CCW Repeal on Jobs, Worker Income, and Economic Output in Indiana, 2014

Combination (Earnings, Jobs)	Direct Change in Jobs	Non-direct Change in Jobs	Total Change in Jobs	Total Change in Worker Income	Total Change in Economic Output
Average	1,308	-1,963	-655	-\$246.05 million	-\$695.57 million
(-4.54%, 0.91%)	-1,449	-1,955	-3,404	-\$245.64 million	-\$694.19 million
(-4.54%, 1.81%)	-336	-1,951	-2,287	-\$245.37 million	-\$693.31 million
(-4.54%, 2.72%)	775	-1,945	-1,170	-\$245.10 million	-\$692.42 million
(-8.42%, 1.68%)	-496	-1,973	-2,469	-\$246.62 million	-\$697.49 million
(-8.42%, 3.37%)	1,570	-1,964	-394	-\$246.15 million	-\$695.91 million
(-8.42%, 5.05%)	3,635	-1,956	1,679	-\$245.68 million	-\$694.33 million
(-10.70%, 2.14%)	65	-1,984	-1,919	-\$247.21 million	-\$699.46 million
(-10.70%, 4.28%)	2,690	-1,973	717	-\$246.62 million	-\$697.49 million
(-10.70%, 6.42%)	5,316	-1,963	3,353	-\$246.04 million	-\$695.53 million

Source: Result of authors' insertion of all combinations of employment and earnings estimates (Figure 5) into IMPLAN's industry change feature for all types of construction and repair, except residential. IMPLAN Version 3.0.17.2, Minnesota IMPLAN Group, Inc. © 2011.

Figure 8 examines the top 10 industries that would be expected to experience job losses as a result of CCW repeal. The sector that would likely see the largest decline in employment is the retail trade industry, since workers have less disposable income to spend shopping. Job losses in food and drinking services, wholesale trade, and real estate services are also related to the decline in consumer spending from reduced earnings. Negative impacts on employment for such industries as professional, scientific, and management services, manufacturing and milling, and financial services can be attributed to the anticipated influx of out-of-state contractors who are less likely to purchase machinery, hire architects, seek legal services, and finance operations locally from Indiana firms. Reduced fringe benefits would also have negative impacts on the burgeoning healthcare industry in Indiana.

Figure 8: Top 10 Industries Experiencing Job Losses in Indiana if CCW is Repealed, Average of Scenarios, 2014

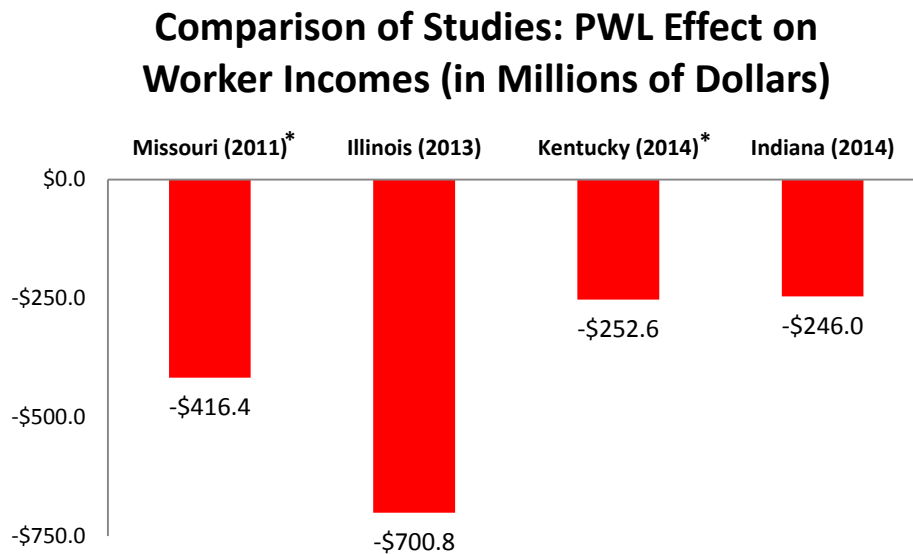
Rank	Industry	Average Jobs Lost
1	Retail Trade	-421
2	Health Care & Personal Care Services	-365
3	Professional, Scientific, & Management Services	-268
4	Food & Drinking Services	-210
5	Management & Business Services	-145
6	Manufacturing & Milling	-137
7	Finance, Insurance, & Banking Services	-101
8	Wholesale Trade	-100
9	Real Estate Services	-95
10	Transportation & Movement of Materials	-83

Source: Average result of authors' insertion of all combinations of employment and earnings estimates (Figure 5) into IMPLAN's industry change feature for all types of construction and repair, except residential. IMPLAN Version 3.0.17.2, Minnesota IMPLAN Group, Inc. © 2011.

It is important to note that only three of the nine combinations of earnings and elasticity estimates provide positive net total employment effects (Figure 7). For one of these scenarios to occur, the drop in worker incomes would have to be over 8.4 percent and the gain in construction jobs would have to be over 4.3 percent—possible but unlikely outcomes. Regardless, total worker incomes fall by about \$246 million across all nine scenarios. This predicted decline in worker incomes aligns with findings from recent studies on the impact of repealing state prevailing wage laws for three of Indiana's neighbors (Figure 9).

Researchers have concluded that PWL repeal would reduce worker incomes by \$416 million in Missouri (Kelsay et al., 2011), \$701 million in Illinois (Dickson Quesada et al., 2013), and \$253 million in Kentucky (Philips, 2014) (Figure 9). Although Indiana's expected reduction in labor income is the smallest of all four evaluations, the Missouri and Kentucky studies both ignored the change in total earnings which is *not used* to hire new workers. The small mistake made by these studies, outlined in the previous chapter, is that total construction revenues and costs were both assumed to be constant even though labor costs declined (because the elasticity used did not bring payroll costs of new hires up to pre-repeal levels). Typically, an economic equation with constant revenues and a fall in labor costs means that profit goes up. Both this study and the Illinois report have accordingly assumed that proprietor income makes up the difference. The effects of PWL repeal for Missouri and Kentucky are thus likely to be slightly overstated, but negative nonetheless.

Figure 9: Comparison of Academic Studies Reporting the Effect of Repeal on Worker Incomes, 2011-2014



Source: Kelsay et al. (2011); Dickson Quesada et al. (2013); Philips (2014); and the average estimate from Figure 7 (this report). *Note that income losses may be overstated in the Missouri and Kentucky studies because total costs are held constant but net construction labor costs are reported to decline, but the authors allow this lost income to disappear from the economy.

Tax Impacts: Local, State, and Federal Tax Revenues

Net job losses, a drop in worker incomes, and reduced economic activity would result in negative tax impacts for all levels of government. Figure 10 provides a detailed breakdown of CCW repeal's impact on various state and local taxes for all possible scenarios. If lawmakers put an end to Common Construction Wage, the State of Indiana and affiliated local governments would be expected to lose \$21.0 million in government revenue annually. This includes average decreases of about \$520,000 in employee compensation taxes, \$14.0 million in production taxes and sales taxes collected from Indiana businesses, \$6.0 million in income and property taxes collected from Indiana households, and an estimated \$440,000 in corporate income taxes each year. Importantly, anticipated tax impacts are negative for all types of revenues across all nine combinations of earnings and jobs estimates. As reported in Figure 11, CCW repeal would also lead to a loss in federal tax revenues and fees of between \$51.9 million and \$80.8 million annually, with an average anticipated effect of \$65.8 million lost each year.

Figure 10: Estimated State and Local Tax Impacts for Indiana if CCW is Repealed, 2014

Combination (Earnings, Jobs)	Employee Taxes	Production and Sales Taxes	Personal Income & Property Taxes	Corporate Taxes	Total Change in State & Local Taxes
Average	-\$0.52 million	-\$14.04 million	-\$5.98 million	-\$0.44 million	-\$20.98 million
(-4.54%, 0.91%)	-\$0.43 million	-\$13.97 million	-\$6.15 million	-\$0.44 million	-\$21.00 million
(-4.54%, 1.81%)	-\$0.38 million	-\$13.93 million	-\$6.26 million	-\$0.44 million	-\$21.01 million
(-4.54%, 2.72%)	-\$0.33 million	-\$13.89 million	-\$6.37 million	-\$0.44 million	-\$21.02 million
(-8.42%, 1.68%)	-\$0.64 million	-\$14.12 million	-\$5.74 million	-\$0.45 million	-\$20.95 million
(-8.42%, 3.37%)	-\$0.54 million	-\$14.05 million	-\$5.94 million	-\$0.44 million	-\$20.97 million
(-8.42%, 5.05%)	-\$0.44 million	-\$13.98 million	-\$6.13 million	-\$0.44 million	-\$20.99 million
(-10.70%, 2.14%)	-\$0.75 million	-\$14.21 million	-\$5.50 million	-\$0.45 million	-\$20.92 million
(-10.70%, 4.28%)	-\$0.64 million	-\$14.12 million	-\$5.74 million	-\$0.45 million	-\$20.95 million
(-10.70%, 6.42%)	-\$0.52 million	-\$14.03 million	-\$5.98 million	-\$0.44 million	-\$20.98 million

Source: Result of authors' insertion of all combinations of employment and earnings estimates (Figure 5) into IMPLAN's industry change feature for all types of construction and repair, except residential. IMPLAN Version 3.0.17.2, Minnesota IMPLAN Group, Inc. © 2011.

Figure 11: Estimated Federal Tax Impacts for Indiana if CCW is Repealed, 2014

Combination (Earnings, Jobs)	Total Change in Federal Taxes
Average	-\$65.83 million
(-4.54%, 0.91%)	-\$59.18 million
(-4.54%, 1.81%)	-\$55.52 million
(-4.54%, 2.72%)	-\$51.87 million
(-8.42%, 1.68%)	-\$72.74 million
(-8.42%, 3.37%)	-\$66.23 million
(-8.42%, 5.05%)	-\$59.72 million
(-10.70%, 2.14%)	-\$80.80 million
(-10.70%, 4.28%)	-\$72.73 million
(-10.70%, 6.42%)	-\$64.67 million

Source: Result of authors' insertion of all combinations of employment and earnings estimates (Figure 5) into IMPLAN's industry change feature for all types of construction and repair, except residential. IMPLAN Version 3.0.17.2, Minnesota IMPLAN Group, Inc. © 2011.

CHAPTER 6: IMPACTS ON WORKER WELLBEING AND PRODUCTIVITY

Health and Safety

Construction has been classified a “high hazard” industry by the Occupational Safety & Health Administration (OSHA). Perilous activities in construction work that can result in workplace injury or fatality include (but are not limited to) falls from rooftops or ladders or scaffolding, unguarded machinery, perforations from equipment, electrocutions, chemical burns and fumes, injuries from lifting materials, and auto accidents for road construction workers. Additionally, while falls cause one-third of all construction worker deaths, half of all workers are exposed to hazardous conditions and equipment on a weekly basis. Some occupations– such as carpenters, elevator installers, power-line installers, and operating engineers– face workplace hazardous almost every workday (OSHA, 2013).

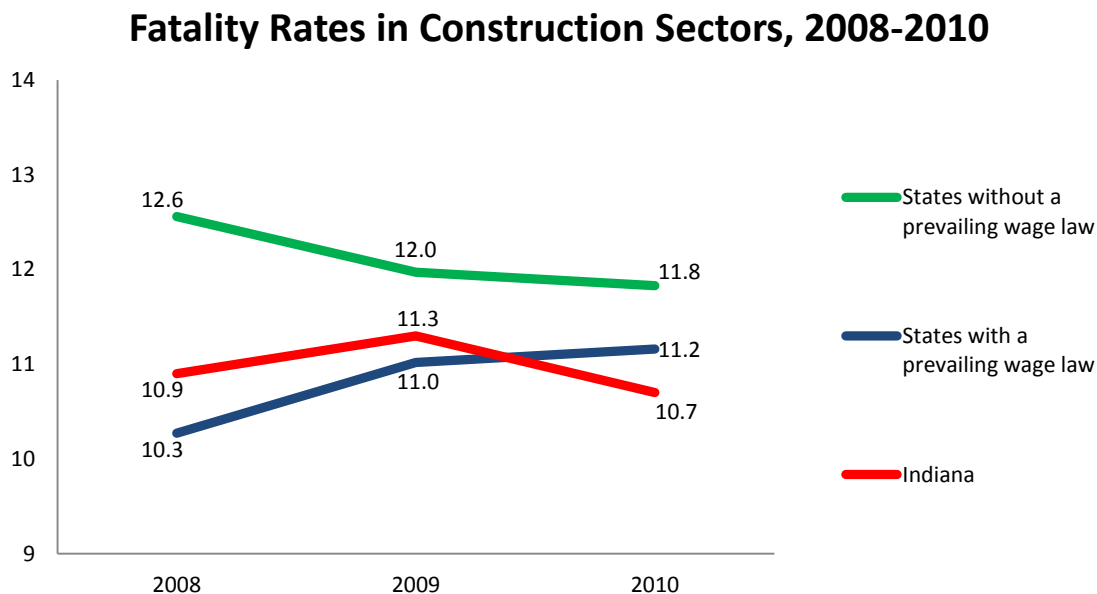
On-the-job injuries, illnesses, and fatalities have consequences beyond immediate costs to construction workers and their families. While medical costs and forgone wages are the direct costs of workplace

injuries and deaths, many other indirect costs impact employers, taxpayers, and the larger economy. Production delays and diminished productivity reduce economic efficiency, equipment damage results in high replacement or repair costs, lawsuits can stifle business activity, and increased workers' compensation expenditures require additional taxpayer support.

Research indicates that prevailing wage laws (PWLs) help to reduce workplace injuries and fatalities. One study of inspection records from the Indiana Occupational Safety and Health Administration from 1981 to 1986 found that private projects had 53 percent more violations per project than public projects to which the PWL was applied (Vincent, 1990). Additionally, between 1979 and 1985, nine states repealed their PWLs. After repeal, construction worker workplace injuries increased by 15 percent in these states (Philips, 1995). Construction workers in states without a prevailing wage law also report 12 percent more disabilities compared to those in states with a prevailing wage law (Philips, 2014).

Finally, Figure 12 depicts average incidence rates of fatal injuries in construction from 2008 to 2010 for states without a PWL, states with a PWL, and Indiana. The data are from the U.S. Department of Labor's Bureau of Labor Statistics, as reported in Dickson Quesada et al. (2013). States without a PWL experienced an average fatality rate of 12.12 deaths per 100,000 full-time construction workers from 2008 to 2010. At the same time, states with a PWL and the State of Indiana respectively maintained fatalities rates of 10.82 and 10.97 deaths per 100,000 workers. While the fatality rate difference of 1.15 between non-PWL states and Indiana may seem small, an additional 5 construction workers would have lost their lives in Indiana from 2008 to 2010 without the Common Construction Wage (CCW), assuming repeal would have increased the fatality rate by 1.15 per 100,000 workers. Accordingly, over fifteen years, approximately 25 additional Hoosier construction workers would suffer fatal injuries at work due to CCW repeal.

Figure 12: Construction Worker Fatality Rates, Indiana Compared to PWL and non-PWL States, 2008-2010



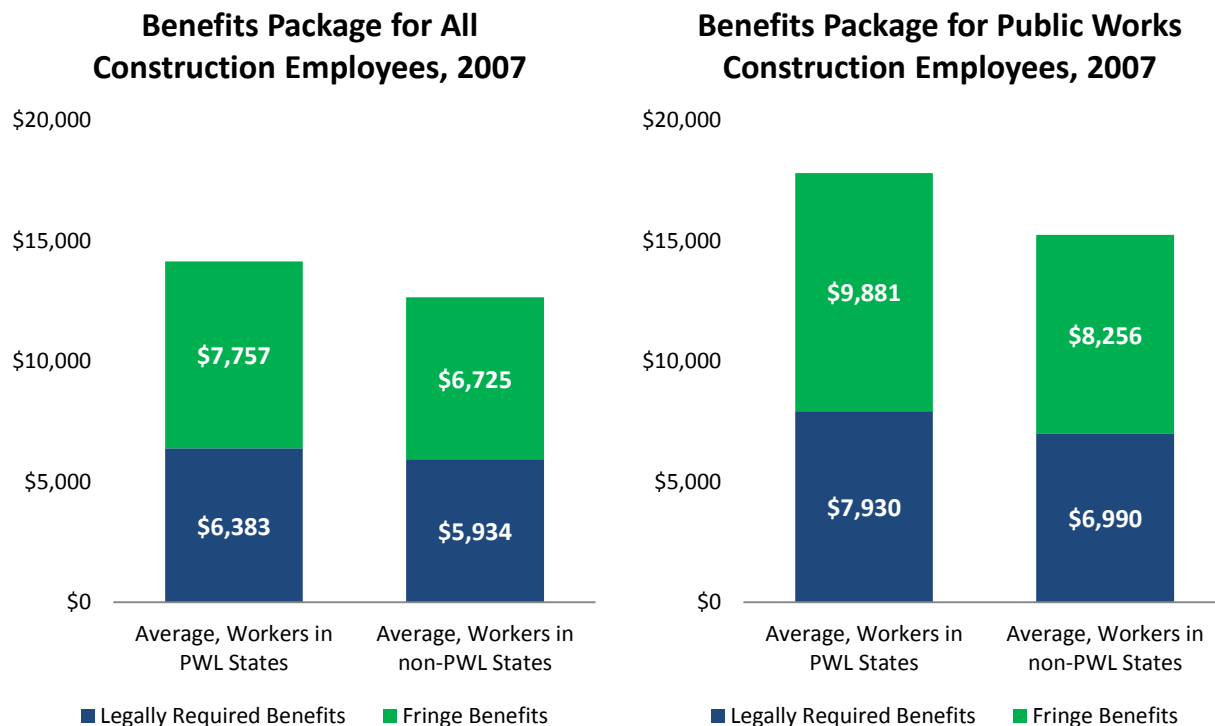
Source: "State Occupational Injuries, Illnesses, and Fatalities," U.S. Department of Labor, Bureau of Labor Statistics for the three full years from 2008 to 2010. Fatality rates for "states with a prevailing wage law" and for "states without a prevailing wage law" are state-level averages. Historical data was not reported or was incomplete for Connecticut, Delaware, Idaho, Maine, Montana, New Hampshire, North Dakota, Oregon, Rhode Island, South Dakota, Vermont, and Wyoming— these states were excluded from the analysis.

Benefits, Training, and Productivity

Workers in states with a prevailing wage law receive significantly higher benefits compared to their counterparts in states without a prevailing wage law (Figure 13). Benefits packages can be itemized into two main categories: *legally-required benefits* for Social Security, Medicare, unemployment insurance, workers' compensation, and temporary disability and *fringe benefits* made voluntarily by employers for retirement, health insurance, life insurance, and other collectively-bargained benefits. In 2007, the most recent year for which Economic Census data are available, construction employers in states without a PWL spent \$5,934 on legally-required benefits and \$6,725 on fringe benefits per worker. In comparison, construction employees in states with a PWL received an average benefits package of \$6,383 in legally-required benefits and \$7,757 in fringe benefits per worker. The total benefits package was 17.6 percent more generous for workers in states with a PWL than their counterparts in states without a PWL.

The construction sectors to which the Common Construction Wage most applies, however, are those in public works. Public works construction sectors include highway, street, and bridge construction; heavy and civil engineering; other heavy and civil engineering; and water, sewer line, and related structural construction. For each employee in these sectors in states without a prevailing wage law, employers provided \$6,990 worth of legally-required benefits and \$8,256 in fringe benefits. By contrast, employers paid \$7,930 in legally-required benefits and \$9,881 in fringe benefits for each public works construction employee in states with a PWL (Figure 13). The total benefits package was 21.6 percent more generous for public works construction workers in states with a PWL than for those in states without a PWL.

Figure 13: Dollars Spent Per Employee on Benefits, All Construction and Public Works Construction, 2007



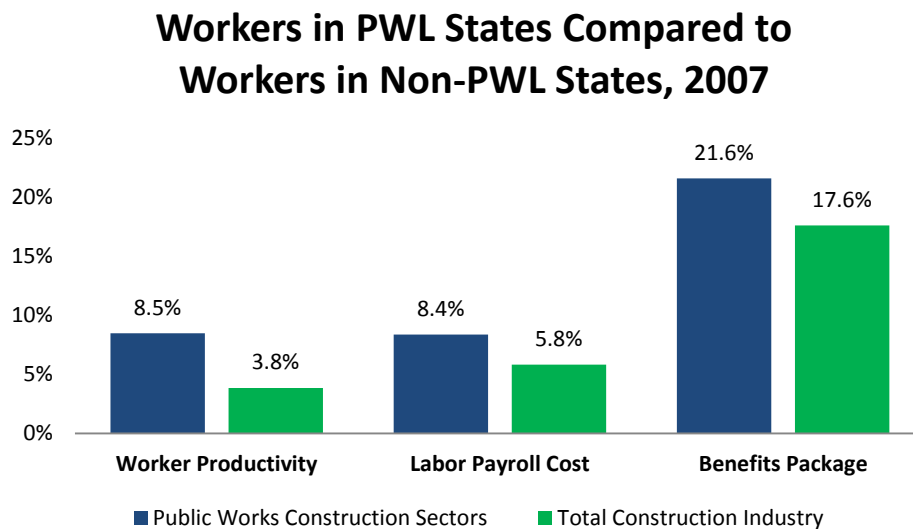
Source: 2007 Economic Census of the United States for the Construction Industry. The Economic Census is conducted jointly by the U.S. Census Bureau and the U.S. Department of Labor. Figures provided are not state-level averages. Instead, data for states with a PWL and for states without a PWL were respectively summed and then the average of all workers in each type of state was calculated. That is, the estimates are the true average, while state-level analyses are "averages of averages." "Public Works Construction" includes highway, street, and bridge construction; heavy and civil engineering; other heavy and civil engineering; and water and sewer line and related structures construction.

Indiana's Common Construction Wage also helps keep costs down because the workforce is well-trained. Nationwide, "there are nearly twice as many apprenticeships in states with PWLs as in those without such laws" (Dickson Quesada et al., 2013). The apprenticeship share of the construction workforce is 14.4 percent in states with a PWL, 87 percent more than the apprenticeship share in states without a PWL (Dickson Quesada et al., 2013). Indiana mirrors its counterparts with a PWL: in 2003, apprentices accounted for 14.7 percent of workers in construction occupations (Vincent, 2004).

Repeal of a PWL has also been found to reduce training. In Kansas, for instance, registered apprenticeships fell by 38 percent post-repeal (Philips, 2014). Apprenticeships fell to historic lows after Utah repealed its prevailing wage law as well (Philips, 1995). Unfortunately, efforts to limit union membership and weaken labor standards have led to decreases in apprenticeship programs that are jointly administered by unions and employers, contributing to skilled labor shortages across America (Eisenbrey, 2014). The CCW promotes a well-trained, highly-skilled workforce which ensures that Indiana's roads, buildings, and other structures are built efficiently, on-time, and to the standards of quality expected by the community.

As a result of better health outcomes and increased training, construction workers in states with a PWL are more productive than those in states without a PWL (Figure 14). The average payroll cost per employee in public works construction sectors was 8.4 percent higher in states with a PWL compared to states without a PWL, according to the 2007 Economic Census. This result is unsurprising, as public works construction employees are most likely to be paid a prevailing wage and the higher labor cost matches the 8.4 percent estimated increase in total worker incomes reported in Chapter 4 from the advanced analysis in Table A of the Appendix.

Figure 14: Workers in PWL States Compared to Workers in Non-PWL States, Percentage Increase, 2007



Source: 2007 Economic Census of the United States for the Construction Industry. The Economic Census is conducted jointly by the U.S. Census Bureau and the U.S. Department of Labor. Figures provided are not state-level averages. Instead, data for states with a PWL and for states without a PWL were respectively summed and then the average of all workers in each type of state was calculated. That is, the estimates are the true average, while state-level analyses are "averages of averages." "Public Works Construction" includes highway, street, and bridge construction; heavy and civil engineering; other heavy and civil engineering; and water and sewer line and related structures construction.

The reason that payroll costs are higher for workers in states with a PWL, however, is *because* they are more productive. In states with a PWL, a public works construction employee generates an average of \$140,320 in *value added*—a measure of annual productivity which equals business revenues minus the costs for materials, components, supplies, fuel, and subcontracted work. Value added per public works

construction employee is just \$129,357 in states without a PWL, meaning that workers in states with a PWL are 8.5 percent more productive. Similarly, for the entire construction industry, workers in states with a PWL are 3.8 percent more productive than their counterparts in states without a PWL. This indicates that PWLs may have positive spillover effects for the entire industry. Finally, one 2014 study found even greater productivity associated with the presence of a state PWL, estimating that worker output is 14 percent higher in prevailing wage states and between 21 and 33 percent higher on public projects in such states (Philips, 2014).

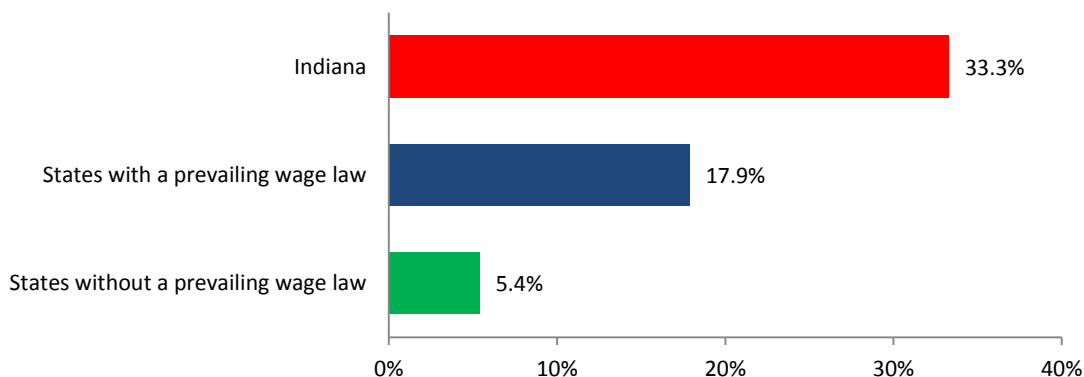
Ultimately, the cost of not having a PWL, such as Indiana's Common Construction Wage, is high both for families with a construction worker and for public bodies. The preponderance of available evidence reveals that Indiana's CCW is likely to reduce workplace injuries, save the lives of construction workers, and support working families through good benefits packages which save taxpayer dollars by keeping construction workers off government programs. Indiana's CCW also improves the skill level of construction workers through higher degrees of apprenticeship training and, partly as a result of higher skills, increases worker productivity by 8.5 percent. Each of these outcomes is good for the Indiana economy and good for Hoosier taxpayers.

CHAPTER 7: THE UNION-PREVAILING WAGE MYTH

Indiana's Common Construction Wage provides substantial benefits to both union and non-union contractors. While prevailing wage rates are typically found to raise construction worker incomes by a small amount on average, they take labor costs out of the equation in project bids, allowing contractors to compete over quality, productivity, materials costs, technology, management practices, and profit margins. As a result, it is an absolute myth that the prevailing wages simply promote the interests of unionized construction workers. A local union wage only prevails if more than half of the workers in a particular job classification are paid that rate. At the federal level, 72 percent of Davis-Bacon rates in 2000 were based on non-union rates (BLS, 2001). At the state-level, one researcher analyzed 8,093 bids on public school construction projects in Ohio after the state exempted such projects from prevailing wage regulations in 1997. The study found no statistical evidence that bid costs per square foot were lower for nonunion contractors post-repeal; in fact, there was *suggestive* evidence that union contractors were actually lower bidders (Atalah, 2013).

Figure 15: Private Construction Industry Union Membership Rate, 2013

Construction Union Membership Rate, 2013

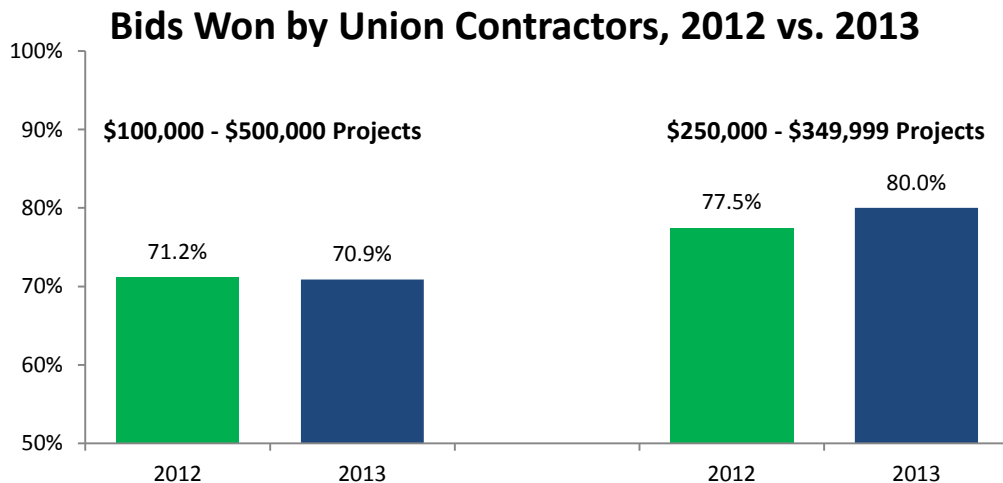


Source: United States Department of Labor, Bureau of Labor Statistics, Data from the Current Population Survey Outgoing Rotation Groups (CPS ORG) for 2013.

The myth that Indiana's Common Construction Wage is equivalent to the union rate stems from the high degree of construction unionization in Indiana compared to states without a prevailing wage law (Figure 15). On average, unionization is just 5.4 percent among all private sector construction workers in states without a prevailing wage law. The union membership rate, by contrast, is 17.9 percent for comparable workers in states with a PWL and 33.3 percent for Indiana's private construction industry. Additionally, the income models detailed in Chapter 4 (Table A of the Appendix) indicate that a one percentage point increase in a state's construction unionization rate raises worker incomes by between 0.6 and 2.0 percent in the state.

To determine whether CCW in Indiana provides asymmetrical benefits to union contractors, data was obtained for bids let (awarded) on publicly-assisted projects costing \$500,000 or less in fourteen northern Indiana counties from the beginning of 2012 to the end of 2013.¹ On January 1, 2013, the project cost threshold for coverage under the CCW was increased from \$250,000 or more to \$350,000 or more (IDOL, 2013). If the Common Construction Wage favors unions, the data should indicate that union contractors won fewer bids when CCW no longer applied to projects costing \$250,000 to \$349,999 (Figure 16). However, union contractors actually won 80.0 percent of bids in 2013, slightly *greater* than the 2012 share in the region (77.5 percent). Union contractors were awarded 71.2 percent of the 170 regional projects costing between \$100,000 and \$500,000 in 2012. By contrast, in 2013, unionized firms won 70.9 percent of the 134 comparable state and local projects in 2013. Neither difference is statistically significant, meaning that there was no discernible benefit to either union or nonunion contractors when CCW was weakened.

Figure 16: Share of Bids Won by Union Contractors in Northern Indiana, 2012-2013



Source: Data from an internal database generously provided by the Indiana, Illinois, Iowa Foundation for Fair Contracting (2014). Data on \$100,000 to \$500,000 winning bids include 170 projects in 2012 and 134 projects in 2013. Data on \$250,000 to \$349,999 winning bids include 40 projects in 2012 and 35 projects in 2013. Neither difference is statistically significant, with t-tests of union win probabilities respectively yielding results of $t = 0.05$ and $t = -0.26$. Counties: Elkhart, Fulton, Jasper, Kosciusko, LaGrange, LaPorte, Lake, Marshall, Newton, Noble, Porter, Pulaski, St. Joseph, Starke.

While the policy change had no statistical impact, other factors are found to influence whether a union contractor wins a project bid (Figure 17). An advanced analysis is performed to determine which factors had an effect on the probability that a union contractor wins a bid for project costing less than \$350,000 for 2012 and 2013. The results—summarized in Figure 17 and further explained in Table B of the Appendix—indicate that the CCW threshold change, increased competition through additional bidders,

¹ The fourteen northern Indiana counties included Elkhart County, Fulton County, Jasper County, Kosciusko County, Lagrange County, La Porte County, Lake County, Marshall County, Newton County, Noble County, Porter County, Pulaski County, St. Joseph County, and Stark County.

and the cost of the project all had *no impact* on whether a union contractor won a bid. However, the following factors raised a union contractor's chances of being awarded a project: if the project was in Lake County or Porter County (where more firms are likely to be unionized) and if the project was let in March, August, or September. A 10 percent spread between the winning bid and the 2nd-lowest bid reduced a union contractor's chances of getting a project by 5.0 percent. This finding could imply either that union contractors submit overly costly bids or that they are better at winning closely-contested bids compared to nonunion contractors. Union contractors are also less likely to win bids for city projects and county projects compared to school construction projects, state projects, federally-assisted projects, and airport projects.

These findings are only based on 304 total projects in northern Indiana (including just 75 projects costing \$250,000 to \$349,999) and should not be considered conclusive. Future research should explore all available projects affected by changes to the CCW law throughout the state over a longer period of time to increase the number of observations and provide more precise statistical effects. But the evidence is suggestive that union contractors do not disproportionately benefit from the Common Construction Wage compared to nonunion contractors. Instead, since the number of bids also has no apparent impact on whether a union firm is awarded the bid, union contractors are found to be competitive with nonunion contractors.

Figure 17: CCW Threshold Change Impact on Probability of Union Win in Northern Indiana Bids, 2012-2013

Statistically Significant Factor	Effect
CCW Threshold Change	No Effect
Number of Bids	No Effect
Higher Project Cost	No Effect
Winning Bid to 2 nd -Best: 10% Spread	-5.0%
Awarded in March	+37.3%
Awarded in August	+29.1%
Awarded in September	+31.6%
Lake County	+28.7%
Porter County	+59.2%
Project Type: City	-39.5%
Project Type: County	-40.2%
Number of Projects	137

Source: Data from an internal database generously provided by the Indiana, Illinois, Iowa Foundation for Fair Contracting (2014). Analysis conducted for projects costing less than \$350,000. Counties: Elkhart, Fulton, Jasper, Kosciusko, LaGrange, LaPorte, Lake, Marshall, Newton, Noble, Porter, Pulaski, St. Joseph, Starke. Please see Appendix Table B for more information.

Ultimately, even in cases where the contractual union wage is the rate most commonly paid to workers of a specific occupation, the truth is that contractors and workers have entered into a local labor market with established wages that allow individuals to support a family in the community. The government should not, through taxpayer-financed projects, actively undermine the local labor market by paying low-quality wages, often to contractors from lower-skilled states. Union productivity has been found to be 17 to 22 percent higher than nonunion output and unionization is associated with fewer instances of employee misclassification (Allen, 1984). There thus may be considerable community benefits if a union wage prevails. Nevertheless, regardless of the wage determination, there is no evidence to suggest that the Common Construction Wage only helps union contractors.

The High Price to Pay for a Low Cost Strategy

- No prevailing wage**
- + Fly-by-night contractor**
- + No background check**
- + No technical training**
- + Overdue project**
- + Cheap but prohibited methods**



Philips (2014) provides an example which illustrates the potentially disastrous impacts of CCW repeal. In 2001, an out-of-state contractor received the low bid for asbestos removal of the historic Old Capital Dome in Iowa, one of 18 states without a prevailing wage law. A background check would have revealed 11 state code violations committed by the contractor over the past 10 years and that employees were never provided a formal OSHA training regarding hazardous materials. As the project was almost two months behind its contractual competition date, the contractor was rushing to finish the asbestos removal. The contractor then decided to use heat guns and torches, a cheap technique that was prohibited by the University of Iowa (the owner of the facility). Ultimately, the 160-year old building caught fire, resulting in \$5.6 million worth of damage. Sadly, the University was only able to recoup \$1.9 million from the contractor.

With a Common Construction Wage law, it is very likely that the “Old Cap” fire would have been prevented. CCW increases worker safety and skills, discourages out-of-state contractors by requiring the payment of local wages and benefits, and eliminates the low-cost strategies that lead to the use of untrained and unqualified workers.

Source (including photo): Philips, Peter. (2014). Kentucky’s Prevailing Wage Law: An Economic Impact Analysis. Economics Department, University of Utah.

CONCLUSION: TEN FACTS ABOUT THE COMMON CONSTRUCTION WAGE

Indiana’s Common Construction Wage (CCW) promotes positive labor market outcomes for both construction workers and contractors at costs that are either negligible or fully offset. Findings from this Research Report can generally be summarized into the following ten facts about the Common Construction Wage:

1. **The Common Construction Wage does not increase total construction costs for public projects.** A thorough review of economic research finds no evidence that local, state, or federal prevailing wage laws increase the cost of construction. Instead, CCW produces better-skilled, more productive workers who complete the job on-time the first time. CCW repeal would not save money for Indiana taxpayers.
2. **The Common Construction Wage promotes an upwardly-mobile, high-road economy for working families.** By paying living wages and compressing worker incomes, CCW creates a pathway into the middle class for blue-collar workers where they can support a family and achieve the American Dream. CCW repeal would increase income inequality and put thousands of workers onto government assistance programs.
3. **The Common Construction Wage keeps Hoosier jobs local.** Prevailing wage laws reduce the probability of an out-of-state contractor winning a bid by about 5 percent. Furthermore, in Indiana, 90.5 percent of all construction work was completed by in-state contractors. This compares favorably to nearby Iowa, which does not have a prevailing wage law, where the in-

state share is just 88.1 percent. Indiana's in-state percentage is also better than the 89.2 percent share for all states without a prevailing wage law. CCW repeal would hurt local businesses in Indiana.

4. **The Common Construction Wage supports almost 2,000 non-construction jobs and nearly \$250 million in total worker income throughout the state.** Industries that are indirectly affected by the policy include retail trade, health care, professional services, food and drinking services, and manufacturing. CCW repeal would come at the expense of job losses in these industries.
5. **The Common Construction Wage boosts the Indiana economy by about \$700 million.** The policy increases construction worker wages by between 4.5 percent and 10.7 percent and, as a result, lifts consumer demand in the economy. CCW repeal would shrink the Indiana economy.
6. **The Common Construction Wage increases tax revenues for all levels of government.** Due to higher worker incomes and increased consumer spending, the law supports \$21 million in total state and local tax revenues in Indiana. The policy also supports \$66 million in federal tax revenues. CCW repeal would fiscally restrain public sector budgets and decrease their ability to provide further infrastructure investments.
7. **The Common Construction Wage fosters safer workplaces for Indiana construction workers.** Injury rates are 12 to 15 percent lower in states with a prevailing wage law than in states without such a law. In Indiana, the policy helped to prevent 5 worker deaths from 2008 to 2010. CCW repeal would result in more workers' compensation and temporary disabilities claims, which cost the taxpayer.
8. **The Common Construction Wage increases the benefits package paid to workers by around 20 percent.** In 2007, construction workers in states with a prevailing wage law earned \$1,481 more in legally-required and fringe benefits than their counterparts in states without such a law; for public works construction employees, the benefits premium was \$2,565 annually. CCW repeal would generate unhealthy construction workers, thus reducing overall productivity.
9. **The Common Construction Wage produces a highly-skilled, highly-productive workforce.** There are nearly twice as many construction apprentices in states with a prevailing wage law as there are in states without a law. Upon repeal, registered apprentices have been found to fall by 38 percent. CCW repeal would lead to a poorly trained, low-skill workforce that would reduce the quality of Indiana's infrastructure.
10. **The Common Construction Wage does not favor union contractors over nonunion contractors.** There is no evidence that union contractors are more costly or that they submit higher bids than nonunion contractors. After Indiana raised its threshold for CCW coverage, union contractors in fourteen northern counties were just as likely to be awarded a bid as the year before. CCW repeal would hurt both union and nonunion contractors in Indiana.

Ultimately, the Common Construction Wage for publicly-assisted construction projects provides substantial economic benefits for workers, contractors, and the overall Indiana economy. Repeal of the Common Construction Wage would result in job losses, would shrink the economy, and would reduce tax revenues in Indiana. The Common Construction Wage supports a dynamic, high-road economy that promotes worker productivity and improves public safety.



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APPENDIX

TABLE A: OLS REGRESSIONS OF THE IMPACT OF PREVAILING WAGE LAWS ON THE NATURAL LOG OF INCOME, 2009-2011 AND 2007-2011

Variable	(A)		(B)		(Z)	
	ln(total income)		ln(total income)		ln(wage/salary income)	
	Coefficient	(St. Err.)	Coefficient	(St. Err.)	Coefficient	(St. Err.)
Prevailing wage law	0.0454***	(0.0040)	0.0841***	(0.0317)	0.1070***	(0.0271)
State construction unionization	0.6396***	(0.0184)	-0.0191	(0.0812)	1.9923***	(0.3914)
ln(State average total comp./job)					0.5739***	(0.1103)
Age	0.0328***	(0.0008)	0.0317***	(0.0007)	0.0519***	(0.0007)
Age ²	-0.0002***	(0.0000)	-0.0002***	(0.0000)	-0.0005***	(0.0000)
Male	0.1842***	(0.0070)	0.1843***	(0.0070)	0.1365***	(0.0108)
Married	0.1488***	(0.0032)	0.1548***	(0.0032)		
Foreign-Born	-0.0686***	(0.0051)	-0.0891***	(0.0052)	-0.0660***	(0.0050)
Recent Immigrant					-0.0622***	(0.0059)
Speaks English					0.1281***	(0.0047)
In School	-0.2224***	(0.0082)	-0.2245***	(0.0081)		
Less than high school	-0.2334***	(0.0048)	-0.2173***	(0.0047)		
High school	-0.1045***	(0.0035)	-0.0977***	(0.0035)		
Associates	0.0069	(0.0064)	0.0113	(0.0064)		
Masters	0.2503***	(0.0118)	0.2457***	(0.0117)		
Professional or doctorate	0.2134***	(0.0264)	0.2083***	(0.0262)		
No schooling					-0.1223***	(0.0110)
Nursery school to grade 4					-0.1270***	(0.0099)
Grade 5, 6, 7, or 8					-0.0876***	(0.0051)
Grade 9					-0.0748***	(0.0065)
Grade 10					-0.0898***	(0.0069)
Grade 11					-0.1034***	(0.0065)
1 year of college					0.0675***	(0.0041)
2 years of college					0.1042***	(0.0063)
4 years of college					0.0870***	(0.0067)
5+ years of college					0.1032***	(0.0171)
Public sector employment	0.0248***	(0.0070)	0.0291***	(0.0070)		
Veteran status	0.0312***	(0.0055)	0.0334***	(0.0055)	-0.0081	(0.0052)
Weeks worked last year	0.2299***	(0.0011)	0.2297***	(0.0011)	0.0912***	(0.0021)
Usual hours worked per week	0.0205***	(0.0001)	0.0207***	(0.0001)	0.0103***	(0.0002)
Supervisor					0.2513***	(0.0040)
Ln(commute time to work)					0.0457***	(0.0011)
Work out of state					0.0839***	(0.0016)
Yearly trend	-0.0122***	(0.0018)	-0.0133***	(0.0018)		
Race/Ethnicity dummies	Y		Y		Y	
Year effects	N		N		Y	
Urban status dummies	N		N		Y	
Household type dummies	N		N		Y	
Occupation dummies	Y		Y		N	
State dummies	N		Y		Y	
Constant	7.4129***	(0.0243)	7.3665***	(0.0274)	1.7112	(1.2086)
R ²	0.4084		0.4174		0.3396	
Observations	246,847		246,847		138,426	
Weighted	Y		Y		Y	

Three asterisks (***) indicate significance at the 1% level, two asterisks (**) indicate significance at the 5% level, and one asterisk (*) indicates significance at the 10% level. Source: American Community Survey. Models A and B include all 246,847 observations of employed construction workers in 2009, 2010, and 2011. "Prevailing wage law" is a dummy variable for which 1=Law and 0=No Law in Models A and B. Model Z includes 138,426 observations limited to full-time (usual hours>34) blue-collar construction workers in 2007, 2008, 2009, 2010, and 2011. "Prevailing

wage law” is a dummy variable for which 1=Strong or Moderate Law and 0=No or Weak Law in Model Z. The data are adjusted by the person weight to match the total population.

Ordinary least squares (OLS) regression models account for other variables to parse out the actual and unique causal effect that prevailing wage laws have on incomes on average. The analyses control for a host of demographic, work, occupation, household, geographic, time, and education variables that could also have an impact a construction worker’s incomes. The sample, in all cases, is weighted to match the actual population. Regressions (A) and (B) investigate the effects of PWLs on all construction persons employed in the construction industry from 2009 to 2011, at the end of the Great Recession and into the recovery. Although prevailing wages only usually impact blue-collar construction workers, the occupation dummies and other variables should account for this generality. Regression (B) includes state dummies to account for unmeasured differences between states, although prevailing wages do not change very often so the state effect could capture some of the impacts of PWLs. The output, however, shows that state dummies tended to capture the effects of union membership. Finally, Regression (Z) narrows the analysis to focus on full-time, blue-collar construction workers but simultaneously extends the analysis to look at the five-year period from 2007 to 2011. Note that Regression (Z) also controls for other factors. Regressions (A) and (B) also evaluate “total annual income” (from all sources) as the dependent variable while Regression (Z) looks at “annual wage and salary income.” For full outputs in a .txt format, please contact authors Frank Manzo IV at fmanzo@illinoisepi.org and Scott Littlehale at slittlehale@smartcitiesprevail.org.

TABLE B: PROBIT REGRESSION ON PROBABILITY OF UNION CONTRACTOR WINNING BID, AVERAGE MARGINAL EFFECTS, 2012-2013

Northern Indiana		
Prob(Union Win)	Coefficient	(St. Err.)
CCW Threshold Change	-0.0088	(0.0775)
Competition: # of Bids	-0.0021	(0.0260)
Ln(Winning bid)	0.0539	(0.1041)
Winner-2 nd % Difference	-0.5017**	(0.2312)
Awarded in January	-0.0756	(0.2028)
Awarded in February	0.0821	(0.1841)
Awarded in March	0.3727**	(0.1827)
Awarded in May	0.0916	(0.1122)
Awarded in June	-0.1999	(0.2061)
Awarded in July	0.2296	(0.1452)
Awarded in August	0.2908**	(0.1351)
Awarded in September	0.3162**	(0.1603)
Awarded in October	0.0913	(0.1851)
Awarded in November	0.1998	(0.1523)
Awarded in December	0.4091	(0.2616)
Elkhart County	-0.0532	(0.1286)
Kosciusko County	-0.1374	(0.1786)
Lagrange County	-0.3315	(0.2480)
Lake County	0.2867**	(0.1126)
Porter County	0.5919**	(0.1632)
St. Joseph County	0.1096	(0.1088)
Project Type: City	-0.3952**	(0.1930)
Project Type: County	-0.4017**	(0.2033)
Project Type: School	-0.3199	(0.2101)
Project Type: State	-0.3999	(0.3529)
Constant	0.5980***	(0.0334)
R ²	0.3101	
Observations	137	

A probit regression model allows for analysis of the probability of a “binary” yes-or-no variable occurring. In this case, the model reports the (positive or negative) direction of the effect that a factor has on the probability that a union contractor will be awarded a bid and whether the output is statistically significant. To determine the magnitude of statistically significant factors, average marginal effects (AMEs) are generated and reported using the *dydx, margins* command in STATA. The “Winner-2nd % Difference” is the spread in the estimated costs of the lowest bidder and the 2nd-best bidder: a 10 percent increase in the spread led to a 5 percent lower chance of winning a bid for union contractors. Other variables were included in the model but dropped due to collinearity. The small sample size of 137 is problematic, but the results are nevertheless suggestive and interesting. Future research should include more observations across the whole state. For full outputs in a .txt format, please contact author Frank Manzo IV at fmanzo@illinoisepi.org.

Three asterisks (***) indicate significance at the 1% level, two asterisks (**) indicate significance at the 5% level, and one asterisk (*) indicates significance at the 10% level. Source: Ill FFC, Internal Database of Bids on Public Construction Projects in fourteen northern Indiana counties in 2012 and 2013. The fourteen Indiana counties are: Elkhart, Fulton, Jasper, Kosciusko, Lagrange, La Porte, Lake, Marshall, Newton, Noble, Porter, Pulaski, St. Joseph, and Stark. Total observations include 304 bids let between \$100,000 and \$500,000. The probit analysis was limited to 137 bids under \$350,000.

