The Effects of Repealing Common Construction Wage in Indiana

Impacts on Ten Construction Market Outcomes

January 2018

Frank Manzo IV, MPP
Midwest Economic Policy Institute

Kevin Duncan, Ph.D.
Colorado State University-Pueblo
BCG Economics

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MIDWEST ECONOMIC POLICY INSTITUTE

Executive Summary

On July 1, 2015, Indiana lawmakers completely repealed Common Construction Wage, which was a minimum wage that supported blue-collar construction workers employed on public construction projects. Repeal of Common Construction Wage has led to a host of negative impacts on workers and the construction industry– including lower wages and more income inequality– while failing to deliver any meaningful cost savings or increased bid competition promised by those in favor of repeal.

Actual economic data reveal that:

1. Repeal decreased the wages of blue-collar construction workers by 8.5 percent, on average.
2. Repeal decreased the wages of the lowest-paid construction workers by 15.1 percent, contributing to greater wage inequality in construction.
3. Repeal was statistically associated with a 4.5 percentage-point increase in the share of workers in construction occupations without a high school diploma or equivalent.
4. The share of construction workers who are military veterans fell by 1.2 percentage points post-repeal.
5. Construction worker productivity growth was 5.3 percentage-points slower in Indiana than in neighboring Midwest states following repeal.
6. Relative worker turnover increased by 1.2 percentage points in Indiana's heavy and highway construction sector following repeal.
7. Employment growth in public works construction was 1.5 percentage-points slower in Indiana than in neighboring Midwest states following repeal, and evidence suggests that repeal has resulted in more out-of-state workers employed on public projects in Indiana.
8. The average number of bidders on public projects in northern Indiana was 3.0 before repeal and 2.9 after repeal.
9. Common Construction Wage did not favor union contractors, as the union share of northern Indiana's public construction market stayed the same or even increased following repeal.
10. Repeal had no statistical impact on the average cost per public school project in northern Indiana.

State Representative Ed Soliday, a Republican who serves as Assistant Majority Floor Leader in the Indiana House of Representatives, put it best when he testified that, "*[w]e got rid of prevailing wage and so far it hasn't saved a penny*."

These effects contrast starkly with the claims made by those who opposed the policy and voted to repeal Common Construction Wage (Shella, 2015; WYFI, 2015):

- "We've heard testimony in committee and I've seen studies that show it could save somewhere between 10 and 20 percent on public works projects." –Indiana State Representative Jerry Torr (R-Carmel).
- "We can maintain high standards for government contractors without relying on 'artificially determined' wages that don't truly reflect the local market."" –Indiana State Senator Carlin Yoder (R-Middlebury).
- "When the Indiana Senate voted today to repeal the Common Construction Wage, they put taxpayers first, providing much-needed relief to cash-strapped local governments and schools." –Vice President (then-Governor) Mike Pence.

However, based on statistically significant differences between Indiana post-repeal and comparable Midwest states that did not repeal their prevailing wage laws, repeal has had negative consequences for Indiana. Blue-collar construction worker wages have been cut and lesser-educated individuals have replaced high-skilled workers, contributing to higher turnover rates and lower per-worker productivity levels. Contractor competition has not increased for bids on public construction projects and public school construction costs have not decreased. Ultimately, repeal of Common Construction Wage has not saved taxpayers any money and, in fact, has had negative effects on construction market outcomes in Indiana.

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About the Authors

Frank Manzo IV, MPP is the Policy Director of the Midwest Economic Policy Institute, a division of the Illinois Economic Policy Institute (ILEPI). His research focuses on labor market policies, income inequality, economic development, infrastructure investment, and public finance. He earned 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.

Kevin Duncan, Ph. D. is a Professor of Economics at Colorado State University-Pueblo, where he teaches business and regional economics in the Hasan School of Business. Duncan has examined the effect of prevailing wage laws on construction costs and productivity, construction worker poverty and reliance on public assistance, and minority employment in the construction industry, as well as the economic impact of the wage policy. Duncan has provided testimony and research related to construction labor market policy to state legislatures in Colorado, Hawaii, Kentucky, New Hampshire, and Vermont. His research on prevailing wage laws has appeared in leading peer-reviewed academic journals such as *Construction Management and Economics*, *Industrial and Labor Relations Review*, and *Industrial Relations*. He received his Ph. D. in Economics from the University of Utah and his BA in Economics from the University of California, Riverside.

Introduction

Common Construction Wage, also called prevailing wage, was a law in Indiana that supported blue-collar construction workers employed on public construction projects. Common Construction Wage was essentially a minimum wage on publicly-assisted projects, requiring that contractors pay workers no less than the prevailing wage and benefit rates that were most commonly paid to comparable workers in each county. The rates were determined democratically through public hearings in every county. The law was enacted in 1935 as a direct response to an influx of out-of-state, less-trained contractors entering Indiana and undercutting local construction standards (Vincent, 1990).

Common Construction Wage leveled the playing field for all contractors by ensuring that state and local expenditures maintained and reflected local area standards for wages and benefits. Public construction bidding is different from the private construction sector. Public bodies in Indiana are required to select the lowest bidder. In the low-bid model, contractors aim to lower their bids however possible, including through cutthroat reductions in worker wages, benefits, and apprenticeship training or benefits. Thus, long-term investments in workers through training, health, and well-being are often jettisoned by contractors to win bids on short-term projects. Common Construction Wage took labor costs out of the equation for contractors and incentivized them to compete based on core competencies in construction rather than on undermining middle-class compensation standards.

Despite an emerging academic consensus that shows Common Construction Wage and other state prevailing wage laws do not have a discernible impact on total construction costs, Hoosier lawmakers completely repealed the Indiana Common Construction Wage Act on July 1, 2015 (Indiana DOL, 2015). In the years leading up to repeal, there were concerted efforts to weaken or repeal prevailing wage laws in states across America. Indiana initially weakened Common Construction Wage from 2012 through 2015. Prior to 2012, projects with an actual construction cost of less than $150,000 were excluded from coverage under the law, meaning that Common Construction Wage did not apply to small projects. This threshold was raised twice: first to $250,000 in January 2012 and then to $350,000 on January 2013 (Indiana DOL, 2011). In 2015, however, Indiana lawmakers completely repealed their prevailing wage law. Today, 29 states have a state prevailing wage law– including bordering Illinois, Michigan, and Ohio.

Per the legislation to repeal Common Construction Wage, the Indiana Department of Labor is required to study the effects of repeal. The report must study the effects of repeal on, at minimum, the cost of public works projects, the wages paid on public works projects, and the number of Indiana residents working on public works projects. The law mandates that this report be submitted on or before July 1, 2021 (HEA 1019, 2015). However, data have become available to begin assessing the impact. This report evaluates data on the impact of repealing Common Construction Wage on ten construction market outcomes: blue-collar construction worker wages, wage inequality, worker skill levels, veterans working in construction, worker productivity, worker turnover, public works employment, competition in public bidding, union market share, and public school projects.

Competing Claims on the Economic Effects of Repealing Common Construction Wage

In the year prior to repeal, three economic studies were published on the effects of Indiana's Common Construction Wage. To varying degrees, all three studies provided economic forecasts on the impact that repealing the policy would have on Indiana's construction market.

The first study was published in June 2014 by Frank Manzo IV at the Midwest Economic Policy Institute, Dr. Robert Bruno at the University of Illinois at Urbana-Champaign, and Scott Littlehale at Smart Cities Prevail (Manzo et al., 2014). The report, *Common Sense Construction: The Economic Impacts of Indiana's Common Construction Wage*, concluded that the policy promoted positive market outcomes for construction workers and contractors. The researchers found that Common Construction Wage increased the share of work completed by in-state contractors, raised construction worker wages by 8.4 percent on average, boosted productivity, did not increase construction costs on public projects, and did not favor union contractors over nonunion contractors.

The second study was published in January 2015 by Dr. Peter Philips, a Professor of Economics at the University of Utah since 1978 (Philips, 2015). The report, *Indiana's Common Construction Wage Law: An Economic Impact Analysis*, also found that the policy was good for the construction industry, construction workers, and Indiana taxpayers. Philips notably ascertained that joint labor-management apprenticeship programs accounted for 94 percent of all annual training expenditures in Indiana's construction industry, contributing to higher productivity among union contractors. He found that repeal would lead to the loss of middle-class construction careers, the rise of less-skilled workers entering construction, and lower levels of productivity. Professor Philips used his study in a testimony before the Tax and Fiscal Policy Committee in the Indiana State Senate.

The third article was delivered in March 2015 by James Sherk, a Research Fellow at The Heritage Foundation (Sherk, 2015). The piece, *How the Common Construction Wage Affects the Cost and Quality of Construction Projects*, was used as a testimony before the Tax and Fiscal Policy Committee in the Indiana State Senate as well. In the article, Sherk argued that Common Construction Wage only benefited unions at the expense of taxpayers. He claimed that the law "inflated" the cost of construction labor, limited competition on public projects, and that the higher productivity of union workers did not offset their higher labor costs.[1] Sherk concluded that repeal– by cutting worker wages– would result in lower costs on public construction projects. This argument persuaded Indiana State Representative Jerry Torr (R-Carmel) and then-Governor Mike Pence, who referenced it in arguing that repeal would save taxpayer dollars (Shella, 2015; WYFI, 2015).[2]

Figure 1 summarizes the differences between the three studies across ten construction market outcomes. With a few exceptions, all three studies made claims which projected the impact of repealing Common Construction Wage on ten construction market outcomes. Included in Figure 1 is a post-repeal study published in May 2016 on the impact of repeal on veterans (Manzo et al., 2016a). Conducted by two of the researchers in the first study plus Dr. Kevin Duncan, a Professor of Economics at Colorado State University–Pueblo, the study found that repeal reduces veteran employment in blue-collar construction occupations, reduces the annual incomes of veteran blue-collar construction workers by between 7 and 11 percent, and results in more veterans in poverty. With an aging construction workforce, the loss of young veterans– who are more likely to have formal training while serving– contributes to skilled labor shortages in the industry.

[1] Sherk equated prevailing wage rates with union wage rates, and compared union wages to nonunion wages as the basis for his analysis. In Adams County, Indiana, a skilled carpenter working full-time earning the union rate would have earned $51,000 in 2014, near the median family income in Adams County. Conversely, a skilled carpenter working full-time at the nonunion rate would have taken home about $38,000, about 150 percent of the federal poverty level. Sherk's labor cost savings were based on the assumption that construction workers would be paid near-poverty level wages that would qualify them for public assistance (Duncan, 2016).

[2] Sherk now serves as an advisor to President Donald Trump on the White House Domestic Policy Council (Penn, 2017).

FIGURE 1: FORECASTS OF CONSTRUCTION MARKET OUTCOMES IN THREE PRE-REPEAL STUDIES ON COMMON CONSTRUCTION WAGE

Construction Market Outcome	Manzo, Bruno, and Littlehale (2014)[1]: One University (Ph.D.) Academic	Philips (2015)[2]: One University (Ph.D.) Academic	Sherk (2015)[3]: No University (Ph.D.) Academics
Construction wages*	Repeal would result in "4.5 percent to 10.7 percent fall in average construction worker wages"	Repeal "will inevitably lead towards lower construction worker incomes across all of Indiana construction"	Common Construction Wage "rates average 22 percent above actual market wages"
Wage inequality	With Common Construction Wage, Indiana's "construction industry… reduces wage inequality"	Repeal "will inevitably lead towards… the loss of middle class careers in construction and efforts to fill the void with guest worker programs"	N/A
Worker skill levels	Repeal "would lead to a poorly trained, low-skill workforce"	"Squeezing wages and benefits has the effect of… attracting less skilled workers"	"[H]igher compensation rates do not automatically translate into higher quality"
Veterans in construction	Repeal "reduces the attractiveness of employment in a construction occupation for veteran workers."**	N/A	N/A
Worker productivity	"For the entire construction industry, workers in states with a PWL are 3.8 percent more productive"	"In states with Common Construction-Wage laws, value added per worker is, on average, 14% higher"	"[H]igher wages do not produce offsetting productivity or quality benefits" (despite empirical research suggesting otherwise)
Worker turnover	Due to repeal, workers "would voluntarily choose to leave for another profession because construction wages and benefits would fall"**	"Squeezing wages and benefits has the effect of pushing many of the best workers out of construction"	N/A
Public works employment	The middle-of-the-road estimate for construction employment was a 3.4 percent increase, because "elasticities of labor demand are expected to be close to zero for construction workers"	N/A	"Higher wages for union members come at the cost of reduced job opportunities"
Contractor competition	Common Construction Wage laws "take labor costs out of the equation in project bids, allowing contractors to compete over… materials costs, technology, management practices, and profit margins"	"Common wage regulations mean that the bidding the government uses on public works reinforces rather than undercuts" high-road market outcomes	"Prevailing wage laws limit competition"
Union market share	"There is no evidence to suggest that the Common Construction Wage only helps union contractors"	"The difference between union and nonunion contractor bids… was insignificant"	"Prevailing wage laws force non-union firms to adopt the same cost structure as their unionized competitors. This makes it much harder to undercut unionized firms"
Public school projects*	"The Common Construction Wage does not increase total construction costs for public projects"	"There is little evidence to support the assertion that repealing Common Construction Wage… saves any money at all"	"Limiting competition makes public construction cost more," citing 10.7 percent savings from repeal

Author affiliations:
[1]Frank Manzo IV, M.P.P.: Policy Director, Midwest Economic Policy Institute; Robert Bruno, Ph.D.: Director, Project for Middle Class Renewal, University of Illinois at Urbana-Champaign; Scott Littlehale: Senior Research Analyst, Smart Cities Prevail.
[2]Peter Philips, Ph.D.: Professor of Economics, University of Utah.
[3]James Sherk, M.A.: Research Fellow, Heritage Foundation.

**In a May 4, 2015 "fiscal note," the Legislative Services Agency at Indiana's Office of Fiscal and Management Analysis stated that "it is reasonable to assume that the removal of Common Construction Wage may result in lower compensation plus fringe benefits on public works projects" and that "[d]ebt incurred to finance projects may decrease due to the lower project costs" (LSA, 2015).*

***From Manzo, Bruno, and Duncan (2016a)* – The Impact of Prevailing Wage Laws on Military Veterans: An Economic and Labor Market Analysis*. Kevin Duncan, Ph.D.: Professor of Economics, Colorado State University–Pueblo.*

Source(s): Manzo et al. (2014); Philips (2015); Sherk (2015).

Finally, it is also worth noting that the Legislative Services Agency at Indiana's Office of Fiscal and Management Analysis published a fiscal note in May 2015 (LSA, 2015). The fiscal note was less comprehensive than the three

studies that predicted outcomes, but did state that "it is reasonable to assume that the removal of Common Construction Wage may result in lower compensation plus fringe benefits on public works projects." The Legislative Services Agency said that lower labor costs could result in lower project costs. The fiscal note, however, did not estimate how much total project costs would decrease, saying only that "[t]he specific amount of cost savings is indeterminate at this time."

The Impacts of Repealing Common Construction Wage on Ten Market Outcomes

While the Indiana Department of Labor is required to submit a report on the effects of repeal of Common Construction Wage before July 2021, data are becoming available to test claims made by policy researchers in the months leading up to repeal. Figure 2, for example, provides descriptive statistics from the *Current Population Survey Outgoing Rotation Groups* (CPS-ORG), which is compiled by the U.S. Department of Labor Bureau of Labor Statistics (BLS). Indiana survey results are compared for the 18 months before repeal and the 18 months after repeal of Common Construction Wage and contrasted with aggregate data for Illinois, Michigan, and Ohio over the same timeframe. There are 2,234 survey results from individuals employed in these occupations in the four Midwest states. In a typical poll, the standard margin of error would be ±2.1%.

FIGURE 2: DESCRIPTIVE STATISTICS OF CONSTRUCTION MARKET DATA IN INDIANA AND THREE NEIGHBORING STATES, 2014-2016

Current Population Survey Outgoing Rotation Groups (CPS ORG) CEPR Data	Indiana			Illinois, Michigan, Ohio		
	Pre-Repeal (Jan. 2014-June 2015)	Post-Repeal (July 2015-Dec. 2016)	Change	Pre-Repeal (Jan. 2014-June 2015)	Post-Repeal (July 2015-Dec. 2016)	Change
Observations	226	232		887	889	
Weighted to Actual Employment	163,085	161,545	-1,540	633,620	660,256	+26,636
Real Hourly Wage	$23.71	$22.63	-4.5%	$23.72	$24.39	+2.8%
Share with Less than High School	15.1%	18.6%	+3.6%	15.4%	13.8%	-1.6%
Veteran Share	8.4%	7.8%	-0.6%	6.5%	7.1%	+0.6%
Number of Veterans	13,641	12,471	-1,170	41,066	46,795	+5,729

Source(s): Authors' analysis of CEPR (2017).

The data indicate that, after repeal of Common Construction Wage, the average real (inflation-adjusted) hourly wage of blue-collar construction workers fell in Indiana by 4.5 percent, the share of the workforce without a high school degree increased by 3.6 percentage points, and veteran employment in the trades marginally fell by 0.6 percentage point. Conversely, in the three neighboring states with prevailing wage, the opposite happened in each case. In Illinois, Michigan, and Ohio, the average hourly wage of blue-collar construction workers grew by 2.8 percent, the share of the workforce without a high school degree decreased by 1.6 percentage points, and the veteran share slightly increased by 0.6 percentage point. There is also suggestive evidence that employment in construction occupations fell by about 1,500 workers in Indiana following repeal but increased by more than 26,000 workers in the three neighboring states, though this is not statistically significant (Figure 2).

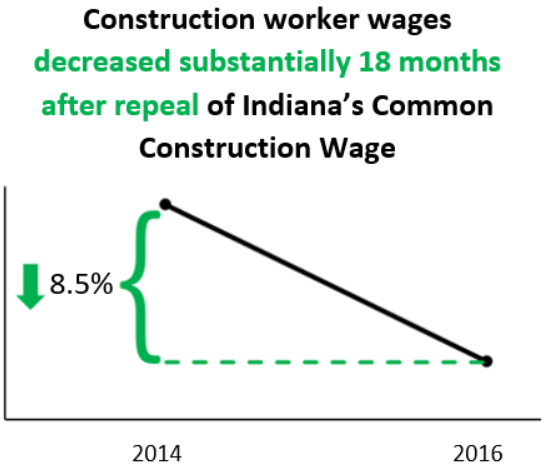
FIGURE 3: CONSTRUCTION LABOR MARKET CHANGES AFTER CCW REPEAL IN INDIANA, DIFFERENCE-IN-DIFFERENCES

Current Population Survey Outgoing Rotation Groups	Difference-in-Differences
Real Hourly Wage	**-7.3%**
Share with Less than High School	**+5.1%**
Veteran Share	**-1.2%**

Source(s): Authors' analysis of CEPR (2017).

1. Construction Wages

Statistical regression results on the impact of Common Construction Wage repeal on the average hourly wages of blue-collar construction and extraction workers are reported in Figure 4.[3] Many factors influence a worker's hourly wage, including level of educational attainment, age, race, immigration status, veteran status, and union membership. After accounting for these observable variables, removing Common Construction Wage decreased real hourly wages for blue-collar construction workers in Indiana by 8.5 percent on average in the 18 months following repeal. This effect is statistically significant.



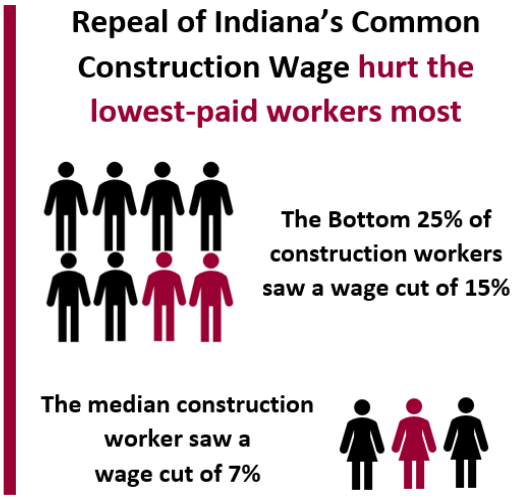
The 8.5 percent average drop in relative construction worker wages attributable to the repeal of Common Construction Wage is nearly identical to the "middle-of-the-road" estimate of 8.4 percent that was predicted in Manzo, Bruno, and Littlehale, who provided a range of between 4.5 and 10.7 percent (2014). It is also consistent with other research that has found that state prevailing wage laws increase blue-collar construction worker hourly wages (Manzo et al., 2016b).

FIGURE 4: THE IMPACT OF CCW REPEAL ON REAL WAGES OF CONSTRUCTION AND EXTRACTION WORKERS

Current Population Survey Outgoing Rotation Groups	Effect on Hourly Wage	Significance (P_Value)	Number of Observations	R^2 Value
Robust Standard OLS Regression	**-8.46%****	0.020	1,782	0.27

Source(s): Authors' analysis of CEPR (2017). See the Appendix for more information. For full regression results, please contact author Frank Manzo IV at fmanzo@illinoisepi.org. Three asterisks (***) indicate significance at the 99-percet confidence level. Two asterisks (**) indicate significance at the 95-percent confidence level. One asterisk (*) indicates significance at the 90-percent confidence level.

2. Wage Inequality



Three quantile regressions were employed to evaluate the impact of Common Construction Wage repeal on blue-collar construction and extraction workers across the income distribution (Figure 5). Whereas repeal of Common Construction Wage is statistically associated with an 8.5 percent decrease in average hourly wages, the effect is concentrated among the lowest-income workers. In fact, after accounting for other observable factors, the hourly earnings of the Bottom 25 Percent of Indiana construction workers statistically fell by 15.1 percent post-repeal. The median construction worker saw a wage cut of 7.0 percent, but the impact is merely suggestive because it is significant at only the 90-percent confidence level. The repeal of Common Construction Wage had no statistical impact on the hourly wages of the highest-earning construction workers,

[3] For more on the "regression" statistical approach, please see the "Report Methodology" section in the Appendix.

reflected in the quartile regression for the Top 25 Percent (Figure 5).

Repeal of Common Construction Wage hurt the lowest-paid workers most, contributing to greater wage inequality in construction and extraction occupations. These estimates echo findings from a 2016 national study which found that state prevailing wage laws increase earnings by 18 to 19 percent for working-class construction workers while having no effect on managers and supervisors in the industry. As a result, they reduce the number of blue-collar construction workers earning less than the official poverty line by 30 percent (Manzo et al., 2016b). Similarly, a 2014 report found that state prevailing wage laws reduce income inequality between the Top 10 Percent in construction and the Bottom 10 Percent in construction by as much as 45 percent because it establishes minimum pay levels (Manzo & Bruno, 2014). Common Construction Wage acted like a minimum wage for skilled construction workers, reducing income inequality by stabilizing the wage floor.

FIGURE 5: THE IMPACT OF CCW REPEAL ON WAGES OF CONSTRUCTION WORKERS ALONG THE INCOME DISTRIBUTION

Current Population Survey Outgoing Rotation Groups	Effect on Hourly Wage	Significance (P_Value)	Number of Observations	R^2 Value
Quartile Regression: Bottom 25 Percent	**-15.08%*** **	0.001	1,782	0.17
Quartile Regression: Median	**-6.98%***	0.058	1,782	0.19
Quartile Regression: Top 25 Percent	**-5.10%**	0.297	1,782	0.15

Source(s): Authors' analysis of CEPR (2017). See the Appendix for more information. For full regression results, please contact author Frank Manzo IV at fmanzo@illinoisepi.org. Three asterisks (***) indicate significance at the 99-percet confidence level. Two asterisks (**) indicate significance at the 95-percent confidence level. One asterisk (*) indicates significance at the 90-percent confidence level.

3. Worker Skill Levels

A key discrepancy between Sherk and the other two pre-repeal studies involves the skill level and quality of construction workers. Sherk (2015) claimed that "higher compensation rates do not automatically translate into higher quality." This is at odds with peer-reviewed research, which indicates that, when wages increase in construction, contractors respond by substituting skilled workers in place of less-productive counterparts (Blankenau & Cassou, 2011). Philips (2015) arrived at the same conclusion as the peer-reviewed research, saying that by reducing wages and benefits, repealing Common Construction Wage would attract less-skilled workers.

Repeal was statistically associated with an increase of low-skill workers in construction occupations

4.5 percentage-point increase of workers without a high school degree

After accounting for other factors such as age, race, and immigration status, repeal of Common Construction Wage is statistically associated with a 4.5 percentage-point increase in the share of workers in construction and extraction occupations who do not have a high school diploma or equivalent degree (Figure 6). In the four Midwest states, the baseline is 15.0 percent, which means that 15.0 percent of all construction workers would be expected to have educational attainment levels below that of a high school degree, holding all else constant. Repeal of Common Construction Wage added 4.5 percentage points to that baseline.

Construction and extraction occupations in Indiana became lower-paying and less-skilled after repeal. Repeal of Common Construction Wage could explain almost all the difference between Indiana, which saw an increase in the low-skill share of construction workers, and the three neighboring states that had and maintained their prevailing wage, which cumulatively experienced a decrease in these less-educated workers (Figure 2).

At the federal-level, there is additional evidence that removing prevailing wage requirements results more low-skilled workers on public projects. In late August 2005, following the devastation of Hurricane Katrina, President George W. Bush temporarily suspended the Davis-Bacon Act for Gulf Coast areas in Florida, Alabama, Mississippi, and Louisiana. Over two months, several billion dollars of non-prevailing wage contracts were awarded. Reports later documented widespread displacement of local workers by migratory low-wage, low-skill workers who endured significant health and safety risks. The consequences of the suspension of the federal Davis-Bacon Act were so immediate and dire that a bipartisan group of legislators was summoned to the White House in late October 2005, where the President reversed the suspension (Whittaker, 2005).

FIGURE 6: THE IMPACT OF CCW REPEAL ON THE PROBABILITY OF A CONSTRUCTION WORKER NOT HAVING A HIGH SCHOOL DEGREE

Current Population Survey Outgoing Rotation Groups	Average Marginal Effect	Significance (P_Value)	Number of Observations	R^2 Value	Constant
Probit on Prob(Less than High School)	**+4.52 p.p.****	0.044	2,234	0.10	15.03%

Source(s): Authors' analysis of CEPR (2017). See the Appendix for more information. For full regression results, please contact author Frank Manzo IV at fmanzo@illinoisepi.org. Three asterisks (***) indicate significance at the 99-percet confidence level. Two asterisks (**) indicate significance at the 95-percent confidence level. One asterisk (*) indicates significance at the 90-percent confidence level.

4. Veterans in Construction

Prior research has found that military veterans are more likely than non-veterans to work in construction. State prevailing wage laws– like Common Construction Wage in Indiana– have been found to increase the share of military veterans employed in construction. Specifically, any given blue-collar construction worker is 1.9 percentage-points more likely to be a military veteran in states that have a strong or average prevailing wage law compared to states with no prevailing wage or a weakly-enforced prevailing wage law (Manzo et al., 2016a). Veterans tend to be younger workers who have received formal training while serving. At a time when the construction workforce is aging, a loss of veterans contributes to skilled labor shortages in construction.

After accounting for other factors such as age, race, and educational attainment, repeal of Common Construction Wage is weakly correlated with a 1.3 percentage-point drop in the share of the construction workforce that are military veterans (Figure 7). This is on par with the 1.2 percentage-point relative difference reported in Figure 3. However, the drop in the veteran share of construction and extraction workers is not statistically significant. Thus, while the numbers suggest that repealing Common Construction Wage reduced the appeal of working construction careers among veterans, more data is needed to further assess the impact.

FIGURE 7: THE IMPACT OF CCW REPEAL ON THE PROBABILITY OF A CONSTRUCTION WORKER BEING A MILITARY VETERAN

Current Population Survey Outgoing Rotation Groups	Average Marginal Effect	Significance (P_Value)	Number of Observations	R^2 Value	Constant
Probit on Prob(Veteran)	**-1.27 p.p.**	0.613	454	0.11	8.13%

Source(s): Authors' analysis of CEPR (2017). See the Appendix for more information. For full regression results, please contact author Frank Manzo IV at fmanzo@illinoisepi.org. Three asterisks (***) indicate significance at the 99-percet confidence level. Two asterisks (**) indicate significance at the 95-percent confidence level. One asterisk (*) indicates significance at the 90-percent confidence level.

5. Worker Productivity

Construction productivity per worker increased at a slower pace in Indiana after repeal

Productivity grew 5.3 percentage-points slower in Indiana compared to Illinois, Michigan, and Ohio

While the four previous construction market outcomes used individual-level survey data to assess impacts on workers, the next three utilize state-level data based largely on employer payroll and sales records. Most economists agree that a worker's contribution to national gross domestic product (GDP) is a good measure of his or her annual productivity. To gauge per-worker productivity in construction, industry output data from the Bureau of Economic Analysis (BEA) is divided by the total number of construction employees.

Figure 8 shows GDP per employee in the construction industry in 2014, 2015, and 2016. The two years of interest are 2014, which serves as the baseline because it is the year prior to Indiana repealing Common Construction Wage, and 2016, which is the latest year for which data are available. Note that the growth rates are two-year estimates and are not adjusted for inflation. Annual GDP per worker– including both blue-collar workers and white-collar employees– was $64,374 in Indiana's construction industry in 2014. Construction productivity grew to $67,227 in 2016, an increase of 4.4 percent (about $2,900). Meanwhile, annual GDP per construction employee increased from $71,971 to $79,003 between 2014 and 2016 in neighboring Illinois, Michigan, and Ohio, a growth rate of 9.8 percent (about $7,000).

FIGURE 8: CHANGE IN ANNUAL PRODUCTIVITY PER WORKER AFTER CCW REPEAL IN INDIANA, DIFFERENCE-IN-DIFFERENCES

Gross Domestic Product Per Worker, Construction Industry (Bureau of Economic Analysis)					
Area	2014 (Pre-Repeal)	2015 (½ Repeal)	2016 (Post-Repeal)	Growth Rate Since 2014	Dollar Change Since 2014
Indiana	$64,374	$65,873	$67,227	+4.4%	+$2,853
Illinois, Michigan, Ohio	$71,971	$76,031	$79,003	+9.8%	+$7,032
Difference-in-Differences	**-$7,597**	**-$10,158**	**-$11,776**	**-5.3%**	**-$4,179**

Source(s): Authors' analysis of BEA (2017).

As a result, construction productivity per worker grew 5.3 percentage-points slower in Indiana following repeal of Common Construction Wage (Figure 8). This drop in relative productivity *exceeds* the drop in labor costs. In Indiana, blue-collar labor costs only account for 25 percent of total construction costs (Philips, 2015; Manzo et al., 2014). Repeal of Common Construction Wage was associated with an 8.5 percent average drop in blue-collar construction worker wages (Figure 4). Multiplying the labor cost share by the change in labor costs divulges that total construction costs may be approximately 2.1 percent lower per worker-hour in Indiana following repeal of Common Construction Wage. However, while projects may appear to cost 2.1 percent less per hour, contractors and taxpayers are paying workers that are 5.3 percentage-points less productive per hour. Thus, the relative decrease in worker productivity more than offsets the wage cut.

In addition, the full effect of repealing Common Construction Wage may take multiple years to emerge. In previous economic research, the primary reason why construction workers are more productive is that prevailing wage laws support apprenticeship training programs. Economist Cihan Bilginsoy has found that that apprenticeship enrollments are 6 to 8 percent higher in states with prevailing wage and that apprentices complete their on-the-job and classroom training at a faster rate in these states (Bilginsoy, 2005). Other studies conducted after the repeal of prevailing wage in Colorado, Kansas, and other states found that repeal was associated with a 40 percent decrease in apprenticeship training (Azari-Rad et al., 1993; Philips, 2014; Philips et

al., 1995). Because most apprenticeship programs take between two and six years to complete, the consequences of repealing Common Construction Wage on apprenticeship training– and spillover effects on worker productivity– may not materialize until around the time that the Indiana Department of Labor submits its report on the impact of Common Construction Wage repeal in 2021.

6. Worker Turnover

Quarterly Workforce Indicators (QWI) from the U.S. Census Bureau are used to investigate impacts on worker turnover in the "heavy and civil engineering construction" sector.[4] Heavy and civil engineering construction primarily involves public works projects, particularly heavy and highway projects. QWI data are available on a quarterly basis, so peak construction quarters for the Midwest are the second quarter (April, May, and June) and the third quarter (July, August, and September).

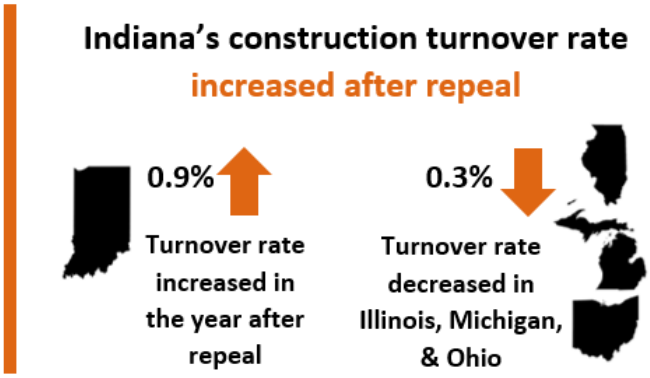


Figure 9 presents turnover data for heavy and highway contractors, showing the turnover rate for the four quarters leading up to repeal of Common Construction Wage and the four quarters immediately following repeal. Turnover is highest in the third quarter of every year as firms hire additional workers to complete summer jobs. In the year prior to repealing Common Construction Wage, worker turnover in the heavy and civil engineering construction sector averaged 12.3 percent in Indiana and 13.0 percent in the three neighboring states with prevailing wage laws. In the four months after repeal, however, average quarterly turnover in the sector jumped up to 13.2 percent in Indiana but fell to 12.6 percent in bordering Midwest states (Figure 9).

FIGURE 9: DESCRIPTIVE STATISTICS ON THE QUARTERLY TURNOVER RATES IN HEAVY AND CIVIL ENGINEERING CONSTRUCTION

Turnover Rate	Indiana	Illinois, Michigan, Ohio
2014Q3	23.0%	26.7%
2014Q4	9.4%	8.5%
2015Q1	8.6%	8.4%
2015Q2	8.3%	8.2%
Average	**12.3%**	**13.0%**
Indiana Repeals Common Construction Wage		
2015Q3	23.6%	26.5%
2015Q4	10.6%	8.1%
2016Q1	8.6%	7.6%
2016Q2	10.1%	8.3%
Average	**13.2%**	**12.6%**

Source(s): Authors' analysis of LEHD (2017).

Figure 10 shows the year-over-year change in turnover rates and provides a "difference-in-differences" estimate on the possible effect of repealing Common Construction Wage. In Indiana's heavy and civil engineering

[4] For more information, please see the "Data Sources" section in the Appendix.

construction sector, worker turnover increased year-over-year in three out of four quarters, with an average increase of 0.9 percentage point. Meanwhile, in Illinois, Michigan, and Ohio's aggregated heavy and civil engineering construction sector, worker turnover *decreased* year-over-year in three out of four quarters. The average drop in worker turnover was 0.3 percentage point in the three neighbors that have and maintain state prevailing wage laws. Thus, repeal of Common Construction Wage was associated with a 1.2 percentage-point relative increase in worker turnover in Indiana's heavy and highway construction sector. As wages decreased and low-skill employees entered the workforce, more productive workers may have exited the industry in search of another career that offers a middle-class lifestyle.

FIGURE 10: CHANGE IN TURNOVER RATE IN HEAVY AND CIVIL ENGINEERING CONSTRUCTION AFTER CCW REPEAL IN INDIANA, DIFFERENCE-IN-DIFFERENCES

Turnover Rate Change	Indiana	Illinois, Michigan, Ohio	Difference-in-Differences
Q3 Year over Year	+0.6%	-0.2%	+0.8%
Q4 Year over Year	+1.2%	-0.4%	+1.6%
Q1 Year over Year	0.0%	-0.8%	+0.8%
Q2 Year over Year	+1.8%	+0.1%	+1.7%
Average	**+0.9%**	**-0.3%**	**+1.2%**

Source(s): Authors' analysis of LEHD (2017).

7. Public Works Employment

QWI data also offer a measure of public works employment. The "heavy and civil engineering construction" sector includes the construction and maintenance of highways, streets, bridges, dams, parks, trails, utility and energy line, and similar projects. Because the U.S. Census Bureau uses payroll records from contractors for QWI data, employment counts for the heavy and civil engineering construction sector should align with the actual number of workers employed on public works construction projects.

Public works construction employment grew slower in Indiana after repeal

Indiana's public works employment grew 1.5 percentage-points slower than Illinois, Michigan, and Ohio

Figure 11 displays employment data for heavy and highway contractors over the four pre-repeal quarters and the four post-repeal quarters. Employment counts are generally highest in the fourth quarter of every year as contractors have "all hands on deck" to complete jobs prior to December and January, which are typically the coldest months of the year. In the year prior to repealing Common Construction Wage, there were an average of about 15,800 employees in the heavy and civil engineering construction sector in Indiana and an average of about 81,800 in the three neighboring states with prevailing wage laws. In the four months after repeal, average sectoral employment improved slightly in Indiana to approximately 16,100 workers and grew to nearly 84,500 workers in the three bordering Midwest states (Figure 11).

Analogous to the previous analysis of worker turnover rates, Figure 12 shows year-over-year changes by quarter and provides a "difference-in-differences" estimate on the impact of Common Construction Wage repeal. In Indiana's heavy and civil engineering construction sector, total employment increased year-over-year in three out of four quarters, with an average increase of 1.8 percent. Meanwhile, in the three neighboring states with prevailing wage laws, heavy and civil engineering construction employment increased in all four quarters. The average year-over-year employment growth was 3.3 percent in the three bordering Midwest states.

FIGURE 11: DESCRIPTIVE STATISTICS ON QUARTERLY EMPLOYMENT COUNTS IN HEAVY AND CIVIL ENGINEERING CONSTRUCTION

Employment	Indiana	Illinois, Michigan, Ohio
2014Q3	17,166	92,179
2014Q4	17,422	91,340
2015Q1	12,951	66,345
2015Q2	15,580	77,281
Average	**15,780**	**81,786**
Indiana Repeals Common Construction Wage		
2015Q3	17,678	95,317
2015Q4	18,338	95,587
2016Q1	13,071	66,717
2016Q2	15,173	80,275
Average	**16,065**	**84,474**

Source(s): Authors' analysis of LEHD (2017).

Accordingly, repeal of Common Construction Wage was associated with slower job growth in public works construction. The rate of heavy and civil engineering construction job growth was 1.5 percentage points lower in Indiana than in Illinois, Michigan, and Ohio one year following repeal of Common Construction Wage in Indiana. Contrary to claims made by some opponents of Common Construction Wage, repealing the law was not a boon to the public works construction industry. If repeal resulted in lower construction costs, then it might have allowed local governments to complete more projects. If local governments took on more projects, then the number of workers employed on public works construction projects would have increased significantly. Instead, public works construction employment grew slower in Indiana than in the three neighboring prevailing-wage states.

FIGURE 12: CHANGE IN EMPLOYMENT IN HEAVY AND CIVIL ENGINEERING CONSTRUCTION AFTER CCW REPEAL IN INDIANA, DIFFERENCE-IN-DIFFERENCES

Employment Change	Indiana	Illinois, Michigan, Ohio	Difference-in-Differences
Q3 Year over Year	+3.0%	+3.4%	-0.4%
Q4 Year over Year	+5.3%	+4.6%	+0.6%
Q1 Year over Year	+0.9%	+0.6%	+0.4%
Q2 Year over Year	-2.6%	+3.9%	-6.5%
Average	**+1.8%**	**+3.3%**	**-1.5%**

Source(s): Authors' analysis of LEHD (2017).

A recent case study from southern Indiana may shed light on why public works employment did not increase. After the state weakened Common Construction Wage by raising contract thresholds– but before full repeal– public works construction employment in the 13 southernmost Indiana counties decreased by over 800 jobs (-21 percent). Over the same period, public works construction employment grew by nearly 800 jobs (21 percent) in 14 border counties across the river in Kentucky. Average construction wages were about 24 percent lower in Kentucky, suggesting that weakening the wage policy resulted in greater demand for low-wage, out-of-state workers (Manzo, 2016). The net impact in this case was that local construction standards were undermined and taxpayer dollars were shifted to Kentucky as workers returned home upon project completion. Other studies have found that the probability of winning a bid on a public school project is 5 percent higher for in-state contractors in states with prevailing wage laws (Prus, 1999). It is possible that contractors from lower-paying areas were awarded more projects, with jobs going to out-of-state workers.

8. Contractor Competition

The remaining three construction market outcomes– contractor competition, union market share, and public school projects– are evaluated using bid data. Compared to the first four outcomes that analyzed individual-level data and the other three that utilized state-level information from publicly-available sources, information on actual public construction projects is more challenging to obtain. Fortunately, the Indiana, Illinois, Iowa Foundation for Fair Contracting (IIIFFC)– a nonprofit labor-management organization– collects public bid data for 14 northern Indiana counties (Figure 13). Bid data are collected at bid lettings, at local board meetings, and from public documents. All projects in their proprietary reports include the date of the bid letting, the county of the project, the awarding agency, bid information, and the union status of each bidder. The IIIFFC generously provided data on 2,062 public projects, including 335 school projects, from January 2013 through September 2017.

There has been essentially no change in contractor competition following repeal

FIGURE 13: 14 NORTHERN INDIANA COUNTIES COVERED IN THE IIIFFC DATASET

	14 Northern Indiana Counties
1	Elkhart
2	Fulton
3	Jasper
4	Kosciusko
5	LaGrange
6	Lake
7	LaPorte
8	Marshall
9	Newton
10	Noble
11	Porter
12	Pulaski
13	St. Joseph
14	Starke

Source(s): IIIFFC (2017).

The impact of prevailing wage laws on contractor competition was a point of contention between the three pre-repeal studies. Sherk (2015) argued that the Common Construction Wage limited competition by "forc[ing] non-union firms to adopt the same cost structure as their unionized counterparts," which discouraged nonunion companies from submitting bids on public projects. Repeal would increase competition according to Sherk's testimony. Manzo, Bruno, and Littlehale (2014), on the other hand, asserted that the level playing field helped to promote competition. By taking labor costs out of the equation in the bid process, Common Construction Wage incentivized contractors to "compete over quality, productivity, materials costs, technology, management practices, and profit margins." Competitive pressures to improve quality, productivity, and management practices and be more efficient with materials and capital equipment ensured best-value contracting for Hoosier taxpayers. Philips (2015) reached a similar conclusion and noted that repeal of Common Construction Wage would undercut, rather than improve, competitive bidding.

Actual project data reveal that the repeal of Common Construction Wage did not increase competition in northern Indiana (Figure 14). Figure 14 describes project data for the 2,062 projects awarded in northern Indiana between January 2013 and September 2017. A total of 978 public projects were awarded prior to repeal of Common Construction Wage with a total project value of $1.27 billion, based on the cumulative value of apparent low bids. Prior to repeal, an average of 3.0 contractors submitted bids on each public project. After repeal of Common Construction Wage, a total of 1,084 public projects were awarded with a total construction value of $1.19 billion. On these post-repeal public projects, an average of 2.9 contractors submitted bids. Therefore, contractor competition has been essentially unchanged since repeal of Common Construction Wage; in fact, bid competition marginally decreased following repeal. This is contrary to Sherk's testimony, which was based on too many ill-founded assumptions about the construction industry.

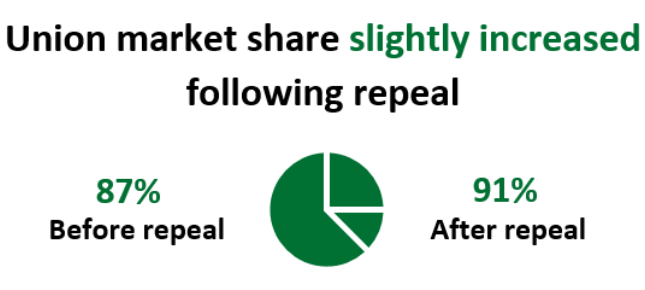
FIGURE 14: OVERALL STATISTICS ON PUBLIC PROJECTS AWARDED IN NORTHERN INDIANA COUNTIES BETWEEN 2013 AND 2017

Public Project Metric	Pre-CCW Repeal (Jan. 2013 – June 2015)	Post-CCW Repeal (July 2015 – Sept. 2017)
Public Projects Awarded	978	1,084
Bidders on Awarded Projects	2,939	3,178
Bidders Per Public Project	3.01	2.93
Market Value of Construction Work	$1,271,336,867	$1,194,052,839

Source(s): Authors' analysis of proprietary data from IIIFFC (2017).

Peer-reviewed research has found that prevailing wage laws do not reduce bid competition (Bilginsoy, 1999). A recent study focused on the effect of Davis-Bacon prevailing wage requirements on the cost of highway resurfacing projects in Colorado, comparing projects funded by the federal government, which require the payment of prevailing wages, to projects financed by the State of Colorado, which are not covered by prevailing wage. After taking project size and complexity into account, the study found that the level of bid competition did not vary between state and federal projects (Duncan, 2015). Another study on local projects substantiates this finding. In analyzing public works projects in five San Francisco Bay-area municipalities, researchers found that prevailing wage standards had no effect on the number of bidders or on contractor bidding behavior relative to the engineer's estimate of the value of the project (Kim et al., 2012).

9. Union Market Share



If Common Construction Wage was just a "union wage," as critics of prevailing wage laws often assert, then union contractors should have faced greater competition and declining market share with the law off the books. Instead, in a period with relatively low unemployment during the upswing of the business cycle, the opposite has happened. Since repeal of Common Construction Wage, the union share of northern Indiana's public construction market has actually increased (Figure 15). In the 30 months prior to repeal union contractors were awarded 733 out of the 978 contracts for public projects, or 74.9 percent. By contrast, in the 27 months since repeal, union contractors won 838 out of 1,084 projects, or 77.3 percent. The union win percent thus increased by 2.4 percentage points. In dollar amounts, the union share of the public construction market was 86.6 percent of total value prior to repeal but increased by 4.2 percentage points to 90.8 percent after Common Construction Wage was repealed.

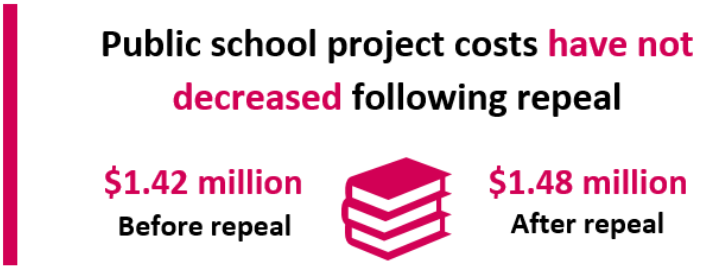
FIGURE 15: UNION SHARE STATISTICS ON PUBLIC PROJECTS AWARDED IN NORTHERN INDIANA COUNTIES BETWEEN 2013 AND 2017

Public Project Metric	Pre-CCW Repeal (Jan. 2013 – June 2015)	Post-CCW Repeal (July 2015 – Sept. 2017)
Public Projects Awarded	978	1,084
Projects Awarded to Union Contractors	733	838
Projects Awarded to Nonunion Contractors	245	246
Union Win Percent	74.9%	77.3%
Market Value of Construction Work	$1,271,336,867	$1,194,052,839
Union Market Share	$1,100,363,628	$1,084,193,848
Union Share Percent	86.6%	90.8%

Source(s): Authors' analysis of proprietary data from IIIFFC (2017).

Philips (2015) was correct when he used project-level data, found that there was no statistical difference between union and nonunion contractor bids on public school projects, and concluded that repeal of Common Construction Wage would have no discernible impact on contractor competition. There is no evidence the Common Construction Wage favored union contractors.

10. Public School Projects



In analyzing the effect of Common Construction Wage and other prevailing wage laws on project costs, public school construction has been a key focus of economic researchers. Public school construction is more homogenous than other types of public works projects, which makes it easier to isolate the potential cost impact of Common Construction Wage. A recent summary of the economics literature found that the majority of peer-reviewed studies failed to find a statistically significant link between prevailing wage laws and school construction costs (Duncan & Ormiston, 2017).

Between January 2013 and September 2017, there were 335 school construction projects awarded in northern Indiana (Figure 16). Public projects included elementary schools, middle schools, high schools, community colleges, public universities, and affiliated facilities such as gyms and bus transportation centers. The total number of public school projects in the dataset that were awarded prior to repeal was 146. In the months leading up to repeal, there were an average of 2.6 bidders per project, union contractors had a win percentage of 83.6 percent, and the average cost of the public school projects was $1.42 million.

There has been little to no difference in public school project bids in northern Indiana since repeal of Common Construction Wage (Figure 16). In the months following repeal, there were 189 public school projects awarded with an average bid competition of 2.8 bidders. Union contractors had a win percentage of 83.1 percent. The average cost of the public school projects was $1.48 million. Post-repeal, contractor competition marginally increased by 0.2 bidders, the union win share marginally fell by 0.5 percentage points, and the average cost per project actually increased by nearly $60,000.

FIGURE 16: PUBLIC SCHOOL BID STATISTICS ON PROJECTS AWARDED IN NORTHERN INDIANA COUNTIES BETWEEN 2013 AND 2017

Public School Construction Metric	Pre-CCW Repeal (Jan. 2013 – June 2015)	Post-CCW Repeal (July 2015 – Sept. 2017)
Public Projects Awarded	146	189
Bidders on Awarded Projects	377	526
Bids Per Project	2.58	2.78
Projects Awarded to Union Contractors	122	157
Projects Awarded to Nonunion Contractors	24	32
Union Win Percent	83.6%	83.1%
Cost Per Public School Project	$1,422,996	$1,481,545

Source(s): Authors' analysis of proprietary data from IIIFFC (2017).

Repeal of Common Construction Wage has had no effect on public school construction costs. Figure 17 uses a statistical technique called a "t-test" to assess whether the union win percentage and the average per-project

construction cost were meaningfully different after repeal.[5] In the case of the union win percentage on public school project bids, the t-statistic is -0.12, meaning that there is no discernible difference in the share of projects won by union contractors due to repeal of prevailing wage. Similarly, the t-statistic is 0.19 for the average public school project costs. The average cost per project built with Common Construction Wage was not statistically different than the average cost per project built without Common Construction Wage. Repeal has neither reduced the market share of union contractors nor lowered construction costs for taxpayers.

FIGURE 17: T-TESTS ON THE IMPACT OF REPEAL ON PUBLIC SCHOOL PROJECTS IN NORTHERN INDIANA BETWEEN 2013 AND 2017

T-test Assessments	Union Win Percentage			Public School Project Cost		
Public School Construction Metric	Mean Value	Standard Deviation	Number	Mean Value	Standard Deviation	Number
Before Repeal	0.8356	0.3719	146	1,422,996	2,779,748	146
After Repeal	0.8307	0.3760	189	1,481,545	2,891,530	189
t-statistic	*-0.1196*			*0.1869*		
Two-tailed p-value	*0.9049*			*0.8519*		
Statistically Significant?	**No**			**No**		

Source(s): Authors' analysis of proprietary data from IIIFFC (2017). See the Appendix for more information.

These findings parallel the economic consensus on the cost effect of prevailing wage laws on school construction projects. Figure 18 breaks down the 15 studies conducted since 2000 that used regression analyses and evaluated actual school construction projects. A total of 19,896 school projects have been assessed in these studies. If duplicates are omitted from authors who studied the same set of schools in multiple peer-reviewed articles that took different approaches, then 11,785 unique school projects have been evaluated using regression analysis since 2000.

Figure 18 shows that the preponderance of economic research finds that prevailing wage laws– such as Common Construction Wage– have no discernible impact on school construction costs. Fully 14 out of 15 studies (93.3 percent) since 2000 *that have used regression analyses* find no statistically significant impact of prevailing wage on school construction costs. This includes 10 out of 11 peer-reviewed articles (90.9 percent) that analyze actual school construction projects through regression models. Moreover, excluding the Ohio Legislative Service Commission (LSC), a total of 13 individual economic researchers are listed in Figure 18; 11 of those researchers (84.6 percent) have concluded that prevailing wage has no statistical impact on school construction costs in at least one study. The majority of economic studies and economic researchers say that prevailing wage laws have no effect on school construction costs.

Two of the three studies on Indiana's Common Construction Wage in 2014 and 2015 were convinced by the general economic consensus (Manzo et al., 2014; Philips, 2015). Sherk (2015), on the other hand, claimed that states that repealed prevailing wage saw 10.7 lower school construction costs, citing the report by the Ohio LSC. This report was also referenced by Indiana State Representative Jerry Torr (R-Carmel) and then-Governor Mike Pence (Shella, 2015; WYFI, 2015). However, the Ohio LSC estimate was not statistically significant. In fact, study authors wrote, "[e]vidence was not available as to the portion of the estimated savings, if any, that could be directly and conclusively attributed to the prevailing wage exemption" (Ohio LSC, 2002). An accurate assessment of the Ohio LSC study reveals that prevailing wage had no effect on school construction costs.

The finding that repeal of Common Construction Wage has had no impact on school project costs also validates a recent statement by Ed Soliday, who serves as the Assistant Majority Floor Leader in the Indiana House of Representatives. Representative Soliday (2017), who is a Republican from Valparaiso in northern Indiana,

[5] For more on the "t-test" statistical approach, please see the "Report Methodology" section in the Appendix.

testified in April 2017 that opponents of Common Construction Wage exaggerated how much Indiana would lower costs by repealing the law. Soliday attested:

> *"We got rid of prevailing wage and so far it hasn't saved a penny. Probably the people most upset with us repealing common wage were the locals. Because the locals, quite frankly, like to pay local contractors and they like local contractors to go to the dentist in their own town. … There's not 22 percent savings out there when the total cost of labor is 22 percent. It's rhetoric. So far, I haven't seen a dime of savings out of it."*

FIGURE 18: ECONOMIC RESEARCH USING REGRESSIONS TO EVALUATE THE COST IMPACT OF PREVAILING WAGE ON SCHOOL PROJECTS

Study	Authors	Year	Academic Journal	Number of Projects	Geography	Effect
1	Kevin Duncan; Peter Philips; Mark Prus	2014	*Industrial Relations*	498	British Columbia (Canada)	No Effect
2	Alan Atalah	2013	*International Journal of Economics and Management Engineering*	1,496	Ohio	No Effect
3	Alan Atalah	2013	*Journal of Civil Engineering and Architecture*	1,496	Ohio	No Effect
4	Kevin Duncan; Peter Philips; Mark Prus	2012	*Engineering, Construction and Architectural Management*	498	British Columbia (Canada)	No Effect
5	Jeffrey Vincent; Paavo Monkkonen	2010	*Journal of Education Finance*	2,645	United States	13.4%
6	Kevin Duncan; Peter Philips; Mark Prus	2009	*International Journal of Construction Education and Research*	438	British Columbia (Canada)	No Effect
7	Kevin Duncan; Peter Philips; Mark Prus	2006	*Construction Management and Economics*	528	British Columbia (Canada)	No Effect
8	Kevin Duncan; Mark Prus	2005	*The Economics of Prevailing Wage Laws* (book)	723	British Columbia (Canada)	No Effect
9	Hamid Azari-Rad; Peter Philips; Mark Prus	2003	*Industrial Relations*	4,653	United States	No Effect
10	Hamid Azari-Rad; Peter Philips; Mark Prus	2002	*Journal of Education Finance*	4,974	United States	No Effect
11	Cihan Bilginsoy; Peter Philips	2000	*Journal of Education Finance*	54	British Columbia (Canada)	No Effect
12	Lameck Onsarigo; Alan Atalah; Frank Manzo IV; Kevin Duncan	2017	Not peer-reviewed	110	Ohio	No Effect
13	Michael Kelsay	2015	Not peer-reviewed	266	Maryland, Ohio, Pennsylvania, West Virginia, North Carolina, and Virginia	No Effect
14	Peter Philips	2014	Not peer-reviewed	391	Kentucky, Ohio, Michigan	No Effect
15	Ohio Legislative Service Commission*	2002	Not peer-reviewed	1,126	Ohio	No Effect

* This report has been used by opponents of prevailing wage because it claimed that school construction exemption from the state's prevailing wage law saved the state 10.7 percent. However, this was based on a model that was not close to statistical significance. In fact, study authors wrote, "[e]vidence was not available as to the portion of the estimated savings, if any, that could be directly and conclusively attributed to the prevailing wage exemption." An accurate assessment of their results reveals that prevailing wage had no statistically significant impact on school construction costs.
**Edward Keller and William Hartman (2001) published a peer-reviewed article that estimated that prevailing wage laws increased the cost of school construction projects by 2.3 percent. However, this study did not analyze actual projects, but rather conducted hypothetical "wage differential" approaches for 25 arbitrary projects. Wage differential studies are flawed compared to regression analyses of actual projects (Duncan & Ormiston, 2017).

Source(s): Individual studies listed in table.

Summary of Pre-Repeal Claims and Actual Post-Repeal Data

While the Indiana Department of Labor is required to submit a report on the effects of repeal of Common Construction Wage before July 2021, data have become available to begin testing claims made by policy researchers in the months leading up to repeal. Manzo, Bruno, and Littlehale (2014) and Philips (2015) predicted negative consequences if Indiana repealed Common Construction Wage. Sherk (2015), on the other hand, argued that repeal would save money and increase competition. In general, the evidence indicates that Philips and Manzo, Bruno, and Littlehale were accurate in their forecasts while Sherk's testimony was largely incorrect (Figure 20).

Professor Peter Philips made 8 claims that could be tested following repeal of Common Construction Wage. The data indicates that Philips was correct on all 8 of his forecasts (100.0 percent). As one of the nation's foremost construction labor economists who has been studying the industry for decades, Philips has repeatedly cautioned that repeal of prevailing wage laws ultimately leads to a less-skilled construction workforce with low levels of productivity– negating lower labor costs associated with repeal. There is convincing evidence that this phenomenon is playing out in Indiana. As wages have been cut, turnover has increased with high-skilled workers being replaced by less-educated workers, resulting in lower annual productivity per construction employee (Figure 20).

FIGURE 20: ASSESSMENT ON THE ACCURACY OF FORECASTS OF CONSTRUCTION MARKET OUTCOMES IN THREE PRE-REPEAL STUDIES

Construction Market Outcome	Manzo, Bruno, Littlehale (2014)	Philips (2015)	Sherk (2015)	Who Was Correct? Based on Early Data
Construction wages	Lower wages for construction workers	Lower wages for construction workers	Lower wages for construction workers	***All economics researchers***: Blue-collar construction worker wages decreased by 8.5 percent on average
Wage inequality	Increase inequality	Increase inequality	N/A	***Philips, Manzo, Bruno, and Littlehale***: Wages fell 15.1 percent for the poorest 25 percent of construction workers
Worker skill levels	Increase low-skill workforce	Increase less-skilled workers	No impact on worker quality	***Philips, Manzo, Bruno, and Littlehale***: Less-educated construction workers increased by 4.5 percentage points
Veterans in construction	Fewer veterans working in construction	N/A	N/A	***Suggestive: Manzo, Bruno, and Duncan****: While the veteran share fell in Indiana, the result is not statistically significant
Worker productivity	Reduce productivity	Reduce productivity	Very small or no effect on productivity	***Philips, Manzo, Bruno, and Littlehale***: Relative productivity grew 5.3 percentage points slower in Indiana
Worker turnover	Increase as high-skilled workers exit	Increase as high-skilled workers exit	N/A	***Philips, Manzo, Bruno, and Littlehale***: Relative public works turnover increased by 1.2 percentage points in Indiana
Public works employment	Increase due to elasticity of labor demand	N/A	Increase due to drop in "labor cartels"	***No one***: Public works employment grew 1.5 percentage points slower in Indiana
Contractor competition	No effect on competitive bidding	No effect on competitive bidding	Increase competitive bidding	***Philips, Manzo, Bruno, and Littlehale***: In northern Indiana, the number of bidders per project stayed the same
Union market share	No benefit to nonunion contractors	No benefit to nonunion contractors	More nonunion wins, fewer union wins	***Philips, Manzo, Bruno, and Littlehale***: In northern Indiana, union wins and union market share both slightly increased
Public school projects	No impact on costs	No impact on costs	Lower costs	***Philips, Manzo, Bruno, and Littlehale***: In northern Indiana, the union win share and average project costs did not change

Source(s): Manzo et al. (2014); Philips (2015); Sherk (2015).

Frank Manzo IV, Professor Robert Bruno, and Scott Littlehale– with a contribution from Professor Kevin Duncan– made 10 claims that could be tested following repeal of Common Construction Wage. The data indicates that these researchers were correct on 8 of their forecasts (80.0 percent). There is also suggestive but not statistically significant evidence that repeal reduced the share of military veterans working in construction, which would have increased their accuracy rate to 90.0 percent. The construction market outcome on which the researchers were most precise was the impact of repealing Common Construction Wage on blue-collar construction worker wages. Manzo, Bruno, and Littlehale predicted that repeal would result in an 8.4 percent decrease in worker wages, while post-repeal regression results indicate that repeal was statistically associated with an 8.5 percent drop in relative hourly wages for construction workers in Indiana. The key insight is that this average decrease is primarily driven by a steep wage cut (15.1 percent) for the poorest construction workers as the wage floor was eliminated (Figure 20).

James Sherk made 7 claims that could be tested following repeal of Common Construction Wage. The data indicates that Sherk was correct on 1 of his forecasts (14.3 percent). Sherk did not explicitly predict that blue-collar construction worker wages would decline, but he argued that labor costs would decrease and implied that blue-collar construction workers would earn near-poverty level incomes that would qualify them for government assistance. Thus, Sherk's only correct claim comes from an inference in his testimony. His testimony rested on the premise that Common Construction Wage only benefited labor unions and that repeal would increase competitive bidding and lower costs for taxpayers. However, data from northern Indiana suggests that Sherk's forecasts were wrong. The number of bidders on public projects did not increase, union contractors captured a greater– not smaller– share of the market, and public school construction costs did not change (Figure 20). Ultimately, Sherk's failing grade is due to an incomplete understanding of the construction industry grounded in assumptions that are at odds with peer-reviewed economic research.

Conclusion and Future Research

Repeal of Common Construction Wage has had negative impacts on Indiana's construction industry and construction workforce, without generating any meaningful savings for taxpayers. However, because Common Construction Wage provided middle-class standards and helped the industry attract and retain a supply of skilled workers, it could take years to fully realize certain effects of repeal. When compiling and evaluating data to submit to state legislators before July 2021, the Indiana Department of Labor should assess the longer-term impact of repealing Common Construction Wage on the ten labor market outcomes in this assessment as well as other outcomes that require more years of data– such as impacts on government assistance programs and rates of local hiring. Furthermore, the Indiana Department of Labor should consider peer-reviewed economic research, findings from this analysis, and comparisons with neighboring states that did not repeal their prevailing wage laws in its final report.

To this point, repeal of Common Construction Wage has had negative consequences for Indiana. Blue-collar construction worker wages have been cut, especially for low-income workers. This has led to lesser-educated individuals entering the workforce who replaced high-skilled workers, contributing to higher turnover rates and lower per-worker productivity levels. Moreover, contractor competition has not increased for bids on public construction projects. Changes to worker skill levels and worker productivity have offset any savings from lower labor costs and the number of bidders has been unchanged, resulting in no change in public school construction costs following repeal. Ultimately, repeal of Common Construction Wage has not saved taxpayers any money and, in fact, has had negative effects on construction market outcomes in Indiana.

Appendix

Data Sources

This analysis utilizes data from four sources, including three publicly-available datasets and one private report covering northern Indiana that is based on public documents. In all data sources except for one, construction market outcomes in Indiana are assessed against three neighboring Midwest states that each had, and still have, a state-level prevailing wage law: Illinois, Michigan, and Ohio.

First, data from the *Current Population Survey Outgoing Rotation Groups* (CPS-ORG) is used to evaluate effects on four outcomes: construction worker hourly wages, wage inequality in construction occupations, the share of the construction workforce without a high school diploma or equivalent, and the share of construction workers who are military veterans. CPS-ORG data is compiled by the U.S. Department of Labor Bureau of Labor Statistics (BLS) and is made available in a public format by the Center for Economic and Policy Research (CEPR, 2017). Because the BLS collects survey results throughout the year, annual CPS-ORG data is typically not available until March or April of the subsequent year. Accordingly, the analysis uses data from January 2014 through December 2016, or 18 months prior to repeal compared to 18 months after repeal. This yields 2,234 survey results from individuals employed in construction and extraction occupations across Indiana, Illinois, Michigan, and Ohio.

Second, regional data from the Bureau of Economic Analysis (BEA) at the U.S. Department of Commerce are utilized to examine changes in productivity (BEA, 2017). The BEA collects information on annual gross domestic product (GDP) by state that can be deconstructed by industry. Additionally, the BEA reports total full-time and part-time employment levels by industry in each state. Dividing the construction industry's contribution to GDP (value added) by the total number of employees in the construction industry provides a measure of per-worker productivity. Once again, data were only available through 2016, so the analysis considers worker productivity the year before repeal and the year after repeal.

Third, data from the Quarterly Workforce Indicators (QWI) are used to investigate impacts on worker turnover and public works employment. The QWI dataset is compiled by the U.S. Census Bureau in the *Longitudinal Employer-Household Dynamics* survey and made available through their Local Employment Dynamics (LED) Extraction Tool (LEHD, 2017). The benefits to the QWI dataset are that it is based on actual payroll records and that industries are broken down into specific sectors. Instead of studying all blue-collar construction workers or the entire construction industry, QWI includes information on the "heavy and civil engineering construction" sector. The vast majority of heavy and civil engineering construction involves public works, including the construction and maintenance of highways, streets, bridges, dams, parks, and trails. Dredging, land drainage, and utility line construction are also included in heavy and civil engineering construction (Census, 2017). In the QWI, turnover data and employment counts are available on a quarterly (three-month) basis through the second quarter of 2016. Thus, the four quarters prior to repeal can be compared to the four quarters post-repeal.

Finally, the relationship between repeal of Common Construction Wage and contractor competition, union market share, and school construction costs are considered in 14 northern Indiana counties. Bid tab data are collected by the Indiana, Illinois, Iowa Foundation for Fair Contracting (IIIFFC) from bid lettings, local board meetings, and public documents (IIIFFC, 2017). The IIIFFC generously provided data from January 2013 through September 2017[6] for 14 northern Indiana counties: Elkhart, Fulton, Jasper, Kosciusko, LaGrange, Lake, LaPorte, Marshall, Noble, Porter, Pulaski, St. Joseph, and Starke. Note that these northern Indiana counties tend to have higher levels of union density than the rest of Indiana, so– if Sherk's claim that Common Construction Wage

[6] Note that data collection for this study began in October 2017.

primarily benefited unions at the expense of taxpayers is correct– northern Indiana might be expected to experience significant changes following repeal

Report Methodology

This analysis also uses five common statistical techniques to measure the budding impact of repealing Common Construction Wage in Indiana. One method, and the least advanced, is called the "difference-in-differences" approach. This intuitive technique is utilized in both the social sciences and the medical field to isolate the impact of a change in one group (the "treatment group") from a similar group (the "control group"). In a scientific experiment, Illinois, Michigan, and Ohio would be considered the "control group" because these three Midwest states had, and continue to have, state-level prevailing wage laws. Indiana would be the "treatment group" as a Midwest state that experienced a change, from having a state prevailing wage law to repealing the policy. In this analysis, the difference-in-difference approach is mainly used to contrast state-level metrics in Indiana versus the three neighboring states over time.

This analysis also employs three types of common but advanced statistical techniques called "regressions." Regressions are used to parse out the actual and unique impact that certain variables– such as a Common Construction Wage or prevailing wage law– have on construction market outcomes at the individual-level. The technique describes "how much" the variable is responsible for a change. For example, an ordinary least squares (OLS) regression can help determine how much the absence of Common Construction Wage raises or lowers average hourly wages for blue-collar workers in construction and extraction occupations, after accounting for all other observable factors.

While OLS regressions reveal average effects, quantile regressions allow researchers to assess impacts at different points in the wage distribution. The impact of Common Construction Wage repeal can be evaluated for the median worker, for low-income individuals, and for upper middle-class employees to get a better sense of who is affected by the policy change. Quantile regressions are used to understand the impact of repeal on wage inequality among construction workers.

In addition to OLS regressions and quantile regressions, this analysis also uses probabilistic models called probit regressions. Probits help in calculating how much a certain factor increases a given individual's chance of achieving a certain binary outcome. For example, there are a number of factors that influence whether a military veteran will return home and find work as a blue-collar construction worker, including educational and demographic factors. Probits control for these other variables and separate out the effect that Common Construction Wage repeal has on the likelihood that a construction and extraction job is occupied by a military veteran. In this analysis, probit regressions are used to evaluate construction worker skill levels and the share of veterans in employment.

Finally, simple "t-tests" are used to assess the relationship between Common Construction wage repeal and public school project bids. A t-test assesses whether the average after repeal is statistically different from the average before repeal. The "t-statistic" tells researchers whether the outcome has statistical significance or whether it occurred by chance. For there to be statistical significance, the t-statistic must be ±1.96.

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