

December 15, 2016

The Economic, Fiscal, and Social Effects of Kentucky's Prevailing Wage Law

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Submitted to the Kentucky State Building
and Construction Trades Council



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Executive Summary

The main purpose of a prevailing wage law is to protect local construction labor standards from distortions associated with publicly funded construction. Large infusions of government spending into an area, along with a contract award process that favors the lowest bidder, may attract contractors from areas where construction worker wage rates are relatively low. Competition between these out-of-area and local contractors may result in the erosion of local compensation standards. Prevailing wage laws create a level playing field for all contractors by ensuring that public works expenditures maintain and support local area standards.

Research on Prevailing Wage Laws and Construction Costs

The preponderance of peer-reviewed research conducted over the last 16 years indicates that prevailing wage laws do not increase the cost of public construction. Since 2001, nine out of eleven peer-reviewed studies (82%) find that prevailing wage laws are unrelated to the cost of building public schools. Six other studies examine the effect of prevailing wage laws on the cost of different types of construction, such as highways, low-income housing, and offices. Results from only two of these studies suggest that prevailing wage requirements increase costs. Of the combined 17 peer-reviewed studies over the last 16 years, fully 76% indicate that prevailing wages are not associated with increased construction costs. Why is it unlikely that prevailing wages increase construction costs? First, labor costs are a low and historically declining percentage of total costs in the construction industry—approximately 23% of all building costs in the U.S. Consequently, only minor changes in labor productivity and other construction costs are needed to offset the effect of the wage policy.

Peer-reviewed studies typically involve the examination of hundreds or thousands of construction projects and utilize specialized statistical techniques and software. A peer-review involves an anonymous critique of the research by experts to determine if the study is to be published in a scholarly journal. The quality of this research differs markedly from other studies that have not undergone a peer-review, which are based on incomplete information about the construction industry and tend to claim savings with the repeal of prevailing wage laws that are unrealistically too high. Recent research by the Legislative Research Commission and by the Associated Builders and Contractors of West Virginia are examples of the latter types of studies.

The 2016 study by Kentucky's Legislative Research Commission (LRC) supposes that exempting education construction from prevailing wage requirements in Kentucky would decrease construction costs for elementary and secondary education projects by approximately 7.9%. This cost estimate is based on a "wage differential" method that measures the impact of the wage policy by comparing differences in prevailing wages to alternative rates that would hypothetically be paid in the absence of the policy. In obtaining this estimate, LRC assumes that prevailing wages exceed alternative wage rates by an average of 25.7%. LRC also assumes that labor costs represent 30.7% of total school construction costs. Multiplying these two percentages together yields the estimated "savings" of 7.9% if school construction is exempt from prevailing wage requirements.

The "wage differential" method is alluring because of its rudimentary approach. The method is often used when legislatures are considering policy changes and time constraints prevent

the use of more-precise methods of assessing the cost impact of prevailing wages. However, by focusing exclusively on wage differences in measuring the cost effect of prevailing wage, this approach ignores changes in labor productivity and other construction costs that also change with wage rates. For example, peer-reviewed research indicates that skilled labor replaces less-skilled counterparts and the use capital equipment increases when wages rise in the construction industry. Additionally, as wages increase, contractors spend less on materials, supplies, fuels, and other items. All of these changes tend to mitigate the effects of prevailing wage rates on overall costs. By ignoring other factors that change with wages, the wage differential method is based on an incomplete understanding of the construction industry and provides a cost estimate of prevailing wage requirements that is unrealistically too high. As a consequence, this method is *not* suitable for use in determining public policy.

A 2015 study by the Associated Builders and Contractors of West Virginia suggests that prevailing wages substantially increase construction costs by 16.8%.¹ This study is based on the comparison of the square foot costs for two schools built under prevailing wage requirements and two schools built without the wage policy. The problem with the estimated “savings” is that actual data from the *Economic Census of Construction* indicate that labor costs for school construction are only about 21% of total construction costs. Since prevailing wages primarily affect labor costs, a 16.8% savings suggests that labor costs fall from 21% of overall costs to 4.2% (21% - 16.8%). Again, this estimated cost savings is unrealistically too high. Factors other than prevailing wages are responsible for the cost differences between the two groups of schools.

Kentucky's Prevailing Wage Law and Income, Poverty, and Reliance on Public Assistance

Prevailing wage repeal decreases construction worker income and increases poverty and reliance on public assistance. Repealing or weakening prevailing wage in Kentucky would lower blue-collar construction worker incomes by 10%, reduce employer-provided health insurance coverage by 7 percentage points, and decrease employer-provided pension coverage by 13 percentage points. Weakening or repealing prevailing wage in Kentucky would significantly decrease private health and retirement coverage, forcing blue-collar construction workers who were previously self-sufficient to rely on public insurance programs.

Repealing prevailing wage reduces worker earnings and slashes employee benefits, resulting in fewer construction workers in the middle class. As a result, approximately 6,100 blue-collar construction workers would lose their employer-provided health insurance coverage and another 10,300 would lose their employer-provided pension plan if Kentucky were to repeal or weaken its prevailing wage law. For approximately 5,700 workers, the wage cut would be so significant that they would fall below the official poverty line, qualifying them for Supplemental Nutrition Assistance Program (SNAP) government benefits. In addition, an estimated 5,800 blue-collar construction workers would newly qualify for Earned Income Tax Credit (EITC) assistance. Weakening or repealing prevailing wage in Kentucky would thus force thousands of blue-collar construction workers onto public insurance programs, increasing costs to taxpayers.

¹ For a summary of this study, see “The Reality of the Prevailing Wage Repeal,” *West Virginia Record*, October 20, 2015. Accessed at: <http://wvrecord.com/stories/510644025-the-reality-of-the-prevailing-wage-repeal>.

Kentucky's Prevailing Wage Law and Military Veterans

Military veterans employed in the construction industry would be particularly worse off from repealing or weakening prevailing wage. Veterans are more likely to work in construction than non-veterans. In 2014, veterans accounted for 7.5% of Kentucky's blue-collar construction workforce but only 6.4% of total employment in the state's economy, a 1.1 percentage-point difference. Additionally, over the next decade, construction and extraction jobs are expected to grow faster than the state average— providing middle-class job opportunities for blue-collar veterans who populate the trades at higher rates than non-veterans.

Applying results from a first-of-its-kind national study commissioned by VoteVets.org reveals that veterans would be negatively affected if the state were to weaken or repeal prevailing wage. Blue-collar construction occupations would become less attractive to veterans because these middle-class careers would be converted into low-wage, low-benefit jobs. In fact, weakening or repealing prevailing wage in Kentucky would result in 1,500 blue-collar veterans separating from their construction jobs. Additionally, the total income of all veterans employed in construction jobs would decline by \$80 million in the state and at least 600 veterans would lose their employer-provided health coverage. The market share of veteran-owned construction companies would also decrease. Gutting prevailing wage would increase burdens on taxpayers and disproportionately impact veteran workers who served their country.

Kentucky's Prevailing Wage Law and Apprenticeship Training in the State

Formal apprenticeship training is the foundation of skill development in Kentucky's construction industry. Prevailing wages create a strong incentive to employ apprentices because contractors are allowed to pay trainees a lower rate than journeymen. This incentive increases demand for apprentices and draws more trainees and resources into the state's training programs. The result is a stable supply of trained construction employees available for work throughout Kentucky's construction industry.

In the nonunionized segment of Kentucky's construction industry, apprenticeship programs are sponsored by a single contractor or by groups of employers. In the unionized sector, apprenticeship training is jointly determined and managed by unions and contractors who are signatories to collective bargaining agreements. Union programs are financed by a "cents per hour" contribution that is part of the total wage and benefits package negotiated with contractors. Consequently, more of the Kentucky's construction apprentices are enrolled in, and graduate from, union-sponsored programs. Between 2008 and 2016, fully 80% of construction apprentices were enrolled in union training programs, which have a completion rate that is 35% higher than nonunion programs. Union programs also provide training for the full-range of trades, while nonunion programs in Kentucky do not currently provide training programs for such critical trades as ironworkers, operating engineers, or sheet metal workers.

Current prevailing wage policy complements the Kentucky Work Ready Skills Initiative that addresses the state's skilled worker shortage.² Interest in this initiative has been very strong

² See "Kentucky Work Ready Skills Initiative," Kentucky Education Workforce & Development. Accessed at: <http://educationcabinet.ky.gov/ky-work-ready-skills/Pages/default.aspx>.

with an initial 83 applications totaling more than \$455 million.³ This far out-strips the original program budget of \$100 million. The prevailing wage standard results in more training that is, to a large extent, financed privately by the construction industry. While prevailing wage laws provide a basis for formal training in the construction industry, research indicates that repeal of the wage policy reduces apprenticeships by approximately 40%. Repeal of Kentucky's wage standard would increase the state's burden to finance more training in the construction industry.

Prevailing Wage Laws and Safety in the Construction Industry

Construction workers are exposed to many hazardous tasks and conditions at work, such as height, excavations, noise, dust, power tools and equipment, confined spaces, electricity, and vehicle traffic. While prevailing wage laws do not include safety requirements, the wage policy does affect injury rates in construction indirectly through the linkage between prevailing wages and apprenticeship training, and the relationship between training and safety. The overwhelming majority of the research in this area finds lower fatality and injury rates in states with prevailing wage laws. For example, between 2008 and 2010, the average fatality rate was 8.5 per 100,000 workers in states with strong prevailing wage laws compared to 12.7 per 100,000 workers in states that never had the wage policy. Construction workers report 12% more disabilities in states without prevailing wage laws compared to states with the wage policy. Additionally, injuries are 7% to 10% lower in prevailing wage states compared to states without the wage policy.

The Economic Impact of Kentucky's Prevailing Wage Law

By protecting local wages, prevailing wage laws also protect work for local contractors and construction workers. The prevailing wage allows local contractors to submit competitive and profitable bids while attracting local workers possessing the skills needed for the project. When local companies and workers are employed on a state-funded project, more project funds remain in the local economy and stimulate additional economic activity. However, without adequate prevailing wage protection, more work is completed by out-of-area contractors and more project funds, jobs, income, spending, and economic activity leak out of the local economy.

Weakening or repealing Kentucky's prevailing wage law would be associated with a \$248 million net leakage of construction business out of Kentucky's building industry. This loss of construction business and spending would ripple throughout Kentucky's economy and reduce economic activity by approximately \$400 million. The corresponding total employment loss would be 2,900 jobs— including 1,800 direct construction jobs and 1,100 jobs in other industries, such as retail, service, and restaurants. The reduction in economic activity is associated with an approximate \$13 million decrease in state and local tax revenue. This is a statewide impact that would be experienced each year if the wage policy is repealed.

Prevailing wage repeal represents a strong headwind for a Kentucky construction industry that has not yet fully recovered from the Great Recession. Before the economic downturn in late 2007, the number of construction establishments and employees were at all-time highs in the state. The impact of the economic crisis was much more severe and long-lasting in the construction industry, with the decrease in the number of establishments and employment reaching their lowest

³ See "JTTC a finalist for part of \$100 million in state funding," Louisville Business First. November 23, 2016. Accessed at: <http://www.bizjournals.com/louisville/news/2016/11/23/jctc-a-finalist-for-part-of-100-million-in-state.html>.

levels in 2012. Between the peak in 2007 and the trough in 2012, construction employment decreased by 21% and the number of construction businesses decreased by 22%. The building industry is recovering, but employment remains approximately 14% below the 2007 level and the number of construction firms is still 19% below pre-recession levels. The consequences of repeal would reduce construction industry employment and the number of establishments in Kentucky.

The Purpose of Prevailing Wage Laws and Kentucky's Prevailing Wage Policy

The main purpose of a prevailing wage law is to protect local construction labor standards from distortions associated with publicly funded construction.¹ Large infusions of government spending into an area, along with a contract award process that favors the lowest bidder, may attract contractors from areas where construction worker wage rates are relatively low. Competition between these out-of-area and local contractors may result in the erosion of local compensation standards. Prevailing wage laws create a level playing field for all contractors by ensuring that public works expenditures maintain and support local area standards.

Kentucky's prevailing wage law became effective in 1940, nine years after the first federal prevailing wage law, the Davis-Bacon Act, was enacted in 1931.² Kentucky's law has undergone many changes since its inception (notably in 1982 and 1996), but presently has the characteristics described in this section.³

The payment of prevailing wage rates are required of all contractors and subcontractors working on public works projects with an estimated cost of over \$250,000. Covered public works projects include building, heavy, and highway construction funded by the state, school districts, or local governments. The "prevailing wage" is the hourly base wage and fringe benefit rate for detailed job classifications, such as carpenters, electricians, plumbers, pipefitters, and operating engineers.⁴ Prevailing wages rates in Kentucky are determined by one of two methods. In 84 counties, the Labor Cabinet conducts periodic hearings to collect data on the wages paid to construction workers within a "locality" (consisting of one county or a group of counties).⁵ In the remaining 36 counties, federal Davis-Bacon rates are automatically adopted.⁶ Davis-Bacon wage rates are determined through a survey conducted by the U.S. Department of Labor and apply to a county or a group of counties within a state.⁷

Regardless of the method, prevailing wage rates for state-funded projects in Kentucky are determined by a majority-average approach. For example, if a majority of workers in a detailed job classification and type of work earn the same wage rate, that rate is the prevailing wage rate. If there is no majority wage, the weighted average rate for workers in the job classification prevails.

¹ As an example see "The Davis-Bacon Act Protecting Wage Equality Since 1931," Wage and Hour Division, U.S. Department of Labor. Accessed at: <http://www.dol.gov/whd/programs/dbra/Survey/conformancefaq.htm>.

² For a brief summary of Kentucky's prevailing wage law see "Everything you ever wanted to know about prevailing wages in Kentucky," Prepared by Greenbaum Doll & McDonald, PLLC, October 2006. Accessed at: http://www.freedomkentucky.org/images/c/cf/Everything_you_ever_wanted_to_know_about_PDF.pdf.

³ See "An Analysis of Kentucky's Prevailing Wage Laws and Procedures," Research Report No. 304, Legislative Research Commission, Commonwealth of Kentucky. Accessed at: <http://www.lrc.ky.gov/lrcpubs/RR304.pdf>.

⁴ The fringe rate is an additional amount per hour the employer pays on behalf of the employee for benefits such as health insurance, retirement, life insurance, and apprenticeship. Fringe benefits do not include deductions required by law such as taxes, workers' compensation, or unemployment insurance. It also does not include costs associated with vacation and holiday pay. An employer may pay an employee's fringes to the employee in cash or partly in cash and partly in benefits. For a detailed description of the policy see "What is the Prevailing Wage?" Kentucky Labor Cabinet. Accessed at: <http://labor.ky.gov/dows/doesam/pw/Pages/What-is-Prevailing-Wage.aspx#WHAT%20IS%20PREVAILING%20WAGE?>

⁵ See "Kentucky Prevailing Wage Counties Whereby Hearings are Conducted." Accessed at: <http://labor.ky.gov/dows/doesam/pw/Documents/KY%20PW%20Map%20for%20Hearing%20Counties.pdf>.

⁶ See "Kentucky Prevailing Wage Localities where Davis-Bacon Rates are Adopted." Accessed at: <http://labor.ky.gov/dows/doesam/pw/Documents/KY%20PW%20Map%20for%20Davis%20Bacon%20Only.pdf>.

⁷ For more details on the Davis-Bacon Act see: "Davis-Bacon and Related Acts." Wage and Hour Division, U.S. Department of Labor. Accessed at: <https://www.dol.gov/whd/govcontracts/dbra.htm>.

As a consequence, prevailing wage rates in Kentucky vary by type of work, worker, and location. The goal of both methods is to obtain a measure of construction wages that prevail within a region.⁸

Compared to other states, Kentucky's prevailing wage law can be considered average in terms of strength, where strength is determined by the ability of a policy to project local wage rates.⁹ There are presently 29 states (plus the District of Columbia) with prevailing wage laws.¹⁰ 23 of the state-level laws can be considered average or strong in terms of policy strength.¹¹ Six states have weak laws and 21 states do not have a wage policy. Much of the analysis in this report is based on differences in construction industry and construction labor market characteristics in states with average and strong prevailing wage laws compared to states with weak or no prevailing wage laws.

⁸ For current prevailing wage rates required on Kentucky public works see: "Current Wage Rates," Prevailing Wage Home, Kentucky Labor Cabinet. Accessed at: <http://labor.ky.gov/dows/doesam/pw/Pages/Current-Wage-Rates.aspx>.

⁹ In 1995, Armand Thieblot rated state-level prevailing wage laws based on factors including coverage thresholds, type of work excluded/included, and the determination of wage rates, etc. See Thieblot Armand J.1995. "State Prevailing Wage Laws. An Assessment at the Start of 1995." Prepared for Associated Builders and Contractors, Inc. At the time of Thieblot's report, Kentucky had a weak prevailing wage law. However, since 1996 the law has strengthened with the extension of coverage to school and local government construction as well as the modal-average method of determining the prevailing wage. The \$250,000 coverage threshold contributes to a weaker wage policy as fewer projects are covered by the wage standard.

¹⁰ For a list of states with prevailing wage laws, see "Dollar Threshold Amount for Contract Coverage," Wage and Hour Division, U.S. Department of Labor. Accessed at <https://www.dol.gov/whd/state/dollar.htm>. Since this information was compiled, Indiana and West Virginia have repealed their prevailing wage policies.

¹¹ For a list of states with average/strong and weak/no prevailing wage laws see "How Weakening Wisconsin's Prevailing Wage Policy Would Affect Public Construction Costs and Economic Activity," by Kevin Duncan and Alex Lantsberg, May 22, 2015. Accessed at: <http://www.faircontracting.org/wp-content/uploads/2015/05/How-Weakening-Wisconsin%E2%80%99s-Prevailing-Wage-Policy-Would-Affect-Public-Construction-Costs-and-Economic-Activity2.pdf>. Information in this report is based on data from 2012 and does not reflect the repeal in prevailing wage laws in Indiana and West Virginia in 2015.

Review of the Research on Prevailing Wage Laws and Construction Costs

While there are numerous implications of prevailing wage laws, the public policy debate is centered on the effect of the wage requirements on the cost of public construction. Prevailing wage opponents often claim substantially higher construction costs, ranging as much as 30% higher, due to the wage policy.¹² Many of these claims are based on research that utilizes a “wage differential” method that calculates the cost impact by comparing prevailing wage rates with rates that would be paid in the absence of the wage policy. This approach is rudimentary and provides policymakers with a quick-and-easy cost estimate. However, the method is inherently unscientific and promises cost savings from repeal of prevailing wages that cannot be delivered.¹³ While it is understandable that policymakers desire a cost estimate that is based on wage rates and policy within their jurisdiction, the wage differential method should be *avoided* due to its numerous limitations which bias estimates of the cost effect of prevailing wage standards.

The “wage differential” method is based on the following steps:

1. The percentage difference between prevailing wages and alternative rates that would hypothetically be paid in the absence of the wage policy.
2. The percentage of labor costs (wages and benefits) as a share of total construction costs.
3. Multiplying the percentages from steps 1 and 2 to obtain the percentage change in total costs due to prevailing wages.

The fiscal note written by the Legislative Research Commission (LRC) during the 2016 legislative session can be used to illustrate the wage differential method.¹⁴ To obtain the information needed for the first step, the LRC relies on information from two different studies. The LRC study from 2001 indicates that prevailing wage rates exceed alternative wages by 17.6%, while the 2014 study indicates a 33.8% wage difference. The midpoint between these two is 25.7%.¹⁵ Information needed for the second step is also derived from two sources. Information obtained from the School Facilities Construction Commission indicates that labor costs, which include wages and benefits, account for about 38% of the total costs for elementary and secondary education projects. Data from 2012 *Economic Census of Construction* indicates that wages and benefits for construction workers accounts for 23.4% of all construction costs in Kentucky, not simply school construction costs. This is a very wide range in labor costs as a percent of total construction costs. The LRC recognizes that the 38% estimate may be due to the inclusion of the wages and benefits of non-construction employees. Regardless, the LRC settles for the midpoint between the two percentages, or 30.7%.¹⁶ An estimated “savings” of 7.9% associated with the

¹² For example see, “Kentucky Senate again seeks to repeal prevailing wage law for school construction projects,” Lexington Herald Leader, January 12, 2016. Accessed at: <http://www.kentucky.com/news/politics-government/article54323200.html>.

¹³ For a detailed examination of this method see, Kevin Duncan, “The Wage Differential Method: Promising Construction Costs Savings with the Repeal or Weakening of Prevailing Wage Laws that Cannot be Delivered,” September 2016. Accessed at <http://www.faircontracting.org/wp-content/uploads/2012/08/Wage-differential-method-critique-Duncan-2016-1.pdf>.

¹⁴ Legislative Research Commission Fiscal Note, Senate Bill 9. Accessed at: <http://www.lrc.ky.gov/record/16RS/SB9/FN.pdf>.

¹⁵ Math: $(17.6\% + 33.8\%)/2$

¹⁶ Math: $(38\% + 23.4\%)/2$

elimination of prevailing wages is obtained by multiplying the two midpoints from steps one and two together.¹⁷

The wage differential method is often used in fiscal notes when legislatures are considering policy changes and time constraints prevent the use of other more-precise methods of measuring the cost impact of prevailing wages.¹⁸ However, a fundamental and fatal flaw of the wage differential method is that this approach is not capable of including numerous other changes that take place when wages change in the construction industry.

The wage differential method ignores other changes that take place in the construction industry when wage rates change. Evidence from peer-reviewed studies indicates that when wages increase, skilled construction workers replace their less productive counterparts, and usage of capital equipment and machinery increases as well.¹⁹ These changes are motivated by higher wage rates and are associated with increased labor productivity. By focusing exclusively on wage rates, the wage differential method ignores changes in labor productivity that take place when wages increase in the construction industry. By ignoring changes in labor productivity and other construction costs, the wage differential method is based on an incomplete understanding of the construction industry and provides a cost estimate of the prevailing wages that is too high. Given the shortcomings of this approach, the wage differential method is often referred to as a “back of the envelope” estimate.²⁰ As a consequence, it is not suitable for use in determining public policy.

The wage differential method used by the LRC assumes that wage costs are the only construction cost component that is affected by the prevailing wage policy. Data from the *Economic Census of Construction*, however, indicates that other costs *decrease* when wages are higher—indicating that at least some of the inflationary effect of prevailing wages is offset by decreases in other costs. The information reported in Figure 1 illustrates that when wages and benefits are high, other construction component costs are low. The data are from the most recent *Economic Census of Construction* (conducted by the U.S. Census Bureau) where the 50 states are divided into two groups; the 25 states with average or strong prevailing wage laws and the 25 states with very weak or no prevailing wage policies as of 2012.²¹

¹⁷ Math: $0.257 \times 0.307 = 0.079 = 7.9\%$

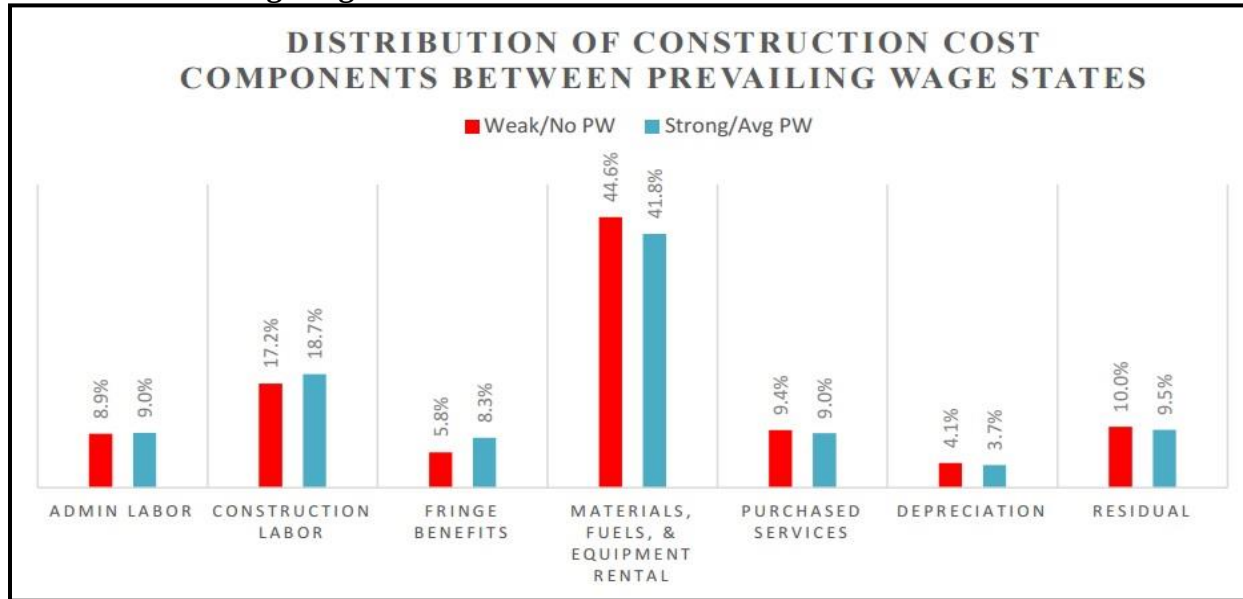
¹⁸ See “Components of the Capital Bill-Prevailing Wage,” Fiscal Note-Revised, Vermont Legislative Joint Fiscal Office, July 24, 2015. Accessed at: http://www.leg.state.vt.us/jfo/fiscal_notes/2015_H_492%20Prevailing%20Wages%20Fiscal%20Note%20%28Revised%29%203-25-2015.pdf.

¹⁹ See William Blankenau and Steven Cassou, “Industry Differences in the Elasticity of Substitution and Rate of Biased Technological Change between Skilled and Unskilled Labor,” *Applied Economics*, 2011, Vol. 43, pp. 3129-3142 and Edward Balistreri, Christine McDaniel and Eina Vivian Wong, “An Estimation of U.S. Industry-Level Capital-Labor Substitution Elasticities: Support for Cobb-Douglas,” *The North American Journal of Economics and Finance*, 2003, Vol. 14, No. 3, 343-356.

²⁰ Peter Philips. 2013. “Mr. Rosaen’s Magical Thinking: A Short Evaluation of Alex Rosaen’s 2013 Prevailing Wage Methodology,” Department of Economics Working Paper Series, University of Utah. Accessed at: https://ideas.repec.org/p/uta/papers/2013_12.html.

²¹ Armand Thieblot rated state-level prevailing wage laws based on factors including coverage thresholds, type of work excluded/included, and the determination of wage rates, etc. See Thieblot, Armand. (1995). State Prevailing Wage Laws: An Assessment at the Start of 1995, prepared for the Associated Builders and Contractors, Inc. The groups of states used in Figure 1 have been adjusted to reflect subsequent policy changes. See “How Weakening Wisconsin’s Prevailing Wage Policy Would Affect Public Construction Costs and Economic Activity,” by Kevin Duncan and Alex Lantsberg, May 22, 2015. With either set of ratings, Kentucky’s prevailing wage standard would fall into the average/strong category.

Figure 1. Distribution of Construction Cost Components in States with Strong/Average vs. Weak/No Prevailing Wage Laws



Source: *Economic Census of Construction, 2012* from “How Weakening Wisconsin’s Prevailing Wage Policy Would Affect Public Construction Costs and Economic Activity,” by Kevin Duncan and Alex Lantsberg, 2015.

This information reveals the expected result. Where wage policies are present and when the policies are strongest, wages and benefits are higher and are a larger percent of total construction costs. In states with weak or no prevailing wage law, wage costs are 17.2% of total costs versus 18.7% in states with at least average prevailing wage policies. Benefit payments are also significantly lower in weak or no law states representing 5.8% of total construction costs versus 8.3% in the other group of states. Taken together, wage and benefit costs are 23% of all costs in states with weak or no wage policy and 27% in states with at least average wage policies.

The information reported in Figure 1 also indicates that when wages and benefits are higher, other costs are lower. The costs of materials, fuels, and rental equipment are lower in those states with higher wage and benefit costs. Material, fuel, and rental equipment costs represent 41.8% of total costs in states with average or strong prevailing wage laws and 44.8% in states with weak or no law. While administrative labor costs are approximately the same in both groups of states (9%), purchased services, depreciation, and residual earnings— a measure of contractor profits— are each a lower percent of total costs in those states where wage and benefits are higher.

While the wage differential method focuses exclusively on disparity in wage rates to determine the cost effect of prevailing wages, superior methods make use of specialized statistical software and access to project-level data to analyze the effect of prevailing wages on all construction costs. This type of approach avoids the shortcomings of the wage differential method by taking into consideration changes in other construction costs and labor productivity that occur when wage rates rise and fall in the construction industry. Studies that have undergone peer-review prior to publication generally use these advanced research techniques. Note that a peer-review is not based on whether reviewers agree with the research results; rather, the purpose of the review is to ensure quality, provide credibility, and maintain standards in the discipline. One

benefit of this type of review is that peer experts are more likely to detect errors that may not be obvious to casual readers. It is entirely up to casual readers to evaluate the accuracy of research that has not been peer reviewed. Research that involves project-level data, statistical analysis, and peer-review is very time consuming and can take years to conduct. The level of expertise and rigor required of this type of research does not compare to that required of the “back of the envelope” wage differential method. Unsurprisingly, the findings of the preponderance of peer-reviewed research that utilizes advanced statistical methods are in sharp contrast to the LRC cost estimate of 7.9%.

Since 2001 there have been 11 peer-reviewed studies that examine the effect of prevailing wage laws on school construction costs. One of these studies is based on the wage differential method. As long as prevailing wage rates are greater than the alternative wage, and since other mitigating influences are ignored, this method automatically yields a prevailing wage cost effect. Of the remaining ten studies, nine (90%) find that there is very little consistent evidence that prevailing wages contribute to increased construction costs. These studies are reviewed below.

School construction projects are relatively similar and provide for an apples-to-apples comparison of building projects, which is important in separating the effect of prevailing wage policies from other project characteristics that also influence construction costs. In two studies that examine costs of over 4,000 schools built in the United States, Professors Azari-Rad, Philips, and Prus fail to find any statistically significant²² cost difference between schools built in states with and without prevailing wage laws.²³

Professor Atalah tests the hypothesis that prevailing wages increase school construction costs in two studies. Both are based on the examination of over 8,000 bids for school construction projects in Ohio. The first study compares bids that were submitted by contractors who are signatories to collective bargaining agreements and who pay union wage and benefit rates to the bids submitted by “open shop” contractors who typically pay lower rates. A comparison of average bid-costs per square foot indicates that there is no significant difference in this cost measure between the two groups of contractors across the state, except in the southern region where bids by union contractors are lower than bids by nonunion contractors.²⁴ This difference is statistically significant. Union rates are used to determine prevailing wage and benefit levels in Ohio.²⁵ Wages paid by “open shop” contractors represent wages at the other extreme, if prevailing wages do not apply. If costs do not differ between these extremes, the inference is that prevailing wages do not affect costs.

²² A statistically significant difference is likely not due to chance, implying causation. A difference that is not statistically significant is likely due to chance, implying the lack of causation.

²³ See Hamid Azari-Rad, Peter Philips and Mark Prus. 2003 ‘State Prevailing Wage Laws and School Construction Costs.’ *Industrial Relations*, Vol. 42, No. 3, pp. 445-457 and Hamid Azari-Rad, Peter Philips and Mark Prus. 2002. “Making Hay When It Rains: The Effect Prevailing Wage Regulations, Scale Economies, Seasonal, Cyclical and Local Business Patterns Have On School Construction Costs.” *Journal of Education Finance*, Vol.27, 997-1012.

²⁴ Alan Atalah. 2013. “Comparison of Union and Non-Union Bids on Ohio School Facilities Commission Construction Projects,” *International Journal of Economics and Management Engineering*, Vol. 3, Issue 1, pp. 29-35.

²⁵ See “Chapter 4115: Wages and Hours on Public Works,” LA Writer, Ohio Laws and Rules. Accessed at <http://codes.ohio.gov/orc/4115>.

The second study by Professor Atalah yields mixed results regarding the cost impact of prevailing wages.²⁶ This study compares bids that were submitted by different trades that did and did not pay union rates. Results indicate that all bids and winning bids—adjusted by school square foot size—were higher for 3 of the 18 trades (16.7%) that paid union rates compared to the same trades that did not pay union rates. Specifically, all bids and winning bids were higher for union contractors doing work on existing conditions, plumbing, and earthwork. In 2 of the 18 trade categories (11.1%), all bids and winning bids submitted by union contractors were lower. Specifically, HVAC and electrical union contracts had lower bid prices. There were no statistically significant differences in bid-costs per square foot for 72.2% of the other trades (13 out of 18 classifications), regardless of payment of union wage and benefit rates.²⁷ In sum, the studies by Professor Atalah find that, by and large, the payment of union wage rates are not associated with increased bid costs. There are a few cases where bids are higher for some trades when union rates are paid, but there are also a few cases where bids are lower for some trades when union rates are paid. Moreover, there is additional evidence that, for the southern region of the state, bids based on the payment of union wages are lower than bids based on nonunion wage rates.

Professors Keller and Hartman compare labor costs under prevailing wage regulations and “open shop” conditions and report that Pennsylvania’s prevailing wage law adds, on average, 2.25% to the cost of building public schools, though this analysis is based on the flawed wage differential method.²⁸ In a comparison of about 2,600 schools built in the U.S., Vincent and Monkkonen report a prevailing wage cost effect ranging between 8% and 13%.²⁹ The data used in this study is similar to that used in the studies by Professors Azari-Rad, Philips, and Prus who find no statistically significant prevailing wage cost impact. One flaw, however, in Professor Vincent and Monkkonen’s analysis is that they do not consider the effect of economic conditions on costs. Professors Azari-Rad, Philips and Prus find that doubling the unemployment rate within a state can reduce school construction costs by as much as 21 percent. If states built under prevailing wage requirements in the study by Professors Vincent and Monkkonen also have lower unemployment rates, the prevailing wage cost estimate of 8% to 13% is too high.

Several studies have taken advantage of the introduction of a prevailing wage policy in British Columbia to compare school construction costs. This policy is similar to the relatively strong prevailing wage laws in Washington and Illinois. Professors Bilginsoy and Philips were the first to examine the impact of British Columbia’s Skill Development and Fair Wage Policy on school construction costs.³⁰ This study takes a number of factors into consideration— including the construction business cycle, number of competitors, type of school, and a time trend. Results from

²⁶ Alan Atalah. 2013. “Impact of Prevailing Wages on the Cost among the Various Construction Trades,” *Journal of Civil Engineering and Architecture*, Vol. 7, No. 4, pp. 670-676.

²⁷ These projects include the trades involved in the following Construction Specifications Institute categories: communications, concrete, conveying equipment, electronic safety and security, equipment, finishing, fire suppression, furnishings, masonry, openings, structural steel, thermal and moisture protection, and wood, plastics and composites work.

²⁸ This 2001 study is the last peer-reviewed paper based on the wage differential method. See Keller, Edward C. and William T. Hartman. 2001 ‘Prevailing Wage Rates: the Effects on School Construction Costs, Levels of Taxation, and State Reimbursements,’ *Journal of Education Finance*, Vol. 27, pp. 713-728.

²⁹ See Jeffrey Vincent, Jeffrey and Paavo Monkkonen. 2010. “The Impact of State Regulations on the Cost of Public School Construction,” *Journal of Education Finance*, Vol. 35, No. 4, spring, pp. 313-330.

³⁰ Cihan Bilginsoy and Peter Philips. 2000. “Prevailing Wage Regulations and School Construction Costs: Evidence from British Columbia,” *Journal of Education Finance*, Vol. 24, 415-432.

the analysis of 54 projects indicate that construction costs under the policy were not statistically different from costs of schools built before the introduction of prevailing wages.³¹

Professors Duncan, Philips, and Prus examine the effect of British Columbia's prevailing wage standard by including a control group of private school projects.³² This analysis indicates that before the introduction of the prevailing wage policy, the cost of building public schools was approximately 40% more expensive than the costs of comparable private schools.³³ This cost differential did not change after the wage policy was introduced. These authors have also used the British Columbian example to study the effect of prevailing wage laws on the productivity and efficiency of construction. They find that prior to the introduction of the wage legislation, public school projects were 16% to 19% smaller, in terms of square feet, than comparable private structures (given the same project expenditure). This size differential did not change after the policy was in effect.³⁴ These results suggest that prevailing wage requirements do not alter labor or other input utilization in a way that significantly affects the relative size of covered and uncovered projects. The authors also find that average total efficiency for public school construction is 94.6% (100% is optimal construction efficiency).³⁵ Average efficiency for projects covered by the introductory stage of British Columbia's construction wage legislation was 86.6%. However, this policy mandated apprenticeship training requiring journeymen to divide time between teaching and building, which can explain the decrease in efficiency when the policy was first introduced. On the other hand, by the time of the expansion of the policy 17 months later, the average efficiency of covered projects *increased* to 99.8%. These findings suggest that the introduction of prevailing wage laws initially disrupted construction efficiency. However, in a relatively short period of time, the construction industry adjusted to wage requirements by actually improving overall construction efficiency in a way that is consistent with stable total costs. A similar pattern was observed with respect to cost efficiency.³⁶ All of these studies are based on the examination of between 420 and 550 school projects. Taken together, these studies of prevailing wages in British Colombia provide a comprehensive analysis that fails to find an effect on construction costs or efficiency consistent with the view that prevailing wages increase construction costs.

In a study that is particularly relevant to Kentucky, Professor Peter Philips has examined school construction costs in Kentucky, Michigan, and Ohio during periods in the 1990s when prevailing wage policies for school projects changed within these states. While this study has not been peer-reviewed, it also provides a sharp contrast to the LRC cost estimate of 7.9%. Professor

³¹ Statistical analysis makes a distinction between 'statistically significant' and 'statistically insignificant' results. A statistically significant result is unlikely to have occurred due to chance. If a result is statistically insignificant, then the measured result is likely to have occurred due to chance.

³² Kevin Duncan, Peter Philips, and Mark Prus. 2014. "Prevailing Wage Regulations and School Construction Costs: Cumulative Evidence from British Columbia." *Industrial Relations*, Vol. 53, No. 4, October, pp. 593-616.

³³ Professors Duncan and Prus examine the effect of the British Columbian wage policy on assorted building types, (assembly halls, hospitals, offices, schools, etc., and find a similar effect. See Duncan, K. and Prus, M. 2005. "Prevailing Wage Laws and Construction Costs: Evidence from British Columbia's Skills Development and Fair Wage Policy" in *The Economics of Prevailing Wage Laws*, Azari-Rad, Hamid, Philips, Peter and Prus, Mark, eds. (Aldershot, G.B.: Ashgate), pp. 123-148.

³⁴ Kevin Duncan, Peter Philips, and Mark Prus. 2006. "Prevailing Wage Legislation and Public School Construction Efficiency: A Stochastic Frontier Approach," *Construction Management and Economics*, Vol. 24, June 2006. pp. 625-634.

³⁵ Kevin Duncan, Peter Philips, and Mark Prus. 2009. "The Effects of Prevailing Wage Regulations on Construction Efficiency in British Columbia," *International Journal of Construction Education and Research*, Vol. 5, No.1, pp. 63-78.

³⁶ Kevin Duncan, Peter Philips, and Mark Prus. 2012. "Using Stochastic Frontier Regression to Estimate the Construction Cost Efficiency of Prevailing Wage Laws." *Engineering, Construction and Architectural Management*, Vo. 19, No. 3, pp 320-334.

Philips finds that there was no statistically significant difference in school construction costs as Kentucky, Michigan, and Ohio introduced and repealed prevailing wage requirements for public school construction.³⁷

Six other peer-reviewed studies have examined the effect of prevailing wage laws on construction costs for different types of projects, such as highways, low-income housing, and offices.³⁸ Results from two of these studies (33%) suggest that prevailing wage requirements increase costs. Of the combined 17 peer-reviewed studies that examine this issue, fully 76% find that prevailing wages are not associated with increased construction costs.

Why don't prevailing wages increase construction costs? First, labor costs are a low and historically declining percentage of total costs in the construction industry—approximately 23% of all building costs in the United States.³⁹ As the data presented in Figure 1 indicate, contractors reduce expenditures on materials, fuels, and rental equipment, and accept marginally lower profit margins when wages are higher.⁴⁰ Finally, peer-reviewed research indicates that when wages increase in the construction industry, contractors respond by utilizing more capital equipment and substituting skilled workers for less-productive counterparts.⁴¹ Since labor costs represent a small portion of overall costs, relatively minor changes are needed to offset the effect of the wage policy.

³⁷ All of these findings are reported in Peter Philips, "Kentucky's Prevailing Wage Law," January 2014.

³⁸ For a review of these studies see Kevin Duncan, "The Effect of Federal Davis-Bacon and Disadvantaged Business Enterprise Regulations on Highway Maintenance Costs," *Industrial and Labor Relations Review*, January, 2015, Vol. 68, No. 1, pp. 212-237. Accessed at: <http://ilr.sagepub.com/content/68/1.toc>.

³⁹ See the 2012 U.S. Census Bureau, *Economic Census of Construction*, Construction: Geographic Area Series: Detailed Statistics for Establishments, accessed at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table.

⁴⁰ Kevin Duncan and Alex Lantsberg. 2015. "How Weakening Wisconsin's Prevailing Wage Policy Would Affect Public Construction Costs and Economic Activity." Accessed at: <http://www.faircontracting.org/wp-content/uploads/2015/05/How-Weakening-Wisconsin%E2%80%99s-Prevailing-Wage-Policy-Would-Affect-Public-Construction-Costs-and-Economic-Activity2.pdf>.

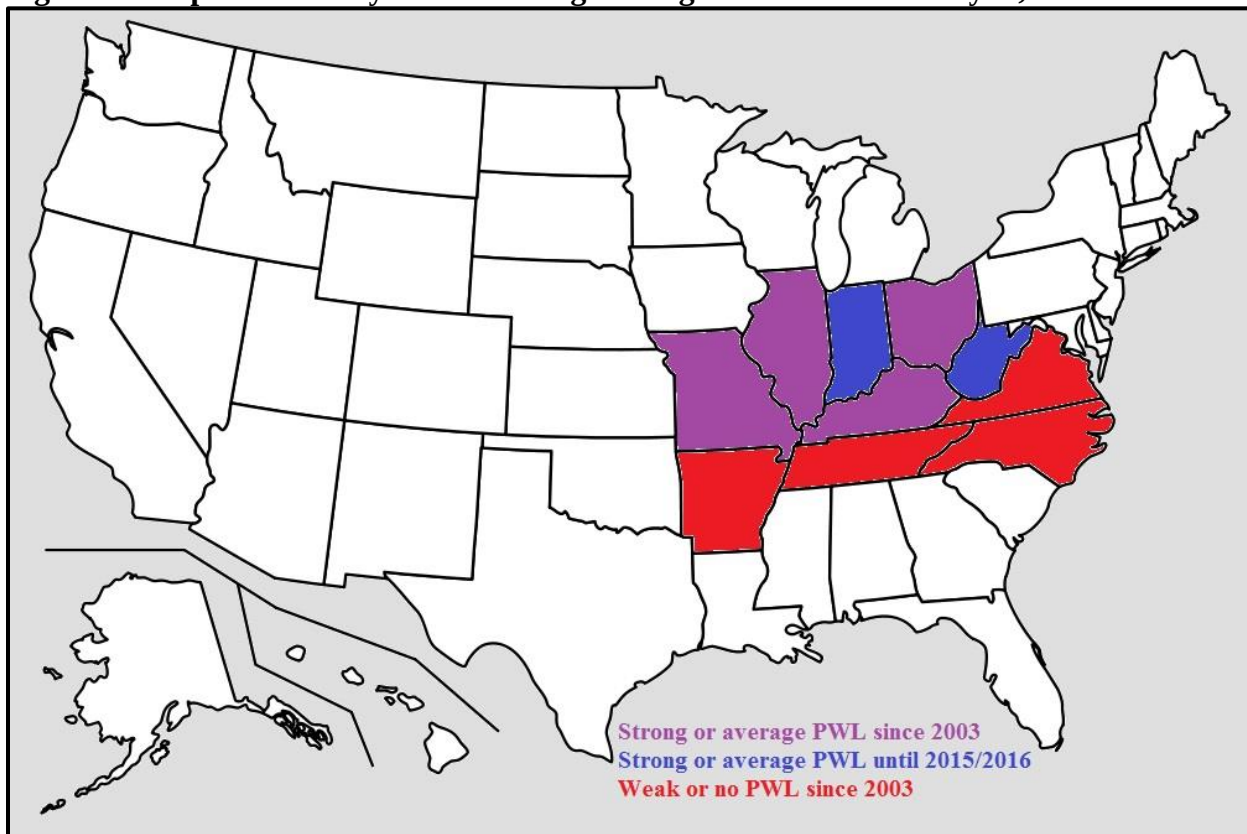
⁴¹ See William Blankenau and Steven Cassou, "Industry Differences in the Elasticity of Substitution and Rate of Biased Technological Change between Skilled and Unskilled Labor." *Applied Economics*, 2011, Vol. 43, pp. 3129-3142 and Edward Balistreri, Christine McDaniel and Eina Vivian Wong, "An Estimation of U.S. Industry-Level Capital-Labor Substitution Elasticities: Support for Cobb-Douglas." *The North American Journal of Economics and Finance*, 2003, Vol. 14, No. 3, 343-356.

Prevailing Wage Laws and Construction Worker Income, Poverty, and Reliance on Public Assistance

Background on the Statistical Analysis of Repealing or Weakening Prevailing Wages

This section compares labor market outcomes for construction workers residing in a 10-state region with Kentucky at the center (Figure 2). The states are categorized by those with strong or average prevailing wage laws (PWLs) and those with weak/no prevailing wage policies. Note that Indiana observations starting in July 2015 and West Virginia observations starting in May 2016 are classified as occurring in weak or no law states because these states repealed prevailing wage during the period of analysis.⁴² Data from the Annual Social and Economic Supplement (ASEC) of the *Current Population Survey* contain economic and demographic information on a large number of construction workers.⁴³ The *Current Population Survey* is a random poll of households, jointly sponsored by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics. Weights are provided by statisticians at the U.S. Census Bureau to match the survey sample to the overall population in each state.

Figure 2. Map of Kentucky and Nine Neighboring States Used in Analysis, 2003-2016



⁴² See Indiana Department of Labor, "Common Construction Wage Home." Accessed at <http://www.in.gov/dol/2723.htm>. See WSAZ, "UPDATE: West Virginia repeal of state prevailing wage takes effect" (May 5, 2016). Accessed at: <http://www.wsaz.com/content/news/West-Virginia-House-to-vote-on-repeal-of-prevailing-wage-366679441.html>

⁴³ See "Poverty," *Current Population Survey Annual Social and Economic Supplement*, US Census Bureau. Accessed at: <http://www.census.gov/hhes/www/poverty/publications/pubs-cps.html>.

The Annual Social and Economic Supplement provides additional data on income and benefits, including from government programs. In total, the dataset comprises 249,100 responses from individuals in the labor force— including the unemployed— over a 14-year period from the beginning of 2003 through the end of 2016. The dataset also includes 10,909 total observations from employed blue-collar construction workers. When weighted to match the actual U.S. population, the data represent 36.8 million labor force participants and 1.6 million blue-collar construction workers annually. Adjusting the sample using weighting techniques provided by the U.S. Census Bureau to account for demographic groups who are under-sampled or over-sampled allows the data to mirror the actual construction sector.⁴⁴ The information was extracted from the Integrated Public Use Microdata Series (IPUMS-CPS) project by the Minnesota Population Center at the University of Minnesota.⁴⁵

To understand the actual and unique impact that repealing or weakening prevailing wage laws have on worker incomes and public sector budgets, the statistical method of “regression analysis” is utilized. This statistical technique, a “curve fitting” method, allows researchers to compare labor market outcomes between workers in the two groups of states, taking other individual characteristics into consideration. Statistical analysis also allows researchers to determine if a measured difference is statistically significant or not. A statistically significant finding is an indication of that the relationship may be causal.

Results are reported from a regional analysis of the 10 states— Kentucky and nine neighboring states— using Heckman regression models and Heckman probit models— and are compared to an advanced national analysis of all states using similar data from 2004 to 2013.⁴⁶ States that had a prevailing wage statute classified as either “strong” or “average” from 2003 through 2016 include Kentucky, Illinois, Missouri, and Ohio. States in the region with a “weak” law or without a prevailing wage law include Arkansas, Tennessee, Virginia, and North Carolina. As discussed previously, Indiana and West Virginia are in the strong/average group of states until the month in which their respective repeals became effective.

There are limitations to this statistical approach. First, data from the *Current Population Survey* reports a worker’s state of residence rather than state of employment, so the results may be biased by workers who live in states with weak or no prevailing wage laws but work in states with a strong or average prevailing wage law (e.g., living in Tennessee but working in Kentucky) and vice-versa. Second, the data is based on household survey responses rather than on administrative payroll reports. There may be more potential for human error in reporting income and government assistance than official payroll records. A recent paper by Professor Bruce Meyer at the University of Chicago and Nikolas Mittag at CERGE, Charles University has found that the *Current Population Survey* and other household data considerably underreport government transfers of

⁴⁴ An example of a traditionally under-sampled group is foreign-born immigrants, who may be more difficult to reach via telephone or home visits. On the other hand, an example of a traditionally oversampled group is stay-at-home parents, who are more likely to be home to take the survey, tend to have more availability on a given day, and are consequently more likely to answer survey questions.

⁴⁵ See Sarah Flood, Miriam King, Steven Ruggles, and J. Robert Warren. Integrated Public Use Microdata Series, *Current Population Survey*: Version 4.0. [Machine-readable database]. Minneapolis: University of Minnesota, 2016.

⁴⁶ Frank Manzo IV, Alex Lantsberg, and Kevin Duncan. 2016. “The Economic, Fiscal, and Social Impacts of State Prevailing Wage Laws: Choosing Between the High Road and the Low Road in the Construction Industry.” Illinois Economic Policy Institute, Smart Cities Prevail, and Colorado State University–Pueblo. Accessed at: <http://www.smartcitiesprevail.org/wp-content/uploads/2016/02/PW-national-impact-study-FINAL2.9.16.pdf>.

income.⁴⁷ Using data from New York, the researchers find that the *Current Population Survey* misses 40 percent of all Supplemental Nutrition Assistance Program (SNAP) food stamp recipients. The largest instance of underreporting is for single mother households. However, blue-collar construction occupations are male-dominated, so underreporting is a smaller issue for this industry. Nevertheless, all government assistance findings are likely to be *conservative* estimates as a result. The final limitations are those associated with all statistical models, such as lurking and unobservable variables.

Summary Statistics of the CPS-ASEC Data

Table 1 provides summary statistics for all employed blue-collar construction workers in the dataset, by state of employment. Blue-collar construction workers are defined as all workers employed in “construction occupations,” such as construction laborers, operating engineers, electricians, carpenters, plumbers, pipefitters, and painters. These numbers also describe “what is.” For example, without considering any other factors, what is the average wage and salary income of a blue-collar construction worker in a state with a strong or average prevailing wage law compared to the same income in a state with a weak or no law?

The blue-collar construction workforce is better-educated in states with a strong or average law than in states with a weak or no law (Table 1). For blue-collar construction workers in both types of states, white non-Latino workers account for the majority of the workforce and only about 3% of the workforce is female. However, the share of blue-collar construction workers with a college degree or some college-level instruction (which can include apprenticeship training) is 33.2% in states with a strong or average prevailing wage law, compared to just 23.2% in states with a weak or no law. An estimated 27.8% of the blue-collar construction workforce in Kentucky has some college experience or a college degree.

As shown in Table 1, personal economic outcomes contrast sharply between the two groups of states. The average wage and salary income for blue-collar construction workers was \$45,844 in states with a strong or average prevailing wage law in the region, or \$8,396 greater than their counterparts in states with a weak or no law (\$37,448). Isolated from their regional peers in states with a strong or average prevailing wage law, blue-collar construction workers in Kentucky (\$40,313) still earned \$2,865 more than their counterparts in states with a weak or no law. In the region's states with an effective prevailing wage law, 90.8% of blue-collar construction workers had health insurance and 45.7% had a pension plan at work. Conversely, in nearby states without an adequate prevailing wage law, only 84.9% of blue-collar construction workers had employer-provided health insurance and just 27.2% had a pension plan at work. The respective figures for Kentucky were 86.9% covered by an employer-provided health insurance plan and 33.7% covered by a pension—both better than the outcomes in neighboring states with a weak or no law.

Other data reported in Table 1 indicate that blue-collar construction workers are more likely to be impoverished and require public assistance in states with a weak or no prevailing wage law. Fewer blue-collar construction workers earned an annual income that placed them below the official poverty line (7.7%) and fewer qualified for, and received, Earned Income Tax Credits

⁴⁷ Bruce Meyer and Nikolas Mittag. 2015. “Using Linked Survey and Administrative Data to Better Measure Income: Implications for Poverty, Program Effectiveness and Holes in the Safety Net.” National Bureau of Economic Research (NBER), Working Paper 21676. Accessed at: <http://www.nber.org/papers/w21676>.

(11.2%) in the states with strong or average prevailing wage laws than in those without (12.2% and 16.4%, respectively). Once again, when isolated from their strong or average law peers, Kentucky still fared better than neighboring states with a weak or no law, with 9.8% of the blue-collar construction workforce below the poverty line and 12.1% receiving Earned Income Tax Credits.

Table 1. Information on Blue-Collar Construction Workers in Kentucky and Nine Neighboring States, 2003-2016

Summary Statistics	Kentucky	Strong/Average PWL (incl. KY)	Weak/No PWL
Observations in labor force (Weighted)	18,083 (2,209,606)	157,484 (22,659,174)	91,616 (14,159,198)
Employed construction worker observations (Weighted)	675 (82,052)	6,197 (882,226)	4,712 (705,388)
<i><u>Demographics</u></i>			
White, non-Latino	86.2%	82.8%	61.0%
Female	2.6%	3.0%	2.8%
High school degree or less	72.2%	66.8%	76.8%
Some college, no degree	14.6%	18.9%	13.4%
College degree	13.2%	14.3%	9.8%
<i><u>Poverty, Government Assistance, and Taxes</u></i>			
Real wage and salary income*	\$40,313	\$45,844	\$37,448
Usual hours worked per week	34.1	35.1	34.1
Included in employer-provided health plan	86.9%	90.8%	84.9%
Has a pension plan at work	33.7%	45.7%	27.2%
Lives below official poverty line	9.8%	7.7%	12.2%
Receives Earned Income Tax Credits (EITC)	12.1%	11.2%	16.4%

Source: *Current Population Survey, Annual Social and Economic Supplement* (2003-2016). *Reported only for those workers with positive earnings.

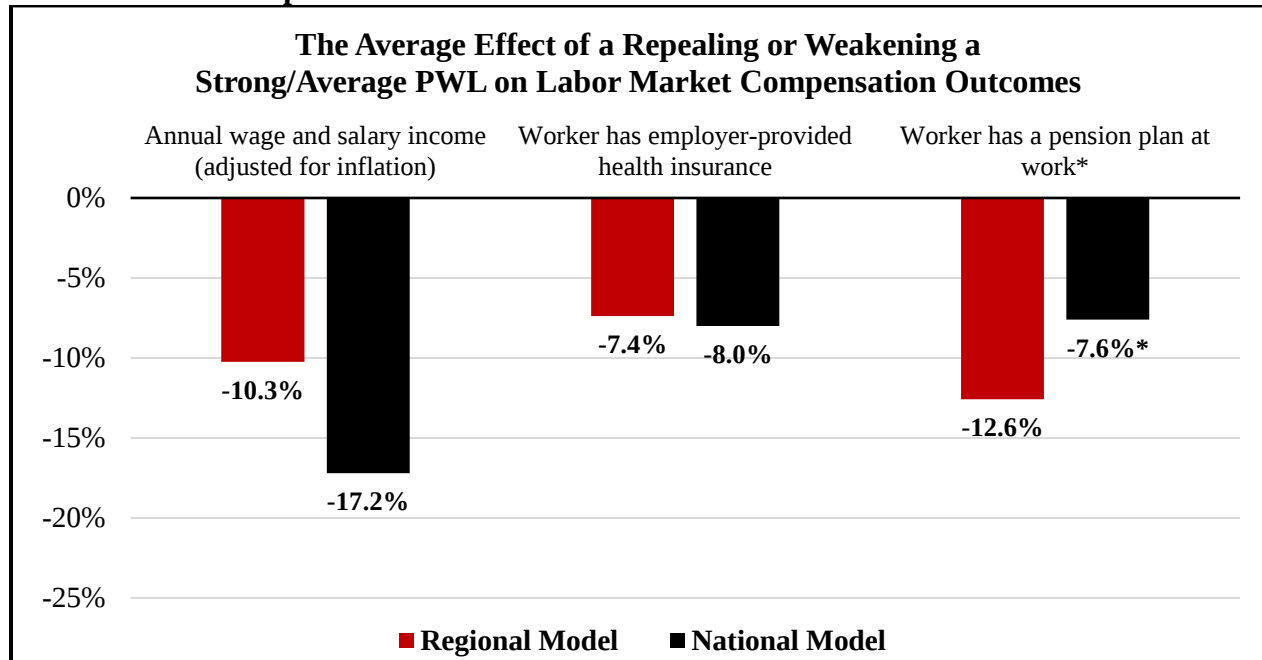
The Cost of Weakening or Repealing Prevailing Wage on Worker Incomes and Employee Benefits

While the summary statistics of Table 1 report “what is,” the remainder of this section investigates “how much” strong or average prevailing wage legislation is uniquely responsible for these outcomes. Determining the causal impact of prevailing wage after netting out the effects of other variables allows us to assess the costs of legislation that would weaken or repeal prevailing wage laws.

The effect of strong or average prevailing wage laws in the region appears to be consistent with overall estimates for the rest of the country, as depicted in Figure 3. The average impact of repealing or weakening prevailing wage is to reduce blue-collar construction worker incomes by 10.3% in the region (Figure 3). In addition, gutting strong or average prevailing wage laws lowers the probability that a blue-collar construction worker has employer-provided health insurance by 7.4 percentage points and the probability that he or she has a pension plan at work by 12.6 percentage points. All of these results are statistically significant. The advanced national model by Manzo, Lantsberg, and Duncan finds that the impact of repealing prevailing wage across the country is a 17.2% decrease in wages, an 8.0 percentage-point reduction in health coverage, and a

7.6 percentage-point drop in pension coverage– but the latter is not significant at the traditional 5% confidence level.⁴⁸ Weakening or repealing prevailing wage in Kentucky would significantly decrease private health and retirement coverage, forcing blue-collar construction workers who were previously self-sufficient to rely on public insurance programs.

Figure 3. The Impact of Repealing or Weakening Prevailing Wage on Labor Market Compensation Outcomes



Source: Authors' analysis of the *Current Population Survey*, Annual Social and Economic Supplement (2003-2016). For full regression results in .txt format, please contact author Frank Manzo IV at fmanzo@illinoisepi.org. *For the effect on pension coverage in the national model, the results are only significant at $P > |0.10|$.

Other academic research that examines the benefits of prevailing wage laws by Professor Waddoups has explored the connection between the lack of employment-based health insurance and the disproportionate uncompensated care costs that accrue to public hospitals and, by extension, the community.⁴⁹ In particular, Waddoups' study documented the particularly low incidence of employment-based health insurance among construction workers and the corresponding disproportionately high incidence of uncompensated care among construction workers at a local public hospital. The findings clearly demonstrate that a large share of uncompensated care is attributable to the construction industry relative to its size, which means that local taxes supporting the hospital are higher than they would otherwise be. To the extent that cross-subsidies from paying patients cover the uninsured, prices of health care– and thus, insurance prices– are higher than they would be.

⁴⁸ Frank Manzo IV, Alex Lantsberg, and Kevin Duncan. 2016. "The Economic, Fiscal, and Social Impacts of State Prevailing Wage Laws: Choosing Between the High Road and the Low Road in the Construction Industry." Illinois Economic Policy Institute, Smart Cities Prevail, and Colorado State University–Pueblo. Accessed at: : <http://www.smartcitiesprevail.org/wp-content/uploads/2016/02/PW-national-impact-study-FINAL2.9.16.pdf>.

⁴⁹ Jeff Waddoups. 2005. "Health Care Subsidies in Construction: Does the Public Sector Subsidize Low Wage Contractors?". Accessed at: http://www.researchgate.net/publication/237102337_Health_Care_Subsidies_in_Construction_Does_the_Public_Sector_Subsidize_Low_Wage_Contractors.

The Social Cost of Weakening or Repealing Prevailing Wage

Repealing prevailing wage reduces worker earnings and slashes employee benefits, resulting in fewer construction workers in the middle class. Accordingly, these economic realities should tend to increase reliance on government programs—hurting public sector budgets. Table 2 presents results from regional analyses and compares them to national findings by Manzo, Lantsberg, and Duncan.⁵⁰

Results reported in Table 2 indicate that weakening or repealing prevailing wage laws increases the probability that a blue-collar construction worker earns less than the official poverty line and that he or she receives Earned Income Tax Credits (EITC). In the regional models, gutting a strong or average prevailing wage law is found to raise poverty by 6.9 percentage points and EITC reliance by 7.1 percentage points. Though larger, the regional findings are similar to the national estimates. Note that the regional models account for the types of workers who self-select into blue-collar construction occupations, who may otherwise be more likely to fall below the poverty line due to demographic factors or lower levels of educational attainment on average.

Table 2. The Impact of Repealing or Weakening Prevailing Wage on Poverty and Earned Income Tax Credits

Average Effect of Repealing or Weakening a Strong or Average PWL on:	Regional Model	National Model
Worker living below official poverty line	+6.9%	+3.1%
Worker receiving Earned Income Tax Credits (EITC)	+7.1%	0.0%

Source: Authors' analysis of the *Current Population Survey*, Annual Social and Economic Supplement (2003-2016). For full regression results in .txt format, please contact author Frank Manzo IV at fmanzo@illinoisepi.org.

Table 3 aggregates the findings to forecast the number of affected workers if Kentucky were to weaken or repeal its strong or average prevailing wage law. Note that, given the finding by Professors Meyer and Mittag that government assistance is actually underreported by the *Current Population Survey* Annual Social and Economic Supplement (ASEC), Table 3 likely provides conservative estimates.⁵¹ This predictive analysis is also a “static” assessment and assumes that nothing else changes other than the state’s prevailing wage law.

Table 3 applies the regional impacts to Kentucky. The top-line figure in Table 3 is the average annual number of blue-collar construction workers in each state from 2003 through 2016. These estimates do not include extraction occupations, which are often grouped with construction workers. The rest of the table incorporates the data to understand how Kentucky would be different by gutting its prevailing wage law, reported in percentage values and total worker values.

⁵⁰ Frank Manzo IV, Alex Lantsberg, and Kevin Duncan. 2016. “The Economic, Fiscal, and Social Impacts of State Prevailing Wage Laws: Choosing Between the High Road and the Low Road in the Construction Industry.” Illinois Economic Policy Institute, Smart Cities Prevail, and Colorado State University–Pueblo. Accessed at: <http://www.smartcitiesprevail.org/wp-content/uploads/2016/02/PW-national-impact-study-FINAL2.9.16.pdf>.

⁵¹ Bruce Meyer and Nikolas Mittag. 2015. “Using Linked Survey and Administrative Data to Better Measure Income: Implications for Poverty, Program Effectiveness and Holes in the Safety Net.” National Bureau of Economic Research (NBER), 2015, Working Paper 21676. Accessed at: <http://www.nber.org/papers/w21676>.

The data forecast that thousands of Kentucky construction workers would require government assistance if the state weakened or repealed its prevailing wage law (Table 3). The average annual income of Kentucky's blue-collar construction workforce would be expected to decline by 10.3%. For approximately 5,700 workers, the wage cut would be so significant that they would fall below the official poverty line, qualifying them for Supplemental Nutrition Assistance Program (SNAP) government benefits. In addition, an estimated 5,800 blue-collar construction workers would newly qualify for Earned Income Tax Credit (EITC) assistance.

Furthermore, thousands of blue-collar construction workers would lose their employer-provided health insurance and pension plan if Kentucky were to weaken or repeal its prevailing wage law. Nearly 6,100 blue-collar construction workers would lose their employer-provided health insurance coverage and over 10,300 would lose their employer-provided pension plan if Kentucky were to gut prevailing wage. By reducing pension and health coverage, repeal of prevailing wage would force thousands of blue-collar construction workers onto public retirement and public health insurance programs, increasing costs to taxpayers.

Table 3. Estimated Social Impact of Repealing or Weakening Prevailing Wages in Kentucky

Economic or Public Sector Budget Outcome	Actual (2003-2016)	With Weak or No PWL	Estimated Change
Average workers in construction occupations	82,100	82,100	--
Worker living below official poverty line	9.8%	16.7%	+6.9%
	8,000	13,700	+5,700
Workers receiving Earned Income Tax Credits (EITC)	12.1%	19.2%	+7.1%
	10,000	15,800	+5,800
Workers with employer-provided health insurance	86.9%	79.5%	-7.4%
	71,300	65,200	-6,100
Workers with a pension plan at work	33.7%	21.1%	-12.6%
	27,600	17,300	-10,300

Source: Authors' analysis of the *Current Population Survey*, Annual Social and Economic Supplement (2003-2016). All estimates rounded to the nearest hundred.

Prevailing Wage Laws and Military Veterans in the Construction Industry

A recent, first-of-its-kind national study commissioned by VoteVets.org in May 2016, *The Impact of Prevailing Wage Laws on Military Veterans: An Economic and Labor Market Analysis*, finds that veterans in particular are worse off by weakening or repealing prevailing wage laws.⁵² This section applies results from the national study to estimate the impact that weakening or repealing prevailing wage would have on veterans working in Kentucky's construction sector.

Veterans are more likely to work in construction than non-veterans (Table 4). Nationally, veterans accounted for 6.9% of all blue-collar construction workers in 2014. In Kentucky, veterans made up an even larger share of the construction workforce. Approximately 7.5% of all blue-collar construction workers in Kentucky were military veterans, above the U.S. average. Any given construction worker was 1.1 percentage-points more likely to be a military veteran than another individual in the overall Kentucky economy. Note that the difference between the veteran share of the construction workforce relative to the veteran share of all workers is generally higher in states with strong or average prevailing wage laws in the region.

Table 4. Share of Veterans Employed in the Workforce, by State and Occupation, 2014

State	Veteran Share of All Workers	Veteran Share of Construction Workforce	Difference: 2014
<u><i>Strong/Average PWL</i></u>			
Kentucky	6.4%	7.5%	+1.1%
Illinois	4.5%	7.4%	+2.9%
Indiana*	5.8%	8.6%	+2.8%
Missouri	6.7%	10.5%	+3.8%
Ohio	6.0%	8.5%	+2.5%
West Virginia*	6.6%	7.4%	+0.8%
<u><i>Weak/No PWL</i></u>			
Arkansas	7.5%	7.9%	+0.4%
North Carolina	6.9%	5.6%	-1.3%
Tennessee	7.0%	8.2%	+1.2%
Virginia	9.6%	11.3%	+1.7%
United States	5.8%	6.9%	+1.1%

Source: Author's application of Frank Manzo IV, Robert Bruno, and Kevin Duncan, "The Impact of Prevailing Wage Laws on Military Veterans: An Economic and Labor Market Analysis," 2016. Study commissioned by VoteVets.org.

*Indiana became a weak/no PWL state in July 2015 and West Virginia became a weak/no PWL state in May 2016.

Over the next decade, construction and extraction occupations are expected to offer career opportunities for Kentucky's blue-collar workers—veteran and nonveteran alike (Table 5). Construction and extraction jobs are projected to be the 9th-fastest growing occupation in the state. By 2024, construction and extraction occupations will increase by 16.7%, adding over 15,000 new jobs.⁵³ This expected growth exceeds projected employment growth in all occupations (15.2%).

⁵² Frank Manzo IV, Robert Bruno, and Kevin Duncan. 2016. "The Impact of Prevailing Wage Laws on Military Veterans: An Economic and Labor Market Analysis." Illinois Economic Policy Institute, University of Illinois at Urbana-Champaign, and Colorado State University–Pueblo. Accessed at: http://b.3cdn.net/votevets/62350ae9afd6c4c714_0jm6bsc5b.pdf.

⁵³ See Kentucky Department of Workforce Investment, "Kentucky Occupational Outlook to 2024: A Statewide Analysis of Wages, Employment, Growth and Training." Accessed at: <https://kylmi.ky.gov/admin/gsipub/htmlarea/uploads/Outlook.pdf>.

The U.S. military has responded to these employment projections through the United States Military Apprenticeship Program (USMAP), which now accounts for 21.4% of all registered apprentices in the country.⁵⁴ The typical construction apprenticeship through USMAP requires 8,000 hours of both classroom time and on-the-job training. As the construction industry grows and replaces retiring workers, apprentices from the military will become an increasingly important source of skilled construction labor.

Table 5. Top 10 Fastest Growing Major Occupations in Kentucky, by Growth Rate, 2014-2024

Rank	Fastest-Growing Major Occupations in Kentucky	Growth: 2014-2024
<i>KY</i>	<i>Total</i>	15.2%
1	Healthcare support	38.2%
2	Healthcare practitioners and technical	29.6%
3	Community and social services	21.8%
4	Computer and mathematical	21.7%
5	Life, physical, and social science	20.2%
6	Education, training, and library	19.3%
7	Personal care and service	17.9%
8	Installation, maintenance, and repair	16.9%
9	Construction and extraction	16.7%
10	Transportation and material moving	15.7%

Source: Kentucky Department of Workforce Investment, "Kentucky Occupational Outlook to 2024: A Statewide Analysis of Wages," Employment, Growth and Training.

Kentucky veterans who return home to become blue-collar construction workers and open construction companies have benefited substantially from prevailing wage. Prevailing wage protects local construction standards and ensures that blue-collar construction workers earn livable wages that reflect the markets in the communities where they live. By taking labor costs out of the equation, prevailing wage incentivizes contractors to compete efficiently over other factors—such as worker productivity, materials costs, technological advances and proficiencies, management practices, and profit margins. By preventing governmental units from undercutting privately-negotiated local wages, prevailing wage creates a level playing field for local businesses competing with out-of-area or foreign bidders.

Table 6. Veteran-Owned Share of Businesses, Construction vs. All Firms, 2012

Veteran-Owned Share of Businesses	Share: 2012
Construction firms with paid employees	12.3%
All firms with paid employees	8.8%
Difference in veteran share of businesses	+3.5%

Source: Authors' analysis of Census Bureau (2012), 2012 *Survey of Business Owners*.

Construction companies are more likely to be owned by veterans than non-construction businesses in Kentucky (Table 6). Economic data reveal that 12.3% of all construction firms with paid employees in Kentucky are majority-owned by veterans. By contrast, veteran business

⁵⁴ Frank Manzo IV, Robert Bruno, and Kevin Duncan. 2016. "The Impact of Prevailing Wage Laws on Military Veterans: An Economic and Labor Market Analysis." Illinois Economic Policy Institute, University of Illinois at Urbana-Champaign, and Colorado State University–Pueblo. Accessed at: http://b.3cdn.net/votevets/62350ae9afd6c4c714_0jm6bsc5b.pdf.

owners account for 8.8% of all companies throughout the state, a 3.5 percentage-point difference. The higher veteran share in construction means that prevailing wage changes would have disproportionate impacts on veteran contractors.

Veterans in Kentucky's construction industry would be negatively affected if the state were to weaken or repeal prevailing wage. Blue-collar construction occupations would become less attractive because the middle-class careers would be converted into low-wage, low-benefit jobs. As discussed previously, gutting prevailing wage would reduce annual incomes by 10.3% in Kentucky. Veterans working in construction would not be immune to this pay cut. Indeed, the 10.3%-drop in this analysis is consistent with the national VoteVets.org study, which uses other data sources but finds that blue-collar construction workers would see their incomes fall by between 7% and 11%.⁵⁵

The cumulative economic impacts of weakening or repealing prevailing wage on military veterans working in construction are presented in Table 7. An estimated 1,500 blue-collar veterans would be expected to separate from their jobs in Kentucky's construction occupations if prevailing wage was weakened or repealed, mainly because the occupation no longer provides for well-paying, middle-class careers. Additionally, the total income of all veterans employed in construction jobs would decline by \$80 million in the state and at least 600 veterans would lose their employer-provided health coverage.

Table 7. Impact of Repealing or Weakening Prevailing Wage on Kentucky Veterans

Impact of Repealing or Weakening Prevailing Wage on Kentucky Veterans	2014 Value	As a Weak/No PWL State	Total Change
Veterans employed as construction workers	6,200	4,700	-1,500
Total wages and salaries for BCCW veterans	\$250.0 million	\$170.0 million	-\$80.0 million
BCCW veterans without health insurance	2,200	2,800	+600

Source: Author's application of Frank Manzo IV, Robert Bruno, and Kevin Duncan, "The Impact of Prevailing Wage Laws on Military Veterans: An Economic and Labor Market Analysis," 2016. Study commissioned by VoteVets.org. Non-monetary estimates rounded to the nearest hundred.

There are significant costs to weakening or repealing prevailing wage for Kentucky's veterans. Weakening prevailing wage standards reduces the attractiveness of employment in a construction occupation for veteran workers. By cutting the hourly wages of veterans, reducing the number of veterans with employer-provided health insurance, and shrinking the market share of veteran-owned construction companies, gutting prevailing wage would increase burdens on taxpayers and disproportionately harm veteran workers who served their country. Maintaining or strengthening prevailing wage in Kentucky, on the other hand, would promote a middle-class, self-sufficient lifestyle for veterans choosing to work in construction.

⁵⁵ Frank Manzo IV, Robert Bruno, and Kevin Duncan. 2016. "The Impact of Prevailing Wage Laws on Military Veterans: An Economic and Labor Market Analysis." Illinois Economic Policy Institute, University of Illinois at Urbana-Champaign, and Colorado State University-Pueblo. Accessed at: http://b.3cdn.net/votevets/62350ae9afd6c4c714_0jm6bsc5b.pdf.

Prevailing Wage Laws and Training in the Construction Industry

In addition to the fundamental goal of protecting local wage rates from distortions associated with public construction procurement, prevailing wage laws also facilitate worker training in the industry. Construction is distinct from other industries in that the inherent instability of building activity creates strong disincentives for employers and employees to invest in a highly skilled, efficient, and safe workforce.

Due to fluctuations in seasons and economic activity, construction is the most unstable sector of the U.S. economy. Much of construction is outdoor activity and as a result, construction employment varies with the season. For example, comparing employment during the four peak summer months to the slowest four winter months indicates that construction employment decreased by 5.3% in the United States over the 2014-2015 period.⁵⁶ This rate outpaced employment fluctuations in other seasonally-sensitive industries: a similar comparison over the same period indicates that employment in the U.S. leisure and hospitality industry and in retail trade fluctuated by 5.2% and 4.3%, respectively.⁵⁷

The end result of instability in the construction industry is a loose attachment between contractors and their employees. When work is available, contractors take on additional workers, but shed employees when a project is completed, the season comes to an end, or the economy slows. As a consequence, there is little incentive for contractors to incur the expenses associated with training. There is no guarantee that the trained worker will be retained and it is likely that at some point a trained employee may work for a competing contractor. From the worker's perspective, there is also little incentive to incur the costs of training due to intermittent spells of unemployment between projects, transitions to work in other industries, and seasonal layoffs.⁵⁸ Economic fluctuations exacerbate the training problem, with downturns resulting in fewer jobs for trainable young people followed by a shortage of skilled workers when the economy expands.

The challenges associated with training workers exist alongside the need for a skilled labor force that can build customized projects. Unlike manufacturing where the product and the production process are uniform, the majority of construction "output" is not standardized. Outside of residential construction, the majority of building sites, designs, and logistics vary from project to project. Broadly trained craft workers are needed to adjust to the non-routine aspects of customized construction.

The industry has responded to the mismatch between strong disincentives to train and the need for a skilled, safe, and sustained workforce by creating formal apprenticeship training programs. Apprenticeships typically involve a mix of on-the-job training and in-class theoretical

⁵⁶ These data are for all blue and white collar employees in the industry. The peak months in construction employment are typically June-September across the nation. December-March is marked by the lowest levels of employment. Data obtained from the Quarterly Census of Wages and Employment of the Bureau of Labor Statistics, U.S. Department of Labor. Accessed at: <http://www.bls.gov/cew/>.

⁵⁷ Peak employment in the leisure and hospitality industry typically occur between May and August with the lowest employment between November-February. Peak employment in the retail industry occurs between October and January with low months between February and March. See the Quarterly Census of Employment and Wages. Accessed at: <http://www.bls.gov/cew/>.

⁵⁸ For a detailed explanation see Philips, Peter, "Dual Worlds: The Two Growth Paths in U.S. Construction," in Building Chaos: An International Comparison of the Effects of Deregulation on the Construction, (Peter Philips and Gerhard Bosch, eds.) Routledge Press, London, 2003.

education that covers the basic and specialized skills of a particular craft (for carpenters, electricians, and plumbers, etc.).⁵⁹ During the on-the-job component of training, the apprentice earns less than the fully-trained journeyworker.⁶⁰ With this arrangement the cost of training workers is shared between the apprentice and the employers who are sponsoring the training. Accordingly, apprenticeship programs address the disincentives that discourage employers and workers from pursuing training. Upon successful completion of the program, the apprentice becomes a certified journeyworker. The program results in a relatively homogenous skilled workforce in an industry that is otherwise largely free of certifications that reveal worker quality.

The Office of Apprenticeships at the U.S. Department of Labor works in conjunction with approved State Apprenticeship Agencies to set basic standards for programs that meet federal requirements for formal apprenticeship and prevailing wage work. Within this framework, sponsors have freedom to determine program content, applicant qualifications, and other aspects of the program.⁶¹ In the “open shop” segment of the construction industry, apprenticeship programs are sponsored by a single contractor or by groups of nonunion employers. These employers unilaterally determine program content, set entry requirements, select apprenticeships, and monitor trainee progress. In the unionized sector, apprenticeship training is jointly determined and managed by unions and contractors who are signatories to collective bargaining agreements.

There are other significant differences between “open shop” and union-sponsored apprenticeship programs. Funding for training in union programs is financed by a “cents per hour” fee that is part of the total wage and benefit package negotiated with signatory contractors. These types of fees are rare in open shop training arrangements where sponsoring contractors pay for the cost of training directly. The important distinction is that, under the union system, the costs of training the next generation of workers is included in the project bid and is paid by the project owner. This is not the case under the “open shop” arrangement.⁶² Also, nonunion training programs such as those offered by the Associated Builders and Contractors are characterized by task driven and modular training with a lower priority placed on the full-scope craft training characteristic of union-sponsored training programs.⁶³ Training is obligatory for all construction workers in the unionized sector where the rotation of trainees among different contractors increases exposure to multiple aspects of the trade. On the other hand, formal apprenticeship training is not mandatory in the open shop segment where arrangements to rotate trainees among different contractors are not common.⁶⁴

⁵⁹ On-the-job training ranges between 6,000 to 8,000 hours (3-4 years) with in-class instruction ranging between 430 to 580 hours. See Bilginsoy, Cihan. 2003. “The Hazards of Training: Attrition and Retention in Construction Industry Apprenticeship Programs.” *Industrial and Labor Relations Review*, Vol. 27, Issue 1, pp. 54-67.

⁶⁰ Compensation varies with the program, but usually starts at 50% of the hourly rate for the corresponding journey worker and increases with progression through the training program. See Bilginsoy, Cihan. 2007. “Delivering Skills: Apprenticeship Program Sponsorship and Transition from Training.” *Industrial Relations*, Vol. 46, No. 4, pp. 738-763.

⁶¹ See “What is Registered Apprenticeship?” ApprenticeshipUSA, Employment and Training Administration, U.S. Department of Labor. Accessed at: <https://www.doleta.gov/OA/apprenticeship.cfm>.

⁶² See Construction Industry Institute. 2007. “Construction Industry Craft Training in the United States and Canada.” Accessed at <http://ps.businesssocialinc.com/media/uploads/abceastflorida/craftstudy.pdf>

⁶³ See Associated Builders and Contractors, Inc. “Craft Training & Apprenticeship.” Accessed at: <http://www.abc.org/en-us/educationtraining/crafttrainingapprenticeship.aspx> and See Vincent, Jeff. 2004. “Analysis of Construction Industry Apprenticeship Programs in Indiana.” Accessed at: http://www.faircontracting.org/PDFs/prevailing_wages/AnalysisofApprenticeshipProgramsinIndiana.pdf.

⁶⁴ Cihan Bilginsoy. 2007. “Delivering Skills: Apprenticeship Program Sponsorship and Transition from Training.” *Industrial Relations*, Vol. 46, No. 4, pp. 738-763.

Apprenticeship Training in Kentucky: A Comparison of Joint Labor-Management and Nonunion Programs

Apprenticeship programs are either registered with the federal Office of Apprenticeship or are registered with state agencies.⁶⁵ Apprenticeship data for programs registered with the Kentucky Labor Cabinet were obtained through an open records request. These data contain information on detailed trainee characteristics, enrollment-completion status, and an identification number that can be matched to training programs.⁶⁶ The requested data cover the period from January 1, 2008 to November 1, 2016. This information allows us to compare the outcomes and characteristics of apprentices enrolled in joint labor-management (union) training programs with those in non-joint (nonunion) programs.

Data reported in Table 8 indicate that while there were a larger number of active and inactive nonunion programs over the period, approximately 80% of apprentices were enrolled in union programs. These programs also provide a more complete array of training with programs ranging from laborers to operating engineers. On the other hand, nonunion programs are concentrated in training for electricians, which is responsible for about 79% of total nonunion apprentices. As a result this emphasis, nonunion programs in Kentucky do not offer training for iron workers, operating engineers, painters, roofers, or sheet metal workers.

Table 8. Distribution of Joint Labor Management (Union) and Non-Joint (Nonunion) Training Programs, Number of Apprentices, and Distribution of Training Trades in Kentucky. State Registered Programs, January 2008 to November 2016

Category	Non-Joint (Nonunion) Programs	Joint (Union) Programs
Number of Programs	39* (65% of total)	21 (35% of total)
# of Apprentices	1,415 (21% of total)	5,445 (79% of total)
Carpenters	0.4%	N/R
Electricians	78.9%	26.6%
Elevators	12.4%	1.1%
HVAC	1.0%	0.5%
Insulators	0.1%	3.7%
Laborers	3.8%	15.6%
Pipefitters	0.8%	15.7%
Plumbers	1.7%	9.9%
Iron Workers	N/A	12.6%
Operating Engineers	N/A	5.0%
Painters	N/A	2.3%
Roofers	N/A	2.3%
Sheet Metal	N/A	4.6%

Number of Apprentices equals those enrolled, completed, and cancelled. *Includes six inactive programs. N/A: training program not available. N/R: training center in Louisville is registered in Indiana with the Indiana-Kentucky-Ohio Regional Council of Carpenters. Source: "Active and Inactive Apprentice Status Report and History," Office of Apprenticeship, U.S. Department of Labor, January 1, 2008 to November 1, 2016. Information obtained through an open records request to the Kentucky Labor Cabinet.

⁶⁵ See "Office of Apprenticeship Sponsors Website," Employment and Training Administration, U.S. Department of Labor. Accessed at: <https://oa.doleta.gov/>.

⁶⁶ Personal information (name, age, address, Social Security number, and wages, etc.) were redacted.

Data reported in Table 9 reveals differences and similarities between the two types of programs. For example, the completion rate in union sponsored programs over the period is 48.2% and is 35% higher than the completion rate for nonunion programs.⁶⁷ Completers from either program are predominantly male, with a higher percentage of females and veterans graduating from union programs. The racial compositions of graduates between the two types of programs are similar.

Table 9. Characteristics of Apprenticeship Program Completers, by Type of Program in Kentucky, January 2008 to November 2016

Completer Characteristic	Non-Joint (Nonunion) Programs	Joint (Union) Programs
Completion Rate	31.1%	48.2%
Male Completers	98.6%	96.4%
Female Completers	1.4%	3.6%
Veteran Completers	5.0%	8.9%
White Completers	94.3%	95.0%
Black Completers	4.8%	5.0%
Other Race Completers	1.0%	0.0%

Source: "Active and Inactive Apprentice Status Report and History," Office of Apprenticeship, U.S. Department of Labor, January 1, 2008 to November 1, 2016. Information obtained through an open records request to the Kentucky Labor Cabinet.

The information for state-registered apprenticeship training programs in Kentucky does not capture all formal training activity. For example, the Associated Builders and Contractors, Indiana/Kentucky Chapter (ABC) is a provider of formal construction apprenticeship training in Kentucky and is registered with the U.S. Department of Labor, Office of Apprenticeship.⁶⁸ Membership in this organization consists of nonunion contractors committed to the merit pay approach to construction. This chapter identifies three training centers in Kentucky (Bowling Green, Lexington, and Louisville). According to information from Office of Apprenticeship, this chapter provides training opportunities in Kentucky for carpenters, electricians, floor layers, HVAC, plumbing, and pipefitting only through the Louisville center.⁶⁹ According to information from the Office of Apprenticeship, this chapter does not offer training programs for other common trades such as laborers, operating engineers, painters, roofers, iron workers, and sheet metal workers in Kentucky. Since this ABC chapter is not registered with the Commonwealth of Kentucky, we do not have information on apprenticeship registration and completion rates.

However, financial information is available for nonprofit organizations including those involved in educational activities such as apprenticeship training. These data are reported in Table 10. For example, in 2015, this ABC chapter had assets of approximately \$54,000 and revenue of

⁶⁷ The completion rate is equal to the number of program completers divided by the sum of the number of program completers and the number of cancelled apprentices.

⁶⁸ For more information on the training program offered through this chapter see, "Craft Training and Apprenticeship," ABC Indiana/Kentucky Chapter. Accessed <http://www.abcindianakentucky.org/education/craft-training-apprenticeship/>.

⁶⁹ See "Search Program Sponsors Database," Registered Apprenticeship, Employment and Training Administration, U.S. Department of Labor. Accessed at: <https://oa.doleta.gov/bat.cfm>. There are no ABC Kentuckiana sponsored programs listed for the Bowling Green and Lexington centers.

about \$115,000.⁷⁰ These funds would be available for training in the occupations listed previously. Since this chapter extends over Kentucky into Indiana, it is unclear how training funds are divided between the two states.

Table 10. Training Fields, Revenue, and Assets, by Selected Apprenticeship Programs

Training Program Name(s)	Apprenticeship Trades	Training Fund Revenue*	Training Fund Assets*
Associated Builders and Contractors, Indiana/Kentucky Chapter (ABC)	Carpenters, Electricians, Floor Layers, HVAC, Plumbing, and Pipefitting**	\$115,000	\$54,000
Joint Electrical Apprenticeship Training Trusts (Louisville and Owensboro combined)	Electricians	\$2,461,000	\$5,792,000
Plumbing/Pipefitting Apprenticeship Training Fund (Union Locals 184, 452, 502, and 633 combined)	Plumbers and Pipefitters	\$3,185,000	\$7,060,000
International Union of Operating Engineers Local Apprenticeship Training Program	Operating Engineers	\$2,563,000	\$5,708,000
Joint Ironworkers Apprenticeship Training Fund (Local 782 and 769 combined).	Iron Workers	\$767,000	\$1,865,000
Kentucky Laborers Training Trust Fund	Laborers	\$1,334,000	\$2,620,000
Indiana Kentucky Ohio Regional Council of Carpenters	Carpenters	\$118,593,000	\$226,008,000

Sources: Propublica, Citizens Audit, and Nonprofit Storm, and the Office of Apprenticeship, Employment and Training Administration, U.S. Department of Labor. * Most recent reporting year. **According to data from the Office of Apprenticeship, the Louisville training center of this ABC chapter is the only center offering training programs and in these fields in Kentucky.

For comparison, two union-sponsored apprenticeship programs for electricians in Owensboro and Louisville had combined assets of over \$5.7 million and combined revenue in

⁷⁰ Financial information for nonprofit organizations involved in apprenticeship training in the building trades can be found on several websites. See Propublica's "Nonprofit Explorer" as an example (accessed at: https://www.propublica.org/search/search.php?qss=nonprofit&x=8&y=7&csrf_token=99ca053a5881ab3cc0e4496d9f5afc4fdadd e7b82b985be40c91e78bf3c3527f). Nonprofit Storm is another source of information (accessed at: <https://www.nonprofitstorm.com/joint-apprenticeship-&-training-committee-paducah-div-southern-in-42002>), as is Citizens Audit (accessed at: <https://www.citizenaudit.org/>). Assets and expenditures for the nonprofit that administers training funding for the Kentuckiana chapter of the ABC (the Kentuckiana Construction Education Trust Fund) fluctuated between 2011 and 2013. For example, expenditures and assets in 2011 were about \$170,000 and \$77,000, respectively. Expenditures were about \$118,000 with assets of \$30,000 in 2013.

excess of \$2.4 million in 2014.⁷¹ The union training programs for plumbers and pipefitters located in Lexington, Owensboro, Louisville, and Paducah had combined assets of \$7.1 million and revenue of over \$3.2 million.⁷² In addition union training programs for iron workers, laborers, and operating engineers had combined assets exceeding \$10 million.⁷³ These latter three trades were not among those listed under the program offering by the ABC chapter in Kentucky and Indiana, based on information reported by the federal Office of Apprenticeship. As is the case with the ABC chapter in Indiana and Kentucky, many of the joint union-management programs have jurisdictions that extend outside of Kentucky. The Indiana-Kentucky-Ohio Regional Council of Carpenters operates a joint training program with signatory contractors in these states. While training data by state is not available, the joint apprenticeship training fund reported assets exceeding \$226 million and revenue over \$118 million in 2013. In sum, these data illustrate the disparity in training resources between joint union-management training programs and those offered by the local ABC chapter for Indiana and Kentucky.

This evidence presented is consistent with the preponderance of research indicating the union-sponsored apprenticeship programs are characterized by larger numbers, higher completion rates, and more training resources. For example, William Londrigan and Joseph Wise find a 69%-31% split in enrollment between union and nonunion training programs in Kentucky between 1985 and 1994.⁷⁴ Sixty-four percent of apprentices in nonunion programs were studying to be electricians. Professor Cihan Bilginsoy also finds that apprentices in joint programs are more likely to complete training and receive certification while those who quit open shop programs do so before a substantial build-up of skills.⁷⁵

Recent studies also find that joint labor-management programs provide the vast majority of human capital investment in the construction industry. A 2015 report of apprenticeship programs in Indiana found that union programs were responsible for 94% of annual training expenditures, with the “open shop” segment representing the remaining 6%.⁷⁶ The corresponding figures for Wisconsin were 95% and 5%, respectively.⁷⁷ Similarly, a 2016 study by Manzo and Bruno found that 98% of all active apprentices are enrolled in joint labor-management programs by in Illinois. Union programs account for 99% of all privately-funded apprenticeship expenditures

⁷¹ These data are for the Owensboro Electrical Joint Apprenticeship and Training Trust and the Louisville Electrical Joint Apprenticeship and Training Trust.

⁷² These data are for the following programs and reporting years (in parentheses). The Plumbers & Pipefitters Local Union 633 Education Training Fund (2014), Plumbers & Pipefitters Local No. 452 Joint Apprenticeship and Training (2014), Plumbers & Pipefitters Local No. 502 Joint Education Training Fund (2014), and Plumbers & Steamfitters Local 184 Education Training Fund (2015).

⁷³ These data are for the Ironworkers Local 782 Joint Apprenticeship Training Funds in Hebron and Paducah (for combined assets of \$1.9 million in 2013 and 2014), the International Union of Operating Engineers Local 181 Apprenticeship & Training Program in Henderson (with \$5.7 million in assets in 2014), and the Kentucky Laborers Training Trust Fund (reporting \$2.6 million in 2014).

⁷⁴ William Londrigan and Joseph Wise. 1997. “Apprentice Training In Kentucky: A Comparison of Union and Non-Union Programs In The Building Trades.” Accessed at:

http://www.faircontracting.org/PDFs/prevailing_wages/ApprenticeTrainingInKentucky.pdf.

⁷⁵ Cihan Bilginsoy. 2007. “Delivering Skills: Apprenticeship Program Sponsorship and Transition from Training.” *Industrial Relations*, Vol. 46, No. 4, pp. 738-763.

⁷⁶ Philips, Peter. 2015. “Indiana’s Common Construction Wage Law: and Economic Impact Analysis.” Accessed at: http://www.isbctc.org/Uploads/UploadedFiles/docs/Philips_Indiana_Report_January_2015.pdf.

⁷⁷ Peter Philips. 2015. “Wisconsin’s Prevailing Wage Laws: An Economic Impact Analysis.” Accessed at: http://www.wisconsincontractorcoalition.com/application/files/9914/2889/7832/Wisconsin_Report_April_2015.pdf.

in the state, have a significantly lower apprentice-to-program-employee ratio, and return \$11 in economic and tax benefits per dollar invested in Illinois.⁷⁸

Regulatory incentives to encourage training are not extensive in the U.S. construction industry. Prevailing wage laws play an important role in training by providing strong incentives for union and nonunion contractors to employ apprentices on covered projects. For example, under Kentucky's prevailing wage law apprentices are paid as indicated by the approved program.⁷⁹ Typically apprentice wage rates are based on a fraction of the corresponding journey rate, starting as low as 50% and increasing with program progress. This wage savings creates a high demand for apprentices that drives skill development for the entire construction industry. With increased demand for apprentices on prevailing wage projects, more resources are expended on training. The result is an increase in the number of skilled workers who are available for work on publicly- and privately-funded construction in Kentucky.

Consequently, it is not surprising that research shows a strong connection between prevailing wage laws and training in the construction industry. For example, Cihan Bilginsoy finds that enrollments are from 6% to 8% higher in states with prevailing wages laws than in states without the wage policy.⁸⁰ Bilginsoy also finds that apprentices in states with prevailing wage laws complete their on-the-job and classroom training at a faster rate than apprentices in states without the wage policy. This effect is strongest in states with stronger prevailing wage laws.⁸¹ It is also not surprising the prevailing wage repeal is associated with a decrease in apprenticeship training. For example, Philips finds that training decreased in Kansas by 38% after this state repealed its prevailing wage law in 1987.⁸² After repeal in Colorado in 1985, apprenticeship training decreased by 42%.

⁷⁸ Frank Manzo IV and Robert Bruno. 2016. "The Impact of Apprenticeship Programs in Illinois: An Analysis of Economic and Social Effects." Accessed at: https://illinoisepi.files.wordpress.com/2016/08/pcmr-ilepi-impactofapprenticeshipprograms_newcover.pdf.

⁷⁹ <http://www.lrc.ky.gov/kar/803/001/020.htm>.

⁸⁰ Cihan Bilginsoy. 2005. "Wage Regulation and Training: The Impact of State Prevailing Wage Laws on Apprenticeship," in Hamid Azari-Rad, Peter Philips and Mark J. Prus (eds.) *The Economics of Prevailing Wage Laws*, Aldershot, UK: Ashgate, pp.149-168.

⁸¹ Armand Thieblot developed a classification system for state prevailing wage laws into weak, average, and strong polices. These are based on the contract value threshold that prevailing wages apply, the level of coverage at the municipal, county, or state level, the types of work/trades excluded, the determination of prevailing wage rates, and other item. See Thieblot, Armand. 1995. *State Prevailing Wage Laws: An Assessment at the Start of 1995*, Associated Building Contractors, Inc., Rosslyn, VA.

⁸² Philips, Peter. 1998. "Kansas and Prevailing Wage Legislation." Accessed at: http://www.faircontracting.org/PDFs/prevailing_wages/kansas_prevailing_wage.pdf

Prevailing Wage Laws and Safety in the Construction Industry

Construction workers are exposed to many hazardous tasks and conditions at work, such as height, excavations, noise, dust, power tools and equipment, confined spaces, electricity, and vehicle traffic. Consequently, construction is one of the most perilous occupations. Construction employment represented only 5.3% of U.S. employment in 2014, yet this industry had the most job-related deaths, accounting for one-in-five private sector workplace fatalities.⁸³ The leading causes of deaths at construction sites in 2014 were falls, electrocution, being struck by object, and crush injuries.⁸⁴ These “Fatal Four” were responsible for 58% of construction worker deaths in 2014. Nonfatal injuries are also disproportionately high in construction, with the industry representing 6.4% of all nonfatal injuries in private industry in 2014.⁸⁵

Prevailing wage laws do not include safety requirements. Rather, the wage policy affects injury rates in construction indirectly through the linkage between prevailing wages and apprenticeship training, and the relationship between training and safety. Safe work practices necessary to develop the knowledge and proficiency of a skilled professional are emphasized in apprenticeships administered by the Office of Apprenticeships and State Apprenticeship Agencies, regardless if the apprenticeship training programs are sponsored by joint union-management or open shop organizations.⁸⁶

The overwhelming majority of the research in this area indicates lower fatality and injury rates in states with prevailing wage laws. For example, researchers associated with the University of Illinois at Urbana-Champaign examine fatality rates among all sectors of the construction industry between 2008 and 2010 and find that the average fatality rate in states with strong prevailing wage laws was 8.5 per 100,000 workers compared to 12.7 per 100,000 workers in states that never had the wage policy.⁸⁷ Peter Philips finds that construction workers reported 12% more disabilities (hearing, vision, memory loss and difficulty climbing stairs, dressing, bathing, etc.) in states without prevailing wage laws compared to states with the wage policy between 2009 and 2011.⁸⁸ In an examination of injury rates before and after Kentucky exempted schools from the state's prevailing wage laws, Professor Philips finds that serious injuries, lost workdays due to

⁸³ Based on average annual employment obtained from the Quarterly Census of Wages and Employment; Accessed at: <http://www.bls.gov/data/>. In 2014, fatalities in construction were 874 deaths followed by 735 in transportation and warehousing, 568 in agriculture, forestry, fishing, and hunting and a total of 4,251 deaths for all private industry in this year. Data obtained from TABLE A-1. Fatal Occupational Injuries by Industry and Event or Exposure, all United States, 2014, Bureau of Labor Statistics, U.S. Department of Labor, September 17, 2015. Accessed at: <http://www.bls.gov/iif/oshwc/foi/cftb0286.pdf>.

⁸⁴ See Commonly Used Statistics, Occupational Safety & Health Administration, U.S. Department of Labor. Accessed at <https://www.osha.gov/oshstats/commonstats.html>.

⁸⁵ See Nonfatal Occupational Injuries and Illness Requiring Days Away from Work, 2014, News Release, Bureau of Labor Statistics, U.S. Department of Labor, November 19, 2015. Accessed at <http://www.bls.gov/news.release/pdf/osh2.pdf>.

⁸⁶ See “What is a Registered Apprenticeship?” ApprenticeshipUSA, Employment and Training Administration, U.S. Department of Labor. Accessed at: <https://www.doleta.gov/OA/apprenticeship.cfm>. Also see “Apprenticeship Training Representative.” Bulletin 2016-04, Employment and Training Administration, U.S. Department of Labor, December 16, 2015. Accessed at: <https://www.doleta.gov/OA/bul16/2016-04.pdf>.

⁸⁷ Alison Dickson Quesada, Frank Manzo, Dale Belman, and Robert Bruno. 2013. “A Weakened State: The Economic and Social Impacts of Repeal of the Prevailing Wage Law in Illinois.” Accessed at: <http://truthinemployment.org/wp-content/uploads/2015/03/A-Weakened-State.pdf>.

⁸⁸ Peter Philips. 2014. “Kentucky's Prevailing Wage Law: An Economic Impact Analysis.” Accessed at: <http://www.faircontracting.org/wp-content/uploads/2014/02/Kentucky-Report-2014-Philips.pdf>.

serious injuries, and serious injuries as a percent of all injuries per worker increase by 0.5%, 3.0% and 3.6%, respectively.⁸⁹

Researchers from the University of Utah find that injuries per construction worker and serious injuries per construction worker were between 5% and 9% higher in states that did not have prevailing wage policies compared to states with the wage policy.⁹⁰ This study also finds that injury case rates increased by 14%, serious injury rates increased by 15%, and workdays lost to injury increased by 12% in the nine states that repealed their prevailing wage laws between 1978 and 1991. In addition to the impact of injuries on workers, the authors also point out other costs. For example, while construction employment represents about 5% to 6% of total employment in the United States, construction-related injuries and illnesses represent approximately 30% of worker's compensation expenditures.

Hamid Azari-Rad examines non-fatal injury rates among all construction and finds that all non-fatal injury rates are lower in states with prevailing wage laws.⁹¹ For example, rates for injuries resulting in no lost days of work, lost workdays, and days away from work were lower by 7% to 10% in prevailing wage states compared to states without the wage policy.

⁸⁹ Peter Philips. 1999. "Kentucky's Prevailing Wage Law: Its History, Purpose and Effect." Accessed at: http://www.faircontracting.org/PDFs/prevailing_wages/kentucky_prevailing_wage.pdf.

⁹⁰ Peter Philips, Garth Mangum, Norm Waitzman, and Anne Yeagle. 1995. "Losing Ground: Lessons from the Repeal of Nine "Little Davis-Bacon" Acts. Working Paper, Department of Economics, University of Utah. Accessed at: http://www.faircontracting.org/PDFs/prevailing_wages/losingground.pdf.

⁹¹ Hamid Azari-Rad. 2005. "Prevailing wage laws and Injury Rates in Construction." In Hamid Azari-Rad, Peter Philips, and Mark Prus (Eds.), *The Economics of Prevailing Wage Laws*, pp. 123–148. Aldershot, UK: Ashgate, 2005.

The Economic Impact of Kentucky's Prevailing Wage Law

The main purpose of a prevailing wage law is to protect local construction labor standards from distortions associated with publicly-funded construction.⁹² Large infusions of government spending into an area, along with a contract award process that favors the lowest bidder, may attract contractors from areas where construction worker wage rates are relatively low. Competition between these out-of-area and local contractors may result in the erosion of local compensation standards. Prevailing wage laws create a level playing field for all contractors by ensuring that public works expenditures maintain and support local area standards.

By protecting local wages, prevailing wage laws also protect work for local contractors and construction workers. The prevailing wage allows local contractors to submit competitive and profitable bids while attracting local workers possessing the skills needed for the project. As a consequence, local contractors have an advantage over competitors from areas where wages are relatively high or low. When local companies and workers are employed on a state-funded project, more project funds remain in the local economy and stimulate additional economic activity. Without adequate prevailing wage protection, more work is completed by out-of-area contractors with more project funds, jobs, income, spending, and economic activity leaking out of the local economy.

Several studies and publicly available data lend support to the notion that prevailing wage laws are associated with more work for local contractors and construction workers. For example, data from the *Economic Census of Construction* indicates that states with weak or no prevailing wage laws have about 2.4% more of the total value of construction completed by contractors from other states compared to states with average or strong wage policies.⁹³ This is not just a reduction in state-funded construction, but 2.4% of the value of all private and public construction. An examination of library construction in Santa Clara County, California reveals that 39% of subcontractors employed on prevailing wage projects are county-resident businesses.⁹⁴ The corresponding figure when prevailing wages do not apply is 23%. Since local contractors are three times more likely to use local construction workers, more labor income and spending remains in the county when prevailing wages apply. Another study illustrates how the weakening and eventual repeal of Indiana's prevailing wage law benefited low wage, out-of-state construction workers in Kentucky.⁹⁵ Along the southern border with Kentucky, public works construction employment in Indiana decreased by over 800 jobs after the wage policy was weakened. Along the bordering counties in Kentucky, public works construction employment grew by over 700 jobs over the same period. The average construction wage rates were about 24% lower in Kentucky

⁹² As an example see "The Davis-Bacon Act Protecting Wage Equality Since 1931," Wage and Hour Division, U.S. Department of Labor. Accessed at: <http://www.dol.gov/whd/programs/dbra/Survey/conformancefaq.htm>.

⁹³ The national average for states with average or strong prevailing wage laws is 93.2% and the average for states with weak or no wage policy is 90.8%. The difference between these averages (2.4%) is statistically significant.. Data are obtained from Table 23SG04, Value of Construction Work for Location of Construction Work," 2012 *Economic Census of Construction*, U.S. Census Bureau. Accessed at:

http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23SG04&prodType=table.

⁹⁴ See the "Economic, Fiscal and Social Impact of Prevailing Wage in San Jose, California." Economic Policy Brief, April 25, 2011. Accessed at: http://wpusa.org/5-13-11%20prevailing_wage_brief.pdf.

⁹⁵ Frank Manzo. 2016. "Weakening Prevailing Wage Hurts Local Contractors and Workers: A Case Study of Southern Indiana." Economic Commentary #40, Midwest Economic Policy Institute. Accessed at <https://illinoisepi.files.wordpress.com/2016/06/ilepi-economic-commentary-southern-in-case-study1.pdf>.

suggesting that weakening the wage policy resulted in greater demand for low wage, out-of-state workers.

The amount of work that is completed by out-of-state contractors depends on presence of prevailing wage laws, the size of a state's construction industry, the size of the industry in neighboring states, and the skills of a state's construction workforce. Kentucky has a prevailing wage law, but is a relatively small state and is surrounded by several larger states. As a consequence, 83.3% of the total value of construction value is completed by Kentucky-resident contractors according to data obtained from the U.S. Census Bureau's *Economic Census of Construction* for 2012.⁹⁶ The remaining 16.7% is completed by contractors from other states. Table 11 reports the value of construction work completed by out of state contractors for the five neighboring states that do most of the work in Kentucky.

Table 11. Top Five States by Value of Construction Work Completed in Kentucky

State	Work Completed in Kentucky*	Percent of Kentucky Construction Value
Ohio	\$968,000,000	6.6%
Indiana	\$620,000,000	4.3%
Tennessee	\$258,000,000	1.7%
Georgia	\$133,000,000	1.0%
Missouri	\$112,000,000	0.8%

Source: *Economic Census of Construction*, 2012. *Adjusted to 2016 dollars.

Contractors from the states of Ohio, Indiana, Tennessee, Georgia, and Missouri represent 14.4% of the 16.7% of value of construction work is completed by contractors from other states.⁹⁷ Ohio and Indiana represent over 10% (about \$1.6 billion) of this work indicating that contractors from these two states do a significant amount of work in Kentucky. If the prevailing wage policy in Kentucky is weakened or repealed, contractors can expect increased competition from builders in these two states in particular.⁹⁸

Why can Kentucky contractors expect increased competition from out-of-state contractors with the repeal or weakening of the state's prevailing wage law? Based on the evidence presented in this report, there are two answers to this question. First, prevailing wage repeal or weakening opens state-funded construction to competition from low-wage, out-of-state contractors. Second, repealing or weakening the prevailing wage laws means less work for union contractors and building trades unions that are responsible for the preponderance of worker training in Kentucky's construction industry. Less work for these parties means a reduction in training resources and opportunities. With a less-skilled workforce, contractors involved in technologically demanding work, such as industrial construction, will need to recruit skilled workers from other states.

⁹⁶ Data are obtained from Table 23SG04, Value of Construction Work for Location of Construction Work, 2012 *Economic Census of Construction*, U.S. Census Bureau. Accessed at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23SG04&prodType=table.

⁹⁷ 2012 was the recessionary trough in Kentucky's construction industry, so the imported work is not due to full capacity.

⁹⁸ Indiana repealed its prevailing wage law in 2015.

Kentucky's current prevailing wage law is considered to be in the average or strong category.⁹⁹ Based on the data from the *Economic Census of Construction*, further weakening or repeal of Kentucky's prevailing wage laws would be associated with an additional 2.4% increase in construction work for out-of-state contractors. This would represent approximately \$354 million more in construction value completed by contractors in surrounding states (based on 2016 dollars).¹⁰⁰ When contractors travel to other states to conduct work, supplies, materials, fuels and rental equipment are typically purchased in the state where the work is to be completed. According to information from the *Economic Census of Construction*, materials, components, fuels, power, and rental equipment represent about 30% of overall costs.¹⁰¹ This indicates that 30% of the \$354 million in construction value, or \$106 million, completed by out-of-state contractors would remain in Kentucky. Consequently, the net leakage of construction business and spending associated with prevailing wage repeal would be \$248 million, or \$354 million in construction value by out-of-state contractors less the \$106 million spent in Kentucky.

The IMPLAN Economic Impact Software

The impact of the loss in construction industry business and spending associated with the repeal of Kentucky's prevailing wage law can be measured using the IMPLAN economic impact software. This economic impact analysis is based on the ripple effect, or multiplier, associated with the leakage of construction incomes and spending from Kentucky's economy. Specifically, this software is used to estimate the impact of the loss in incomes on state-level economic activity, employment, and tax revenue. IMPLAN (IMPact analysis for PLANning) was originally developed by the U.S. Department of Agriculture to assist the Forest Service with land and resource management planning. The Minnesota IMPLAN Group (MIG) started work on the data-driven model in the mid-1980s at the University of Minnesota. The software was privatized in 1993 and made available for public use. The software contains an input-output model with data available at the zip-code, county, state, and national levels.

Input-output analysis measures the inter-industry relationships within an economy. Specifically, input-output analysis is a means of measuring the market transactions between businesses and between businesses and consumers. This framework allows for the examination of how a change in one sector affects the entire economy. In this way, input-output analysis is able to analyze the economic effects of policy alternatives by measuring the multiplier, or ripple effect, as an initial change in labor income stimulates further changes in transactions between other

⁹⁹ In 1995, Armand Thieblot rated state-level prevailing wage laws based on factors including coverage thresholds, type of work excluded/included, and the determination of wage rates, etc. See Thieblot Armand J. 1995. "State Prevailing Wage Laws. An Assessment at the Start of 1995." Prepared for Associated Builders and Contractors, Inc. We updated Thieblot's classifications reflective of subsequent policy changes and other research. A description of state-level prevailing wage laws is available at: <http://www.dol.gov/whd/state/dollar2011.htm#1>. A summary of recent state-level prevailing wage characteristics is available at www.cga.ct.gov/2010/rpt/2010-R-0526.htm.

¹⁰⁰ Data are obtained from Table 23SG04, Value of Construction Work for Location of Construction Work," 2012 *Economic Census of Construction*, U.S. Census Bureau. Accessed at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23SG04&prodType=table. The 2012 data is adjusted for inflation based on the "Producer Price Index by Commodity for Construction," U.S. Bureau of Labor Statistics. Accessed at: <https://fred.stlouisfed.org/series/WPU80>.

¹⁰¹ See the 2012 U.S. Census Bureau, *Economic Census of Construction*, Construction: Geographic Area Series: Detailed Statistics for Establishments, accessed at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table.

businesses and households. The results reported in this study are based on industry figures from the 2012 *Economic Census of Construction* and the most recent IMPLAN data for Kentucky (2014). IMPLAN deflators are used to adjust for changes in prices over time. The results are reported in 2016 dollars. The specific model used here is based on the leakage of \$354 million in construction value with the return (addition) of \$106 million in spending as out-of-state contractors make local purchases of materials, components, etc.¹⁰²

Economic Impact Results

The impact results obtained from IMPLAN are reported in Table 12. The net leakage of \$248 million in construction business and spending results in an overall reduction in economic activity in Kentucky of approximately \$400 million. The corresponding employment loss is 2,900 total jobs. About 1,800 of these jobs are in the construction industry (direct jobs) with another 1,100 jobs lost in other industries, such as retail, service, and restaurants that are no longer supported by the spending of in-state construction workers. The reduction in economic activity is associated with an approximate \$13 million decrease in state and local tax revenue. This is a statewide impact that would be experienced each year if the wage policy is repealed.

Table 12. Economic Impact of the Leakage of Construction Business if Kentucky's Prevailing Wage Law is Repealed

Category	Direct Effect	Total Impact
Economic Activity	–\$248 million	–\$398 million
Jobs	–1,800 jobs	–2,900 jobs
State and Local Tax Revenue	–	–\$12.5 million

Source: Source: IMPLAN economic impact software and 2014 data for the state of Kentucky.

The total economic impact is the sum of all industry-level impacts. The impacts for selected industries are reported in Table 13. For example, with the leakage in construction business if the prevailing wage law is repealed, revenue in Kentucky's wholesale and retail businesses (listed in the table) would decrease by over \$30 million in sales revenue with the loss of about 270 jobs. The reduction in economic activity would reduce home values. IMPLAN measures this effect by the loss \$11 million in imputed rental value should home owners let their dwellings. Real estate is particularly sensitive to economic activity and repeal would reduce sales revenue in this sector by over \$7 million and reduce employment by about 40 jobs. Repeal would reduce construction employment and with fewer jobs, incomes, and spending, hospitals, doctors' offices, and restaurants would experience business and employment decreases. As is the case with the results above, these industry-level impacts are statewide impacts that would be experienced each year if the wage policy is repealed. These industry-level impacts reveal the economic development role of prevailing wage laws. By protecting work for local contractors and construction workers, prevailing wages prevent the leakage of construction business spending and increase both sales revenue and employment in industries that are unrelated to the construction industry.

¹⁰² The distribution of \$106 million across specific Kentucky producers of materials, fuels, power, and rental equipment is based on the induced impact of the initial \$354 million leakage impact. IMPLAN's induced impact identifies that portion of the overall impact that is due to spending changes by suppliers.

Table 13. Industry-Level Economic Impacts of the Leakage of Construction Business if Kentucky's Prevailing Wage Law is Repealed, Selected Industries

Industry	Revenue/Income Loss (\$)	Employment Loss (Jobs)
Wholesale trade	–\$15.5 million	–65
Retail trade (general, non-store, clothing, gas, etc.)	–\$15.1 million	–205
Imputed rent, owner-occupied dwellings	–\$10.8 million	N/A
Real estate	–7.6 million	–39
Hospitals	–\$5.6 million	–37
Restaurants (full and limited service)	–\$4.4 million	–76
Offices of physicians	–\$2.9 million	–20

Source: Source: IMPLAN economic impact software and 2014 data for the state of Kentucky.

Finally, prevailing wage repeal represents a strong headwind for a Kentucky construction industry that has not yet fully recovered from the Great Recession. Before the economic downturn in 2007, the number of construction establishments and employees were at all-time highs in the state, with 11,657 construction firms and 85,135 construction workers.¹⁰³ The impact of the economic crisis was much more severe and long-lasting in the construction industry with the decrease in the number of establishments and employment reaching their lowest levels in 2012. Between the peak in 2007 and the trough in 2012, construction employment decreased by 21% and the number of construction businesses decreased by 22%. The building industry is recovering but employment remains approximately 14% below the 2007 level and the number of construction firms is still 19% below pre-recession levels. The consequences of repeal would reduce construction industry employment and the number of establishments in Kentucky. Weakening or repealing Kentucky's prevailing wage law would open an industry that is still recovering to increased competition from workers and builders from other states.

¹⁰³ Data obtained from the Quarterly Census of Wages and Employment, Bureau of Labor Statistics, U.S. Department of Labor. Accessed at: <http://www.bls.gov/cew/>.

Conclusions

The preponderance of peer-reviewed research fails to find consistent evidence that prevailing wage laws increase construction costs. Over the past 16 years, 76% of the studies examining the effect of prevailing wage laws on construction costs find no impact, including 82% of the studies focused on public school construction. Why is it unlikely that prevailing wages increase construction costs? Since labor costs are a low and historically declining percentage of total construction costs (about 23%), only minor changes in labor productivity and other construction costs are needed to offset the effect of the wage policy. Other studies by the Legislative Research Commission and the Associated Builders and Contractors of West Virginia are based on incomplete information about the construction industry and claim savings with the repeal of prevailing wage laws that are demonstrably too high.

Prevailing wage repeal decreases construction worker income and increases poverty and reliance on public assistance. Repealing or weakening prevailing wage in Kentucky would lower blue-collar construction worker incomes by 10%, reduce employer-provided health insurance coverage by 7 percentage points, and decrease employer-provided pension coverage by 13 percentage points. As a result, thousands of blue-collar construction workers would lose their employer-provided health insurance coverage and pension plan if Kentucky were to repeal or weaken its prevailing wage law. Additionally, thousands of Kentucky's construction workers would fall below the official poverty line due to the severity of the wage cut, forcing them onto public insurance programs and increasing costs to taxpayers.

Military veterans employed in construction would be particularly worse off from repealing or weakening prevailing wage. Blue-collar construction occupations would become less attractive to veterans because the middle-class careers would be converted into low-wage, low-benefit jobs. Veterans would not be immune to this pay cut. In fact, weakening or repealing prevailing wage in Kentucky would result in 1,500 blue-collar veterans separating from their construction jobs. Additionally, the total income of all veterans employed in construction jobs would decline by \$80 million in the state. Gutting prevailing wage would increase burdens on taxpayers and disproportionately impact veteran workers who served their country.

Prevailing wage laws support training and safety in the construction industry. Kentucky's prevailing wage law creates incentives to employ apprentices. The vast majority of the Kentucky's apprentices are enrolled in, and graduate from, union-sponsored programs. Between 2008 and 2016, fully 80% of construction apprentices were enrolled in union training programs, which have a completion rate 35% higher than nonunion programs. Union programs also provide training for the full-range of trades while nonunion programs in Kentucky do not currently provide training for ironworkers, operating engineers, or sheet metal workers. Research indicates that prevailing wage laws encourage training and reduce fatal and nonfatal injuries.

By protecting local wage rates, prevailing wage laws protect work for local contractors and construction workers. Prevailing wage repeal would reduce work for Kentucky-resident contractors by approximately \$250 million annually. This loss of business would ripple through Kentucky's economy, reducing overall economic activity by about \$400 million annually. Construction industry employment would fall by about 1,800 jobs. With the loss of these good-paying jobs and their consumer spending, an additional 1,100 jobs in retail and service industries

would be lost, bringing the total employment decline with repeal to 2,900 jobs. The decrease in economic activity would reduce state and local tax revenue by \$12.5 million. Repealing or weakening the wage policy would be associated with increased work completed by contractors from neighboring states, particularly from Ohio and Indiana.

The highest-quality research available indicates that repealing or weakening Kentucky's prevailing wage law will not result in significant construction cost savings. Eliminating or reducing prevailing wages will impact taxpayers as more construction workers qualify for public assistance. Undermining current standards will also adversely affect military veterans who are more likely to work and own businesses in the construction industry compared to other industries in Kentucky. Apprenticeship training would decrease and injury rates can be expected to increase if the policy is diminished. With a strong prevailing wage law, more of Kentucky's tax dollars are used to employ Kentucky workers at Kentucky companies. Repeal, on the other hand, would mean that more of the state's tax dollars will be used to employ contractors and workers from other states.