

The Adverse Economic Impact from Repeal of the Prevailing Wage Law in Missouri

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A Study Funded by the Committee to Protect MO Families

Conducted under the auspices of:

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April 2016

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Chapter I

Executive Summary

The attempts to repeal the prevailing wage law in Missouri are based upon the claim that repeal will save dollars on total construction costs and will bolster state and local budgets. In 2004 and 2011, we conducted an in-depth study of the impact of the repeal of the prevailing wage in Missouri. In 2004 and 2011, we showed that the repeal of the prevailing wage statute in Missouri would not save dollars on construction costs but rather would result in a negative impact on families, taxpayers, and the state and regional economies in Missouri. Utilizing data from the F.W. Dodge Company on construction costs in the North Central States Region, we update our previous two reports for the period 2011-2015 on the impact of the prevailing wage statute in Missouri. Our update of 2015 has shown that Missouri's prevailing wage laws do not raise the cost of construction. Our examination of both the short and long-term effects of prevailing wage show positive and substantial impacts on construction workers, their families, other industry participants and their families, and state, county, and local revenue streams.

1. Opponents of the prevailing wage statute argue that the repeal of the prevailing wage statute would save dollars on construction costs and would bolster state, local, and county revenue streams.

Study Finding #1

- The repeal of the prevailing wage statute would cost the residents of Missouri and their families between \$216.5 million and \$346.6 million annually in lost income.
- The repeal of the prevailing wage statute would cost the State of Missouri between \$2.3 million and \$3.7 million annually in lost sales tax collections.
- The repeal of the prevailing wage statute would cost the State of Missouri between \$6.5 million and \$10.4 million annually in lost income tax revenues.
- The total economic loss due to the repeal of the prevailing wage law in Missouri would be a loss of income and revenue between \$225.3 million and \$360.7 million annually.

2. Opponents of prevailing wage statutes argue that prevailing wage laws increase the costs of public construction due to the impact of higher wage rates on total construction costs. Repeal opponents argue that the increased costs to states as a result of prevailing wage statutes ranges from 10%-30% of total construction costs.

Study Finding #2

- The F.W. Dodge Company provided us with the bid price on 27,874 observations for the period 2011-2015 in the twelve states North Central States Region across thirteen different structures.
- In the North Central States Region, there are eight prevailing wage states and four non-prevailing wage states.
- For the period 2011-2015, the mean square foot costs of construction in prevailing wage states was \$132.10; for non-prevailing wage states, the mean square foot costs of construction was *higher* at \$180.77.
- The costs of public construction are higher than the costs of private construction in both prevailing wage states and non-prevailing wage states.
- There is no statistical difference in the mean square foot costs of public construction in prevailing and non-prevailing wage states.
- Given that labor costs account for approximately 23% of total construction costs according to the Census of Construction (2012) and have been decreasing over time, the claim of 15%-30% cost savings with the repeal of the prevailing wage statute is not possible.

3. Opponents of prevailing wage statutes argue that, by exempting school construction from the prevailing wage statute, four schools could be built for the price of three schools.

Study Finding #3

- For elementary school construction, there is no statistical difference in the mean square foot costs of construction in Missouri versus the non-prevailing wage states in the North Central States Region.
- For secondary school construction in Missouri, there is no statistical difference in the mean square foot costs of construction in Missouri versus the non-prevailing wage states in the North Central States Region.
- For other schools/libraries construction in Missouri, there is no statistical difference in the mean square foot costs of construction in Missouri versus the non-prevailing wage states in the North Central States Region.
- For university school construction, the mean square foot costs of construction is \$34.35 per square foot *cheaper* in Missouri than in the non-prevailing wage jurisdictions in the North Central States Region and the difference is statistically significant.
- The repeal of the prevailing wage statute in Missouri will not result in any cost savings in school construction costs as alleged by the opponents of prevailing wage.

4. Opponents of prevailing wage statutes argue that prevailing wage statutes decrease minority participation and female participation in on the job training (OJT) and apprenticeship programs in the construction trades.

Study Finding #4

- For the period 2008-2010, four of the eight prevailing wage states (Illinois, Minnesota, Indiana, and Michigan) in the North Central Region were ranked in the top ten in the country by the increase in the percentage of women in OJT and apprenticeship programs. No non-prevailing wage state in the North Central States region was ranked in the top ten.
- For the period 2008-2010, four of the eight prevailing wage states (Illinois, Minnesota, Indiana, and Wisconsin) in the North Central Region were ranked in the top ten in the country by the increase in the percentage of minorities in OJT and apprenticeship programs. No non-prevailing wage state in the North Central States region was ranked in the top ten.
- Illinois, Indiana, and Minnesota, all prevailing wage states in the region, performed consistently high in both increasing the percentage of both women and men of color in training programs.
- In terms of the total number of OJT and apprenticeship programs in 2008, six of the eight prevailing wage states in the region were ranked in the top ten. These states include, Indiana, Wisconsin, Michigan, Ohio, Missouri and Minnesota. Once again, no prevailing wage states in the North Central region was in the top ten.
- The State of Missouri has created a workforce development and training program that has become a National Model – The Missouri Model. The Missouri Model recommends reserving at least 0.5% of project budgets for on-the-job training and apprenticeship program, and devoting 30% of the work hours to economically disadvantaged individual, minorities, and women. This model has been utilized on two major highway and bridge programs: the \$550 million I-64 highway reconstruction, which was completed three weeks early and \$11 million under budget, and the Christopher Bond Bridge.

5. There are other benefits associated with prevailing wage statutes. These include (1) more comprehensive benefit packages that reduce the reliance on the public sector for health insurance, retirement benefits, and other forms of public assistance, (3) decreased number of injuries and fatalities, and (4) productivity in the construction sector which allows for more efficient outcomes.

Study Finding #5

- Real compensation packages are higher in prevailing wage states than in non-prevailing wage states.
- Real health benefits per construction worker are higher in prevailing wage states than in non-prevailing states.
- Real pension benefits per construction are higher in prevailing wage states than non-prevailing wage state.
- This means that the construction worker living next to us can afford health insurance for his or her family, will receive a pension upon retirement, can buy rather than rent a home, can pay taxes, and becomes a member of the middle class.
- In 2010, Missouri reported one of the lowest numbers of injuries of all reporting states in the region; Missouri has one of the strong commitments to job training and apprenticeship programs.
- Productivity is higher in prevailing wage states than non-prevailing wage states. The value added per worker in the prevailing wage states in the North Central States Region is 16.2% higher than in the non-prevailing wage states.
- Prevailing wage states pay more in per capita federal taxes and have a lower percentage of the workforce receiving various types of public assistance.
- The prevailing wage statute provides for (1) a better compensation packages for construction workers and their families, (2) a safer working environment that results in less injuries and fatalities and (3) a more

productive workforce. This results in more efficient outcomes in the construction sector.

Chapter II

Introduction to the Study

In 2004 and subsequently in 2011, we conducted a study of the impact of the repeal of the prevailing wage statute in Missouri. In those two previous studies, we utilized construction data for the period 1993-2002 and 2003-2010 for the 12-state region of Nebraska, South Dakota, North Dakota, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio. This data was provided to us by the F.W. Dodge Company (Dodge Data and Analytics). In the original study and the subsequent study, we examined whether the existence of a state prevailing wage law results in higher construction costs on state projects. In this update of our original 2004 and 2011 studies, we will utilize construction data for the period 2011-2015 for the identical 12-state region of Nebraska, South Dakota, North Dakota, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio. Once again, the data was provided by Dodge Data and Analytics.

In this chapter, we examine prevailing wage legislation in the United States, beginning with the statutes that apply at the federal level. We then turn to statutes legislating prevailing wages at the state and local government level, before turning specifically to Missouri's legislation. Finally, we briefly summarize arguments for and against prevailing wage legislation, including a brief summary of the findings of previous studies.

Chapter III provides our contribution to the literature. This chapter examines the argument that prevailing wage regulations raise public construction costs. In our previous study in 2004 and the subsequent update in 2011, we used the data purchased from Dodge Data and Analytics to examine whether the existence of a state prevailing wage law results in higher construction costs. We found that there was no statistically significant difference in mean square foot costs across all types of construction for the 12

state region for the period 2011-2015.¹ In this 2016 update, we utilize the same construction data for the same 12-state region series except for the period 2011-2015.

Studies that assert that prevailing wages increases total construction costs are based on a faulty, non-scientific assumption that prevailing laws increase wages and, therefore, must increase total construction costs. These savings estimates use a simply wage differential and conclude that prevailing wage laws increase total construction costs, with increased costs estimates ranging from 15%-30%. One reason why prevailing wages do not increase construction costs is that labor costs are a low and declining percentage of total construction costs; labor costs accounted for approximately 23% of construction costs in 2012.² In addition, as labor costs increase, general contractors reduce cost in other areas such as fuels, rental equipment, and scheduling flows and become more efficient in their management of projects.

In our 2011 update and the current updated analysis for the period 2011-2015, we devote a section to the analysis of the impact of prevailing wage on school construction costs. The argument is frequently made that prevailing wage regulations raise wages and must, by default, increase construction costs. This argument makes the fatal assumption that, when wages increase, there is no impact on labor productivity. This assumption by the critics of prevailing wage is not supported by a large majority of the peer-reviewed empirical evidence. It has been shown in our analysis and the literature that construction workers in prevailing wage states get more formal apprenticeship training and generate more value added per worker than those construction workers in non-prevailing wage states.

In a study conducted by Dr. Peter Phillips (2006), a preeminent scholar on prevailing wage issues, on school construction costs in Kentucky, Ohio, and Michigan over the period 1992-2000, he found no statistically significant difference in the average square foot costs associated with the repeal of prevailing wage regulations.³ Dr. Phillips

¹ In our 2004 and 2011 study, the data purchased from F. W. Dodge Company partitioned the data across 13 different construction. In the 2016 update, the data purchased from F.W. Dodge Company partitioned the data across the same 13 different construction types for the period 2011-2015.

²2012 U.S. Census Bureau, *Economic Census of Construction*, Construction: Geographic Area Series: Detailed Statistics for Establishments.

³ In 1996, (1) Kentucky went from *not* having a prevailing wage statute on schools to having a prevailing wage statute on schools. In 1997, Ohio had a prevailing wage statute and repealed the law on school

conducted a similar study of the costs of new school construction for the period 1991-1997 by examining the difference in average square foot costs among fifteen Great Plains States. In his study, there were nine prevailing wage states and six non-prevailing wage states. Dr. Phillips results again showed that there is no statistical difference in mean square foot costs of school construction. Dr. Phillips results are consistent with much of the empirical literature on costs associated with prevailing wage regulation (Prus, 1996; Vincent, 1990, Phillips, et al., 1995; Bilginsoy and Phillips, 2000; and Belman and Voos, 1995, Kelsay, Sturgeon, and Pinkham, 2011, Kelsay, 2015, Kaboub and Kelsay, 2014).

Kelsay (2015) found that in an examination of school construction costs in the State of West Virginia (a prevailing wage state) and the non-prevailing wage states of North Carolina, Ohio, and Virginia, there was no statistical difference in mean square foot costs in elementary and secondary school construction for the period 2006-2013.⁴ For university school construction, the mean square foot costs of construction was \$58.52 per square foot cheaper in West Virginia than in the non-prevailing wage states of North Carolina and Virginia and the difference is statistically significant. Duncan, Phillips, and Prus (2014) found, in an analysis of the public/private construction cost differentials for schools found that a strong prevailing wage policy was not associated with changes in the efficiency or productivity of construction that contributes to increased building costs.

In Chapter IV, we quantify the economic impact of the prevailing wage statute on the State of Missouri. In an assessment of the economic impacts of the repeal or weakening of prevailing wage statutes, one must incorporate both the short-run and long-run economic impact. A misconception of the prevailing wage statute is that it subsidizes the union sector at the expense of the non-union sector, state residents, and state revenues. In reality, repeal of prevailing wage statutes can be quite costly over the longer run. The economic impact of potential earnings losses to the state can be considerable, and include tax revenue losses to local, county, and state governments. Using RIMS II multipliers obtained from the Bureau of Economic Analysis for the State of Missouri and

construction. As a result of a court decision, Michigan's prevailing wage statute on schools was suspended in late 1994 and was the law was reinstated in 1997.

⁴ For elementary school construction, the mean square foot costs of construction is \$6.10 per square foot **cheaper** in West Virginia than in the non-prevailing wage states of North Carolina, Ohio, and Virginia; for secondary school construction, the mean square foot costs of construction is \$22.37 per square foot **cheaper** in West Virginia than in the non-prevailing wage states of North Carolina, Ohio, and Virginia

six-sub state county aggregates, we analyze the direct and induced impact from a hypothetical repeal of the prevailing law in Missouri. These spillover effects are quantified in terms of lost earnings. We conclude that the prevailing wage statute has a positive and substantial impact on construction workers, their families, other industry participants and their families, and state, county, and local revenue streams.

For the two urban county aggregates, we utilize the RIMSII multipliers for the ten-county Kansas City region and the eight-county St. Louis Region. The ten-county Kansas City region includes Bates, Buchanan, Cass, Clay, Clinton, Caldwell, Jackson, Lafayette, Platte, and Ray counties. The eight-county St. Louis region includes, Franklin, Jefferson, Lincoln, St. Charles, Warren, Washington, and St. Louis Counties, and St. Louis City.

We chose four other county aggregates in the State of Missouri as representative of other counties in the state. Region #1 includes the six-county region of Harrison, Mercer, Putnam, Schuyler, Grundy, and Sullivan counties. Region #2 includes the five-county region of Dallas, Laclede, Pulaski, Webster, and Wright counties. Region #3 includes the six-county region of Knox, Lewis, Shelby, Marion, Monroe, and Ralls counties. Region #4 includes the six-county region of Bollinger, Cape Girardeau, New Madrid, Perry, Scott, and Stoddard counties.

Chapter V analyzes the impact of prevailing wage statutes have in the North Central States Region on (1) encouraging a safer workplace environment, (2) benefits of skills training and apprenticeship programs, (3) analysis of legally required and voluntary benefits and voluntary benefits in prevailing and no-prevailing wage states, (4) analysis of injuries and fatalities in prevailing and non-prevailing wage states, and (5) the impact of repeal on Missouri-based construction contractors.

Prevailing wage regulation reduces the incentive to bid on public construction projects which focuses on strategies that rely on cheap, inexperienced, untrained and uniformed labor. Prevailing wage regulations decrease the incentive to cheat on safety by emphasizing competition based upon skills training and management organization rather than on competition based upon unskilled and cheap labor. The employment in many construction industry occupations is an extremely dangerous one. Unfair bidding

processes may lead to an environment of untrained, uninformed, and inexperienced labor doing the most dangerous work which can make construction work deadly.

Opponents of prevailing wage regulations state that by keeping wages low, the costs of construction can be decreased. However, the negative impact from the weakening or repeal of prevailing wage regulations often results in the abandonment of health insurance, pension coverage, and payroll taxes that funds the unemployment system and the workers compensation system throughout the United States.

The lack of health coverage exacts a large toll on the uninsured in the United States. These include avoidable deaths, poorly managed chronic conditions, and underutilized life-savings medical procedures. The economic costs of being uninsured or under-insured are borne by individuals, employers, the health system, taxpayers, and the public at large. The taxpayers bear an economic cost due to the uninsured and under-insured. Federal, state and local governments support care of the uninsured through public health clinics, and payments to certain care facilities that care for the poor and uninsured.

According to the Centers for Medicare and Medicaid Services, 55% of emergency care goes uncompensated. Health care costs for both the full-year and part-year uninsured have been estimated to total \$176 billion dollars per year - \$86 billion of which will be incurred when they are uninsured. In the past, hospitals shifted uncompensated care costs to insured patients to make up the difference. However, cost shifting no longer is a viable option because managed care and other health plans have instituted strict price controls, leaving little margin to shift costs. Since 2000, hospitals have provided more than \$502 billion in uncompensated care to their patients. These conclusions show that the uninsured in the employed population are exacting a high cost on those individuals as well as employers, the general health delivery system and taxpayers and the public at large.

In 2014, the construction industry provided less insurance for workers than any sector in the economy; only 36.4% of private sector construction establishments offered health insurance for their employees compared to 61.8% in manufacturing, 50.2% in

professional services, and 47.5% across all private sector establishments.⁵ In the four non-prevailing wage states in the North Central Plains Region (Iowa, North Dakota, South Dakota, and Kansas), the average percentage of private sector establishments in the agriculture, forestry, and construction sector offering health insurance was 20.9%.⁶ In the 8 prevailing wage states in the North Central Plains Region the average percentage of private sector establishments offered health insurance was 30.8%, or 47.4% higher.

Workers compensation premiums and unemployment insurance premiums provide benefits for construction workers and their families. However, unscrupulous contractors sabotage the conditions for a fair and competitive marketplace. By misclassifying workers, unscrupulous contractors gain a pricing advantage over honest contractors which results in unfair competition in the marketplace. Firms that misclassify workers can bid for work without having to account for many of the normal payroll-related costs. If an employee is classified as an independent contractor, the “employer” is not required to pay and/or withhold a variety of payroll-related taxes, fees and benefits (e.g., Social Security and Medicare taxes, local, state and federal income taxes, unemployment insurance, workers compensation, pension and health benefits, etc.). This illegal practice can decrease payroll costs by as much as 10% to 20%. Not only are these costs shifted to the individual worker, the “independent contractor” is also not fully protected by various employment laws (e.g., minimum wage and overtime requirements, workers compensation protection, the right to form a union and bargain collectively, etc.) and may, incorrectly, believe that he or she is protected by unemployment laws. Prevailing wage regulations force bidders on public works projects to include all costs in their bids. This means that the construction worker living next to you can afford health insurance for their families, will receive a pension for his/her years of work, can buy rather than rent a home, can pay their taxes, and become members of the middle class.

⁵ Agency for Healthcare Research and Quality. Center for Financing, Access and Cost Trends. 2014 Medical Expenditure Panel Survey – Insurance Component. Table I.A.2 (2014)

⁶ Agency for Healthcare Research and Quality. Center for Financing, Access and Cost Trends. 2014 Medical Expenditure Panel Survey – Insurance Component. Table V.A.2 (2014).

A. Background on the Prevailing Wage Law and the Davis Bacon Act

Prevailing wage laws have been the focus of public policy debate in the United States at the federal and state levels since the turn of the century. Prevailing wage laws require that construction workers on public projects be paid the wages and benefits that are found by the Department of Labor to be “prevailing” for similar work in or near the locality in which the construction project is to be performed.

Three federal laws affect prevailing wages in the United States. One of these, the Davis-Bacon Act of 1931, applies to the construction industry.⁷ Two similar laws apply to other industries.⁸ The general intent of a national prevailing wage law is to stabilize local wages and industry standards by preventing unfair and/or unregulated bidding practices, etc.

Before passage of the Davis-Bacon Act, a number of states and cities had already acted to secure the economic benefits of having a prevailing wage law on the books. Prior to Davis-Bacon at the federal level, nine states had enacted their own such law for state-funded projects. Within four years of Davis-Bacon's passage, sixteen more states added a state-level prevailing wage law ("mini" Davis-Bacon acts). At one time or another, forty-two states and the District of Columbia have had a prevailing wage law (Table 1). Indeed, prevailing wage laws have consistently received strong support from both state and local business communities.

The fact that such laws tend to stabilize and support local economies and labor markets has earned bi-partisan favor among legislators. A former banker, Congressman Robert L. Bacon (R-NY), introduced the first version of the eventual Davis-Bacon Act in the pre-Depression year of 1927. He obtained crucial support in 1930 from newly elected Senator James L. Davis (R-PA), a former US Secretary of Labor under three Republican administrations. The combined Davis-Bacon bill received strong backing from the Hoover administration and easily passed both houses of Congress. Prevailing wage laws

⁷ The Davis-Bacon Act of 1931 was subsequently modified in 1935 and 1964.

⁸ The Walsh-Healy Public Contracts Act of 1936 covers employees in manufacturing and supply industries, and the Service Contract Act of 1965 applies to suppliers of personal and business services.

have come to enjoy widespread support among contractors, subcontractors and employee groups within the U.S. construction industry.

The Davis-Bacon Act requires that private contractors pay construction workers the prevailing wage/benefit package on all contracts of more than \$2,000 for construction, alteration, or repair of federal public buildings or public works. In 1935, President Roosevelt's Secretary of Labor established the original rules for determining the Davis-Bacon wage rate. It stated that the prevailing wage was to be the wage paid to the majority of workers, if it existed; if not, the 30% rule was applied. The 30% rule simply stated that, if 30% of the workers in an area are paid the same rate, that rate becomes the prevailing wage in that locality. In practice, the 30% wage rate was, in many instances, the union wage rate. If the 30% rule did not apply because 30% of an area's workers in a particular occupation did not earn the same wage, then the average wage rate was to be paid to workers doing the same job. This rule applied to the prevailing wage statute until 1985.

Until 1985, if the modal wage accounted for more than 30% of all wages for that occupation, the Department of Labor used the modal wage to determine the prevailing wage for an occupation in a local labor market⁹. If the modal wage rate accounted for less than 30% of all wages for a given occupation, the mean wage rate was declared the prevailing wage. Union wages tend to be the modal wage rate and they tend to be above the mean wage for an occupation. In 1985, President Reagan changed the 30% rule to the 50% rule. The impact of the 50% rule was to decrease the prevailing wage in areas where unions are relatively weak.

⁹ There is an increasing prevalence of market-recovery agreements between unions and contractors, which provide for multiple union wage rates for a single occupation in a local labor market. Thus, although union wage rates may be more than 50%, there is not a single union wage rate that accounts for 50% of workers in the market. The result may be that the union wage rate does not apply.

**Table II.1
Prevailing Wage Laws, by State**

States Having Prevailing Wage Laws	Year Passed	States That Have Repealed Prevailing Wage Laws	Year Passed	Year of Repeal
Alaska	1931	Alabama	1941	1980
Arkansas	1955	Arizona ¹	1912	1984
California	1931	Colorado	1933	1985
Connecticut	1935	Florida	1933	1979
DC	1931	Idaho	1911	1985
Delaware	1962	Kansas	1891	1987
Hawaii	1955	Louisiana	1968	1988
Illinois	1931	New Hampshire	1941	1985
Indiana	1935	Utah	1933	1981
Kentucky	1940	Oklahoma ²	1909	1995
Maine	1933			
Maryland	1945			
Massachusetts	1914	States Without Prevailing Wage Law		
Michigan	1965			
Minnesota	1973	Georgia		
Missouri	1957	Iowa		
Montana	1931	North Carolina		
Nebraska	1923	North Dakota		
Nevada	1937	South Carolina		
New Jersey	1913	South Dakota		
New Mexico	1937	Vermont		
New York	1894	Virginia		
Ohio	1931			
Oregon	1959			
Pennsylvania	1961			
Rhode Island	1935			
Tennessee	1953			
Texas	1933			
Washington	1945			
West Virginia	1933			
Wisconsin	1931			
Wyoming	1967			

¹ Invalidated by Court Decision in 1980 and repealed by referendum in 1984

² Invalidated by Court Decision in 1995.

B. History of the Prevailing Wage Laws in U.S. States

Because the U.S. Constitution prohibits the federal government from dictating contract terms for the states in construction, the Davis-Bacon Act does not cover construction work funded entirely by state and local governments. State prevailing wage laws set a minimum pay for construction workers on state and local projects, and the terms of the respective prevailing wage statutes among the states differ substantially. The prevailing wage laws of some states are non-binding, while other states set wages for virtually all contracts at the collectively bargained wage rate. In addition, different states treat jointly financed projects (e.g. state/federal, local/federal, private/public) differently. Some states defer to the federal statute while other states set the prevailing wage at the higher of the state or federal prevailing wage. Certain states also specifically include or exclude specific types of projects (e.g. road construction) and/or workers, and/or projects above or below a given threshold.

Kansas passed the first prevailing wage law in 1891. The first prevailing wage statute stated:

“That not less than the current rate of per diem wages in the locality where the work is being performed shall be paid to laborers, workman, mechanics, and other persons so employed by or on behalf of the State of Kansas...”¹⁰

In 1894 New York became the second state to pass a prevailing wage law. In other states similar laws were passed in the first part of the twentieth century: Oklahoma (1909), Idaho (1911), Massachusetts (1914), and New Jersey (1923). These laws provided the legal precedent for the creation of the federal Davis-Bacon prevailing wage law at the federal level. By 1969, 41 states had prevailing wage statutes (Table 2).

During the 1970's, many states began to suffer fiscal crisis. On the belief that they might save tax dollars, many state and local governments began to consider repeal of prevailing wage laws. In 1979 Florida, which had enacted a prevailing wage law in 1933, was the first to repeal its law. Alabama was the second state to repeal its prevailing wage statute, with repeal in 1980. Seven other states (Arizona, Colorado, Idaho, Kansas, Louisiana, New Hampshire, and Utah) repealed their prevailing wage statutes in the

¹⁰ L. 1891 Ch. 114 pp.192-193.

1980s. The prevailing wage statute in Oklahoma was invalidated by a court decision in 1995. At the present time, 32 states and the District of Columbia still have prevailing wage statutes, 10 states have repealed their prevailing wage statutes, and 8 states have never enacted a prevailing wage statute.

C. Prevailing Wage Legislation - State of Missouri

Twenty-five states passed prevailing wage laws in the United States before Missouri passed its law in 1957¹¹; subsequent amendments to the law were made in 1986, 1987, and 1993. The Missouri prevailing wage law mandates, among other things:

1. Not less than the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed, and not less than the prevailing hourly rate of wages for legal holiday and overtime work, shall be paid to all workman employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.
2. Every public body authorized to contract for or contract public works, before advertising for bids or undertaking such construction shall request the department to determine the prevailing rate of wages for workmen for the class and type of work called for by the public works, in the locality where the work is being performed.
3. The Department shall annually investigate and determine the prevailing hourly rate of wages in each locality for each separate occupational title.
4. Right of workman to bring legal action that doubles the difference for violation of the prevailing wage law.
5. Violators of the requirements of Sections 290.210 to 290.240 shall be punished for each violation, thereof by a fine not exceeding \$500 dollars, or by imprisonment not exceeding six months, or by both such fine and imprisonment.
6. When there is a period of excessive unemployment in Missouri, every person who is charged with the duty of constructing or building any public building works project or improvement in the State of Missouri, shall

¹¹ M. Rev. Stat. §§ 290-210 to 290.340.

employ only Missouri laborers and laborers from nonrestrictive states on such contracts. A period of excessive unemployment is defined as any month following two consecutive quarters during which the unemployment rate in the state has exceeded 5%. The State of Missouri is in a period of excessive unemployment at the present time.¹²

D. Review of Previous Studies

Proponents argue that the prevailing wage statutes among the various states encourage the employment of a more highly skilled labor force in construction, improve workplace safety, provide economic incentives for quality construction, increase apprenticeship training and provide career opportunities in construction for citizens. In addition, prevailing wage regulations are said by proponents to induce contractors to provide health insurance, pension benefits, and other voluntary benefits that would not be otherwise provided in construction.

Critics offer a number of arguments against prevailing wage regulations. The primary contention of critics is that the prevailing wage laws increase the costs of public construction due to the impact of higher wage rates on total construction costs. Critics have argued that the prevailing wage statutes increase overall public construction costs by 10% to 30%. A closer look at the data shows this to be impossible unless labor is going to donate their work effort. An analysis of the wage component in the overall costs of construction shows that wage costs have only a moderate and relatively constant impact on the total costs. Indeed, labor costs have accounted for far less than a third of total construction costs. According to the Census of Construction, labor costs, including voluntary and required fringe benefits was 25.5% in 2002 and decreased slightly to 24.6% in 2007; it has decreased to approximately 23% in 2012.

The National Alliance for Fair Contracting has conducted two time series analyses of wages, productivity, and highway construction costs in the United States. Utilizing data from the Federal Highway Administration, the National Heavy and

¹² M. Rev. Stat. §§290.550 – 290.580 “Laborers from non-restrictive states,” are defined as residents of another state, which has not enacted state laws restricting Missouri laborers from working on public works projects in their states. Restrictive states have laws in place restricting Missouri workers from working on their states public projects in their state.

Highway Alliance commissioned a study to analyze the costs of building a mile of highway in the United States over the period 1980-1993. They updated their study in 2004 over the period 1994-2002.¹³ For the period 1980-1993, labor costs per mile were 20.7% of the total costs of highway construction; for the period 1994-2002, labor costs per mile were 20.0% of the total costs of highway construction.

Utilizing this data from the NAFC studies, further analysis can be made of wage costs and the impact of productivity measures with respect to prevailing and non-prevailing wage states. Critics of prevailing wage statutes couch their analysis in terms of wage differentials in a static environment. They assume that a reduction of wages in the construction sector has no impact on the number of hours of labor to be employed and that the productivity of labor is constant. Efficiency wage theory focuses on the impact of wages on incentives and worker productivity and suggest that higher than market clearing wages increase productivity and increase profits. On the other hand, if employers pay lower wages, they will get employees that do a lower quality of work and have lower productivity. Therefore, by the establishment of a wage rate that is “prevailing” in the market allows the public sector to attract workers of at least a prevailing productivity and training” to public projects. In addition, a wage premium decreases labor turnover costs, attracts a higher quality labor force, reduces shirking and absenteeism, and increases worker effort.

Furthermore, they ignore the “indirect” effects of wage reduction on spending and income generated in a state; hence, they ignore the effects on tax revenue collections. However, the evidence clearly demonstrates that the payment of higher wages attracts a more highly skilled labor force that is more productive. The increase in productivity can offset the higher wage rates being paid. In fact, some studies show the payment of higher wages will reduce overall costs of construction. For example, in a study by Steven Allen of the productivity of unionized workers, he showed that unionized labor productivity is 17-52% higher than that of non-union labor (Allen, 1984). Another study by Mike Walter (1992), found that construction worker productivity was 25% higher in states with

¹³ *Wages, Productivity and Highway Construction Costs*. Updated Analysis: 1994-2002. Prepared for Construction Industry Labor-Management Trust. By Construction Labor Research Council. March 2004.

a prevailing wage law than in states that did not have one.¹⁴ In addition, the higher wage rates that prevail may induce contractors to substitute capital and other inputs for labor; this would further mitigate the effect of higher labor costs on total construction costs. Finally, higher incomes associated with prevailing wage legislation can generate more spending and more tax revenue for state and local governments.

In the study by the Construction Labor Research Council (1995), they examined productivity and costs for highway construction in the 50 states over a period from 1980-1993 and a subsequent period of 1994-2002 and found that there was an inverse relationship between higher hourly wage rates paid to labor and the cost of a mile of highway construction.

In the 2004 study, the dividing point for defining high and low wage states was an hourly wage rate of \$25. In the 2004 study, the data showed that labor hours to compete a mile of highway are 32% lower in the high wage states in spite of a 69% higher wage rate. While the hourly wage for the high wage states were 73% more than in the low wage state, labor hours were 35% less and total costs per mile were 4% less.

Looking at our region in the 2004 study, the average wage rate in Missouri (a prevailing wage rate state) over this time period was \$25.23 and the average cost per mile was \$730,918; in Kansas (a non-prevailing wage state after 1987) the average wage rate was \$16.62, while the average cost per mile was \$1,087,248. The average wage rate in Missouri over this time period was 51.8% higher while the average cost per mile in Missouri over this time period was 32.8% lower compared with Kansas. Higher wages increase productivity, and thus lower the total cost per mile of highway by employing a more highly trained and more skilled work force taking less labor hours to complete a given mile of highway.

Based on these data, we concluded that any savings due to lower wages that might have been achieved in the absence of prevailing wage legislation were more than offset by lower productivity that accompanies payment of lower wages. Further, the claim made by critics of prevailing wage legislation that substantial cost savings can be achieved by repeal of the legislation is incorrect. Given the percentage of labor costs as a

¹⁴ Walter, Mike. *The Economic Impact of Prevailing Wage Requirements in Minnesota*. Industrial Relations Center of The University of Minnesota, January, 1992.

percentage of total construction costs over the past twenty years and empirical evidence of productivity increases in the construction sector in response to a higher wage rate, one should not accept the argument of critics that the repeal of the prevailing wage laws can reduce construction costs by an imaginary magnitude of 10% to 30%. Rather, the evidence suggests that the attraction of a more skilled workforce in higher wage states decreases overall costs of construction in the public sector.

It is necessary to conduct a more detailed and empirically rigorous analysis to control for factors such as productivity, employment effects, and other economic effects (such as effects on incomes, spending, and tax revenue). There are several studies that have purported to present empirical evidence that prevailing wage rates increased total costs of construction, decreased employment levels in the state, decreased quality of life, resulted in out-migration from those states, and imposed substantial cost burdens on state taxpayers. Let us briefly examine a representative sample.

One of the first detailed studies that attempted to analyze the impact of prevailing wage legislation on actual total construction costs was the Fraundorf study (Fraundorf, 1983). This study examined two hundred and fifteen new, non-residential construction projects that had been built in 1977-78. The study tried to control for differences in the type of structure, types of materials used, and project size in order to identify cost differences associated with labor cost differentials. The results of their study purportedly showed that the impact of prevailing wage laws was to raise total construction costs by a range of 26%-35%. Yet, given that labor costs have averaged approximately 25% of total construction costs over time, it is not possible to achieve these cost reductions presented by the authors. There are other serious problems with this study.

First, the estimated wage differential was less than the differential for total construction costs, a finding that is counterintuitive and that was not adequately explained. Second, given a small sample size (N=215), the authors grouped projects into relatively large geographic regions.¹⁵ This could lead to biased results because construction costs in a low wage state were compared with total construction costs in a high wage state, with the resulting cost differential attributed to the prevailing wage law.

In reality, the construction costs differences could have been attributable to a number of other factors (e.g. differentials in cost of living, material costs, and other factors).

Another problem with the study was that construction projects were placed into relatively large, heterogeneous structure types, with dissimilar structure types grouped together.¹⁶ Consequently, cost differentials between public and private buildings may have been the result of differentials in structure type rather than from the prevailing wage statute. The most serious deficiency of the Fraundorf study is that it failed to differentiate cost differences due to differences of ownership types (public versus private) and cost differences that may have resulted from prevailing wage laws or other factors. The comparison of costs of public projects with costs of private projects does not disentangle cost differences that are attributable to public versus private ownership from those due to the existence of prevailing wage law.

In the Mackinac study (Mackinac Center for Public Policy, 1999)¹⁷, anecdotal evidence is presented regarding the impact of repeal of the prevailing wage in Michigan over the time from December 1994 to June 1997 when the prevailing wage law in Michigan was ruled invalid. Summary conclusions of that study are that the prevailing wage law in Michigan (1) reduces construction employment, (2) increases the cost of government outlays by \$275 million, (3) resulted in net out-migration of 2.5 million citizens from Michigan from 1990-1996, and (4) resulted in decreased worker productivity. However, no careful empirical analysis was conducted for this study. Rather, simple descriptive statistics were presented. The authors attribute the results in Michigan wholly to the impact of the prevailing wage law while claiming that their analysis controlled for other factors that may influence construction employment. They state that their analysis disentangles the effects of seasonal fluctuations in construction employment, unusual weather conditions, and the impact of the business cycle on the state.

¹⁵ The distribution of projects was put into four census regions: (1) Northeast, (2) North Central, (3) South, and (4) West. The South region accounted for 41.4% of the observations while the Northeast accounted for only 8.8% of the observations.

¹⁶ The distribution of projects by type was (1) office –commercial, (2) industrial, (3) storage, (4) medical, (5) amusement, and (6) other. Office-commercial structures account for 56.7% of the total observations.

¹⁷ Michigan's Prevailing Wage Law and Its Effect on Government Spending and Construction Employment. Richard Vedder, Ph.D. Mackinac Center for Public Policy. 1999.

However, their study does not account for the possible direct and indirect impacts of a more highly paid, highly trained workforce in the presence of prevailing wage legislation, and the spillover impacts of a more highly trained, higher paid workforce. Indeed, one of the more implausible results of the study is the claim that higher wage rates result in lower productivity. The authors state that there is no reliable evidence that labor productivity is materially different where prevailing wage laws exist. This is contradictory to accepted economic theory of labor productivity and to the empirical results presented earlier. In a rebuttal by Dr. Peter Phillips to the analysis of Dr. Vedder and the Mackinac Center, he (Phillips) shows that, applying the same methodology used by Dr. Vedder for the Michigan study to other states that changed the provisions of their prevailing wage law, the actual outcome with respect to construction employment is contrary to Dr. Vedder's prediction.¹⁸ It is probable that the very short period of time during which the prevailing wage law was not applied in Michigan generated the spurious Mackinac results. When a state abandons its prevailing wage laws, it will probably take a few years before labor productivity falls significantly enough to begin raising construction costs. Hence, given the weakness of the methodology employed in the Mackinac study, as well as the results provided by the extension of that study by Dr. Phillips to other states that dropped prevailing wage rules, and given the short period of time during which Michigan operated without such legislation, we believe the claims made by Dr. Vedder are not supported by the empirical research.

In a report by the Center for Government research (2008), it is estimated that prevailing wage laws raised construction costs by 36% in New York's metro regions.¹⁹ Once again, these cost savings on total projects costs are not possible given the labor component share of total construction costs. Secondly, this study did not empirically test whether or not the increase was even related to prevailing wage regulations; they made the erroneous assumption in their study that their wages differentials fully transferred to

¹⁸ *Four Biases and a Funeral*. Dr. Vedder's Faulty Experiment Linking Michigan's Prevailing Wage Law to Construction Employment. Peter Phillips. February 2001. Other states that Dr. Phillips used in his analysis were Oklahoma, Kentucky, Ohio, Louisiana, Kansas, New Hampshire, Colorado, and Idaho.

¹⁹ *Prevailing Wages in New York State: The Impact on Project Costs and Competitiveness*. Prepared for the New York State Economic Development Council. Rochester N.Y: Center for Government Research. 2008.

government costs. Once again, this study assumed that productivity was constant, material costs were constant, and the labor share of construction was constant.

Critics of prevailing wage laws have also cited the results of a study undertaken in Ohio.²⁰ Senate Bill 102 of the 122nd General Assembly created the Ohio School Facilities Commission which, among other things, exempted construction undertaken by school districts from Ohio's prevailing wage law. The Ohio Legislative Service Commission issued Staff Research Report #149 claiming \$487.9 million in cost savings since S.B. 102 took effect in August 1997.

A statistical shortcoming of this report is that in the regression equations, which purportedly support this finding, cost savings account for a trivial amount of the differences in costs between projects undertaken by school districts. The study makes sweeping conclusions about the adverse impact of the prevailing wage law, yet the specified model has extremely low R^2 and adjusted R^2 values (in the range of 0.01 to 0.03). R^2 measures the percent of variation in a dependent variable (e.g. total construction costs) that is explained by variations in a set of independent variables that they have specified. According to the study's estimate, only 1%-3% of the variation in total construction costs of schools in Ohio is explained by the set of independent variables they have included in their model. In other words, their models do not explain 97-99 percent of the differences in project costs for new construction and additions. These extremely low R-squared values provide no statistical basis for estimating any cost savings, let alone the claimed \$487.9 million. In addition, the regression results do not show that the presence of a prevailing wage requirement actually increased costs for new construction or additions. The model specifies a dummy variable (PW) to capture the impact of a prevailing wage requirement on project costs. It also specifies a dummy variable (PW-rural) to capture the potential impact of the wage importing effect of a prevailing wage requirement. In the regression results presented in Tables 20-22 of the report, however, the coefficients for both of these variables were statistically insignificant across all three models. In short, the results of this study are empirically meaningless.

²⁰ Ohio Legislative Service Commission. "The Effects of the Exemption of School Construction Projects from Ohio's Prevailing Wage Law." Staff Research Report #149. State House. Columbus, Ohio (May 20, 2002).

In a study conducted by Sarah Dunn, John M. Quigley, and Larry a Rosenthal (2005), they concluded that the expansion of the prevailing wage statute in California to cover low-cost housing would lead to a 9% to 37% increase in housing construction costs.²¹ Given they assume that the labor share of total construction costs ranged from 42.6% to 47.2%, the prevailing wage differential would have to be in excess of 60% to explain their high estimates. This is almost surely impossible.

There have also been a number of studies by proponents of prevailing wage laws that have empirically analyzed the impact of prevailing wage laws on total construction costs in general, and school construction costs in particular (for example, Prus - 1996, Vincent - 1990, Phillips, et al. - 1995, Bilginsoy and Phillips - 2000, and Phillips, 1998, Belman and Voos, 1995, Phillips, 2006, and Kelsay, 2015). The results of the majority of these studies have demonstrated uniformly three primary findings: (1) there are no statistically significant measurable cost differences between similar structures as a result of prevailing wage laws, (2) there are significant measurable wage differences between public and private projects of a similar nature, and (3) the economic impact of a higher wage and more skilled workforce can be substantial, offsetting any increase in wages in the construction sector that might result from prevailing wage legislation. Further, these studies consistently find that repeal of prevailing wage laws in various states results in a less skilled workforce with reduced productivity, a decrease in apprenticeship and training programs, increased injuries and deaths in the construction industry, decreased wages and benefits, as well as adverse economic impacts for the states and their taxpayers.

Other studies have empirically analyzed the economic impact that prevailing wage repeal would have on the construction industry and the taxpayers of that state (Phillips, 1998, Belman and Voos, 1995, and Vincent, 1990, Duncan, 2011). The results show in the NAFC study on highway construction costs presented earlier find no correlation with wage rates and cost per mile of highway. A careful, rigorous empirical analysis is required to sort out the effects of prevailing wage laws on: (1) productivity-

²¹ Dunn, Sarah and John M. Quigley and Larry A. Rosenthal. *The Effects of Prevailing Wage Requirement on the Cost of Low-Income Housing*. Industrial & Labor Relations Review. Volume 50, Number 1, Article 8. 2006.

adjusted labor costs; (2) other construction labor working on projects not covered by prevailing wage laws; (3) wages paid to labor in other sectors of the economy, (4) spending, employment, and income in the region and in the state, and (5) tax revenue received by state and local government.

In October, 2006, a study was released on the evaluation of the weakening or repeal of the prevailing wage statute in Minnesota (2006).²² The authors concluded that the repeal or weakening of the prevailing wage statute would reduce income in the state between \$382 million and \$1.8 billion annually. In addition, they concluded that the repeal or weakening of the prevailing wage statute in Minnesota would (1) weaken apprenticeship training programs, (2) increase injury rates, weaken position of women and minorities in the construction industry, (5) increase project cost overruns, and reduce construction wages.

At the time of the Minnesota, study, the Minnesota Chapter of the ABC had argued that repealing prevailing wage requirements would save the stated 10%-30%. Mike Walter of the University of Minnesota empirically tested this claim by the ABC. Walter concluded that “The potential savings of repealing the statute would translate roughly into 6.6% of labor costs or 1.8% of total costs.

Professor Kevin C. Duncan at Colorado State University (2011), , utilizing data from highway resurfacing projects in the State of Colorado, conducted an analysis of the Davis Bacon prevailing wage requirements on projects funded by the federal government. The results of his study showed that requiring prevailing wage requirements on highway resurfacing projects in Colorado were not associated with statistically significant higher construction costs. This confirms what many other credible peer-reviewed empirical studies have found; namely that there is a strong relationship between wages, labor productivity, and total costs in the construction industry.

In a study conducted by Frank Manzo, Alex Lantsberg and Kevin Duncan (2016), showed that prevailing wage laws result in positive additions to the tax base by increasing income tax collections and decreasing the reliance on various forms of public

²² Jordon, Lisa M., lead researcher. “An Evaluation of Prevailing Wage in Minnesota: Implementation, Comparability and Outcomes. October, 2006.

assistance.²³ For example, their study showed that blue collar construction workers in states with average and strong prevailing wage laws paid, on average, \$3,289 in federal income taxes; in states with weak prevailing wage laws, they paid, on average, only \$1,964 in federal income taxes.

²³ Manzo IV, Frank, Lantsberg, Alex and Kevin Duncan. “The Economic, Fiscal, and Social Impacts of State Prevailing Wage Laws: Choosing Between the High Road and the Low Road in the Construction Industry. February 9, 2016.

Chapter III

The Impact of Prevailing Laws on Total Construction Costs: North Central States Region

Summary of Findings Based on Descriptive Statistics

- Total new construction projects from 2011-2015 were 27,874;²⁴ of which 5,061 were in non-prevailing wage states and 22,813 were in prevailing wage states.²⁵
- Distribution of structure type (by percentage of projects) is essentially the same in prevailing wage states and non-prevailing wage states.
- In non-prevailing wage states: dollar value of new construction was \$31,532,997,000; total square feet of new construction was 174,435,100; and mean cost per square foot of new construction across all structure types was \$180.77
- In prevailing wage states: dollar value of new construction was \$101,971,882,000; total square feet of new construction was 777,950,000; and mean cost per square foot of new construction across all structure types was \$132.10
- Conclusion: the mean square foot cost of construction in prevailing wage states is \$48.67 per square foot cheaper in prevailing wage states across all thirteen structure types.

²⁴ These construction totals include new and additions only in the Dodge Data and Analytics data base. They do not include alterations which were provided in the data base for which there are no square feet reported in the data base.

²⁵ School construction is exempt from prevailing wage in Ohio and school construction in Ohio is included in non-prevailing wage states.

Summary of Findings on School Construction Based on Descriptive Statistics

- Total school construction projects from 2011-2015 were 3,618; of which 1,309 were in non-prevailing wage states and jurisdictions and 2,309 were in prevailing wage states.²⁶
- In non-prevailing wage states: dollar value of school construction was \$12,349,649,100; total square feet of new construction was 52,873,000.
- In prevailing wage states: dollar value of new construction was \$18,570,974,900; total square feet of new construction was 75,186,300.
- For elementary, secondary, and other schools/libraries construction, there is no statistical difference in the means square foot costs of construction in the State of Missouri and the non-prevailing wage jurisdictions in the region.
- For university school construction, the mean square foot costs of construction is \$34.35 per square foot cheaper in Missouri than in the non-prevailing wage jurisdictions in the region and the difference is statistically significant.
- Conclusion: There is no statistical difference in mean square foot costs in elementary, secondary, and other schools/libraries for the period 2011-2015 between the State of Missouri and the non-prevailing wage states; university school construction costs are \$34.35 cheaper per square foot in Missouri than in non-prevailing wage states and it is statistically significant.

²⁶ School construction is exempt from prevailing wage in Ohio and school construction in Ohio is included in non-prevailing wage states.

**Summary of Data, Models Used,
and
Detailed Empirical Findings from Regression Analysis**

The F.W. Dodge (Dodge Data and Analytics) database facilitates comparison of construction costs on similar projects in the private and public sectors for both prevailing and non-prevailing states in the Great Plains Region. Using regression analysis we test for the significance of prevailing wage legislation on construction costs.

Models 1A and 1B

- Model 1A estimates the cost differences between public and private construction in prevailing wage states, where construction costs are a function of scale of project, vector of indicator variables indicating structure type, vector of state indicator variables and an indicator variable indicating whether the project was public or private.
 - Model One allows us to capture cost differentials between public and private projects, but does not disentangle cost differentials resulting from ownership type versus cost differences due to prevailing wage laws or other factors.
 - Results of multiple regression analysis of Model 1A find that there are statistically significant differences in costs of public versus private projects in prevailing wage states.
 - However, this sheds no light on potential cost differences due to existence of prevailing wage legislation.
- Model 1B re-estimates the model using data on construction projects from states *without* prevailing wage laws.
 - As with Model 1A, public projects are significantly more expensive than comparable private projects.
 1. Public sector may simply be a more exacting owner than the private sector, requiring higher construction standards.

2. Fact that construction costs for public projects is significantly higher in both prevailing and non-prevailing wage states provides statistical evidence that the higher costs of public projects may not be due to the presence of prevailing wage laws.

Model 2: Specification and Results

**Motivation:* Comparison of public projects versus private projects can provide evidence that the public sector is a more exacting owner than is the private sector, but cannot determine whether prevailing wage laws raise costs. We must separate cost differentials due to public versus private ownership and those due to existence of a prevailing wage law. This is done by separately determining costs for each of four possibilities:

- a. Private projects where no prevailing law is in effect.
- b. Public projects where no prevailing law exists.
- c. Private projects in states where a prevailing law exists.
- d. Public projects where prevailing wage laws exist – only this fourth category of construction projects is directly impacted by the presence of a prevailing wage law in a state.

**Model Two reformulates the model with construction costs a function of scale of project, vector of indicator variables indicating structure type, vector of state indicator variables, indicator variable indicating whether the project was public or private, and interactive indicator variable for public construction and a prevailing wage state.*

- The prevailing wage variable captures the impact of prevailing wage laws on construction projects independent of whether or not the projects are public or private.
- The interaction variable captures the direct impact of prevailing wage laws on public projects because it is equal to one in only those instances where there is a public project in a state that has a prevailing wage law.

- Result of multiple regression for Model 2 shows that public projects are significantly more expensive than private projects.
- However, a prevailing wage law does not have a statistically significant impact on the total costs of construction projects as indicated by insignificant coefficient on the prevailing wage variable.

Conclusions

- Construction costs in public sector are statistically more expensive than construction costs in the private sector.
- No statistically significant difference in total construction costs between similar structures because of a state having a prevailing wage statute.
- Repeal and/or modification of prevailing wage laws will not result in substantial cost savings as claimed by prevailing wage law critics.

The Impact of Prevailing Laws on Total Construction Costs

North Central States Region

The proponents of repeal or modification of prevailing wage laws argue that these laws increase the costs of public construction substantially due to the impact of higher wage rates on total construction costs. Further, repeal proponents argue that the increased costs to states amounts to 10%-30% of construction costs (Fraundorf, 1983; Thiebolt, 1996; Mackinac Center for Public Policy, 1999). However, the method used in such studies is inadequate and in many cases flawed. This is because the factors that go into determining construction costs are complex. First, project types vary significantly in terms of square foot construction costs—hence, it is important to control for project type, something that few studies have been able to do. Second, it is important to control for regional cost differences—construction costs can be much higher on the east or west coasts than in the Midwest (for example), for a wide variety of reasons that have nothing to do with the existence of prevailing wage laws. Further, as we will show, construction costs vary considerably between private projects and public projects. Some of this variance *could* be due to existence of prevailing wage laws; however, it could also be due to more exacting construction standards in the public sector. Again, previous studies have not adequately separated out the various factors that go into determining construction costs. Hence, they provide no useful empirical information that would allow us to determine cost differentials due solely to the existence of prevailing wage legislation.

This chapter is divided into two sections. Section I presents “descriptive findings” based on simple manipulation of the data. This allows us to calculate the number, square foot, and construction costs of projects in both prevailing wage states and non-prevailing wage states. We also are able to examine types of construction to determine whether projects vary between prevailing wage states and non-prevailing wage states. We also separate public projects from private projects. Finally, we are able to calculate cost per square foot for each project, and mean square foot cost by state, as well as by project type and by ownership (private versus public). This allows us to make a

preliminary determination of any cost differential between prevailing wage states and non-prevailing wage states.

However, such descriptive statistics do not permit us to disentangle the complicated interactions among project type, ownership type, and existence of prevailing wage laws. Only multiple regression analysis is able to separate out the contribution to cost that result only from existence of prevailing wage legislation. In Section 2, we present the results from two increasingly refined regression models. Model 1 allows us to capture cost differentials between private and public projects—which is substantial. Indeed, this cost difference accounts for most of the cost difference found by proponents of repeal of prevailing wage legislation. However, as we will explain, this cost difference actually tells us nothing about the effect of prevailing wage legislation. Model 1B refines the analysis of Model 1A, demonstrating that the cost difference between public and private projects remains even if we are able to leave out any effects of prevailing wage legislation. Model 2 separates the effects of prevailing wage legislation from the cost differential due to project ownership (public versus private). This model provides the most robust estimate of the effects of prevailing wage laws on construction costs. We conclude that a properly specified model shows that a prevailing wage law does not have a significant impact on construction costs. Hence, there is no empirical justification for the claim that repeal of these laws will result in lower construction costs.

Section 1: Descriptive Findings

In this section we use simple descriptive statistics to compare the square foot construction costs for thirteen types of construction projects: (1) amusements, (2) dormitories, (3) government services buildings, (4) hospitals and other health treatment facilities, (5) hotels and motels, (6) manufacturing plants, warehouse, and labs, (7) miscellaneous nonresidential buildings, (8) office and bank buildings, (9) parking garages and automotive services, (10) religious buildings, (11) schools, libraries, and labs, (12) stores and restaurants, and (13) warehouses, excluding manufacturer owned. We examine eight states that have prevailing wage laws (Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Missouri, and Nebraska) and four states that have never had a prevailing wage law or have repealed their law (Iowa, North Dakota, South Dakota, and

Kansas).²⁷ All states were drawn from the North Central States Region which are states that are believed to have reasonably similar conditions to those of the State of Missouri. Finally, we separately analyze the data by project ownership; that is, according to whether the project is private or public.

The primary data used were obtained from the F.W. Dodge Company, a company that collects and disseminates data on construction projects for the industry. The F.W. Dodge data provides information on the start or bid cost of construction projects by state, as well as providing data on 13 primary structure types, location of project, project scale, and other technical characteristics of the project. The Dodge data also distinguishes between public and private sector construction projects. Because the Dodge data provides information on a large number of construction projects, the analysis can be done on a regional basis for comparison. This section examines total construction costs for non-residential construction in these states for the period 2011-2015. All data has been adjusted for inflation to real 2015 dollars.²⁸

Charts III.1-III.4 provides a preliminary overview of construction costs for the North Central States Region for the years 2011-2015. Chart III.1 shows real (inflation adjusted) construction cost per square foot for private projects, comparing the costs in prevailing wage states versus costs in non-prevailing wage states. This chart shows that in four of five years from 2011-2015, the mean construction costs are *higher* for private projects in non-prevailing wage states than in prevailing wage states. There is no statistical difference in mean construction costs between prevailing wage states and non-prevailing wage states for private construction costs.

Chart III.2 makes the same type of comparison, but for public projects. Chart III.3 shows that the costs of public projects are considerably higher than costs of private projects in non-prevailing wage states; Chart III.4 finds the same result in prevailing wage states. Based on these four charts one would conclude that public projects are more expensive than private projects, but the results for the effects of prevailing wage legislation are unclear. However, because this simple analysis cannot account for different types of

²⁷ The State of Ohio has exempted school construction from their prevailing wage law.

²⁸ United States Bureau of Labor Statistics. Producer Price Index. Series ID PCU236211236211. New Building Construction.

projects, these results are probably spurious. In other words, it could be the case that the public versus private construction cost differential arises because the public sector built hospitals while the private sector built inexpensive warehouses; similarly, the apparent prevailing wage affects could be due to differences of project type.

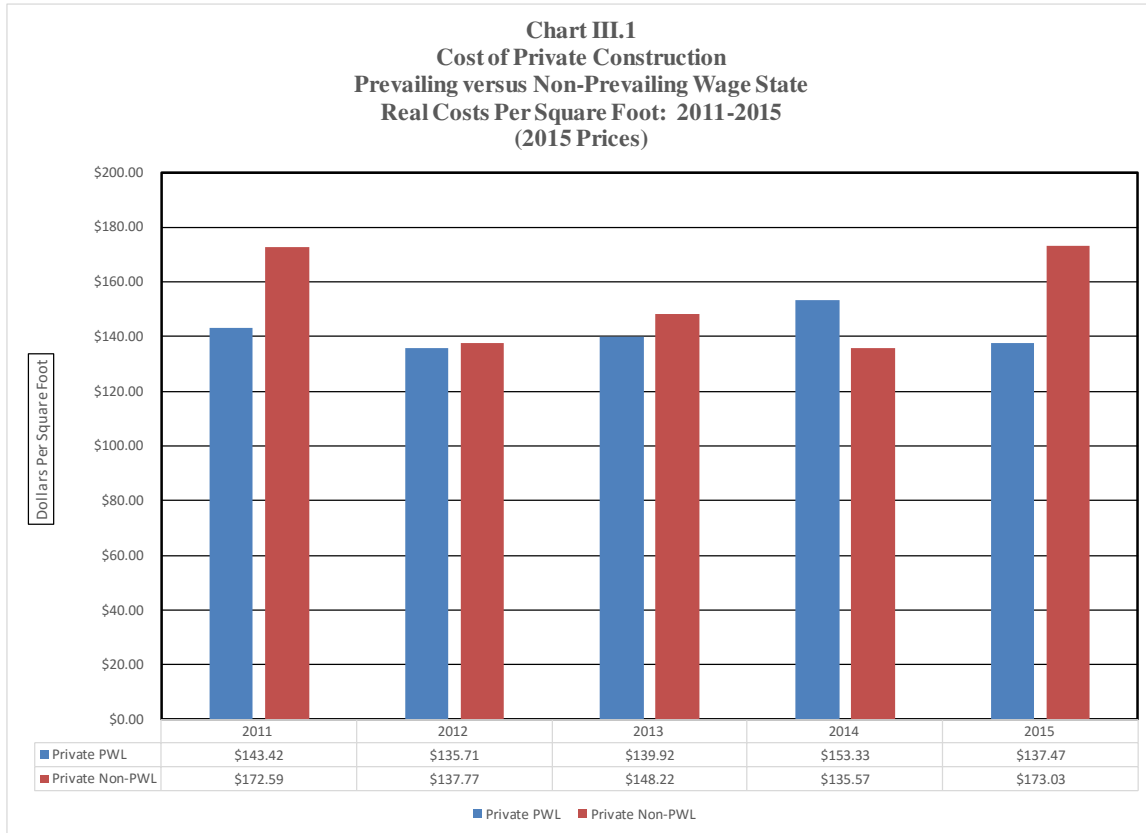


Chart III.2
Cost of Public Construction
Prevailing versus non-Prevailing Wage State
Real Costs Per Square Foot: 2011-2015
(2015 Prices)

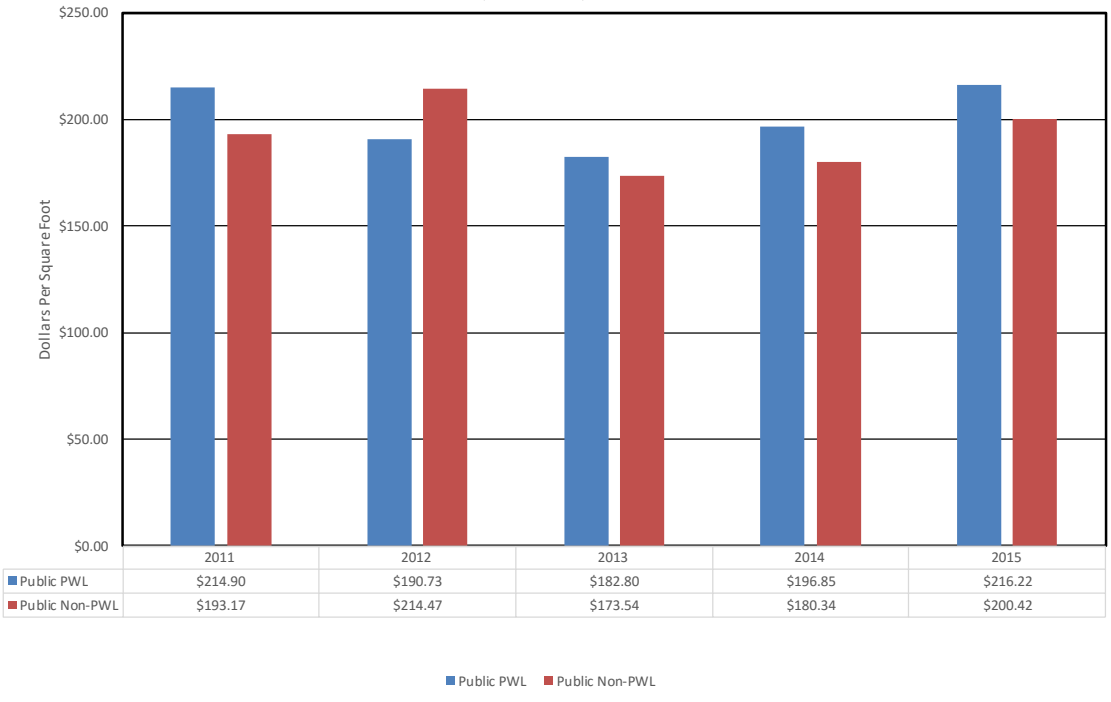


Chart III.3
Cost of Private versus Public Construction
Non Prevailing Wage State
Real Cost Per Square Foot: 2011-2015
(2015 Prices)

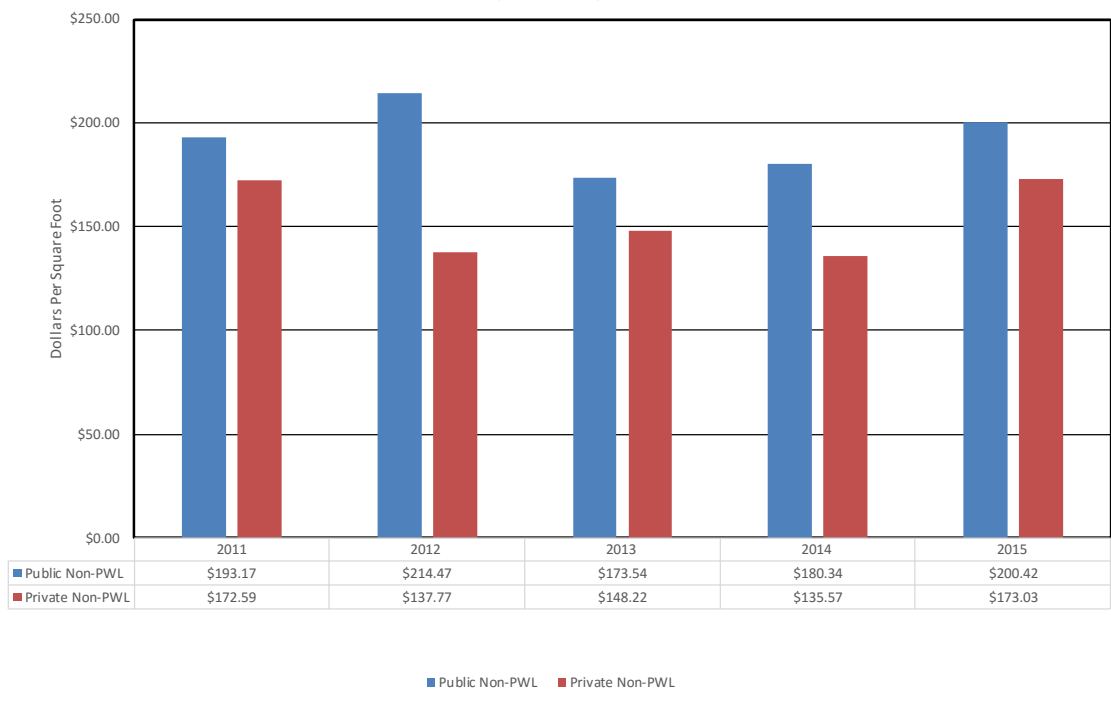


Chart III.4
Cost of Private versus Public Construction
Prevailing Wage State
Real Cost Per Square Foot: 2011-2015
(2015 Prices)

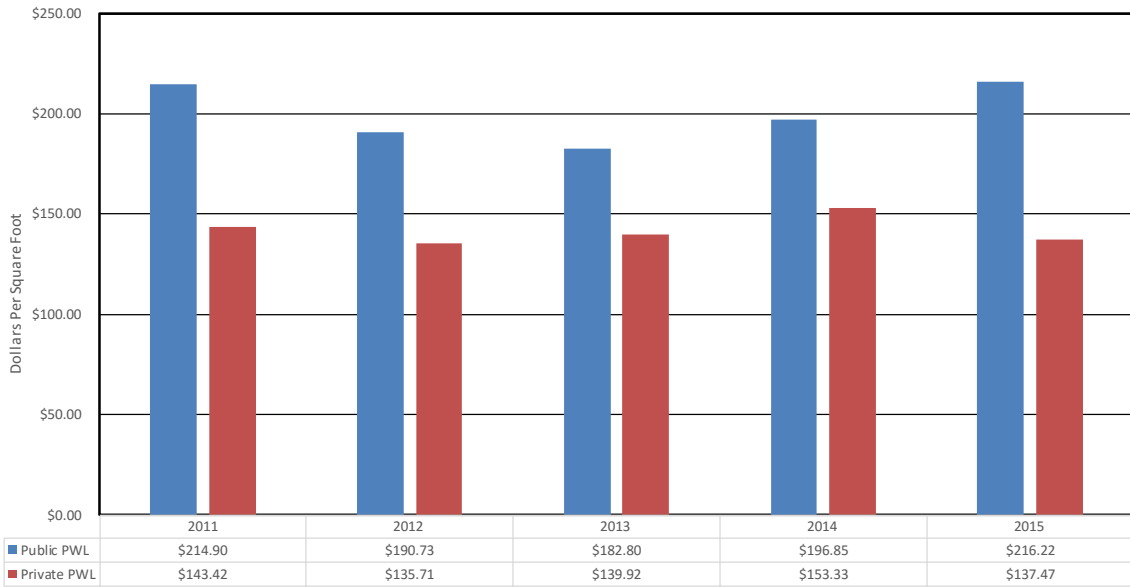


Table IIIA presents the distribution of new construction spending by structure type for the entire region.²⁹ There were 27,874 new/addition construction projects over the period 2011-2015. The largest number of projects in the region were office and bank buildings (6,205), followed by schools, libraries, and labs, nonmfg (3,618) office and bank buildings (2,630), and hospitals and other health treatment facilities (2,533). These four structure types accounted for 53.8% of all projects in the region. Table IIIB presents the distribution of new construction spending separated by states with and without a prevailing wage law. The distribution of structure type is essentially the same in the four states that do not have prevailing wage laws compared with the eight states that do have prevailing wage laws, with the exception of schools, libraries, and labs where those projects accounted for 25.9% of all construction projects in the non-prevailing wage states and only 10.1% in the prevailing wage states.

Table IIIC presents the cost per square foot of new construction by type and prevailing wage status. For the period 2011-2015, the mean cost per square foot across all structures for non-prevailing wage states was \$180.77; the mean cost per square foot across all structures for prevailing wage states was \$132.09. A t-test for the equality of means shows that there is no statistically significant difference for the mean cost of construction between the prevailing and non-prevailing wage states at the 5 percent level of significance for the period 2011-2015 across the thirteen structure types. What this means is that based on these data, one cannot conclude that there is any difference in the mean square foot costs of construction in prevailing and non-prevailing wages states because the observed difference is not statistically significant.

A more rigorous analysis can be undertaken because the Dodge data allows a comparison of construction costs on similar projects in the private and public sectors for states in our region of analysis that have prevailing and non-prevailing wage laws. This is critical because it allows us to isolate cost differentials that are associated with prevailing wage laws, as opposed to cost differentials that are associated with public and private construction. In other words, the results presented in Table IIIC might be spurious due to the fact, for example, there may be a different mix of public versus

²⁹ Tables IIIA-IIIK are reported at the end of the Chapter III.

private construction between the prevailing wage and non-prevailing wage states. Hence, we will develop a model that will allow us to control for project type while we separate out differentials due to the public versus private mix, and differentials due solely to the existence of prevailing wage legislation.

Section II: The Multiple Regression Model

A) Model 1A: Public versus Private Project Construction Costs in Prevailing Wage States

The model we have developed begins as and follows the specification of Prus (1999):

$$CC = \alpha + \beta_1 S + \beta_2 T + \beta_3 R + P\beta_4 + \varepsilon$$

where CC = bid costs³⁰; S = the scale of the projects as measured by the square foot of the project, T = a vector of indicator variables that indicates detailed structure type across thirteen structure categories, R = a vector of indicator variables for states, and P = a indicator indicating whether the project was public or private. This model estimates the differences between public and private construction costs while holding constant other variables such as structure type and the state in which the project was undertaken. This will allow us to calculate a “normal” cost differential between public and private projects.

The projects used in this analysis are nonresidential construction projects that are categorized as (1) amusements, social, and recreational buildings, (2) dormitories, (3) government services buildings, (4) hospitals and other health treatment facilities, (5) hotels and motels, (6) manufacturing plants, warehouse, and labs, (7) miscellaneous nonresidential buildings, (8) office and bank buildings, (9) parking garages and automotive services, (10) religious buildings, (11) schools, libraries, and labs, (12) stores and restaurants, and (13) warehouses, excluding manufacturer owned. Disaggregation of construction projects by these thirteen structure categories decreases the probability of comparing construction costs across very differentiated structures, a shortcoming of the

³⁰ The start costs from F.W. Dodge Company refer to the accepted bid price and do not include change orders, cost overruns, maintenance costs, scheduling problems, or other components of construction costs.

Fraudorf, *et al.*, study. Further, the model allows us to differentiate each structure type by ownership type (public versus private).

For Model 1A, we use the equation above and data from the eight prevailing wage states to estimate the construction cost difference between public and private projects.³¹ The result of the multiple regression analysis using the natural log of real project bid costs as the dependent variable, controlling for relevant variables, in states that have prevailing wage laws is reported in the first column in Table III.1.

Table III.1		
Regression Results		
Variable	States with PWL Coefficients	States Without PWL Coefficients
Intercept	3.885***	4.315***
Ln Square Feet	0.1.029***	0.987***
Pubcode	0.224***	0.175***
Amusements, Social and Recreational Buildings	1.138***	1.050***
Dormitories	0.980***	0.759***
Government Services Buildings	1.127***	0.928***
Hospital and Other health Treatment Facilities	1.281***	1.042***
Hotels and Motels	0.865***	0.579***
Manufacturing Plants, Warehouses, and labs	0.203	0.457***
Miscellaneous Nonresidential buildings	0.979**	0.481***
Office and Bank Buildings	0.991***	0.745***
Parking Garages and Automotive Services	0.235	0.110
Religious Buildings	0.864***	0.611***
Schools, Libraries, and Labs (nonmfg)	1.207***	1.049***
Stores and Restaurants	0.401**	0.571***
	Adjusted R-Squared = 0.953	Adjusted R-Squared =0.952
	883.000	N=538
	F=1,277.596	F = 753.064
NOTE: Dependent Variable is LN (real total costs) where total costs are bid costs reported in 2015 dollars		
*** coefficient is significant at .01 level		
** coefficient is significant at .05 level		

These results show that there is a large and statistically significant cost differential between public and private projects. This is indicated by the coefficient 0.224 for “PubCode,” which is the “P” variable in the equation above. As noted in the table, this

coefficient is highly significant, at the 0.01 level. The adjusted R-Squared value for this model is 0.953, which means we have explained 95.3% of the variation in construction costs across projects in our model.

B) Model 1B: Public Project versus Private Project in Non-Prevailing Wage States

Model 1A analysis does not identify costs differences in construction projects that may result from the presence of prevailing wage laws. In order to capture this effect, Model 1B uses data on construction projects from states without prevailing wage laws.³² Similar controls were used in this model to ensure that public projects were being compared with similar private projects in the North Central States for states that have no prevailing wage law. We again use the following equation:

$$CC = \alpha + \beta_1 S + \beta_2 T + \beta_3 R + P\beta_4 + \varepsilon$$

The results of this regression are reported in the second column of Table III.1. As with the first regression, public projects are significantly more expensive than comparable private projects. The coefficient on PubCode is 0.175, which is again statistically significant at the 0.01 level. The adjusted R-Squared value for this model is 0.952 which means we have explained 95.2 % of the variation in construction costs across projects in our model.

Given that the second equation examined the states in the region that do not have prevailing wage laws, the differential in construction costs between public and private projects cannot be attributable to the impact of prevailing wage statutes. Because construction costs for public projects (whether in prevailing or non-prevailing states) are higher, the public sector may simply be a more exacting owner than the private sector, requiring higher construction standards. For example, public owners may design structures that have longer expected lifetimes compared with structures built by private owners. Fittings and components used in public structures may be a higher standard. Additionally, quality and workmanship specifications for public structures may be higher. Fraundorf, *et al.*, admit this possibility in their study when they state that “If the

³¹ Ohio exempts school construction from prevailing wages. Therefore, the observations on school construction costs are pooled with the observations from our non-prevailing wage states.

³² Ibid.

government is a more exacting owner than private owners are in its quality standard, labor hours (and costs) and possibly material costs would be higher in government projects." Such higher costs are not caused by prevailing wage legislation. More importantly, the fact that construction costs for public projects is significantly higher in both prevailing and non-prevailing wage states provides evidence that the higher costs of public projects should not be attributed to the presence of prevailing wage laws.

C) Model 2: Estimation of Prevailing Wage Effects

There are two components of construction costs that need to be disentangled. On the one hand, the comparison of public projects versus private projects can provide evidence that the public sector is a more exacting owner than is the private sector. The other requirement of analysis is to determine whether a prevailing wage statute adds an additional cost differential to public projects (and, perhaps, to private projects in prevailing wage states).

We can disentangle these two impacts that examining four discrete outcomes. These four distinct outcomes are (1) private projects that are constructed where no prevailing law exists, (2) public projects that are constructed where no prevailing law exists, (3) private projects in jurisdictions where a where a prevailing law exists, and (4) public projects in jurisdictions where a prevailing laws exist. It is in this fourth category of construction projects (public projects in a prevailing wage jurisdiction) that is directly impacted by the present of a prevailing wage law. In order to isolate this impact of prevailing wage laws on construction costs this outcome must be isolated from the other three possible outcomes.

The model that can capture the impact, if any, of a prevailing wage law on construction costs is specified as follows:

$$CC = \alpha + \beta_1 S + \beta_2 T + \beta_3 R + \beta_4 PW + \beta_5 PC + \beta_6 I + \varepsilon$$

where CC = start costs; S = the scale of the projects as measured by the square foot of the project, T = a vector of indicator variables that indicates detailed structure type across

thirteen structure categories, R = a vector of indicator variables (one for each state), PW = a indicator indicating the presence or absence of a prevailing wage law, PC = a indicator indicating whether or not a project was public or private, and $I = (PW*PC)$, an interaction variable. The key variables in this regression are PC , PW , and I . These three variables allow us to estimate the impact of prevailing wage statutes separate from the impact of public ownership of a project. PC captures the cost differential between public and private projects in the region, independent of whether or not a state has a prevailing wage law. The PW variable captures the impact of prevailing wage laws on construction projects independent of whether or not the projects are public or private. The I -interaction variable captures the direct impact of prevailing wage laws on public projects because it is equal to one in only those instances where there is a public project in a state that has a prevailing wage law. Table III.2 presents the results.

The variable of note in the regression is the interactive variable (PW times PC). The coefficient on this interaction variable (I), which captures the impact of prevailing wages on public project construction costs in prevailing wage states is (0.043) and is statistically insignificant at the 10% level. We conclude that prevailing wage laws do not have a statistically significant impact on public construction projects in prevailing wage states. While public projects in the 12-state region are significantly more expensive than private projects in both prevailing and non-prevailing wage states, as indicated by the statistically significant coefficient on the variable $Pubcode$, this is not due to existence of prevailing wage legislation. Previous studies that have claimed to find such an impact have likely confused the higher costs associated with public projects for a prevailing wage effect that does not exist.

Table III.2	
Regression Results: Determinants of Construction Costs for All States	
Variable	Coefficient
Intercept	4.161***
Ln Square Feet	1.005***
Pubcode	0.278***
Prevailing Wage	(0.110) **
Public Code * Prevailing Wage	-0.043
Amusements, Social and Recreational Buildings	1.104***
Dormitories	0.927***
Government Services Buildings	1.061***
Hospital and Other health Treatment Facilities	1.250***
Hotels and Motels	0.840***
Manufacturing Plants, Warehouses, and labs	0.462***
Miscellaneous Nonresidential buildings	0.498***
Office and Bank Buildings	0.864***
Parking Garages and Automotive Services	0.212***
Religious Buildings	0.816***
Schools, Libraries, and Labs (nonmfg)	1.175***
Stores and Restaurants	0.536***
	Adjusted R-Squared = 0.952
	N=1309
	F = 1622.217
NOTE: Dependent Variable is LN (real total costs) where total costs are bid costs reported in 2015 dollars	
*** coefficient is significant at .01 level	
** coefficient is significant at .05 level	

School Construction in the North Central States Region

The primary data used to analyze school construction costs were obtained from the F.W. Dodge Company, a company that collects and disseminates data on construction projects for the industry. The Dodge data provides the bid costs of school construction projects by state. The Dodge data also provided the bid costs of construction costs for elementary schools, secondary schools, other schools/libraries, and universities.

Our analysis of the F.W. Dodge data for school construction showed that (1) the public costs of construction are higher than the private costs of construction in both prevailing and non-prevailing wage jurisdictions and (2) the coefficient on our interaction variable, which captured the impact of prevailing wages on public project construction is statistically insignificant at the 10% level. We can conclude the same in our analysis of school construction. The model that can capture the impact, if any, of a prevailing wage law on school construction costs is specified as follows:

$$CC = \alpha + \beta_1 S + \beta_2 T + \beta_3 R + \beta_4 PW + \beta_5 PC + \beta_6 I + \varepsilon$$

where CC = start costs; S = the scale of the projects as measured by the square foot of the project, T = a vector of indicator variables that indicates whether the school construction project is elementary, secondary, or university, R = a vector of indicator variables (one for each state), PW = a indicator indicating the presence or absence of a prevailing wage law, PC = a indicator indicating whether or not a project was public or private, and $I = (PW*PC)$, an interaction variable. The key variables in this regression are PC , PW , and I . These three variables allow us to estimate the impact of prevailing wage statutes separate from the impact of public ownership of a project. PC captures the cost differential between public and private projects in the region, independent of whether or not a state has a prevailing wage law. The PW variable captures the impact of prevailing wage laws on construction projects independent of whether or not the projects are public or private. The I -interaction variable captures the direct impact of prevailing wage laws on public projects because it is equal to one in only those instances where there is a public project in a state that has a prevailing wage law. Table III.3 presents the results.

Table III.3	
Regression Results: Determinants of School Construction Costs	
Variable	Coefficient
Intercept	5.458***
Ln Square Feet	1.006***
Pubcode	0.247***
Prevailing Wage	-0.003
PubCode * Prevailing Wage	0.086
Elementary	(0.458)***
Secondary	(0.429)***
Other Schools/Libraries	(0.223)***
	Adjusted R-Squared = 0.931
	N=432
	F = 829.217
NOTE: Dependent Variable is LN (real total costs) where total costs are bid costs reported in 2015 dollars	
*** coefficient is significant at .01 level	
** coefficient is significant at .05 level	

The variable of note in the regression is the interactive variable (*PW times PC*). The coefficient on this interaction variable (*I*), which captures the impact of prevailing wages on public project construction costs in prevailing wage states) is 0.086 and is statistically insignificant at the 10% level. We conclude that prevailing wage laws do not have a statistically significant impact on public construction projects in prevailing wage states. While public projects in the 12-state region are significantly more expensive than private projects in both prevailing and non-prevailing wage states, as indicated by the statistically significant coefficient on the variable *PubCode*, this is not due to existence of prevailing wage legislation. Previous studies that have claimed to find such an impact have likely confused the higher costs associated with public projects for a prevailing wage effect that does not exist. We conclude that prevailing wage laws do not have a statistically significant impact on school construction projects in prevailing wage states.

Table III.4 provides summary statistics on school construction costs in the region by (1) prevailing wage states, (2) non-prevailing wage states, and (3) the State of Missouri. All data has been adjusted for inflation to real 2015 dollars.

For public construction of elementary schools in the State of Missouri versus non-prevailing wage jurisdictions in the North Central States Region, there is no statistically significant difference in the mean costs of construction between the two; the t-test for paired two sample for means is -0.2097.

For public construction of secondary schools in the State of Missouri versus non-prevailing wage jurisdictions in the North Central States Region, there is no statistically significant difference in the mean costs of construction between the two; the t-test for paired two sample for means is 0.0283.

For public construction of other schools/libraries in the State of Missouri versus non- prevailing wage jurisdictions in the North Central States Region, there is no statistically significant difference in the mean costs of construction between the two; the t-test for paired two sample for means is -0.9325.

For public construction of universities in the State of Missouri versus non-prevailing wage jurisdictions in the North Central States region, the mean costs of construction was \$34.35 cheaper in Missouri versus non-prevailing wage jurisdictions in the North Central States Region and was statistically significant at the 5% level; the t-test for paired two sample for means is -2.2086.

Conclusions

The results of this analysis of school construction costs in Missouri indicate that there is no statistically significant difference in total school construction costs between the State of Missouri and non-prevailing wage jurisdictions. Therefore, the repeal or modification of prevailing wage laws will not result in costs savings as alleged by proponents of repeal or modification of prevailing wage law. The results show that there are significant cost differences between public and private school construction projects; however, these differences cannot be attributed to prevailing wage legislation.

Table III.4
Summary of School Construction in North Central Region
(Cost and Square Feet in '000)

	Cost	Percent of Total	Square Feet	Percent of Total	Number of Projects	Percent of Total
<u>Prevailing Wage</u>						
Private						
Elementary	407,766	8.1%	2,558	11.7%	98.0	15.1%
Secondary	572,815	11.3%	3,485	15.9%	81.0	12.5%
Other Schoos/Libraries	1,869,964	37.0%	8,303	37.9%	318.0	48.9%
University	2,200,902	43.6%	7,582	34.6%	153.0	23.5%
Total	5,051,446	100.0%	21,928	100.0%	650.0	100.0%
Public						
Elementary	4,146,869	30.7%	19,064	35.8%	646.0	38.9%
Secondary	4,155,109	30.7%	17,234	32.4%	431.0	26.0%
Other Schools/Libraries	2,337,488	17.3%	7,135	13.4%	346.0	20.9%
University	2,880,063	21.3%	9,825	18.4%	236.0	14.2%
Total	13,519,529	100.0%	53,258	100.0%	1,659.0	100.0%
	Cost	Percent of Total	Square Feet	Percent of Total	Number of Projects	Percent of Total
<u>Non Prevailing Wage</u>						
Private						
Elementary	114,952	5.8%	674	8.7%	29.0	10.5%
Secondary	148,947	7.5%	859	11.1%	29.0	10.5%
Other Schools/Libraries	935,426	47.2%	3,837	49.6%	159.0	57.8%
University	782,304	39.5%	2,366	30.6%	58.0	21.1%
Total	1,981,629	100.0%	7,736	100.0%	275.0	100.0%
Public						
Elementary	4,180,890	40.3%	21,395	47.4%	482.0	46.6%
Secondary	3,324,136	32.1%	15,644	34.7%	265.0	25.6%
Other Schools/Libraries	1,777,471	17.1%	4,461	9.9%	198.0	19.1%
University	1,085,622	10.5%	3,637	8.1%	89.0	8.6%
Total	10,368,120	100.0%	45,137	100.0%	1,034.0	100.0%
	Cost	Percent of Total	Square Feet	Percent of Total	Number of Projects	Percent of Total
<u>State of Missouri</u>						
Private						
Elementary	5,136	0.7%	34	1.2%	4.0	5.6%
Secondary	125,738	17.1%	496	17.6%	8.0	11.3%
Other Schools/Libraries	279,255	38.1%	1,053	37.4%	37.0	52.1%
University	323,682	44.1%	1,229	43.7%	22.0	31.0%
Total	733,811	100.0%	2,811	100.0%	71.0	100.0%
Public						
Elementary	727,362	41.3%	3,760	46.0%	136.0	44.3%
Secondary	596,462	33.9%	2,873	35.2%	104.0	33.9%
Other Schools/Libraries	234,256	13.3%	699	8.6%	44.0	14.3%
University	203,965	11.6%	837	10.2%	23.0	7.5%
Total	1,762,045	100.0%	8,169	100.0%	307.0	100.0%

Table IIIA					
Distribution of New Construction Spending by Type					
2011-2015					
PWS and Non-PWS				Count	%
Amusement, Social and Recreational Bldgs				2,087	7.5%
Dormitories				312	1.1%
Government Service Buildings				998	3.6%
Hospitals and Other Health Treatment				2,533	9.1%
Hotels and Motels				582	2.1%
Manufacturing Plants, Warehouses, Labs				1,862	6.7%
Miscellaneous Nonresidential Buildings				1,197	4.3%
Office and Bank Buildings				2,630	9.4%
Parking Garages and Automotive Services				2,107	7.6%
Religious Buildings				1,015	3.6%
Schools, Libraries, and Labs (nonmfg)				3,618	13.0%
Stores and Restaurants				6,205	22.3%
Warehouses (excl. manufacturer owned)				2,728	9.8%
Total				27,874	100.0%

Table IIIB							
Distribution of New Construction Spending by Type and Prevailing Wage Status							
2011-2015							
				Non-PWS		PWS	
				Count	%	Count	%
Amusement, Social and Recreational Bldgs				403	8.0%	1,684	7.4%
Dormitories				57	1.1%	255	1.1%
Government Service Buildings				187	3.7%	811	3.6%
Hospitals and Other Health Treatment				422	8.3%	2,111	9.3%
Hotels and Motels				176	3.5%	406	1.8%
Manufacturing Plants, Warehouses, Labs				143	2.8%	1,719	7.5%
Miscellaneous Nonresidential Buildings				270	5.3%	927	4.1%
Office and Bank Buildings				467	9.2%	2,163	61.0%
Parking Garages and Automotive Services				250	4.9%	1,857	8.1%
Religious Buildings				140	2.8%	875	3.8%
Schools, Libraries, and Labs (nonmfg)				1309	25.9%	2,309	10.1%
Stores and Restaurants				888	17.5%	5,317	23.3%
Warehouses (excl. manufacturer owned)				349	6.9%	2,379	10.4%
Total				5,061	100.0%	22,813	151.5%

Table III C							
Real Cost Per Square Foot of New Construction by Type and Prevailing Wage Status							
2011-2015							
Non-PWS				Cost/Sq Ft.		PWS	
							Cost/Sq Ft.
Amusement, Social and Recreational Bldgs				\$209.72		Amusement, Social and Recreational Bldgs	\$225.88
Dormitories				\$161.28		Dormitories	\$182.98
Government Service Buildings				\$225.64		Government Service Buildings	\$206.00
Hospitals and Other Health Treatment				\$231.98		Hospitals and Other Health Treatment	\$259.21
Hotels and Motels				\$136.36		Hotels and Motels	\$166.76
Manufacturing Plants, Warehouses, Labs				\$180.96		Manufacturing Plants, Warehouses, Labs	\$126.17
Miscellaneous Nonresidential Buildings				\$157.94		Miscellaneous Nonresidential Buildings	\$133.06
Office and Bank Buildings				\$185.27		Office and Bank Buildings	\$184.64
Parking Garages and Automotive Services				\$91.06		Parking Garages and Automotive Services	\$86.18
Religious Buildings				\$168.39		Religious Buildings	\$129.55
Schools, Libraries, and Labs (nonmfg)				\$215.07		Schools, Libraries, and Labs (nonmfg)	\$236.12
Stores and Restaurants				\$141.33		Stores and Restaurants	\$139.13
Warehouses (excl. manufacturer owned)				\$82.79		Warehouses (excl. manufacturer owned)	\$77.38
Non PWS - Mean Cost Per Square Foot of New Construction				\$180.77		PWS - Mean Cost Per Square Foot of New Construction	\$132.09
Total Dollar Value of New Construction				\$31,532,997,000		Total Dollar Value of New Construction	101,971,882,000
Total Square Feet of New Construction				174,435,100		Total Square Feet of New Construction	771,980,000

Table IIID					
Square Foot Construction Costs by Structure Type					
2011-2015					
Illinois				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				234	\$235.74
Dormitories				30	\$203.73
Government Service Buildings				120	\$275.98
Hospitals and Other Health Treatment				294	\$273.43
Hotels and Motels				51	\$221.59
Manufacturing Plants, Warehouses, Labs				92	\$106.92
Miscellaneous Nonresidential Buildings				123	\$122.04
Office and Bank Buildings				263	\$181.37
Parking Garages and Automotive Services				260	\$90.51
Religious Buildings				91	\$129.61
Schools, Libraries, and Labs (nonmfg)				530	\$260.25
Stores and Restaurants				804	\$162.20
Warehouses (excl. manufacturer owned)				268	\$82.38
TOTALS				3,160	\$181.07

Table IIIE					
Square Foot Construction Costs by Structure Type					
2011-2015					
Indiana				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				281	\$151.57
Dormitories				40	\$186.54
Government Service Buildings				110	\$178.58
Hospitals and Other Health Treatment				328	\$234.95
Hotels and Motels				49	\$128.51
Manufacturing Plants, Warehouses, Labs				678	\$70.68
Miscellaneous Nonresidential Buildings				158	\$102.03
Office and Bank Buildings				498	\$141.32
Parking Garages and Automotive Services				321	\$77.37
Religious Buildings				269	\$99.35
Schools, Libraries, and Labs (nonmfg)				286	\$242.78
Stores and Restaurants				999	\$106.22
Warehouses (excl. manufacturer owned)				885	\$54.07
TOTALS				4,902	138.37

Table III F					
Square Foot Construction Costs by Structure Type					
2011-2015					
Iowa				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				196	\$260.05
Dormitories				22	\$166.59
Government Service Buildings				67	\$226.67
Hospitals and Other Health Treatment				160	\$220.47
Hotels and Motels				49	\$198.28
Manufacturing Plants, Warehouses, Labs				71	\$138.72
Miscellaneous Nonresidential Buildings				111	\$115.05
Office and Bank Buildings				213	\$283.90
Parking Garages and Automotive Services				89	\$91.31
Religious Buildings				48	\$155.45
Schools, Libraries, and Labs (nonmfg)				313	\$194.81
Stores and Restaurants				375	\$174.69
Warehouses (excl. manufacturer owned)				165	\$68.81
TOTALS				1,879	\$177.75

Table III G					
Square Foot Construction Costs by Structure Type					
2011-2015					
Kansas				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				100	\$204.29
Dormitories				22	\$142.90
Government Service Buildings				55	\$206.44
Hospitals and Other Health Treatment				153	\$258.17
Hotels and Motels				41	\$125.30
Manufacturing Plants, Warehouses, Labs				45	\$261.20
Miscellaneous Nonresidential Buildings				69	\$217.91
Office and Bank Buildings				123	\$162.09
Parking Garages and Automotive Services				67	\$84.50
Religious Buildings				51	\$204.56
Schools, Libraries, and Labs (nonmfg)				300	\$272.06
Stores and Restaurants				333	\$166.31
Warehouses (excl. manufacturer owned)				84	\$84.00
TOTALS				1,443	\$183.54

Table IIIH					
Square Foot Construction Costs by Structure Type					
2011-2015					
Michigan				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				202	\$248.66
Dormitories				30	\$134.06
Government Service Buildings				94	\$204.63
Hospitals and Other Health Treatment				278	\$225.21
Hotels and Motels				54	\$114.22
Manufacturing Plants, Warehouses, Labs				239	\$158.09
Miscellaneous Nonresidential Buildings				97	\$132.82
Office and Bank Buildings				262	\$184.22
Parking Garages and Automotive Services				181	\$100.04
Religious Buildings				96	\$135.05
Schools, Libraries, and Labs (nonmfg)				334	\$230.12
Stores and Restaurants				661	\$114.37
Warehouses (excl. manufacturer owned)				208	\$88.63
TOTALS				2,736	\$161.12

Table III					
Square Foot Construction Costs by Structure Type					
2011-2015					
Minnesota				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				174	\$225.79
Dormitories				22	\$182.30
Government Service Buildings				93	\$195.10
Hospitals and Other Health Treatment				265	\$241.29
Hotels and Motels				51	\$158.88
Manufacturing Plants, Warehouses, Labs				93	\$128.79
Miscellaneous Nonresidential Buildings				141	\$126.35
Office and Bank Buildings				160	\$203.61
Parking Garages and Automotive Services				340	\$69.73
Religious Buildings				87	\$127.10
Schools, Libraries, and Labs (nonmfg)				341	\$220.89
Stores and Restaurants				508	\$129.89
Warehouses (excl. manufacturer owned)				208	\$71.13
TOTALS				2,483	\$161.95

Table IIIJ					
Square Foot Construction Costs by Structure Type					
2011-2015					
Missouri				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				166	\$222.75
Dormitories				37	\$215.54
Government Service Buildings				117	\$195.77
Hospitals and Other Health Treatment				191	\$281.00
Hotels and Motels				32	\$153.74
Manufacturing Plants, Warehouses, Labs				49	\$114.30
Miscellaneous Nonresidential Buildings				92	\$157.49
Office and Bank Buildings				144	\$189.00
Parking Garages and Automotive Services				96	\$86.52
Religious Buildings				66	\$151.91
Schools, Libraries, and Labs (nonmfg)				378	\$237.33
Stores and Restaurants				504	\$172.35
Warehouses (excl. manufacturer owned)				91	\$79.35
TOTALS				1,963	\$178.37

Table IIIK					
Square Foot Construction Costs by Structure Type					
2011-2015					
Nebraska				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				82	\$215.92
Dormitories				15	\$163.11
Government Service Buildings				34	\$242.02
Hospitals and Other Health Treatment				102	\$285.61
Hotels and Motels				37	\$147.41
Manufacturing Plants, Warehouses, Labs				21	\$198.17
Miscellaneous Nonresidential Buildings				44	\$170.97
Office and Bank Buildings				114	\$206.14
Parking Garages and Automotive Services				60	\$60.19
Religious Buildings				34	\$133.77
Schools, Libraries, and Labs (nonmfg)				160	\$217.00
Stores and Restaurants				168	\$100.51
Warehouses (excl. manufacturer owned)				66	\$87.40
TOTALS				937	\$175.56

Table IIII					
Square Foot Construction Costs by Structure Type					
2011-2015					
North Dakota				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				57	\$189.14
Dormitories				8	\$185.60
Government Service Buildings				44	\$266.60
Hospitals and Other Health Treatment				64	\$255.81
Hotels and Motels				66	\$100.27
Manufacturing Plants, Warehouses, Labs				9	\$99.89
Miscellaneous Nonresidential Buildings				47	\$144.41
Office and Bank Buildings				89	\$130.97
Parking Garages and Automotive Services				57	\$94.17
Religious Buildings				29	\$152.99
Schools, Libraries, and Labs (nonmfg)				126	\$178.76
Stores and Restaurants				95	\$90.13
Warehouses (excl. manufacturer owned)				56	100.14
TOTALS				747	\$157.23

Table IIIM					
Square Foot Construction Costs by Structure Type					
2011-2015					
Ohio				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				315	\$301.06
Dormitories				45	\$218.77
Government Service Buildings				120	\$186.11
Hospitals and Other Health Treatment				426	\$299.98
Hotels and Motels				102	\$173.85
Manufacturing Plants, Warehouses, Labs				323	\$116.04
Miscellaneous Nonresidential Buildings				168	\$117.05
Office and Bank Buildings				461	\$187.33
Parking Garages and Automotive Services				351	\$84.09
Religious Buildings				153	\$107.97
Schools, Libraries, and Labs (nonmfg)				474	\$240.43
Stores and Restaurants				1,156	\$142.19
Warehouses (excl. manufacturer owned)				415	\$69.14
TOTALS				4,509	\$172.61

Table IIIN					
Square Foot Construction Costs by Structure Type					
2011-2015					
South Dakota				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				50	\$185.38
Dormitories				5	\$161.57
Government Service Buildings				21	\$197.01
Hospitals and Other Health Treatment				45	\$191.82
Hotels and Motels				20	\$109.40
Manufacturing Plants, Warehouses, Labs				18	\$194.12
Miscellaneous Nonresidential Buildings				43	\$153.52
Office and Bank Buildings				42	\$143.97
Parking Garages and Automotive Services				37	\$96.02
Religious Buildings				12	\$149.53
Schools, Libraries, and Labs (nonmfg)				96	\$189.29
Stores and Restaurants				85	\$119.87
Warehouses (excl. manufacturer owned)				44	\$77.68
TOTALS				518	\$153.33

Table IIIO					
Square Foot Construction Costs by Structure Type					
2011-2015					
Wisconsin				Count	Average Cost/Sqft
Amusement, Social and Recreational Bldgs				230	\$207.84
Dormitories				36	\$157.75
Government Service Buildings				123	\$183.74
Hospitals and Other Health Treatment				227	\$230.04
Hotels and Motels				30	\$232.13
Manufacturing Plants, Warehouses, Labs				224	\$98.92
Miscellaneous Nonresidential Buildings				104	\$135.71
Office and Bank Buildings				261	\$183.79
Parking Garages and Automotive Services				248	\$112.57
Religious Buildings				79	\$150.86
Schools, Libraries, and Labs (nonmfg)				280	\$244.45
Stores and Restaurants				517	\$169.76
Warehouses (excl. manufacturer owned)				238	\$87.17
TOTALS				2,597	\$169.23

CHAPTER 4

The Economic Impact of the Prevailing Wage Statute On the State of Missouri

SUMMARY OF FINDINGS:

- This chapter uses an input-output approach to estimate the economic impact of repeal of Missouri's prevailing wage laws.
- Direct and indirect losses to household income and to government revenues are calculated.
- Losses are estimated for the state as a whole, and for six aggregations of regions throughout the State.

Specific findings include:

- For the state as a whole, the major conclusions are:
 - The repeal of the prevailing wage law would cost the residents of Missouri and their families between \$216.5 million and \$346.6 million annually in lost income.
 - The repeal of the prevailing wage law would cost the State of Missouri between \$2.3 million and \$3.7 million in lost sales tax collections annually.
 - The repeal of the prevailing wage law would cost the State of Missouri between \$6.5 and \$10.4 million annually in lost income tax revenue. This does not take into account the lost earnings tax that is imposed on incomes in certain parts of the state.
 - The total economic loss due to repeal of the prevailing wage law in Missouri in 2015 is estimated to be a loss of income and revenue between \$227.2 million and \$363.3 million annually.

For Region 1 (Northwest Missouri), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between \$205,320 and \$328,520 annually in lost income.

- The repeal of the prevailing wage law would cost this region between \$1,093 and \$1,079 in lost sales tax collections annually.
- The total economic cost due to repeal of the prevailing wage law in this region in 2015 is estimated to be loss between \$206,414 and \$330,269 annually.

For Region 2 (Northeast Missouri), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between \$1,186,220 and \$1,889,960 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$5,956 and \$9,536 in lost sales tax collections annually.
- The total economic cost due to repeal of the prevailing wage law in this region in 2015 is estimated to be a loss between \$973,725 and \$1,559,041 annually.

For Region 3 (Southwest Missouri), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between \$1,466,863 and \$2,347,331 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$5,852 and \$9,364 in lost sales tax collections annually.
- The total economic cost due to repeal of the prevailing wage law in this region in 2015 is estimated to be a loss between \$1,777,822 and \$2,844,940 annually.

For Region 4 (Southeast Missouri), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between \$5,954,863 and \$9,531,369 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$32,293 and \$51,688 in lost sales tax collections annually.
- The total economic cost due to repeal of the prevailing wage law in this region in 2015 is estimated to be a loss between \$5,987,156 and \$9,583,057 annually.

For Region 5 (Kansas City MSA Missouri), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between \$42,821,573 and \$68,564,888 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$183,490 and \$293,801 in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost this region between 428,214 and \$685,649 annually in lost earnings tax collections annually
- The total economic cost due to repeal of the prevailing wage law in this region in 2015 is estimated to be a loss between \$43,433,279 and \$69,544,337 annually.

For Region 6 (St Louis MSA Missouri), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between \$76,409,374 and \$122,337,138 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$569,011 and \$911,029 in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost this region between \$764,094 and \$1,223,371 annually in lost earnings tax collections annually
- The total economic cost due to repeal of the prevailing wage law in this region in 2015 is estimated to be a loss between \$77,742,479 and \$124,471,539 annually.

Section I Introduction

There are a number of methodologies that have been developed for regional economic impact analysis. The three most common types are econometric models, economic base models, and input-output models.³³ An input-output model is used in this study to estimate the economic impact of the prevailing wage statute and the construction sector on the State of Missouri. The three most accepted methodological approaches for using input-output analysis are the REMI, IMPLAN, and the RIMS II multipliers. The decision to use the RIMS II multipliers for this study was made after comparison of the benefits and costs of the three methodological approaches. RIMS II is widely used in the public and private sector for analysis of regional economic impacts. Empirical tests have shown that estimates based upon the RIMS II modeling system and estimates from other regional impact models are similar in magnitude.

An input-output model quantifies the interdependence among industries in a regional or state economy so that one can reach a conclusion with respect to the impact of a change in incomes or expenditures in one industry might have upon the total regional economy. Therefore, regional input-output models provide a valuable tool for regional economic impact analysis.

In the mid-1970's, the United States Department of Commerce, Bureau of Economic Analysis (BEA), completed the development of a method of estimating regional input-output multipliers known as RIMS (Regional Industrial Multipliers System).³⁴ In the mid-1980s, BEA completed an enhancement of RIMS known as RIMS II. In 1986, industry multipliers for 39 industry aggregates for each of the states were published.

³³ For an excellent review of economic base and input-output methodologies, see Henry Richardson. "Input-Output and Economic Base Multipliers: Looking backward and Forward." *Journal of Regional Science*. Volume 25, No. 4 (1985): 607-661.

³⁴ Cartwright, Joseph V. and Richard M. Beemiller and Richard D. Goshely, *Regional Input-Output Modeling Systems: Estimation, Evaluation and Application of a Disaggregated Regional Impact Model*. U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division, April 1981.

Using RIMS II, multipliers can be estimated for any region composed of one or more counties and for any industry in the national input-output table. This allows for consistent analysis of economic impacts for different industries in a regional economy, including the construction industry. The multipliers provide a means for assessing the impact of a sector or industry on the regional economy as a result of a change in a fundamental variable such as output or income.

The RIMS II multipliers used in this study were first released in June 2003. The output, earnings, and employment multipliers used in this study are based upon the 2008 annual input-output accounts for the U.S. economy and 2008 regional data. In order to capture differential regional impacts of the prevailing wage law in Missouri, we have obtained seven sets of RIMS II multipliers from the Bureau of Economic Analysis. These regional definitions provide coverage for the State of Missouri and for the differential regions in our study. Table IV.1 provides the counties included in each region for the purposes of this study. The multipliers provided for output, earnings, and employment are provided by detailed industry and industry aggregation. For the construction industry, the detailed industry multipliers are provided for fifteen sectors in the construction industry.

Table IV.1
RIMS II Multipliers for Missouri Regions (List of Counties)

Region #1 NW MO.	Region #2 NE MO.	Region #3 SW M).	Region #4 SE MO.	Region #5 St. Louis MSA	Region #6 KC MSA	State
Grundy	Knox	Dallas	Bollinger	Franklin	Bates	Missouri
Harrison	Lewis	Laclede	Cape Girardeau	Jefferson	Buchanan	
Mercer	Marion	Pulaski	New Madrid	Lincoln	Caldwell	
Putnam	Monroe	Webster	Perry	St. Charles	Cass	
Schuyler	Ralls	Wright	Scott	Warren	Clay	
Sullivan	Shelby		Stoddard	Washington	Clinton	
				St. Louis City	Jackson	
				St. Louis County	Lafayette	
					Platte	
					Ray	

Section II Input-Output Analysis

This section provides a brief overview of how economic modeling using input-output analysis is constructed. In general, input-output modeling is a method to quantify business relationships between industries in a geographic agglomeration. In other words, by using a set of assumptions about how various types of business sectors operate in a region, state, or nation, input-output modeling can take the arduous task of surveying countless numbers of firms, regarding their supply chain and sales relationships, and simplify the task by estimating these results.

This accomplishes three things. First, it provides a tool for economic and social policy which can help facilitate timely and effective planning for public and private sector projects. Secondly, and related to the latter, input-output modeling serves as a descriptive framework, displaying interrelationships between industries and industrial sectors, as well as quantifying the corresponding supply chains and finished good markets, including households and the public sector. Lastly, at a macro perspective, such as at a regional, state or national level, input-output modeling can estimate, and hence quantify, the employment, income, and tax revenue effects of an economic or social policy which would have a direct effect upon an industry or industrial sectors business operations.

Section II.A Input-Output Model Transaction Table

Input-output modeling relies on information about how business sectors interact, in other words, information regarding the purchases of final goods from other sectors which are then used by the industry in question to produce its final goods. The various linkages in a regional economy between households, business, and government establish the interdependencies between sectors. An input-output model quantifies these relationships in such a way that conclusions regarding economic variables such as employment, household or business income, or tax revenue can be reached.

To construct an input-output model a transaction table must be developed. The idea behind a transaction table is simple in nature but is the foundation for the input-output model. The general notion behind the transaction table relates to all the components purchased to form a final good. For example if an industrial sector wants to

produce a specified amount output in dollar terms, it might need to purchase some dollar amount from its same sector, some dollar amount from two other sectors, and finally some purchase of labor to build the product. In this example then we have three industrial sectors and a labor sector all producing or providing goods or services which will be used to construct a final good for our initial sector in question. By looking at what goods or services are purchased to produce a good in one industrial sector, we can then conclude a monetary value for the total inputs needed to produce a final good in one sector. If we followed this approach for our other two industrial sectors and our labor pool, as well as to the rest of our economy, we can then determine a value for final output of a particular industrial sector.

Following the above, Table IV.2 provides a visual aid and the paragraph below explains.

Table IV.2					
Sample Input-Output Transaction Table					
Purchasing Sector					
From / To	Purchasing Sector			Final Demand	Total Output
	#1	#2	#3		
#1	4	5	2	9	20
#2	7	8	3	17	35
#3	3	5	7	7	20
Payment Sector (Value Added)	6	17	10	3	36
Total Inputs	20	35	20	36	111

To clarify, the column entries reflect the purchases made by a particular sector. For example, for purchasing sector #1 to produce \$20 in output, sector #1 would require (1) \$4 in inputs from regional firms in the same industry, (2) \$7 and \$3 of inputs, respectively from Sectors #2 and #3, and (3) \$6 in labor inputs from households. The row entries indicate the sales of that row sector to a particular column sector. For example, as shown above, Sector #1 sells \$4 to sector #1, \$5 to Sector #2, \$2 to Sector #3, and \$9 to final demand which sums to \$20 of total sales. Notice that total inputs equal total output, in other words, for each sector or industry, inputs equal outputs; this is just like saying there is no surplus or shortage in the economy.

Section II.B

Sample Direct Requirements Matrix

To simplify and make the information found in a transaction table more useful a direct requirements matrix is formed. At first glance this sounds complicated, but in fact it is rather a quick process of computing a ratio of individual sector inputs, to the total input needed to produce a specified industrial output. The ratio computed is called a technical coefficient and is used to describe the interrelationship among industries in a particular region. Recall that our transaction table essentially described what dollar amounts of inputs were needed to produce a certain amount of dollar output. Hence our technical coefficients represent the ratio of inputs to output to produce a particular industrial good. Thus, these ratios (or technical coefficients) can be viewed as estimates of the dollar change in output, for each additional output produced. Take for example the direct requirements matrix associated with our previous example and data found in Table IV. 2; this will be found below in Table IV. 3

Table IV.3				
Sample Technical or Direct Impact Coefficients				
($A = a_{ij} = X_{ij} / X_j$)*				
	Sector #1	Sector #2	Sector #3	Final Demand
Sector #1	.2000	.1429	.1000	.2500
Sector #2	.3500	.2286	.1500	.4722
Sector #3	.1500	.1429	.2500	.1944
Payment Sector (Value Added)	.3000	.4857	.5000	.0834
Total	1.00	1.00	1.00	1.00

* $A = a_{ij} = X_{ij} / X_j$) where X_{ij} is the dollar requirement of impacts from sector “i” required to produce \$1.00 of output from sector “j”; X_j represents the total product in industry “j” or the column total.

Looking at Table IV.3 and with reference to Sector #1, we can conclude from these estimates that a dollar increase of Sector #1’s output will generate \$.20 of additional production in Sector #1, \$.35 in Sector #2, and so on. Generally put, our direct requirements matrix can be utilized to show how specified dollar changes in output will affect not only the industry in question but also the industries supply chain. It must also be understood that these are direct impacts, meaning that an injection or leakage of dollars from our regional economy has a multiplicative effect; simply put, a dollar

increase in output of one industry will impact a whole scope of other industries which are all connected in producing goods which end up being a part of the output of the industry in question. We call these effects indirect.

Section II.C Sample Direct and Indirect Requirements Matrix

It is particularly useful to have an estimate of how dollar changes in one sector would affect all other sectors in a particular geographic agglomeration. These estimates can be found in a direct and indirect requirements matrix. Although the procedure to construct this matrix is difficult, it can be found in any mathematical economics textbook (see Chiang, 1984). Nonetheless, its general understanding is not difficult to comprehend, when output is increased in one industrial sector, there are economic affects in a multitude of other sectors in a specified economic region. This is simply suggesting, for example, that if output is increased in one industrial sector, the inputs used to produce the goods needed to increase that output must also increase. Continuing the example from above Table IV.4 shows a constructed direct and indirect requirements matrix.

Table IV.4			
Direct and Indirect Requirements Matrix			
(Inverse of $[I-A]$ or $[I-A]^{-1}$)			
	Sector #1	Sector #2	Sector #3
Sector #1	1.4346	0.1014	0.3108
Sector #2	0.3128	1.5062	0.5335
Sector #3	0.2536	0.3991	1.4601
Total	2.0010	2.0067	2.3044

In the above table, the column entries represent the output changes by the column sector as a result of a one-dollar change in output-demand. The summation of all column entries indicates the change, of all sectors given a dollar change in demand by one of the column entries. For example, as shown above with respect to Sector #1, if demand for output of sector #1 falls by \$1.00, direct and indirect changes in this model would decrease total output (of all sectors) by \$2.0010. This means that there is a multiplier effect of dollars spent or in this case taken away. Hence, the output multiplier is defined as the summation of the column entries in the direct and indirect requirements matrix. To be absolutely clear, the reason the effect is “multiplied” is because the decreased demand

for Sector #1's output leads to a decline in demand for output of those sectors that supply input to sector one. (For example, a decline of the demand for new homes will also cause a reduction in the forestry industry.)

These multipliers provide a means for assessing the impact of a sector or industry on the regional economy as a result of a change in a fundamental variable such as output or income. As a final note, this type of multiplier is referred to as a Type-I multiplier because it is calculated from the direct and indirect requirements matrix which does not consider the indirect effects of the final payments sector, or in other words, our labor sector.

Section III Construction Industry in the United States and Missouri

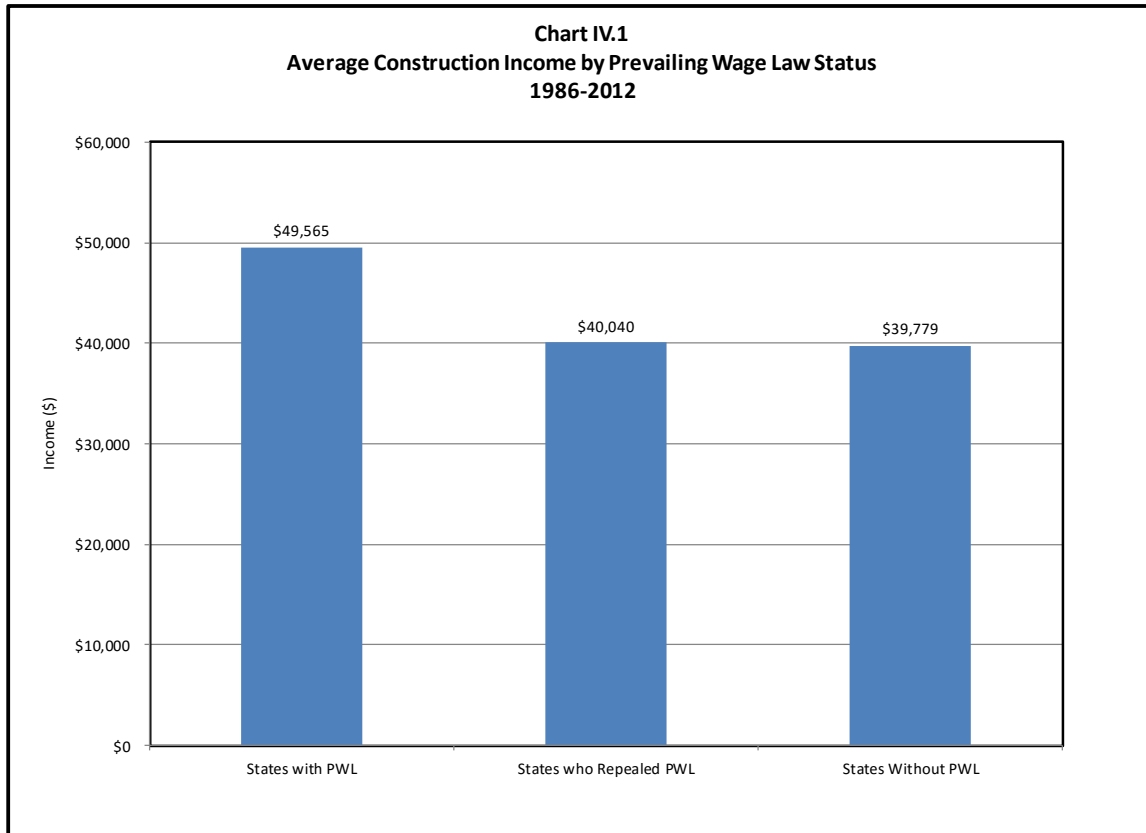
The construction industry is one of the most important sectors in our national and regional economy. According to the United States Census Bureau, the construction industry employed 6.62 million people in January, 2016, or 4.62% of the total nonfarm workforce in January, 2016.³⁵ In Missouri, the construction industry employed 119,400 people in January, 2016, representing 4.28% of the workforce in the state.

Section IV. Expected Loss of Earnings in Construction due to repeal of Prevailing Wage Laws

In order to adequately assess any cost savings in overall construction expenditures from repeal of a prevailing wage statute, the purported cost savings to be realized has to be offset against the loss of incomes and revenues by other residents in Missouri and by the public sector. The lower paid wages in the construction sector expected to follow from repeal of prevailing wage laws has a multiplier effect, not only impacting the construction sector, but other industries and their families as well as tax revenue bases for Missouri.

Construction workers in states that have a prevailing wage law have a higher average annual income than do construction workers in states that have never had a prevailing wage law or states that have repealed their prevailing wage law. Chart IV.1

categorizes the states into these three groups.³⁶ The first bar shows that the average annual income for construction workers in states that had a prevailing wage law for this period of time.



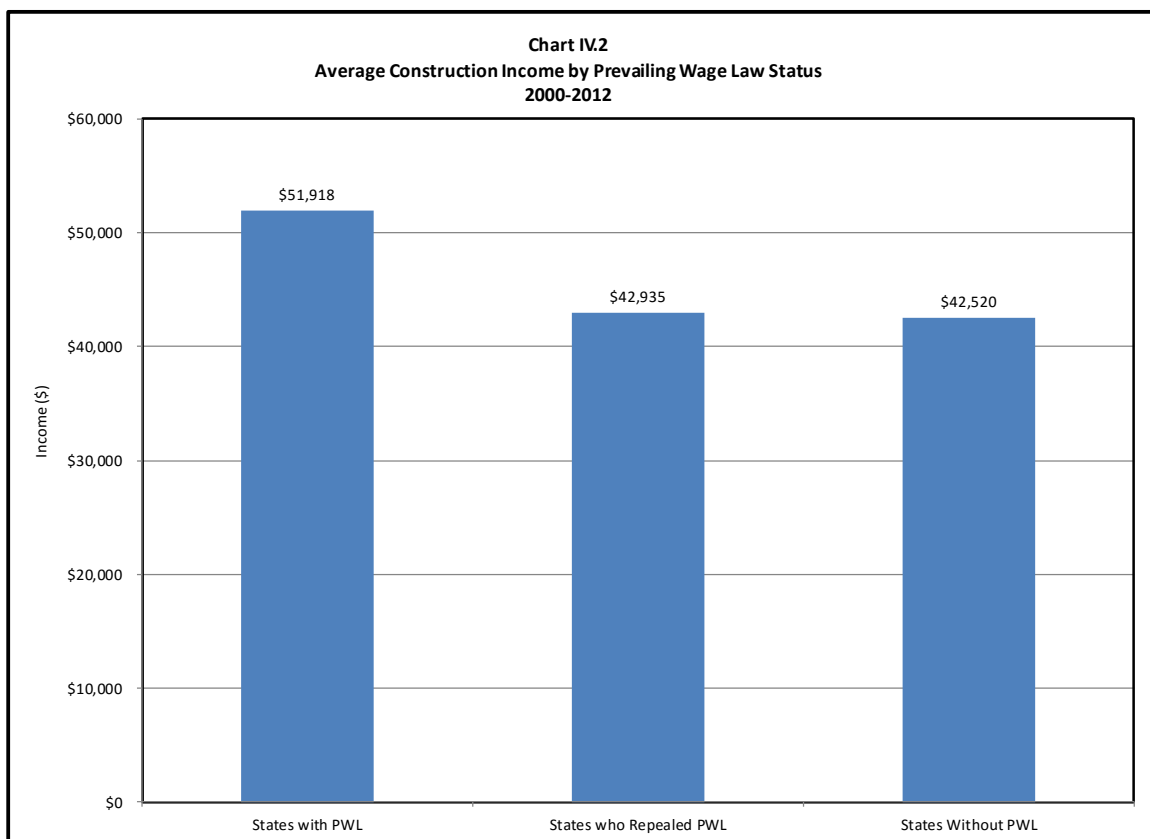
1986-2012 was \$49,565 annually.³⁷ The second bar shows the average annual income for construction workers in states that have repealed their prevailing wage law during this time period. For the period 1986-2012, the average annual earnings for this group were \$40,040. The third bar shows the average annual income for construction workers in states that have never had a prevailing wage law. Their average annual income was only \$39,779. For the period 1986-2012, the average annual earnings for construction workers in states that that have a prevailing wage law is 23.8% higher than in states that have

³⁵ U.S. Census Bureau. Employment, Hours and Earnings from the Current Employment Statistics Survey (National and Construction). January, 2016.

³⁶U.S. Census Bureau, County Business Patterns, 1986-2012. Earnings data have been adjusted to 2012 real dollars using a BLS PPI for construction inputs and materials.

³⁷All figures have been adjusted to 2012 real dollars using a BLS PPI for construction inputs and materials for this analysis.

repealed their prevailing wage law; it is 22.1% higher in prevailing wage states than those states that have never had a prevailing wage law. Chart IV.2 shows this same analysis for the period 2000-2012. The results are similar, with the average income of construction workers in prevailing wage states higher by 20.9% and 22.1%, respectively, versus those states that have repealed their prevailing wage law or have never had a prevailing wage law. This analysis provides evidence that repealing or never having a prevailing wage law reduces construction income not only on public projects but also across all sectors of the construction industry.



Although this provides preliminary evidence of lower construction income across all public and private construction, the reason for the differential may be a combination of factors other than the presence of a prevailing wage law. For example, it could be the case that states with higher construction wages have higher living costs for reasons not associated with prevailing wage laws. Therefore, we look more closely at data for the ten

states that have repealed their prevailing wage in order to see whether repeal of the law led to lower construction wages.

Section V. State and Regional Impact of Repeal of Missouri's Statute

In order to capture urban and rural regional impacts of the repeal of the prevailing wage law in Missouri on the construction industry, other industries, and the residents and public sector in Missouri, we have obtained five sets of RIMS II multipliers from the Bureau of Economic Analysis. These regional multipliers provide coverage for the State of Missouri and for urban and regional differences across Missouri.

Section V.1: General Overview of Construction in Missouri

According to the United States Census Bureau, the population of the State of Missouri was estimated in 2015 at 6,083,672 persons; the 2010 Census estimated the population of Missouri at 5,988,927.³⁸ In 2000, the total urban population in Missouri was 3,881,133 or 69.4% of the total population; in 2000, the total population was 1,714,078, or 30.6% of the population.³⁹

We have chosen six sub-state regions for analysis. The six regions we have chosen to analyze consist of an aggregation of (1) six counties in Northwest Missouri, (2) five counties in Southwest Missouri, (3) six counties in Southeast Missouri, (4) six counties in Northeast, Missouri (5) ten counties in the Kansas City MSA, and (6) eight counties in the St. Louis MSA.

The six counties in Northwest Missouri are Grundy, Harrison, Mercer, Putnam, Schuyler, and Sullivan. The five counties in Southwest Missouri are Dallas, Laclede, Pulaski, Webster, and Wright. The six counties in Southeast Missouri are Bollinger, Cape Girardeau, new Madrid, Perry, Scott, and Stoddard. The six counties in Northeast Missouri are Knox, Lewis, Marion, Monroe, Ralls, and Shelby. The ten Missouri counties in the Kansas City MSA are Bates, Buchanan, Caldwell, Cass, Clay, Clinton, Jackson, Lafayette, Platte, and Ray. The eight Missouri counties in the St. Louis MSA are

³⁸Missouri Census Data Center <http://mcdc.missouri.edu/u>.

³⁹ Missouri Census Data Center. <http://mcdc2.missouri.edu/websas/geocorr2k.html>.

Franklin, Jefferson, Lincoln, St. Charles, St. Louis, Warren, Washington and St. Louis (Independent City).

For the six counties in Northwest Missouri, the total population was 39,651. Of this total population, 22% are defined as urban and 78% as rural. For the five counties in Southwest Missouri, the total population was 138,339. Of the total population, 33% are defined as urban and 67% are defined as rural. For the six counties in Southeast Missouri, the total population was 188,841. Of this total population, 50.7% are defined as urban and 49.3% are defined as rural. For the six counties in Northeast Missouri, the population was 68,880. Of this total population, 31.1% are defined as urban and 68.9% are defined as rural.⁴⁰

For the 10 counties in the Kansas City MSA, the total population is 1,181,672. Of this total population, 85.2% are defined as urban and 14.8% as rural. For the eight counties in the St. Louis MSA, the total population is 2,027,016. Of this total population, 88.7% are defined as urban and 11.0% are defined as rural.⁴¹ This regional coverage provides us with the ability to differentiate the economic impact of the repeal of the prevailing wage statute on different regions in the State of Missouri.

For the period 2011-2015, total construction in the data provided for Missouri was \$11.52 billion.⁴² Of the total inflation-adjusted costs of construction during that period, private sector construction was \$8.31 billion and public sector construction was \$3.21 billion. Private sector construction costs accounted for 72.1% of construction activity in the State of Missouri; public sector construction accounted for 27.9% of construction activity in Missouri. The total amount of square foot of construction in Missouri from 2011-2015 was 69,865,100 square feet. Of the total square feet of construction from 2011-2015, private construction accounted for 55,568,300 square feet, or 79.5%; public construction accounted for 14,297,100 square feet or 20.5% of total construction activity in Missouri during this period.

For private construction in Missouri over the period 2011-2015, hospitals and other health treatment facilities, manufacturing plants, warehouses and labs, stores and

⁴⁰ Ibid.

⁴¹ Ibid.

restaurants, and office and bank buildings accounted for \$5.41 billion of the inflation-adjusted costs of construction, or 65.2% of private construction activity.

For private construction in Missouri, stores and restaurants, hospitals and health treatment facilities, manufacturing plants, warehouses and labs, and parking garages and automotive services accounted for 35,388,000 square feet or 63.7% of total private construction activity from 2011-2015.

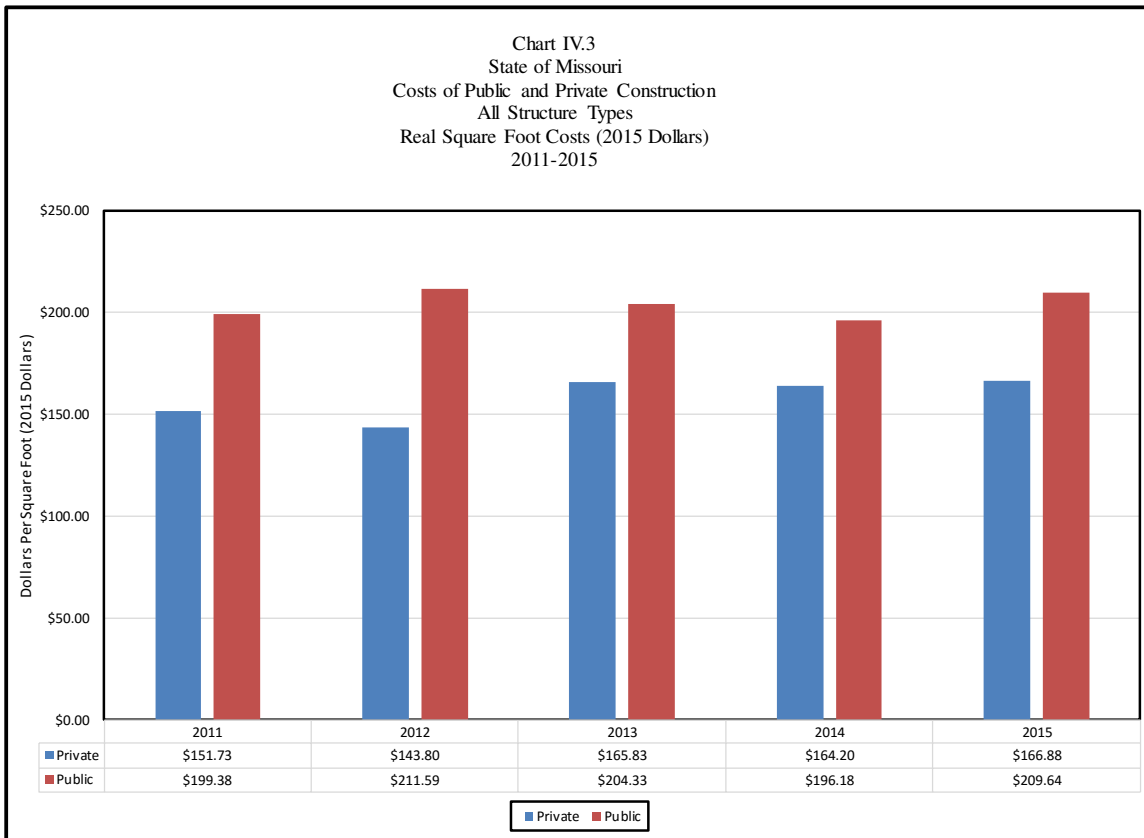
For public construction in Missouri over the period 2011-2015, schools, libraries, and labs (non-manufacturing) and government service buildings \$2.23 billion of the inflation-adjusted costs of construction, or 69.3% of public construction activity, with schools, libraries, and labs accounting for \$1.76 billion of the inflation-adjusted costs of construction, or 54.8% of total public construction activity from 2011-2015.

For public construction in Missouri, schools, libraries, and labs (non-manufacturing) and government service buildings accounted for 9,882,800 square feet, or 69.1% of total public construction activity from 2011-2015; schools, libraries, and labs (non-manufacturing) accounted for 8,168,900 square feet or 57.1% of total public construction activity from 2011-2015.

Charts IV.3-IV.4 present findings on the level of private and public sector activity and the real costs of construction for the State of Missouri across (1) 13 types of construction and (2) school, libraries, and labs (non-manufacturing) construction only, respectively. Chart IV.3 shows the costs of public construction versus private construction in Missouri. These findings are derived from the construction cost data base from F.W. Dodge. Chart IV.3 shows that public construction costs per square foot across all 13 construction categories are more than private construction costs per square foot. This result is obtained for all 10 states in the region, irrespective of whether or not it is a prevailing wage state or a non-prevailing wage state. One reason why public sector

⁴²For construction value in Missouri for the period 2011-2015, we have expressed all years in 2015 prices. United States Bureau of Labor Statistics. Series ID: PCU236211236211, New Industrial Building Construction

construction costs are high is certain facilities extract more demanding standards of construction than does most non-residential private sector construction activity.⁴³

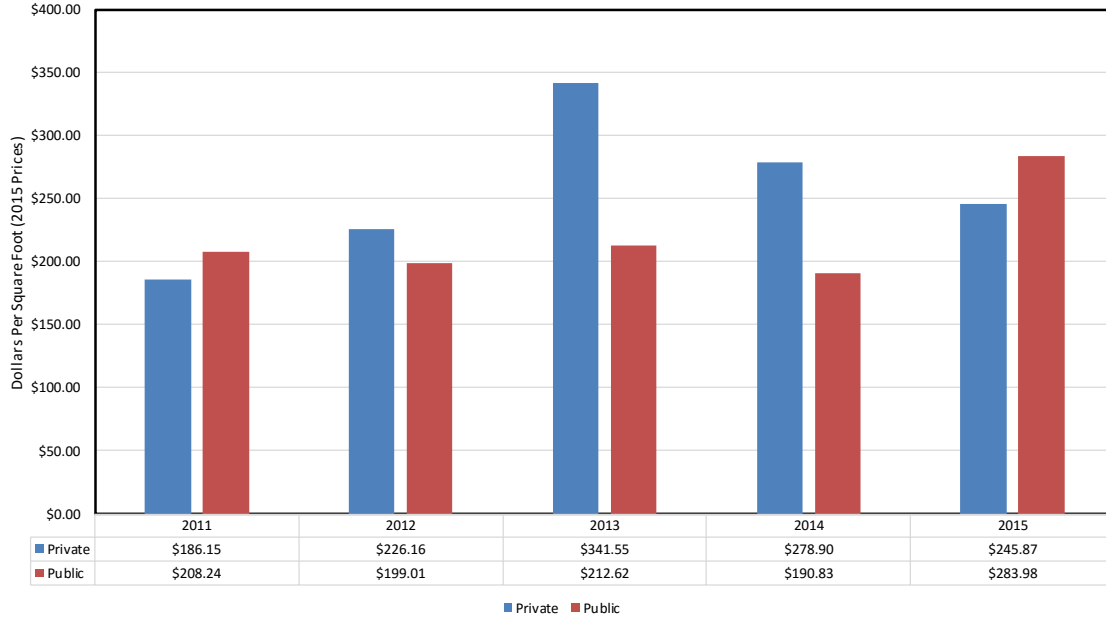


The argument is often made that prevailing wage statutes increases the costs of construction in the school sector (e.g. “we could build four schools for the price of three schools if we could exempt prevailing wage).

However, close analysis of the F.W. Dodge data for the period 2011-2015 reveals that the costs of construction per square foot in the schools, libraries, and labs category, expressed in 2015 dollars, was \$260.00 per square foot for private construction, while only \$215.70 for public construction (See Chart IV.4) Private construction of schools, libraries, and labs was 21.0% higher than public construction of schools, libraries, and labs. In our 2004 and 2011 report, we found similar results; private sector construction of school, libraries, and labs construction per square foot was higher than public construction costs for in Missouri for schools, libraries, and labs.

⁴³ See Appendix for Detail Structure List from F.W. Dodge, which explains components of each structure type.

Chart IV.4
 State of Missouri
 Costs of Public and Private Construction
 All Structure Types
 Real Square Foot Costs (2015 Dollars)
 2011-2015



Section V.2: Costs and Benefits to the State of Missouri Resulting from Repeal of Prevailing Wage Legislation

Numerous studies have presented evidence that wages should be expected to fall after repeal of the Missouri prevailing wage statute. Phillips (1995) showed that the estimate of repeal of prevailing wage laws results in a 5.1% decrease in earnings.⁴⁴ Kessler and Katz (1999) showed there was a 4.7% relative fall in construction workers wages in states that repealed their prevailing wage law and those states that did not.⁴⁵ In our 2004 study, we found that real construction wages decreased by 3.4%. We present a range of estimates of the decrease in construction wages. The range of estimates for a decrease in construction wages is based upon the research cited above: (1) 3.2% [Gould, et al], (2) 3.4% [Kelsay, et al.] and (3) 5.1% [Phillips, et al.1999]. Table IV.5 provides the estimates of economic loss in the construction sector.

This loss in annual construction worker income represents the direct or first order impact of the repeal of the prevailing wage statute in Missouri. Based upon construction employment in Missouri of 119,400 workers in 2015, this direct or first order economic loss to construction workers incomes is between \$154.3 million and \$304.9 million annually across the three ranges of estimates (Table IV.5). This loss in construction worker income does not take account of the indirect or secondary affects, as it ignores multiplier effects (e.g. induced or secondary effects) on other workers and their families in Missouri. It also ignores impacts on tax revenue bases in Missouri that are a function of the general level of income and economic activity in Missouri.

As an offset to the reduction in construction income (direct impacts) and to the reduction in other industry incomes (indirect impacts), there could be an increase in employment in the construction sector as a result of the lower wages paid. For example, employment might increase in the construction sector because the payment of lower wages induces firms to hire less productive workers, so that it would take more workers to complete any given task. (See Chapter 2 above for exploration of this issue, with

⁴⁴ Phillips, Peter, Garth Magnum, Norm Waitzman, and Anne Yeagle. *Losing Ground: Lessons from the Repeal of Nine "Little Davis Bacon" Acts*. Working Paper. Economics Department. University of Utah. February, 1995. Page 24.

**Table IV.5
Economic Impact on Wages and Employment in Missouri
2015 Wage Data**

	Gould / Shierolz (2011)	Kelsay, et al (2013)	Phillips, et al. (1999)
	3.20%	4.18%	5.10%
2015 Average Annual Wage in Missouri ¹	\$50,080	\$50,080	\$50,080
Decrease in Wage ²	\$1,603	\$2,093	\$2,554
New Annual Wage	\$48,477	\$47,987	\$47,526
Number of Workers	119,400	119,400	119,400
Loss in Income for Missouri Workers ³	\$191,345,664	\$249,945,274	\$304,957,152
Increase in Employment from Lower Wage ⁴	764	998	1,218
Increase in Income from Lower Wage ⁵	\$37,044,521	\$47,899,512	\$57,880,867
Net Economic Loss in Income in Missouri ⁶	\$154,301,143	\$202,045,761	\$247,076,285
¹ May 2015 State Occupational Employment and Wage Estimates: Missouri			
² 2015 annual wage in Missouri multiplied by the estimated loss in wages.			
³ Decrease in wages <i>multiplied</i> by number of workers			
⁴ Increase in Employment is derived from labor elasticity estimate of -0.20.			
⁵ New Wage multiplied by Increase in Employment			
⁶ Loss in Earnings in Construction Sector <i>minus</i> Increase in Income			

evidence demonstrating that worker productivity is lower, and construction costs higher, in low wage states.) In addition, it is conceivable that lower wages might encourage more projects, although we have demonstrated in an earlier chapter that lower wages do not result in lower construction costs. In any case, we will assume that the elasticity of labor demand to a fall of wages is 0.20 - in other words, if wages fall, there is a slight increase in employment. A number of labor studies report these elasticity estimates (Kniesner, 1987; Altonji and Ashfelter, 1980; Michl, 1986, Freeman and Medoff, 1981, Brown, 1982, and Belman, 1988, Jacob and Ludwig, 2009)).⁴⁶

According to the data from the U.S. Department of Commerce, Bureau of Labor Statistics, the 2015 average wage in Missouri for all construction and extraction occupations, Occupational Code 47-000 was \$50,080. Utilizing the calculation that the loss in per worker income was \$1,603 in 2015 and the labor elasticity estimate is 0.2, a 3.2% reduction in wages would generate about 764 additional construction jobs.

⁴⁵ Kessler, Daniel P. and Lawrence Katz. *Prevailing Wage Laws and Construction Labor Markets*. NBER Working Paper Series. Working Paper 7454. December, 1999. Table 2.

⁴⁶The elasticities of demand for labor reviewed range between -0.07 and -0.44. Labor demand is less elastic for skilled labor than for unskilled labor. Given the skill craftsmen working in the

Assuming that these less productive workers earn \$48,877, on average, this would generate an additional \$37.0 million in additional construction sector income in Missouri. This additional construction income would have induced or secondary effects as well. This direct impact of \$37.0 million in additional construction income would partially offset the \$191.3 million in direct lost construction income. Hence, the net loss in direct income to construction workers and their families in the State of Missouri under the estimate that per worker income decreased by \$1,603 per worker is \$154.3 million annually.

Utilizing the calculation that the loss in per worker income was \$2,093 in 2015 and the labor elasticity estimate is 0.2, a 4.18% reduction in wages would generate about 998 additional construction jobs. Assuming that these less productive workers earn \$47,987, on average, this would generate an additional \$47.9 million in additional construction sector income in Missouri. This additional construction income would have induced or secondary effects as well. This direct impact of \$47.9 million in additional construction income would partially offset the \$249.9 million in direct lost construction income. Hence, the net loss in direct income to construction workers and their families in the State of Missouri under the estimate that per worker income decreased by \$2,093 per worker is \$202.0 million annually.

Utilizing the calculation that the loss in per worker income was \$2,554 in 2015 and the labor elasticity estimate is 0.2, a 5.1% reduction in wages would generate about 1,218 additional construction jobs. Assuming that these less productive workers earn \$47,526, on average, this would generate an additional \$57.9 million in additional construction sector income in Missouri. This additional construction income would have induced or secondary effects as well. This direct impact of \$7.9 million in additional construction income would partially offset the \$304.9 million in direct lost construction income. Hence, the net loss in direct income to construction workers and their families in the State of Missouri under the estimate that per worker income decreased by \$2,554 per worker is \$247.1 million annually.

construction sector, the elasticity will tend to lower estimates. We have used -0.20 for our estimates in this section.

This accounts for the direct impacts of repeal on the construction industry only. We also need to account for the economic impact of the induced and secondary effects of the repeal of prevailing wage that is associated with lower construction incomes throughout the Missouri economy.

Section V.3: Multiplier Effects

In order to assess the secondary or induced effects, we have obtained multipliers from the Bureau of Economic Analysis, called RIMS II for six regions in the State and the State of Missouri. The application of the earnings multipliers will allow us to quantitatively assess the secondary and induced effects on other sectors and their families in Missouri as well as on public sector revenue streams. The earnings multipliers obtained for the seven regions in Missouri are presented below:

<u>Earnings (\$) Multiplier⁴⁷</u>		
Region 1:	Northwest Missouri	0.9310
Region 2:	Northeast Missouri	1.0850
Region 3:	Southwest Missouri	1.2080
Region 4:	Southeast Missouri	1.2097
Region 5:	Kansas City MSA	1.3687
Region 6:	St. Louis MSA	1.3197
Region 7:	State of Missouri	1.4030

These can be interpreted as follows: In Region 4, for every \$1 increase (decrease) of earnings in the construction sector, the region’s earnings increase (decrease) by \$1.21. For the state as a whole, for every \$1 increase (decrease) of earnings in the construction sector, the state’s earnings increase (decrease) by \$1.40. The size of the multiplier depends upon several factors. One of the more important factors is the size of the geographic size of the region under analysis. A given sector’s multiplier is smaller for a region within Missouri compared to the entire state; for example the earnings multiplier for Missouri is 1.4030 while the associated multipliers for the selected regions in Missouri is smaller, ranging from 0.9310 (Region 1) to 1.3687 (Region 7). This is because a higher percent of spending will “leak out” of a small region through purchases of products and services from other regions.

⁴⁷The earnings multiplier measures the dollar change in earnings of households employed by all industries for each additional dollar of earnings paid directly to households employed by the construction industry.

Another important factor in determining the size of the multiplier is the number and diversity of firms in the selected region. If a region is large and diverse (such as the Kansas City MSA and the St. Louis MSA) with respect to its industry composition, the larger will be the multiplier; again the leakages from the selected area will be smaller. For example, the multipliers for the Regions 1-4 range from 0.9310 to 1.2097, while the associated multipliers for Regions 5-6 range from 1.3179 to 1.3687; Regions 5-6 are more self-contained.

It is important to remember that income would not be the only loss for the State of Missouri as a result of the repeal of its prevailing wage statute. Job safety would suffer as a result of repeal. For example, it was shown in Utah that serious occupational injuries in the construction industry increased by 15% after repeal (Phillips, 1995). This increase in injuries imposes indirect costs on the public sector. As a result of an increase in injuries in the construction sector associated with repeal of a prevailing wage statute, workers compensation costs for the public sector would increase.

It is also predicted that quality would suffer from repeal. With a prevailing wage statute, contractors have the incentive to use skilled journeymen and well-supervised apprentices. This skilled construction workforce is more efficient in insuring that work is done correctly and according to specification. In addition, the repeal of prevailing wage laws increases the long-run costs of maintenance of public sector construction. Under billing, high rates of failure in the construction industry, lower wages received, increased labor force turnover, less experience and decreased quality of workmanship lead to increased maintenance costs in the long run.

In order to assess the total impact of the prevailing wage in Missouri, we present estimates for the State of Missouri and for each of the six county aggregations, using multipliers obtained from the Bureau of Economic Analysis so that both the direct and secondary impacts of repeal are quantified. We first present the annual economic impact of repeal of the prevailing wage statute for the State of Missouri. Assuming a stable economic environment, (in which the State of Missouri and the construction sector do not experience severe upturns or downturns), we present an estimate of the economic impact of repeal for the next five years for the State of Missouri. We also present the economic impact for the six sub-state county aggregations we have obtained.

V.4: Multiplier Effects for State of Missouri

In the previous section, we have calculated that repeal of prevailing wage laws in Missouri would result in a net direct loss of construction income in Missouri between \$154.3 million to \$247.1 million in net direct earnings losses in the State of Missouri (See Table IV.5). This loss figures incorporates the additional jobs that would be obtained via a lower wage. In addition to the direct effects on construction income in Missouri, we need to incorporate the indirect and induced effect.

For the State of Missouri, the earnings multiplier provided by the Bureau of Economic Analysis is 1.4030. The earning multiplier measures the dollar change in income received by all households in Missouri across all industries that results from a \$1 change in earnings paid to households in the construction sector. We can use the earnings multiplier, which measures the direct and induced/indirect impacts of a reduction in earnings in the construction sector on the Missouri economy. Based upon a direct economic loss of \$159.7 million to \$247.1 million annually in the construction sector, the total loss due to the repeal of Missouri's prevailing wage statute should be expected to range between \$216.5 million and \$346.6 million annually.

Previous studies have shown that the repeal of prevailing wage laws has decreased tax revenues in other states. Given the decline in wages reported, construction workers and other workers in the state will buy fewer goods and services, decreasing sales taxes that are collected by the states. In addition, the reduction in wages paid to people in Missouri will result in lower taxable income; this will decrease the revenue derived by the state of Missouri from income taxes. Cities like Kansas City and St. Louis will also suffer a reduction of income tax receipts from the earnings tax.

The current sales tax rate in Missouri is 4.225% on those items not exempt from the sales tax base. Cities, counties, and certain districts may also impose local sales taxes as well, so the amount of sales tax paid will be a function of the combined state and local rates at the location of the seller. The average local (county and city) sales tax rate in

Missouri in 2015 is approximately 3.58% statewide.⁴⁸ For the projected economic loss of sales tax revenue, we have used the Missouri State sales tax rate of 4.225%.⁴⁹

For the projected economic loss of sales tax revenue at the state level, I have used the Missouri sales tax rate statewide of 4.225%. Not all sales at the retail level are subject to Missouri tax. According to a study by Bruce and Fox (2000), they estimated that the taxable sales tax base in Missouri is 45.7%; other estimates.⁵⁰ Other estimates have estimated the taxable at a lower rate. According to estimates of the taxable sales tax base in Missouri, I have utilized a conservative 25% sales tax base coverage. Based upon data from the Department of Labor, consumer units that report income in the range of the average wages of construction workers report a propensity to consume of 100%.⁵¹ We can use these estimates to calculate the expected tax revenue loss resulting from repeal of prevailing wage laws.

If income would decrease by \$216.5 million to \$346.6 million after repeal and given that the estimated sales tax coverage is 25%, it is estimated that sales tax revenue would decrease at the state level by \$2.3 million to \$3.7 million annually. Additional economic losses would occur for the cities and counties throughout Missouri as a function of their specific tax rate imposed, as discussed below.

State income taxes for Missouri would decrease as well. The current Missouri marginal income tax rate on income over \$9,000 is 6.0%. I have made several conservative assumptions regarding the net increase in income taxes in Missouri:

- (1) 25% would be taxed at an effective tax rate of 6.0% on the lost income;
- (2) 50% would tax at an effective tax rate of 3.0%; and
- (3) 25% would pay no additional Missouri Income tax.

Based upon the estimate of the lost income due, and the estimated overall effective income tax rate of 3.0%, the economic loss in state income taxes is estimated to be between \$6.5 million and \$10.4 million annually.

⁴⁸Tax Foundation. Fiscal Fact April, 2015. State and Local Tax Rates in 2015. Scott Drenkard and Jared Walczak. http://taxfoundation.org/sites/taxfoundation.org/files/docs/TaxFoundation_FF461.pdf

⁴⁹ This income tax rate is the state rate only. Cities and counties throughout Missouri charge impose additional sales taxes in addition to the state rate. This reduced sales tax generation will impact all cities and counties throughout the state depending upon their specific tax rate.

⁵⁰The sales tax base is calculated as the percentage of personal income. Donald Bruce and William F. Fox. National Tax Journal. Volume 53, No.4, Part 3. (December 2000): 1373-1390.

In summary,

- The repeal of the prevailing wage law would cost the residents of Missouri and their families between \$216.5 million and \$346.6 million annually in lost income.
- The repeal of the prevailing wage law would cost the State of Missouri between \$2.3 million and \$3.7 million in lost sales tax collections annually at the state level. These calculations of lost sales tax revenues do not account for the additional lost sales taxes for cities and counties throughout Missouri. Based upon an average local (county and city) sales tax rate in Missouri in 2015 of approximately 3.58%, the lost sales tax collections at the city and county level would be \$1.9 million and \$2.6 million annually statewide.
- The repeal of the prevailing wage law would cost the State of Missouri between \$6.5 million and \$10.4 million annually in lost income tax revenue. This does not take into account the lost earnings tax that is imposed on incomes in Kansas City and St. Louis.
- The total economic impact of repeal of the prevailing wage law in Missouri in 2016 would be a loss of income and revenue between \$227.2 million and \$363.3 million annually.
- The five-year negative economic impact of repeal of the prevailing wage law in Missouri would be between \$1.14 billion and \$1.82 billion for the workers, families, and the public sector in Missouri.

This analysis has shown that the annual economic loss to the citizens of Missouri and the public sector resulting from repeal would be between \$227.2 million and \$363.3 million annually—many times greater than any hypothetical cost savings. It is economically impossible for repeal of prevailing wage legislation to result in construction cost savings sufficient to offset the economic losses that are likely to be suffered due to multiplier effects on income and tax revenue.

⁵¹Consumer Expenditures in 2009. United States Department of Labor. Bureau of Labor Statistics. Table 2301 <ftp://ftp.bls.gov/pub/special.requests/ce/standard/2009/higherincome.txt>.

Given that labor costs are a small and decreasing component of total construction costs, given that construction costs for public construction of schools, libraries, and labs is 21.0% lower than private construction of schools, libraries, and labs (Private - \$260.00 per square foot; Public \$215.70 per square foot), and given the negative multiplier effects of wage cuts, the result hoped for by those opposing prevailing wage statutes is not possible under any plausible assumptions.

Section V.5: Analysis of Impacts of Repeal on Regions

In this section, we will look in detail at our six sub-state aggregations of counties in Missouri. The total level of construction employment in these six aggregations of counties in Missouri was 77,895 in 2013, which represents 74.2% of the construction workforce in the State of Missouri in 2013. The total earnings of the construction sector workers in these six aggregations of counties in Missouri was \$4.5 billion, which represents 80.3% of the total income in the construction sector in the State of Missouri. This sub-state analysis is presented so that decision-makers within those regions can assess the impact of prevailing wage repeal within their own regions. The methodology and associated multipliers can be used to assess any county or region of counties depending upon the urban or urban composition of the region.

A) Region #1: Northwest Missouri

Region 1 contains the Northwest Missouri Counties of Grundy, Harrison, Mercer, Putnam, Schuyler, and Sullivan. Table IV.6 provides the level of construction employment and construction income in those counties as of 2013.⁵² Construction employment was 154 workers in Region 1, or 0.15% of total construction employment in Missouri. Total income in Region 1 was \$4.36 million or 0.08% of total construction earnings in Missouri. The earnings multiplier for the counties in this region is 0.9311.

Based upon calculations made in the previous section, the annual loss in construction worker income ranges from \$1,603 to \$2,554 per worker. Based upon

⁵² Data for each of the sub aggregations of derived from County Business Patterns. http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=BP_2013_00A1&prodType=table

construction employment of 154 construction workers in 2013 in this region, the direct or first order economic loss to construction workers in this region under the assumption that the average loss in income per construction worker is \$1,603 is \$246,862. If the average loss were \$2,554 per worker, the total loss of income resulting from repeal would be \$393,316.

As an offset to this reduction of wage income in the construction sector in this region, there would be a slight increase in overall employment in the construction sector in this region. Based upon elasticity estimates of 0.2, we have calculated that a 3.2%

Table IV.6			
Construction Employment and Income			
Region 1: Northwest Missouri			
	Construction Employment	Construction Income	Average Income
Grundy	96	\$2,688,000	\$28,000
Harrison	NA	N/A	N/A
Mercer	NA	NA	NA
Putnam	N/A	N/A	N/A
Schuyler	N/A	N/A	N/A
Sullivan	58	\$1,671,000	\$28,810.34
Totals	154	\$4,359,000	\$28,305

SOURCE: County Business Patterns. Missouri, 2013

to 5.1% reduction in wage income in the construction sector would generate one to two additional construction job in the region. Assuming that these additional workers would earn \$25,751 to \$26,702 annually, this would generate an additional \$26,325-\$40,448 in construction worker income in this region. This increase would partially offset the decrease of \$246,862 to \$393,316 as a result of the general decline in income in the construction sector in this region. The net direct loss of income would be \$220,537 to \$352868 annually throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 0.9310. The earnings multiplier measures the direct and induced impact of a reduction in earnings in the construction sector. Based upon a direct economic loss of

\$220,537 to \$352,868 annually in the construction sector in this region, the direct and induced economic loss due to repeal of Missouri's prevailing wage statute on this region would be \$205,320 to \$328,520 annually.

In addition to the economic impact on workers and their families in this region as a result of the repeal of the prevailing wage statute, there will be an additional impact on the public revenue base in this region. Prior analyses have shown that the repeal of prevailing wage laws has decreased tax revenues. The reduction in wages paid to people in this region will result in lower taxable income; this will decrease the revenue derived by Missouri from sales taxes. In order to calculate the lost sales tax in this region, we have estimated the average sales tax rate above the state tax rate in this region. For this region, the average sales tax rate above the state rate is 2.130%. Based upon data from the Department of Labor, consumer units that report income in the range of construction workers average income report a propensity to consume of 100%.⁵³

Given that income would decrease \$205,320-\$328,530 annually after repeal of the prevailing wage law and given that the estimated sales tax coverage is conservatively estimated at 25.0%, it is estimated that sales tax revenue would decrease in this region by \$1,093 to \$1,749 annually.

In summary, the economic impact of repeal in the State of Missouri of the prevailing wage law would decrease income throughout this region by a range of \$205,320 to \$328,520 annually, depending upon the assumption made with respect to lost construction income per worker as a result of repeal. In addition, there would be economic losses in the form of reduced sales taxes. The range of lost sales taxes to this region is \$1,093 to \$1,749 annually.

The conclusions with respect to the economic losses in this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between \$205,320 and \$328,520 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$1,093 and \$1,748 in lost sales tax collections annually.

⁵³Consumer Expenditures in 2009. United States Department of Labor. Bureau of Labor Statistics. Table 2301 <ftp://ftp.bls.gov/pub/special.requests/ce/standard/2009/higherincome.txt>.

- The total economic loss due to repeal of the prevailing wage law in this region in 2015 is estimated to be between \$206,414 and \$330,269 annually.

B) Region #2: Northeast Missouri

Region 2 contains the Northeast Missouri Counties of Knox, Lewis, Marion, Monroe, Ralls, and Shelby Counties. Table IV.7 provides the level of construction

Table IV.7			
Construction Employment and Income			
Region 2: Northeast Missouri			
	Construction Employment	Construction Income	Average Income
Know	12	\$394,000	\$32,833.33
Lewis	79	\$2,668,000	\$33,772.15
Marion	532	\$34,860,000	\$65,526.32
Monroe	NA	\$700,000	N/A
Ralls	117	\$4,975,000	\$42,521.37
Shelby	NA	NA	NA
Totals	740	\$43,597,000	\$58,915

SOURCE: County Business Patterns. Missouri, 2013

employment and construction income in those counties as of 2013.⁵⁴ Construction employment was 740 workers in Region 2, or 0.70% of total construction employment in Missouri. Total construction income in Region 2 was \$43.60 million or 0.78% of total construction earnings in Missouri. The earnings multiplier for the counties in this region is 1.058.

Based upon calculations made in the previous section, the annual loss in construction worker income ranges from \$1,603 to \$2,554 per worker. Based upon construction employment of construction workers in 2013 in this region, the direct or first order economic loss to construction workers in this region under the assumption that the average loss in income per construction worker is \$1,603 is \$1,186,220. If the average

loss were \$2,554 per worker, the total loss of income resulting from repeal would be \$1,889,960.

As an offset to this reduction of wage income in the construction sector in this region, there would be a slight increase in overall employment in the construction sector in this region. Based upon elasticity estimates of 0.2, we have calculated that a 3.2% to 5.1% reduction in wage income in the construction sector would generate between five and eight additional construction job in the region.

Assuming that these additional workers would earn \$56,361 to \$57,312 annually, this would generate an additional \$271,504 to \$425,400 in construction worker income in this region. This increase would partially offset the decrease of \$1,198,220 to \$1,889,960 as a result of the general decline in income in the construction sector in this region. The net direct loss of income would be \$914,716 to \$1,464,560 annually throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.058. The earnings multiplier measures the direct and induced impact of a reduction in earnings in the construction sector. Based upon a direct economic loss of \$914,716 to \$1,464,560 annually in the construction sector in this region, the direct and induced economic loss due to repeal of Missouri's prevailing wage statute on this region would be \$967,769 to \$1,549,905 annually.

In addition to the economic impact on workers and their families in this region as a result of the repeal of the prevailing wage statute, there will be an additional impact on the public revenue base in this region. Prior analyses have shown that the repeal of prevailing wage laws has decreased tax revenues. The reduction in wages paid to people in this region will result in lower taxable income; this will decrease the revenue derived by Missouri from sales taxes. In order to calculate the lost sales tax in this region, we have estimated the average sales tax rate above the state tax rate in this region. For this region, the average sales tax rate above the state rate is 2.462%. Based upon data from

⁵⁴ Data for each of the sub-state aggregations of counties are derived from the U.S. Department of Commerce. County Business Patterns. <http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl>.

the Department of Labor, consumer units that report income in the range of construction workers average income report a propensity to consume of 100%.⁵⁵

Given that income would decrease \$967,769 to \$1,549,505 annually after repeal of the prevailing wage law and given that the estimated sales tax coverage is conservatively estimated at 25.0%, it is estimated that sales tax revenue would decrease in this region by \$5,956 to \$9,596 annually.

In summary, the economic impact of repeal in the State of Missouri of the prevailing wage law would decrease income throughout this region by a range of \$967,769 to \$1,549,505 annually, depending upon the assumption made with respect to lost construction income per worker as a result of repeal. In addition, there would be economic losses in the form of reduced sales taxes. The range of lost sales taxes to this region is \$5,956 to \$9,536 annually.

The conclusions with respect to the economic losses in this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between \$967,769 and \$1,549,505 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$5,956 and \$9,536 in lost sales tax collections annually.
- The total economic loss due to repeal of the prevailing wage law in this region in 2015 is estimated to be between \$973,725 and \$1,559,041 annually.

C) Region #3: Southwest Missouri

Region 3 contains the Southwest Missouri Counties of Dallas, Laclede, Pulaski, Webster, and Wright Counties. Table IV.8 provides the level of construction

⁵⁵Consumer Expenditures in 2009. United States Department of Labor. Bureau of Labor Statistics. Table 2301 <ftp://ftp.bls.gov/pub/special.requests/ce/standard/2009/higherincome.txt>.

Table IV.8			
Construction Employment and Income			
Region 3: Southwest Missouri			
	Construction Employment	Construction Income	Average Income
Dallas	74	\$2,067,000	\$27,932
Laclede	224	\$8,999,000	\$40,174
Pulski	236	\$8,378,000	\$35,500
Webster	366	\$11,927,000	\$32,587
Wright	155	\$5,358,000	\$34,568
Totals	1,055	\$36,729,000	\$34,814

SOURCE: County Business Patterns. Missouri, 2013.

employment and construction income in those counties as of 2013.⁵⁶ Construction employment was 1,055 workers in Region 3, or 1.00% of total construction employment in Missouri. Total construction income in Region 3 was \$36.7 million or 0.65% of total construction earnings in Missouri. The earnings multiplier for the counties in this region is 1.2080.

Based upon calculations made in the previous section, the annual loss in construction worker income ranges from \$1,603 to \$2,554 per worker. Based upon construction employment of construction workers in 2013 in this region, the direct or first order economic loss to construction workers in this region under the assumption that the average loss in income per construction worker is \$1,603 is \$1,691,165. If the average loss were \$2,554 per worker, the total loss of income resulting from repeal would be \$2,694,470.

As an offset to this reduction of wage income in the construction sector in this region, there would be a slight increase in overall employment in the construction sector in this region. Based upon elasticity estimates of 0.2, we have calculated that a 3.4% to a 5.1% reduction in wage income in the construction sector would generate between seven and eleven additional construction job in the region. Assuming that these additional workers would earn \$32,260 to \$33,211 annually, this would generate an additional

\$224,302-\$347,139 in construction worker income in this region. This increase would partially offset the decrease of \$1,691,165 to \$2,694,470 as a result of the general decline in income in the construction sector in this region. The net direct loss of income would be \$1,466,863 to \$2,347,331 annually throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.2080. The earnings multiplier measures the direct and induced impact of a reduction in earnings in the construction sector. Based upon a direct economic loss of \$1,466,863 to \$2,347,311 annually in the construction sector in this region, the direct and induced economic loss due to repeal of Missouri's prevailing wage statute on this region would be \$1,771,970 to \$2,835,576 annually.

In addition to the economic impact on workers and their families in this region as a result of the repeal of the prevailing wage statute, there will be an additional impact on the public revenue base in this region. Prior analyses have shown that the repeal of prevailing wage laws has decreased tax revenues. The reduction in wages paid to people in this region will result in lower taxable income; this will decrease the revenue derived by Missouri from sales taxes. In order to calculate the lost sales tax in this region, we have estimated the average sales tax rate above the state tax rate in this region. For this region, the average sales tax rate above the state rate is 1.321%. Based upon data from the Department of Labor, consumer units that report income in the range of construction workers average income report a propensity to consume of 100%.⁵⁷

Given that income would decrease \$1,771,970-\$2,835,576 annually after repeal of the prevailing wage law and given that the estimated sales tax coverage is conservatively estimated at 25.0%, it is estimated that sales tax revenue would decrease in this region by \$5,852 to \$9,364 annually.

In summary, the economic impact of repeal in the State of Missouri of the prevailing wage law would decrease income throughout this region by a range of \$1,771,970 to \$2,835,576 annually, depending upon the assumption made with respect to lost construction income per worker as a result of repeal. In addition, there would be

⁵⁶ Data for each of the sub-state aggregations of counties are derived from the U.S. Department of Commerce. County Business Patterns. <http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl>.

⁵⁷ Consumer Expenditures in 2009. United States Department of Labor. Bureau of Labor Statistics. Table 2301 <ftp://ftp.bls.gov/pub/special.requests/ce/standard/2009/higherincome.txt>.

economic losses in the form of reduced sales taxes. The range of lost sales taxes to this region is \$5,852 to \$9,364 annually.

The conclusions with respect to the economic losses in this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between \$1,771,970 and \$2,835,576 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$5,852 and \$9,364 in lost sales tax collections annually.
- The total economic loss due to repeal of the prevailing wage law in this region in 2015 is estimated to be between \$1,777,822 and \$2,844,940 annually.

D) Region #4: Southeast Missouri

Region 4 contains the Southeast Missouri Counties of Bollinger, Cape Girardeau, New Madrid, Perry, Scott, and Stoddard Counties. Table IV.9 provides the level of construction employment and construction income in those counties as of 2013.⁵⁸

Table IV.9			
Construction Employment and Income			
Region 4: Southeast Missouri			
	Construction Employment	Construction Income	Average Income
Bollinger	79	\$2,310,000	\$29,241
Cape Girardeau	1,777	\$84,067,000	\$47,308
New Madrid	141	\$5,230,000	\$37,092
Perry	538	\$31,575,000	\$58,690
Scott	764	\$33,749,000	\$44,174
Stoddard	426	\$12,836,000	\$30,131
Totals	3,725	\$169,767,000	\$45,575
SOURCE: County Business Patterns. Missouri, 2013.			

⁵⁸ Data for each of the sub-state aggregations of counties are derived from the U.S. Department of Commerce. County Business Patterns. <http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl>.

Construction employment was 3,725 workers in Region 4, or 3.55% of total construction employment in Missouri. Total construction income in Region 4 was \$169.8 million or 3.02% of total construction earnings in Missouri. The earnings multiplier for the counties in this region is 1.2097

Based upon calculations made in the previous section, the annual loss in construction worker income ranges from \$1,603 to \$2,554 per worker. Based upon construction employment of construction workers in 2013 in this region, the direct or first order economic loss to construction workers in this region under the assumption that the average loss in income per construction worker is \$1,547 is \$5,971,175. If the average loss were \$2,321 per worker, the total loss of income resulting from repeal would be \$9,513,650.

As an offset to this reduction of wage income in the construction sector in this region, there would be a slight increase in overall employment in the construction sector in this region. Based upon elasticity estimates of 0.2, we have calculated that a 3.2% to a 5.1% reduction in wage income in the construction sector would generate between twenty-four and thirty-eight additional construction job in the region. Assuming that these additional workers would earn \$43,021 to \$43,972 annually, this would generate an additional \$1,048,580-\$1,634,532 in construction worker income in this region. This increase would partially offset the decrease of \$5,971,175 to \$9,513,650 as a result of the general decline in income in the construction sector in this region. The net direct loss of income would be \$4,922,595 to \$7,879,118 annually throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.2097. The earnings multiplier measures the direct and induced impact of a reduction in earnings in the construction sector. Based upon a direct economic loss of \$4,922,595 to \$7,879,118 annually in the construction sector in this region, the direct and induced economic loss due to repeal of Missouri's prevailing wage statute on this region would be \$5,954,863 to \$9,531,369 annually.

In addition to the economic impact on workers and their families in this region as a result of the repeal of the prevailing wage statute, there will be an additional impact on the public revenue base in this region. Prior analyses have shown that the repeal of prevailing wage laws has decreased tax revenues. The reduction in wages paid to people

in this region will result in lower taxable income; this will decrease the revenue derived by Missouri from sales taxes. In order to calculate the lost sales tax in this region, we have estimated the average sales tax rate above the state tax rate in this region. For this region, the average sales tax rate above the state rate is 2.169%. Based upon data from the Department of Labor, consumer units that report income in the range of construction workers average income report a propensity to consume of 100%.⁵⁹

Given that income would decrease \$5,954,863-\$9,531,369 annually after repeal of the prevailing wage law and given that the estimated sales tax coverage is conservatively estimated at 25.0%, it is estimated that sales tax revenue would decrease in this region by \$32,293 to \$51,688 annually.

In summary, the economic impact of repeal in the State of Missouri of the prevailing wage law would decrease income throughout this region by a range of \$5,954,863 to \$9,531,369 annually, depending upon the assumption made with respect to lost construction income per worker as a result of repeal. In addition, there would be economic losses in the form of reduced sales taxes. The range of lost sales taxes to this region is \$32,293 to \$51,688 annually.

The conclusions with respect to the economic losses in this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between \$5,954,863 and \$9,531,369 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$32,293 and \$51,688 in lost sales tax collections annually.
- The total economic loss due to repeal of the prevailing wage law in this region in 2015 is estimated to be between \$5,987,156 and \$5,583,057 annually.

E) Region #5: Kansas City Missouri MSA Counties

Region 5 contains the Kansas City MSA Missouri Counties of Bates, Buchanan, Caldwell, Cass, clay, Clinton, Jackson, Lafayette, Platte, and Ray. Table IV.10 provides

⁵⁹Consumer Expenditures in 2009. United States Department of Labor. Bureau of Labor Statistics. Table 2301 <ftp://ftp.bls.gov/pub/special.requests/ce/standard/2009/higherincome.txt>.

the level of construction employment and construction income in those counties as of 2013.⁶⁰

Construction employment was 25,525 workers in Region 5, or 24.3% of total construction employment in Missouri. Total construction income in Region 5 was \$1.55 billion or 27.5% of total construction earnings in Missouri. The earnings multiplier for the counties in this region is 1.3687.

Table IV.10			
Construction Employment and Income			
Region 5: Kansas City MSA Counties			
	Construction Employment	Construction Income	Average Income
Bates	105	\$2,794,000	\$26,610
Buchanan	1,694	\$114,357,000	\$67,507
Caldwell	NA	NA	NA
Cass	1,373	\$64,635,000	\$47,076
Clay	3,071	\$167,684,000	\$54,602
Clinton	167	\$5,896,000	\$35,305
Jackson	17,128	\$1,089,335,000	\$63,600
Lafayette	416	\$15,102,000	\$36,303
Platte	1,393	\$79,815,000	\$57,297
Ray	178	\$5,622,000	\$31,584
Totals	25,525	\$1,545,240,000	\$60,538
SOURCE: County Business Patterns. Missouri, 2013.			

Based upon calculations made in the previous section, the annual loss in construction worker incomes range from \$1,603 to \$2,554 per worker. Based upon construction employment of construction workers in 2013 in this region, the direct or first order economic loss to construction workers in this region under the assumption that the average loss in income per construction worker is \$1,603 is \$40,916,575. If the average

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⁶⁰ Data for each of the sub-state aggregations of counties are derived from the U.S. Department of Commerce. County Business Patterns. <http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl>.

loss were \$2,554 per worker, the total loss of income resulting from repeal would be \$65,190,850.

As an offset to this reduction of wage income in the construction sector in this region, there would be a slight increase in overall employment in the construction sector in this region. Based upon elasticity estimates of 0.2, we have calculated that a 3.2% to a 5.1% reduction in wage income in the construction sector would generate between 163 and 260 additional construction job in the region. Assuming that these additional workers would earn \$57,984 to \$58,935 annually, this would generate an additional \$9,630,265-\$15,095,951 in construction worker income in this region. This increase would partially offset the decrease of \$40,916,575 to \$65,190,850 as a result of the general decline in income in the construction sector in this region. The net direct loss of income would be \$31,286,310 to \$50,094,888 annually throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.3687. The earnings multiplier measures the direct and induced impact of a reduction in earnings in the construction sector. Based upon a direct economic loss of \$31,286,310 to \$50,094,888 annually in the construction sector in this region, the direct and induced economic loss due to repeal of Missouri's prevailing wage statute on this region would be \$42,821,573 to \$68,564,888 annually.

In addition to the economic impact on workers and their families in this region as a result of the repeal of the prevailing wage statute, there will be an additional impact on the public revenue base in this region. Prior analyses have shown that the repeal of prevailing wage laws has decreased tax revenues. The reduction in wages paid to people in this region will result in lower taxable income; this will decrease the revenue derived by Missouri from sales taxes. In order to calculate the lost sales tax in this region, we have estimated the average sales tax rate above the state tax rate in this region. For this region, the average sales tax rate above the state rate is 1.714%. Based upon data from the Department of Labor, consumer units that report income in the range of construction workers average income report a propensity to consume of 100%.⁶¹

⁶¹Consumer Expenditures in 2009. United States Department of Labor. Bureau of Labor Statistics. Table 2301 <ftp://ftp.bls.gov/pub/special.requests/ce/standard/2009/higherincome.txt>.

Given that income would decrease \$42,821,573-\$68,564,888 annually after repeal of the prevailing wage law and given that the estimated sales tax coverage is conservatively estimated at 25.0%, it is estimated that sales tax revenue would decrease in this region by \$183,490 to \$293,801 annually.

Because a one percent earnings tax is assessed in Kansas City, we have calculated the lost earnings tax based upon the percentage of construction income paid in this region that would be subject to the Kansas City tax. Based on our estimates, we calculate the lost earnings tax for Kansas City would be between \$428,214 and \$685,649 annually.

In summary, the economic impact of repeal in the State of Missouri of the prevailing wage law would decrease income throughout this region by a range of \$42,821,573 to \$68,564,888 annually, depending upon the assumption made with respect to lost construction income per worker as a result of repeal. In addition, there would be economic losses in the form of reduced sales taxes. The range of lost sales taxes to this region is \$183,490 to \$293,801 annually. The range of lost earnings tax to the region is \$428,216 to \$685,649 annually

The conclusions with respect to the economic losses in this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between \$42,821,573 and \$68,564,888 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$183,490 and \$293,801 in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost this region between \$428,216 and \$685,649 million annually in lost earnings tax collections
- The total economic loss due to repeal of the prevailing wage law in this region in 2015 is estimated to be between \$43,433,278 and \$69,544,377 annually.

F) Region #6: St. Louis Missouri MSA Counties

Region 6 contains the Kansas City MSA Missouri Counties of Franklin, Jefferson, Lincoln, St. Charles, St. Louis, St. Louis City, Warren, and Washington. Table IV.11

provides the level of construction employment and construction income in those counties as of 2013.⁶²

Construction employment was 46,696 workers in Region 5, or 44.5% of total construction employment in Missouri. Total construction income in Region 5 was \$2.71 billion or 43.8% of total construction earnings in Missouri. The earnings multiplier for the counties in this region is 1.3179

Table IV.10			
Construction Employment and Income			
Region 6: St. Louis MSA Counties			
	Construction Employment	Construction Income	Average Income
Franklin	2,634	\$120,265,000	\$45,659
Jefferson	3,436	\$161,935,000	\$47,129
Lincoln	737	\$39,965,000	\$54,227
St. Charles	6,567	\$349,448,000	\$53,213
St Louis MSA	24,643	\$1,512,032,000	\$61,357
St. Louis City	8,076	\$505,927,000	\$62,646
Warren	452	\$16,625,000	\$36,781
Washington	151	\$4,758,000	\$31,510
Totals	46,696	\$2,710,955,000	\$58,055.40

SOURCE: County Business Patterns. Missouri, 2013

Based upon calculations made in the previous section, the annual loss in construction worker income ranges from \$1,603 to \$2,554 per worker. Based upon construction employment of construction workers in 2013 in this region, the direct or first order economic loss to construction workers in this region under the assumption that the average loss in income per construction worker is \$1,603 is \$74,853,688. If the average loss were \$2,554 per worker, the total loss of income resulting from repeal would be \$119,261,584.

⁶² Data for each of the sub-state aggregations of counties are derived from the U.S. Department of Commerce. County Business Patterns. <http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl>.

As an offset to this reduction of wage income in the construction sector in this region, there would be a slight increase in overall employment in the construction sector in this region. Based upon elasticity estimates of 0.2, we have calculated that a 3.2% to 5.1% reduction in wage income in the construction sector would generate between 299 and 476 additional construction job in the region. Assuming that these additional workers would earn \$55,501 to \$56,452 annually, this would generate an additional \$16,875,561-\$26,434,254 in construction worker income in this region. This increase would partially offset the decrease of \$74,853,688 to \$119,261,584 as a result of the general decline in income in the construction sector in this region. The net direct loss of income would be \$57,978,127 to \$92,827,330 annually throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.3179. The earnings multiplier measures the direct and induced impact of a reduction in earnings in the construction sector. Based upon a direct economic loss of \$57,978,127 to \$92,827,330 annually in the construction sector in this region, the direct and induced economic loss due to repeal of Missouri's prevailing wage statute on this region would be \$76,409,374 to \$122,337,138 annually.

In addition to the economic impact on workers and their families in this region as a result of the repeal of the prevailing wage statute, there will be an additional impact on the public revenue base in this region. Prior analyses have shown that the repeal of prevailing wage laws has decreased tax revenues. The reduction in wages paid to people in this region will result in lower taxable income; this will decrease the revenue derived by Missouri from sales taxes. In order to calculate the lost sales tax in this region, we have estimated the average sales tax rate above the state tax rate in this region. For this region, the average sales tax rate above the state rate is 2.979%. Based upon data from the Department of Labor, consumer units that report income in the range of construction workers average income report a propensity to consume of 100%.⁶³

Given that income would decrease \$76,409,374-\$122,337,138 annually after repeal of the prevailing wage law and given that the estimated sales tax coverage is

⁶³Consumer Expenditures in 2009. United States Department of Labor. Bureau of Labor Statistics. Table 2301 <ftp://ftp.bls.gov/pub/special.requests/ce/standard/2009/higherincome.txt>.

conservatively estimated at 25.0%, it is estimated that sales tax revenue would decrease in this region by \$569,011 to \$911,029 annually.

Because a one percent earnings tax is assessed in St. Louis City, we have calculated the lost earnings tax based upon the percentage of construction income paid in this region that would be subject to the St. Louis City tax. Based on our estimates, we calculate the lost earnings tax for St. Louis City would be between \$764,094 and \$1,223,371 annually.

In summary, the economic impact of repeal in the State of Missouri of the prevailing wage law would decrease income throughout this region by a range of \$76,709,374 to \$122,337,138 annually, depending upon the assumption made with respect to lost construction income per worker as a result of repeal. In addition, there would be economic losses in the form of reduced sales taxes. The range of lost sales taxes to this region is \$569,011 to \$911,029 annually. The ranges of lost earnings tax to the region is \$764,094 to \$1,223,371 annually.

The conclusions with respect to the economic losses in this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between \$76,409,374 and \$122,337,138 annually in lost income.
- The repeal of the prevailing wage law would cost this region between \$569,011 and \$911,029 in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost this region between \$764,094 and \$1,223,371 annually in lost earnings tax collections
- The total economic loss due to repeal of the prevailing wage law in this region in 2015 is estimated to be between \$77,742,479 and \$124,471,539 annually.

Chapter V

Impacts of Prevailing Wage Laws: Upon Benefits, Training, Safety, Productivity and In-State Contractors

CHAPTER SUMMARY:

- Prevailing wage laws promote better compensation packages for workers.
- Prevailing wage laws have helped to prevent erosion of compensation for construction workers:
- Real average total benefits per construction worker have increased while for states that have repealed their prevailing wage laws, real average total benefits have decreased.
- Real average pension benefits have increased in prevailing wage states; for states that repealed their prevailing wage law, real average pension benefits have decreased.
- Real average health care benefits have increased in prevailing wage states; for states that repealed their prevailing wage law, real average health care benefits have decreased.
- Repeal of prevailing wage laws or the absence of prevailing wage laws encourages small, inexperienced construction firms to enter the sector. These smaller and more inexperienced firms have poorer safety records than do large ones.
- Employee turnover increases in states that do not have prevailing wage statutes. Lower construction wages and benefits, lack of apprenticeship training, and other factors lead to a less skilled workforce that is more prone to injuries.
- In 2010, Missouri reported one of the lowest number of injuries per worker of all reporting states in our region; Missouri also has the strongest commitment to job training and apprenticeship programs. Missouri reported the one of the lowest number of severe injuries (e.g. workdays

lost) of all reporting states in the region. Repeal of the state's prevailing wage laws would endanger Missouri's superior safety record.

- Union labor productivity is higher than non-union labor.
- Value added per worker in the prevailing wage states in the North Central States Region is, on average, higher than non-prevailing wage states in the North Central States Region.
- No correlation between average cost per mile and average wage rate in highway construction over a 20 year period.
- Implausible that repeal of prevailing wage statutes would decrease construction costs by the magnitude claimed by opponents of prevailing wage statutes, given productivity effects in construction.

A. Health Care and Pension Benefits

The provision of fringe benefits (e.g., health and pension benefits) is substantially lower in the construction sector. The primary reasons for this lack of fringe benefit provision in the construction sector include the smaller size of firms and the transitory nature of construction employment. Estimates of the rate of health insurance and pension coverage for construction workers show relatively low coverage compared with that of the rest of the population. In 2014, the construction industry provided less insurance for workers than any sector in the economy; only 36.4% of private sector construction establishments offered health insurance for their employees compared to 61.8% in manufacturing, 50.2% in professional services, and 47.5% across all private sector establishments.⁶⁴ In the four prevailing wage states in the North Central Plains region (Iowa, North Dakota, South Dakota, and Kansas), the average number of private sector establishments in the construction sector offering health insurance was 20.9%. In the eight prevailing wage states in the North Central States Region, the average percentage of private sector establishments in the construction sector offering health insurance was 30.8%, or 47.4% higher in the prevailing wage states.

With respect to pensions, Petersen (2000) reports that pension coverage for construction workers is about 30%, while the pension rate coverage for the rest of the employed population is approximately 50%.⁶⁵ These very low coverage rates are related to the specific nature of construction employment.

The construction industry is primarily composed of small employers that employ a work force that is transitory in nature. According to the United States Census Bureau in their County Business Patterns for 2013, there were 658,483 construction firms in the United States. In the construction sector, over 60.0% of all construction firms have 4 or fewer employees; in the construction sector, the percentage of construction firms with 20 or fewer employees is approximately 90% of the total construction workforce. The costs

⁶⁴ Agency for Healthcare Research and Quality. Center for Financing, Access and Cost Trends. 2010 Medical Expenditure panel Survey – Insurance Component. Table V.A.2 (2014)

⁶⁵ Jeffrey S. Petersen. *Health Care and Pension Benefits for Construction Benefits: The Role of Prevailing Wage Laws*. Industrial Relations, Volume 39, No. 2 (April, 2000): 246-264.

of provision of fringe benefits for smaller size firms is higher than for larger size firms that have a larger pool of employees over which to spread the costs of coverage.

In addition, it is not uncommon for a construction worker to work for a large number of different employers during his career. As a result of this short-term relationship, certain costs are created in the construction labor market. These costs that are associated with the transitory nature of the construction workforce that decrease the incentive for firms to provide benefits to their workforce. Because the construction labor market is relatively unstable and short term in nature, employees have an incentive to demand compensation weighted more heavily toward current wage compensation and less to the longer-term value of deferred benefits. This is also consistent with the incentives of construction employers.

Although low offer rates of health insurance are concentrated in smaller sized firms (the vast majority of construction firms are small), there is increasing empirical evidence that the uninsured rate is increasing in larger firms. Empirical research has shown four factors that have contributed to this change in the labor market: (1) increase in low income workers, (2) decreases in unionization rates, (3) a shift away from manufacturing jobs to more service oriented jobs, and (4) an increase in the number of small entities within a larger company.

The lack of health coverage exacts a large toll on the uninsured in our county – avoidable deaths, poorly managed chronic conditions, and underutilized life-savings medical procedures. In addition to the direct toll the lack of health coverage takes on the uninsured, there are other substantial economic consequences as well. The economic costs of being uninsured or under-insured are borne by individuals, employers, the health system, taxpayers, and the public at large. The costs borne by the uninsured include a greater probability of death, reduced preventive care, and a smaller likelihood of early detection of medical problems.⁶⁶ Employers also bear a portion of the burden of uninsured workers; when employees miss work, leave their job, or retire early for health

⁶⁶ The Commonwealth Fund reports that the lack of health insurance leads to 18,000 deaths per year. The Commonwealth Fund. The Costs and Consequences of Being Uninsured. Commonwealth Fund Publication #663.

reasons, the employers bear an economic cost.⁶⁷ The health system also bears an economic cost as well. The health system also bears an economic cost as well. According to the Centers for Medicare and Medicaid Services, 55% of emergency care goes uncompensated. Health care costs for both the full-year and part-year uninsured have been estimated to total \$176 billion dollars per year - \$86 billion of which will be incurred when they are uninsured. Since 2000, hospitals have provided more than \$502 billion in uncompensated care to their patients. These findings show that the uninsured in the employed population are exacting a high cost on those individuals as well as employers, the general health delivery system and taxpayers and the public at large.

It has been reported that benefit payments to union construction workers are substantially higher than to non-union workers (Petersen, 2000).⁶⁸ Petersen reported that although unionized construction workers account for only 20% of the workforce in the construction sector, unionized benefit programs account for 88% of all benefits in the industry. It is clear that union membership is a primary determinant of the probability of receiving benefits in the construction sector.

Empirical analysis has shown that the decline in unionization rates was the single most important contributing factor to the decrease in the insured across all firm size categories (The Commonwealth Fund, 2002; Buchmueller, DiNardo, and Valletta, 2001). For large firms, the two primary factors contributing to the increase in the uninsured rate over the period 1987-2001 was unionization decline and manufacturing decline; a decline in unionization contributed 38% of the increase in the numbers of uninsured while manufacturing's decline contributed 18% to the increase in the numbers of uninsured over this period.⁶⁹ Buchmueller, et al (2001) shows that declining unionization between 1983-1997 explains 20-35% of the decline in employee health coverage.⁷⁰

⁶⁷ In a survey by The Commonwealth Fund, they reported that 16% of uninsured workers missed work because of a dental problem, while only 8% of those who had health insurance reported missing work.

⁶⁸ Petersen derived these calculations from Form 5500 series of the Internal Revenue Service. He calculated the benefits paid for union construction was \$11.6 billion for 906,191 workers. The total benefits paid for nonunion construction was \$1.6 billion for 3,623,582 workers.

⁶⁹ The Commonwealth Fund. The Growing Share of Uninsured Workers Employed by Large Firms. October 2003.

⁷⁰ Thomas C. Buchmueller, John DiNardo, and Robert G. Valletta. Union Effects on Health Insurance Provision and Coverage in the United States. Working Paper 8238. National Bureau of Economic Research. April 2001.

In addition, their study found that the union effect on retiree coverage increased substantially between 1988-1993. They report that union employees are about twice as likely as non-union employees to be eligible for a retirement health plan for which their employers pay the full costs.

In a 2007 study, it has been found that “union workers are more likely than non-union workers to have health benefits” (Fronstin 2007). This study reports that:

“Between 2003 and 2007, there was a 3 percentage point decline in the likelihood that a union worker had coverage through his or her own job. A similar decline was not experienced among nonunion workers. Specifically, in 2007, 82.7 percent of union workers had coverage from their own job down from 86 percent in 2003. Most of the decline in coverage from a union worker’s own job was offset by an increase in the percentage of workers covered as a dependent on someone else’s employment-based health plan. Between 2003 and 2007, the percentage of union workers with coverage as a dependent increased from 9.4 percent to 11.5 percent. There was no comparable change for nonunion workers.”

With respect to the construction industry, this study found that there existed a 59% difference between union and nonunion workers in the construction, extraction, and maintenance occupations. This study found that more than 83% of all union workers had health benefits through their own job, compared with 58% of nonunion workers.⁷¹

In an analysis of pension plan participation in the union and non-union sector, the Bureau of Labor Statistics confirms the evidence that union workers have higher rates of access and participation in pension plans.⁷² In 2011, the Bureau of Labor Statistics reported that 93% of civilian union workers have access to pension plans while non-union workers have only 64%.⁷³ They also found that participation in pension plans for civilian union workers was 88%, while it was only 49% with nonunion workers. The Bureau of Labor Statistics study confirms prior evidence that, since 2008, civilian union workers have had greater access and participation in pension plans than do the civilian nonunion workers.⁷⁴

In an analysis of the North Central States Region for the four reporting periods from 1982-2007, we can see a changing shift in the wage-benefit mix between the

⁷¹ Paul Fronstin. *The Relationship between Union Status and Employment Based Health Benefits*. EBRI. Org Notes, Volume 30, No. 10 (October 2009): 15-29.

⁷² Includes defined benefit pension plans and defined contribution retirement plans. Workers are considered as having access or as participating if they have access to or participating in at least one of these plan types.

⁷³ Includes workers in the private nonfarm economy except those in private households, and workers in the publicsector, except the federal government.

⁷⁴ See Bureau of Labor Statistics, National Compensation Survey

prevailing and non-prevailing wage states, in favor of benefits in the prevailing wage states. Secondly, the voluntary benefits paid in prevailing wage states are substantially higher compared with benefits paid in non-prevailing wage states, verifying the results of the Petersen study.⁷⁵

In 1982, the percentage of voluntary benefits to total benefits paid in prevailing wage states versus non-prevailing wage states were similar, with prevailing wage states paying 25.9% of total benefits in the form of voluntary benefits. In non-prevailing wage states, this percentage was 24.8%. In each of the subsequent reporting periods, this differential has widened substantially. In 1997, prevailing wage states paid 40.7% of all fringe benefits in the form of voluntary benefits, while non-prevailing wage states paid only 28.9% of total benefits in the form of voluntary benefits. In 2007, prevailing wage states paid 58.0% in the form of voluntary fringe benefits, while non-prevailing wage states paid on 51.1% of total benefits in the form of voluntary fringe benefits.

An analysis of the 2007 data from the Census of Construction also shows that the prevailing wage states in the North Central States Region paid \$9,620 in voluntary benefits per worker in the construction. For the four non-prevailing wage states in the North Central Region, the total voluntary benefits paid per worker totaled only \$5,627. Voluntary benefits paid per worker in the construction section in 2007 were 71% higher in the prevailing wage states than in non-prevailing wage states in the North Central States Region.

⁷⁵ The Census of Construction reports three categories of benefits. The first reported category is fringe benefits. This represents expenditures made by the employer during the reporting period for legally required and voluntary fringe benefits programs for employees. The second category is legally required benefits. This includes social security contributions, unemployment compensation, workman's compensation, and State temporary disability payments. The third category is voluntary payments. This includes life insurance premiums, pension plans, and insurance premiums for hospital and medical plans, welfare plans, and union negotiated benefits.

B. Skills Training and Apprenticeship.

A U.S. Census Bureau analysis of projected nonfarm wage and salary employment by major industry division for the period 2008-2018 shows that the growth in overall employment is projected to increase 10.6%, or an annual rate of increase of 1.0%; in construction, the growth in employment is projected to increase 18.5%, or an annual rate of increase of 1.7%.⁷⁶ Projected to reach an employment level of 8.8 million in 2010, the construction industry is also one of the economy's top-10 largest sources of employment growth. Real output in the construction sector is projected to increase to \$1.14 trillion by 2018. Coupled with this projected growth in the construction sector over the next decade is the industry's critical shortage of a skilled labor force. For the past decade, there have been predicted and realized shortages of skilled workers in the construction industry.

In a study conducted by the National Center for Construction Education and Research, they found that 92% of national construction firms reported shortages of skilled labor and over 85% said their workforce is not as skilled as it should be in today's market. One of the primary causes of this skilled craftsmen shortage was the push toward more open shop agreements. The general shift of workers out of unions, where training was available, and into the open labor market decreased the availability of a skilled labor pool.

In addition, a major influence on the age composition of the labor force has been the baby-boom generation born between 1946 and 1964. This group has accounted for a large portion of the construction workforce and they are beginning to retire. As a result, a large number of workers will be needed to replace jobs vacated by retirees and jobs created by growth in the construction industry.

A central debate concerning the need for cooperation between unions and management in skills training is the potential for market failure. Because employees in the construction sector are constantly moving from one job to another and from one contractor to another, there is a lack of incentive on the part of employers to invest in

⁷⁶ Bureau of Labor Statistics. "The Employment Projections for 2008-2018." *Monthly Labor Review*. November, 2009. Pages 3-10.

skills training. Because of the unique short-run structure of employment in the construction sector, employers in this sector have the incentive to focus only on the short-run. For example, if a particular employer has a shortage in some skilled craft, the optimal short run solution for the employer is to simply hire that skilled worker away from someone else. It may take three to five years to train a skilled craftsman; the unique short-term nature of employment in the construction sector means that jobs requiring the skilled craftsmen could be gone by the time the training is complete. Therefore, certain institutional structures have been developed in the United States to address this market failure.

In the United States, joint apprenticeship programs have been developed in which contractors contribute a pre-determined amount into a training fund per hour of labor employed.⁷⁷ The contractors provide the training, while trainees accept apprenticeship wages. This approach solves the market failure problem, because all employers share the cost of that training. The apprenticeship programs are either jointly sponsored by unions and contractors according to collective bargaining agreements or by contractors themselves. The Bureau of Apprenticeship training refers to these types of programs as “joint” and “non-joint,” respectively. The thirty-six states that participate in the Department of Labor database of union apprenticeships account for the majority of all apprenticeships in the construction industry.

In an analysis by Cihan Bilginsoy (2003), it is shown that, controlling for the size of the trade, the supply of apprenticeship training is higher in prevailing wage states than in non-prevailing wage states.⁷⁸ In addition, he showed that apprentices complete graduation requirements at a slower rate in states without prevailing wage laws. The cancellation hazard is also higher in non-prevailing wage states. This result indicates that non-prevailing wage states are not as efficient in producing certified skilled workers. A final result of his study was that prevailing wage laws do not tend to lead to exclusion of minorities from training for the skilled trades.

⁷⁷ As a result of these costs contributed per hour of labor employed, the costs of apprenticeship programs are factored into the bid costs of those participating contractors.

⁷⁸ Cihan Bilginsoy, *Wage Regulation and Training: The Impact of State Prevailing Wage Laws on Apprenticeship*. Working Paper No. 2003-08. May 2003.

Ciham Bilginsoy (2005) examined the relationship between prevailing wage regulations and apprenticeship training in the United States. The data clearly showed that prevailing wage states have the highest percentage of apprentices (72%) and the highest percentage of apprentices in joint programs as well (74%). In a regression analysis on this data, Dr. Bilginsoy reported that the prevailing wage law had a strong and statistically significant impact on apprenticeship registrations.

In a 2011 report by the Transportation Equity Network, they examined data from all 50 states and the District of Columbia on the use of on-the-job training programs and apprenticeship programs for women and minorities in the federal highway construction industry.⁷⁹ During the period 2008-2010, they found that four of the top five states in terms of the number of OJT programs and apprenticeships were states from the North Central States Region – Indiana was ranked #1 with 1,573, Illinois was ranked #2 with 1,028, Michigan was ranked 4th with 911 and Wisconsin was ranked 5th with 793. There were no non prevailing wage states in the top ten.

In terms of women participation in training programs, they found that four of the top ten states in terms of percentage increase in OJT and apprenticeship programs from 2008-2010 were prevailing wage states from the North Central States region – Illinois, Minnesota, Indiana, and Michigan. There were no non prevailing wage states in the top ten.

In terms of minority participation in training programs, they found that, once again, four of the top ten states in terms of percentage increases in OJT and apprenticeship programs were prevailing wage states in the North Central States Region – Wisconsin, Illinois, Indiana, and Minnesota.

The top ten states by minorities in OJT and apprenticeship programs in 2008 included four prevailing wage states in the North Central States region; Michigan, Missouri, and Ohio were ranked 1st, 2nd, and 3rd, respectively. The top ten states by women in OJT and apprenticeship programs in 2008 included five prevailing wage states in the North Central States region; Indiana, Michigan, Ohio, Missouri, and Ohio were

⁷⁹ Transportation Equity Network. The Road to Good Jobs: Making Training Work. Boosting Construction Job Access through training and Apprenticeship Programs. October 2011.

ranked 1st, 2nd, 3rd, and 4th, respectively. The State of Missouri was cited as a model of workforce development. Among the key features of the Missouri Model include:

- 20% of workforce hours are devoted to on-the-job training for minorities, women, and low income individuals;
- 0.5% of the total projected budget is invested in pre-apprenticeship training and for recruitment of minorities, women, and low-income individuals.

On the Job Safety – Injuries and Fatalities

On-job accidents have a costly impact on the construction industry in the United States. Work related injuries and illnesses, including fatalities, in the construction sector occur at a rate higher than the rate for all industries, making the construction sector one of the most hazardous sectors in the United States. These costs of injury are borne not only by the construction workers and their families, but also by their employers and society in general. Some of these costs are borne directly in the form of wage replacement and medical payments. However, many of these costs of injury and illness in the construction sector are not compensated directly.⁸⁰ Published estimates of the total direct and indirect costs of nonfatal injuries in all industries in the United States are estimated at \$155 billion or 3% of gross domestic product.

There are a number of reasons why prevailing wage regulations are positively correlated with apprenticeship training and higher wages and why the absence of prevailing wage regulations tends to increase injuries in the construction sector.

- Repeal of prevailing wage laws or the absence of prevailing wage laws induce small, inexperienced construction firm entrants into the sector. These smaller and more inexperienced firms simply have poorer safety records than large ones.
- Employee turnover increases in states that do not have prevailing wage statutes. Lower construction wages and benefits, lack of apprenticeship

⁸⁰ Some of the more important indirect costs of an injury on a construction site are (1) loss of productivity, (2) production delays, (3) damaged equipment and the costs of replacing or repairing the equipment, (4) lawsuits, (5) increased workers compensation claims, and (6) other indirect costs.

training, and other factors lead to a less skilled workforce that is more prone to injuries.

Annually, the various states in conjunction with the U.S. Department of Labor conduct an occupational injury and illness survey. These surveys are reported for a number of different industries, including construction. The average number of injuries per worker in construction in the prevailing wage states in the North Central States Region that report is 4.86 per 100 workers, while the number of injuries in non-prevailing wage states that report is 5.32 per 100 workers. For the State of Missouri, the total cases of injuries and illness reported in 2010 was 4.2 per 100 workers; for the two non-prevailing wage states reporting, the total number of cases of injuries and illnesses is 5.32 per 100 workers. Missouri, a prevailing wage state with a strong commitment to job training and apprenticeship programs in the region, has one of the lowest incident rate of non-fatal injuries and illnesses; it was 4.2 per 100 workers in 2010. This reinforces the argument that increased training leads to fewer injuries in the workplace and decreases costs for workers, employers and taxpayers.

For the State of Missouri, the total number of lost workday cases in 2010 was 1.64 per 100 workers. This was the lowest incidence rate in the North Central States Region. For 2010, the two non-prevailing wage states that report that number of total lost workday cases was 2.3 and 1.8 per 100 workers in Iowa and Kansas, respectively. For the State of Missouri, the total cases of lost workday cases with days away from work in 2010 was 0.8 per 100 workers the lowest in the North Central Region.

Prevailing wage laws and their encouragement of a skilled and trained workforce promote safety in the industry. The absence of workplace safety imposes significant costs on the workers, their families, and the citizens of those states. Prevailing wages laws help to promote workplace safety by encouraging training, retention of skilled workers, and more experienced employees.

D. Productivity in the Construction Sector

Labor productivity is a critical component to the long run economic health of the United States. Given the size of the construction industry in the United States, productivity changes within the construction sector have large direct impacts on the national productivity and economic well being of the United States. In 2010, new construction put in place accounted for a 5.2% of the Gross Domestic Product in the United States.⁸¹

Real wages in construction have decreased over the past 30 years more rapidly than have the wages for most Americans. There are a number of reasons for this downward trend in real wages in the construction sector. One of the most important reasons for the decline is the dramatic decrease in the union labor force and an increasing percent of open and merit shop work. From the 1970s to the 1990s, union labor has decreased from approximately 32% of the construction workforce to less than 20%. In 2000, 17.5% of the construction workforce was members of unions; it has decreased to 13.1% of the construction workforce in 2010.⁸² These lower real wages paid in the construction sector may, in fact, this may be understated due to the transitory and seasonal nature of employment in the construction industry. In addition, older craftsmen have retired, and younger entrants entering the labor pool have chosen careers other than construction due to the lower real wages being paid, creating a skill shortage of craftsmen in the industry that was discussed earlier in this section.

Critics offer a number of arguments against prevailing wage regulations. As stated in Section II, a crucial assumption of the critics of prevailing wage regulations is that prevailing wage laws increase the costs of public construction due the impact of higher wage rates on total construction costs. Implicit in that assumption is that productivity remains constant with lower wage payments to construction workers. Yet, close examination of the wage component in overall costs of construction has shown that wage costs have had a decreasing impact on the total costs of construction. Labor costs

⁸¹ St. Louis Federal Reserve Bank. <http://www.stlouisfed.org/> and United States Census Bureau.

Construction Spending. Total value put in Place, 2010. <http://www.census.gov/const/www/totpage.html>

⁸² U.S. Bureau of Labor Statistics. Union Affiliation data from the Current Population Survey. Series ID LUU0204910500. <http://data.bls.gov/cgi-bin/surveymost>

account for far less than a third of total construction costs and that percent has been decreasing over time. According to the Census of Construction, labor costs including voluntary benefits and required fringe benefits paid to all employees in the construction sector were 26.2% of total costs in 1987, 25.5% in 2002, 24.6% in 2007, and 23.0%.

The Construction Labor Research Council has conducted two studies on wages, productivity and highway construction costs in the 50 states.⁸³ The first study was an analysis of highway construction costs for the period 1980-1993 for all fifty states. The updated analysis was conducted for the period 1994-2002. In their first study, they found that only 20.7% of highway construction costs were labor costs; that had decreased to 20.0% for the period 1994-2002. Critics of prevailing wage legislation assume that a reduction in wages in the construction sector has no impact on the number of hours of labor to be employed and that the productivity of labor is constant. However, empirical evidence, such as the two studies by the Construction labor Research Council clearly indicate that the payment of higher wages attracts a more highly skilled labor force that is more productive. The increase in productivity more than offsets the higher wage rates being paid. With increases in the wage rate, a more highly skilled labor force is utilized that in fact decreases costs of construction.

In a study by Steven Allen of the productivity of unionized workers, he showed that unionized labor productivity is 17-52% higher than non-union labor (Allen, 1984). In addition, the higher wage rates that prevail may induce contractors to substitute capital and other inputs for labor; this would further mitigate the effect of higher labor costs on total construction costs. In an analysis of declining productivity in construction, Allen (1986) stated that the biggest factor in the decline in productivity was a decrease in the skilled workforce in the construction industry. The decline in union membership was also a contributing factor to the decline in productivity in the construction sector. In a study by Dale Belman (1992), the union productivity effect was between 17%-38%.

⁸³Construction Labor Research Council. *Wages Productivity and Highway Construction Costs: 1980-1993. Prepared for Construction Industry Labor-Management Trust, February, 1995* and ⁸³Construction Labor Research Council. *Wages Productivity and Highway Construction Costs: Updated 1994-2002.*

In a report by Dr. Peter Phillips on the effect of prevailing wage regulation on the construction sector in Iowa, it was shown that with a low-wage worker, productivity is higher. Additionally, he also showed that states that have a prevailing wage law have 13-15% higher value added per worker. In our analysis of the North Central States region, we found that the eight states that have a prevailing wage law have 16.2% higher value added per worker than do the four non prevailing wage states

Additionally, we discussed earlier in this section that prevailing wage states pay substantially more in benefits in workers. These benefit plans offered by firms in prevailing wage states enhance productivity as well. Labor market literature suggests that there is an empirical relationship between pension plans and productivity. In a paper by Cornwell and Dorsey (June, 2000), they showed an empirical relationship between defined benefits plans and productivity. The authors showed that reduced turnover and early retirement from defined benefit plans enhance productivity.

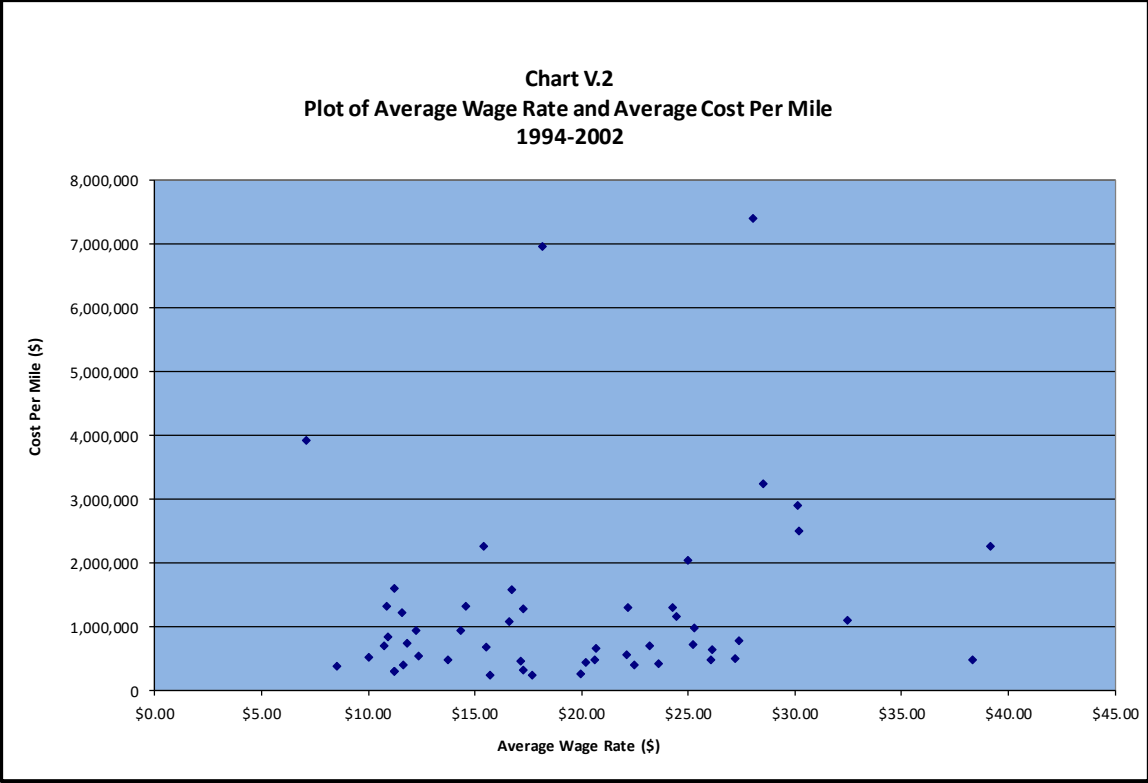
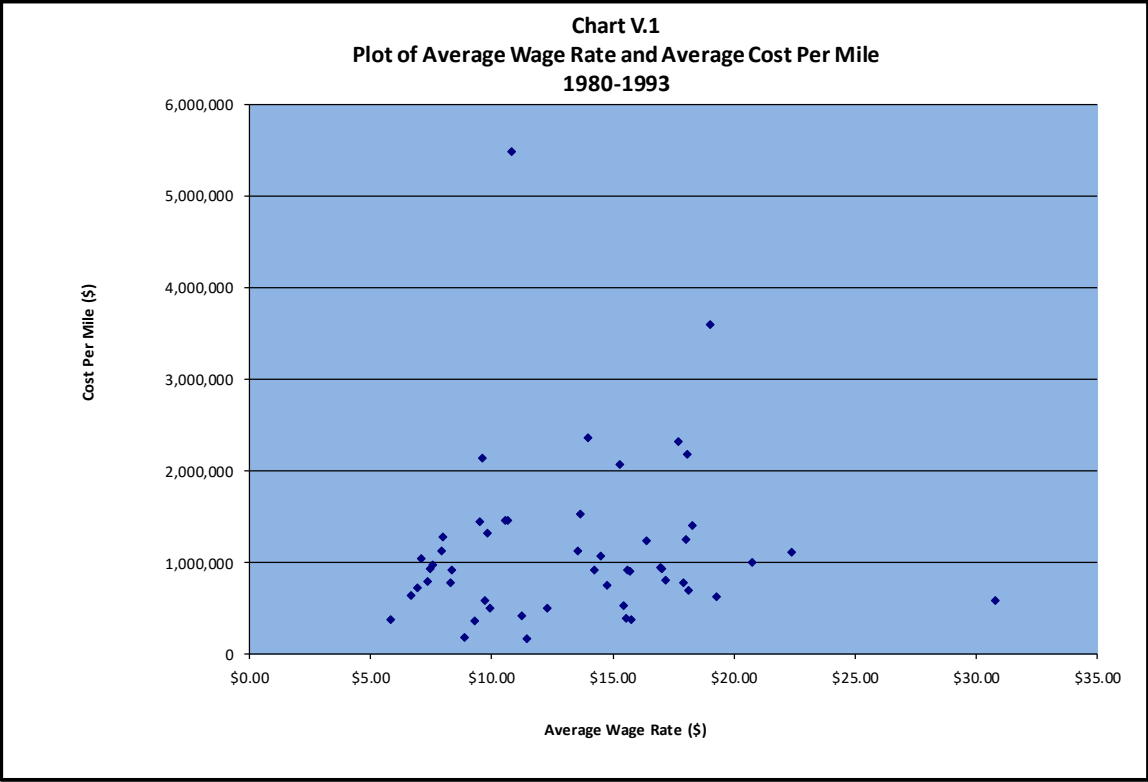
In the two studies conducted by the Construction Labor Research Council by alluded to earlier, they examined productivity and costs for highway construction in the 50 states over a thirteen year period from 1980-1993 and over a nine year period from 1994-2002. Their report showed that higher wage rates resulted in lower highway costs per mile. For example, in the study over the period 1980-1993, the study showed that the total cost per mile in high-wage-states was 11% lower than the per mile cost in low-wage states despite the fact that the wage rate in high-wage-states was more than double the wage rate in the lower wage states (\$18.39 versus \$8.16). The study further showed that labor-hours per mile were 42% less in high-wage states despite the substantially higher wage rate.⁸⁴ In an analysis of average annual construction for states doing more than \$175,000,000 construction work annually from 1980-1993, high wage states saved taxpayers an average of \$136,360 per mile in construction costs.

In an examination of high expenditure states, they found that per mile costs of highway construction in the high wage states was 3.8% lower than the low wage states,

⁸⁴ The low wage rate states were Alabama, Florida, Georgia, Texas, and Virginia. The high wage rate states were California, Illinois, Missouri, New York, Ohio, and Pennsylvania. All of the low wage states, except Texas, never had a prevailing wage statute or repealed the statute prior to the data collection period from 1980 to 1993. All of the high-wage-states have a prevailing wage statute.

despite the fact that the wage rate in high-wage-states was 67% higher in those states⁸⁵. The study concluded that, although the hourly wage rate in the high wage states was 73% more than the low wage states, labor hours were 35% less and the total cost per mile was 4% less. The study shows that productivity in the construction sector is not a constant but that productivity gains resulting from a more highly trained and paid workforce is a critical component in the reduction of overall construction costs to the public sector. Based on these data, we conclude that for the thirteen-year period 1980-93 and the nine-year period 1994-2002, any savings due to lower wages that might have been achieved in the absence of prevailing wage legislation were more than offset by lower productivity that accompanies payment of lower wages. Charts V.1 and V.2 shows a plot of cost per mile (\$) and average wage rate (\$) among the 50 states in highway construction for the period 1980-1993 and 1994-2002 respectively. The coefficient of correlation is a measure of the degree of association between two variables (e.g. average wage rate and average cost per mile). The correlation coefficient of 0.08 for the period 1980-1993 and 0.18 tells us that there is little, if any, correlation between these two variables.

⁸⁵ They defined high expenditure states as those states that had more than \$1 billion dollars in reported highway spending for the nine year period.



The claim made by critics of prevailing wage legislation - that substantial cost savings can be achieved by repeal of the legislation is incorrect. The critics reach such conclusions only because they conduct static analyses, and overstate the contribution made by labor costs to overall construction costs. Decreasing labor costs as a component of overall construction costs, increases in productivity from the payment of higher wages for a more skilled workforce, and the dynamics of the construction industry make the assumptions underlying analysis of construction costs based solely on these static wage differentials implausible. Given the decreasing percentage of labor costs as a percentage of total construction costs over the past 20 years and empirical evidence of productivity increases in the construction sector in response to a higher wage rate, it is implausible to accept the argument of critics that the repeal of the prevailing wage can reduce construction costs by a magnitude of 10-30%. Rather, empirical evidence suggests that the attraction of a more skilled workforce decreases overall costs of construction in the public sector.

Chapter VI

Summary and Conclusions

In this study, we have examined the impact of the prevailing wage law in Missouri in two different and fundamentally important ways. First, using data obtained from the F.W. Dodge Company on construction costs in the Great Plains Region, we have empirically examined the argument of opponents of prevailing wage laws that large construction cost savings can be realized from repeal of the prevailing wage law in Missouri. Secondly, using RIMS II multipliers obtained from the Bureau of Economic Analysis has allowed us to empirically analyze the direct and induced impacts of repeal as a result of the lower wage incomes in the construction sector in Missouri. With them, we have examined the economic impact of repeal of Missouri's prevailing wage law on the construction industry and their families, other industries and their families, and taxpayers and beneficiaries in the State of Missouri. In addition, we have analyzed the economic impacts of RTW laws. The results of this study are clear and indicate the following:

- The prevailing wage law in Missouri is beneficial to construction workers and their families, other workers and their families, taxpayers, and beneficiaries of those state and local tax streams in the State of Missouri.
- The mean cost per square foot of non-residential construction in prevailing wage states from 2011-2015 was \$132.09 (constant 2015 prices). The mean square cost per foot of non-residential construction in non-prevailing wage states from 2011-2015 was \$180.77 (constant 2015 prices). There were no statistically significant differences in mean square foot costs across all types of non-residential construction for prevailing wage states versus non-prevailing wage states.
- There were statistically significant cost differentials between public and private construction projects in both prevailing and non-prevailing wage states.
- There were *no* statistically significant differences in construction costs across thirteen different structure types in the North Central States Region as a result of a state having a prevailing wage statute for the period 2011-2015.

- For elementary, secondary, and other schools/libraries school construction, there is no statistical difference in the mean square foot costs of construction in Missouri and the non-prevailing wage jurisdictions in the North Central States Region.
- For university school construction, the mean square foot costs of construction were \$34.35 cheaper per square foot than in the non prevailing wage jurisdictions.
- Using an input-output approach that utilized the RIMS II earnings multipliers from the Bureau of Economic Analysis, we have calculated the direct and induced economic losses to household income and to governmental revenues for the State of Missouri and for four regions in the State of Missouri, two urban regions and two rural regions.
- The elimination of the prevailing wage in Missouri would cost the State of Missouri substantially more in lost income and lost tax revenues than it would save in reduced, if any, construction costs in the State.
- The repeal of the prevailing law in Missouri would cost the State of Missouri and the residents of Missouri between \$216.5 million and \$346.6 million annually in lost income.
- The repeal of the prevailing law in Missouri would cost the State of Missouri and the residents of Missouri between \$2.3 million and \$3.7 million annually in lost sales tax collections.
- The repeal of the prevailing law in Missouri would cost the State of Missouri and the residents of Missouri between \$6.5 million and \$10.4 million annually in lost sales tax collections.
- The total economic loss due to repeal of the prevailing wage law in Missouri would be a loss of income and revenue between \$225.3 million and \$360.7 million annually, dwarfing any hypothetical gain offered by opponents of prevailing wage laws with respect to total construction costs.
- Prevailing wage standards are economically productive. As shown, construction costs have a minimal and decreasing impact on total construction costs. Further, we have shown that productivity gains, as a result of higher wage payments to construction workers, result in lower overall costs. A fatal flaw of the argument

of opponents is that productivity is a constant. There is simply no empirical evidence of this statement with respect to the construction industry or other industries in the economy.

- Total benefits compensation (e.g. health, pension) per construction worker in prevailing wage states is substantially higher in prevailing wage states than in non-prevailing wage states. These voluntary benefits paid to construction workers in prevailing wage states will reduce current and long-term costs to the taxpayers in the State of Missouri.
- Prevailing wage statutes support the system of apprenticeship training, which is critical to meet the predicted shortage of skilled craftsmen in the industry over the next decade. The long run impact of a decreasing apprenticeship program is the creation of a labor force that is less skilled than its predecessors. The result of a less skilled labor force will be a construction industry that is less and less safe.
- Prevailing wage laws encourage a more skilled and trained workforce that promotes safety in the industry. The absence of a skilled workforce imposes significant costs on the worker, their families, and the citizens of Missouri. Diminished benefit packages and decreased incentives for skills training will result in more serious injuries, increases in workman compensation costs, and increased publicly financed health services as a result of the repeal of the prevailing wage law in Missouri.
- Prevailing wage states have shown a much stronger commitment in on-the-job training and apprenticeship programs for minorities and women than have non prevailing wage states.
- A construction worker that has health and pension benefits is less likely to become an economic burden to his family or the taxpayers in the State of Missouri.

In summary, the prevailing wage law in Missouri, as well as in other states, creates a system of employment that is in the interest not only of the construction worker and his or her family, but of all citizens and state and local governments in Missouri. This study has shown that the *benefits of repeal* (lower construction costs)

are simply not there. This study has shown the *costs of repeal* are real and substantial and will have a short term and long-term negative impact on the State of Missouri.

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