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

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A study funded by the Council for Promoting American Business

Conducted under the auspices of:

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5100 Rockhill Road
Kansas City, MO 64110

January 2004

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Chapter I

Executive Summary

Attempts to repeal the prevailing wage law in Missouri are based upon the claim that repeal with save dollars on total construction costs and will bolster state and local budgets. However, this study has shown that repeal of the prevailing wage statute in Missouri would not save dollars on construction costs and would result in a negative economic impact on families in Missouri, taxpayers in Missouri, and the state and regional economies in Missouri. This study has shown that the consequences of repeal in Missouri would include:

- Lower wages for all construction workers in Missouri (direct impact of repeal in Missouri) and reduced incomes for other workers in industries located in Missouri (the indirect, or induced, impact of repeal).
- Reduced health and pension benefits for construction workers in Missouri (and, as a result, probability of eventual increased costs to state and local communities).
- Reduced sales tax revenues to the State of Missouri and regional economies in Missouri.
- Reduced corporate income taxes for the State of Missouri.
- Weakened system of construction apprenticeship training in Missouri.
- Increased occupational injuries and their associated costs in Missouri.
- Increased construction work done by out-of-state contractors in Missouri.
- Lower productivity of the construction workforce.

Findings

Chapter III - Summary of Findings Based on Descriptive Statistics

- Total new construction projects from 1993-2002 was 290,814; of which 34,427 were in non-prevailing wage states and 256,387 were in prevailing wage states.

- 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 $37,305,560,070; total square feet of new construction was 364,346,200; and mean cost per square foot of new construction across all structure types was $74.94
- In prevailing wage states: dollar value of new construction was $241,524,373,519; total square feet of new construction was 3,089,590,300; and mean cost per square foot of new construction across all structure types was $78.17
- Conclusion: There is no statistically significant difference in mean square foot costs (difference is $3.23 per sq. ft.) across all types of construction for the period 1993-2002 for prevailing wage states versus non-prevailing wage states.

Chapter III - Summary of Empirical Findings

- Whether or not the construction occurs in a prevailing or a non-prevailing wage state, the cost differential between public and private construction projects is statistically significant (at the .01 level).
- The presence of a prevailing wage statute did not result in any statistically significant difference in construction costs in the Great Plains States for the period 1993-2002.

Chapter IV – Economic Impact of Repeal in Missouri

- Using an input-output approach to estimate the economic impact of repeal of Missouri's prevailing wage law we calculate the direct and indirect losses to household income and to government revenues.
- Losses are estimated for the state as a whole, and for four regions, two urban and two rural.
- **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 $294.4 million and $356.0 million annually in lost income.
- The repeal of the prevailing wage law would cost the State of Missouri between $5.7 million and $6.9 million in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost the State of Missouri between $17.7 and $21.4 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 2004 would be a loss of income and revenue between $317.8 million and $384.2 million annually.

- **For Urban Region #1 (St. Louis area), the conclusions are:**
  - The repeal of the prevailing wage law would cost the residents of this region between $109.1 million and $131.8 million annually in lost income.
  - The repeal of the prevailing wage law would cost this region between $1.3 and $1.5 million in lost sales tax collections annually.
  - The repeal of the prevailing wage law would cost this region between $783,030 and $946,484 annually in lost earnings tax collections.
  - The total economic cost due to repeal of the prevailing wage law in this region in 2004 would be a loss between $111.1 million and $134.3 million annually.

- **For Urban Region #2 (Kansas City area), the conclusions are:**
  - The repeal of the prevailing wage law would cost the residents of this region between $65.1 million and $78.7 million annually in lost income.
  - The repeal of the prevailing wage law would cost this region between $709,957 and $858,265 in lost sales tax collections annually.

- The repeal of the prevailing wage law would cost this region between $444,885 and $537,821 annually is lost earnings tax collections.
- The total economic impact of repeal of the prevailing wage law in this region in 2004 would be an economic loss between $66.3 million and $80.1 million annually.

- **For Rural Region #1 (North Central Missouri), the conclusions are:**
  - The repeal of the prevailing wage law would cost the residents of this region between $255,261 and $308,522 annually in lost income.
  - The repeal of the prevailing wage law would cost this region between $2,760 and $3,336 in lost sales tax collections annually.
  - The total economic loss due to repeal of the prevailing wage law in this region in 2004 would be between $258,021 and $311,858 annually.

- **For Rural Region #2 (South Central Missouri), major conclusions are:**
  - The repeal of the prevailing wage law would cost the residents of this region between $2.1 million and $2.6 million annually in lost income.
  - The repeal of the prevailing wage law would cost this region between $17,373 and $20,997 in lost sales tax collections annually.
  - The total economic loss due to repeal of the prevailing wage law in this region in 2004 would be between $2.1 million and $2.6 million annually.

Chapter V – Other Impacts of Prevailing Wage Laws

- Prevailing wage laws promote better compensation packages for workers: By 1991-92, average total compensation for states that kept prevailing wages laws was 20.2% higher than for those states that repealed their laws after 1982-3.
- Prevailing wage laws have helped to prevent erosion of compensation for construction workers: There was no change in real average total compensation for

states that kept prevailing laws; however, there was a 16.6 percent decline in real average total compensation in states that repealed their prevailing wage laws.

- Real average total benefits per construction worker increased 32.4 percent from 1982-83 to 1991-92 in prevailing wage states; for states that repealed their prevailing wage law, real average total benefits decreased 53.5 percent over the same period. Real average total benefits per worker in prevailing wage states was 373.1 percent higher than in those states that repealed their PWL.
- Real average pension benefits increased 5.0 percent from 1982-83 to 1991-92 in prevailing wage states; for states that repealed their prevailing wage law, real average pension benefits decreased 66.6 percent over the period. Real average pension benefits per worker in prevailing wage states was 417.9 percent higher than in those states that repealed their PWL.
- Real average health care benefits increased 49.4 percent between 1982-83 and 1991-92 in prevailing wage states; for states that repealed their prevailing wage law, real average health care benefits decreased 38.2 percent. Real average health care benefits per worker in prevailing wage states was 345.0 percent higher than in those states that repealed their PWL.
- 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 2001, Missouri had 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 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 probably endanger Missouri's superior safety record.

- No correlation between average cost per mile and average wage rate in highway construction between 1980-1993.
- Implausible that repeal of prevailing wage rate would reduce construction costs, given the productivity effects in construction.
- Percentage of construction work done by in-state contractors in the Great Plains Region is significantly higher in prevailing wage states than non-prevailing wage states.
    - For prevailing wage states in the Great Plains Region, the value of construction work done by in-state contractors was 86.9, 91.0, and 91.7 percent, respectively, for the three Census reports 1982-1992.
    - For non-prevailing wage states in the Great Plains Region, the value of construction work done by in-state contractors was only 77.2, 79.1, and 84.5 percent respectively.
    - In Missouri, a prevailing wage state, the percentage of construction work done by in-state contractors was 80.6, 89.2, and 88.0 percent over the period 1982-1992; in Kansas, a non-prevailing wage state, the percentage of work done by in-state contractors was only 76.0, 74.6, and 82.7 percent over the period 1982-1992.
    - The presence of a prevailing wage statute is good for contractors in the State of Missouri, as well as its citizens and its taxpayers as jobs and incomes are kept in Missouri.

Chapter II

Introduction to the Study

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 state statutes that legislate 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 empirical studies. We will conclude that the existing studies are generally inadequate in a number of important ways.

Chapter III provides our own contribution to the empirical literature, attempting to rectify the weaknesses of previous studies. This chapter examines the argument that prevailing wage regulations raise public construction costs. Using data from the F.W. Dodge Company over the period 1993-2002 for the 12-state region of Nebraska, South Dakota, North Dakota, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio, we examine whether the existence of a state prevailing wage law results in higher construction costs on state projects.

In Chapter IV, we quantify the economic impact of the prevailing wage statute on the State of Missouri. In previous work, assessment of economic impacts has been inadequate because the short run and long run economic impact of the prevailing wage has not been clearly understood. 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 both state and local governments. Using RIMS II multipliers obtained from the Bureau of Economic Analysis for the State of Missouri and four sub-state county agglomerations (2 urban and 2 rural), 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 and their families, and state and county tax revenues.

Chapter V analyzes the impact of prevailing wage statutes on (1) the level of employee benefits, (2) skills training and apprenticeship – their benefits and costs, (3) on-the-job safety, injuries and fatalities, (4) productivity issues, and (5), the potential impact of repeal on Missouri-based construction contractors.

Chapter VI offers conclusions and recommendations for further study.

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.[1] Two similar laws apply to other industries.[2] 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

[1] The Davis-Bacon Act of 1931 was subsequently modified in 1935 and 1964.
[2] 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.

(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 them 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 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, the Department of Labor used the modal wage to determine the prevailing wage for an occupation in a local labor market, if the modal wage accounted for more than 30% of all wages for that occupation.[3] If the modal wage rate accounted for less than 30% of all wages for a given occupation, the mean wage rate was declared

[3] 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.

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.

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…*[4]

New York was the second state to pass a prevailing wage law in 1894. Similar laws in other states 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 1).

[4] L. 1891 Ch. 114 pp.192-193.

During the 1970s, 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. Florida, which had enacted a prevailing wage law in 1933, was the first to repeal its law, in 1979. Alabama was the second state to repeal its prevailing wage statute, with a repeal in 1980. Seven other states (Arizona, Colorado, Idaho, Kansas, Louisiana, New Hampshire, and Utah) repealed their prevailing wage statutes in the 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.

Table 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[2]	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[3]	1909	1995
Maine	1933			
Maryland	1945			
Massachusetts	1914	**States Without Prevailing Wage Law**		
Michigan[1]	1965			
Minnesota	1973	Georgia		
Missouri	1957	Iowa		
Montana	1931	Mississippi		
Nebraska	1923	North Carolina		
Nevada	1937	North Dakota		
New Jersey	1913	South Carolina		
New Mexico	1937	South Dakota		
New York	1894	Virginia		
Ohio	1931			
Oregon	1959			
Pennsylvania	1961			
Rhode Island	1935			
Tennessee	1953			
Texas	1933			
Vermont	1928			
Washington	1945			
West Virginia	1933			
Wisconsin	1931			
Wyoming	1967			

[1]Invalidated by Court Decision from December, 1994 – June, 1997

[2]Invalidated by Court Decision in 1980 and repealed by referendum in 1984

[3] Invalidated by court decision in 1995.

SOURCE: Survey Conducted by UMKC Department of Economics in September, 2003

C. Prevailing Wage Legislation - State of Missouri

Twenty-five states passed prevailing wage laws in the United States before Missouri passed its law in 1957; 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 for double 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 employ only Missouri laborers and laborers from nonrestrictive states on such contracts.[5]

[5] A "period of excessive unemployment" is defined as any month immediately following two consecutive calendar months during which the level of unemployment in the State of Missouri has exceed 5% as

D. Review of Previous Studies

Proponents argue that the prevailing wage statutes among the various states encourage the employment of a 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 10-30 percent. Yet, close analysis of the wage component in overall costs of construction shows that wage costs have only a moderate and decreasing impact on the total costs. Indeed, labor costs account for far less than a third of total construction costs. According to the Census of Construction, labor costs, including benefits, on all construction were 26.2% of total costs in 1987 and decreased to 21.2% by 1997. In an analysis of wages, productivity, and highway construction costs, labor costs per mile were 20.7% of the total costs of highway construction for the period 1980-1993 (National Alliance for Fair Contracting, 1995).

Using data from the NAFC study for the period 1980-1993, 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. Furthermore, they ignore the "indirect" effects of wage reduction on spending and income generated in a state, hence, ignore the effects on tax revenue collection. However, the evidence clearly demonstrates

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measured by the United States Bureau of Labor Statistics. "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 projects in that state.

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). 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 National Alliance for Fair Contracting (1995) that examined productivity and costs for highway construction in the 50 states over a 13 year period from 1980-1993, there is an inverse empirical relationship between higher hourly wage rates paid to labor and the cost of a mile of highway construction—higher wage rates result in lower highway cost per mile (See Tables 2 & 3 in the Appendix to this chapter). For example, the NAFC 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.[6] 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. 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.[7]

[6] 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.

[7] The study showed similar results for 26 states that averaged over $100 million annually. These 26 states represented 78% of all construction activity, 70% of total construction miles, and 79% of total labor hours over the period 1980-1993. Labor-hours to complete a mile of highway was 40% lower in high wage states in spite of an 81% higher wage rate ($17.65 versus $9.76). A further result from the 26-state study showed that the per mile savings to taxpayers in high wage states was $123,057 per mile.

Looking to our region, the average wage rate in Missouri (a prevailing wage rate state) over this time period was $17.16 and the average cost per mile was $807,021; in Kansas (a non-prevailing wage state after 1987) the average wage rate was $13.57, while the average cost per mile was $1,131,243 (See Tables 2 and 3 in the Appendix to this Chapter). The average wage rate in Missouri over this time period was 26.5 percent higher while the average cost per mile in Missouri over this time period was 40.2 percent lower compared with Kansas. (Tables 2 and 3). 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.

In a report by the Mechanical Electrical Sheet Metal Alliance, a direct link between wage rates and labor productivity was found (MESMA, 1994). The results of the study showed that for ten states where highway and bridgework is done, workers in high-wage states were paid wages double that of workers in low-wage states, yet they built 74.4 more miles of roadbed and 32.8 more miles of bridges for $557 million less.

Based on these data, we conclude that at least for the time period 1980-93, 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 appears to be incorrect. The critics seem to reach such conclusions only because they conduct static analyses, and overstate the contribution made by labor costs to overall construction costs. Given the decreasing percentage of labor costs as a 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 a magnitude of 10-30%. Rather, empirical 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 numerous 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 as much as 30 percent. However, there are several 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.[8] 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.[9] 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

[8] 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 percent of the observations while the Northeast accounted for only 8.8 percent of the observations.

[9] 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 percent of the total observations.

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)[10], 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 between 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.

Yet, 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 Peter Phillips to the analysis of Dr. Vedder and the Mackinac Center, Dr. 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.[11] 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.

Critics of prevailing wage laws have also cited the results of a study undertaken in Ohio. 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 to 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. According to the study's estimate, only 1-3 percent variation in total construction costs of schools in Ohio is explained by the set of independent variables included in the 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.

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

[11] 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.

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.

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 (Prus - 1996, Vincent - 1990, Phillips, et al. - 1995, Bilginsoy and Phillips - 2000, and Phillips, 1998, Belman and Voos, 1995). The results of these studies have demonstrated 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 a prevailing wage repeal would have on the construction industry and the taxpayers of that state (Phillips, 1998, Belman and Voos, 1995, and Vincent, 1990). However, they have presented their analysis in a static perspective, focusing on the direct impact only of a reduction in wages in the construction industry. A second shortcoming of earlier studies on the impact of prevailing wage laws is that many assume that the same number of hours of labor will be employed regardless of the wage differential paid (e.g. labor productivity

is constant). Clearly, more careful empirical study is required to sort out the effects of prevailing wage laws on:

a) productivity-adjusted labor costs

b) other construction labor working on projects not covered by prevailing wage laws

c) wages paid to labor in other sectors

d) spending, employment, and income in the region and in the state

e) tax revenue received by state and local government

A primary contribution of our present study is that, utilizing state and sub-state regional multipliers from the Bureau of Economic Analysis, we present both the direct and induced effects on the citizens of Missouri as well as the impact on state revenues in Missouri. As we will show in the next two chapters, we are able to sort out the effects of prevailing wage laws in ways that no previous study has been able to do.

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 1993-2002 were 290,814; of which 34,427 were in non-prevailing wage states and 256,387 were in prevailing wage states.
- 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 $37,305,560,070; total square feet of new construction was 364,346,200; and mean cost per square foot of new construction across all structure types was $74.94
- In prevailing wage states: dollar value of new construction was $241,524,373,519; total square feet of new construction was 3,089,590,300; and mean cost per square foot of new construction across all structure types was $78.17
- Conclusion: No statistical difference in mean square foot costs across all types of construction for the period 1993-2002 for prevailing wage states versus non-prevailing wage states.

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

The F.W. Dodge 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 dummy variables indicating structure type, vector of state dummy variables and dummy 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 dummy variables indicating structure type, vector of state dummy variables, dummy variable indicating whether the project was public or private, and interactive dummy 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. Repeal proponents argue that the increased costs to states amounts to 10-30 percent of construction costs (Fraundorf, 1983; Thiebolt, 1996; Mackinac Center for Public Policy, 1999). However, the methodology 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 tremendously 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 almost no useful empirical information that would allow us to determine cost differentials due solely to 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 results 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 (stores, warehouses, offices/banks, parking garages/service stations, manufacturing, education, healthcare facilities, public/government, religious, amusement, miscellaneous nonresidential, hotel/motel, and dormitories). 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). All states were drawn from the North Central States Region, 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 up 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 construction projects as to whether the construction project was a public project or a private project. 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 1993-2002. All data has been adjusted for inflation to real dollars at the 1993 level.

Charts III.1-III.4 provide a preliminary overview of construction costs for the North Central States Region for the years 1993-2002. 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 most years, costs are higher for private projects in prevailing wage states. Chart III.2 makes the same sort of comparison, but for public projects. Here we find that public construction costs are generally *higher* in non-prevailing wage states than in prevailing wage states—a surprising result. Chart III.3 shows that 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 be tempted to conclude that public projects are more expensive than private projects, but the results for the effects of prevailing wage legislation are unclear or

Chart III.1
Cost of Private Construction
Prevailing versus Non Prevailing State
Real Cost Per Square Foot (1993 Dollars)
1993-2002

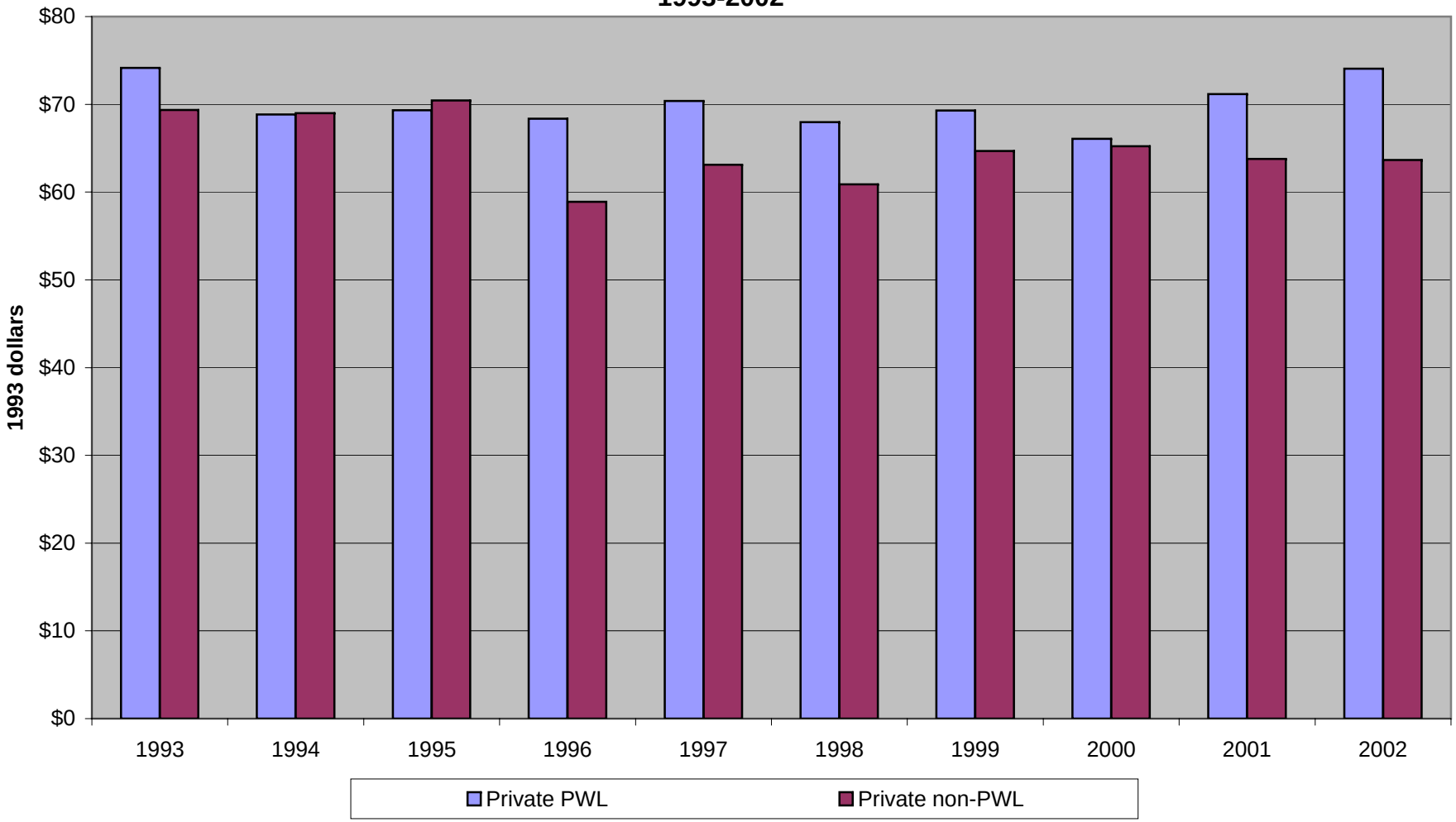


Chart III.2
Cost of Public Construction
Prevailing versus Non Prevailing State
Real Cost Per Square Foot (1993 Dollars)
1993-2002

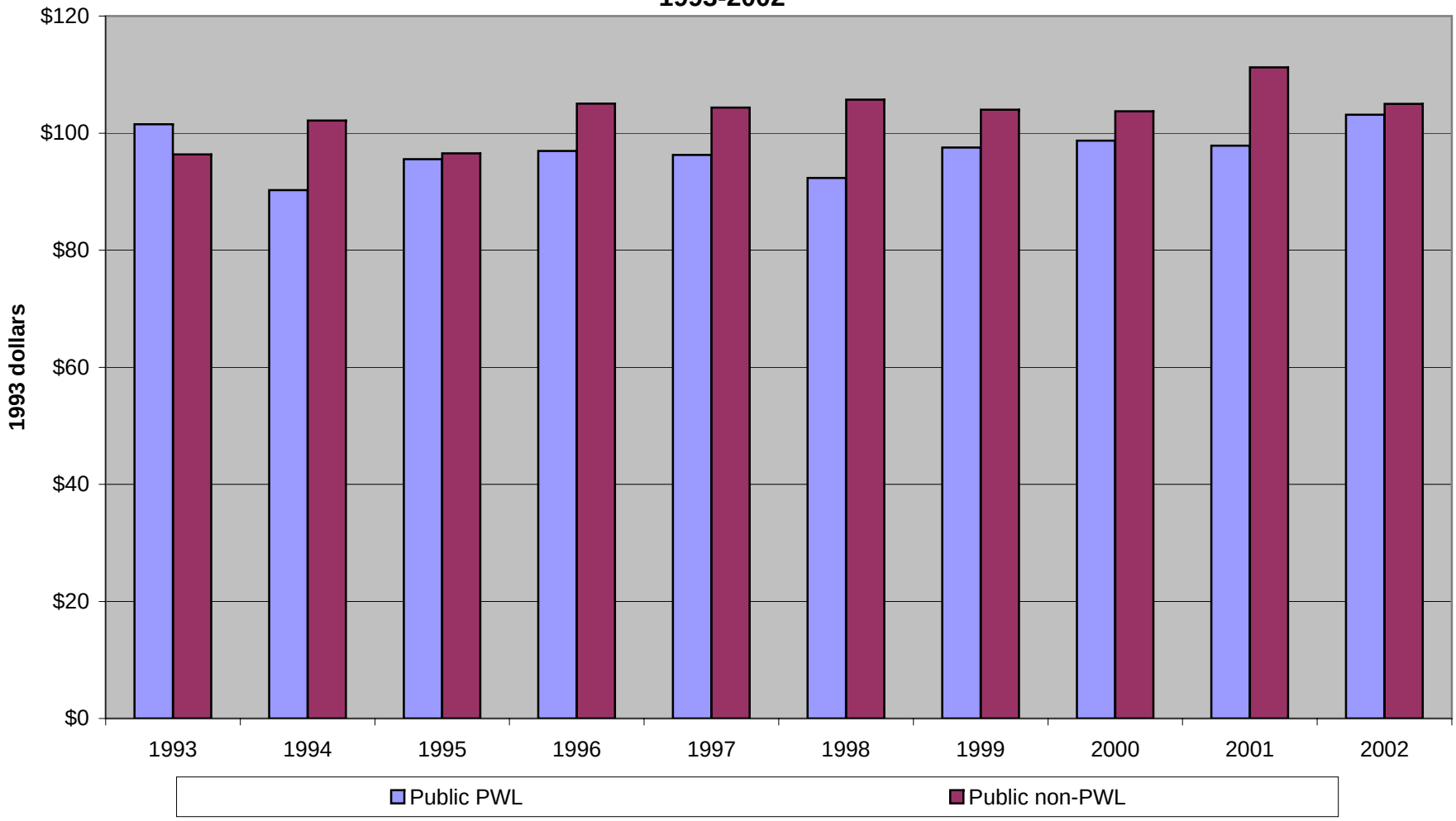


Chart III.3
Cost of Public versus Private Construction
Non Prevailing Wage State
Real Cost Per Square Foot (1993 Dollars)
1993-2002

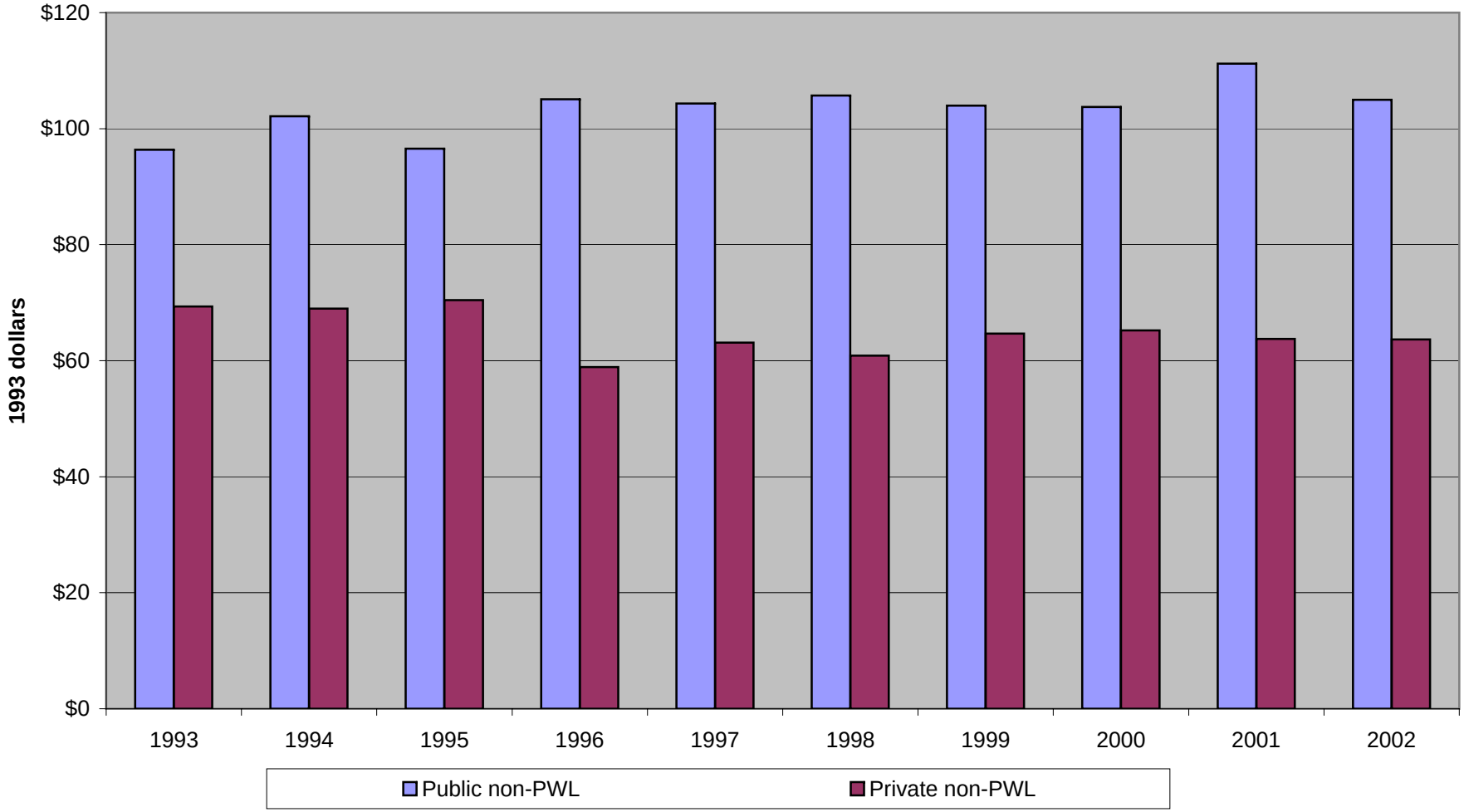
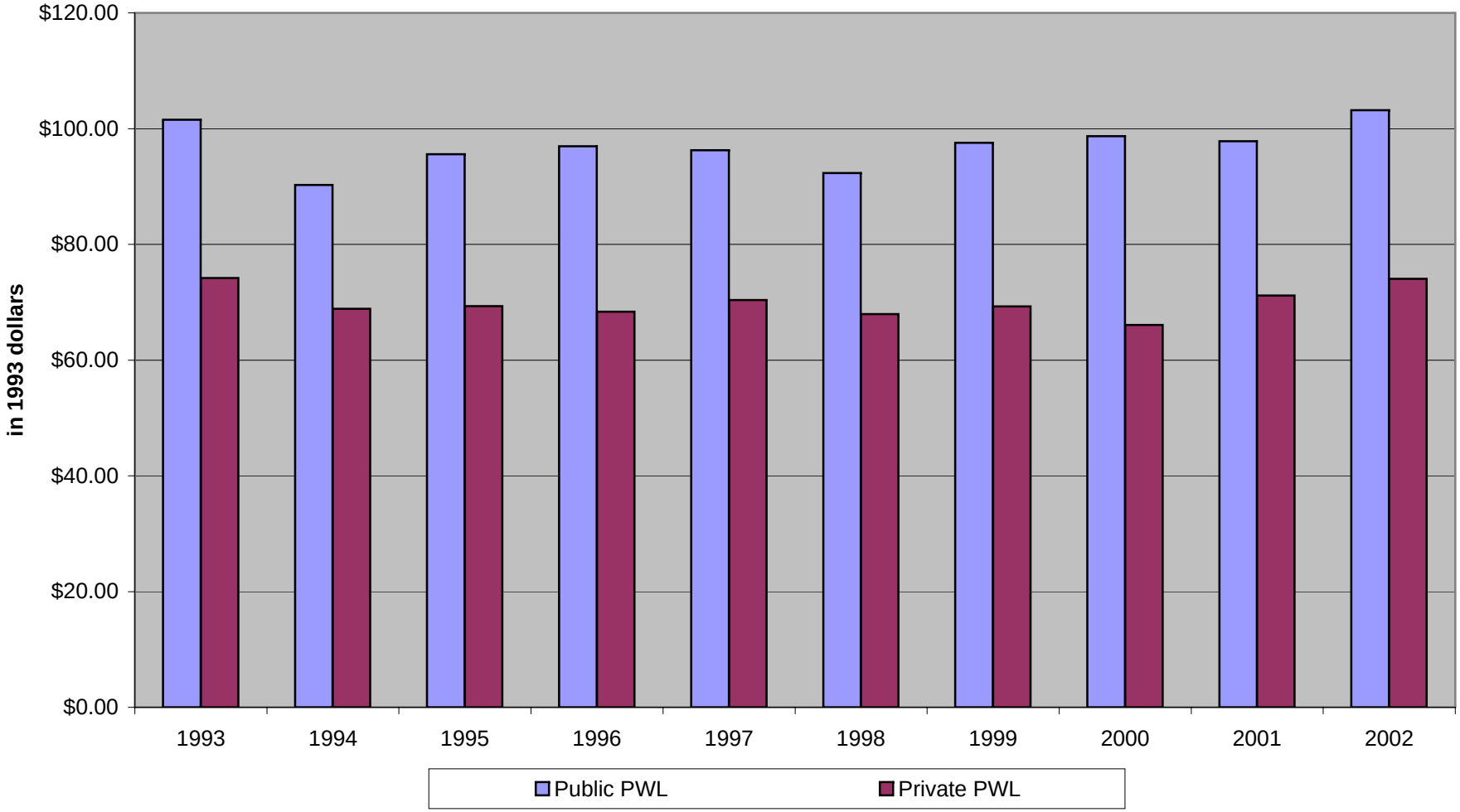


Chart III.4
Cost of Public versus Private Construction
Prevailing Wage State
Real Cost Per Square Foot (1993 Dollars)
1993-2002



counter-intuitive (the legislation appears to *lower* public construction costs but *raise* private construction costs). However, because this simple analysis cannot account for different types of 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 cheap warehouses; similarly, the apparent prevailing wage affects could be due to differences of project type.

The next step is to examine in detail the types of construction projects. Tables IIIA-IIIO (at the end of this chapter) present summary statistics by structure type, by state, and by prevailing wage status. (Tables IIID to IIIO show square foot construction costs by structure type for each of the states; these will not be discussed in the text that follows.)

Table IIIA presents the distribution of new construction spending by structure type for the entire 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. Table IIIC presents the cost per square foot of new construction by type and prevailing wage status. For the period 1993-2002, the mean cost per square foot across all structures for non-prevailing wage states is $74.94; the mean cost per square foot across all structures for prevailing wage states is $78.17. A t-test for the equality of means shows that there is no statistically significant difference for mean cost of construction between the prevailing and non-prevailing wage states at the 5 percent level of significance for the period 1993-2002. What this means is that based on these data, one cannot conclude that costs in prevailing wage states are higher than in non-prevailing wage states because the observed difference (a bit over three dollars per square foot) 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, biased for example by a different mix of public versus 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 specification of Prus (1999)

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

where CC = start costs; S = the scale of the projects as measured by the square foot of the project, T = a vector of dummy variables that indicates detailed structure type across thirteen structure categories, R = a vector of dummy variables for states, and P = a dummy 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 non residential construction projects that are categorized as (1) stores, (2) warehouses, (3) offices/banks, (4) parking garages/service stations, (5) manufacturing, (6) education, (7) healthcare facilities, (8) public/government, (9) religious, (10) amusement, (11) miscellaneous nonresidential, (12) hotel/motel, and (13) dormitories. Disaggregation of construction projects by these thirteen different structure categories decreases the probability of comparing construction costs across very differentiated structures, a shortcoming of the 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.

Table III.1
Regression Results

Variable	States with PWL Coefficients	States Without PWL Coefficients
Amusement	1.040***	0.997***
Dormitories	1.290***	1.406***
Government Services	1.054***	0.525***
Hospitals	1.325***	1.393***
Hotels	0.115	-0.573
Manufacturing Plants	0.735***	0.629***
Non-Residential	0.746***	0.637***
Office	1.033***	0.987***
Parking	0.025	0.244
Religious	0.476***	-0.095
School	1.028***	0.818***
Stores	0.659***	0.536***
Ln Sq Feet	1.032***	1.143***
Pubcode	0.343***	0.304***
Intercept	3.348***	2.823***
	Adjusted R-Squared = 0.874	Adjusted R-Squared =0.827
	N=2080	N=1040
	F=1034.215	F = 349.567

NOTE: Dependent Variable is LN (real total costs) where total costs are reported in 1993 real dollars
*** coefficient is significant at .01 level
the coefficients for the state dummy variables are not reported.

The result of the multiple regression analysis using the natural log of real total project costs as the dependent variable, controlling for relevant variables, in states that have prevailing wage laws is reported in the first data column in Table III.1.

These results show that there is a large and statistically significant cost differential between public and private projects. This is indicated by the coefficient 0.343 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. Note also that the adjusted R-Squared

value for this estimation is 0.847, which means we have explained nearly 85% of the variation of construction costs across projects—a very high percent.

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

However, this analysis does not identify costs differences that may result from prevailing wage laws. In order to capture this effect, Model 1B uses data on construction projects from states without prevailing wage laws.[12] Similar controls were used in the 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 data column of Table 1. As with the first regression, public projects are significantly more expensive than comparable private projects. The coefficient on Pubcode is 0.304, which is again statistically significant at the 0.01 level. Our equation explains nearly 83% of the variation of construction costs, which is quite high. 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 structure built by private owners. Fittings and components used in public structures may be a higher standard. Additionally, quality and workmanship

[12] The State of Michigan's prevailing wage law was invalidated for the period December 1994 through June 1997. In the Appendix, results are reported for regressions run without the State of Michigan. Table 3 demonstrates that dropping Michigan from the sample does not change the results at all: the coefficient on Pubcode (that captures the cost differential on public projects over private projects) hardly changes and is still significant at the 0.01 level of significance. In the North Central States region, three of the non-prevailing wage states have never had a prevailing wage statute (North Dakota, South Dakota, and Iowa). The remaining non-prevailing wage state is Kansas, which repealed its statute in 1987.

specifications for public structures may be higher. Fraundorf, et al admit this possibility in their study when they state that "If the 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). By separating these two impacts, we can examine four different situations: (1) private projects that are constructed where no prevailing law exists, (2) public projects where no prevailing law exists, (3) private projects in states where a prevailing law exists, and (4) public projects where prevailing laws exist. Only the fourth category of construction projects is directly impacted by the presence of a prevailing wage law in a state. Therefore, to isolate this impact of prevailing wage laws on construction costs, this situation must be isolated from the other three possibilities.

The correctly specified model that can estimate the impact of prevailing wage laws on construction costs is

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

where CC = start costs; S = the scale of the projects as measured by the square foot of the project, T = a vector of dummy variables that indicates detailed structure type across thirteen structure categories, R = a vector of dummy variables (one for each state), PW = a dummy indicating the presence or absence of a prevailing wage law, PC = a dummy

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.

Table III.2
Regression Results: Determinants of Construction Costs for All States

Variable	Coefficient
Amusement	1.028***
Dormitories	1.323***
Government Services	0.875***
Hospitals	1.353***
Hotels	-0.107
Manufacturing Plants	0.709***
Non-Residential	0.704***
Office	1.022***
Parking	0.083***
Religious	0.291***
School	0.956***
Stores	0.620***
Ln Sq Feet	1.067***
Pubcode	0.196***
Interact	0.213
PW	0.065
Intercept	3.097***
	Adjusted R-Squared = 0.864
	N=3120
	F = 1236.103

NOTE: Dependent Variable is LN (real total costs) where total costs are reported in 1993 real dollars
*** coefficient is significant at .01 level
the coefficients for the state dummy variables are not reported.

According to regression results (Table III.2), the presence of a prevailing wage law does not have a statistically significant impact on the total costs of construction projects in the twelve-state region at the 0.01 level. The coefficient on the PW variable (that estimates the impact of prevailing wage laws independent of whether

the project is public or private) is 0.065 and is statistically insignificant. The coefficient on the interaction variable (I, which captures the impact of prevailing wages on public project construction costs in prevailing wage states) is 0.213 and is statistically insignificant.[13]

Hence, we can conclude that prevailing wage laws do not have a statistically significant impact on construction costs, nor do they have a statistically significant impact on public projects in prevailing wage states. While public projects in the 12-state region are significantly more expensive than private projects, 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 seem to exist.

Conclusions

The results of this analysis indicate that there is no statistically significant difference in total construction costs between similar structures as a result of a state having a prevailing wage statute. Therefore, the repeal or modification of prevailing wage laws will not result in substantial 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 projects of a similar structure; however, these differences cannot be attributed to prevailing wage legislation.

[13] As mentioned above, Michigan's prevailing wage law was temporarily set aside during the period December 1994 through June 1997. Thus, we re-estimated the equation without Michigan, and the results are reported in the Appendix as Table 4. The coefficients on the variables PC, PW, and I are changed only slightly, and statistical significance is not changed from the results reported in Table 2.

Table IIIA
Distribution of New Construction Spending by Type
1993-2002

PWS and Non-PWS	Count	%
Amusement, Social and Recreational Bldgs	**17,472**	6.0%
Dormitories	**1,918**	0.7%
Government Service Buildings	**10,176**	3.5%
Hospitals and Other Health Treatment	**24,458**	8.4%
Hotels and Motels	**3,918**	1.3%
Manufacturing Plants, Warehouses, Labs	**25,252**	8.7%
Miscellaneous Nonresidential Buildings	**7,307**	2.5%
Office and Bank Buildings	**63,818**	21.9%
Parking Garages and Automotive Services	**13,366**	4.6%
Religious Buildings	**12,958**	4.5%
Schools, Libraries, and Labs (nonmfg)	**35,008**	12.0%
Stores and Restaurants	**55,170**	19.0%
Warehouses (excl. manufacturer owned)	**19,993**	6.9%
Total	**290,814**	**100.0%**

Table IIIB
Distribution of New Construction Spending by Type and Prevailing Wage Status
1993-2002

	Non-PWS		PWS	
	Count	**%**	Count	%
Amusement, Social and Recreational Bldgs	2,535	7.4%	14,937	5.8%
Dormitories	354	1.0%	1,564	0.6%
Government Service Buildings	1,245	3.6%	8,931	3.5%
Hospitals and Other Health Treatment	3,355	9.7%	21,103	8.2%
Hotels and Motels	516	1.5%	3,402	1.3%
Manufacturing Plants, Warehouses, Labs	2,321	6.7%	22,931	8.9%
Miscellaneous Nonresidential Buildings	899	2.6%	6,408	2.5%
Office and Bank Buildings	7,684	22.3%	56,134	21.9%
Parking Garages and Automotive Services	1,412	4.1%	11,954	4.7%
Religious Buildings	1,467	4.3%	11,491	4.5%
Schools, Libraries, and Labs (nonmfg)	4,360	12.7%	30,648	12.0%
Stores and Restaurants	6,141	17.8%	49,029	19.1%
Warehouses (excl. manufacturer owned)	2,138	6.2%	17,855	7.0%
Total	**34,427**	**100.0%**	**256,387**	**100.0%**

Table IIIC
Cost Per Square Foot of New Construction by Type and Prevailing Wage Status
1993-2002

Non-PWS	Cost/Sq Ft.	PWS	Cost/Sq Ft.
Amusement, Social and Recreational Bldgs	$111.23	Amusement, Social and Recreational Bldgs	$118.54
Dormitories	$128.93	Dormitories	$116.51
Government Service Buildings	$132.36	Government Service Buildings	$142.42
Hospitals and Other Health Treatment	$121.03	Hospitals and Other Health Treatment	$130.18
Hotels and Motels	$62.37	Hotels and Motels	$79.24
Manufacturing Plants, Warehouses, Labs	$62.10	Manufacturing Plants, Warehouses, Labs	$53.21
Miscellaneous Nonresidential Buildings	$56.20	Miscellaneous Nonresidential Buildings	$86.53
Office and Bank Buildings	$89.17	Office and Bank Buildings	$98.07
Parking Garages and Automotive Services	$37.21	Parking Garages and Automotive Services	$41.22
Religious Buildings	$81.99	Religious Buildings	$77.82
Schools, Libraries, and Labs (nonmfg)	$99.45	Schools, Libraries, and Labs (nonmfg)	$122.71
Stores and Restaurants	$49.57	Stores and Restaurants	$55.41
Warehouses (excl. manufacturer owned)	$37.55	Warehouses (excl. manufacturer owned)	$33.53
Non PWS - Mean Cost Per Square Foot of New Construction	**$74.94**	**PWS - Mean Cost Per Square Foot of New Construction**	**$78.17**
Total Dollar Value of New Construction	$37,305,560,070	Total Dollar Value of New Construction	$241,524,373,519
Total Square Feet of New Construction	364,346,200	Total Square Feet of New Construction	3,089,590,300

Table IIID
Square Foot Construction Costs by Structure Type
1993-2002

Illinois	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	2,632	$151.61	$120.03	$191.32
Dormitories	288	$152.83	$110.75	$230.48
Government Service Buildings	1,702	$191.11	$155.31	$289.21
Hospitals and Other Health Treatment	3,273	$165.52	$123.55	$218.19
Hotels and Motels	594	$114.95	$88.75	$207.49
Manufacturing Plants, Warehouses, Labs	2,849	$61.73	$54.08	$80.95
Miscellaneous Nonresidential Buildings	1,035	$187.54	$57.26	$547.62
Office and Bank Buildings	9,999	$134.34	$108.47	$153.63
Parking Garages and Automotive Services	1,701	$55.79	$42.76	$64.73
Religious Buildings	1,350	$102.35	$90.00	$118.99
Schools, Libraries, and Labs (nonmfg)	6,723	$155.40	$134.44	$200.17
Stores and Restaurants	8,268	$71.01	$62.48	$87.11
Warehouses (excl. manufacturer owned)	2,160	$39.59	$33.57	$46.07

Table IIIE
Square Foot Construction Costs by Structure Type
1993-2002

Indiana	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	0	$121.51	$99.54	$139.75
Dormitories	103	$153.41	$121.51	$224.16
Government Service Buildings	881	$158.57	$115.27	$204.90
Hospitals and Other Health Treatment	2,902	$140.69	$113.33	$184.39
Hotels and Motels	488	$86.16	$61.85	$109.90
Manufacturing Plants, Warehouses, Labs	3,954	$58.80	$44.66	$71.55
Miscellaneous Nonresidential Buildings	1,117	$80.18	$53.28	$125.92
Office and Bank Buildings	8,000	$108.68	$94.16	$125.52
Parking Garages and Automotive Services	1,779	$45.36	$33.74	$66.63
Religious Buildings	2,021	$82.07	$71.98	$92.54
Schools, Libraries, and Labs (nonmfg)	3,172	$154.46	$126.52	$175.06
Stores and Restaurants	7,371	$59.78	$50.66	$76.05
Warehouses (excl. manufacturer owned)	3,797	$33.06	$28.05	$38.97

Table IIIF
Square Foot Construction Costs by Structure Type
1993-2002

Iowa	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	959	$133.96	$116.48	$172.12
Dormitories	151	$319.95	$56.18	$1,384.50
Government Service Buildings	464	$174.97	$107.55	$382.09
Hospitals and Other Health Treatment	1,438	$141.44	$127.48	$167.89
Hotels and Motels	214	$77.83	$60.48	$129.41
Manufacturing Plants, Warehouses, Labs	879	$64.92	$45.15	$131.32
Miscellaneous Nonresidential Buildings	360	$68.09	$43.15	$86.69
Office and Bank Buildings	2,927	$102.44	$91.20	$119.67
Parking Garages and Automotive Services	506	$43.22	$33.41	$50.18
Religious Buildings	591	$93.78	$82.38	$110.99
Schools, Libraries, and Labs (nonmfg)	1,739	$119.36	$92.73	$149.89
Stores and Restaurants	2,294	$57.21	$49.05	$72.38
Warehouses (excl. manufacturer owned)	865	$36.89	$29.68	$44.26

Table IIIG
Square Foot Construction Costs by Structure Type
1993-2002

Kansas	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	1,055	$120.05	$99.92	$139.28
Dormitories	123	$284.63	$105.44	$613.63
Government Service Buildings	481	$175.76	$130.74	$285.90
Hospitals and Other Health Treatment	1,232	$135.53	$109.15	$159.74
Hotels and Motels	175	$69.74	$48.67	$110.92
Manufacturing Plants, Warehouses, Labs	939	$70.82	$49.21	$107.52
Miscellaneous Nonresidential Buildings	343	$81.60	$32.28	$149.07
Office and Bank Buildings	3,037	$102.24	$79.01	$129.70
Parking Garages and Automotive Services	602	$51.97	$30.13	$91.41
Religious Buildings	596	$92.68	$70.95	$115.10
Schools, Libraries, and Labs (nonmfg)	1,821	$113.39	$77.29	$143.38
Stores and Restaurants	2,891	$56.58	$47.58	$62.40
Warehouses (excl. manufacturer owned)	821	$49.63	$38.01	$57.47

Table IIIH
Square Foot Construction Costs by Structure Type
1993-2002

Michigan	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	2,717	$133.33	$101.17	$170.86
Dormitories	193	$160.66	$96.89	$284.41
Government Service Buildings	1,222	$158.11	$118.84	$220.93
Hospitals and Other Health Treatment	2,954	$141.92	$119.13	$195.81
Hotels and Motels	478	$88.18	$52.34	$147.11
Manufacturing Plants, Warehouses, Labs	4,719	$58.24	$48.79	$67.81
Miscellaneous Nonresidential Buildings	916	$96.34	$59.62	$163.35
Office and Bank Buildings	7,913	$106.41	$91.32	$119.40
Parking Garages and Automotive Services	2,033	$50.50	$39.72	$69.12
Religious Buildings	1,970	$86.73	$75.46	$99.94
Schools, Libraries, and Labs (nonmfg)	4,560	$149.35	$120.14	$183.03
Stores and Restaurants	7,825	$60.13	$57.37	$67.07
Warehouses (excl. manufacturer owned)	2,661	$41.06	$35.49	$46.61

Table IIII
Square Foot Construction Costs by Structure Type
1993-2002

Minnesota	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	1,461	$111.53	$91.54	$136.13
Dormitories	153	$100.97	$71.52	$151.39
Government Service Buildings	863	$157.85	$133.25	$186.55
Hospitals and Other Health Treatment	1,658	$147.06	$100.56	$203.58
Hotels and Motels	314	$70.03	$58.72	$85.02
Manufacturing Plants, Warehouses, Labs	932	$62.17	$44.40	$81.29
Miscellaneous Nonresidential Buildings	534	$105.40	$67.79	$158.86
Office and Bank Buildings	5,301	$121.83	$101.65	$173.11
Parking Garages and Automotive Services	985	$40.78	$32.57	$50.92
Religious Buildings	898	$87.93	$80.81	$93.49
Schools, Libraries, and Labs (nonmfg)	2,804	$133.27	$103.37	$168.30
Stores and Restaurants	3,145	$60.31	$52.08	$67.95
Warehouses (excl. manufacturer owned)	1,079	$40.68	$30.02	$55.27

Table IIIJ
Square Foot Construction Costs by Structure Type
1993-2002

Missouri	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	1,530	$134	$109	$201
Dormitories	216	$142	$100	$305
Government Service Buildings	895	$171	$112	$223
Hospitals and Other Health Treatment	2,036	$149	$124	$221
Hotels and Motels	382	$103	$58	$190
Manufacturing Plants, Warehouses, Labs	1,049	$78	$59	$113
Miscellaneous Nonresidential Buildings	520	$139	$49	$306
Office and Bank Buildings	5,319	$113	$91	$132
Parking Garages and Automotive Services	1,004	$40	$35	$46
Religious Buildings	1,088	$92	$72	$118
Schools, Libraries, and Labs (nonmfg)	3,167	$124	$89	$174
Stores and Restaurants	4,205	$60	$46	$67
Warehouses (excl. manufacturer owned)	1,161	$39	$30	$46

Table IIIK
Square Foot Construction Costs by Structure Type
1993-2002

Nebraska	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	603	$123.46	$84.26	$159.08
Dormitories	68	$175.89	$55.41	$745.73
Government Service Buildings	295	$168.74	$136.03	$205.42
Hospitals and Other Health Treatment	929	$149.55	$115.99	$175.10
Hotels and Motels	109	$97.21	$65.25	$156.09
Manufacturing Plants, Warehouses, Labs	658	$76.37	$50.50	$131.69
Miscellaneous Nonresidential Buildings	232	$101.10	$75.47	$148.54
Office and Bank Buildings	2,048	$101.53	$93.80	$125.67
Parking Garages and Automotive Services	405	$44.37	$33.82	$58.24
Religious Buildings	340	$101.62	$74.88	$133.24
Schools, Libraries, and Labs (nonmfg)	1,167	$124.10	$89.42	$154.81
Stores and Restaurants	1,387	$55.67	$44.77	$67.03
Warehouses (excl. manufacturer owned)	630	$48.27	$38.03	$67.20

Table IIIL
Square Foot Construction Costs by Structure Type
1993-2002

North Dakota	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	250	$135.25	$94.96	$187.45
Dormitories	45	$112.30	$68.66	$180.11
Government Service Buildings	141	$268.15	$36.31	$1,492.91
Hospitals and Other Health Treatment	354	$171.99	$110.84	$273.74
Hotels and Motels	49	$70.80	$41.44	$127.55
Manufacturing Plants, Warehouses, Labs	301	$86.74	$43.34	$198.41
Miscellaneous Nonresidential Buildings	108	$69.66	$51.87	$93.80
Office and Bank Buildings	995	$115.06	$91.67	$160.42
Parking Garages and Automotive Services	170	$60.32	$36.63	$122.59
Religious Buildings	161	$113.34	$73.17	$194.66
Schools, Libraries, and Labs (nonmfg)	344	$107.72	$83.01	$142.54
Stores and Restaurants	560	$54.39	$41.42	$69.08
Warehouses (excl. manufacturer owned)	254	$40.57	$27.70	$53.88

Table IIIM
Square Foot Construction Costs by Structure Type
1993-2002

Ohio	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	4,654	$136.37	$110.50	$155.99
Dormitories	371	$156.49	$84.21	$251.45
Government Service Buildings	2,022	$169.05	$129.54	$234.10
Hospitals and Other Health Treatment	5,692	$149.95	$125.40	$180.84
Hotels and Motels	717	$83.64	$63.81	$97.11
Manufacturing Plants, Warehouses, Labs	7,061	$57.51	$44.29	$69.99
Miscellaneous Nonresidential Buildings	1,493	$87.13	$55.99	$122.08
Office and Bank Buildings	14,042	$110.25	$98.89	$124.51
Parking Garages and Automotive Services	3,108	$56.68	$42.11	$72.28
Religious Buildings	2,940	$84.07	$71.92	$95.60
Schools, Libraries, and Labs (nonmfg)	6,398	$141.00	$125.62	$151.19
Stores and Restaurants	13,991	$66.27	$53.91	$71.11
Warehouses (excl. manufacturer owned)	5,065	$38.65	$32.89	$49.38

Table IIIN
Square Foot Construction Costs by Structure Type
1993-2002

South Dakota	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	271	$108.26	$89.64	$131.47
Dormitories	35	$132.35	$61.55	$430.71
Government Service Buildings	159	$111.70	$62.02	$137.04
Hospitals and Other Health Treatment	331	$134.00	$93.87	$169.76
Hotels and Motels	78	$62.49	$43.44	$78.95
Manufacturing Plants, Warehouses, Labs	202	$101.12	$34.21	$455.58
Miscellaneous Nonresidential Buildings	88	$73.41	$47.34	$91.84
Office and Bank Buildings	725	$114.78	$70.44	$171.95
Parking Garages and Automotive Services	134	$45.90	$31.49	$64.61
Religious Buildings	119	$81.31	$63.05	$102.37
Schools, Libraries, and Labs (nonmfg)	456	$98.00	$70.92	$136.54
Stores and Restaurants	396	$61.40	$35.19	$82.19
Warehouses (excl. manufacturer owned)	198	$48.33	$38.46	$59.54

Table IIIO
Square Foot Construction Costs by Structure Type
1993-2002

Wisconsin	Count	Mean	Minimum	Maximum
Amusement, Social and Recreational Bldgs	1,340	$133.53	$100.23	$169.46
Dormitories	172	$149.24	$95.92	$305.26
Government Service Buildings	1,051	$141.96	$116.54	$159.36
Hospitals and Other Health Treatment	1,659	$134.81	$115.76	$169.69
Hotels and Motels	320	$82.01	$59.68	$105.66
Manufacturing Plants, Warehouses, Labs	1,709	$54.75	$41.37	$72.71
Miscellaneous Nonresidential Buildings	561	$71.99	$54.21	$107.88
Office and Bank Buildings	3,512	$97.32	$84.30	$112.98
Parking Garages and Automotive Services	939	$49.38	$34.87	$54.24
Religious Buildings	884	$82.50	$65.67	$100.09
Schools, Libraries, and Labs (nonmfg)	2,657	$110.08	$80.99	$145.69
Stores and Restaurants	2,837	$56.33	$34.25	$72.52
Warehouses (excl. manufacturer owned)	1,302	$36.97	$29.12	$44.80

Chapter IV

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 four regions, two urban and two rural.

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 $294.4 million and $356.0 million annually in lost income.
  - The repeal of the prevailing wage law would cost the State of Missouri between $5.7 million and $6.9 million in lost sales tax collections annually.
  - The repeal of the prevailing wage law would cost the State of Missouri between $17.7 and $21.4 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 2004 would be a loss of income and revenue between $317.8 million and $384.2 million annually.

#For Urban Region #1 (St. Louis area), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between $109.1 million and $131.8 million annually in lost income.

- The repeal of the prevailing wage law would cost this region between $1.3 and $1.5 million in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost this region between $783,030 and $946,484 annually in lost earnings tax collections.
- The total economic cost due to repeal of the prevailing wage law in this region in 2004 would be a loss between $111.1 million and $134.3 million annually.

#For Urban Region #2 (Kansas City area), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between $65.1 million and $78.7 million annually in lost income.
- The repeal of the prevailing wage law would cost this region between $709,957 and $858,265 in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost this region between $444,885 and $537,821 annually in lost earnings tax collections.
- The total economic impact of repeal of the prevailing wage law in this region in 2004 would be an economic loss between $66.3 million and $80.1 million annually.

#For Rural Region #1 (North Central area), the conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between $255,261 and $308,522 annually in lost income.
- The repeal of the prevailing wage law would cost this region between $2,760 and $3,336 in lost sales tax collections annually.
- The total economic loss due to repeal of the prevailing wage law in this region in 2004 would be between $258,021 and $311,858 annually.

#For Rural Region #2 (South Central area), major conclusions are:

- The repeal of the prevailing wage law would cost the residents of this region between $2.1 million and $2.6 million annually in lost income.
- The repeal of the prevailing wage law would cost this region between $17,373 and $20,997 in lost sales tax collections annually.
- The total economic loss due to repeal of the prevailing wage law in this region in 2004 would be between $2.1 million and $2.6 million 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.[14] 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 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 knows as RIMS (Regional Industrial Multipliers System).[15] In the mid-1980s, BEA completed an enhancement of RIMS knows as RIMS II. In 1986, industry multipliers for 39 industry aggregates for each of the states were published.

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

[14] 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.

[15] 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.

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 are based upon the 1999 annual input-output accounts for the U.S. economy and 2000 regional data. In order to capture differential urban and rural regional impacts of the prevailing wage law in Missouri, we have obtained five 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 regional analysis of urban and rural impacts 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

Rural #1	Rural #2	Urban #1	Urban #2	Missouri
Harrison	Dallas	Franklin	Buchanan	
Mercer	Laclede	Jefferson	Clinton	
Putnam	Webster	Lincoln	Caldwell	
Schuyler	Wright	St. Charles	Platte	
Grundy	Pulaski	Warren	Clay	
Sullivan		Washington	Ray	
		St. Louis City	Jackson	
		St. Louis County	Lafayette	
			Cass	
			Bates	

Section II Input-Output Analysis

This section provides a brief overview of how economic modeling using input-output analysis is constructed. An input-output table accomplishes two things. First, it serves as a descriptive framework for illustrating the interrelationship between industries

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U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division, April 1981.

and sectors and between inputs and outputs. Second, given certain economic assumptions about the nature of the production function, it provides an analytical tool for measuring the impact of autonomous disturbances (e.g. a reduction in wages in the construction sector from repeal of the prevailing wage statute in Missouri) on a region's economic output, income, and employment in the State of Missouri.

The various linkages in a regional economy between households, business, and government establish the various interdependencies in a regional economy. The input-output model quantifies these relationships in such a way that conclusions can be reached.

Section II.A Input-Output Model Transaction Table

The first step in the construction of an input-output table is the development of a transaction table (Table IV.2). 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, 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. Note that for each sector or industry, inputs equal outputs.

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

Section II.B Sample Direct Requirements Matrix

At the heart of an input-output model is a matrix of direct impact or technical coefficients, which describe the interrelationships among industries in a particular region (Table IV.3). In order to calculate the technical coefficient matrix, divide each column

entry by the corresponding column total (e.g. 4/20 = .2000) and the result is the technical coefficient matrix ($A = [a_{ij}] = X_{ij}/X_j$). The summation of each column in Table 3 equals 1.00.

The direct requirements coefficients for sector #1 can be viewed as estimates of the dollar change in output, for each additional dollar of output of Sector #1, that occurs in regional industries. In other words, a dollar increase of sector one's output will generate twenty cents of additional production in sector one, thirty-five cents in sector two, and so on. These changes typically are called first-round or direct changes in outputs.

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.

Section II.C Sample Direct and Indirect Requirements Matrix

The direct and indirect coefficient matrix illustrates the multiple effect of a change in a particular industry. For example, if an industry requires additional inputs in order to increase outputs, additional inputs are required and increased inputs need to be purchased from their suppliers, and so on. These successive transactions created by the inter-industry interactions produce a multiplier effect throughout the regional economy. There, the impact of a change is a multiple of the original change.

The direct and indirect requirements matrix, which summarizes all of these interdependent relationships, is difficult to construct. The procedure whereby the direct and indirect requirements matrix is constructed can be found in any mathematical

economics textbook (see Chiang, 1984). The direct and indirect requirements matrix for the sample illustration is presented in Table IV.4.

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

The column entries illustrate the output changes by the column sector as a result of a one-dollar change in 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, if demand for output of sector #1 falls by $1.00, direct and indirect changes in this simplified model would decrease total output (all sectors) by $2.0010. Therefore, the output multiplier is defined as the summation of the column entries in the direct and indirect requirements matrix. Again, the reason the effect is "multiplied" is because the decreased demand for sector one's output leads to a decline of demand for output of those sectors that supply input to sector one. (For example, a decline of the demand for American automobiles will also cause production in the U.S. tire industry to fall.)

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. 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.

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 6.49 million people in 2001, or 5.64 percent of the workforce.[16] The payroll of the construction industry in 2001 represented 6.20 percent of total payroll in the United States. In the State of Missouri, the construction sector plays a somewhat

[16] U.S. Census Bureau. 2001 County Business Patterns (NAICS). United States. Major Industry.

larger role than it does nationally. In Missouri, the construction industry employed 137,383 people in 2001, representing 5.71 percent of the workforce in the state. The total payroll of the construction industry was 7.23 percent of the state's payroll. Using data from the United States Census Bureau's County Business Patterns series, we calculated a comparison of the relative earnings levels for the years 1993 through 2001 (the most recent year in which data on earnings is available, which is Table IV.5). The states included in this analysis are the North Central States, which have been the focus in this study. The prevailing wage states are Ohio, Michigan, Indiana, Wisconsin, Minnesota, Missouri, and Nebraska; the four states that are without a prevailing wage law are Iowa, North Dakota, South Dakota, and Kansas. This relative earnings index is calculated by dividing the average annual earnings per employee in the construction industry by the average annual earnings per employee in all nonagricultural industries. The comparison of the relative earning indices across the North Central region shows that the relative earnings of employees in the construction sector is higher in prevailing wage states than in non-prevailing wage states. These results are consistent with the argument that prevailing wage wages tend to increase the wages of workers in the construction sector.

Table IV.5
Relative Earnings of Construction Sector Versus Non-Agricultural Sector
Prevailing Wage Law Versus Non-prevailing Wage Law

Year	Prevailing Wage Law	No Prevailing Wage Law
1993	1.25	1.21
1994	1.28	1.22
1995	1.23	1.20
1996	1.25	1.21
1998	1.26	1.21
1999	1.25	1.21
2000	1.20	1.21
2001	1.25	1.18

Source: United States Department of Census. County Business Patterns: 1993-2001. Data from 1997 was incomplete for the region and omitted.

The County Business Patterns series also reports the number of employees and payroll by SIC code for the years 1993 through 2001. Table IV.6 shows the relative earnings index of construction workers to all nonagricultural workers in Missouri. For the State of Missouri, construction workers earn a premium that is similar to that found in other prevailing wage states.

Table IV.6 Relative Earnings Index of Construction Sector Versus Non-Agricultural Sector	
Year	Relative Earnings Index
1993	1.20
1994	1.26
1995	1.24
1996	1.25
1998	1.28
1999	1.28
2000	1.22
2001	1.29
Source: United States Department of Census. County Business Patterns: 1993-2001. Data from 1997 was incomplete for the region and omitted.	

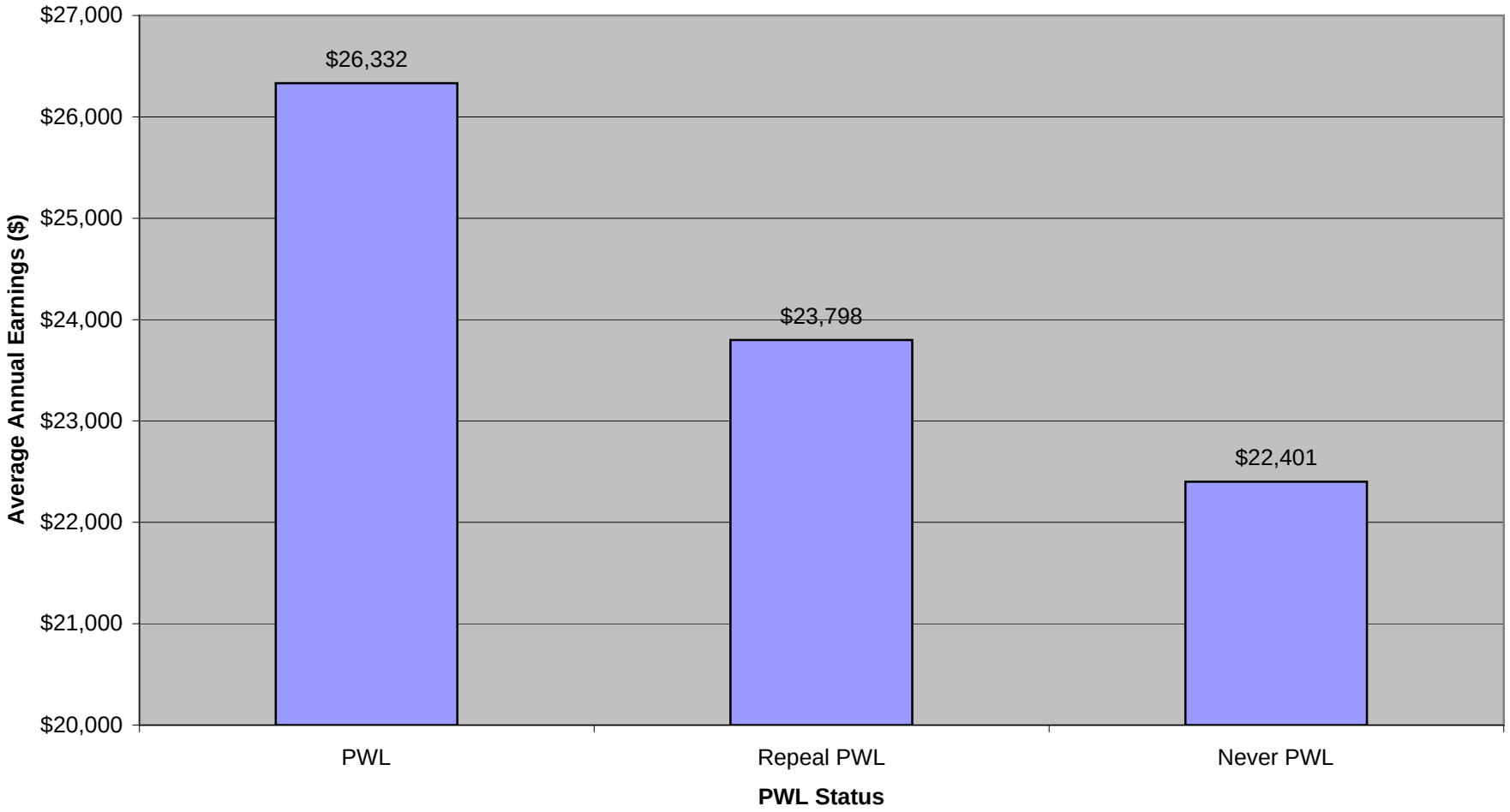
Section IV. Expected Loss of Earnings in Construction due to repeal of Prevailing Wage Laws

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.[17] Chart IV.1 categorizes the states into three groups. The first group shows that the average annual income for construction workers in states that had a prevailing wage law for the period

[17] Bureau of Labor Statistics. Covered Employment and Wages Program. ES-202. 1975-2000.

Chart IV.1
Comparison of Annual Earnings by PWL Status
U.S. Department of Labor Employment and Earnings
(1975-2000)



1975-2000 was $26,332 annually.[18] The second group shows the average annual income for construction workers in states that have repealed their prevailing wage law. For the period 1975-2000, the average annual earnings for this group was $23,798. 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 $22,401. For the period 1975-2000, the average annual earnings for construction workers in states that have a prevailing wage law is 17.5 percent higher than in states that have never had a prevailing wage law. Chart IV.2 shows this same analysis for the period 1993-2000, the period we are analyzing in this study. The results are similar, with the average annual income of construction workers in prevailing wage states higher by 17.5 percent and 13.1 percent, respectively, versus states that have no prevailing wage law and those that have repealed their 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 since 1979 in order to see whether repeal of the law led to lower construction wages.

The states that have repealed their prevailing wage laws since 1979 are Alabama, Arizona, Colorado, Florida, Idaho, Kansas, Louisiana, New Hampshire, Utah, and Oklahoma.[19] Chart IV.3 shows the analysis of average annual wage income for the 10 states that have repealed their prevailing wage law since 1979. The average annual earnings for the ten repeal states in 1993 dollars after 1979 but before each of these states repealed their prevailing wage statute was $24,269. In the years after repeal, the average annual earnings fell to $23,468. In other words, real construction wages fell after repeal, and this decrease was equal to an income loss of $801 annually or 3.41 percent. Among

[18] All figures have been adjusted to 1993 real dollars for this analysis.
[19] See Section II of this report for the dates of repeal of the various states' prevailing wage statutes.

Chart IV.2
Comparison of Annual Earnings by PWL Status
U.S. Department of Labor Employment and Earnings
(1993-2000)

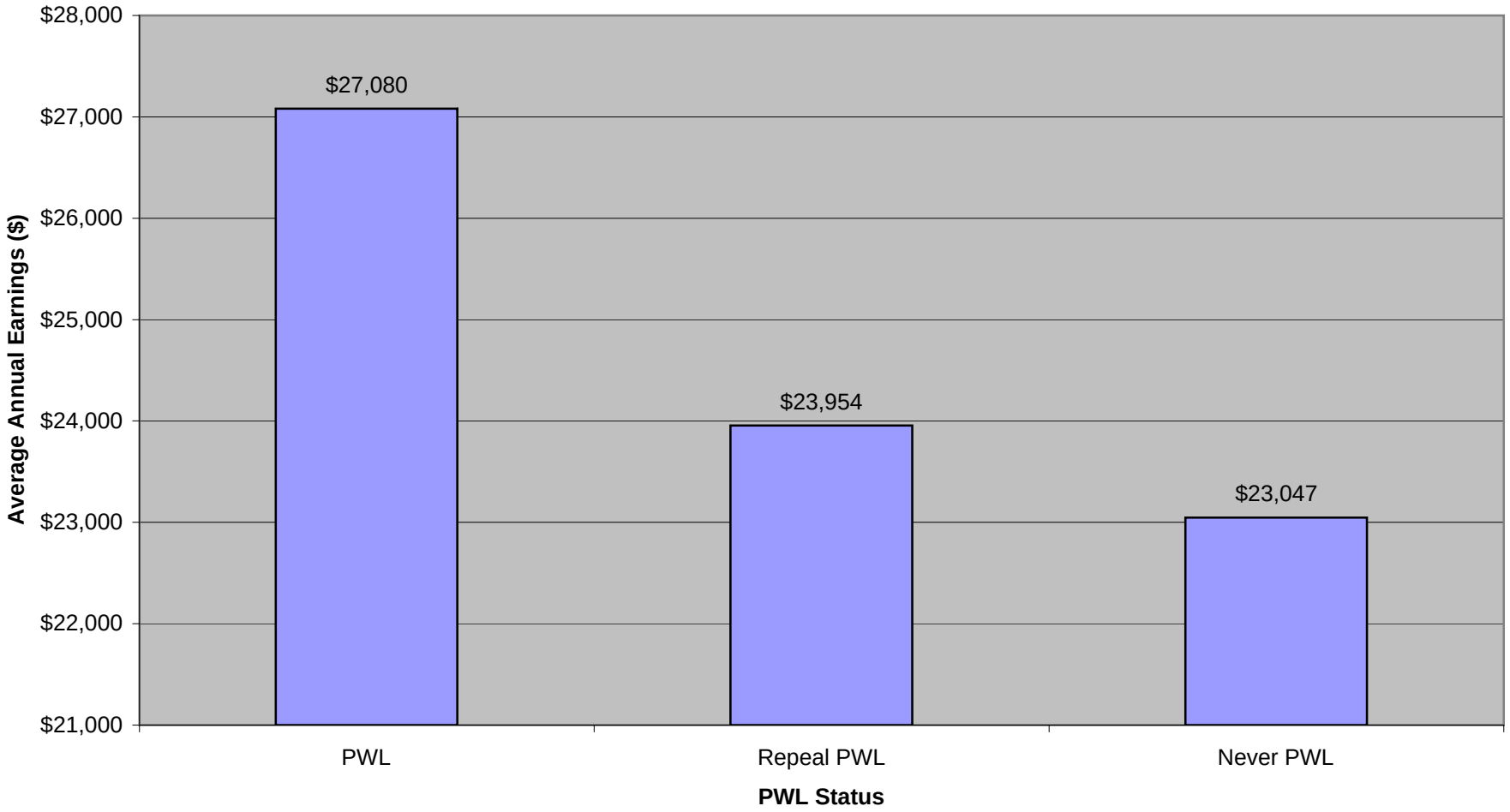
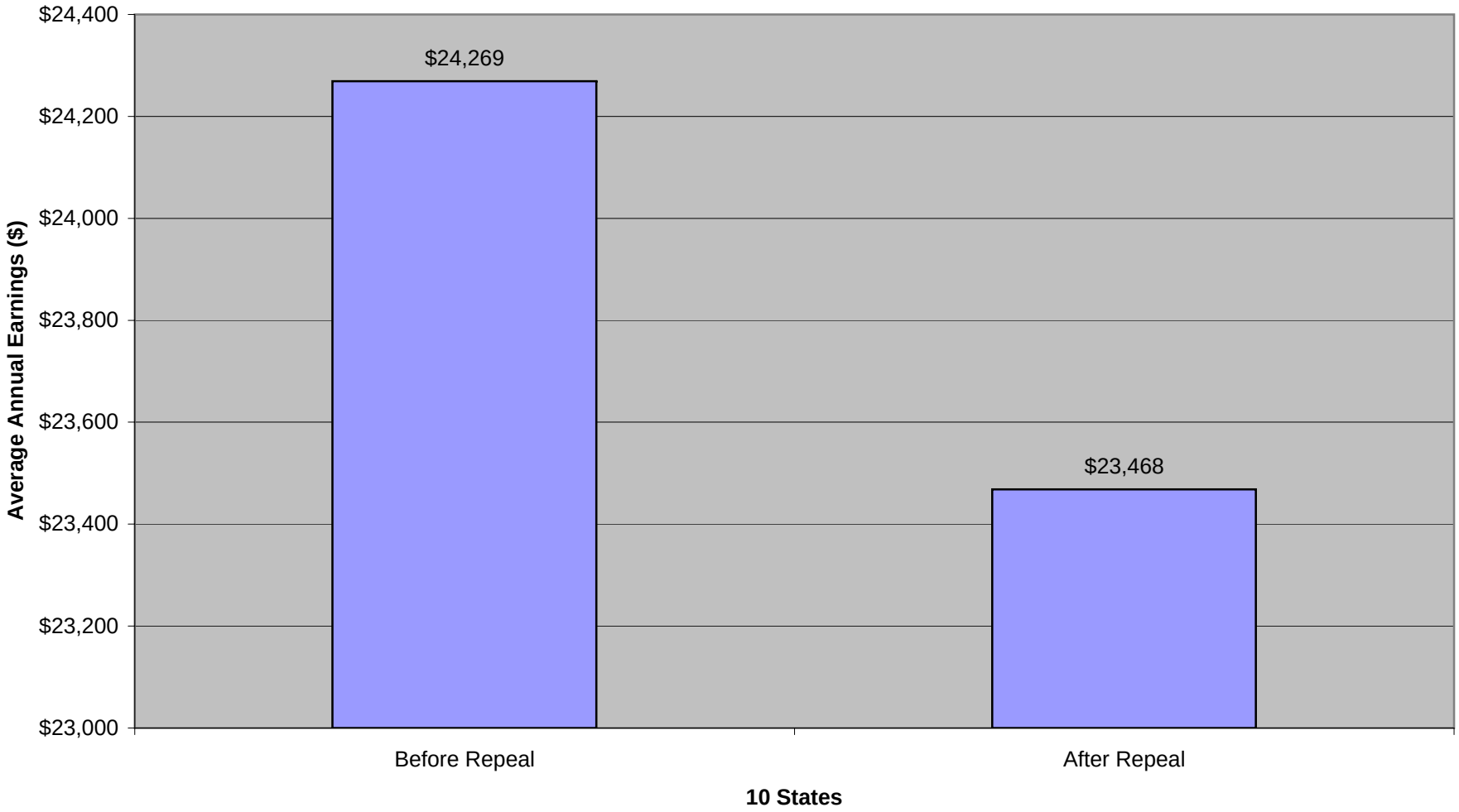


Chart IV.3
Average Annual Earnings in 10 Repeal States
(1979-1995)



the states that have repealed their prevailing wage law, New Hampshire construction earnings performed contrary to the experience in the rest of the states. According to the Bureau of Labor Statistics, the average annual earnings from 1975 until repeal was $22,599 annually and it rose to $25,544 annually after repeal of New Hampshire's prevailing wage law. We do not know what special conditions in the state might have led to the anomalous results. Chart IV.4 presents the same analysis but omits New Hampshire from the analysis. Omitting New Hampshire, the average annual earnings from 1975 until repeal was $24,455 and it fell to $23,237 annually after repeal. This decrease of annual earnings was $1,218 or 4.98 percent. This analysis provides initial evidence in support of the argument that repealing or never having a prevailing wage law decreases income in the construction sector, as well as across all sectors, both public and private.

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.

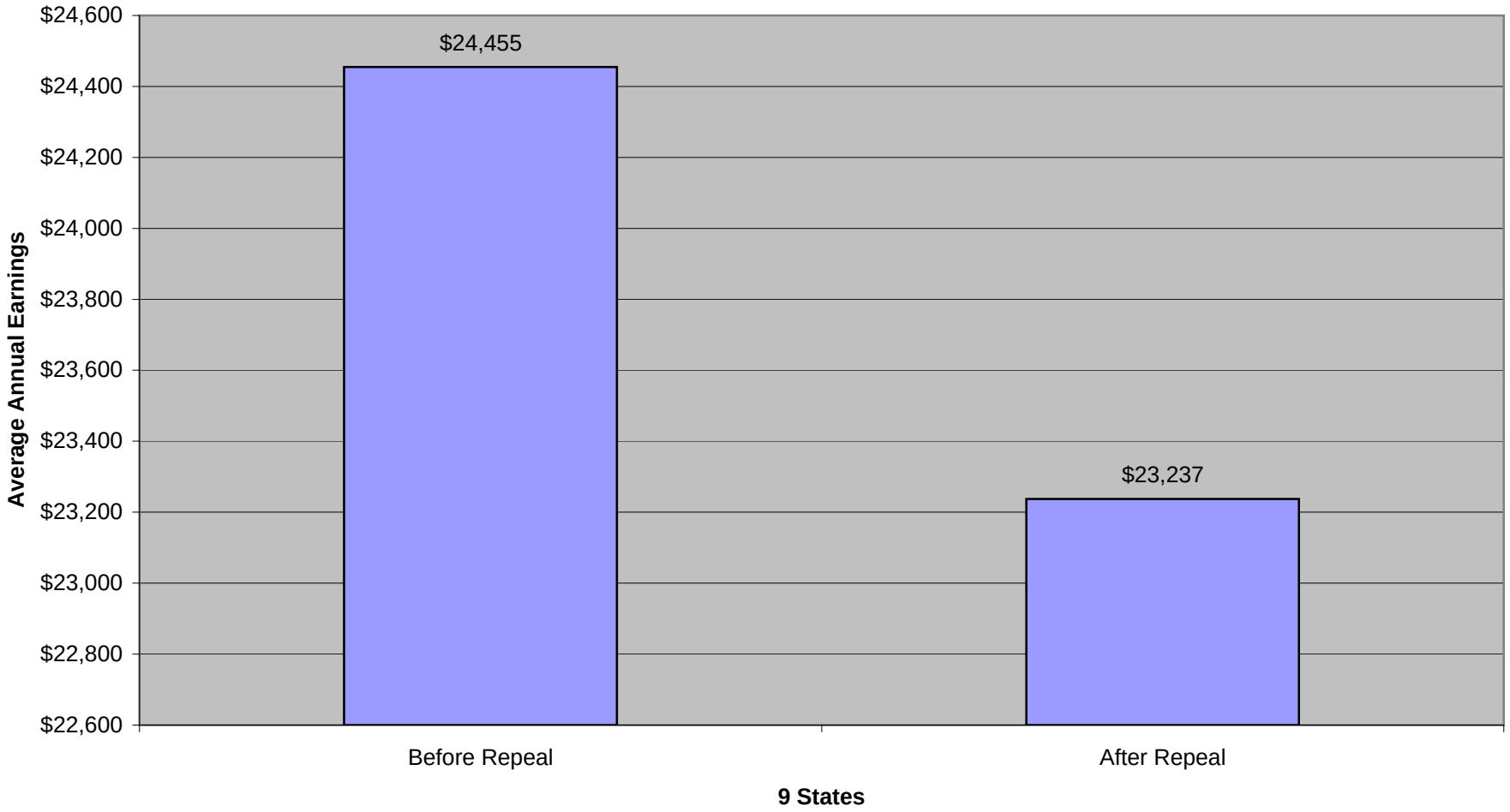
Section V.1: General Overview of Construction in Missouri

According to the United States Census Bureau, the population of the State of Missouri is 5,595,211 persons.[20] The total urban population is 3,881,133 or 69.4 percent of the population in Missouri. The total rural population is 1,714,078, or 30.6 percent of the population.

The rural regions chosen to analyze consist of an aggregation of five counties in North Central Missouri and an aggregation of six counties in South Central Missouri. The urban regions chosen are the 10 counties on the Missouri side of the Kansas City MSA and the seven counties on the Missouri side of the St. Louis MSA. The six rural counties in North Central Missouri are Grundy, Harrison, Mercer, Putnam, Schuyler, and Sullivan. The five rural counties in South Central Missouri are Dallas, Laclede, Pulaski,

[20] Population and Population Centers 2000. U.S. Census Bureau.

Chart IV.4
Average Annual Earnings in 9 Repeal States
New Hampshire Omitted
(1979-1995)



Webster, and Wright. The ten Missouri counties in the Kansas City MSA are Bates, Buchanan, Caldwell, Cass, Clay, Clinton, Jackson, Lafayette, Platte, and Ray. The seven Missouri counties in the St. Louis MSA are Franklin, Jefferson, Lincoln, St. Charles, Warren, Washington and St. Louis City.

For the 6 rural counties in North Central Missouri, the total population is 39,651. Of this total population, 22.0 percent are defined as urban and 78 percent as rural. For the five counties in South Central Missouri, the total population is 138,339. Of this total population, 33.0 percent are defined as urban and 67.0 percent as rural. For the 10 counties in the Kansas City MSA, the total population is 1,181,672. Of this total population, 85.2 percent are defined as urban and 14.8 percent as rural. For the seven counties in the St. Louis MSA, the total population is 1,010,7901. Of this total population, 78.8 percent are defined as urban and 21.2 percent are defined as rural. 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 1993-2002, total construction in Missouri was $25.44 billion.[21] Of the total inflation-adjusted costs of construction during that period, private sector construction was $16.47 billion and public sector construction was $8.98 billion. Private sector construction costs accounted for 64.7 percent of all construction activity in the State of Missouri. The total amount of square foot of construction in Missouri from 1993-2002 was 277,916,400 square feet. Of the total, the private sector accounted for 203,419,400 square feet or 73.2 percent. The total amount of public sector square foot of construction during this period was 74,497,000 square feet or 26.8 percent of total construction activity in Missouri during this period.

Over this time period, for the private sector, office and bank buildings, stores and restaurants, and hospital and other health treatment facilities accounted for 8.30 billion of total private sector construction activity, or 50.4 percent of private sector construction activity. With respect to square foot of construction activity in the private sector, stores and restaurants, office and bank buildings, parking garages and automotive services and manufacturing plants, warehouses, & labs accounted for 120,858,600 square feet or 59.4 percent of total private sector construction activity from 1993-2002. For the public

[21] This amount is expressed in 1993 real dollars.

sector, government services buildings and schools, libraries, and labs (non-manufacturing) accounted for $5.74 billion of total public sector construction costs, or 63.9 percent of public sector construction activity. With respect to the square foot of construction activity in the public sector over this period, government services buildings and schools, libraries, and labs (non-mfg) accounted for 45,535,900 square feet, or 61.1 percent of total public sector construction activity in Missouri during this time period. Public sector construction activity during this time period was highly concentrated in these two structure types, according to the F.W. Dodge Company.

Charts IV.5-9 present findings on the level of private and public sector activity and the real costs of construction for the State of Missouri and the two urban and two regional areas as defined. These charts demonstrate that public construction costs per square foot are higher than private costs, for the whole state and for each of our chosen regions. These findings are derived from an analysis of the construction cost data from the F.W. Dodge Company. Miscellaneous public non-residential construction costs in the public sector is 121.2 percent higher than in the private sector. This type of construction includes airline terminals, railroad terminals and freight terminals, which exact more demanding standards of construction than does most non-residential private sector construction activity.[22] The argument is often made that prevailing wage statutes increases the costs of construction in the school sector (e.g. building 5 schools for the price of 4). However, close analysis of the data for the State of Missouri for the period 1993-2002 reveals that costs of construction per square foot in this category is $167.70 per square foot in the private sector, while only $113.58 per square foot of public construction in this sector. Private sector costs of school construction per square foot are 47.6 percent higher than public sector costs.

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

Chart IV.5
State of Missouri
Costs of Public versus Private Construction
Real Cost Per Square Foot (1993 Dollars)
1993-2002

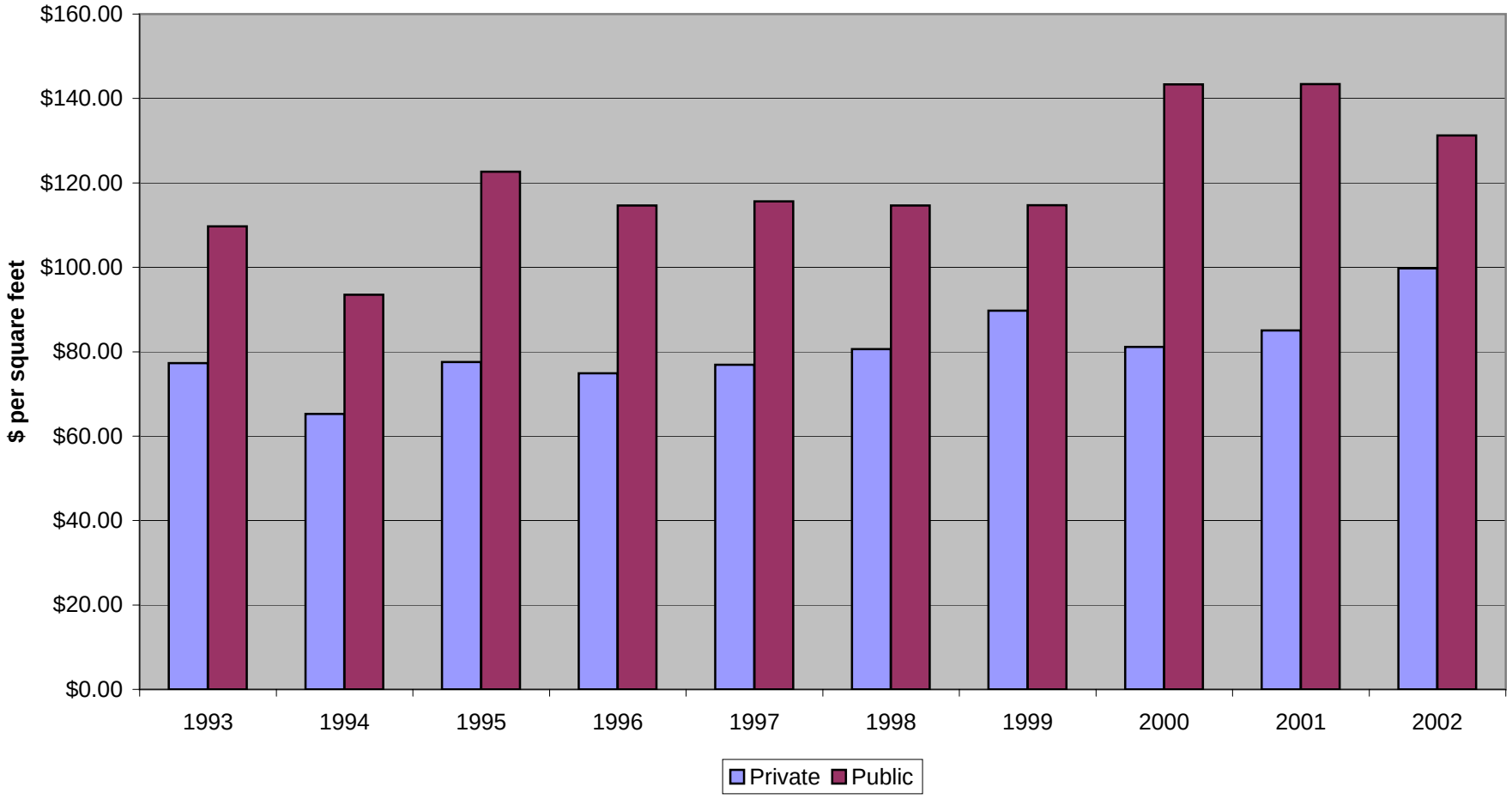


Chart IV.6
Costs of Public versus Private Construction
Real Costs Per Square Foot (1993 Dollars)
Rural Counties #1
1993-2002

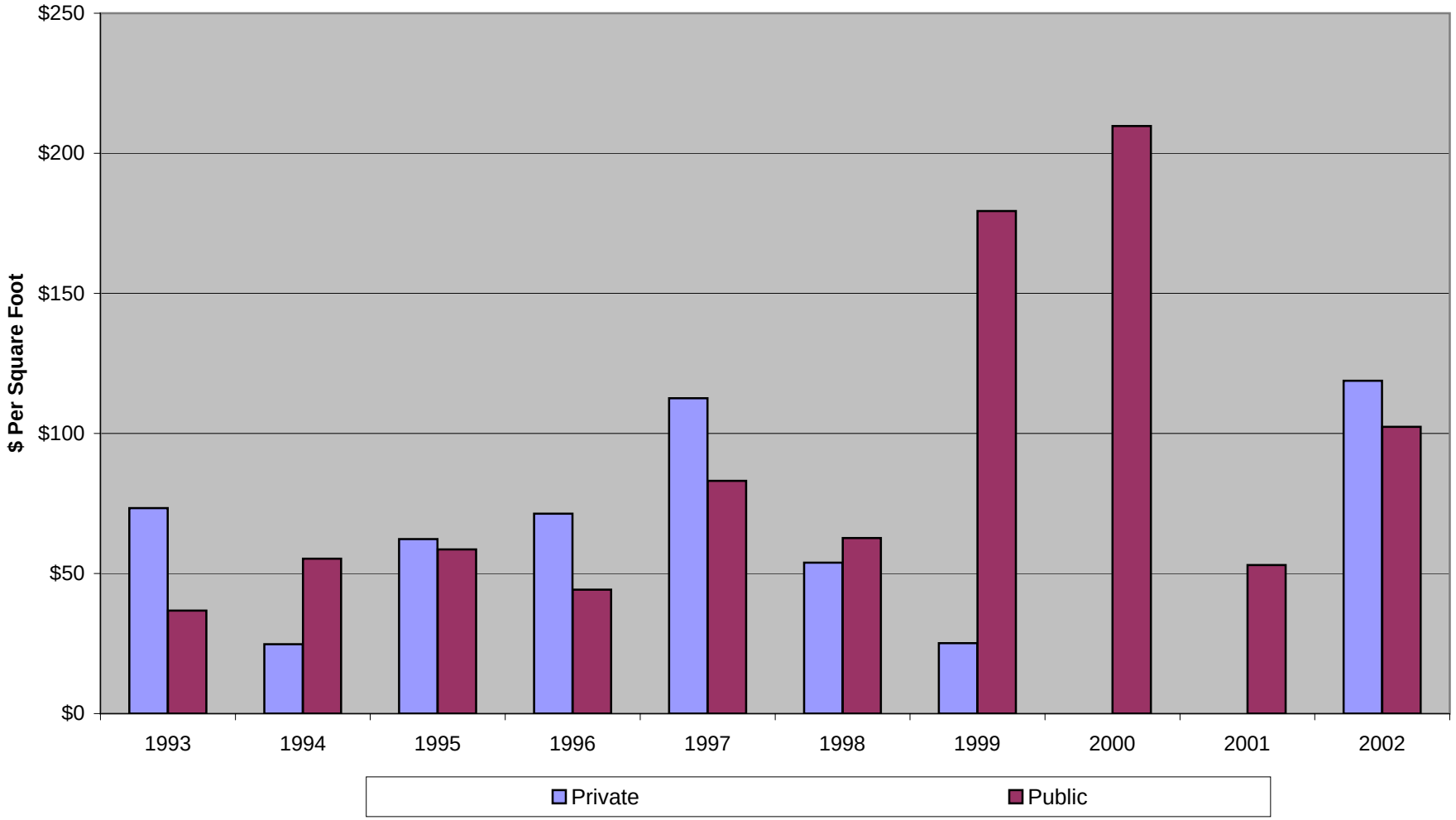


Chart IV.7
Costs of Public Versus Private Construction
Real Costs Per Square Foot (1993 Dollars)
Rural Counties #2
1993-2002

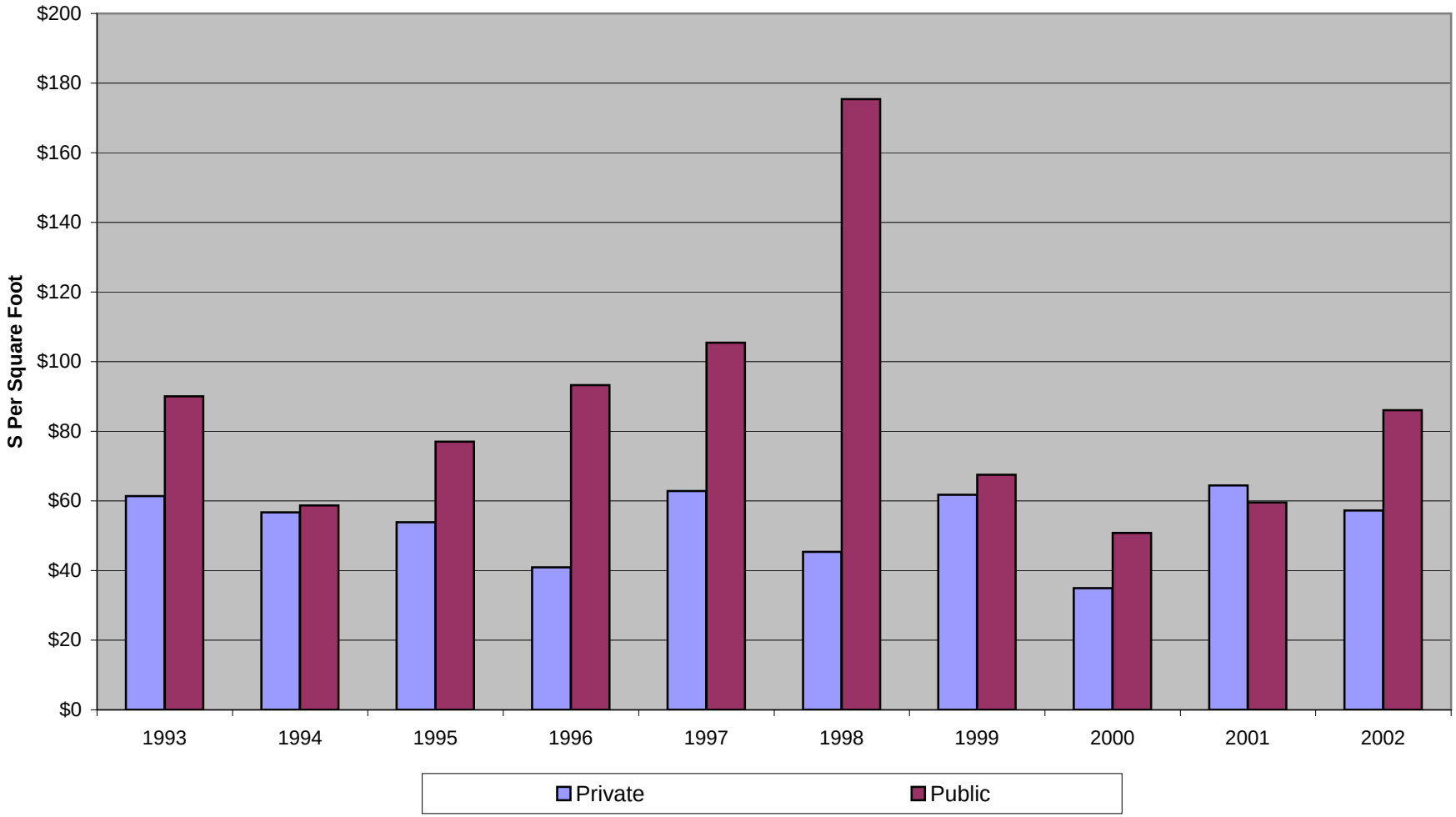


Chart IV.8
Cost of Public versus Private Construction
Real Costs Per Square Foot (1993 Dollars)
Urban Counties #1
1993-2002

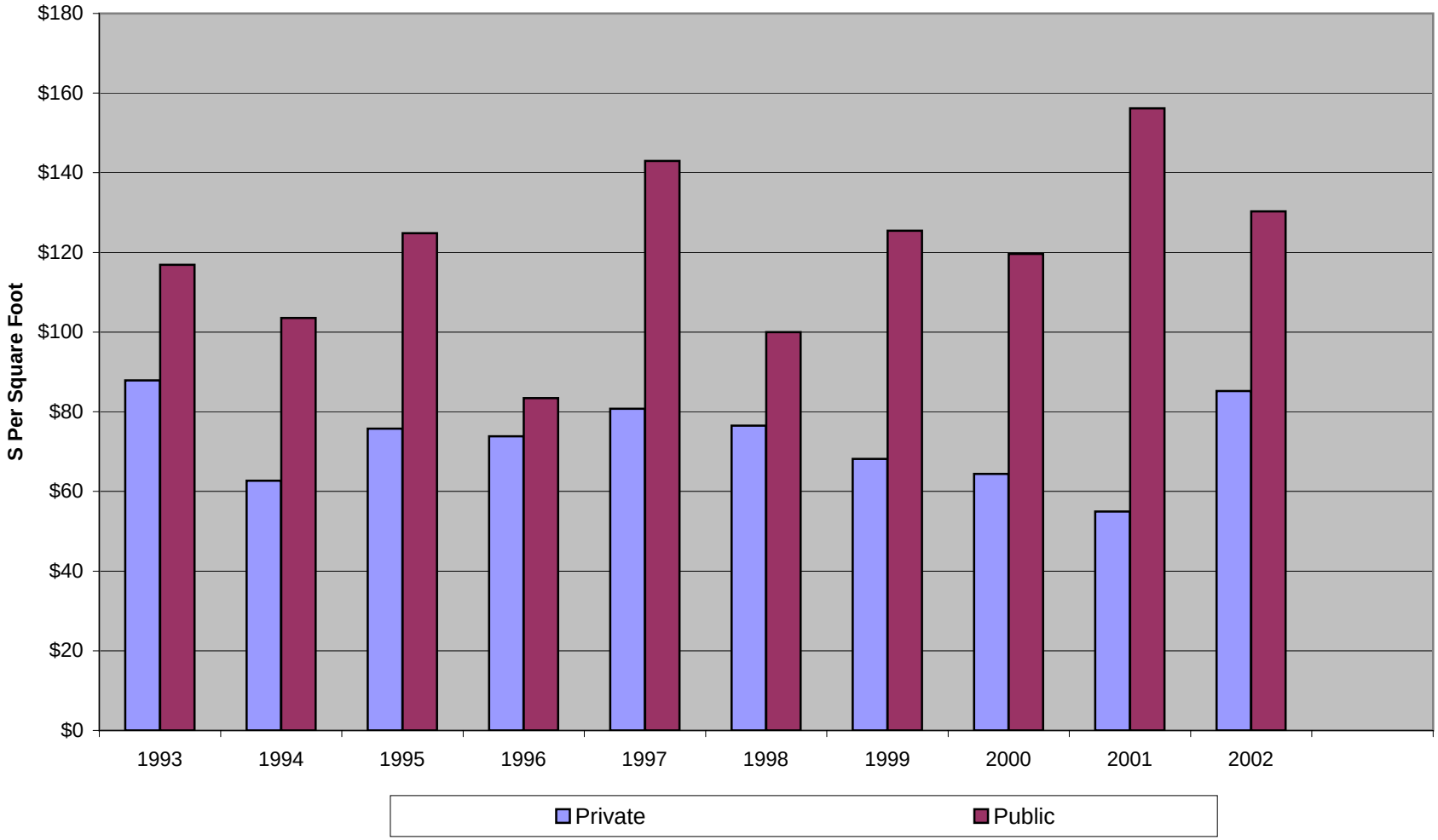
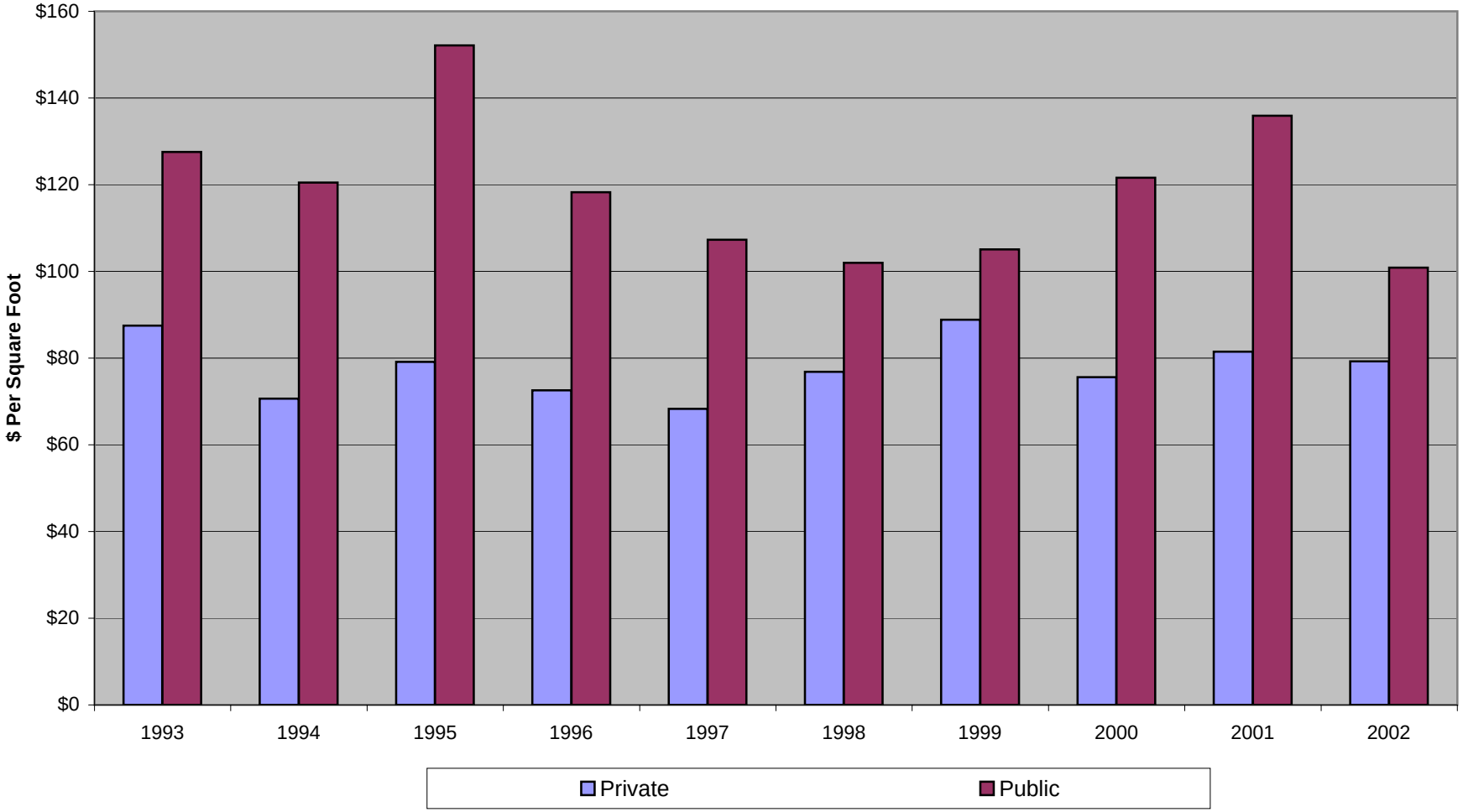


Chart IV.9
Costs of Public versus Private Construction
Real Costs Per Square Foot (1993 Dollars)
Urban Counties #2
1993-2002



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

Many studies, including this one, have presented evidence that wages should be expected to fall after repeal of the Missouri prevailing wage statute. Based upon earlier studies of the decrease in construction earnings from nine repeal states, it has been claimed that repeal would decrease construction worker income by $1,477 per worker (Phillips, 1995).[23] Detailed analyses of the decrease of income in the construction sector that followed repeal in a number of states have estimated construction incomes fall by $801 per worker annually to $1,218 per worker annually (expressed in 1993 dollars).[24]

For the purpose of this analysis, we present two loss estimates: a "low-loss" estimate using the mean reduction in per worker earnings of $1,010 and the second "high-loss" estimate using $1,218 per worker income loss (derived from the experience found in 9 repeal states since 1979).[25] These loss estimates are in 1993 prices. Adjusting this lost annual income per worker to 2002 dollars, the expected annual loss of construction income per worker ranges between $1,289 and $1,555 per worker in Missouri after repeal of prevailing wage legislation.[26] 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 137,383 workers in 2001, this direct or first order economic loss to construction workers incomes is between $177.1 million and $213.7 million annually, according to the low-loss and high-loss estimates, respectively.[27] However, this loss in construction worker income

[23] This annual loss in construction worker income was expressed in 1993 dollars.

[24] This analysis for this calculation was obtained from the Bureau of Labor Statistics database for the period 1975-2000. The $801 annual loss in construction worker income is the results from the analysis of the 10 repeal states since 1979. The $1,218 annual loss in construction worker income is the results from an analysis of 9 real states since 1979, omitting New Hampshire from the analysis. As reported earlier, the average annual earnings in New Hampshire increased substantially after repeal.

[25] It was reported in Section IV above that the results of earnings reduction in the 10 repeal states since 1979 was $801 per worker and the results of earnings reduction in 9 states that have repealed since 1979 was $1,218 per worker (excluding New Hampshire because of anomalous earnings result since repeal). For the low-loss estimate, we use the mean resulting decreasing in earnings from both results [($801+$1,219) / 2 = $1,010] in 1993 prices.

[26] In order to bring this lost annual income to 2002 dollars, the consumer price index – all urban consumers was used. Series ID CUUR0000SAH. U.S. City Average. Housing. 1982-84=100.

[27] U.S. Census Bureau. 2001 County Business Patterns for Missouri (NAICS). The 2001 data on construction employment is the most recent available.

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 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).[28]

According to the Bureau of Labor Statistics, EC202, the annual wages in 2000 for the construction sector in Missouri is $26,132. Because these annual earnings are expressed in 1993 prices, I have adjusted annual earnings in Missouri to 2002 prices. The annual earnings in 2002 prices is $33,358 annually.[29] Under the assumption that the loss in per worker income is $1,289 in 2002 and given the labor elasticity estimate of 0.2, a 3.9 percent reduction in wages would generate about 1,061 additional construction jobs. The average wage paid in Missouri in 2002 was $33,358, so if wages fall by $1289, the resulting wage will be $32,079.

[28] The 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 construction sector, the elasticity will tend to lower estimates. We have used –0.20 for our estimates in this section.
[29] U.S. Department of Labor. Bureau of Labor Statistics. Consumer Price Index – All Urban Consumers. CUUR0000SAH.

Assuming that these less productive workers earn $32,079, on average this would generate an additional $34.1 million in additional construction sector income in Missouri. This additional construction income would have induced or secondary effects as well. This direct impact of $34.1 million in additional construction income would partially offset the $177.1 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 $1,289 per worker is $143.0 million annually.

If wages fall by $1,555 per worker after repeal, then the average wage would fall to $31,813 in Missouri. Given this average wage reduction and the labor elasticity estimate of 0.2, a 4.7 percent reduction in wages would generate about 1,280 additional construction jobs. Assuming that these less productive workers earn $31,813 on average, this would generate an additional $40.7 million in construction sector income in Missouri annually. This additional construction income would have induced or secondary effects as well. The direct impact of additional income of $40.7 million in additional construction income would partially offset the $213.7 million in direct lost construction income. The net loss in direct income to the State of Missouri due to repeal under the assumption that per worker income decreased $1,555 per worker is $172.9 million annually.

This accounts for the direct impacts of repeal on the construction industry only. Many earlier studies stopped analyzing the impact at this point. They quantify the direct impacts on the construction sector and the associated public sector impacts. However, many earlier studies fail to incorporate into their analysis the economic impact of repeal the induced or secondary effects associated with lower construction incomes throughout the 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. 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 five regions in Missouri are presented below:

	Earnings ($) Multiplier[30]
Rural #1	1.4523
Rural #2	1.5725
Urban #1	1.9009
Urban #2	1.9920
State of Missouri	2.0584

These can be interpreted as follows: In Rural Region #2, for every $1 increase (decrease) of earnings in the construction sector, the region's earnings increase (decrease) by $1.45. For the state as a whole, for every $1 increase (decrease) of earnings in the construction sector, the state's earnings increase (decrease) by $2.0584. 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 2.0584 while the associated multipliers for the selected regions in Missouri is smaller, ranging from 1.4523 (Rural Region #1) to 1.9920 (Urban Region #2). This is because a higher percent of spending will "leak out" of a small region through purchases of products and services from other regions.

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 rural county selections range from 1.4523 to 1.5725, while the associated multipliers for the urban county selections range from 1.9009 to 1.9920. The urban county selections 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 percent 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.

[30] The earnings multiplier measures the dollar change in earnings of households in that region that results

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 four 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 over the next five years (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 four 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 would result in a net direct loss of construction income in Missouri of $143.0 million to $172.9 million. As discussed above, this figure is derived on the assumption that repeal leads to 1,062 and 1,280 new construction jobs under our "low-loss" and high-loss" estimates, respectively, resulting in $34.1 million to $40.7 million in new income. However, the direct cost due to lower wages earned by workers easily swamps this at $177.1 to $213.7 million in total direct earnings losses in Missouri; this net direct impact is $143.0 to $172.9 million in net direct earnings losses in Missouri. On top of this, we need to add the indirect effects.

For the State of Missouri, the earnings multiplier provided by the Bureau of Economic Analysis is 2.0584. The earning multiplier measures the dollar change in

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from a $1 change in earnings paid directly to households in the construction sector.

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 $143.0 to $172.9 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 $294.4 and $356.0 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.

The current sales tax rate in Missouri is 4.225 percent. Cites, counties, and certain districts may 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. For the projected economic loss of sales tax revenue, we have used the Missouri State sales tax rate of 4.225 percent.[31] Not all sales at the retail level are subject to Missouri tax. The taxable sales tax base in Missouri is approximately 45.7 percent.[32] For most construction workers in Missouri, the average earnings are between $20,000 - $30,000 annually. Based upon data from the Department of Labor, consumer units that report income from $20,000-$39,000 report a propensity to consume of 100 percent.[33] We can use these estimates to calculate the expected tax revenue loss resulting from repeal of prevailing wage laws.

If income would decrease by $294.4 to $356.0 million after repeal and given that the estimated sales tax coverage is approximately 45.7 percent, it is estimated that sales

[31] 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.

[32] The 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.

tax revenue would decrease at the state level by $5.7 million to $6.9 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 percent. Based upon average construction incomes in the State of Missouri and the associated marginal tax rate, the economic loss in state income taxes is $17.7 million to $21.4 million annually. In summary,

- The repeal of the prevailing wage law would cost the residents of Missouri and their families between $294.4 million and $356.0 million annually in lost income.
- The repeal of the prevailing wage law would cost the State of Missouri between $5.7 million and $6.9 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.
- The repeal of the prevailing wage law would cost the State of Missouri between $17.7 million and $21.4 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 impact of repeal of the prevailing wage law in Missouri in 2004 would be a loss of income and revenue between $317.8 million and $384.2 million annually.
- The five-year negative economic impact of repeal of the prevailing wage law in Missouri would be between $1.6 billion and $1.9 billion for the workers, families, and the public sector in Missouri.

Assuming that a repeal of prevailing wage laws could decrease cost of non-residential construction only by 5 percent (implausible given that careful analysis presented in previous chapters demonstrates that any reduction of wage is more than

[33] Consumer Expenditures in 2001. United States Department of Labor. Bureau of Labor Statistics. April 2003. Report 966.

offset by falling worker productivity), this would result in a savings of only $54.2 million in construction costs.[34] This is based upon construction costs of $1.084 billion, adjusting the F.W. Dodge data to 2002 prices. Even if repeal of prevailing wage laws could decrease cost of construction by 10 percent (extremely implausible), this would result in a savings of $108.4 million in construction costs. This further assumes that all construction in Missouri is subject to the prevailing wage law, which it clearly is not. Yet, this analysis has shown that the likely annual economic loss to the citizens of Missouri and the public sector resulting from repeal would be between $317.8 million and $384.2 million annually—many times greater than any 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. Given that labor costs are a small and decreasing component of total construction costs, 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 two urban and two rural county aggregations. The total level of construction employment in these four regions was 90,195 in 2001, equal to 65.6 percent of the construction workforce in the State of Missouri. The total earnings of the construction sector workers in these four regions was $3.8 billion in 2001 or 71.09 percent of 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) Urban Region #1

Urban region #1 contains the Missouri counties in the St. Louis MSA. These include Franklin, Jefferson, Lincoln, St. Charles, St. Louis (both city and county), Warren, and Washington counties. Table IV.7 provides the level of construction employment and construction income in those counties. Construction employment was

[34] This estimate is derived from F.W. Dodge data.

55,000 in urban region #1 or 40.4 percent of total construction employment in Missouri. Total income in urban region #1 was $2.4 billion or 45.0 percent of total construction earnings in Missouri. The earnings multiplier for the counties in the St. Louis MSA is 1.9009.

Table IV.7
Construction Employment and Income
Urban Region #1

	Construction Employment	Construction Income	Average Income
Franklin	2,267	$68,229,000	$30,097
Jefferson	3,654	$130,790,000	$35,794
Lincoln	849	$27,738,000	$32,671
St. Charles	8,127	$318,300,000	$39,166
St. Louis[1]	39,876	$1,857,152,000	$46,573
Warren	619	$15,388,000	$24,859
Washington	108	$2,445,000	$22,639
[1]Includes City and County			
Totals	**55,500**	**$2,420,042,000**	**$33,114**

SOURCE: County Business Patterns. Missouri, 2001.

Based upon calculations made in the previous section, the annual loss to construction worker income resulting from repeal ranges from $1,289 to $1,555 per worker. Based upon construction employment of 55,000 construction workers in this region (in 2001), the direct or first order economic loss to construction workers in this region is between $70.9 and $85.5 million.

As an offset to this reduction in wage income in the construction sector in this region, there could be a slight increase in overall employment in the construction sector in this region. Based upon elasticity estimates of 0.2, a 3.9 percent to 4.7 percent reduction in wage income in the construction sector would generate 425 to 513 additional construction jobs in the region. Assuming that these 425-513 workers would earn $31,825 to $31,559 on average, this would generate an additional $13.5 million to $16.2 million in construction worker income in this region. This increase would partially offset the decrease of $70.9-$85.5 million as a result of the general decline in income in the

construction sector in this region. The net direct impact would be between $57.4 million to $69.3 million annually of income lost in this region if prevailing wage legislation were repealed.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.9009. Based upon a net direct economic loss of $57.4 million to $69.3 million annually, the direct and induced impact of the repeal of Missouri's prevailing wage statute would total $109.1 million to $131.8 million annually.

In addition to the economic impact on workers and their families in this region, there will be an additional impact on the public revenue base in this region. The current sales tax rate statewide in Missouri is 4.225 percent. This economic loss was calculated in the previous section. Cites, counties, and certain districts may impose local sales taxes above the state rate. For this region, the average sales tax rate added to the state rate of 4.225 percent is 2.536 percent. For most construction workers in this region, the earnings are in the third 20-percent decile (income before taxes is $35,660). Based upon data from the Department of Labor, consumer units that report income below $35,660 report a propensity to consume of 100 percent.[35] Given that income would decrease by $109.1 million to $131.8 million annually after repeal of the prevailing wage law, and given that the estimated sales tax coverage is approximately 45.7 percent, it is estimated that sales tax revenue would decrease in this region by $1.3 million to $1.5 million annually.

A one-percent earnings tax is assessed in St. Louis. It is estimated that 71.8 percent of earned income is subject to this tax. Based on our estimate of income loss between $109.1 million and $131.8 million, the expected lost earnings tax revenue for St. Louis will be between $783,030 and $946,484 annually if the prevailing wage law is repealed.

In summary, the economic impact of repeal of Missouri's the prevailing wage law would be to decrease income throughout the St. Louis region by a range of $109.1 million to $131.8 million annually, depending upon the assumption of the decrease in wage per worker in the region. In addition, there would be economic losses in the form of reduced sales taxes and earnings taxes. We present two estimates of reduced annual

[35] Consumer Expenditures in 2001. United States Department of Labor. Bureau of Labor Statistics. April 2003. Report 966.

sales taxes and earnings taxes in this region, based upon the assumption of lost income per construction worker in Missouri. The range of lost sales taxes to this region is $1.3 to $1.5 million annually and the range of lost earnings taxes is $783,030 to $946,484. The conclusions with respect to the economic impact in this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between $109.1 million and $131.8 million annually in lost income.
- The repeal of the prevailing wage law would cost this region between $1.3 and $1.5 million in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost this region between $783,030 and $946,484 million annually in lost earnings tax collections.
- The total economic impact of repeal of the prevailing wage law in this region in 2004 would be a loss between $111.1 million and $134.3 million annually.

B) Urban Region #2

Urban region #2 contains the Missouri counties contained in the Kansas City MSA. These include Bates, Buchanan, Caldwell, Cass, Clay, Clinton, Jackson, Lafayette, Platte and Ray Counties. Table IV.8 provides the level of construction employment and construction income in those counties. Construction employment was 33,334 in urban region #2 or 24.3 percent of total construction employment in Missouri. Total construction income in urban region #2 was $1.4 billion or 25.5 percent of total construction earnings in Missouri. The earnings multiplier for the counties in the Kansas City MSA is 1.9920.

Table IV.8
Construction Employment and Income
Urban Region #2

	Construction Employment	Construction Income	Average Income
Bates	150	$3,095,000	$20,633
Buchanan	2,371	$108,319,000	$45,685
Caldwell	187	$6,532,000	$34,930
Cass	2,054	$65,354,000	$31,818
Clay	3,594	$140,760,000	$39,165
Clinton	168	$3,878,000	$23,083
Jackson	22,776	$978,169,000	$42,947
Totals	445	$12,094,000	$27,178
Platte	1,410	$49,931,000	$35,412
Ray	179	$3,871,000	$21,626
Totals	**33,334**	**$1,372,003,000**	**$41,159**

SOURCE: County Business Patterns. Missouri, 2001.

Based upon calculations made in the previous section, the annual loss in construction worker income ranges from $1,289 to $1,555 per worker (3.9 percent to 4.7 percent). Based upon construction employment of 33,334 construction workers in 2001 in this region, the direct or first order economic loss to construction workers in this region ranges from $43.0 million to $51.8 million.

As an offset to this reduction in wage income in the construction sector in this region, there could 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 3.9 percent to 4.7 percent reduction in wage income in the construction sector would generate 258 to 311 additional construction jobs in the region. Assuming that these additional workers would earn $39,870 to $39,604 on average, this would generate an additional $10.3 million to $12.3 million in construction worker income in this region. This increase of income would partially offset the decrease of $43.0-$51.8 million as a result of the general decline in income in the construction sector in this region. The net direct loss would be $33.0 million to $40.0 million annually throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.9920. The earnings multiplier measured the direct and induced impact of a reduction in earnings in the construction sector. Based upon a direct economic loss of $33.0 million to $40.0 million annually in the construction sector in this region, the direct and induced impact of the repeal of Missouri's prevailing wage statute on this sector would be $65.1 million to $78.7 million 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. The reduction in wages paid to people in this region will result in lower taxable income; this will decrease the revenue derived by local governments from sales taxes and earnings taxes.

In order to calculate the lost sales tax, we estimated the average sales tax rate above the state sales tax. For this region, the average sales tax rate above the state rate is 2.385 percent. For most construction worker in this region, the average earnings are in the third 20 percent decile (income before taxes is $35,536). Based upon data from the Department of Labor, consumer units that report income before taxes of $35,536 report a propensity to consume of 100 percent.[36] Given that income would decrease $64.1-$78.7 million annually from repeal of the prevailing wage law and given the estimated sales tax coverage is approximately 45.7 percent, it is estimated that sales tax revenue would decrease in this region by $709,957 to $858,265 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. This ratio is 64.8 percent of total construction income earned in the region. Based on our estimates, we calculate the lost earnings tax for Kansas City would be between $444,885 and $537,821 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 $65.1 million to $78.7 million annually. In addition, there would be economic losses in the form of reduced sales taxes and earnings taxes. The range of lost sales taxes to this

[36] Consumer Expenditures in 2001. United States Department of Labor. Bureau of Labor Statistics. April 2003. Report 966.

region is $709,957 to $858,265 annually and the range of lost earnings taxes is $444,885 to $537,821 annually.

The conclusions with respect to the economic impact of repeal of prevailing wage laws for this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between $65.1 million and $78.7 million annually in lost income.
- The repeal of the prevailing wage law would cost this region between $709,957 and $858,265 in lost sales tax collections annually.
- The repeal of the prevailing wage law would cost this region between $444,885 and $537,821 annually in lost earnings tax collections.
- The total economic impact of repeal of the prevailing wage law in this region in 2004 would be an economic loss between $66.3 million and $80.1 million annually.

C) Rural Region #1

Rural region #1 contains the North Central Missouri counties of Grundy, Harrison, Mercer, Putnam, Schuyler, and Sullivan. Table IV.9 provides the level of construction employment and construction income in those counties. Construction employment was 162 workers in rural region #1 or 0.1 percent of total construction employment in Missouri. Total income in rural region #1 was $4.5 million or 0.08 percent of total construction earnings in Missouri. The earnings multiplier for the counties in this region is 1.4523.

Based upon calculations made in the previous section, the annual loss in construction worker income ranges from $1,289 to $1,555 per worker. Based upon construction employment of 162 construction workers in 2001 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 $1,289 is $209,000. If the average loss were $1,555 per worker, the total loss of income resulting from repeal would be $251,910.

Table IV.9
Construction Employment and Income
Rural Region #1

	Construction Employment	Construction Income	Average Income
Grundy	81	$1,946,000	$24,025
Harrison	N/A	N/A	N/A
Mercer	35	$1,475,000	$42,143
Putnam	N/A	N/A	N/A
Schuyler	N/A	N/A	N/A
Sullivan	46	$1,066,000	$23,174
Totals	**162**	**$4,487,000**	**$27,698**

SOURCE: County Business Patterns. Missouri, 2001.

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 3.9 percent to 5.2 percent reduction in wage income in the construction sector would generate 1-2 additional construction job in the region, respectively. Assuming that these additional workers would earn $26,409 to $26,143 annually, this would generate an additional $33,055-$39,473 in construction worker income in this region. This increase would partially offset the decrease of $208,000 to $251,910 as a result of the general decline in income in the construction sector in this region. The net direct loss of income would be $175,763 to $212,437 annually throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.4523. 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 $175,763 to $212,437 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 $255,261 to $308,522 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 show 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 and earnings 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 2.366 percent. For most construction workers in this region, the average earnings are between $20,000 - $30,000 annually. Based upon data from the Department of Labor, consumer units that report income from $20,000-$39,000 report a propensity to consume of 100 percent.[37] Given that income would decrease $255,261-$308,522 annually after repeal of the prevailing wage law and given that the estimated sales tax coverage is approximately 45.7 percent, it is estimated that sales tax revenue would decrease in this region by $2,760 to $3,336 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 $255,261 to $308,522 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 $2,760 to $3,336 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 $255,261 and $308,522 annually in lost income.
- The repeal of the prevailing wage law would cost this region between $2,760 and $3,336 in lost sales tax collections annually.
- The total economic loss due to repeal of the prevailing wage law in this region in 2004 would be between $258,021 and $311,858 annually.

[37] Consumer Expenditures in 2001. United States Department of Labor. Bureau of Labor Statistics. April 2003. Report 966.

D) Rural Region #2

Rural region #2 contains the South Central Missouri counties of Dallas, Laclede, Pulaski, Webster, and Wright. Table IV.10 provides the level of construction employment and construction income in those counties. Construction employment was 1,199 in rural region #2 or 0.09 percent of total construction employment in Missouri. Total income in rural region #2 was $26.8 million or 0.50 percent of total construction earnings in Missouri. The earnings multiplier for the counties in this region is 1.5725.

Table IV.10
Construction Employment and Income
Rural Region #2

	Construction Employment	Construction Income	Average Income
Dallas	104	$3,090,000	$29,712
Laclede	298	$7,332,000	$24,604
Pulaski	211	$4,428,000	$20,986
Webster	443	$8,502,000	$19,192
Wright	143	$3,423,000	$23,937
Totals	**1,199**	**$26,775,000**	**$22,331**

SOURCE: County Business Patterns. Missouri, 2001.

Based upon calculations made in the previous section, the annual loss in construction worker income ranges from $1,289 to $1,555 per worker. Based upon construction employment of 1,199 construction workers in 2001 in this region, the direct or first order economic loss to construction workers in this region is $1.5 million to $1.9 million annually.

As a partial offset to this reduction in wage income in the construction sector in this region, there could 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 3.9 to 4.7 percent reduction in wage income in the construction sector would generate 9-11 additional construction jobs in the region. Assuming that these 9-11 additional workers

would earn $24,042 to $20,776 on average, this would generate an additional $194,926 to $232,173 in construction worker income in this region. This increase of income would partially offset the loss of income due to the direct impact of repeal on this region. The net direct impact would be $1.4 to $1.6 million annually in lost incomes throughout this region.

For this region, the earnings multiplier provided by the Bureau of Economic Analysis was 1.5725. 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 $1.4-$1.6 million annually in the construction sector in this region, the direct and induced impact of the repeal of Missouri's prevailing wage statute on this region would be $2.1 million to $2.6 million 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 have led to 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 local governments from sales taxes and earnings taxes. For this region, the average sales tax rate above the state rate is 1.790 percent. For most construction workers in this region, the average earnings are between $20,000 - $30,000 annually. Based upon data from the Department of Labor, consumer units that report income from $20,000-$39,000 report a propensity to consume of 100 percent.[38] Given that income would decrease $2.1-$2.6 million annually after repeal of the prevailing wage law and given that the estimated sales tax coverage is approximately 45.7 percent, it is estimated that sales tax revenue would decrease in this region by $17,373 to $20,997 annually.

In summary, the economic impact of repeal of Missouri's prevailing wage law would be to decrease income throughout this region by a range of $2.1 million to $2.6 million annually. In addition, there would be additional economic losses in the form of reduced sales taxes. The range of lost sales taxes to this region is $17,373 to $20,997 annually.

[38] Consumer Expenditures in 2001. United States Department of Labor. Bureau of Labor Statistics. April 2003. Report 966.

The conclusions with respect to the economic impact on this region are:

- The repeal of the prevailing wage law would cost the residents of this region and their families between $2.1 million and $2.6 million annually in lost income.
- The repeal of the prevailing wage law would cost this region between $17,373 and $20,997 in lost sales tax collections annually.
- The total economic loss due to repeal of the prevailing wage law in this region in 2004 would be between $2.1 million and $2.6 million

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: By 1991-92, average total compensation for states that kept prevailing wages laws was 20.2% higher than for those states that repealed their laws after 1982-3.
- Prevailing wage laws have helped to prevent erosion of compensation for construction workers: There was no change in real average total compensation for states that kept prevailing laws; however, there was a 16.6 percent decline in real average total compensation in states that repealed their prevailing wage laws.
- Real average total benefits per construction worker increased 32.4 percent from 1982-83 to 1991-92 in prevailing wage states; for states that repealed their prevailing wage law, real average total benefits decreased 53.5 percent over the same period. Real average total benefits per worker in prevailing wage states was 373.1 percent higher than in those states that repealed their PWL.
- Real average pension benefits increased 5.0 percent from 1982-83 to 1991-92 in prevailing wage states; for states that repealed their prevailing wage law, real average pension benefits decreased 66.6 percent over the period. Real average pension benefits per worker in prevailing wage states was 417.9 percent higher than in those states that repealed their PWL.
- Real average health care benefits increased 49.4 percent between 1982-83 and 1991-92 in prevailing wage states; for states that repealed their prevailing wage law, real average health care benefits decreased 38.2

percent. Real average health care benefits per worker in prevailing wage states was 345.0 percent higher than in those states that repealed their PWL.

- 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 2001, Missouri had 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 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 probably endanger Missouri's superior safety record.
- Union labor productivity is 17-52 percent higher than non-union labor.
- Union productivity effect in construction is between 17-38 percent.
- No correlation between average cost per mile and average wage rate in highway construction between 1980-1993.
- Implausible that repeal of prevailing wage rate would reduce construction costs, given productivity effects in construction.
- Percentage of construction work done by in-state contractors in the Great Plains Region is significantly higher in prevailing wage states than non-prevailing wage states.
    - For prevailing wage states in the Great Plains Region, the value of construction work done by in-state contractors was 86.9, 91.0, and 91.7 percent, respectively, for the three Census reports 1982-1992.

- For non-prevailing wage states in the Great Plains Region, the value of construction work done by in-state contractors was only 77.2, 79.1, and 84.5 percent respectively.
- In Missouri, a prevailing wage state, the percentage of construction work done by in-state contractors was 80.6, 89.2, and 88.0 percent over the period 1982-1992; in Kansas, a non-prevailing wage state, the percentage of work done by in-state contractors was only 76.0, 74.6, and 82.7 percent over the period 1982-1992. The presence of a prevailing wage statute is good for Missouri contractors, its citizens, and taxpayers as jobs and incomes are kept in Missouri.

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 an article by William J. Wiatrowski (1995), it is reported that 84 percent of the working population had health insurance coverage during 1993.[39] According to the Department of Labor, 78 percent of workers in establishments were covered by health insurance plans. However, the percent of coverage in the construction industry reported by Mr. Wiatrowski was the lowest of all sectors; only 55 percent of construction workers were covered by health insurance. With respect to pensions, Petersen (2000) reports that pension coverage for construction workers is about 30 percent, while the pension rate coverage for the rest of the employed population is approximately 50 percent.[40] These very low coverage rates are related to the specific nature of construction employment.

[39] William J. Wiatrowski. *Monthly Labor Review*. June, 1995: 36-44.
[40] 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.

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 2001, construction firms that have fewer than 20 employees employ 90.1 percent of all construction workers while construction firms that have less than 100 employees employ 98.9 percent of all construction workers. The costs 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 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.

According to the United States Census Bureau, the percentage of the population covered by health insurance through their own employer or another person's employer had decreased to 75.9 percent of the employed population by 1997.[41] The number and percentage of employers that offer health insurance varies dramatically among industry groups, as does the likelihood that an employee will be covered by the employer's health insurance plan. According to the U.S. Census Bureau, workers in education services and in manufacturing were the most likely to be offered health insurance; the offer rate was 92.0 percent and 90.7 percent, respectively. At the other end of the spectrum, the workers least likely to be offered health insurance by their employer were in the agricultural, mining, and construction industry; the offer rate for this group was only 57.3 percent.[42] In 1997, the occupational groups having the highest offer rates of health insurance consisted of architects, technicians, scientists, and medical workers and

[41] U.S. Census Bureau. Employment-Based Health Insurance: 1997. Household Economic Studies. Issued, December 2002.

[42] In the Monthly Labor review report by Mr. Wiatrowski, approximately 55 percent of construction workers were offered health insurance. William J. Wiatrowski. *Monthly Labor Review*. June, 1995: 36-44.

managers & administrators at 92.8 percent and 89.5 percent, respectively. Once again, the occupation group having the lowest offer rate was farm, construction, and mining workers; only 55 percent of workers in this occupational group were offered health insurance by their employer.

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.[43] Employers also bear a portion of the burden of uninsured workers; when employees miss work, leave their job, or retire early for health reasons, the employers bear an economic cost.[44] The health system also bears an economic cost as well. It is reported that approximately $34.5 billion in uncompensated care was received by the uninsured in 2001. In addition to these direct costs to the health system, there are indirect costs through inefficient use of the health care system (e.g. costs of emergency room visits that are not needed). One report states that 33 percent of

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[43] 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.

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

emergency room visits were for health reasons that did not require emergency room care and could have been provided a lower cost alternative.

The taxpayers also bear an economic cost of 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. The Commonwealth Fund reports that these intergovernmental expenditures were approximately $30.6 billion annually. 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.

It has been reported that benefit payments to union construction workers are substantially higher than to non-union workers (Petersen, 2000). Petersen reported that in 1992, health, welfare and pension plans in the construction industry paid $13.2 billion in benefits to active construction workers and retirees, of which the vast majority was paid to union members. Peterson further reports that the benefits paid per worker for union construction was $12,798, while the benefits paid per worker for nonunion construction was $434.[45] Petersen reports that although unionized construction workers account for only 20 percent of the workforce in the construction sector, unionized benefit programs account for 88 percent 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.

With respect to production workers in the construction sector, union members are much more likely to have employer or union-provided health insurance than are non-union workers. In 2000, it is reported by the Center to Protect Workers Rights (CPWR) that only 46 percent of wage and salary construction workers were eligible for an employer or union-provided pension plan, while 39 percent of the workers participated in such plans.

In 2000, 82 percent of union members had health insurance provided by their employer or union; only 46 percent of non-union members had insurance provided by employer.[46] The percentage of construction workers that have employer provided health

[45] 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.
[46] The Center to Protect Workers Rights. The Construction Chart Book. Third Edition, 2002

insurance plans varies substantially among selected occupations within the construction sector. For sheet metal workers, 77 percent of employees are covered by health insurance plans by their employer or by their union, while roofers and painters coverage is only 28 percent and 26 percent, respectively.

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 percent of the increase in the numbers of uninsured while manufacturing's decline contributed 18 percent to the increase in the numbers of uninsured over this period.[47] Buchmueller, et al (2001) shows that declining unionization between 1983-1997 explains 20-35 percent of the decline in employee health coverage.[48]

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. With respect to pension coverage, Petersen (2000) reports that pension coverage for construction workers is about 30 percent, while the pension rate coverage for the rest of the employed population is approximately 50 percent.[49] In the 2000 report by CPWR, it is reported that pension participation among union members is 76 percent, while pension participation among non-union workers is only 28 percent. Once again, the participation level in employer or union-provided pension plans differed substantially among the various trades in construction. Sheet metal workers have 68 percent of their workers enrolled in company provided or union provided pension plans, while painters and roofers have only 13 percent and 10 percent, respectively, enrolled in their pension plans.

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[47] The Commonwealth Fund. The Growing Share of Uninsured Workers Employed by Large Firms. October 2003.

[48] 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.

[49] 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.

Petersen (2000) conducts an empirical analysis of the effect of prevailing wage laws on compensation paid to construction workers. He first compares income and benefits with states that never had a prevailing wage law in those states that kept their prevailing wage law during the period 1982-1992. Secondly, he compares construction income and benefits in states that have a prevailing wage law with those that repealed their prevailing wage law. [50] In the Petersen analysis, Florida, Utah and Alabama were excluded from the study because they repealed their PWL prior to 1982. Alaska, Kentucky, Montana, Wyoming, Iowa, and the District of Columbia were excluded due to missing values for wage and benefit data. The remaining states were 28 with PWL, 8 that never had a law, and 6 that repealed their law.

Table V.1 replicates the results presented by Petersen in his analysis. There are several significant findings from the Petersen analysis for the current prevailing wage debate. Note, this data is reported in constant 1994 dollars.

- For the period 1982-83, average total compensation for states that kept PWLs was 0.2% higher than for those states that repealed their prevailing wage law; by the period 1991-92, average total compensation for states that kept PWLs was 20.2% higher than for those states that repealed their laws over the intervening period.
- There was no change in real average total compensation for states that kept prevailing laws over this period, increasing from $35,180 in 1982-83 to $35,238 in 1991-92; however, there was a 16.6 percent decline in real average total compensation in states that repealed their PWL, decreasing from $35,156 in 1982-83 to $29,326 in 1991-92.

[50] In the Petersen analysis, Florida, Utah and Alabama were excluded from the study because they repealed their PWL prior to 1982. Alaska, Kentucky, Montana, Wyoming, Iowa, and the District of Columbia were excluded due to missing vales for wage and benefit data. The remaining states were 28 with PWL, 8 that never had a law, and 6 that repealed their law.

Table V.1
Comparison of Average Wages, Benefits, and Wage/Benefit Mix in States With and Without Prevailing Wage Laws, 1982-1992

	States that Kept PWL			States That Never Had PWL			States That Repealed PWL		
	1982-83	1991-92	% change	1982-83	1991-92	% change	1982-83	1991-92	% change
Average Total Compensation	$35,180	$35,238	0.0%	$27,533	$30,435	10.5%	$35,156	$29,326	-16.6%
Average Wages	$33,092	$32,474	-1.9%	$27,180	$29,971	10.3%	$33,900	$28,741	-15.2%
Average Total Benefits	$2,087	$2,763	32.4%	$353	$465	31.7%	$1,255	$584	-53.5%
Average Pension Benefits	$1,105	$1,160	5.0%	$208	$174	-16.3%	$672	$224	-66.7%
Average Health Care Benefits	$1,072	$1,602	49.4%	$145	$289	99.3%	$583	$360	-38.2%
Percent of Compensation in Wages	94.1%	92.2%	-1.9%	98.7%	98.5%	-0.2%	96.4%	98.0%	1.6%

SOURCE: Reprinted from Jeffrey S. Peterson. *Health Care and Pension Benefits for Construction Workers: The Role of Prevailing Wage Laws.* Industrial Relations, Volume 39, No. 2 (April, 2000)

- Real average total benefits per construction worker increased 32.4 percent from 1982-83 to 1991-92 in prevailing wage states, increasing from $2,087 per construction worker in 1982-83 to $2,763 per construction worker in 1991-92; for states that repealed their prevailing wage law, real average total benefits decreased 53.5 percent from 1982-83 to 1991-92, decreasing from $1,255 per construction worker in 1982-83 to $584 per construction worker in 1991-92. Real average total benefits per worker in prevailing wage states was 373.1 percent higher than those states that repealed their PWL.
- Real average pension benefits increased 5.0 percent from 1982-83 to 1991-92 in prevailing wage states, increasing from $1,105 per construction worker in 1982-83 to $1,160 per construction worker in 1991-92; for states that repealed their prevailing wage law, real average pension benefits decreased 66.6 percent between 1982-83 and 1991-92, decreasing from $672 per construction worker in 1982-83 to $224 per construction worker by 1991-92. By 1991-2, real average pension benefits per worker in prevailing wage states was 417.9 percent higher than in those states that repealed their PWL.
- Real average health care benefits increased 49.4 percent from 1982-83 to 1991-92 in prevailing wage states, rising from $1,072 per construction worker in 1982-83 to $1,602 per construction worker in 1991-92; for states that repealed their prevailing wage law, real average health care benefits decreased 38.2 percent between 1982-83 and 1991-92, decreasing from $583 per construction worker in 1982-83 to $360 per construction worker in 1991-92. By 1991-2, real average health care benefits per worker in prevailing wage states was 345.0 percent higher than in those states that repealed their PWL.

As expected, the mix of wages and benefits shifted toward benefits in states that had prevailing wage laws. The results of the Petersen study show that the wage-benefit mix for construction workers in prevailing wage states decreased from 94.1 percent to

92.2 percent over the time period from 1982-1992. For states that repealed prevailing wage laws, the wage-benefit mix for construction workers increased from 96.4 percent to 98.0 percent in favor of wages over the same time period. an analysis of Census of Construction data for the four reporting periods between 1982 and 1997, the same trend is reflected.

In an analysis of the Great Plain States for the four reporting periods from 1982-97, we can see a changing shift in the wage-benefit mix between the 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 (Table V.2).[51]

TABLE V.2
Analysis of Legally Required and Voluntary Benefits Paid
North Central States Region: 1982-1997

Non-prevailing Wage States	1982	1987	1992	1997
Fringe Benefits - Total	$3,908,314 100.0%	$5,439,126 100.0%	$6,214,919 100.0%	$9,634,452 100.0%
Legally Required Expenditures	$2,859,828 75.2%	$3,934,781 72.3%	$4,511,226 72.6%	$6,847,858 71.1%
Voluntary Expenditures	$ 945,481 24.8%	$1,504,336 27.7%	$1,703,691 27.4%	$2,786,595 28.9%
Prevailing Wage States	1982	1987	1992	1997
Fringe Benefits - Total	$10,639,092 100.0%	$19,497,496 100.0%	$23,182,239 100.0%	$31,788,027 100.0%
Legally Required Expenditures	$7,885,888 74.1%	$123,080,392 67.1%	$14,584,694 62.9%	$18,844,587 59.3%
Voluntary Expenditures	$2,753,188 25.9%	$6,417,085 32.9%	$8,597,551 37.1%	$12,943,440 40.7%
SOURCE: United States Census Bureau. Census of Construction. 1982, 1987, 1992, and 1997				

[51] 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, insurance premiums for hospital and medical plans, welfare plans, and union negotiated benefits.

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 percent of total benefits in the form of voluntary benefits. In non-prevailing wage states, this percentage was 24.8 percent. In each of the three following reporting periods, this differential has widened substantially. In 1997, prevailing wage states paid 40.7 percent of all fringe benefits in the form of voluntary benefits, while non-prevailing wage states paid only 28.9 percent of total benefits in the form of voluntary benefits. An analysis of 1997 data from the Census of Construction also shows that the prevailing wage states in the North Central Region paid $3,968 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 $2,158. Voluntary benefits paid per worker in the construction section in 1997 were 84 percent higher in the prevailing wage states than in non-prevailing wage states in the North Central Region.

B. Skills Training and Apprenticeship.

Construction employment is predicted to increase at an average rate of 1.2 percent annually over the period 2000-2010, adding approximately 825,000 new jobs over the decade.[52] In a report in the Monthly Labor Review, the author states that the construction industry is the goods-producing sector's largest and fastest growing source of employment growth (Berman, 2001).[53] Projected to reach an employment level of 7.5 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 $1.182 trillion by 2010.

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 1996, The Business Roundtable surveyed its member companies to validate these concerns of shortages of the skilled workforce in the construction industry.[54] In their

[52] U.S. Department of Labor. Bureau of Labor Statistics. Monthly Labor Review. Industry Output and Employment Projections to 2010. November 2001.
[53] Ibid. Page 54
[54] The Business Roundtable. Confronting the Skilled Construction Workforce Shortage. A Blueprint for the Future. October 1997.

survey, over 60 percent of survey respondents indicated a shortage of skilled craft workers and 75 percent reported that the skilled shortage trend was becoming worse. Although craft shortages were reported to be particularly acute for electricians, pipe fitters, and welders, all crafts identified in the survey reported some level of shortages. In a study conducted by the National Center for Construction Education and Research, they found that 92 percent of national construction firms reported shortages of skilled labor and over 85 percent 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.

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 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.[55] 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

[55] 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.

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.

Table V.3 shows the distribution of new apprenticeships by year for the period 1989-2001. The total number of new apprenticeships registered between 1989-2001 is 467,980. Columns 3 and 4 of Table V.3 illustrate the distribution of new apprenticeships between the joint and non-joint programs over this period. For the period 1989-2001, union apprenticeship programs were 335,288 or 71.6% of all apprenticeship registrations during this time period.

Table V.3
New Apprenticeships in Construction by Year and Program Type

YEAR	TOTAL REGISTRATIONS	UNION REGISTRATIONS	NON-UNION REGISTRATIONS
1989	27,414	75.6%	24.4%
1990	29,378	73.2%	26.8%
1991	24,594	72.1%	27.9%
1992	23,937	70.8%	29.2%
1993	28,034	73.2%	26.8%
1994	34,677	71.8%	28.2%
1995	28,340	73.2%	26.8%
1997	43,303	69.5%	30.5%
1998	47,826	70.0%	30.0%
1999	56,713	71.2%	28.8%
2000	63,633	71.8%	28.2%
2001	60,131	70.8%	29.2%
Totals: 1989-2001	467,980	71.6%	28.4%

SOURCE: Bureau of Labor Statistics and Report by the Building and Construction Trades Department, AFL-CIO. October 2003.

The length of apprenticeships programs in the construction sector can last for a period up to five years. Using the Bureau of Labor Statistics database, an examination of the apprenticeships that registered in 1989-1991 and had graduated by 1995 reveals that approximately 41 percent of joint and 25 percent of the non-joint apprenticeships had completed their apprenticeship program by 1995. The cancellation rate for joint apprenticeships and non-joint apprenticeships was approximately 37 percent and 54 percent, respectively. This result shows that the joint programs have both higher retention rates in the apprenticeship programs and lower rates of attrition that do non-joint programs. The results also show that of those that graduated from the apprenticeship classes of 1989-1991, 82 percent completed joint programs while only 18 percent complete the non-joint programs. Given that only 15 percent of the construction sector are unionized, this evidence supports the argument that the unionized portion of the construction sector provides a disproportionate percentage of apprenticeship training in the United States.

Prevailing wage statutes provide an incentive to maintain an effective apprenticeship training system in the construction industry. An examination of construction apprenticeship programs in non-prevailing wage states in the Great Plains Region versus the State of Missouri for the period 1973-1979 and for the period 1987-1990 show that apprenticeship in the four states that were non-prevailing wage states (Iowa, Kansas, South Dakota, and North Dakota) declined 51.0 percent over the two time periods (Table V.4). For the State of Missouri, apprenticeship programs increased 26.90 percent during the two time periods.

An examination of minority participation in construction apprenticeship programs in the non-prevailing wage states in the Great Plains Region versus the State of Missouri show a similar result (Table V.5). Comparing the two time periods, we see that minority participation in apprenticeship programs in the non-prevailing wage states declined 53.9 percent while the minority participation rate in the State of Missouri decreased 42.0 percent.

Table V.6 examines female participation in the construction sector in the State of Missouri versus non-prevailing wage states in the North Central region. Female participation in the construction sector and in apprenticeship programs has been

increasing over time. In the non-prevailing wage states in the North Central Region, female participation in apprenticeship programs has increased 47.2 percent over the time period under examination. However, female participation in the State of Missouri increased 296.5 percent.

Collectively bargained apprenticeship programs involve a large number of contractors. Affirmative action statutes do not apply to apprenticeship programs that have less than 5 apprentices. As a result, when the magnitude of collectively bargained contracts decrease, the programs that will come under the regulation of affirmative actions law also decreases. As a result, there is less pressure to have both skilled minority and female skilled workers enrolled and graduated from apprenticeship programs.

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.[56] 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.

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

Table V.4
Construction Apprenticeships in Both Union and Non-Union Programs by State
1973-1990 North Central Region

Non Prevailing Wage States | **State of Missouri**

	Iowa	Kansas	North Dakota	South Dakota	Missouri
1973	1388	604	388	467	3276
1974	1633	849	N/A	403	3464
1975	1849	900	682	420	3619
1976	1950	854	690	423	3299
1977	1747	846	753	396	3100
1978	1859	950	759	413	3596
1979	2176	1023	841	391	4609
1987	847	559	169	144	5536
1988	799	559	172	161	5285
1989	1089	501	176		2837
1990	1200	502	203	144	4444
Averages					
1973-1979	1800	861	686	416	3566
1987-1990	984	530	180	150	4526
Percentage Change	**-45.36%**	**-38.40%**	**-73.74%**	**-64.03%**	**26.90%**

Average Percent Change from 1973-79 to 1987-1990

Non Prevailing Wage States	-51.00%
Missouri	26.90%

SOURCE: United Bureau of Apprenticeship Training and Phillips, 1998

Table V.5
Minority Participation in Construction Apprenticeship Programs by State
1973-1990 North Central Region

	Non Prevailing Wage States				State of Missouri
	Iowa	Kansas	North Dakota	South Dakota	Missouri
1973	140	107	13	28	566
1974	152	114	N/A	17	618
1975	154	109	35	21	623
1976	101	110	36	24	568
1977	97	133	29	28	610
1978	105	134	38	16	741
1979	115	134	37	34	772
1987	46	60	8	11	495
1988	47	50	6	18	417
1989	50	53	17	N/A	150
1990	75	57	17	20	430
Averages					
1973-1979	123	120	31	24	643
1987-1990	55	55	12	16	373
Percentage Change	**-55.8%**	**-54.2%**	**-61.7%**	**-31.9%**	**-42.0%**

Average Percent Change from 1973-79 to 1987-1990

Non Prevailing Wage States	-53.9%
Missouri	-42.0%

Table V.6
Female Participation in Construction Apprenticeship Programs by State
1973-1990 North Central Region

	Non Prevailing Wage States				State of Missouri
	Iowa	Kansas	North Dakota	South Dakota	Missouri
1973	1	1	0	0	1
1974	2	1	N/A	0	1
1975	6	2	1	0	4
1976	7	3	1	0	16
1977	9	4	2	0	21
1978	25	25	4	0	47
1979	62	29	12	5	147
1987	30	7	2	3	159
1988	23	10	5	4	145
1989	25	6	4	N/A	93
1990	36	9	5	1	140
Averages					
1973-1979	16	9	3	1	34
1987-1990	29	8	4	3	134
Percentage Change	**78.1%**	**-13.8%**	**20.0%**	**273.3%**	**296.5%**

Average Percent Change from 1973-79 to 1987-1990

Non Prevailing Wage States	47.2%
Missouri	296.5%

C. 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 that is 54 percent higher than the rate for all industries, making the construction sector one of the most hazardous sectors in the United States. According to recent statistics, there are more than 194,000 annual injury and illnesses cases with days away from work in the construction industry. 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.[57] Published estimates of the total cost of nonfatal injuries in all industries in the United States range from $131.2 billion to $145.0 billion.

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 inexperience 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 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. In the tables that are attached, we

[57] 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.

report injuries in construction under three different classifications for the Great Plains Region: (1) total cases reported, (2) total lost workday cases, and (3) cases with days away from work (Tables V.7-V.9).

Table V.7 shows the total cases of injuries in construction in the Great Plains States, broken down by prevailing wage and non-prevailing wage rate states in the regions. One prevailing wage state (Ohio) and two non-prevailing wage states (North Dakota and South Dakota) do not report and are not included in the analysis.

The average number of injuries per worker in construction in the prevailing wage states in the North Central Region that report is 10.5 per 100 workers, while the number of injuries in non-prevailing wage states that report is 10.9 per 100 workers (Table V.7). For the State of Missouri, the total cases of injuries and illness reported in 2001 is the lowest of all of the reporting states in the region, at 7.0 per 100 workers; for the two non-prevailing wage states reporting, the total number of cases of injuries and illnesses reported in 2001 is 9.9 per 100 workers. For the nation as a whole, the total cases reported were 7.9 per 100 workers. Missouri, a prevailing wage state with a strong commitment to job training and apprenticeship programs in the region, is below the national average by 0.9 per 100 workers, while the two reporting non-prevailing wage states is 9.9 per 100 workers, or 2.0 per 100 workers above the national average. 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 2001 was 3.4 per 100 workers; for 2001 for the two non-prevailing wage states that report, the average number of total lost workday cases was 4.6 (Table V.8). For the nation as a whole, the total lost workday cases reported were 4.0 per 100 workers. Missouri, a prevailing wage state with a strong commitment to job training and apprenticeship programs in the region, is below the national average by 0.6 per 100 workers, while the two reporting non-prevailing wage states are 0.6 per 100 workers above the national average.

Table V.7
Total Cases - Injuries and Illnesses
Incidence Rates of Non Fatal Injuries and Illnesses[1]

PWS[2]	1996	1997	1998	1999	2000	2001	Average
Illinois	N/A	N/A	9.0	9.8	9.6	8.0	9.1
Indiana	11.5	11.1	9.3	9.3	7.5	7.5	9.4
Michigan	9.9	10.0	8.5	8.0	8.9	8.7	9.0
Minnesota	12.3	11.6	12.1	12.6	11.5	10.7	11.8
Missouri	10.7	10.3	9.2	10.2	9.0	7.0	9.4
Nebraska	13.2	11.8	10.1	10.0	8.2	9.9	10.5
Wisconsin	10.8	14.0	14.7	12.7	13.7	12.5	13.1
Average	**11.4**	**11.5**	**10.7**	**10.5**	**9.8**	**9.4**	**10.5**
NPWS[3]							
Iowa	12.6	11.1	12.3	9.7	10.9	10.0	11.1
Kansas	11.8	11.1	12.3	9.4	10.9	9.0	10.8
Average	**12.2**	**11.1**	**12.3**	**9.6**	**10.9**	**9.5**	**10.9**

NOTES

[1]Incidence rates represent the number of injuries and illnesses per 100 full-time workers

[2]Historical data is not reported for Ohio

[3]Historical data is not reported for North Dakota and South Dakota

Table V.8
Total Lost Workday Cases
Incidence Rates of Non Fatal Injuries and Illnesses[1]

PWS	1996.0	1997	1998	1999	2000	2001	Average
Illinois	N/A	N/A	3.7	4.9	4.6	4.1	4.3
Indiana	4.7	5.2	4.0	4.1	3.3	3.4	4.1
Michigan	4.4	4.4	4.2	3.5	4.5	4.6	4.3
Minnesota	5.9	5.1	5.0	6.1	5.8	5.1	5.5
Missouri	4.6	4.8	4.5	4.4	4.4	3.4	4.4
Nebraska	6.2	4.7	5.0	4.5	4.8	4.1	4.9
Wisconsin	8.7	6.5	6.4	6.2	6.1	6.4	6.7
Average	**5.8**	**5.1**	**4.9**	**4.8**	**4.8**	**4.5**	**5.0**
NPWS							
Iowa	5.6	4.8	5.3	5.0	4.9	4.7	5.1
Kansas	5.7	5.2	5.6	4.0	3.6	4.5	4.8
Average	**5.7**	**5.0**	**5.5**	**4.5**	**4.3**	**4.6**	**4.9**

NOTES

[1]Incidence rates represent the number of injuries and illnesses per 100 full-time workers.

[2]Historical data is not reported for Ohio

[3]Historical data is not reported for North Dakota and South Dakota

For the State of Missouri, the total cases of lost workday cases with days away from work in 2001 are 2.5 per 100 workers. By contrast, for the two non-prevailing wage states that report, the average number of total lost workday cases with days away from work was 3.4 in 2001 (Table V.9). For the nation as a whole, the total number of lost workday cases reported was 3.0 per 100 workers. Missouri is below the national average by 0.5 per 100 workers, while the two reporting non-prevailing wage states are 0.4 per 100 workers above the national average.

The data reported here, derived from the North Central states survey, does not allow for the analysis of a state that repealed its law during the period 1996-2001 in order to analyze before and after effects of injuries due to repeal. However, Phillips (1998) determined in his analysis on the repeal of the prevailing wage law in the State of Kansas that injuries increased by 19 percent after repeal and serious injuries increased by 21.5 percent after Kansas repealed its prevailing wage law.

The construction industry's share of workman compensation costs is disproportionately high. In 2001, although construction workers accounted for approximately 6 percent of the workforce, the industry incurred 18 percent of employer's costs for workman's compensation. In addition, the average level of injury compensation payments for construction was 91.3 percent above the level for all industries ($7,542 versus $3,943).[58] These costs are a direct cost on the State of Missouri. As a percentage of total payroll, employer spending on workman's compensation was 5.17 percent. This compares with 2.02 percent of payroll for all industries in the United States. Based upon 2001 construction payroll in the State of Missouri, workman compensation costs in the state are approximately $278.1 million annually, a cost borne by the State of Missouri and taxpayers of Missouri.

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.

[58] Xiuwen Dong, The Center to Protect Workers' Rights, The Construction Chart Book. Section 49.

Table V.9
Total Lost Workday Cases With Days Away from Work
Incidence Rates of Non Fatal Injuries and Illnesses[1]

PWS	1996	1997	1998	1999	2000	2001	Average
Illinois	N/A	N/A	3.2	4.2	3.4	3.7	3.6
Indian	4.1	4.5	3.5	3.1	2.7	2.5	3.4
Michigan	3.8	3.8	3.4	2.8	3.8	3.5	3.5
Minnesota	4.5	4.3	3.9	4.6	4.1	3.5	4.2
Missouri	3.8	3.9	3.5	3.5	3.6	2.5	3.5
Nebraska	4.5	4.1	4.2	3.6	3.8	3.3	3.9
Wisconsin	8.0	5.7	5.8	5.1	5.2	5.4	5.9
Average	**4.8**	**4.4**	**4.1**	**3.8**	**3.9**	**3.5**	**4.1**
NPWS							
Iowa	4.9	4.1	4.3	4.1	3.7	3.6	4.1
Kansas	4.6	3.9	4.0	3.2	2.1	3.2	3.5
Average	**4.8**	**4.0**	**4.2**	**3.7**	**2.9**	**3.4**	**3.8**

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 1997, new construction put in place accounted for approximately 7 percent of the Gross Domestic Product in the United States.

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 thirty-two percent of the construction workforce to less than twenty percent. 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 in the earlier analysis in Section V.

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 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 benefits paid to all employees in the construction sector were 26.2% of total costs in 1987 and decreased to 21.2% by 1997. In an analysis of wages, productivity, and highway

construction costs, labor costs per mile were only 20.7% of the total costs of highway construction for the period 1980-1993 (National Alliance for Fair Contracting, 1995).

Critics 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 clearly demonstrates 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 percent.

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 study by the National Alliance for Fair Contracting (NAFC, 1995) that examined productivity and costs for highway construction in the 50 states over a 13 year period from 1980-1993, they showed that higher wage rates result in lower highway cost per mile. For example, the NAFC 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

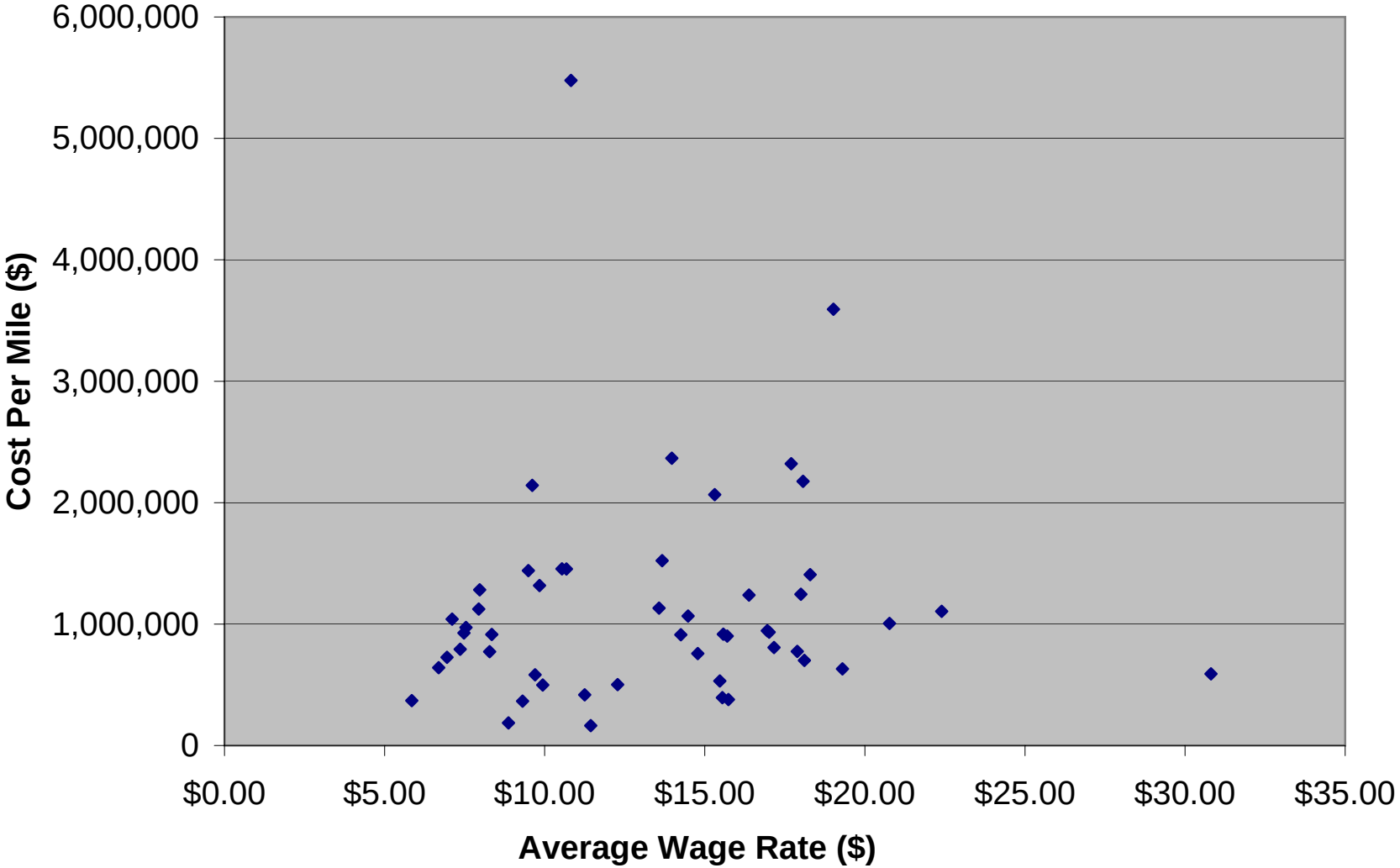
states ($18.39 versus $8.16). The study further showed that labor-hours per mile were 42% less in high-wage states despite the substantially higher wage rate.[59] In an analysis of average annual construction for states doing more than $175,000,000 construction work annually from 1980-1993, high wage states saved taxpayers an average of $136,360 per mile in construction costs. The study shows that productivity in the construction sector is not a constant but that productivity gains resulting from a more highly trained and paid workforce is a critical component in the reduction of overall construction costs to the public sector.[60] Based on these data, we conclude that at least for the time period 1980-93, any savings due to lower wages that might have been achieved in the absence of prevailing wage legislation were more than offset by lower productivity that accompanies payment of lower wages. Chart VI.1 shows a plot of cost per mile ($) and average wage rate ($) among the 50 states in highway construction for the period 1980-1993. 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 tells us that there is little, if any correlation between these two variables.

The claim made by critics of prevailing wage legislation - that substantial cost savings can be achieved by repeal of the legislation - appears to be incorrect. The critics seem to 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

[59] 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.

[60] The study showed similar results for 26 states that averaged over $100 million annually. These 26 states represented 78% of all construction activity, 70% of total construction miles, and 79% of total labor hours over the period 1980-1993. Labor-hours to complete a mile of highway was 40% lower in high wage states in spite of an 81% higher wage rate ($17.65 versus $9.76). A further result from the 26-state study showed that the per mile savings to taxpayers in high wage states was $123,057 per mile.

Chart VI.I
Plot of Average Wage Rate and Average Cost Per Mile
1980-1993



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.

E. Analysis of Firm Location – PWL and Non-PWL States

The argument is frequently made by opponents of prevailing wage laws that repealing a given state's prevailing wage law will benefit not only the economy but also the construction firms in that state.[61] However, an analysis of the value of construction work done in the states, by in-state as opposed to out-of-state firms, shows that significantly more construction work in non-prevailing wage states is done by out-of-state contractors thus exporting those dollars out of the regional and state economy. This exporting of construction spending ends up costing the state and its citizens dollars in the local and state economy.

The Census of Construction reports the value of total construction work done in a particular state, as well as disaggregating the value of construction work done by in-state and out-of-state contractors. Table V.10 reports the percentage of construction value put in place by prevailing and non-prevailing wage states in the North Central Region for the periods 1982, 1987, and 1992. Note, data is not reported for 1997 in Table V.10 because there were reporting errors in the Bureau's 1997 report.[62]

For prevailing wage states in the North Central Region, the percentage of work done by in-state construction contractors is significantly higher than non-prevailing wage states. For prevailing wage states, the value of construction work done by in-state contractors is 86.9 percent, 91.0 percent and 91.7 percent, respectively for the period 1982-1992. For non-prevailing wage states, the value of construction work done by in-state contractors is only 77.2 percent, 79.1 percent, and 84.5 percent, respectively, for

[61] Given elasticity of demand estimates used in Section IV, we have shown that employment does somewhat in fact increase in response to lower wages paid. However, the increase in lower paid construction workers results in decreased productivity and increases costs in the long run.

[62] Problems with the 1997 report have been confirmed per our discussions with the United State Census Bureau. In the 1997 Census of Construction, there was a significant amount of construction value put in place during 1997 that is aggregated in a category of "Not Reported" by either in-state or out-of-state contractors.

the period 1982-1992. For the State of Missouri, a strong prevailing wage state, the percentage of construction done by in-state contractors is 80.6 percent, 89.2 percent, 88.0 percent, respectively, for the period 1982-1992. On the other hand, for the State of Kansas, a non-prevailing wage state, the percentage of work done by in-state contractors is only 76.0 percent, 74.6 percent, and 82.7 percent, respectively for the period 1982-1992. The presence of a prevailing wage statute benefits Missouri contractors, its construction employees, its citizens and taxpayers of Missouri as more dollars remain within the regional and state economy and are not exported to out-of-state contractors.

Table V. 10
Analysis of Value of Construction Work: In State and Out of State Contractors
Prevailing Wage States versus Non Prevailing Wage States
North Central States Region

	PWS	Non - PWS	PWS	Non - PWS	PWS	Non - PWS
	1982		1987		1992	
Value of Construction Work by Instate Contractors	86.9%	77.2%	91.0%	79.1%	91.7%	84.5%
Value of Work Done by Out Of State Contractors	13.1%	22.8%	9.0%	20.9%	8.3%	15.5%

SOURCE: United States Census Bureau. Census of Construction. 1982, 1987, and 1992.

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.

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 1993-2002 was $78.17 (constant 1993 prices). The mean square cost per foot of non-residential construction in non-prevailing wage states from 1993-2002 was $74.94 (constant 1993 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 Great Plains states as a result of a state having a prevailing wage statute for the period 1993-2002.
- 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 $294.4 million and $356.0 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 $5.7 million and $6.9 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 $17.7 million and $21.4 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 $317.8 million and $384.2 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 resulted 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.
- 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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APPENDIX TO CHAPTER 2: TABLES 2 AND 3

Table 2

Prevailing Versus Non Prevailing Wage States

Average Wage Rate and Labor Cost Per Mile: 1980-1993

ALL STATES (Shaded = Non PWL)	Average Wage Rate	Average Cost Per Mile	Labor Cost Per Mile	Labor Hours Per Mile
Alaska	$30.81	$590,496	$151,752	4,888
Alabama	$7.54	$972,285	$139,107	18,777
Arkansas	$7.48	$926,420	$147,041	20,124
Arizona	$15.58	$916,772	$187,085	11,628
California	$22.40	$1,105,537	$283,107	12,759
Colorado	$14.48	$1,066,334	$215,868	15,353
Connecticut	$15.31	$2,066,538	$484,077	30,004
DC	$10.82	$5,477,094	$1,142,849	81,272
Delaware	$10.68	$1,453,920	$235,268	21,894
Florida	$7.97	$1,282,553	$230,866	29,046
Georgia	$7.36	$792,559	$149,224	18,726
Hawaii	$19.02	$3,592,539	$828,041	47,718
Iowa	$11.25	$417,553	$70,381	6,264
Idaho	$15.47	$531,494	$106,839	6,156
Illinois	$18.00	$1,245,858	$282,810	16,530
Indiana	$15.70	$901,438	$196,404	12,594
Kansas	$13.57	$1,131,871	$242,771	17,420
Kentucky	$13.67	$1,522,727	$316,993	26,246
Louisiana	$9.84	$1,317,243	$241,658	24,270
Massachusetts	$17.70	$2,321,025	$384,457	25,868
Maryland	$9.49	$1,440,871	$271,271	27,444
Maine	$5.85	$369,975	$65,246	8,846
Michigan	$17.89	$775,423	$174,320	9,522
Minnesota	$14.78	$756,899	$154,603	10,430
Missouri	$17.16	$807,021	$183,754	11,116
Mississippi	$6.69	$641,238	$95,329	13,524
Montana	$15.74	$378,470	$82,025	5,331
North Carolina	$7.11	$1,041,242	$187,693	27,413
North Dakota	$11.44	$163,354	$26,849	2,330
Nebraska	$9.94	$498,076	$85,548	8,468
New Hampshire	$10.54	$1,454,935	$303,514	29,016
New Jersey	$18.07	$2,175,605	$573,429	30,152
New Mexico	$9.70	$582,122	$99,380	10,305
Nevada	$20.77	$1,005,393	$275,267	13,698
New York	$18.29	$1,407,513	$357,886	22,467
Ohio	$18.11	$701,079	$165,902	9,268
Oklahoma	$8.28	$773,085	$121,686	14,477
Oregon	$17.01	$933,013	$195,532	11,322
Pennsylvania	$16.38	$1,239,013	$300,972	17,223
Rhode Island	$14.25	$912,502	$157,452	11,122
South Carolina	$6.95	$725,898	$122,166	17,319
South Dakota	$8.87	$186,017	$29,269	3,436
Tennessee	$7.94	$1,123,781	$157,098	19,940
Texas	$8.35	$914,160	$180,306	21,290
Utah	$16.95	$945,800	$214,566	12,814
Virginia	$9.61	$2,141,942	$397,919	40,721
Vermont	$9.31	$365,470	$58,528	6,096
Washington	$19.30	$631,222	$159,766	8,370
Wisconsin	$15.55	$394,405	$78,083	5,104
West Virginia	$13.97	$2,365,849	$599,176	51,131
Wyoming	$12.28	$501,477	$104,645	8,501

SOURCE: *Wages, Productivity, and Highway Construction Costs.* National Alliance for Fair Contracting.

Table 3 Prevailing Versus Non Prevailing Wage States Average Annual Construction Statistics				
ALL STATES (Shaded = Non PWL)	Construction Dollars	Construction Miles	Labor Hours	Average Wage Dollars
Alaska	$55,628,303	94,206	460,525	$30.81
Alabama	$175,379,043	180,378	3,387,023	$7.54
Arkansas	$70,673,617	76,287	1,535,177	$7.48
Arizona	$114,338,874	124,719	1,450,225	$15.58
California	$192,011,569	173,682	2,215,955	$22.40
Colorado	$123,725,306	116,029	1,781,420	$14.48
Connecticut	$75,991,779	36,773	110,334	$15.31
DC	$15,270,530	2,788	226,592	$10.82
Delaware	$30,640,211	21,074	461,389	$10.68
Florida	$298,568,951	232,793	6,761,623	$7.97
Georgia	$235,575,227	297,234	5,566,049	$7.36
Hawaii	$39,049,871	10,870	518,685	$19.02
Iowa	$108,948,848	260,922	1,634,461	$11.25
Idaho	$40,610,294	76,408	470,330	$15.47
Illinois	$349,744,990	280,726	4,640,521	$18.00
Indiana	$132,207,631	146,663	1,847,091	$15.70
Kansas	$96,735,537	84,582	1,473,398	$13.57
Kentucky	$87,184,949	57,256	1,502,714	$13.67
Louisiana	$133,507,552	101,354	2,459,866	$9.84
Massachusetts	$67,191,846	28,949	748,870	$17.70
Maryland	$44,681,412	31,010	851,046	$9.49
Maine	$10,951,723	29,601	261,862	$5.85
Michigan	$168,269,513	217,003	2,066,361	$17.89
Minnesota	$131,787,000	174,114	1,816,043	$14.78
Missouri	$176,113,031	218,226	2,425,707	$17.16
Mississippi	$104,214,382	162,521	2,197,914	$6.69
Montana	$77,931,148	205,911	1,097,779	$15.74
North Carolina	$136,605,543	131,195	3,596,412	$7.11
North Dakota	$49,817,054	304,963	710,535	$11.44
Nebraska	$69,116,984	138,768	1,175,119	$9.94
New Hampshire	$29,018,368	19,945	578,716	$10.54
New Jersey	$124,085,304	57,035	1,719,740	$18.07
New Mexico	$87,188,327	149,777	1,543,494	$9.70
Nevada	$52,820,614	52,537	719,668	$20.77
New York	$241,657,581	171,691	3,857,435	$18.29
Ohio	$208,766,721	297,779	2,759,917	$18.11
Oklahoma	$94,430,105	122,147	1,768,357	$8.28
Oregon	$99,555,381	106,703	1,208,087	$17.01
Pennsylvania	$295,317,834	238,349	4,105,129	$16.38
Rhode Island	$13,699,849	15,014	166,984	$14.25
South Carolina	$68,862,645	94,866	1,642,946	$6.95
South Dakota	$47,314,657	254,357	873,897	$8.87
Tennessee	$159,584,427	142,007	2,831,677	$7.94
Texas	$543,368,573	594,391	12,654,732	$8.35
Utah	$89,372,270	94,494	1,210,853	$16.95
Virginia	$224,902,845	105,000	4,275,686	$9.61
Vermont	$17,489,685	47,855	291,743	$9.31
Washington	$116,782,297	185,010	1,548,506	$19.30
Wisconsin	$103,121,564	261,461	1,334,490	$15.55
West Virginia	$151,379,021	63,985	3,271,589	$13.97
Wyoming	$47,005,404	93,734	796,865	$12.28
SOURCE: *Wages, Productivity, and Highway Construction Costs*. National Alliance for Fair Contracting.				

Table 3
Regression Results

Variable	States with PWL Coefficients	States Without PWL Coefficients
Amusement	1.038***	0.997***
Dormitories	1.279***	1.406***
Government Services	1.018***	0.525***
Hospitals	1.330***	1.393***
Hotels	0.168	-0.573
Manufacturing Plants	0.775***	0.629***
Non-Residential	0.751***	0.637***
Office	1.048***	0.987***
Parking	0.019	0.244
Religious	0.485***	-0.095
School	1.028***	0.818***
Stores	0.667***	0.536***
Ln Sq Feet	1.033***	1.143***
Pubcode	0.363***	0.304***
Intercept	3.326***	2.823***
	Adjusted R-Squared = 0.869 N = 1820 F = 865.1257	Adjusted R-Squared =0.827 N=1040 F = 349.567

NOTE: Dependent Variable is LN (real total costs) where total costs are reported in 1993 real dollars
*** coefficient is significant at .01 level
the coefficients for the state dummy variables are not reported.
Michigan has been omitted from analysis. Michigan courts invalidated the prevailing wage law from December, 1994 to June, 1997.

Table 4
Regression Results: Determinants of Construction Costs for All States

Variable	Coefficient
Amusement	1.027***
Dormitories	1.318***
Government Services	0.837***
Hospitals	1.359***
Hotels	-0.095
Manufacturing Plants	0.733***
Non-Residential	0.705***
Office	1.031***
Parking	0.085
Religious	0.279***
School	0.951***
Stores	0.623***
Ln Sq Feet	1.071***
Pubcode	0.202***
Interact	0.232
PW	0.053
Intercept	3.078***
	Adjusted R-Squared = 0.859
	N=2860
	F = 1092.633

NOTE: Dependent Variable is LN (real total costs) where total costs are reported in 1993 real dollars
*** coefficient is significant at .01 level
the coefficients for the state dummy variables are not reported.
Michigan has been omitted from analysis. Michigan courts invalidated the prevailing wage law from December, 1994 to June, 1997.

McGraw-Hill Construction
Detail Structure List

Stores and Restaurants
Stores
Food/Beverage Service
Stores and Other Mercantile Buildings

Warehouses (excl. manufacturer owned)
Warehouses (Non-Refrigerated)
Refrigerated Warehouses

Parking Garages and Automotive Services
Auto Service
Parking Garages

Manufacturing Plants, Warehouses, Labs
Mfg Plants: Chemical
Mfg Plants: Food and Kindred (Non Ref)
Mfg Plants: Paper and Allied Products
Mfg Plants: Petroleum Refineries
Mfg Plants: Printing, Pub and Allied
Mfg Plants: Stone, Clay, and Glass
Mfg Plants: Rubber Products
Mfg Plants: Textile Mill Products
Mfg Plants: Food and Kindred (Ref)
Mfg Plants: Leather
Mfg Plants: Tobacco
Mfg Plants: Primary Ferrous Metals
Mfg Plants: Primary Non-Ferrous Metals
Mfg Plants: Fabricated Metal Products
Mfg Plants: Machinery except Electrical
Mfg Plants: Electrical Machinery
Mfg Plants: Lumber and Wood ex Furniture
Mfg Plants: Ordnance and Acc
Mfg Plants: Petroleum and Coal Prod
Mfg Plants: Furniture and Fixtures
Mfg Plants: Motor Vehicles and Equip.
Mfg Plants: Aircraft and Parts
Mfg Plants: Ship and Boat Building
Mfg Plants: Railroad Equipment
Mfg Plants: Industrial Service

Mfg Plants: Precision Goods
Mfg Plants: Miscellaneous Manufacturing
Mfg Plants: Mfg Plants (Reg 8 and 9)
Mfg Plants: Other Transportation N.E.C.
Mfg Plants: Plastic Plants
Mfg Plants: Chemical (Outdoors)
Mfg Plants: Industry Unknown
Mfg Labs: Chemical Plants (Enclosed)
Mfg Labs: Food and Kindred Products
Mfg Labs: Paper and Allied Products
Mfg Labs: Petroleum Refineries
Mfg Labs: Prints, Publishing
Mfg Labs: Stone, Clay, and Glass
Mfg Labs: Rubber Products
Mfg Labs: Textile Mill Products
Mfg Labs: Leather Products
Mfg Labs: Tobacco Products
Mfg Labs: Primary Ferrous Metals
Mfg Labs: Primary Non-Ferrous Metals
Mfg Labs: Fabricated Metal Products
Mfg Labs: Machinery except Electrical
Mfg Labs: Electrical Machinery
Mfg Labs: Lumber and Wood ex Furniture
Mfg Labs: Ordnance and Accessories
Mfg Labs: Petroleum and Coal Products
Mfg Labs: Furniture and Fixtures
Mfg Labs: Motor Vehicles and Equipment
Mfg Labs: Aircraft and Parts
Mfg Labs: Ship and Boat Building
Mfg Labs: Railroad Equipment
Mfg Labs: Industrial Service Plants
Mfg Labs: Precision Goods
Mfg Labs: Miscellaneous Manufacturing
Mfg Labs: Other Transportation N.E.C.
Mfg Labs: Plastic Plants
Mfg Labs: Classification Unknown
Mfg War: Chemical Plants
Mfg War: Food and Kindred Products
Mfg War: Paper and Allied Products
Mfg War: Petroleum Refineries
Mfg War: Printing, Publishing
Mfg War: Stone, Clay and Glass
Mfg War: Rubber Products
Mfg War: Textile Mill Products
Mfg War: Leather and Leather Products
Mfg War: Tobacco Products

Mfg War: Primary Ferrous Metal
Mfg War: Primary Non-Ferrous Metal
Mfg War: Fabricated Metal Products
Mfg War: Machinery, Ex Electrical
Mfg War: Electrical Machinery
Mfg War: Lumber and Wood ex Furniture
Mfg War: Ordnance and Accessories
Mfg War: Petroleum and Coal Products
Mfg War: Furniture and Fixtures
Mfg War: Motor Vehicles and Equipment
Mfg War: Aircraft and Parts
Mfg War: Ship and Boat Building
Mfg War: Railroad Equipment
Mfg War: Industrial Service Plants
Mfg War: Precision Goods
Mfg War: Miscellaneous Manufacturing
Mfg War: Other Transportation N.E.C.
Mfg War: Plastic Plants
Mfg War: Classification Unknown

Schools, Libraries, and Labs (nonmfg)
Primary Schools
Junior High Schools
Senior High Schools
Vocational Schools
Community Schools
Colleges/Universities Except STC 46
Special Schools
Schools-Educational and Science Buildings
Laboratories/Testing/R and D
Libraries
Museums

Hospitals and Other Health Treatment
Hospitals
Clinics/Nursing Convalescent Facilities
Hospitals and Other Health Treatment

Government Service Buildings
Detention Facilities
Post Offices
Police/Fire Stations
Capitols/Court Houses/City Halls
Armories

Religious Buildings
Houses of Worship, Other Religious Buildings
Funeral/Internment Facilities
Religious Buildings
Sunday Schools

Amusement, Social, and Recreational Buildings
Auditoriums (School and College Owned)
Arenas/Coliseums (School/College Owned)
Clubs and Lodges
Theaters
Communications Buildings
Bowling Alleys
Gyms/Field Alleys (School/College Owned)
Exhibition Halls
Miscellaneous Amusement/Recreational Amusement, Recreational (Reg 8 and 9)
YMCA/YWCA
Auditoriums (Non-School/College Owned)
Arenas/Coliseums (Non-School/College)
Gyms/Field Houses (Non-School/College)

Miscellaneous Non-Residential Buildings
Railroad Terminals
Bus Terminals
Airline Terminals
Miscellaneous Non-Residential Buildings
Freight Terminals, Railroad
Freight Terminals, Trucks
Freight Terminals, Air
Freight Terminals, Marine
Railroad Service
Bus Service
Truck Service
Aircraft Service
Animal/Fish/Plant Facilities

Hotels and Motels
Hotels/Motels (Stories Unknown)
Hotels/Motels 4+ Stories
Hotels/Motels 1-3 Stories

Dormitories
Dormitories