

The Impact of Michigan's Prevailing Wage Law on Education Construction Expenditures

2015 Update

Prepared by:

Anderson Economic Group, LLC
Alex L. Rosaen, Senior Consultant
Traci Taylor, Senior Analyst

Anderson Economic Group, LLC
1555 Watertower Place, Suite 100
East Lansing, Michigan 48823
Tel: (517) 333-6984
Fax: (517) 333-7058

www.AndersonEconomicGroup.com

I. Executive Summary..... 1

 Purpose of Report 1

 Overview of Approach 2

 Summary of Findings 3

 About Anderson Economic Group 3

II. Prevailing Wage Laws Impacting Michigan..... 4

 Prevailing Wage Law Background 4

 Michigan’s Prevailing Wage Law 5

 Empirical Research on the Effects of Prevailing Wage 6

 Arguments About Prevailing Wage Laws 9

III. Estimated Impact of Prevailing Wage on Education Construction..... 12

 Total Education Construction Expenditures
 in Michigan 12

 Impact on Education Construction Expenditures
 in Michigan 13

IV. Appendix A. Data Sources and MethodologyA-1

 Data Sources A-1

 Fiscal Impact Model A-1

 Updates to our Methodology A-10

 Additional Methodological Considerations A-10

V. Appendix B: About AEG.....B-1

 Authors B-1

Executive Summary

Prevailing wage laws set the minimum amount that must be paid to workers laboring on certain types of public construction, with rates varying by trade, occupation, and location. There is a national prevailing wage statute, as well as many state statutes. The federal prevailing wage statute, which was enacted in 1931, is better known as the Davis-Bacon Act.¹ It applies to contracts with federal funding in excess of \$2,000. Federal prevailing wages are based on a U.S. Department of Labor survey of employers and unions, by trade and occupation within a locality.²

While the majority of states (32 and the District of Columbia) have their own prevailing wage laws in place, only six states currently have prevailing wage laws based on union agreements. The State of Michigan passed its prevailing wage law in 1965. It was suspended for a short time from 1994 to 1997. Unlike the Davis-Bacon Act, which does not go into effect unless a minimum amount of funding is in place, Michigan's prevailing wage statute includes any local government projects that use state financial resources.³ Additionally, by law, the prevailing wage rates in Michigan must be based on the rates contained in collective bargaining agreements of state projects.⁴

PURPOSE OF REPORT

The purpose of this report is to estimate the average annual expenditures made for the construction of public K-12 and higher education facilities in Michigan over the past 10 years as a result of Michigan's prevailing wage law. We also studied this subject in a 2013 report.⁵ This is our 2015 edition of that analysis using more recent data, new data, and a more conservative approach.⁶

-
1. The Davis-Bacon and Related Acts (DBRA) apply to contractors and subcontractors working under federally funded or assisted contracts in excess of \$2,000 for construction and repair of public buildings. See "Prevailing Wage Law Background" on page 4 for additional discussion.
 2. For further discussion see "Prevailing Wage Law Background" on page 4. For actual rates, regulations, and occupation classes see the U.S. Department of Labor's Prevailing Wage Resource Book, accessible at <http://www.dol.gov/whd/recovery/pwr/toc.htm>.
 3. This has large implications for public school construction, including projects that are funded through local school districts, as the State of Michigan acts as a surety on most of the bonds used for public schools. See "Michigan's Prevailing Wage Law" on page 5.
 4. See Michigan Compiled Laws 408.554.
 5. Alex Rosaen, "The Impact of Michigan's Prevailing Wage Law on Education Construction Expenditures," Anderson Economic Group, LLC, 2013.
 6. See "Appendix A. Data Sources and Methodology" on page A-1 for a discussion of the report's methodology.

OVERVIEW OF APPROACH

Prevailing wage laws apply to many types of construction, including public buildings, roads, and schools. In this report, we focus on the construction expenditures of K-12 schools, community colleges, and public higher education institutions because data on these education expenditures is more uniform and more readily available than other types of construction subject to the law.

We rely on data from the U.S. Census Bureau for government expenditures on the construction of public education facilities in Michigan. We used the most recent data for a 10-year period (2003 through 2012) to estimate a typical annual expenditure amount for education construction in Michigan.⁷

We also surveyed the existing literature on prevailing wage laws, including studies of Michigan's experience in briefly suspending the law from 1994 to 1997. Using this data and research, we then estimated what cost savings could have been realized by state and local governments had the construction contracts for the same education buildings not been subject to the prevailing wage law.

Limitations

In this report, we model a scenario of construction costs that are due to prevailing wage rates. We assume that those costs are passed on to the overall cost paid to construction firms by contracting entities, who in this case are state and local governments in Michigan. Our analysis does not attempt to project the behavioral responses of the school districts, universities, or voters considering school millage proposals. Communities seeing lower education construction costs could react in a variety of ways, including choosing to build larger or higher-quality buildings. As a result, this report quantifies cost pressures, but does not project the change in total spending on education construction projects in Michigan as a result of a hypothetical prevailing wage repeal. Finally, our analysis does not quantify changes in material costs or labor share due to prevailing wage.

7. Using a 10-year average allowed us to consider changes in business cycles, as well as large fluctuations in demand. For further discussion see "Total Education Construction Expenditures in Michigan" on page 12.

SUMMARY OF FINDINGS

1. We estimate that nearly \$2.1 billion in education construction expenditures are subject to Michigan’s prevailing wage law each year.

On average state and local governments in Michigan spend \$2.3 billion on the construction and repair of public K-12 schools, community colleges, and public higher education institutions each year. We estimate that 90% of the expenditures were on projects subject to the prevailing wage law, or \$2.1 billion. From 2003 through 2012, this would amount to \$21 billion in expenditures being impacted. This is a very large expenditure by local government—in particular, community college and K-12 schools—as this is where the majority of funding is used.

2. We estimate that Michigan’s prevailing wage law has increased the financial obligations for education construction by an average of \$127 million per year for the last 10 years.

If the prevailing wage law were not in place, nearly \$73 million in construction costs for K-12 construction projects and \$54 for construction of community colleges and public higher-ed institutions could have been avoided. These funds could have been used for other purposes, including building bigger or better buildings, tax cuts, or other spending priorities. From 2003 to 2012 local government costs could have been \$1.3 billion lower. See Table 1 below.

TABLE 1. Estimate of Additional Financial Obligations Due to Michigan’s Prevailing Wage Law

	Average Annual Costs	Total Costs (2003-2012)
K-12 School Expenditures	\$ 73.0 million	\$ 730 million
Higher Education Expenditures	<u>\$ 53.7 million</u>	<u>\$ 537 million</u>
Total School Construction Expenditures	\$ 126.7 million	\$ 1,267 million

Note: Numbers may not sum to total due to rounding.

Sources: U.S. Census Bureau, Annual Surveys of State and Local Government Finances by State (2002-

2001, 2004-2012); Economic Census, Geographic Series (2002, 2007, 2012); AEG Estimates

Analysis: Anderson Economic Group, LLC

ABOUT ANDERSON ECONOMIC GROUP

Anderson Economic Group is a research and consulting firm specializing in economics, finance, business valuation, and industry analysis. Clients include industry associations, private companies, labor unions, governments, universities, and others. The firm was founded in 1996, and has offices in East Lansing, Michigan; Chicago, Illinois; and Istanbul, Turkey. See “Appendix B: About AEG” on page B-1.

I. Prevailing Wage Laws Impacting Michigan

Prevailing wage is a complex labor law at both the national and state level, which sets a minimum wage for labor on certain types of public construction, such as public buildings, roads, and schools. In this section, we provide a brief discussion of the history behind both the national prevailing wage law and the statute enacted in Michigan. We then broadly describe the arguments for and against prevailing wage laws, as well as identify several studies that focused on Michigan's suspension of prevailing wage.

PREVAILING WAGE LAW BACKGROUND

Enacted in 1931, the federal prevailing wage statute, 40 U.S. Code § 276, is better known as the Davis-Bacon Act. The Davis-Bacon and Related Acts (DBRA) apply to contractors and subcontractors working under federally funded or assisted contracts in excess of \$2,000 for the "construction, alteration, or repair (including painting and decorating) of public buildings or public works," which are funded through taxpayer dollars.⁸ It requires that laborers be paid not less than the prevailing wage rates and fringe benefits, as those listed in corresponding classes of laborers and mechanics employed on similar projects in the area.

The federal government defines the prevailing wage rate as the average wage paid to similarly employed workers in a specific occupation in the area of intended employment. These rates are determined by the Department of Labor and Industries for each trade and occupation employed for each county in order to reflect local wage conditions.⁹

Prior to the federal prevailing wage, several states chose to enact their own type of prevailing wage laws. Kansas was the first to establish minimum labor standards for public works construction in 1891, followed by seven other states over the next thirty years: New York (1894), Oklahoma (1909), Idaho (1911), Arizona (1912), New Jersey (1913), Massachusetts (1914), and Nebraska (1923). During the Great Depression, beginning in 1931 and prior to the end of World War II, twenty additional states passed their own prevailing wage laws.

Today 32 states and the District of Columbia enforce prevailing wage laws, with most being in place following the New Deal. Only six of these 32 states have prevailing wage laws that are based on union agreements. Nine states have never had their own prevailing wage laws: Georgia, Iowa, Mississippi, North

8. U.S. Department of Labor, accessible at <http://www.dol.gov/whd/govcontracts/dbra.htm>.

9. Rates vary and there are exceptions. For example, apprentices may be employed at less than predetermined rates, but only if they are in a state apprenticeship agency recognized by the Department of Labor or a program registered with the Department. For rates and further discussion see the Prevailing Wage Resource Book, U.S. Department of Labor, accessible at <http://www.dol.gov/whd/recovery/pwrb/toc.htm>.

Carolina, North Dakota, South Carolina, South Dakota, Vermont, and Virginia. Another nine states have chosen to repeal their prevailing wage laws since enacting them: Florida, Alabama, Utah, Arizona, Colorado, Idaho, New Hampshire, Kansas, and Louisiana. In Oklahoma, the prevailing wage law was found to violate the state's constitution, and while it has not been repealed, it has not been enforced since.¹⁰ In general, a state's prevailing wage laws vary according to how strong organized labor is within that state.

MICHIGAN'S PREVAILING WAGE LAW

Michigan's prevailing wage law, Public Act 166 of 1965, went into effect in March of 1966. The state defined the purpose of this law as to "provide rates of pay for workers on construction projects for which the state or a school district is the contracting agent and which is financed or financially supported by the state".¹¹ The statute includes projects undertaken by local governments that use state financial resources.

Unlike the Davis-Bacon Act, there is no minimum amount that needs to be contributed for a construction contract to be under the state's prevailing wage regulations. This has large implications for public school construction, including projects that are funded through local school districts, because the State of Michigan acts as a surety on most of the bonds used for public schools.¹² An estimated 90% of school construction is therefore affected by the prevailing wage law.¹³

In each construction bid requested by a state agency or local government, the appropriate rate schedule must be part of its bid specifications. The Michigan Department of Licensing and Regulatory Affairs determines the state's prevailing wage rates, basing them on rates contained in collective bargaining agreements.¹⁴ Neither the Davis-Bacon Act nor the majority of states with statutes explicitly require that its prevailing wage be based on rates found in collective

10. In 1995, Oklahoma's prevailing wage law was found to violate its constitution on the grounds that "it impermissibly delegated authority to federal officials." See *Oklahoma City v. State ex rel. Department of Labor*, 918 P.2d 26.

11. See the Michigan Department of Licensing and Regulatory Affairs website: http://www.michigan.gov/lara/0,4601,7-154-61256_11407_59886_27706-39650--,00.html.

12. Michigan courts have ruled that this minimal state support for public school construction is enough to require the application of prevailing wages. See *West Ottawa Public Schools v. C. Patrick Babcock*, 107 Mich. App. 237, 309 N.W.2d 200 (1979).

13. According to municipal funding expert Lou Schimmel, "nearly all" of school construction is at least partially funded by qualified bonds. Mike Alandt, director of the Municipal Advisory Council of Michigan, puts that figure at 80 to 90 percent. See Paul Kersey, "The Effect of Michigan's Prevailing Wage Law," Mackinac Center for Public Policy, 2007, <http://www.michigancapitolconfidential.com/archives/2007/s2007-09.pdf>.

14. See Michigan Compiled Laws 408.554.

bargaining agreements.¹⁵ Most states with local prevailing wage statutes leave state or local officials some discretion to set prevailing wage rates.

Similarly to the Davis-Bacon Act, Michigan's prevailing wage rates provide an hourly rate for designated occupation classifications, including wage, fringe benefits, and overtime. Contracting agents and bidders are responsible for complying with the prescribed rates, and may face penalties if they do not do so.

In the mid 1990's, there was a 30 month time period when prevailing wage laws in Michigan were suspended: December 1994-June 1997. In 1994, a federal district court ruled that the law was in conflict with the federal Employee Retirement Income Security Act (*Associated Builders and Contractors v. Perry*, 869 F. Supp. 1239). However, that decision was overturned by the Sixth Circuit Court of Appeals in 1997 (*Associated Builders and Contractors v. Perry*, 115 F.3d 386).

Questioning existing prevailing wage laws during this time period was not uncommon, as several other states repealed prevailing wage or exempted certain types of construction. For example, Oklahoma's prevailing wage law was judicially annulled in November of 1995, and Ohio exempted public school construction from the state's prevailing wage law in July of 1997. However, Michigan is the only state to date that has suspended and reinstated its prevailing wage statute. As a result, Michigan became the focus of several studies focused on quantifying the effects of prevailing wage in terms of cost, income changes, jobs, and productivity. We discuss some of these studies and their findings below.

EMPIRICAL RESEARCH ON THE EFFECTS OF PREVAILING WAGE

There is a great deal of research and empirical studies that have tried to determine the effects of prevailing wage. Below we provide a brief summary of several well known studies that focus on how prevailing wage impacts costs. This is meant to provide the reader with some background and is no means exhaustive. We draw on the conclusions and findings from many of these studies to make assumptions in our own model, which estimates the additional construction costs associated with Michigan's prevailing wage.¹⁶

15. Three other states (Massachusetts, Ohio, and New Jersey) require that the state prevailing wage be based on rates in collective bargaining agreements. See Massachusetts General Laws, Chapter 149 §§26 et seq.; New Jersey Statute §§34:11-56:25-34:11-56:44; Ohio Revised Code §4115.03. Other states that may not have this as a requirement, but may nevertheless use collective bargaining agreement rates. This practice is customary in Illinois.

16. Not all of these studies specifically focused on education construction costs, and several examine the effects at a federal level or in other states. We discuss how we used these studies to inform our assumptions in "Fiscal Impact Model" on page A-1.

Researchers have taken several approaches to study the impact of prevailing wages on costs. One is the wage differential approach, which compares the wage rates in contracts subject to prevailing wage laws with wage rates in contracts not subject to the laws. Most studies assume that contractors pass on additional labor costs to the government. Another approach, called cross-sectional analysis, compares contracts that are subject to the prevailing wage and those that are not, but always during the same time period. Typically these studies compare the costs of government contracts in states with prevailing wage regulations with contracts from places without prevailing wage laws. The third approach, called time series analysis, compares the costs in contracts during time periods with a prevailing wage requirement with contract costs in time periods without one. We provide a few examples of each.

Wage Differential Approach

In 1979, the Government Accountability Office (GAO), which was then the General Accounting Office, studied a sample of 30 federal projects subject to the Davis-Bacon act.¹⁷ The GAO found that due to incorrect procedures by the Department of Labor, 12 projects were set at higher rates than the prevailing wage rate, and 18 projects were given rates lower than the prevailing wage rate. The study assumed that the higher prevailing wage rates were passed through in higher contract costs, and found it increased total construction costs by an average of 3.4%.

In a study by the Beacon Hill Institute, it was found that the Department of Labor's Wage and Hour Division again incorrectly set hourly wages too high. The authors found that the WHD set hourly wages an average of 22% above BLS average wages for nine major construction occupations. When these wage differences were applied to federal construction, the study estimated that government costs would increase by 9.9%.¹⁸

A study focusing on Michigan and its time with a suspended prevailing wage statute was done in 1999.¹⁹ The study estimated that prevailing wage rates raised construction costs in Michigan by 10%.²⁰ The study also found that con-

17. See 104th Congress, 1st Session, Senate Committee on Labor and Human Resources, Report 104-80, "Repeal of the Davis-Bacon Act."

18. See Sarah Glassman, Michael Head, David G. Tuerck, and Paul Bachman, "The Federal Davis-Bacon Act: The Prevailing Mismeasure of Wages," Beacon Hill Institute at Suffolk University, 2008.

19. See Richard Vedder, "Michigan's Prevailing Wage Law and Its Effects on Government Spending and Construction Employment," Mackinac Center for Public Policy, 1999.

20. We note that Vedder and the Mackinac Center have faced criticism for assuming that a wage differential in the Detroit suburbs would be the same in the rest of the state and did not test this assumption.

struction jobs in the state grew by over 11,000, or 13%, after the prevailing wage law was suspended in Michigan.

A subsequent study by the Mackinac Center examined the differences between Michigan's prevailing wage rates and the wages of workers in similar occupations reported to the U.S. Bureau of Labor and Statistics (BLS).²¹ It found the state's prevailing wage rates to be 39% higher on average than the BLS'.

Cross Sectional Analysis

The first econometric cross-sectional study of prevailing wage laws and government construction costs collected construction data in 1977 and 1978 through in-person interviews with contractors of 215 new non-residential buildings in rural areas throughout the U.S.²² Nearly half of these projects (113) were subject to the Davis-Bacon Act, with the remaining projects being private. The study concluded that the public projects, which were all subject to prevailing wage rates, were 26.1% more expensive than private construction. The authors acknowledged this to be high considering labor costs to only be roughly a third of total construction costs.²³

A study of California's construction of low-income residential projects concluded that the state's prevailing wage rates raised public costs between 9 and 37 percent.²⁴ The researchers were able to compare construction costs between public projects that were subject to prevailing wage regulation and public projects that were not, as some public projects are exempted.

Time Series Analysis

A study of Michigan, Kentucky, and Ohio in the mid 1990s concluded that when prevailing wage laws were in effect, suspended or repealed, there was no statistically significant difference in the cost between schools built under prevailing law regulations and those that were not.²⁵ The study examined the time during which Michigan's prevailing wage law was judicially suspended, Ken-

21. See Paul Kersey, "The Effect of Michigan's Prevailing Wage Law," Mackinac Center for Public Policy, 2007, <http://www.michigancapitolconfidential.com/archives/2007/s2007-09.pdf>.

22. See Martha Fraundorf and Mason Farell, "The Effect of Davis-Bacon Act on Construction in Rural Areas," *Review of Economics and Statistics*. Vol. 142, No. 6, 1984.

23. As the first econometric study of prevailing wages and federal construction costs, this study is one of the most cited in literature discussing prevailing wage. However, it is criticized for failing to control for cost differences between public and private construction.

24. The researchers used two different models, which account for the wide variance. One model found an increase in contract costs of 9-11 percent, and the other, which used voter and union data, estimated construction costs increase by 19 to 37 percent. See Sarah Dunn, John Quigley, and Larry Rosenthal, "The Effects of Prevailing Wage Requirements on the Cost of Low-Income Housing," *Industrial & Labor Relations Review*, Vol. 59, No. 1, 2005, pp. 141-57.

tucky adopted prevailing wages for school construction, and Ohio exempted school construction from its prevailing wage statute.

In 2002, the Ohio General Assembly ordered the Ohio Legislative Service Committee to study the impact of suspending prevailing wage for school construction.²⁶ The study concluded that by allowing competitive bidding taxpayers saved 10.7% of construction spending.

ARGUMENTS ABOUT PREVAILING WAGE LAWS

Prevailing wage laws are highly complex, differ by state, and are controversial in many communities. Below we briefly summarize the most widely-cited arguments for and against prevailing wage laws, though we do not attempt to assess the theoretical or empirical merits of each.

Rationale for Prevailing Wage Regulations

When prevailing wage laws were enacted at a federal level during the Great Depression, it was consistent with President Hoover's theory that high wages caused prosperity. This is still argued by some proponents of prevailing wage, who maintain that strong action by public sector, in the case of prevailing wage by regulating private sector wages, can create and support a middle class, as higher incomes provide disposable income, as well as the opportunity to purchase a home, rather than rent. Higher wages can also mean additional tax revenue from purchased goods and owning property.

Another rationale for a prevailing wage is to keep the construction local. By ensuring that construction workers are paid at least the wages and benefits that "prevail" in that community, it can deter contractors from using cheaper labor in order to underbid their competition. At the time that the Davis-Bacon Act was enacted, the concern was not the effect of government construction on the overall labor market, but rather the effect that competition from outside firms might have on workers native to the region of a government-funded project. Prior to Davis-Bacon, it was not uncommon to bring workers from another region to a higher cost locality because they were willing to take lower wages that corresponded to their cost of living at home.

Some supporters of prevailing wage laws claim that contractors use substitute laborers that are unskilled or low-skilled, so that they don't have to pay them as much. Keeping those unskilled or low-skilled workers out of the construction site arguably can result in a more experienced and productive workforce that results in higher quality craftsmanship and fewer workplace injuries.

25. Peter Philips, "A Comparison of Public School Construction Costs in Three Midwestern States That Have Changed Their Prevailing Wage Laws in the 1990s: Kentucky, Ohio, and Michigan," Economics Department, University of Utah, 2001.

26. See Ohio Legislative Service Committee Senate Bill 102 Report: 22-25.

It is also argued that the higher wages required under prevailing wage statutes can help retain a state's current skilled workforce and attract new entrants into the construction trades. These rates may allow contractors and unions to invest in continuing to train their workers, conduct apprenticeship programs, and build training facilities.

Opposition of Prevailing Wage Regulations

Prevailing wage is often argued against in the same manner that minimum wage laws are: they suppress competition and make it more expensive to hire workers, which can impact employment. Essentially, contractors can only compete on non-payroll expenses when they bid for public projects. Putting in place a minimum amount that someone must be paid often discourages employers from hiring additional employees because the cost to do so has artificially risen.

There are opportunity costs for a contractor to put together a bid and determine what rates apply to which workers for the work needed in each bid. Contractors that operate on regional or statewide scale may have to monitor hundreds of different rates annually. This can be especially time consuming and costly for contractors who tend to be less familiar with the finely detailed classifications of prevailing wage rates, and smaller companies that rely less on specialization.

The requirement to categorize all tasks can also reduce a contractor's flexibility. To avoid extensive record keeping, workers may be regulated to one category of tasks, rather than be used as they are needed.

It is argued by proponents of prevailing wage that higher wages result in workers with better skills that can produce higher quality products. Opponents point out that all projects, regardless of whether prevailing wage rules are in force, are subject to the same construction codes (such as the Michigan Construction Code) that set standards for quality and safety of buildings.²⁷ Furthermore, customers have the ability to evaluate the quality of construction projects, both at the contracting stage where materials and methods may be specified, and after completion, when many aspects of quality are apparent. Finally, it is questionable whether the overall project would be of a higher quality. Sometimes paying someone more is just paying someone more. There is no clear incentive for workers that are paid at a higher wage to work harder, more efficiently, or ensure greater quality than those paid at a lower rate, unless pay is directly linked to performance.

Another consideration is the need for those highly skilled workers. Surely there are jobs that require workers with a special set of skills, but there are also jobs

27. Steve Arwood, Director, Michigan Department of Licensing and Regulatory Affairs, letter, addressed to Chris Fisher, President, Associated Builders and Contractors of Michigan, October 9, 2013.

and tasks that do not. It is inefficient to pay someone more for a task that doesn't require a certain skill set, just because they happen to be a skilled worker. A contractor has the incentive to know the difference and pay his employees accordingly—if an unskilled worker makes a mistake in execution, it will likely impact his end profit.

Additionally, as with most regulations, there is an administrative burden. Both determining prevailing wage rates and properly implementing them are a tough administrative burden at both the state and national level. Questions about fraud have surfaced in several states related to the submitted data on which prevailing wages are determined.²⁸ On a federal level, the Labor Department's method for determining "prevailing" rates has been widely criticized for giving far too little weight to lower, nonunion rates that many construction workers in the area receive.²⁹ As previously discussed in "Wage Differential Approach" on page 7, several empirical studies found errors in how prevailing wage rates were implemented, including examples of states assigning wage rates that were both higher and lower than the prevailing wage.

In particular, the way that Michigan's prevailing wage law is written makes it vulnerable to fraud. The prevailing wage rate is based on the rate appearing in collective bargaining agreements, which are determined by employers and union officials, who do not have an incentive to keep costs down. These costs can merely be passed along to local and state governments.

Certain issues that prevailing wage supporters raise could be addressed through other means besides implementing prevailing wage laws. For example, opponents claim that keeping construction labor for private sector projects locally-based is not an issue. Furthermore, the State of Michigan and local governments can address local hiring concerns by adopting state or local hiring preference policies. For example, the State of Michigan authorizes school districts to adopt policies that give preference to Michigan-based businesses in awarding school construction contracts.³⁰

28. In the 1990s, the Oklahoma Commissioner of Labor had uncovered widespread fraud in the submission of data on which prevailing wage determinations were made. See Samuel Cook, *Freedom in the Workplace: The Untold Story of Merit Shop Contracting's Crusade against Compulsory Trade Unionism*. Washington: Regnery, 2005.

29. Wage survey method in use "employs unrepresentative survey and measurement methods that produce wages estimates that are biased upward." See Glassman, et al, p. 38.

30. Michigan Compiled Laws, 380.1267

II. Estimated Impact of Prevailing Wage on Education Construction

Prevailing wage laws apply to many types of construction, including public buildings, roads, and schools. In this report, we focus on the capital expenditures of public education institutions in Michigan because data on these education expenditures are more uniform and more readily available than other types of construction subject to the law. In this section, we discuss education construction expenditures in the state over a 10-year period (2003 through 2012). Lastly, we describe how we estimated the amount of additional spending due to Michigan's prevailing wage law.

TOTAL EDUCATION CONSTRUCTION EXPENDITURES IN MICHIGAN

The construction expenditures made by local and state governments on public education in Michigan from 2003 through 2012 totaled nearly \$24 billion.³¹ In terms of 2015 dollars, over \$28 billion was spent. It is difficult to get a sense for what is spent on construction on an annual basis because it can fluctuate so greatly. This can be a result of the overall economy, a bad Michigan winter, and several other factors, including whether capital improvement bonds are approved by voters.

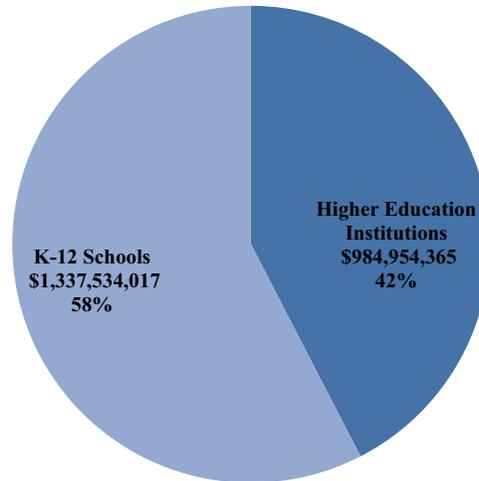
By using an 10-year average of spending that is adjusted for inflation, rather than a single year, or several years, we were able to take into account changes in business cycles and large fluctuations in demand.³² This is why we consider our average of \$2.3 billion to be a somewhat typical year of expenditures by Michigan on education construction projects.

There are two components of education construction expenditures: K-12 public schools and higher education institutions, which include community colleges and public universities. As shown in Figure 1 on page 13, K-12 construction expenditures comprise \$1.4 billion, or 58% of total spending on education construction projects annually. K-12 construction is primarily funded locally through tax revenue and bonds.

31. Due to issues with data submission and quality, the Census Bureau does not make 2003 state data available to the public. AEG estimated the 2003 expenditures by taking the average expenditures made in 2002 and 2004. See "Data Sources" on page A-1 for further discussion.

32. Large fluctuations in demand created by government decisions to develop multiple projects at once and result in higher public costs are referred to as "cost storms." They are an example of the government's power to impact market conditions in the construction industry through large capital investments. See Hamid Azari-Rad, Peter Philips, and Mark Prus, "Making Hay When It Rains: The Effect Prevailing Wage Regulations, Scale Economies, Seasonal, Cyclical and Local Business Patterns Have on School Construction Costs," *Journal of Education Finance*, Vol. 23, 2002, pp. 997-1012.

FIGURE 1. Average Annual Expenditures on Education Construction Expenditures in Michigan, 2003-2012



Source: U.S. Census Bureau, *Annual Surveys of State and Local Government Finances (2001-2002, 2004-2012)*
Analysis: Anderson Economic Group, LLC

IMPACT ON EDUCATION CONSTRUCTION EXPENDITURES IN MICHIGAN

As discussed above, Michigan has spent about \$23.2 billion on education construction expenditures over the past 10 years. The State of Michigan acts as a surety on most of the bonds used for public schools, which makes the vast majority of education capital expenditures subject to prevailing wage laws.

Of the \$2.3 billion spent by local and state governments on public education construction in Michigan annually, nearly \$2.1 billion are subject to prevailing wage regulations.³³ We estimate that about a quarter of those total construction expenses, or over \$507 million, are due to the cost of labor. While each project varies in its labor costs, we created a conservative estimate of the proportion of costs created by labor.

We estimate that Michigan's construction labor costs under prevailing wage rates are approximately 25% higher than construction costs in the private market. We based this estimate on other empirical studies that have focused on quantifying the cost of prevailing wage regulations.³⁴ As shown in Table 2 on page 14, we estimate that nearly \$127 million in added education construction costs are created by Michigan's prevailing wage law each year. The estimated

33. See Table A-3, "Average Additional Annual Cost of Construction for Higher Education and K-12 Schools Under Prevailing Wage, 2003-2012," on page A-8.

34. See "Examining Total Cost Increases Due to Prevailing Wage" on page A-4.

Estimated Impact of Prevailing Wage on Education Construction

additional costs comprise 6.1% of the annual expenditures made by state and local governments on education construction projects. Applying this estimate to total expenditures from 2001 to 2012, Michigan taxpayers could have saved an estimated \$1.7 billion.

For further discussion of our methodology and assumptions see “Fiscal Impact Model” on page A-1.

TABLE 2. Estimating the Additional Financial Obligations Due to Michigan’s Prevailing Wage Rates

Estimated Expenditures	
Estimate of Expenditures Subject to Michigan's Prevailing Wage Laws ^a	\$ 2,090 million
Proportion of Total Expenditures Due to Labor Costs ^b	<u>24%</u>
Estimate of Expenditures for Payroll Expenses	\$ 507 million
Rate that Construction Labor Costs under Prevailing Wage Rates Exceed Average Construction Labor Costs ^c	<u>25%</u>
Estimate of Additional Construction Costs Due to Michigan's Prevailing Wage	\$ 127 million

*Sources: U.S. Census Bureau, Annual Surveys of State and Local Government Finances by State (2001-2002, 2004-2012); Economic Census, Geographic Series (2002, 2007, 2012); AEG Estimates
Analysis: Anderson Economic Group, LLC*

- a. Estimated by multiplying total expenditures by the proportion of expenditures subject to prevailing wage laws. See Table A-3, “Average Additional Annual Cost of Construction for Higher Education and K-12 Schools Under Prevailing Wage, 2003-2012,” on page A-8.
- b. See “Estimating Labor Costs as a Share of Project Costs” on page A-2.
- c. See “Examining Construction Labor Cost Increases Due to Prevailing Wage” on page A-3.

Appendix A. Data Sources and Methodology

DATA SOURCES

One of the data sources for our analysis was the U.S. Census Bureau's Annual Survey of State and Local Government Finances, by State. The data we used from this survey include:

- “Elementary & secondary construction expenditures,” which we labeled “K-12 Schools” in our analysis, and
- “Higher education construction expenditures,” which include spending by community colleges and public universities.

Construction expenditures can fluctuate a great deal. In order to get a sense for what state and local governments spend on education construction, we decided to use an average over a 10-year period. The most recent 10-year data available from the survey of government finances are from years 2004 through 2012. The Census Bureau did not have 2003 data available by state. AEG called the Census Bureau and they stated that, due to issues with data submission and quality, the Census Bureau does not make 2003 state data available to the public. AEG estimated the 2003 expenditures by taking the average expenditures made in 2002 and 2004.

We then adjusted for inflation using the Consumer Price Index and express expenditures in 2015 dollars. See Table A-1 on page A-6.

We also relied on the U.S. Census Bureau's Economic Census Geographic Series for Construction to estimate the share of construction project costs that are due to construction labor. These data are collected in years ending in 2 and 7, so we relied on data from 2002, 2007, and 2012. See Table A-2 on page A-7

FISCAL IMPACT MODEL

A number of factors can impact the cost of a construction project including the age and type of building, functions and amenities requested, the age of the building, materials, and building size, among others. The scope of this project did not allow us to consider individual education projects. We do not consider changes in worker productivity, material costs, or labor share that may occur in the absence of a prevailing wage. Lastly, our analysis does not attempt to project the behavioral responses of the consumer, such as choosing to build larger or higher-quality buildings when faced with lower overall costs.

There already exists a great deal of research and empirical studies on the effects of prevailing wage in terms of cost. Our scope of analysis is limited to estimating how much of what local and state governments spend on education construction is due to Michigan's prevailing wage law. However, in order to inform some of our assumptions, we draw on the conclusions and findings from many

of these studies. We build our own set of assumptions keeping in mind these studies are not necessarily specific to Michigan or education construction costs.

We begin our model by using the inflation-adjusted expenditures on education construction in Michigan. We then estimate the amount of expenditures (or contracted construction amounts), which are subject to prevailing wage in Michigan. As discussed in “Michigan’s Prevailing Wage Law” on page 5, because the state acts as a surety on most of the bonds used for public schools, very few public projects are exempt from the state’s prevailing wage law. We decided to use 90% of total expenditures to represent total spending on education construction that is subject to prevailing wage.

We then needed to consider how much of this spending is due to labor costs, and the additional cost of having a prevailing wage rate in place. We estimated that 24.2% of construction project costs are due to construction labor, and construction labor costs under prevailing wage rates are 25% higher than average construction labor costs. We discuss our reasoning behind these assumptions below in “Estimating Labor Costs as a Share of Project Costs” on page A-2 and “Examining Construction Labor Cost Increases Due to Prevailing Wage” on page A-3.

Our full analysis is shown in Table A-3 on page A-8, and we show the additional costs of prevailing wage by year in Table A-4 on page A-9. We estimate that about 6.1% of education construction costs are due to Michigan’s prevailing wage law. We discuss how our conclusion compares with other studies that have quantified the cost of prevailing wage laws in “Examining Total Cost Increases Due to Prevailing Wage” on page A-4.

Estimating Labor Costs as a Share of Project Costs

We made several key assumptions in order to calculate this estimate. First, we assumed that direct construction labor costs as a share of the net value of construction work is equivalent to subcontracted construction labor costs as a share of the costs of subcontracted construction work.³⁵ Second, we assumed that the proportion of total fringe benefits due to construction labor is equivalent to the proportion of total payroll due to construction labor. From these steps, we estimated that the share of the average construction project cost due to construction labor was 27% in 2002, 23% in 2007, and 24% in 2012. The last key assumption that we made was that the value of construction work reported in the Economic Census represents activity that is comparable to activity that is reported

35. The “net value of construction work” includes the value of construction work less the cost of subcontracted construction work.” Value of construction work” includes the receipts, billings, or sales for construction work done by building contractors, heavy and civil engineering construction contractors, and specialty trade contractors.

in the construction expenditures by the Annual Survey of State and Local Governments.

We then interpolated our estimates of the share of construction project cost due to labor for years 2003 through 2006 and 2008 through 2011. We then weighted the share for each year by nominal construction spending. From 2003 through 2012, the average share of the construction project cost due to construction labor was about 24%.

AEG found several sources with estimates of labor costs in terms of total construction costs. Our estimate that 24% of the construction project cost is due to construction labor is similar to the estimates disclosed in these sources.

- A study of school construction costs in the Great Plains states estimated labor costs to comprise roughly 20 to 30 percent of construction contracts, which was attributed to the Census of Construction.³⁶ The total cost of construction contracts in this calculation excludes land acquisition, architectural design, or management fees. Additionally, the study ultimately concluded that new school construction costs were not statistically different in states with prevailing wage laws than in states without them.
- A review of the research on prevailing wages and contracting costs described the first econometric study of federal construction costs related to Davis-Bacon.³⁷ This study was based on construction data collected in 1977 and 1978. The review estimated that labor costs (including wages, benefits, and payroll taxes) at that time were no more than 30% of total construction costs.

Examining Construction Labor Cost Increases Due to Prevailing Wage

AEG found several studies that estimated how much prevailing wage rates exceed average industry wages. Many of these studies compared state or federal prevailing wage rates with the BLS data on wages.

- Estimates that prevailing wage rates were 22% above BLS average wages. There were several cases included that were given wrong wage rates under the Davis-Bacon Act.³⁸
- A study on Michigan's experience with suspending its prevailing wage rate concluded that the state's prevailing wage rates were 39% higher on average than the wage rates reported by the BLS.³⁹

36. Peter Philips, "Kansas and Prevailing Wage Legislation," Report prepared for the Kansas Senate Labor Relations Committee, 1998.

37. Nooshin Mahalia, "Prevailing Wages and Government Contracting Costs: A review of the research," Washington, D.C.: Economic Policy Institute, 2008.

38. Sarah Glassman, Michael Head, David G. Tuerck, and Paul Bachman, "The Federal Davis-Bacon Act: The Prevailing Mismeasure of Wages," Beacon Hill Institute at Suffolk University, 2008.

We assumed that total construction labor costs are 25% higher under prevailing wage. We use the lower end of the estimates for the difference in wage rates because, in practice, construction firms have some ability to change their behavior in response to higher wage rates. Firms can off-set higher wage rates by hiring more highly-skilled workers who work fewer hours on a project or increase their capital investments in order to make their workers more productive.⁴⁰

Examining Total Cost Increases Due to Prevailing Wage

There have been several studies on the impact of prevailing wage on the total cost of construction projects. Of the studies that found a statistical difference in cost, the estimates ranged from 3 to 15 percent.⁴¹ Our own Michigan-specific estimate is 6.1%.⁴² Since we also used other findings and parameters of these studies to inform our assumptions in our model, it is not surprising that our estimate would be close to other studies. Below are the studies that we found, which created this range of estimates:

- In 1979, the U.S. General Accounting Office (now Government Accountability Office) found that the Davis Bacon Act increased construction costs by 3.4%.⁴³ This cost is attributed to incorrect procedures by the Department of Labor, which set higher rates than the prevailing wage rate for a number of projects. While this was an error, the additional cost was still caused by the legislation in that government agencies and offices are expected to determine and implement rates.
Another study that found incorrect wage rates set for federal construction projects estimated those errors to result in government costs increasing by 9.9%.⁴⁴
- A study of Michigan during the time its prevailing wage was suspended estimated that the legislation added about 10 to 15 percent to the cost of public con-

39. Paul Kersey, "The Effect of Michigan's Prevailing Wage Law," Mackinac Center for Public Policy, 2007, <http://www.michigancongress.com/archives/2007/s2007-09.pdf>.

40. Several studies have found that higher wages are correlated with increased labor productivity. Our estimate of the increased construction labor costs accounts for the combined effects of higher wage rates and increased labor productivity. For a review of these studies, see Michael P. Kelsey, James I. Sturgeon, and Kelly D. Pinkham, "The Adverse Economic Impact from Repeal of the Prevailing Wage Law in Missouri," Department of Economics, University of Missouri-Kansas City, December 2011.

41. We did see studies that concluded there was no statistical difference in the cost between schools built under prevailing wage laws and those that are not. See Peter Philips, "A Comparison of Public School Construction Costs in Three Midwestern States That Have Changed Their Prevailing Wage Laws in the 1990s: Kentucky, Ohio, and Michigan," Economics Department, University of Utah, 2001.

42. That our estimate is in the lower end of this range confirms our assumption that increased labor productivity does not completely off-set higher wage rates. These studies evaluated the change in overall project costs, which accounts for all factors that might affect labor costs.

43. See 104th Congress, 1st Session, Senate Committee on Labor and Human Resources, Report 104-80, "Repeal of the Davis-Bacon Act."

struction.⁴⁵ This study has faced criticism for assuming that the wage differential in the Detroit suburbs would be the same in the rest of the state.

While the study did not test this assumption, we find it reasonable, as over half of the state's population resides in the region and due to this, a large share of construction occurs there.

- In 2002, Ohio's Legislative Service Committee studied the impact of suspending prevailing wage for school construction, they found that by allowing competitive bidding they saved 10.7% of construction spending.⁴⁶

44. Sarah Glassman, Michael Head, David G. Tuerck, and Paul Bachman, "The Federal Davis-Bacon Act: The Prevailing Mismeasure of Wages," Beacon Hill Institute at Suffolk University, 2008.

45. See Richard Vedder, "Michigan's Prevailing Wage Law and Its Effects on Government Spending and Construction Employment," Mackinac Center for Public Policy, 1999.

46. See Ohio Legislative Service Committee Senate Bill 102 Report: 22-25.

TABLE A-1. Education Construction Expenditures Made in Michigan in 2014 dollars, 2003-2012

Year	Type of Expenditure		
	Higher Education Institutions	K-12 Schools	Total Education Construction
2003*	\$ 1,027,646,174	\$ 1,923,193,890	\$ 2,950,840,064
2004	\$ 1,058,235,813	\$ 2,092,162,221	\$ 3,150,398,034
2005	\$ 1,051,032,051	\$ 1,739,792,311	\$ 2,790,824,361
2006	\$ 1,057,009,295	\$ 1,500,184,306	\$ 2,557,193,601
2007	\$ 597,130,269	\$ 1,334,204,096	\$ 1,931,334,365
2008	\$ 852,932,200	\$ 1,041,149,272	\$ 1,894,081,471
2009	\$ 500,483,754	\$ 989,867,721	\$ 1,490,351,475
2010	\$ 1,280,337,952	\$ 964,072,281	\$ 2,244,410,233
2011	\$ 1,250,967,501	\$ 936,168,775	\$ 2,187,136,276
2012	\$ 1,173,768,644	\$ 854,545,295	\$ 2,028,313,940
Total 2001-12	\$ 9,849,543,652	\$ 13,375,340,168	\$ 23,224,883,820
2003-12 Average	\$ 984,954,365	\$ 1,337,534,017	\$ 2,322,488,382



Source: U.S. Census Bureau, Annual Surveys of State and Local Government Finances (2001-2002, 2004-2012)
 Analysis: Anderson Economic Group, LLC

*Note: There was not data available for 2003 at the state level. AEG estimated this value as the average expenditures in 2002 and 2004. See "Data Sources " on page A-1 for additional discussion.

TABLE A-2. Construction Costs in Michigan (in thousands of nominal dollars)

Spending Category	2002	2007	2012
<i>Total Labor Costs</i>			
Payroll	\$ 8,108,488	\$ 7,228,367	\$ 6,370,248
(a) Fringe benefits	\$ 2,194,332	\$ 2,349,470	\$ 1,932,361
<i>Subtotal: Total labor costs</i>	<i>\$ 10,302,820</i>	<i>\$ 9,577,837</i>	<i>\$ 8,302,609</i>
<i>(b) Construction Labor Costs</i>			
Payroll	\$ 5,677,748	\$ 4,790,954	\$ 4,343,129
Fringe benefits	\$ 1,536,521	\$ 1,557,226	\$ 1,317,452
<i>Subtotal: Construction labor costs</i>	<i>\$ 7,214,269</i>	<i>\$ 6,348,180</i>	<i>\$ 5,660,581</i>
(c) Net value of construction work	\$ 26,800,774	\$ 27,675,251	\$ 23,518,202
<i>Share of the net value of construction work due to construction labor</i>	<i>26.9%</i>	<i>22.9%</i>	<i>24.1%</i>

Source: U.S. Census Bureau, Economic Census, Geographic Series (2002, 2007, 2012)

Analysis: Anderson Economic Group, LLC

Notes:

- (a) The Economic Census reports only the total fringe benefits for all employees. AEG estimated the fringe benefits for construction workers by assuming that the proportion of total fringe benefits due to construction labor is the same as the proportion of total payroll due to construction labor.
- (b) Excludes any implicit labor costs for subcontracted construction work.
- (c) Includes the value of construction work less the cost of construction work subcontracted out to others. "Value of construction work" includes the receipts, billings, or sales for construction work done by building contractors, heavy and civil engineering construction contractors, and specialty trade contractors.

TABLE A-3. Average Additional Annual Cost of Construction for Higher Education and K-12 Schools Under Prevailing Wage, 2003-2012

	Average Annual Spending from 2001-2012		
	Higher Education	K-12 Schools	Total
(a) State and Local Government Construction Expenditures	\$ 984,954,365	\$ 1,337,534,017	\$ 2,322,488,382
(b) Proportion of Expenditures Subject to Prevailing Wage Laws	<u>90.0%</u>	<u>90.0%</u>	<u>90.0%</u>
(c) Estimate of Expenditures Subject to Michigan's Prevailing Wage Laws	\$ 886,458,929	\$ 1,203,780,615	\$ 2,090,239,544
(d) Proportion of Total Expenditures Due to Labor Costs	<u>24.2%</u>	<u>24.2%</u>	<u>24.2%</u>
(e) Estimate of Expenditures for Payroll Expenses	\$ 214,900,048	\$ 291,826,844	\$ 506,726,892
(f) Rate by which Construction Labor Costs Under Prevailing Wage Exceed Average Construction Labor Costs	<u>25.0%</u>	<u>25.0%</u>	<u>25.0%</u>
(g) Estimate of Additional Cost Due to Michigan's Prevailing Wage	<u>\$ 53,725,012</u>	<u>\$ 72,956,711</u>	<u>\$ 126,681,723</u>
(h) Memo: Additional Cost of Prevailing Wage as a Share of Total Construction Costs		6.1%	

Sources: U.S. Census Bureau, *Annual Surveys of State and Local Government Finances (2001-2002, 2004-2012)*; *Economic Census, Geographic Series (2002, 2007, 2012)*; *AEG Estimates*

Analysis: Anderson Economic Group, LLC

Notes:

(a) See AEG calculated average in Table A-1 on page A-5.

(b) The state acts as a surety on most of the bonds used for public school construction in Michigan, which makes construction projects with that funding to be under the state's prevailing wage regulations. According to municipal funding expert Lou Schimmel, "nearly all" of school construction is at least partially funded by qualified bonds. Mike Alandt, director of the Municipal Advisory Council of Michigan, puts that figure at 80 to 90 percent. See Paul Kersey, "The Effect of Michigan's Prevailing Wage Law," The Mackinac Center, 2007, available at <http://www.michiganapitolconfidential.com/archives/2007/s2007-09.pdf>.

(c) Estimated by multiplying total expenditures by the proportion of expenditures subject to prevailing wage laws.

(d) AEG estimates based on U.S. Census Bureau Economic Census data. See "Estimating Labor Costs as a Share of Project Costs" on page A-2.

(e) Estimated by multiplying the proportion of payroll expenditures and proportion of payroll expenditures subject to prevailing wage laws by total capital outlay expenditures.

(f) AEG professional judgment based on empirical studies of the effect of prevailing wage law. See "Examining Prevailing Wage Rates Against Average Rates" on page A-3.

(g) Estimated by multiplying the rate prevailing wages exceed average construction labor by the estimate of expenditures for payroll expenses.

(h) AEG's estimates of additional cost due to Michigan's prevailing wage law are 6.1% of total construction expenditures that are subject to prevailing wage regulations. This is within the range of a large number of empirical studies that examined the effects of prevailing wage on total costs. We provide a brief discussion of these studies in "Examining Total Cost Increases Due to Prevailing Wage," on page A-4.

TABLE A-4. Additional Cost of Construction for Higher Education and K-12 Schools Under Prevailing Wage, 2003-2012

Year	Total Education Construction Expenditure	Construction Expenditures Subject to Prevailing Wage Laws (a)	Additional Cost of Education Construction Due to Prevailing Wage (b)
2003*	\$ 2,950,840,064	\$ 2,655,756,057	\$ 160,955,597
2004	\$ 3,150,398,034	\$ 2,835,358,231	\$ 171,840,623
2005	\$ 2,790,824,361	\$ 2,511,741,925	\$ 152,227,430
2006	\$ 2,557,193,601	\$ 2,301,474,241	\$ 139,483,880
2007	\$ 1,931,334,365	\$ 1,738,200,928	\$ 105,345,959
2008	\$ 1,894,081,471	\$ 1,704,673,324	\$ 103,313,974
2009	\$ 1,490,351,475	\$ 1,341,316,327	\$ 81,292,244
2010	\$ 2,244,410,233	\$ 2,019,969,210	\$ 122,422,897
2011	\$ 2,187,136,276	\$ 1,968,422,649	\$ 119,298,849
2012	\$ 2,028,313,940	\$ 1,825,482,546	\$ 110,635,776
Total 2001-12	\$ 23,224,883,820	\$ 20,902,395,438	\$ 1,266,817,229
2003-12 Average	\$ 2,322,488,382	\$ 2,090,239,544	\$ 126,681,722.93

Sources: U.S. Census Bureau, Annual Surveys of State and Local Government Finances (2001-2002, 2004-2012); Economic Census, Geographic Series (2002, 2007, 2012); AEG Estimates

Analysis: Anderson Economic Group, LLC

Notes:

(a) We estimate that 90% of school construction costs in Michigan are subject to prevailing wage. See Table A-3 on page A-7 for further discussion.

(b) As noted in Table A-3 on page A-7, we estimate that the additional cost of the prevailing wage law in Michigan is equivalent to 6.1% of the total construction expenditures that are subject to prevailing wage.

UPDATES TO OUR METHODOLOGY

Since the publication of our first report on the impacts of Michigan’s prevailing wage laws, in 2013, we had become aware of several opportunities to improve our methodology. We identified these opportunities based on our own research and on public discussion of the document, including one self-published working paper.⁴⁷ (The author of the working paper has not had any contact with our firm, and the working paper was not peer-reviewed).

We describe the revisions to our methodology in the following sections:

Construction expenditures. We revised our methodology to use “construction expenditures” from the U.S. Census Bureau Annual Survey of State and Local Government Finances to estimate the construction costs in public education. In our 2013 report, we used “capital outlay expenditures”, which includes spending on not only construction, but also land, structures, and equipment.

Construction labor costs. We also revised our methodology to estimate the construction labor costs as a share of the total construction project cost by using Economic Census data from 2002, 2007, and 2012 for Michigan.

In our 2013 report, we had used our professional judgment that construction labor costs consist of 30% of total construction project costs, based on secondary analyses of data collected in the 1970s and in 1992. These data were based on a geographic scope of the United States as a whole and of Kansas, respectively.

ADDITIONAL METHODOLOGICAL CONSIDERATIONS

In addition to the revisions that we discussed in the previous section, we considered several other factors that could raise or lower our cost estimate. We ultimately did not revise our analysis to quantify the effects of these factors since the effects were not quantifiable based on available data. We describe our consideration further in the remainder of this section and note our estimates for the order-of-magnitude effects of these factors in Table A-5 on page A-11.

Construction management costs. Project contracts often include charges for construction management and program management fees. In 2014, the average fee nationwide was about 5.6%, but they ranged from 0.6 to 18 percent.⁴⁸ To the extent that prevailing wage laws increase a construction project cost, they could also increase construction management costs. We did not quantify an effect of

47. Peter Philips, “Mr. Rosaen’s Magical Thinking,” November 20, 2013, <https://www.aeaweb.org/aea/2014conference/program/retrieve.php?pdfid=1154>, accessed late 2014.

48. This estimate is based on a survey that includes different project types, owner types, and project delivery methods.

See Construction Management Association of America, “New CM/PM Fees Study Published,” January 29, 2015, <https://cmaanet.org/new-cmpm-fees-study-published>, accessed August 2015.

prevailing wage on construction management costs due to data availability, as the public data available to us did not allow us to examine specific budget items not broken out in the data set.

Site preparation costs. Site preparation, such as clearing, filling, leveling, and razing unwanted structures, for school construction likely require labor that is subject to prevailing wage. According to the U.S. Census, these costs are not considered construction expenditures, but rather part of the purchase cost for land and existing structures. If land acquisition were associated with a school construction project, then prevailing wages would affect these costs as well. These effects are also difficult to quantify due to available data. We would need to know both the share of land acquisition costs due to site preparation, which would likely be marginal compared to total cost.

Size of Factors that Affect School Construction Project Costs

In Table A-5 below, we present our estimates for the potential order of magnitude of the factors that we described in earlier in this section.

TABLE A-5. Potential Size of Factors that Could Affect School Construction Costs

Factor that Could Affects School Construction Project Costs	Potential Size Relative to the Extra Cost Due to Prevailing Wage	Potential Extra Annual Cost Due to Prevailing Wage
Construction management costs	0.6 to 18 percent	\$0.8 to 22.9 million
Site preparation costs due to labor ^a	0 to 1 percent	\$0 to 1.2 million

Source: U.S. Census Bureau, Annual Surveys of State and Local Government Finances (2001-2002, 2004-2012); AEG professional judgment

a. Average annual education expenditures for land acquisition in Michigan was about \$1.0 billion from 2003 through 2012. Site preparation is included in these costs. Average annual construction labor costs during this period was about \$500 million, as we presented in Table A-3 on page A-8.

Appendix B: About AEG

Anderson Economic Group, LLC was founded in 1996 and today has offices in East Lansing, Michigan and Chicago, Illinois. AEG is a research and consulting firm that specializes in economics, public policy, financial valuation, and market research. AEG's past clients include:

- *Governments* such as the states of Michigan, North Carolina, and Wisconsin; the cities of Detroit, MI and Cincinnati and Sandusky, OH; counties such as Oakland County, Michigan, and Collier County, Florida; and authorities such as the Detroit-Wayne County Port Authority.
- *Corporations* such as Ford Motor Company, First Merit Bank, Lithia Motors, Spartan Stores, Nestle, and InBev USA; automobile dealers and dealership groups representing Toyota, Honda, Chrysler, Mercedes-Benz, General Motors, Kia, and other brands.
- *Nonprofit organizations* such as the convention and visitor bureaus of Lansing, Ann Arbor, Traverse City, and Detroit, as well as Experience Grand Rapids; higher education institutions including Michigan State University, Wayne State University, and University of Michigan; trade associations such as the Michigan Manufacturers Association, Service Employees International Union, Automation Alley, the Michigan Chamber of Commerce, and Business Leaders for Michigan.

Please visit www.AndersonEconomicGroup.com for more information.

AUTHORS

Alex L. Rosaen

Mr. Rosaen is a Senior Consultant at Anderson Economic Group, and the Director of Public Policy and Economic Analysis. Mr. Rosaen's background is in applied economics and public finance.

Mr. Rosaen's recent work includes analyses of water-related innovation at Michigan's research universities, transportation taxes, the cost of medical care for patients with inadequate dental insurance, the impact of Wayne State University on Midtown Detroit, and the cost of aquatic invasive species to businesses and residents in Great Lakes states.

Mr. Rosaen holds a Masters in Public Policy from the Gerald R. Ford School of Public Policy at the University of Michigan. He also has a Masters of Science and a Bachelors of Science in mechanical engineering from the University of Michigan. He has previously worked as a mechanical engineer for Williams International in Walled Lake, Michigan.

Traci Taylor

Ms. Taylor is a Senior Analyst with Anderson Economic Group, working in the Public Policy and Economic Analysis practice area. Her recent work includes research and data analysis for economic and fiscal impact studies, benchmarking studies, and tax reform proposals.

Prior to joining AEG, Ms. Taylor was a graduate assistant at Michigan State University, where her research focused on local governments facing fiscal stress. She also interned at the Citizens Research Council, a non-profit research organization that focuses on public policy issues in Michigan. Prior to attending graduate school, she worked as an engineer in the petrochemicals industry in Louisiana and as an AmeriCorps VISTA at a non-profit in New Orleans, Louisiana.

Ms. Taylor holds a Master of Science in Agricultural, Food, and Resource Economics and a Bachelor of Science in Chemical Engineering, both from Michigan State University.