

Maintaining Quality Work and Middle-Class Jobs in Construction

An Analysis of The Public Policy Foundation's Report: "An Economic Examination of West Virginia's Prevailing Wage Law"

Mark Price PhD¹

Keystone Research Center²

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Executive Summary

West Virginia's state prevailing wage law requires that construction workers on state-financed construction projects be paid hourly wages that are no less than the wages which "prevail" for construction work of a similar character in the county in which the project is being built.

In January 2009, The Public Policy Foundation (PPF) of West Virginia released a report that compared prevailing wages as determined by the West Virginia Division of Labor (DOL) with the wages for construction occupations reported by WORKFORCE West Virginia (WWV), an economic data program in the state's Department of Commerce.³

PPF finds that DOL's prevailing wages are 73.6% higher than average construction wages measured by WWV. PPF then draws the inaccurate conclusion that WWV's much lower estimates of construction wages, rather than the current DOL method, should determine prevailing wages..

The Public Policy Foundation's conclusion is based on the assumptions that the two data sources can be compared and that Workforce West Virginia measures wages relevant to state-funded construction work.

In fact, the two sources are apples and oranges: They measure different portions of the construction industry. Moreover, DOL's methodology, not WWV's, more accurately measures wages relevant to state-funded construction.

WWV data is not suitable for measuring prevailing wages on state-financed construction because it includes wages paid to workers employed in the residential construction sector. Residential construction relies on workers less skilled and experienced than those needed on larger-scale, more complex construction such as state-financed projects. In West Virginia, indicative of this skill gap, construction workers employed in nonresidential construction—most of which is private sector, not public—earn 87% more than construction workers in the residential construction sector. In other words, the gap between DOL's estimates of prevailing wages and WWV's average construction wages largely reflects the wage gap between residential and nonresidential construction.

Beyond the fact that they measure wages in a construction market that bears little resemblance to the public construction market, WWV data have other limitations that make them unusable and inappropriate for purposes of estimating prevailing wages.

- At the county level, WWV data do not distinguish between construction occupations within the construction industry (residential plus nonresidential) and those in other industries. Construction occupations in all other industries—e.g., utilities and manufacturing, repair industries and building services—are all lumped together with the construction industry itself. As a result, at the local level, even more than the state level, WWV data measure wages in a pool of jobs quite different from those on state construction work.

- The WWV survey does not collect information on compensation paid in the form of health insurance and pension benefits. Data on benefits are needed to comply with the state prevailing wage law because that law requires payment of compensation equal to prevailing wages plus benefits.
- WWV information is dated. At the state level, as of early 2009, the most recent full year of WWV data relevant to construction occupations in the construction industry is based on surveys completed between 2005 and 2007.
- WWV data are based on a survey of only 14% of all construction firms in the state—758 out of 5,585 companies. The survey used by the DOL, on the other hand, relies on sources which cover over half of the non-residential construction market.
- WWV data do not include sufficient occupational detail. They include information for 35 construction occupations, whereas DOL prevailing wage determinations currently cover 50 different construction occupations.

The Public Policy Foundation also maintains that using WWV data to determine prevailing wages would lead to large cost savings for taxpayers. This too is incorrect. As the second half of this report details, a large body of careful academic research shows that even eliminating (not just lowering) state prevailing wage laws does not lower construction costs.

- In the United States from 1991 to 1999, a 2002 study found, prevailing wage laws did not have a statistically significant impact on school construction costs. Other factors, especially the time of year construction took place, did have a big impact on costs.
- A recent study of the suspension of Michigan's prevailing wage law, the adoption of a prevailing wage law in Kentucky, and the repeal of Ohio's law covering school construction found no relationship between construction costs and the presence of prevailing wage regulations.

In addition, research summarized in the body of this report shows that states that do not have prevailing wage laws invest less in workforce training, have higher injury rates and have lower wages and benefits. Middle-class jobs are destroyed with no cost savings for the public. (The Public Policy Foundation acknowledges these arguments for prevailing wage law. Yet in the section of the PPF report labeled "Literature Review," none of the research literature on the impact of prevailing wage laws and their repeal is discussed.)

The reason that lowering prevailing wages does not cut construction costs relates to unique competitive dynamics in the industry. The construction industry is a highly fragmented one prone to cut-throat competition. In addition, workers move from project to project and sometimes from employer to employer. This makes construction contractors reluctant to invest in training. Intense cost competition and low investment in training are a recipe for the industry to travel down the low road—characterized by low wages, few or no-benefits, high turnover, low skills, and sometimes by exploitation of vulnerable workers and violation of workers' compensation and other labor laws.

Preventing the construction industry from traveling down the low road—including through private contractors undercutting local wages on state construction work by importing cheaper labor from outside the local area—was part of the original intent of the West Virginia prevailing wage law. Today, that original intent remains as important as ever. Also important is effective implementation of that intent through accurate measurement of prevailing wages by the current DOL method.

How West Virginia Determines the Prevailing Wage for State-Funded Construction Projects

To implement the state's prevailing wage law, the West Virginia Division of Labor (DOL) currently determines the prevailing wage for each of the state's 55 counties by soliciting information from:

- construction contractors licensed to perform non-residential construction in West Virginia;
- collective bargaining units representing construction workers in West Virginia;
- the public, through requests for comment on West Virginia media outlets;
- and requests for public comment posted at county courthouses.

In 2007, 4,332 contractors received a prevailing wage survey form from DOL and had an opportunity to submit information; 152 contractors returned the survey. Also in 2007, the DOL surveyed 100 collective bargaining units with jurisdiction in West Virginia, thus covering between 10,000 to 15,000 construction workers.⁴

After collecting data and public comment, the DOL determines the prevailing wage by construction occupation, and county. The prevailing wage is defined as the modal wage (the most commonly observed hourly wage) paid within an occupation within each of West Virginia's 55 counties.

Why the DOL Prevailing Wage Determination Process Makes Sense

The basic challenge in designing a methodology for determining prevailing wages is to come up with an approach that accurately measures wage levels that “prevail” on construction work as complex and skill-intensive as public sector construction. The method the West Virginia DOL uses to measure prevailing wages has several features that make it likely to accurately estimate wages appropriate for public construction work.

- It restricts data collection to contractors licensed to perform nonresidential construction. This helps ensure that prevailing wages are appropriate for the high skill levels of public construction. Restricting the sample in this way also helps ensure that prevailing wages are not affected by wage and benefit levels among the very large number of small contractors who perform only residential building construction. Wage and benefit levels tend to be much lower in residential construction because small contractors employ a less skilled and experienced construction workforce than do commercial (nonresidential) contractors.
- It relies on a voluntary survey. This further increases the chance that the prevailing wage determined through the survey is appropriate for public construction work. Here's why: Those firms most likely to participate in the survey are those who regularly bid on public sector work. Many firms that choose not to provide wage and benefit data likely do not because they don't bid on publicly financed projects. Thus, firms responding likely consist primarily of contractors who do or could bid on public contracts.
- Using the modal wage, rather than the average wage, also helps ensure that the prevailing wage is appropriate for complex, public sector construction projects. Construction projects vary widely in complexity: Many light commercial projects—strip malls, for example—require workers with fewer skills than many public-sector projects such as courthouses, prisons, and schools. Reflecting those differences in skill levels, firms that perform a lot of private-sector, light commercial work will have workers who earn substantially less than more skilled workers on public projects. Using the average

wage from a survey to determine the prevailing wage could result in the prevailing wage for public construction being dragged down by the wages of workers not qualified to perform public construction. When the average wage is likely to reflect the wages of large numbers of less skilled workers on less specialized construction projects, the mode provides an alternative measure that better meets the intent of the prevailing wage statute.⁵

- Collecting 40% of data from collecting bargaining units makes sense because unionized contractors perform half or more of non-residential construction work. In the survey process used by DOL to determine prevailing wages for 2008, the DOL received wage data from 154 business units and from 100 collective bargaining units. Thus collective bargaining units represented just under 40% of respondents. This weight on collective bargaining units in the survey sample is comparable to unionized firms' market share in non-residential construction. Both government data bases and union membership statistics from the West Virginia building trades indicate that union membership in non-residential construction is 45-65% of total employment.⁶

Why WORKFORCE West Virginia Data Cannot Be Used to Determine the Prevailing Wage

The West Virginia Department of Commerce publishes data on employment and wages, by occupation, through WORKFORCE West Virginia.⁷ The Public Policy Foundation suggests that these data should be used to determine prevailing wages. For several reasons, however, these data would not produce an estimate that accurately reflects wages prevailing on complex construction work similar to public construction: For these reasons, using WORKFORCE West Virginia (WWV) data would not meet the intent of the states' prevailing wage statute.

- WWV data fail to distinguish between workers employed in residential construction and those employed in non-residential construction. As a result, the residential construction wages that dominate the WWV sample would bring any wage derived from WWV data—average wage or modal wage—well below wages that prevail in complex commercial and public construction. Put another way, the WWV survey is designed to be representative of wages throughout the economy, not the wages of workers most likely to be employed on skill-intensive public sector construction projects. This is a worthy public purpose but a critically different one than measuring the wages that prevail on complex construction projects similar to state construction.
- At the local level, WWV data do not distinguish between occupations indirectly and directly related to construction. As a result, to take three example operating engineers who oversee building HVAC (heating, ventilating, and air conditioning) systems, craft workers that repair assembly lines, and building construction itself are all grouped together. Thus, at the sub-state level, using WWV data requires using a sample that is even more dominated by jobs unlike those on state-financed construction.
- The WWV survey does not collect information on compensation paid in the form of health insurance and contributions towards a pension. Therefore, it cannot be used to determine prevailing benefit levels.⁸
- The WWV data is too old. At the state level, the most recent full year of WWV data currently available is based on surveys completed from 2005 to 2007.
- The WWV data is based on surveys of only 14% of all construction firms in the state.⁹ WWV data is based on surveys of 758 firms out of the 5,585 in the state, 14% of the construction firms in the state. By contrast, the DOL approach to measuring prevailing wage collects data that represent well

over half of the non-residential construction market—i.e., workers covered by collective bargaining plus another 152 contractors.

- The WWV data collects data for just 35 separate construction occupations. DOL prevailing determinations cover as many as 50 different construction occupations and set wage rates for apprentices in 23 construction occupations. WWV data do not have the same level of detail a fact which limits its usefulness in determining prevailing wages.

In order to meet the intent of West Virginia's Prevailing Wage law, data on earnings must be available both by county and for construction workers typically employed on public sector construction projects. Currently WWV data are not available by county, and the data available on wages for workers employed in the construction industry include all construction workers, not just those workers who perform work of a similar character to that done on public sector projects.

The greatest limitation of the data available from WORKFORCE West Virginia is the mixing of wages for workers employed in residential and non-residential construction. Data from the Quarterly Census of Employment and Wages¹⁰ (QCEW) make it possible to see what a major limitation this is. In 2007, according to QCEW, workers employed in the non-residential construction sector made up only about a third of all construction workers in West Virginia; residential construction employed twice as many people. In 2007, the average weekly wage of workers employed in non-residential construction was \$913, 87% more than the \$448 per week earned by workers in residential construction (See Table 1).

Table 1. Average Weekly Wages in Residential and Nonresidential Construction in West Virginia			
Construction Specialty	Average Weekly Wage		Percent Difference in Residential and Nonresidential Wages
	Residential	Nonresidential	
Construction†	\$488	\$913	87%
Building construction	\$448	\$883	97%
Heavy and civil engineering construction	ND	\$1,007	
Poured concrete structure	\$418	\$768	84%
Steel and precast concrete	ND	ND	
Framing	ND	ND	
Masonry	\$388	\$819	111%
Glass and glazing	\$577	\$722	25%
Roofing	\$288	\$794	176%
Siding	\$335	\$577	72%
Other building exterior	\$272	\$991	264%
Electrical and wiring	\$713	\$981	38%
Plumbing and HVAC contractors	\$517	\$993	92%
Other building equipment	\$637	\$1,031	62%
Drywall and insulation	\$454	\$716	58%
Painting and wall covering	\$420	\$708	69%
Flooring	\$432	\$595	38%
Tile and Terrazzo	\$471	\$499	6%
Finish carpentry contractors	\$490	\$573	17%
Other building finishing contractors	\$345	\$669	94%
Site preparation contractors	\$583	\$762	31%
All other specialty trade contractors	\$422	\$800	90%
Note. ND=No data			
† Average weekly wages for residential and nonresidential construction are a employment weighted average of the average weekly wages paid in each subsector.			
Source. Bureau of Labor Statistics, Quarterly Census of Employment and Wages			

As Table 1 shows, the average weekly wage in heavy and civil engineering (contractors specializing in roads and bridge construction) is \$1,007—two-and-a-quarter times higher than in the average weekly wage in residential building construction. A similar pattern holds for every construction specialty.

The large gap between wages in residential building construction and in non-residential construction is a long-established and familiar characteristic of construction labor markets all across the country. Also well known is that residential and nonresidential construction are separate product markets, with firms usually specializing in one or the other and sometimes within much narrower specialties within one of these broad markets. Yet the Public Policy Foundation of West Virginia simply assumes that all construction is alike. It uses this assumption to make the dramatic claim that prevailing wages are on average 73.6% higher than “actual” construction wages in local labor markets in West Virginia. As the data in Table 1 illustrate, is the assumption that all construction is alike is wrong.

The presence of residential and non-construction trades in the WWV data explains most of the gap between WWV hourly wages for construction workers and DOL-determined prevailing wages. Since the latter are

based on data from contractors licensed to perform non-residential construction in the state, it would be a great surprise if there were not a large gap between the two sources.

The Effect of Prevailing Wage Laws Across the Country

Page nine of the Public Policy Foundation report acknowledges that the following arguments have been made in favor of prevailing wage legislation:

- More hiring of West Virginia workers and less of out-of-state workers
- Increased compensation for employees
- Higher-quality construction
- Reduced injuries among construction workers
- Increased work ethic among workers
- Decreased cost of public welfare programs.

Consistent with this statement, a substantial research literature exists on these and related potential benefits of prevailing wage laws. Surprisingly, having mentioned some of the benefits believed to result from prevailing wage laws, the Public Policy Foundation then neglects to review the literature that empirically examines these benefits.

Much of the research on the impact of prevailing wage laws relies on two key facts: (1) Some states have prevailing wage laws and some states don't; and (2) some states that had prevailing wage laws at one time have repealed those laws. Variations in prevailing wage laws across states and over time provide "natural experiments" that make it easier for economists to distinguish the effects of these laws from other factors that influence construction industry outcomes (e.g., costs and injury rates).

Below, we summarize some of the results of the research on prevailing wage laws.

The Effect of Prevailing Wage Laws on Construction Costs

In *The Journal of Education Finance* in the spring of 2002, researchers examined the degree to which school construction costs in the U.S. in the 1990s were influenced by five main factors: the state of the economy, the level of unemployment, the size of the school, the season, and the existence of a prevailing wage law.¹¹ The analysis found that public school construction costs

- rose 22 percent when the unemployment rate declined by half
- fell 2.5 percent for bids accepted in the spring, compared to bids accepted in the fall
- fell by 4.7 percent with a doubling of school size, and
- **did not differ by a statistically significant amount between states with and without prevailing wage laws.**

In another article in *The Journal of Education Finance*, researchers estimated the impact of the establishment of a prevailing wage law in British Columbia. The law set the prevailing wage at 90 percent of the collectively bargained wage. Controlling for other factors that influence school construction costs, the researchers found no statistically significant change in construction costs resulting from the passage of a prevailing wage law.¹²

A third study examined the suspension of Michigan's prevailing law between 1995 and 1997, the adoption of a prevailing wage law in Kentucky in 1996, and the repeal of Ohio's law covering school construction in 1997. Once again, no relationship was found between construction costs and prevailing wage regulations.¹³

In a study examining public school construction costs in Pennsylvania during a period in which Pennsylvania's prevailing wages were lowered, especially in rural areas, the Keystone Research Center (KRC) found no association between reductions (or smaller increases) in per square foot school construction bids and prevailing wage rates set below collectively bargained wages.¹⁴ In fact, KRC found construction bids appeared to go up more where prevailing wages were lowered more.

Other Impacts of Prevailing Wage Laws

One hypothesis that explains why prevailing wages have no impact on costs is that these laws contribute to the attraction and retention of a better trained and more productive workforce. In fact, a rigorous body of economic research supports this hypothesis: eliminating prevailing wage laws not only lowers wages and benefits: it also leads to less workforce training and higher injury rates.

Training. Employment in the construction industry is turbulent, with wild swings in demand due to the changing seasons, the business cycle, and the short-term nature of most construction projects. In this environment, construction workers typically move from employer to employer as one construction project ends and another begins. Such mobility poses a dilemma for construction employers in need of skilled workers: It is difficult to justify training an employee who might work for the competition next year or even next week. The response to this dilemma can be low investment in training by employers. Economists call this outcome a "market failure."

Prevailing wage laws help overcome the natural tendency for firms to under-invest in training by:

- preventing low-wage contractors who don't invest in training from underbidding unionized contractors who invest heavily in it
- establishing wage levels for apprentices that are a fraction of journeyman prevailing wage rates, which create a financial incentive for contractors to economize on "crew costs" by making training opportunities available to younger, less experienced workers;

Consistent with the importance of these mechanisms, economist Cihan Bilginsoy, analyzing data from the U.S. Bureau of Apprenticeship and Training, found more investment in apprenticeship in states with a prevailing wage law.¹⁵

Finally, a study by the West Virginia University, Institute for Labor Studies and Research (ILSR) confirms that in West Virginia, as in other states, unionized contractors account for 95% of the state's 3,194 apprentices.¹⁶ The ILSR study also found that West Virginia apprenticeship programs sponsored jointly by unions and contractors both enrolled and graduated the vast majority of women and minorities in the state, a finding consistent with national research.¹⁷

Worker Safety. As the following quotes illustrate, construction sites can be dangerous and sometimes deadly. One in four workplace fatalities and one in 10 workplace injuries happen to workers employed in the construction industry—figures which are far out of proportion to the fact that only one in 20 of all workers are employed in the construction industry.

- "In April 2000, 16 year-old Antonio Garcia Reyes was framing the roof of a new college dormitory in Alabama when he plunged three stories. He had no harness or other protection against a fall, accident investigators found."¹⁸

- “Moises and Rigoberto Xaca were killed in January 2003 when a trench they were working in collapsed...The boys, 17 and 15 at the time of the accident, ... were working for Burriss Electrical Co. of Lexington, digging trenches at a high school construction site for electrical lines. The company was fined \$42,075 for violations, including not having a competent person on site who knew about soil analysis and who could select the appropriate safety system to protect trench workers. The boys also were too young to work construction jobs, but the employer has said they presented green cards showing they were 22 years old.”¹⁹

In analysis data from the U.S. Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, Azari-Rad found that there are fewer injuries and reduced worker compensation costs in states with a prevailing wage law.²⁰ Construction sites are safer in prevailing wage states because these laws lead to more training, promote the retention of experienced workers, and create an environment in which contractors are more likely to comply with workplace safety and workers’ compensation rules and regulations. In the absence of these laws, a socially corrosive, competitive environment can develop—an environment in which contractors gain competitive advantage by relying on young, inexperienced, and desperate workers. As the quotes above illustrate the result is a deadly combination in an inherently dangerous industry.

Health and Pension Benefits. Construction workers in states with a prevailing wage law are also more likely than workers in other states to have both a pension and health care benefits²¹ In states with prevailing wage laws, just half of construction workers have health insurance coverage, compared to just over a third in states without a law. A third of workers in states with a prevailing wage law have pensions, compared to fewer than one in five of workers in states without a law.²²

One reason that prevailing wage laws promote the extension of health care and pension coverage is straightforward: These laws mandate minimum contributions towards both key fringe benefits. In addition, prevailing wage laws may increase benefit provision because they help maintain unions’ market share in construction. Construction unions, in turn, lead to more businesses, especially small firms, providing benefits.

In general in the United States today, the smallest employers (firms with fewer than 100 employees) have the most difficulty providing health care to their workers.²³ Three out of four construction workers are employed by contractors with fewer than 100 employees, and half of all construction workers are in firms with less than 25 employees. Small size and the temporary nature of employment means many contractors are unable to offer their workers either health care or a pension. In contrast, the construction workers most likely to have both health care and pension benefits are covered by collective bargaining agreements. This is possible because these agreements have established multi-employer health and welfare funds, which allow even small construction contractors to enjoy the same cost advantages with insurance companies that large firms do.

Shifting Costs to the Public Sector. In a study of hospitals and clinics in Las Vegas, Jeffrey Waddoups found that construction workers represented a disproportionate share of the workers unable to pay for urgent medical care.²⁴ People without health insurance often delay getting medical attention and eventually seek care in a hospital emergency room. A low-wage construction worker without employer-provided health care is more likely to have to turn to Medicaid and other forms of public assistance like safety-net hospitals and clinics. Ultimately, taxpayers and those with health care end up paying higher insurance premiums in order to subsidizing contractors who don’t provide health care to their workers. Since repeal of prevailing wage laws tends to drive up the share of construction workers who do not have health care benefits, cost-shifting for health care costs to publicly funded emergency care is likely to increase when prevailing wage laws are taken away.

There is also evidence in some states that one driver of increased overall medical costs is care for construction workers injured on the job but not provided care through workers' compensation. These trends reflect contractors hiring illegal workers and violating workers' compensation laws. For example: a reporter for the *Miami New Times* wrote in 2006 that, according to Florida's Department of Financial Services, while on-the-job injuries in the state decreased only slightly in previous years, workers compensation payouts decreased dramatically. In 2002, workers in Florida collected more than \$1.7 billion in workers' compensation. By 2004, the amount had dropped by more than half to about \$500 million. "In a seemingly inexhaustible labor pool of undocumented workers the system encourages corner-cutting contractors to pay illegal immigrants under-the-table," Ramon Malca, chairman of the Florida bar association's workers comp section, says. That way they can claim a smaller payroll and pay less in workers' comp premiums. If an undocumented worker gets hurt, some contractors instruct them to tell doctors they were injured at home or somewhere other than the work site, Malca says, saving fines and medical costs for the employer.²⁵

Without prevailing wage laws to set a floor on wages and benefits, the effective and healthy competitive bidding process in the construction industry can degenerate into a system that provides economic rewards to contractors pursuing cut-throat strategies. These strategies shift the costs of workplace injuries onto the public and can also raise costs for honest contractors who follow the laws of the worker compensation system.

Conclusion

While research finds that state prevailing wage laws do not significantly raise construction costs, these laws do lead to higher wages and benefits, lower injury rates, and more investment in workforce training. Prevailing wage laws prevent the construction industry from degenerating into unsustainable and destructive wage and price competition. Unchecked competition can drive skilled and experienced workers from the industry, reduce productivity and quality, and result in poverty-level jobs, all without saving construction customers any money.

¹ Mark A. Price holds a PhD in economics from the University of Utah. His dissertation, *State Prevailing Wage Laws and Construction Labor Markets*, was recognized with an Honorable Mention in the 2005 Thomas A. Kochan and Stephen R. Sleigh Best Dissertation Awards Competition sponsored by the Labor and Employment Relations Association. This analysis was commissioned by the ACT Foundation.

² The Keystone Research Center, a non-partisan think tank, conducts economic and public policy research. KRC is a non-profit organization as described in section 501(c) (3) of the Internal Revenue Code.

³ Andrea M. Dean, *An Economic Examination of West Virginia's Prevailing Wage Law*, The Public Policy Foundation of West Virginia, January 2009.

⁴ Data derived from the Current Population Survey puts construction union membership at 10,304 between 2003 and 2008. The ACT Foundation estimates that there are 15,000 construction union members living in West Virginia.

⁵ However this is only true as long as the survey method captures data on workers most likely to be found on public sector projects. For instance consider workers employed by finished carpentry contractors in West Virginia where over three out of four workers are employed in the residential sector. While few of the workers employed as carpenters on the residential side of this sector are likely have the skills necessary to work in the nonresidential sector, if their wages were captured in a prevailing wage survey the modal wage would reflect the wage paid in the residential sector. In this instance the poor design of the prevailing wage survey would defeat the stated purpose

of the states prevailing wage statute by setting the prevailing wage well below the rate typically paid for work in the nonresidential sector work.

⁶ On average between 2003 and 2008, according to the Current Population Survey, there were 42,690 West Virginians employed in the construction industry. The same source estimates union membership at 10,304, yielding a construction industry-wide union market share of 24.3%. (The building trades estimate their West Virginia membership at 15,000 workers, which would yield a union membership rate of 35%, industry-wide.) This industry-wide figure, however, is lower than the union share in non-residential construction because almost all union members are employed outside of residential construction. According to the Quarterly Census of Employment and Wages (QCEW) between 2003 and 2007 (data for 2008 was not available as of the date of this publication) there were 23,098 workers employed in non-residential construction. Given this smaller total employment figure, between 45% and 65% of the West Virginia workers employed in the non-residential construction sector are union members. These levels underestimate the share of craft workers in non-residential construction that are unionized, because very few other occupations (e.g., managers, clerical workers, sales workers, architects, engineers, and estimators) in construction are unionized.

⁷ The data provided by WORKFORCE West Virginia (WVW) is more commonly known as the Occupational Employment Statistics (OES) program, which is designed by the US Bureau of Labor Statistics to collect national, state and metropolitan data on wages and employment by occupation. WVW provides data on employment and wages by occupation for the state as a whole (http://stats.bls.gov/oes/current/oes_wv.htm), by metropolitan area (http://stats.bls.gov/oes/current/oes_16620.htm) and by Workforce Investment Area (<http://www.wvbep.org/bep/lmi/ow2007/wia/TOC001.htm>). Because workers with the same occupational title but employed in different industries often earn very different wages, WORKFORCE West Virginia also makes available to the public data on employment and wages by industry (<http://www.wvbep.org/bep/lmi/ow2008/sector/PAGE0046.HTM>). These data, however, are only available for the state as a whole.

⁸ According to the most recent census of construction voluntary fringe benefits which include contributions towards health care and pensions represented 12 percent of total payrolls in West Virginia. Source. Census Bureau, U.S. Department of Commerce. 2002. Economic Census of Construction West Virginia http://www.census.gov/econ/census02/guide/02EC_WV.HTM

⁹ On average there were 5,585 construction firms in West Virginia between 2005 and 2007 according to the Quarterly Census of Employment and Wages.

¹⁰ The Quarterly Census of Employment and Wages is a US Bureau of Labor Statistics program which derives estimates of wages and employment by industry from quarterly tax reports submitted to West Virginia by employers subject to the state's unemployment insurance law.

¹¹ 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* 27 (Spring 2002): 997-1012.

¹² Cihan Bilginsoy and Peter Philips, "Prevailing Wage Regulations and School Construction Costs: Evidence from British Columbia," *Journal of Education Finance* 25(3) (Winter 2000): 415-31.

¹³ Philips, Peter. "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." Working Paper, Economics Department, University of Utah 2001.

¹⁴ Howard Wial, *Do Lower Prevailing Wages Reduce Public Construction Costs?* (Harrisburg: Keystone Research Center, 1999).

¹⁵ Cihan Bilginsoy, "Wage Regulation and Training: The Impact of State Prevailing Wage Laws on Apprenticeship," in Azari-Rad, Philips and Prus.

¹⁶ Etherton, Sarah S., Stephen L. Cook and Robert V. Massey, Jr. "Building Trades Apprentice Training in West Virginia: A Comparison of Union and Non-union Building Trades Programs in the 1990s". West Virginia University Extension Service, Institute of Labor Studies and Research, May, 2002.

¹⁷ Berik, Günseli and Cihan Bilginsoy "Still a Wedge in the Door: Women Training for the Construction Trades in the U.S." University of Utah, Department of Economics, Working Paper Series, 2005.

¹⁸ Justin Pritchard, "AP Investigation: Mexican worker deaths rise sharply even as overall U.S. job safety improves." Associated Press, March 13, 2004.

¹⁹ Associated Press, "Parents of Mexican teenagers to receive \$100,000 settlement." April 22, 2005.

²⁰ Hamid Azari-Rad, "Prevailing Wage Laws and Injury Rates in Construction," in Azari-Rad, Philips and Prus.

²¹ Jeffrey S. Peterson, "Health Care and Pension Benefits for Construction Workers: The Role of Prevailing Wage Laws," *Industrial Relations* 39(2): 246-264, April 2000.

²² Mark A. Price, "Pension and Health Insurance Coverage in Construction Labor Markets." in Azari-Rad, Philips and Prus; Mark A. Price "State Prevailing Wage Laws and Construction Labor Markets", Dissertation: University of Utah, December 2005.

²³ Elise Gould, "Health Insurance Eroding For Working Families: Employer-provided coverage declines for a fifth consecutive year." Economic Policy Institute, September 2005.

²⁴ C. Jeffrey Waddoups, "Health Care Subsidies in Construction: Does the Public Sector Subsidize Low Wage Contractors?" in Azari-Rad, Philips and Prus.

²⁵ Rob Jordan, "Deconstruction; The last day of Menes Daniel's Life." Miami New Times, June 29, 2006.