



The Federal Davis-Bacon Act: The Prevailing Mismeasure of Wages

**Sarah Glassman, MSEP
Michael Head, MSEP
David G. Tuerck, PhD
Paul Bachman, MSIE**

Beacon Hill Institute at Suffolk University

8 Ashburton Place, Boston, MA 02108

Web: www.beaconhill.org email: bhi@beaconhill.org

phone: 617-573-8750 fax: 617-994-4279

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Executive Summary

In the United States, federal, state and local governments spend about \$300 billion annually on construction projects. Because of their cost and visibility, public construction projects are often the object of criticism from politicians and pundits, a notable example being Boston's "Big Dig," known for its cost overruns and embarrassing, even deadly, structural failures.

The Prevailing Wage Law

One feature of public construction projects that the critics seem less willing to recognize, however, is that they function also as a costly welfare system for union workers. This feature stems from the federal Davis-Bacon Act, under which construction projects funded entirely or in part by the federal government must pay a government determined "prevailing wage" to the workers on the project. While the Davis-Bacon Act (DBA) gets periodic attention from Congress and various critics, there is a general unawareness of the arcane and generally unrepresentative statistical calculations that underlie its enforcement. The purpose of this study is to unearth the methods behind these calculations, to identify some of the anomalies they produce and to estimate what they cost taxpayers.

Prevailing wage laws permeate the federal and state statutes relating to construction. The federal government, 32 states and the District of Columbia require the payment of a prevailing wage for all workers employed directly on site for government-funded construction projects. The DBA, which was adopted by Congress in 1931 and subsequently much modified, provides the legislative authority for enforcement of the prevailing wage at the federal level and the basis for prevailing wages in the states.

Because prevailing wage laws establish a wage floor, they raise construction costs. The reason is twofold: First, the wage that "prevails" in a particular place at any snapshot in time might be greater than the wage that contractors would have to pay if, for example, they could hire cheaper labor from outside the area. Indeed, as we observe in our study, it is the very possibility that employers could hire cheaper labor that led to the passage of the DBA in the first place. Second, because the law is intended to reduce wage

competition, the government authorities responsible for calculating the prevailing wage are under pressure to use methods for calculating the wage that are biased upward.

DBA v. Impartial Methods of Calculating Wages

That pressure of this kind exists is evident in the fact that the federal government is compelled to employ two methods for computing wages. At the Department of Labor, The Wage and Hour Division (WHD) has the job of calculating the prevailing wage under the DBA.

The U.S. Bureau of Labor Statistics (BLS), also at the Department of Labor, has the parallel job, as its website proclaims, of computing “impartial, timely, and accurate data relevant to the needs of our users and to the social and economic conditions of our Nation, its workers, and their families.” The BLS describes itself as the “principal fact-finding agency for the Federal Government in the broad field of labor economics and statistics.”¹

The division of responsibility between computing wages for the purpose of DBA enforcement, on the one hand, and producing “impartial, timely and accurate data,” on the other, has predictable results. When we examined the WHD’s methodology, we found:

- untimely wage reporting due to the vast number of wages to be determined across the entire country and the limited resources available to the WHD,
- poor survey design, which places a heavy burden on survey participants and leads to lower participation from small and medium sized firms,
- strong incentives and the opportunity for unions to dominate the process of reporting wages, and
- ill-conceived calculation methods, including a “majority rule” method that lets as few as 12.5% of survey respondents set wages for the entire universe of workers.

¹ See Bureau of Labor Statistics (BLS), “About BLS) available at <http://www.bls.gov/bls/infohome.htm>; Internet; accessed February 1, 2007.

In contrast, the BLS uses the Occupational Employment Survey (OES), which collects wage data from over 1.2 million establishments. Thus BLS wage estimates rely on a much larger sample that better represents wages that actually prevail in the labor market.²

We find that the WHD mismeasure of wages has three principal consequences for construction wages and costs.

Finding Number 1: The WHD methods inflate wages, on average, by 22%. It comes as no surprise that the WHD methods produce estimates biased in favor of high-cost, union labor. We compared the estimates reported by the WHD to the estimates reported by BLS for a sample of nine occupational categories accounting for 59% of all construction workers across 80 metropolitan areas. We found that on average the DBA prevailing wage is almost \$4.43 per hour, or more than 22%, above the BLS average wage when wages are weighted according to the number of workers in each trade and each metropolitan area.

As a result, taxpayers pay a premium for work performed on public construction projects. In the Nassau-Suffolk, New York metropolitan area, brickmasons and blockmasons make at least \$24.17 per hour more than they would make if the prevailing wage were calculated using BLS methods. In Poughkeepsie-Middleton, New York, plumbers, pipefitters and steamfitters get a premium of \$26 per hour. Steel and metal workers in Bakersfield, California receive a premium of \$16.37.

Finding Number 2: The WHD methods inflate construction costs by 9.91%. Labor costs are about 50% of construction costs. On that basis, we estimate that the systematic biases in the statistical measures used to implement the DBA raise the cost of public construction projects subject to the federal prevailing wage by 9.91%. This is the nationwide average. The increase in cost is substantially higher in some metropolitan areas. For example, construction costs are 19.54% higher in the Nassau-Suffolk MSA and 25.15% higher in the Riverside-San Bernardino-Ontario MSA.

² We surveyed MSAs in four states to determine whether the methods used by state governments to calculate the prevailing wage were better than the methods used by WHD. We found that the states generally did no better than the WHD.

Finding Number 3: The WHD methods raise public construction costs by \$8.6 billion per year. Using data from the Congressional Budget Office, we estimate that 32% of total public construction spending is subject to the DBA. Total public construction spending was \$298 billion in 2007. Thus, about \$95 billion is currently spent on DBA projects. Given that the WHD procedures add 9.91% to construction costs, those procedures currently cost taxpayers \$8.6 billion in overpayments for public construction projects.

Why a Prevailing Wage Law?

The prevailing wage law has been hard to defend from the start. It has operated to protect special interests from competition and to penalize taxpayers and low-wage workers for the benefit of an entrenched monopoly. Moreover, the current method of determining the prevailing wage violates its statutory purpose – that projects funded by the federal government

shall contain a provision stating the minimum wages to be paid various classes of laborers and mechanics which shall be based upon the wages that will be determined by the Secretary of Labor *to be prevailing* for the corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work in the city, town, village, or other civil subdivision of the State in which the work is to be performed.³

Methods used by the WHD to calculate the prevailing wage produce estimates that are biased upward. The WHD calculates, not the prevailing wage, but the wage that would prevail if the wage-setting process were dictated by the construction unions. The simplest way to eliminate this bias would be to repeal the DBA. Then we would know what wage prevails simply by observing what contractors pay.

On the other hand, if it is the wish of voters and taxpayers that construction workers get the wage that prevails in the community, rather than the wage that workers might get if contractors brought in outside labor, then the government should make an accurate determination of the prevailing wage. It should not employ unrepresentative survey and

³ “Davis-Bacon Act, Public – No. 403-74th Congress S.3303”; Internet, available at <http://www.dol.gov/esa/regs/statutes/whd/dbra.htm> (italics added).

measurement methods, to the benefit of union workers but at a cost to taxpayers of \$8.6 billion annually.

Introduction

The Davis-Bacon Act of 1931 (DBA), named for sponsors Congressman James Bacon of New York and Senator James Davis of Pennsylvania, was enacted to help protect local workers during the Great Depression. In New York, Congressman Bacon saw local construction jobs go to low-cost laborers from the south and wanted to halt this competition to local labor. President Hoover saw the DBA as a method to counteract wage rates that were falling during the Great Depression. The timing was important in that DBA prevailing wages were applied to the vast number of public works construction projects undertaken during the New Deal.

Today the federal government, 32 states and the District of Columbia have prevailing wage laws that originate from the original DBA of 1931.

DBA requires payment of a minimum wage equal to the “prevailing wage,” as determined by the Department of Labor (DOL), for all workers employed directly on site for federally-funded construction projects exceeding \$2,000 in total value. The DBA defines a multitude of classes for laborers and mechanics to be taken into account when calculating the minimum payment required.

The DBA has been amended several times since it was first enacted. The first and most comprehensive amendment was passed in 1935 and provided additional specifications including the \$2,000 minimum contract size, remedies for noncompliance and Presidential authority to suspend the law in the event of a national emergency.⁴

In 1940, the DBA was amended to include the territories of Alaska and Hawaii. Employee benefits were added to the requirements in 1964. The DBA pay and benefit requirements have been added to approximately 60 statutes which apply to construction projects through grants, loans, loan guarantees and insurance. Legislation such as the Housing and Community Development Act of 1974 has served to expand the DBA provisions to U.S. territories and protectorates. These "related acts" involve construction projects in such areas as transportation, housing, air and water pollution reduction and

⁴ U.S. Department of Labor, Wage and Hour Division, “Davis-Bacon Act;” available at <http://www.dol.gov/esa/regs/statutes/whd/dbra.htm>; Internet: accessed February 6, 2008.

health. Today the federal government, 32 states and the District of Columbia have prevailing wage laws that originate from the original DBA of 1931.

Table 1 provides data on whether a state has a prevailing wage law or not, as well as information on the threshold project size, above which the prevailing wage, if any, applies.⁵ States with no prevailing wage laws ensure that they pay market wages for their state and locally funded public construction projects that are determined through competitive bidding. Those states that maintain high thresholds for project cost for the application of the prevailing wage laws avoid the costs and reporting burdens of prevailing wage laws for smaller projects. Those states that maintain low or no threshold for project size will encounter the full cost of prevailing wages for most or all of their public construction projects.

Table 1: Threshold Amounts for State Prevailing Wage Laws

State	Threshold Amount, \$
Alabama, Arizona, Colorado, Florida, Georgia, Idaho, Iowa, Kansas, Louisiana, Mississippi, New Hampshire, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Utah, and Virginia	No Prevailing Wage Law
Connecticut, Delaware*, Indiana, Kentucky, Maryland, Nevada, Vermont, Wisconsin**	100,000 to 500,000
Arkansas, Maine, Minnesota [†] , Montana, New Mexico, Ohio ^{††} , Oregon, Pennsylvania, Tennessee, Wyoming,	25,000 to 75,000
Alaska, California, Hawaii, New Jersey [‡] , Rhode Island,	1,000 to 2,000
Illinois, Massachusetts, Michigan, Missouri, Nebraska, New York, Texas, Washington ^{††} , West Virginia ^{†††}	None
<p>*The threshold amount in Delaware begins at \$15,000 for remodeling. **State and Municipal contracts: \$21±6,000 where more than one trade is involved; \$44,000 where a single trade is involved, State highway contracts: none. [†]A \$2,500 threshold is applicable where a single trade is involved. ^{††}A \$20,955 threshold is applicable for remodeling. [‡]A \$10,743 threshold is applicable if the work is done for municipality. ^{††}A \$25,000 threshold is applicable for State college/university construction, per a separate law. ^{†††}1 A \$50,000 threshold is applicable for projects of the West Virginia Infrastructure and Jobs Development Council.</p>	

Despite numerous amendments, the DBA does not prescribe a calculation method for determining prevailing wages; instead, the decision is left to the Secretary of Labor. In the absence of a detailed and documented method, numerous questions have arisen about the consistency of the wages across states, such as large variances between counties that share borders.

⁵ U.S. Department of Labor, Employment Standards Administration, Wage and Hour Division, “Dollar Threshold Amount for Contract Coverage;” available from <http://www.dol.gov/esa/programs/whd/state/dollar.htm>; Internet; accessed February 1, 2008.

In 1963, the Wage Appeals Board (now Administrative Review Board) was created to sort out these matters.⁶ The board is empowered to rule on questions of “fact and law” related to the decisions made by the WHD. The board rules on questions regarding the prevailing wage rates, overtime pay, job classification, damages and appeals. While the board provides a forum to air grievances, its rulings are often issued without justification or supporting documentation.

In the first five decades under DBA, union wages were the basis for determining the prevailing wage. The prevailing wage” was set to a common wage, often the union wage, for an area if 30% of the workers in a job classification were paid the same wage. Later, in 1982, the threshold was increased to 50%.⁷ However, if no single wage rate comprises a majority, the average wage is calculated from the data and becomes the prevailing wage rate.

However, many critics question whether the federal DBA and state-level determined prevailing wages capture the wages that prevail in their local labor markets. In November 1992, the Institute for Justice, a public interest law firm, filed a lawsuit against the DBA claiming it to be in violation of the Constitution. The suit claimed the Act was racially motivated by attempting to keep minority contractors out of the bidding process, and called for its repeal.⁸ The lawsuit failed and the DBA, with the controversies regarding its wage determinations unresolved, remains in force today.

In 1997 Congress recognized the controversies surrounding the DBA wage determinations and commissioned the Office of the Inspector General (OIG) to perform an audit on the 1995 wage determinations. The study did not find any evidence of fraud or intentional submissions of incorrect wages; however, the study did find a large number of inaccuracies in the data submitted by employers, leading to incorrect prevailing wage calculations.

⁶ U.S Department of Labor, “Davis-Bacon Wage Determination Reference Material”; available from <http://www.gpo.gov/davisbacon/referencemat.html#secA>; Internet; accessed February 6, 2008.

⁷ 29 C.F.R. 21 1.2(a) (July 1, 1989 ed.). This rule was challenged but was upheld in Building and Construction Trades' Department. *AFL-CIO v. Donovan*, 712 F.2d 611 (D.C. Cir. 1983).

⁸ Scott Bullock and John Frantz, “Removing Barriers to Opportunity: A Constitutional Challenge to The Davis-Bacon Act,” Institute for Justice; 1993; available from http://www.ij.org/economic_liberty/davis_bacon/background.html; Internet: accessed February 1, 2008.

The OIG audited 837 WD-10 forms (submitted by contractors for determining the prevailing wage). Of these, 123 forms were found to be incorrect, with a total of 211 “significant errors”.⁹ Of these errors, 117 resulted from incorrect data submitted by employers and 34 errors were attributed to the WHD. The final report also sighted methodological issues with the WHD prevailing wage calculation.¹⁰

Since very little information is available about the occupation determinations, there are many instances in which contractors become confused and pay incorrect wages. It is difficult for contractors to define a prevailing wage and when it should be used. There are four different wage definitions for each job category in each county of the United States. Depending on the DOL definitions, a worker could be defined as a carpenter for “Building,” “Heavy,” “Highway” or “Residential” projects.

The DBA was initially enacted to prevent contractors from seeking cheaper labor from outside their local market, which would undercut local wages and employment in the construction industry. Today the implementation of the law is no longer consistent with the original intent of the law, which was to force contractors to pay the wage that actually *prevails* in a local labor market. The methods utilized to determine prevailing wages, by both federal and state governments, mandate wages that differ, often considerably, from the wages that actually prevail.

In contrast to the DBA method of calculating the prevailing wage, the DOL relies on far more accurate, and extensive, wage estimates to administer the Foreign Labor Certificate program. Wage rates for the program are determined using survey data from BLS.

This study analyzes the different methods utilized to determine wage estimates by the two branches of the DOL (the WHD and the BLS) and provides a comparison of the

We find that DBA wages are grossly inflated when compared to the BLS wages. Given a 2007 public construction budget of almost \$300 billion; costs are inflated by roughly \$8.6 billion due to inflated DBA wage determinations.

⁹ Government Accounting Office, “Inaccurate Data Were Frequently Used in Wage Determinations Made Under the Davis-Bacon Act,” Report No. 04-97-013-04-420; March 10, 1997; available from http://www.oig.dol.gov/public/reports/oa/pre_1998/04-97-013-04-420s.htm; Internet; accessed February 1, 2008

¹⁰ Ibid.

prevailing wage data calculated under the DBA to the more robust BLS calculations. Because of the issues inherent in the WHD's method of determination as well as the strong pressure from unions, the DBA prevailing wages do not capture the wages that actually prevail in the market.

Part 1: Issues with the Method of Determination

Part 1 focuses on the WHD prevailing wage calculation method. We examine the four-step wage determination process, highlight weaknesses in this process and identify problems that could stem from these weaknesses.

Part 2: A Comparison of Prevailing Wage Estimates

Part 2 highlights differences that exist between the prevailing wage estimates under the WHD and by BLS. We construct a database that consists of the BLS and WHD wage estimates for a sample of 80 metropolitan areas and nine job categories. We calculate the descriptive statistics for the wages and make comparisons between each.

Part 3: Prevailing Wages in the States

In this section we assemble data for four Metropolitan Statistical Areas in different states that have laws concerning the calculation and enforcement of wage rates and the determination of projects requiring the payment of prevailing wages. We collected the state level prevailing wages for nine occupations and compared these to the federal DBA and the BLS wage calculations.

We find that DBA wages are grossly inflated when compared to the BLS wages. Given a 2007 public construction budget of almost \$300 billion, costs are inflated by roughly \$8.6 billion due to inaccurate DBA wage determinations.

Part 1: Prevailing Wage Method of Determination

The existing federal DBA wage determination process involves four steps: (1) planning and scheduling of surveys, (2) conducting the surveys, (3) clarifying and analyzing the respondents' data and (4) issuing the wage determinations. Problems that contribute to inaccurate prevailing wage estimates begin early in the process and continue throughout all four steps.¹¹

Planning and Scheduling the Surveys

Prior to calculating the prevailing wage rate, the WHD conducts voluntary surveys (WD-10 survey) of the wages and fringe benefits paid to workers in specified job classifications for comparable construction projects in specific geographical areas. Federal prevailing wages are estimated on a county basis (in some cases an estimate is determined for a group of counties), the geographic unit designated by the WHD. The WD-10 survey is sent to contractors from lists supplied by the agency's regional offices. The survey includes questions regarding the contractor, subcontractors, submitter, project, type of construction and hourly wage and fringe benefits being paid to specific classifications of worker.

Planning begins in the third quarter of each fiscal year when the WHD distributes the Regional Survey Planning Report (RSPR), supplied by the F.W. Dodge Division of McGraw-Hill Information Systems, to their regional offices. The RSPR is comprised of data that shows detailed information regarding active construction projects as well as data from federal agencies about upcoming construction projects. The data show the quantity and value of construction projects by geographical area, type of construction, the percentage of the project that is federally financed, the date of the most recent survey in a county and the current wage determination. Using the RSPR, regional offices, in collaboration with the national office, then determine the county and types of construction to be included in that year's survey.

¹¹ United States General Accounting Office, "Davis-Bacon Act Process Changes Could Address Vulnerability to Use of Inaccurate Data in Setting Prevailing Wage Rates," (June 1996): available from, <http://www.gao.gov/cgi-bin/getrpt?T-HEHS-96-166>; Internet; accessed February 1, 2008.

Due to the vast number of prevailing wages to be determined across the entire country (more than 3,000 counties, well over 100 job categories and four project classifications) and the limited resources faced by the WHD, it is not possible to survey each county each year. Therefore, the office must annually identify specific areas that are most in need of revision by referring back to the RSPR. According to the WHD general requirements, areas should be surveyed every three years. Areas in need of a survey are identified based upon the following criteria: (1) the volume of federally funded construction projects in the area, (2) the age of the last survey completed and (3) requests or complaints about the existing prevailing wage estimate.¹² Multiple problems arise as a result of this method and contribute to the inaccuracies in the prevailing wage estimates.

Under the WHD's general requirements, one county could be surveyed in one year and another in the same state three years later. This time gap allows many changes associated with job classifications, salary increases and cost of living adjustments to be unaccounted for in the prevailing wage estimates.

Salary increases occur within a three-year time span due to developments in technology as well as changing job responsibilities. Because there are areas that may not have been surveyed in three years, workers in that area may be receiving wages substantially below what workers in other counties are receiving per the DBA. Furthermore, some areas will consistently have more federally funded construction projects taking place than others, consequently bumping those areas further up on the priority list for a new survey.

In addition, DBA prevailing wage estimates that are not routinely recalculated miss cost of living adjustments due to inflation. Goods and services experience continuous price changes and prevailing wages that have not been updated, in some cases for more than three years, will not capture these increases.

While the DBA prevailing wage estimates in areas that have not been surveyed in years will be significantly below the true market wages, workers in areas that have just been

¹²United States General Accounting Office, "Davis-Bacon Act Process Changes Could Raise Confidence that Wage Rates are Based on Accurate Data"; (May 1996); available from <http://www.gao.gov/archive/1996/he96130.pdf>; Internet; accessed February 1, 2008.

surveyed will clearly be at an advantage. The prevailing wages in their area of employment will reflect recent changes in job categories and inflation.

As a result, workers performing the same construction job in different locations may receive completely different wages which are not a result of differing market wages. For example, workers employed to work on the construction of a federally funded roadway that needs work in multiple counties within the same state, may receive prevailing wages that reflect data from different years. The prevailing wage rate would depend on the location of the construction work being completed on the roadway.

The problems outlined above are exacerbated further if areas are not surveyed within the three-year requirement. In the process of compiling our database, we found numerous examples of job categories in counties in which the wage estimates had not been updated in well over three years.

The issue of the timeliness of the DBA wage data contributes to inaccuracies found within our sample (see Part 2). Specifically, several metropolitan areas, where we found the DBA wage estimates to be significantly below the BLS wages, resulted from noncompliance with the requirement to complete a survey every three years. As noted above, the current method used by the WHD to complete wage surveys is an enormous undertaking, and wage surveys are not completed every three years.

Conducting the Surveys

Once survey schedules are approved, regional offices begin to compile lists of potential survey participants. Analysts from Construction Resources Analysis (CRA) at the University of Tennessee provide regional offices with files of projects that are appropriate for the survey. CRA identifies projects by applying a model to the F.W. Dodge data that pinpoints projects within the parameters specified by the regional offices. The files include the location, type and cost of construction as well as contact information for the primary contractor and subcontractors, if available, that were active during the given time period specified. The time period can be three months or longer and is based on the number of projects that are active; the time period is expanded if there are not enough active projects for the survey.

Population Surveyed

The WD-10 survey form is sent to contractors and subcontractors along with a letter requesting information on any other applicable projects. Letters announcing the survey and a copy of the WD-10 form are also sent to members of Congress, contractor trade associations and building trade unions to inform them of the survey and solicit their information as well. Contractors who do not respond to the initial request are sent a second WD-10 form. Those who do not respond to the second inquiry are contacted by telephone.

Survey Format

The WD-10 survey form includes questions about the contractor, subcontractor, project, type of construction and hourly wage and fringe benefits paid to workers in specific classifications. The design of the survey places a heavy burden on survey participants, and hence can lead to a small and unrepresentative response rate. Survey recipients, particularly small firms, typically do not respond to the survey owing in large part to the time and effort necessary to complete the survey. The low response rate from small contractors contributes to inaccuracies in the wage data, as a smaller sample is less likely to provide reliable data. The DBA prevailing wage data is biased to the extent that it omits data on wages paid by small contractors.

WD-10 survey format problems concern the fringe benefit filing requirements. The survey requires employers to report hourly wages and hourly fringe benefits, yet fringe benefits are rarely quoted, reported or paid on an hourly basis. While firms typically calculate wage rates on an hourly basis, they have little need for, or experience in, calculating hourly fringe benefit rates unless they have previous experience with federally funded projects. Moreover, the survey requests employers to break out the hourly fringe benefits into different components, such as “pension,” “vacation and holiday,” etc., making the task even more burdensome.

Reporting fringe benefits as line items does not provide any additional information needed to determine the “per hour fringe benefit rate” that prevails in the market because employers do not consistently allocate the same amount of funds to each benefit. For

example one contractor may allocate 100% of their employees' benefit funds toward health insurance while another may opt to direct those funds towards life insurance.

Those employers that already record their employees wage rates in the format required by the survey are more likely to respond to the survey because their compliance burden is relatively low. However, employers who have not previously worked on federally funded projects (the very employers the survey is intended to capture) would likely choose not to complete the survey.

Survey Response Rates

As noted above, the design of the WD-10 survey produces a disincentive for firms, typically smaller or new to the process, to respond to the survey. Of the entities surveyed – union contractors, nonunion contractors, trade unions and trade associations – union contractors and trade unions have the strongest incentive to provide responses. Unions typically negotiate contracts that pay wages that are “above market wages” (otherwise unions would not exist). Once a contractor and the union agree on a wage, both have a powerful incentive to ensure that the DBA wage is not set below the union wage. However, if DBA prevailing wages are close to, or match, the union wages, firms using union labor can ensure that contractors paying lower wages will not underbid them on government funded construction projects.

With union contractors and unions dominating the survey responses, it is likely that the resulting estimates are strongly biased upward. As reported by the BLS, only 12% of all employed wage and salary workers are unionized, in the construction industry, only 13% are unionized. Union membership is less than 12% in 29 states and less than 5% in five. Union workers earn a median weekly income of \$833, compared to \$642 for nonunion workers.¹³ The practice of basing the prevailing wage on a small minority of workers who have, on average, weekly earnings that are almost 30% higher than other workers guarantees that the reported wage is anything but the prevailing wage.

¹³ U.S. Department of Labor, Bureau of Labor Statistics, “Union Members Summary”; available from <http://www.bls.gov/news.release/union2.nr0.htm>; Internet; accessed February 1, 2008.

Clarifying and Analyzing the Respondents' Wage Data

As completed surveys arrive at the WHD, analysts review them for missing information, ambiguities and inconsistencies. Analysts attempt to clarify any questions or problems through telephone conversations with the submitting contractor. Analysts then enter data from complete WD-10s into a computer which generates a WD-22a or Project Wage Summary for each project included in the data.

Determining the Prevailing Wage

The survey response rate is calculated prior to the survey cutoff date to determine if the sample of wage data collected is adequate. This allows survey analysts additional time to follow up if the response rate is low. The DOL considers the surveys an inadequate representation of the area if the survey response rate is less than 25%, or if less than half of the wage classifications are represented. If the survey response rate is determined to be inadequate, department analysts will take further steps to increase the robustness of the sample through follow up telephone calls encouraging contractors to submit their wage data. If, after a second attempt to increase the sample, the response rate is still insufficient, federal construction wage data will be included. If there is still a lack of data, analysts will combine private wage data from a nearby county to the current sample of wage data.¹⁴

The inclusion of existing federally funded projects in the survey population pushes up the calculated prevailing wage for new projects. However, because existing projects pay the mandated prevailing wage, their inclusion creates additional bias in the survey data. Moreover, if contractors are following the prevailing wage reporting rules, they will already have their wages and fringe benefits in a format that is compatible with the WD-10 survey. If an area, particularly a small area, is already undergoing a high level of federally funded construction projects, the survey responses from these projects could swamp the wages from other projects.

¹⁴ U.S. Department of Labor, "Davis-Bacon Wage Surveys"; available from <http://www.dol.gov/esa/programs/dbra/faqs/page38.htm>; Internet; accessed February 1, 2008.

Given the survey timeframe, the inclusion of federally-funded projects perpetuates outdated data. Moreover, if prevailing wage estimates from a previous year are already flawed, the flaws will be inherent in the new prevailing wage calculations.

Issuing the Wage Determinations

The designation of the federal prevailing wage depends on the data included in the survey responses. If, according to the survey data, a majority of workers in a single job category receive the same wage to the penny, that wage is designated as the prevailing wage. However, if no single wage rate comprises a majority among a job classification, the average wage is calculated from the data and becomes the prevailing wage rate.

The use of a majority wage as the prevailing wage could allow one or several large entities to determine the prevailing wage, especially in light of the potential low response threshold. A few large firms paying exactly the same wage for a specific job category could provide enough responses to meet the 25% threshold. The wage paid by these firms would be designated the prevailing wage if the wage comprised the majority of workers in the survey responses. Thus, as few as 12.5% (50% of 25%) of the contractors contacted to complete the survey could determine the prevailing wage to be paid by all contractors for federal projects.¹⁵

The following simplified example is provided to further illustrate the point. Suppose survey data indicated that only two contractors submitted wage data for a total of 7 electricians. One contractor reported an hourly wage of \$36.40 for four electricians and the other reported that his three electricians, all of whom earned different hourly wages, only made \$17.01, \$19.22 and \$20.32 an hour different wages. Based on the majority rule, the prevailing wage would be set to \$36.40, when, in fact the average market wage is closer to \$28.88 per hour. Let us suppose further that another 15 electricians are employed in the same area by another six firms that did not respond to the WD-10 survey and that each pay electricians exactly \$20.00 per hour. In this case we have satisfied the 25% response rate threshold, in that 25% of the contractors contacted submitted wage data for their workers ($2/8 = 25\%$). Under the majority rule, the four electricians paid

¹⁵General Accounting Office “Davis-Bacon Act, Labor Now Verifies Wage Data, But Verification Process Needs Improvement”; (January 1999); available from <http://www.gao.gov/archive/1999/he99021.pdf>; Internet; accessed February 1, 2008.

\$36.40 per hour represent the majority of the responses received ($4/7 = 57\%$). However, the \$36.40 wage does not represent the market wage of electricians in the area, and in this case, it represents the maximum wage paid. Furthermore, the prevailing wage in this case is based on only one of the contractor's responses out of the eight contacted ($1/8 = 12.5\%$).

Since the union wage is set through collective bargaining agreements between contractors and the unions, it is identical to the penny for a specific job across different employers. On the other hand, nonunion wages vary from contractor to contractor in the open market. As long as the current method, the majority rule, is used, the prevailing wage is likely to be set equal to the union wage. Individual contractors that complete WD-10 forms will typically have no influence over the wage determination because it is extremely difficult for the wages they pay nonunion workers to ever meet the 50% threshold.

The method employed by the WHD to calculate the prevailing wage results in calculations that do not reflect the wages that truly *prevail* in local labor markets. The method is biased upward by survey respondents who have an interest in influencing the prevailing wage. However, data sources and methods do exist that would allow for more timely and accurate DBA prevailing wage calculations.

Evidence of Davis-Bacon Act Prevailing Wage Inaccuracies

Due to questions raised in 1995 during federal construction projects in Oklahoma City, the U.S. Department of Justice conducted a criminal investigation of the DBA wage data collections. This situation led Congress to ask the OIG and the General Accounting Office (GAO) to perform periodic studies of the WHD and its procedures for determining the federal prevailing wage. These reviews include suggestions on improving the DBA survey and wage calculation methodology. The most recent study was completed by the OIG in March 2004 and contained many suggestions for improving upon on the quality of the DBA data and the WHD methods of calculation.

Since 1997 Congress has appropriated \$22 million in additional funding to modernize the DBA wage surveys. According to the OIG, the appropriation of these funds has produced limited improvements in the accuracy of the wage data. The OIG also has concluded that the data on which DBA calculations are based continue to be wildly

inaccurate. In 1997, Congress appropriated an additional \$3.75 million to modernize the DBA calculation process. The money was used to institute an independent verification procedure in an attempt to reduce the amount of inaccurate data supplied through the WD-10 survey forms. Unfortunately, this additional spending failed to increase the quality of the wage data. In the 2004 audit, the OIG found “significant inaccuracies in 65 percent of the comparisons of the WD-10 to actual payroll data” of survey respondents.¹⁶

In the period prior to the auditing change, 421 WD-10s were reviewed and errors were found in 406, an astonishing 96% error rate. Moreover, after the auditing change was implemented a subsequent review found, amazingly, that the number of accurate surveys had actually dropped: 257, or 98% of 261 surveys reviewed contained errors.

The OIG also concluded that the survey continues to produce biased data – the major complaint cited in the 1995 fraud case. OIG and GAO reports have criticized the WHD’s survey methodology as prone to bias because it relies only on contractors and third-party participants who wish to volunteer their information. The data is skewed by the fact that the most likely survey respondents are large companies that have the resources to employ additional staff to resolve clerical issues that the WD-10 survey form presents. Also, contractors who have no interest in pursuing government contracts would ignore the surveys. Conversely, unions have a strong incentive to ensure that the DBA wage equals their own wages so their bids would not be undercut on federal projects. The OIG found that the BLS wage surveys did not face these issues and would “provide a statistically valid means of establishing wage rates.”¹⁷

The OIG also found that the DBA wage determination process lacked timely execution. The OIG traced 236 surveys between December 31, 1994 and March 31, 2002 and found that the “data completion phase” was closed in approximately six months. However, they found large lags between the completion of the data collection process and the publication of the wages: Of the 236 surveys, 199, or 84%, took from one year and six months to six years and nine months to publish the wages.

¹⁶ Department of Labor, Office of Inspector General, “Concerns Persist with the Integrity of Davis-Bacon Act Prevailing Wage Determination,” Report Number: 04-04-003-04-420: (March 30, 2004); available from <http://www.oig.dol.gov/public/reports/oa/2004/04-04-003-04-420.pdf>; Internet; accessed February 6, 2008.

¹⁷ Ibid.

The OIG's most recent conclusion provides a quality assessment of the WHD methodology and enforcement. The report states:

Over 70 years after D-B's enactment, WH (Wage and Hour Division) still struggles with administering an effective prevailing wage determination program. WH has not sufficiently resolved findings and recommendations reported by OIG and GAO. The credibility of wage determinations remains questionable, because of concerns over data on which they are based. Delays in publishing wage decisions call their relevance into question... The time and expense associated with independent data verification by the firm could be eliminated if BLS did D-B surveys.¹⁸

The best method for determining prevailing wages comes from within the Department of Labor itself, from the Bureau of Labor Statistics.

The OIG calls for the BLS to provide the data for the determination of the federal prevailing wages. Next we examine the BLS methods.

Alternatives to Davis-Bacon Prevailing Wages

The entire process that relies on government bureaucrats to estimate the prevailing wage could be eliminated by one stroke by repealing Davis-Bacon. By relying on the market to determine the prevailing wage, we eliminate the need to measure it in the first place. Yet, many policymakers express concern over the effects of an outright repeal of the law suggesting that the prevailing wage laws help to preserve a skilled labor force in the construction industry, despite the fact that the construction industry gets along just fine using mainly nonunion labor. At any rate, the repeal of the DBA laws remains unlikely.

In the absence of an outright repeal of the DBA, significant reforms should be enacted to the wage calculation method that would align the "prevailing wage" to the wage that does, in fact, prevail. These include changes to the data collection methods (and thus the sample of wage data used to calculate the prevailing wage) as well as improvements to the wage calculation methods.

¹⁸ Ibid.

The best method for determining prevailing wages comes from within the Department of Labor itself: the Bureau of Labor Statistics. BLS collects payroll data from specific employers that meet preset criteria. The data is more timely and accurate.

The BLS Method

To calculate wage statistics the BLS relies on three surveys: the National Compensation Survey (NCS), The Occupational Employment Survey (OES) and the Current Population Survey. The Current Population Survey is conducted by the Census Bureau every month and provides data on the labor force, employment, unemployment and individuals not in the labor force.¹⁹

The National Compensation Survey (NCS) collects data on wages, compensation and benefits by combining data from the Occupational Compensation Survey (OCS), the Employment Cost Index (ECI), and the Employment Benefits Survey (EBS). The NCS surveys 154 metropolitan and non-metropolitan areas that best represent the nation. For its 2000 report, NCS surveyed 18,389 establishments, both private and public, accounting for nearly 89 million employees. A sample of establishments is selected from state insurance reports using probabilities proportional to employment size. Each establishment is classified and weighted according to industry and employment size so that the more employees a firm has, the greater the chance it will be selected for the survey.

The NCS uses field economists who visit each establishment and collect data through an interview process, asking questions about job duties, wages and benefits. The field economists also perform the last stage of the sampling process in which the respondent provides a comprehensive list of all employees and the specific functions of each employee at the establishment, a method called Probability Selection of Occupations (PSO).²⁰

The field economists also classify each employee under a job classification as defined by the 2000 Standard Occupation Classification (SOC) system which was established by the

¹⁹ U.S. Department of Labor, Bureau of Labor Statistics (BLS), “Current Population Survey”; available from <http://www.bls.gov/cps/home.htm>; Internet; accessed February 1, 2008.

²⁰ BLS, “National Compensation Survey, Occupational Wages in the United States, 2000”; available from <http://www.bls.gov/ncs/ocs/sp/ncbl0354.pdf>; Internet; accessed February 6, 2008.

Office of Management and Budget in 1999. In this system there are over 820 specific job categories, which are then grouped into 449 broad occupations, 96 minor groups and 23 major groups.²¹ After classifying the wages by job category, the wage data for each category is weighted according to the sample weight and the number of employees in the establishment. The data are also adjusted for numerous factors, including non-responding establishments and the occupation work schedule.²²

The OES uses a semi-annual mail survey to collect data and produce estimates of employment and wages for over 800 occupations of full and part-time employees in nonfarm establishments in the United States. The OES survey collects data on gross pay and excludes most benefits. The OES is funded by the BLS while the data collection is performed by State Workforce Agencies (SWA). The BLS releases all national and cross industry estimates and SWAs release all industry specific estimates at state levels.

OES reports are based on data collected from over 1.2 million establishments in the United States over a three year period. The OES chooses its sample from State Unemployment Insurance (UI) files. OES forms are sent to establishments with over 10 employees or up to 225 SOC occupations. Each three-year span is broken up into six month periods, with endpoints on the 12th day of May and November, with each period consisting of 200,000 SWA payroll surveys. This three year survey format ensures that no establishment is counted more than once in a three year period. For its May 2006 report, 78.1% of establishments responded to the survey, which represents 73.4% of the total sample employee population.²³

OES data are classified by job classification and industry. Like the NCS report, OES uses the SOC system to classify specific job categories. Establishments are classified by industry according to the North American Industry Classification System (NAICS), which classifies the data by numerous economic sectors, as well as state or local

²¹ BLS, “Standard Occupational Classification System”; available from <http://www.bls.gov/soc/>; Internet, accessed February 6, 2008.

²² BLS, “National Compensation Survey Methodology”; available at <http://www.bls.gov/ncs/methodology.htm>; Internet; accessed February 6, 2008.

²³ BLS, “Technical Notes for May 2006 OES Estimates”; (October 2007); available from http://www.bls.gov/oes/current/oes_tec.htm; Internet; accessed February 6, 2008.

government. The OES survey excludes workers that are “self-employed, owners and partners in unincorporated firms, household workers, or unpaid family workers,”²⁴

The twice annual survey over three years creates six panels of data. When a report is released, the old five panels of data are adjusted, using the Employment Cost Index, to reflect the most recent panel’s reference period. Data are also weighted “to represent all establishments that were part of the in-scope frame from which the panel was selected.”²⁵ For non-responding establishments, data from the closest responding establishments are used to calculate wage distributions and total employment in a region.

The WHD could realize substantial cost savings by utilizing the raw wage data collected by BLS, eliminating the need to conduct their own survey. Relying on the BLS wage data would solve numerous issues mentioned earlier in the report. It would address concerns relating to the timing of the surveys, to the population accounted for in the sample of wage data, to the geographic areas surveyed and to inconsistent job categories across counties.

Improvements in Accuracy

A change in the method of calculation used by the WHD would also lead to cost savings. As outlined above, the WHD currently uses a majority rule to determine prevailing wages resulting in prevailing wages that are likely to be set equal to union wages, which are typically the highest wages in the market. Prevailing wages would be more likely to resemble true market wages if the current majority-rule system was replaced with a new method that utilized representative samples.

Unlike majority rule, which only captures a portion of the populations’ wages, both the mean and median would take into account all wage data across the sample distribution. By eliminating the possibility that wage determinations will be strongly influenced by a small number of workers receiving exceptionally high wages, prevailing wages would be less biased.

²⁴ BLS, “Occupational Employment Statistics Survey,” available from <http://www.bls.gov/oes/home.htm>; Internet; accessed February 6, 2008.

²⁵ Bureau of Labor Statistics “Occupational Employment and Wage Technical Notes,” (May 2007) available from <http://www.bls.gov/news.release/ocwage.tn.htm>; Internet; accessed February 6, 2008.

Part 2: A Comparison of BLS and DBA Wages

The differences in wage calculation methods between the U.S. Department of Labor’s Wage and Hours Division and the Bureau of Labor Statistics, as mentioned above, produces a wide variation in their results. In this section we compare the results of the wages reported by the two arms of the DOL for a sample of nine occupational categories across 80 metropolitan areas. We test whether the average DBA wages are statistically higher than the average BLS wages using two separate statistical tests; and estimate the effect of DBA prevailing wages on construction costs.

Comparison of Descriptive Statistics

Table 2 contains descriptive statistics of the BLS and WHD wage estimates for the nine occupations across the 80 metropolitan areas. The averages of the BLS wage estimates for each occupation are lower than the average of the wages reported by the WHD.

Table 2: Comparison of Hourly Wage Descriptive Statistics

Occupation	Brickmasons and blockmasons	Carpenters	Cement masons and concrete finishers	Electricians	Painters, construction and maintenance	Plumbers, pipefitters, and steamfitters	Roofers	Sheet metal workers	Structural iron and steel workers
BLS Hourly Wages									
Mean	21.12	18.56	17.80	21.96	16.26	21.10	16.60	19.78	21.28
Median	20.59	18.22	16.97	21.64	16.11	20.92	16.31	19.55	20.63
STDEV	4.50	3.62	4.00	4.17	2.89	4.86	3.69	4.50	5.42
Davis-Bacon Hourly Prevailing Wages									
Mean	23.48	21.03	20.04	25.26	18.44	24.29	19.25	23.91	22.45
Median	24.46	22.32	20.32	26.51	17.78	26.32	20.00	26.08	23.25
STDEV	8.62	8.59	8.71	9.48	8.12	9.94	8.50	9.80	7.78
Difference (Davis-Bacon Wage - BLS)									
Mean difference									
\$	2.36	2.47	2.24	3.30	2.18	3.19	2.65	4.13	1.17
%	11	13	13	15	13	15	16	21	5
Median difference									
\$	3.87	4.11	3.35	4.87	1.67	5.40	3.70	6.53	2.62
%	19	23	20	23	10	26	23	33	13

On average, the DBA prevailing wage for the entire sample of occupations is \$2.63, or more than 13% above the average of the BLS wage estimates. We can see that the largest premiums (the difference in the two reported wage estimates) are for electricians, plumbers and sheet metal workers. DBA prevailing wages for sheet metal workers are on average \$4.13, (21%) higher than the average for the BLS estimates, whereas DBA electrician wages are on average \$3.30 (15%) higher than the BLS wages. The DBA wage estimates for plumbers, pipefitters and steamfitters are \$3.19 (15%) higher than the BLS wages. Consequently, costs associated with federally-funded construction projects, specifically those that contract electricians, plumbers and sheet metal workers (all very typical workers contracted for projects) will be inflated due to higher costs of labor.

WHD wages for structural iron and steel workers and painters are considerably closer to the BLS wage estimates. The average DBA wage for structural iron and steel workers and painters are \$1.17 (5%) and \$2.18 (13%) higher than the BLS wage calculations respectively.

The pattern remains fairly consistent when taking the difference in median wages for our sample of metropolitan areas. The DBA wages for sheet metal workers, plumbers, electricians and carpenters are over \$4.00 per hour (20%) higher than the BLS wages. The difference between the DBA and the BLS wages narrows significantly for painters and structural iron and sheet metal workers.

The descriptive statistics displayed in Table 2 do not tell the whole story of the differences between the DBA and BLS wages. While on average the DBA wage calculations are 13% higher than the BLS calculations, there are 16 metropolitan areas for which the BLS wage is substantially higher than the DBA wage for at least eight of the nine job categories. Moreover, 53 MSAs in our sample, or 66% of the total, contain at least one job category with a DBA hourly wage that is lower than the BLS wage calculation.

The top portion of Table 3 displays the metropolitan areas for which DBA wages are lower than BLS wages for the same job categories by the largest margin. The largest difference between DBA and BLS wages are in Sarasota, Florida, Wilmington, North Carolina and Asheville, North Carolina. The MSAs in this group appear to be

predominately located in the southeastern portion of the country, except for Grand Rapids, Michigan and Portland, Maine.

The bottom portion of Table 3 shows those MSAs in our database for which the DBA wages were higher, by the largest margin, than the BLS wages. Nassau, New York, Riverside, California, Edison, New Jersey, Santa Anna and Bakersfield, California show the largest dollar DBA wage premium, on average over \$10 per hour, over the BLS wages. These cities are geographically concentrated in California and the northeastern portion of the country.

Table 3: Metropolitan Areas with Differences between DBA and BLS Wages

	Blockmasons and Brickmasons	Carpenters	Cement masons and concrete finishers	Electricians	Painters, construction & maintenance	Plumbers, pipefitters, and steamfitters	Roofers	Sheet metal workers	Structural iron and steel workers
DBA lower than BLS									
Sarasota-Bradenton-Venice, FL	-10.02	-8.87	-7.83	-9.49	-10.57	-9.46	-8.99	-6.7	na
Wilmington, NC	-4.12	-8.26	-7.26	-10.57	-7.71	-8.42	-7.38	-10.08	-8.53
Asheville, NC	-5.48	-7.11	-6.05	-7.91	-4.54	-9.01	-7.2	-5.56	-7.62
Grand Rapids-Wyoming, MI	-5.11	-3.25	-6.57	-7.81	-5.11	-2.76	-3.86	-10.87	-9.88
Lynchburg, VA	-5.65	-5.57	-3.66	-5.34	-4.54	-8.17	-4.95	-3.43	-8.49
Port St. Lucie-Fort Pierce, FL	-5.54	-6.16	-4.82	-5.62	-7.38	-3.27	-4.37	-3.47	-7.9
Birmingham-Hoover, AL	-1.67	-4.74	na	-9.46	-3.62	-7.38	-4.33	-2.16	-5.08
Tampa-St. Petersburg-Clearwater, FL	-4.8	-3.94	-3.4	-6.17	-4.41	-4.6	-4.42	-4.81	-5.73
Lakeland, FL	-5.15	-4.19	-2.39	-7.74	-4.56	-4.91	-2.64	-2.61	-7.99
Palm Bay-Melbourne-Titusville, FL	-5.25	-4.99	-2.81	-4.9	-4.86	-5.12	-2.83	-4.79	-2.92
Orlando-Kissimmee, FL	-5.45	-5.01	-5.58	-5.46	-4.04	-4.65	-4.13	-4.61	1.01
Roanoke, VA	-3.07	-3.43	-4.56	-4.75	-5.09	-4.79	-2.93	-6.29	-1.49
Jacksonville, FL	-4.28	-5.28	-2.7	2.75	-5.54	-4.62	-2.77	-2.26	-4.88
Richmond, VA	-2.12	-5.46	-3.09	2.2	-3.35	-4.73	-5.3	-4.19	-0.23
Jackson, MS	-0.02	-1.01	-4.04	-4.83	-4.42	-1.31	-3.11	-1.55	-0.38
Portland-S. Portland-Biddeford, ME	-4.48	-0.9	-3.48	4.17	-1.81	-1.7	-4.97	-1.53	-1.29
Average	-4.51	-4.89	-4.55	-5.06	-5.10	-5.31	-4.64	-4.68	-4.76
DBA Wage higher than BLS									
Nassau-Suffolk, NY	24.17	8.63	20.63	16.28	14.01	14.67	10.23	10.17	3.07
Riverside-San Bernardino-Ontario, CA	12.17	14.13	8.66	12.22	13.77	15.42	12.25	17.35	9.42
Edison, NJ	10.97	11.16	11.68	na	14.01	11.82	na	na	na
Santa Ana-Anaheim-Irvine, CA	18.34	12.26	6.16	13.85	9.41	9.21	11.97	13.41	8.37
Bakersfield, CA	9.34	14.42	12.93	7.39	8.73	6.79	13.26	16.37	3.07
Poughkeepsie--Middletown, NY	8.46	2.88	13.34	12.61	4.57	26.00	12.92	7.73	1.44
Modesto, CA	13.01	12.31	11.77	5.84	10.82	10.31	0.36	8.98	14.94
Bridgeport-Stamford-Norwalk, CT	2.61	2.90	na	12.51	9.29	8.33	13.63	17.24	na
Oakland-Fremont-Hayward, CA	7.67	7.07	2.50	9.06	11.42	16.34	9.08	20.00	0.53
San Francisco - Redwood City, CA	1.98	7.30	1.82	13.05	10.54	14.77	5.96	15.51	11.94
Stockton, CA	10.76	3.85	8.65	10.50	11.31	11.83	6.24	7.45	11.13
Camden, NJ	5.93	13.02	7.07	13.24	13.92	13.39	7.57	2.23	0.82
Salinas, CA	6.89	3.49	1.84	9.46	11.53	19.31	12.59	9.47	1.91
Average	9.68	8.38	9.14	11.07	10.72	13.17	10.40	11.61	6.03

This overview of the data shows that there are large differences between DBA and BLS wages. Since, in some of the metropolitan areas, the DBA wages are much higher than the BLS wages and for other MSAs the BLS wages are much higher than the DBA wages there should be systematic errors explaining these inconsistencies. These inaccuracies warrant a closer examination of the wage estimates for these metropolitan areas.

The DBA wage determinations for MSAs that were significantly below the BLS wages, as published online, have not been updated for several years, and in some cases decades. For example, the DBA wages for Wilmington, North Carolina show a publication date of February 9, 2007, but no modifications were made to the wages for the publication. Moreover, the webpage indicates that the wages were last modified December 1, 1980 or over 27 years ago. Had WHD employees not confirmed this fact the actual hourly wages listed on the page provides a good indicator of the timeliness of the data. For example, the DBA prevailing wage listed for a carpenter is \$6.02 per hour, while the wage for a painter is \$5.15, even below the recently increased federal minimum wage of \$5.85 per hour. The DBA wage determinations for Sarasota County, Florida also show a publication date of February 9, 2007; however, wages have not been modified since November 1, 1978 and contain wage levels similar to those for Wilmington.

Theoretically, contractors in these counties could bid for a federally-funded construction project and pay their employees at rates not much higher than the federal minimum wage.²⁶ However, any contractor contemplating this course of action would encounter a powerful deterrent: the market wage. Assuming that the BLS wage represents the market wage, contractors would be unable to find workers at the DBA wage and would thus be forced to pay the higher market wage. In this case, the DBA prevailing wage is moot and produces no distortions in the bidding for federally funded construction contracts.

We also examined the DBA wage data published for those counties for which the DBA wage exceeds the BLS wage by the largest margin, including the counties of Nassau, New York, Riverside, California, Edison New Jersey and Santa Anna, California. The dates for these areas also show a publication date of February 2, 2007, but the wage data

²⁶ Conversations with WHD employees confirmed this scenario over the phone.

shows that modifications were made within the last three years with no significant time lags. The combination of recent updates found in our data sample and the likelihood of errors in the reported wages discovered by the GAO reports produce DBA wages that are distorted and biased upward for these MSAs.

In these metropolitan areas the DBA wage distorts the labor market for federal contracts by forcing all bidders to pay wages that are biased upward toward the highest-wage producers. The DBA prevailing wage, in effect, insulates these producers from competition by forcing other producers to pay equally high wages. As a result, federally-funded projects suffer high construction costs.

As indicated in Part 1 of this study, one of the reasons for not making a prevailing wage determination would be that the WD-10 survey response rate failed to achieve the 25% threshold. However, according to the WHD, it is also possible that these counties were not included in recent surveys, despite the rule that they must be surveyed every three years. Regardless of the reason, the DBA wage determination should be left blank or indicated that no wage determination has been made for the most recent period. It is an absurd practice for the WHD to publish wage data that purports to be the “prevailing wage” and is in reality data that is almost 30 years old, as is the case in Sarasota County, Florida.

Means Tests

In order to make a statistical inference about the differences between BLS and DBA wage estimates for the entire United States we needed to test if the differences between the means of the two are statistically different. We conduct two different means tests; a one-tailed paired means test and a two-tailed means test assuming unequal variances.

Our paired means test is based on the assumption that the BLS and the WHD perform independent calculations of wage estimates; however each takes a random sample from the same population (MSA). Therefore, a strong argument can be made that the results are dependent on each other and the difference between their results should be equal to zero. Based on the results (see Table 7 in the Appendix) we are able to conclude that,

with 95% confidence, DBA wages for all nine occupations are statistically higher than the wages calculated by the BLS.

Our second means test is based on the assumption that the WHD does not calculate DBA prevailing wages using a random sample, but is biased towards union members and larger companies. Consequently, the wage estimates reported by the BLS and WHD are not based on similar samples of the same population and the wage calculations are independent of each other. The test results (see Table 9 in the Appendix) show that for all occupations other than “Structural Iron and Steel Workers” there is a statistically significant difference between the means of the two samples.

Cost to Federally-Funded Construction

Both tests completed above show that DBA prevailing wages are on average statistically higher than the wages reported by the BLS. Therefore, we are able to conclude that DBA prevailing wages drive up overall federal spending on construction (through inflating labor costs) and consequently place a heavy burden on taxpayers.

In order to estimate how much DBA prevailing wages are driving up federal construction costs, we calculated a weighted average wage of the 80 MSAs across the nine occupation groups using employment in each occupation (from the BLS) as the weight (see the Appendix).²⁷ We found the weighted average wage for BLS to be \$20.13 per hour, and \$24.56 per hour for DBA, or DBA wages are 22% higher than BLS.

According to the Congressional Budget Office, in 2001 \$67 billion in government spending was allocated to projects covered by the DBA, accounting for approximately 32% of the total public construction spending in that year.²⁸ Applying this percentage to the public constructions costs for 2007, results in about \$95 billion applied to projects with DBA prevailing wages. Applying BHI calculations (see the Appendix) this costs

²⁷ BLS database at <http://data.bls.gov/oes/search.jsp>.

²⁸ “Budget Options”. The Congress of the United States Congressional Budget Office. Feb 2001, Internet, Available at <http://www.cbo.gov/ftpdocs/27xx/doc2731/ENTIRE-REPORT.PDF>

taxpayers \$8.6 billion per year.²⁹ In all, the DBA wage determinations add 9.91% onto each applicable construction project.

While an almost 10% increase in total cost is a significant amount, taxpayers in some of the MSAs reviewed faced even larger costs. In the Nassau-Suffolk, New York MSA the weighted DBA wage was \$39.50 per hour while the BLS weighted wage was only \$26.59 per hour, increasing costs for any project by 19.54%. For example, suppose that the federal Government funded a \$20 million project in this MSA. As a result of the inflated DBA wages, taxpayers would pay \$3.27 million for the construction than at market wages. In the Riverside-San Bernardino-Ontario, California MSA the results are even more shocking, with the same hypothetical project leading to \$4.02 million being overpaid, or an appalling 25.15% increase in total costs (see Table 11 in the appendix).

Part 3: Prevailing Wages in the States

Individual states have the option of adopting the federal prevailing wage or they can (1) authorize their own state officials to determine a state prevailing wage using their own method of calculation (2) adopt collectively bargained wages or (3) utilize the DBA methods.

States that opt to use the DBA prevailing wage, the DBA methodology or the local union wages are likely to experience higher public construction costs. Moreover, the threshold used by states to determine the application of state prevailing wages will either mitigate or amplify these costs. The threshold contract coverage under state prevailing wage laws differ significantly from state to state. Some states, such as California, require state prevailing wages to apply to almost all construction projects funded by the government, with the minimum threshold set at \$1,000. In contrast, state prevailing wage laws only apply to costly construction projects in states such as Maryland, where the minimum threshold is set to \$500,000.³⁰ As a result, states with a higher threshold will apply the inflated prevailing wages to fewer projects, while states with thresholds set low, such as

²⁹ “Value of Public Construction Put in Place”, U.S Census Internet, Available at <http://www.census.gov/const/C30/pubsa2001.pdf>

³⁰U.S. Department of Labor, WHD, “Dollar Threshold Amount for Contract Coverage Under State Prevailing Wage Laws, January 1, 2008”; available from <http://www.dol.gov/esa/programs/whd/state/dollar.htm>; Internet; accessed February 6, 2008.

California; will incur high costs by applying the inflated prevailing wages to almost all projects.

While the Davis-Bacon Act sets the prevailing wage for federal projects and utilizes its own survey method, a large number of individual states have implemented their own prevailing laws that apply to state construction projects. States employ several methods to calculate their prevailing wages: they conduct surveys, use the federal prevailing wage, set the prevailing wage to union wages or use a combination of the three.

BHI collected data on four MSAs in different states with state prevailing wage laws that delineate the calculation method, deployment of wage rates, and the projects that require prevailing wages. We collected the state prevailing wages for nine occupations and compared these to the DBA and the BLS wage calculations. Table 4 contains the results.

The New Jersey prevailing wage law applies to any public construction project defined as work on any public building, or if a public body leases or owns 55% or more than 20,000 square feet of the building. The public entity contracting for a project must submit a request to the New Jersey Department of Labor's Public Contracts Section (PCS) to receive the official prevailing wage rates. The PCS supplies wages that are "the wage and fringe benefit rates based on collective bargaining agreements established for a particular craft or trade on the locality in which the public work is performed."³¹ Thus New Jersey sets the state prevailing wage to the local union wage.

³¹ See website for State of New Jersey: Department of Labor and Workforce Development; available from http://lwd.dol.state.nj.us/labor/wagehour/wagerate/prevailing_wage_determinations.html; Internet; accessed February 6, 2008.

Table 4: Selected State and Federal Prevailing Wages Compared to BLS Wages

	Brickmasons and blockmasons	Carpenters	Cement masons and concrete finishers	Electricians	Painters, construction and maintenance	Plumbers, pipefitters, and steamfitters	Roofers	Sheet metal workers	Structural iron and steel workers
Camden, NJ									
DB	33.87	35.72	31.78	41.23	32.75	40.06	28.00	28.76	33.39
BLS	27.94	22.7	24.71	27.99	18.83	26.67	20.43	26.53	32.57
State	33.87	37.27	33.87	42.74	33.50	39.57	28.00	37.10	33.91
DBA - State	0.00	-1.55	-2.09	-1.51	-0.75	0.49	0.00	-8.34	-0.52
BLS - State	-5.93	-14.57	-9.16	-14.75	-14.67	-12.90	-7.57	-10.57	-1.34
Los Angeles-Long Beach, CA									
DB	33.78	33.61	28.00	35.47	N/A	30.97	29.00	27.14	N/A
BLS	21.66	22.93	20.20	25.38	18.25	20.71	20.46	21.77	25.7
State	34.07	35.51	28.00	34.25	28.47	30.88	29.90	33.37	30.51
DBA - State	-0.29	-1.90	0.00	1.22	N/A	0.09	-0.90	-6.23	N/A
BLS - State	-12.41	-12.58	-7.80	-8.87	-10.22	-10.17	-9.44	-11.60	-4.81
Milwaukee-Racine-Waukesha, WI									
DB	31.60	28.41	27.82	30.08	25.79	33.65	18.01	33.00	28.96
BLS	25.99	21.97	20.07	24.44	17.20	29.43	18.22	25.04	25.14
State	27.47	27.83	24.61	28.73	16.67	32.05	25.90	22.36	28.09
DBA - State	4.13	0.58	3.21	1.35	9.12	1.60	-7.89	10.64	0.87
BLS - State	-1.48	-5.86	-4.54	-4.29	0.53	-2.62	-7.68	2.68	-2.95
Pittsburgh, PA									
DB	25.38	26.37	23.29	29.92	23.74	29.38	24.39	28.97	29.13
BLS	21.95	18.53	21.23	24.18	21.54	25.96	16.41	23.29	25.65
State	26.93	26.36	23.29	30.38	23.43	31.35	24.39	28.14	29.13
DBA - State	-\$1.55	\$0.01	\$0.00	-\$0.46	\$0.31	-\$1.97	\$0.00	\$0.83	\$0.00
BLS - State	-\$4.98	-\$7.83	-\$2.06	-\$6.20	-\$1.89	-\$5.39	-\$7.98	-\$4.85	-\$3.48

The difference between the state and DBA prevailing wages in the Camden, New Jersey MSA for eight job categories is small, between 0% and 10%. The sheet metal worker job category contains a large difference, over \$8.00 per hour, between the state and federal prevailing wages. However, both the state and federal prevailing wage calculations are consistently higher than the BLS wages. State prevailing wages in New Jersey use union wages to determine the state prevailing wages, and since the state and federal prevailing wages are similar, the bias toward unions wages inherent in the DBA wage calculation become clear.

The Director of the California Department of Industrial Relations (DIR) determines prevailing wages for all state public construction projects over \$1,000, unless the awarding government body has a labor compliance program in place. If a labor compliance program is in place, then the threshold is \$25,000 for new construction and \$15,000 for repair/demolition work. The department uses a survey to determine the prevailing wages and applies majority rule. If the responses fail to meet the majority threshold, then the department applies a model to determine the prevailing wage.³²

The state prevailing wages for the Los Angeles, California MSA produce a similar pattern to that of Camden, New Jersey. See Table 4. The difference between the state and DBA prevailing wages is small, however both are significantly higher than the BLS wages. Like Camden, the state prevailing wage for sheet metal workers is significantly higher than the DBA prevailing wage. The overall results reflect the similar methods employed by the California DIR and DBA, such as the majority rule.

The state prevailing wage in Wisconsin is set by the Construction Wage Standards section of the Labor Department. The department determines wages by county, and also makes projections of next year's wages. These wages are set solely on the basis of an annual survey, for example in 2007 for the three counties in the Milwaukee MSA, 2,666 different companies received surveys. If only one trade is required to complete a project, the threshold for application of the prevailing wage is \$44,000, while if multiple trades are required the threshold is \$216,000.³³

The Milwaukee, Wisconsin MSA, consisting of three counties, contains the highest deviation from the DBA of our four MSAs. For all job categories, except roofers, the state prevailing wage is lower than the DBA prevailing wages and for brick masons, painters and sheet metal workers the state prevailing wage is closer to the BLS wage than the DBA wage. The state prevailing wage surveys in Wisconsin contain fewer distortions than the DBA prevailing wages.

³² See State of California, Department of Industrial Relations; available from <http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm>; Internet; accessed February 6, 2008.

³³ See State of Wisconsin: Department of Workforce Development; available from <http://dwd.wisconsin.gov/er/prevailing%5Fwage%5Frate/>; Internet; accessed February 6, 2008.

The Secretary of Labor and Industry for Pennsylvania sets the state prevailing wages and may consider the following guidelines when selecting the prevailing wage for Pennsylvania: federal prevailing wages, number of workers currently in the county for each occupation and current collective bargaining agreements. This information is obtained through voluntary wage submissions from interested parties. If the secretary decides that the information is incomplete, the department may conduct a field survey to gather a more robust sampling. Individualized wages must be requested for each individual construction contract in excess of \$25,000.³⁴

One would expect the prevailing wages for the Pittsburgh, Pennsylvania MSA to suffer from the same distortions as the federal prevailing wages, since the state uses the federal wage calculation to set their own. The data in Table 4 shows that the state prevailing wages match, almost identically, the DBA prevailing wages.³⁵ As one would also expect the wages are biased upward when compared to the BLS wages. The state inherits the same costly bias that the DBA prevailing wages produces.

The states that have their own prevailing wage laws can learn lessons from the experience of the federal government in the wage determining process. Piggybacking on the federal prevailing wage or copying their methodology will only import the mistakes and bias inherent in that system. Utilizing collective bargaining wage rates will likely result in a prevailing wage that is set above the wages that prevail in the local labor markets. States should, like the WHD, look to the BLS data and methods as a template for determining their prevailing wage rates.

³⁴ State of Pennsylvania: Department of Labor & Industry; available from <http://www.dli.state.pa.us/landi/cwp/view.asp?a=197&q=67245&landiRNavrad1B235=>; Internet;

³⁵ Pittsburgh's state numbers are based upon wages for Pittsburgh High School for Creative and Performing Arts determined on 07-05-2007

Conclusion

We find the BLS methodology to be much stronger and timely leading to more accurate wage measurements than under the WHD methodology.

The WHD calculates, not the prevailing wage, but the wage that would prevail if the wage-setting process were dictated by the construction unions. The simplest way to eliminate this bias would be to repeal the DBA. Then we would know what wage prevails simply by observing what contractors pay.

Since its creation in 1931, the Davis-Bacon Act has required the Department of Labor to calculate and enforce a “prevailing wage” for workers employed on federally funded construction projects. We find that the WHD employs unrepresentative survey and measurement methods that produce wages estimates that are biased upward. Moreover, the burden of calculating prevailing wages is beyond the ability of the WHD, despite recent increases in resources. The methods used by the WHD to calculate the prevailing wage produce estimates that are biased upward, resulting in a 9.91% overpayment on all federally funded construction projects, costing taxpayers \$8.6 billion annually. The BLS, another branch of DOL, also routinely calculates wages for hundreds of occupations. We find the BLS methodology to be much stronger and timely leading to more accurate wage measurements than under the WHD methodology.

The ideal solution would be to repeal the DBA. However, if it is the wish of voters and taxpayers that construction workers get the wage that prevails in the community, rather than the wage that workers might get if contractors brought in outside labor, then the government should make an accurate determination of the prevailing wage. To this end, the WHD should utilize the BLS survey data to determine the prevailing wages.

Appendix

Methodology

The Beacon Hill Institute (BHI) compiled a dataset of the Davis-Bacon Wage Determinations as published by the US Government Printing Office (GPO) in 80 Metropolitan Statistical Areas (MSAs) for nine job categories.³⁶ The Bureau of Labor Statistics produces wage data for separate job classifications by MSA, but the WHD publishes the DBA prevailing wages at the county level. In order to compare the two data sets, we used the DBA prevailing wage county data to construct MSA level data.

Our initial data set consisted of all MSAs, as defined by the U.S Census Bureau. We excluded MSAs that bisected more than one state to eliminate state differences, such as labor laws, as a factor within the MSA. Many MSAs comprise only one county which allows for a straight comparison between the BLS and the WHD wage data without need for further adjustments.

For MSAs encompassing several counties we used a weighted average of the wages in the included counties.³⁷ We used U.S. Census Bureau data for county population as our weight and calculated the ratio of the county population to the total MS population, and multiplied the result by the DBA wage for that county. This process was repeated for the wages of all counties in an MSA and the results were summed, creating a weighted average of the wages for each job category within an MSA.

There were numerous discrepancies between BLS and DBA definitions of job categories. In order to compare the wages of BLS and DBA job categories, we made several adjustments. In the case where DBA data contained more job categories than the BLS data, we calculated a simple average of the wages for the different Davis-Bacon job categories to create one category comparable to that of BLS, as defined on the BLS Occupational Employment and Wage website for individual job categories.³⁸

³⁶ Government Printing Office, “Davis-Bacon Wage Determinations”; available from <http://www.gpo.gov/davisbacon/index.html>; Internet; accessed 8 November 2007.

³⁷ Bureau of Labor Statistics, “Metropolitan Statistical Areas and Components”; available from <http://www.bls.gov/sae/790metdf.htm>; Internet accessed 8 November 2007.

³⁸ Bureau of Labor Statistics, “Occupational Employment and Wages, May 2006,” available from <http://www.bls.gov/oes/current/oes470000.htm>; Internet; accessed 8 November 2007.

Table 5 lists the BLS job descriptions and the corresponding DBA job description(s). For instance, for some counties DBA defines separate wages for both Plumbers and Pipe Fitters. In this case, we calculated a simple average of the two wages. If DBA specified a wage for only one of the applicable job categories, that wage was used.

Table 5: BLS vs. Davis-Bacon Job Descriptions

BLS Job Description	Davis-Bacon Job Description(s)
Brickmasons and Blockmasons	Bricklayer
Carpenter	Carpenter
Cement Masons and Concrete Finishers	Cement Mason, Concrete Finisher
Electrician	Electrician
Painters, Construction and Maintenance	Painter, Painter (Brush), Painter (Spray)
Plumbers, Pipe Fitters, and Steam Fitters	Plumber, Pipefitter
Roofer	Roofer
Sheet Metal Worker	Sheet Metal Worker
Structural Iron and Steel Workers	Ironworker (Structural)

DBA wage determinations are sometimes classified by specific job duties of one particular category. For example, DBA may publish wage determinations for a general carpenter category, as well as specific categories for carpenters that work as pile drivers and floor layers. We used the general carpenter wage determinations as the best match to the BLS carpenter job category definition.

DBA wage determinations are frequently missing for job categories or counties within an MSA. BHI compensated for a missing DBA wage for a county in a given MSA by replacing the missing wages with those of the most populous county with available wage data in the MSA. If only one county was available, that wage would be used as the wage for the MSA. Table 6 lists the adjustments made to individual counties and job codes to construct our dataset.

Table 6: Adjustments made while Constructing DBA Dataset

MSA	Job Description	Issue
Appleton, WI	Cement masons and concrete finishers	Missing all counties in MSA
	Structural iron and steel workers	Missing all counties in MSA
Baltimore-Towson, MD	Painters, construction and maintenance	Missing Ann Arundel County replaced with Baltimore County, largest county in the MSA
	Structural iron and steel workers	Missing Queen Anne's County, replaced with Baltimore County, largest county in the MSA
Bethesda-Gaithersburg-Frederick, MD Metropolitan Division	Cement masons and concrete finishers	Missing Montgomery County, replaced with Frederick County, largest county in the MSA
Billings, MT	Cement masons and concrete finishers	Missing Carbon County, replaced with Yellowstone County, largest county in the MSA
	Painters, construction and maintenance	Missing Carbon County, replaced with Yellowstone County, largest county in the MSA
	Sheet metal workers	Missing Carbon County, replaced with Yellowstone County, largest county in the MSA
	Structural iron and steel workers	Missing all counties in MSA
Birmingham-Hoover, AL	Cement masons and concrete finishers	Missing all counties in MSA
	Painters, construction and maintenance	Missing four counties making up 34% of MSA population, replaced with Jefferson County, largest county in the MSA
	Plumbers, pipefitters, and steamfitters	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
	Roofers	Jefferson County, largest county in the MSA, was the only county with Roofing wages
Bridgeport-Stamford-Norwalk, CT	Cement masons and concrete finishers	Missing wage in the only county making up this MSA
	Structural iron and steel workers	Missing wage in the only county making up this MSA
Boise City-Nampa, ID	Brickmasons and blockmasons	Missing three counties, applied largest counties wage to the missing counties, then used the weighted average
	Carpenters	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
	Painters, construction and maintenance	Missing three counties, applied largest counties wage to the missing counties, then used the weighted average
	Roofers	Missing all counties in MSA
	Sheet metal workers	Missing all counties in MSA
	Structural iron and steel workers	Missing Owyhee County, replaced with Ada County, largest county in the MSA

Cedar Rapids, IA	Structural iron and steel workers	Missing Benton County, replaced with Lynn County, largest county in the MSA
Charleston, WV	Painters, construction and maintenance	Missing three counties, applied largest counties wage to the missing counties, then used the weighted average
Charleston-North Charleston, SC	Brickmasons and blockmasons	Missing all counties in MSA
	Roofers	Only have largest county, making up 55% of the population, this wage was used
	Structural iron and steel workers	Only have largest county, making up 55% of the population, this wage was used
Cleveland-Elyria-Mentor, OH	Cement masons and concrete finishers	Missing Geauga County, replaced with Cuyahoga County, largest county in the MSA
	Painters, construction and maintenance	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
Colorado Springs, CO	Cement masons and concrete finishers	Missing Teller County, replaced with El Paso County, largest county in the MSA
Des Moines-West Des Moines, IA	Structural iron and steel workers	Missing Guthrie County, replaced with Polk County, largest county in the MSA
El Paso, TX	Roofers	Missing wage in the only county making up this MSA
Grand Rapids-Wyoming, MI	Cement masons and concrete finishers	Missing Barry County, replaced with Kent County, largest county in the MSA
	Painters, construction and maintenance	Missing Newaygo County, replaced with Kent County, largest county in the MSA
	Sheet metal workers	Missing Newaygo County, replaced with Kent County, largest county in the MSA
	Structural iron and steel workers	Missing Iona County, replaced with Kent County, largest county in the MSA
Harrisonburg, VA	Plumbers, pipefitters, and steamfitters	Missing all counties in MSA
Jackson, MS	Brickmasons and blockmasons	Missing Rankin County, replaced with Hinds County, largest county in the MSA
	Roofers	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
Jacksonville, FL	Cement masons and concrete finishers	Missing three counties, applied largest counties wage to the missing counties, then used the weighted average
	Plumbers, pipefitters, and steamfitters	Missing Duval County, largest county in the MSA, replaced with Clay County, second largest county in the MSA

	Sheet metal workers	Missing Baker County, replaced with Duval County, largest county in the MSA
	Structural iron and steel workers	Missing three counties, applied largest counties wage to the missing counties, then used the weighted average
Knoxville, TN	Brickmasons and blockmasons	Missing all counties in MSA
	Cement masons and concrete finishers	Missing all counties in MSA
Lexington-Fayette, KY	Cement masons and concrete finishers	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
	Painters, construction and maintenance	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
	Plumbers, pipefitters, and steamfitters	Missing Clark County, replaced with Fayette County, largest county in the MSA
	Sheet metal workers	Missing Jessamine County, replaced with Fayette County, largest county in the MSA
Lynchburg, VA	Brickmasons and blockmasons	Missing all counties except Appotomax, this wage was used
	Cement masons and concrete finishers	Missing Appotomax County, replaced with Bedford County, largest county in the MSA
	Painters, construction and maintenance	Missing Appotomax County, replaced with Bedford County, largest county in the MSA
	Plumbers, pipefitters, and steamfitters	Missing Appotomax County, replaced with Bedford County, largest county in the MSA
Montgomery, AL	Brickmasons and blockmasons	Missing all counties except Lowndes, this wage was used
	Roofers	Missing Lowndes County, replaced with Montgomery County, largest county in the MSA
	Structural iron and steel workers	Missing all counties except Lowndes, this wage was used
New Orleans-Metairie-Kenner, LA	Brickmasons and blockmasons	Missing all counties in MSA
Ogden-Clearfield, UT	Brickmasons and blockmasons	Missing all counties in MSA
	Carpenters	Missing Davis County, largest county in the MSA, replaced with Weber County, second largest county in the MSA
	Painters, construction and maintenance	Missing all counties in MSA
	Structural iron and steel workers	Missing all counties except Morgan, this wage was used
Orlando-Kissimmee, FL	Brickmasons and blockmasons	Missing Osceola County, replaced with Orange County, largest county in the MSA
	Structural iron and steel workers	Missing Lake County, replaced with Orange County, largest county in the MSA

Port St. Lucie-Fort Pierce, FL	Roofers	Missing Martin County, replaced with St. Lucie County, largest county in the MSA
	Structural iron and steel workers	Missing St. Lucie County, replaced with Martin County, second county in the MSA
Portland-South Portland-Biddeford, ME	Painters, construction and maintenance	Missing Cumberland County, largest county in the MSA, replaced with York County, second largest county in the MSA
Richmond, VA	Brickmasons and blockmasons	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
	Cement masons and concrete finishers	Missing seven counties, applied largest counties wage to the missing counties, then used the weighted average
	Painters, construction and maintenance	Missing three counties, applied largest counties wage to the missing counties, then used the weighted average
	Plumbers, pipefitters, and steamfitters	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
	Roofers	Missing six counties, applied largest counties wage to the missing counties, then used the weighted average
	Sheet metal workers	Missing three counties, applied largest counties wage to the missing counties, then used the weighted average
	Structural iron and steel workers	Missing ten counties, applied largest counties wage to the missing counties, then used the weighted average
Roanoke, VA	Cement masons and concrete finishers	Only have Franklin County, this wage was used
	Painters, construction and maintenance	Missing four counties, applied largest counties wage to the missing counties, then used the weighted average
	Structural iron and steel workers	Missing Franklin County, replaced with Roanoke City, largest section in the MSA
Sarasota-Bradenton-Venice, FL	Structural iron and steel workers	Missing all counties in MSA
Syracuse, NY metro area	Structural iron and steel workers	Missing Onondaga County, replaced with Oswego City, largest section in the MSA
Toledo, OH	Roofers	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average

	Sheet metal workers	Missing two counties, applied largest counties wage to the missing counties, then used the weighted average
Tucson, AZ	Roofers	Missing all counties in MSA
West Palm Beach-Boca Raton-Boynton Beach, FL Metropolitan Division	Cement masons and concrete finishers	Missing all counties in MSA

Paired Means Test

In order to test if the differences between the means (of the BLS and the WHD reported wages) are statistically different we performed a one tailed t -test: a paired two sample for mean. Since the sample of employee wages that each agency is surveying in a specific MSA should be random, the difference between their results should be equal to zero. The test is based on our assumption that DBA wages are inflated and will be higher than those reported by the BLS. We use the following hypothesis:

- Null hypothesis
 - o H_0 : the mean of the difference between the paired samples is less than or equal to zero,
- Alternative hypothesis
 - o H_1 : the means of the difference is greater than zero.

First, we confirmed that the t -Test is appropriate by verifying the samples are randomly distributed. Since all 18 samples (9 occupations using 2 methods) are large ($n > 70$) we use “central limit theorem” to determine that we can assume normal distribution in our samples. Central limit theorem states that “for large, simple random samples from a population that is not normally distributed, the sampling distribution of the mean will be approximately normal...As the sample size (n) is increased, the sampling distribution of the mean will more closely approach the normal distribution.”³⁹

As shown in Table 7, for each occupation we are able to reject the null hypothesis and conclude that with 95% confidence that the DBA mean wages are statistically higher than the BLS mean wages.

³⁹ Ronald M. Weiers, *Introduction to Business Statistics*, 5th Ed. (Belmont, CA: Thomson Brooks/Cole: 2005).

Table 7: Paired Means Test (one-tail)

	<i>Test Statistic</i>	<i>d.f.</i>	<i>P-Value</i>
Brickmasons and blockmasons	**3.084	75	0.0014
Carpenters	**3.688	79	0.0002
Cement masons and concrete finishers	**3.166	70	0.0011
Electricians	**4.474	78	0.0000
Painters, construction and maintenance	**3.141	77	0.0012
Plumbers, pipe fitters, and steamfitters	**3.556	74	0.0003
Roofers	**3.586	74	0.0003
Sheet metal workers	**5.423	77	0.0000
Structural iron and steel workers	**2.145	73	0.0177
** Significant at 5% or 95% confidence interval			

We conducted a second test assuming independent samples, based on the assumption that the DBA methodology uses sampling techniques that result in a nonrandomized sampling. Therefore, we conducted a two-tailed *t*-test using the following hypothesis:

- Null hypothesis
 - o H_0 : the means of the two samples are equal,
- Alternative hypothesis
 - o H_1 : the means of the two samples are not equal.

To determine if a *t*-test assuming equal or unequal variances should be used, we conducted an Analysis of Variance test with the following hypothesis:

- Null hypothesis
 - o H_0 : the variance of the underlying populations are equal,
- Alternative hypothesis
 - o H_1 : the variance of the underlying populations are not equal.

Based on the test statistics we calculated (see Table 8) we reject the null hypothesis for all occupations. This means there is a statistically significant difference between the variances in all nine occupations.

Table 8: Variance Test

	<i>Test Statistic</i>	<i>d.f. DB</i>	<i>d.f. BLS</i>	<i>P-Value</i>
Brickmasons and blockmasons	**3.6761	75	79	0.0000
Carpenters	**5.6232	79	79	0.0000
Cement masons and concrete finishers	**4.7447	70	79	0.0000
Electricians	**5.1633	78	79	0.0000
Painters, construction and maintenance	**7.9058	77	79	0.0000
Plumbers, pipe fitters, and steamfitters	**5.4422	75	78	0.0000
Roofers	**5.2977	74	79	0.0000
Sheet metal workers	**4.7411	77	79	0.0000
Structural iron and steel workers	**2.0575	73	79	0.0009

** Significant at 5% or 95% confidence interval

As a result, we could conduct the more robust option, *t*-test: two sampling assuming unequal variance. As shown in Table 9, we reject the null hypothesis for eight of the nine occupations. Therefore, for all occupations, except “Structural Iron and Steel Workers” there is a statistically significant difference between the means of the two samples. In all cases a 95% confidence interval was met (*p* value = 0.05). Therefore, we conclude that, on average, the DBA wage for these eight job categories is statistically higher than the BLS wage calculation

Table 9: Means Test

	<i>Test Statistic</i>	<i>d.f.</i>	<i>P-Value</i>
Brickmasons and blockmasons	**2.132	112	0.0352
Carpenters	**2.371	106	0.0195
Cement masons and concrete finishers	**1.987	96	0.0498
Electricians	**2.831	107	0.0055
Painters, construction and maintenance	**2.236	96	0.0277
Plumbers, pipe fitters, and steamfitters	**2.363	101	0.0200
Roofers	**2.496	100	0.0142
Sheet metal workers	**3.390	107	0.0010
Structural iron and steel workers	1.069	129	0.2868

** Significant at 5% or 95% confidence interval

Weighted the Wages

At the national level there are more than five million workers employed in non-supervisory or administrative occupations in the construction industry. The nine occupations that were used in our analysis account for more than three million workers or 59% of all construction workers. We calculated one weighted wage for BLS and one weighted wage for DBA to use in our comparisons. The reasoning behind this is that we do not want the wage of 50 brickmasons in New Haven, Connecticut to be weighted equally to the 3,020 brickmasons located in the Phoenix, Arizona MSA.

OES employment data from the BLS was used as for the weights.⁴⁰ The employment data supplies the number of employees in each MSA for each occupation. To combine all 80 MSAs across nine occupations required two steps. The first was to find a weighted wage for each occupation, across all the MSAs. The second step was to combine these nine weighted wages into one final weighted wage for each method, BLS and DBA.

First, to calculate the weighted wage by occupation, we calculate a wage for each of the nine occupations. For example, one weighted wage was found for all electricians by weighing each MSA wage by the number of electricians employed in that MSA in relation to the total number of electricians employed in all 80 MSAs. For instance, as there are almost three times as many brickmasons and blockmasons in Albuquerque, New Mexico as in Asheville, North Carolina, the wage in Albuquerque counts for approximately three times as much as the Asheville wage when calculating the weighted brickmason and blockmason hourly wage.

After calculating these nine wages, we combine the weighted occupational wages based on employment in each job occupation in relation to total employment in the nine occupations. Following on the electrician model, we summed up the amount of electricians across all 80 MSAs (200,400) compared to the total employment of all nine occupations (1,034,050) in all 80 MSAs. This was the weight ($=200400/1034050$ or 0.1938) applied to the weighted electrician hourly wage from above. Since there are about twice as many roofers as structural iron and steel workers employed in our 80

⁴⁰ BLS database available at <http://data.bls.gov/oes/search.jsp>

MSA, the total weighted hourly wage for roofers carries roughly twice the weight as the weighted hourly wage of structural iron and steel workers in our final weighted wage for both BLS and DBA.

In some cases, either the DBA did not supply a wage or the BLS was unable to supply employment figures, in which case that data point was left out of the calculation. For instance, the DBA wage was not supplied for roofers in Tucson, Arizona. Therefore, the DBA wage for roofers in Tucson, Arizona was not included in the BLS weighted average. The amount of sheet metal workers employed in Salinas, California was not supplied by the BLS survey, so neither the DBA nor BLS wages were taken into account in the final weighted wage per hour. Once the weighted wage by occupation is calculated we applied a weight based on total employment in each occupation to these nine weighted wage by occupation. This resulted in one weighted wage for BLS, \$20.13 per hour, and DBA, \$24.56 per hour, showing that the DBA wages are inflated by 22%.

Cost to Federally-Funded Construction

Using the following method, BHI estimated a dollar value that DBA increases construction costs.

- x = total cost of a project covered by DBA prevailing wages,
- labor costs comprise 50% of total construction costs, and thus
- labor costs = $0.5x$, and
- DBA inflates labor costs by 22%.

We use the above assumptions to compute the percentage that DBA wages increase total construction costs.⁴¹ First we deflate the wage component of total costs (50%) by the percentage that DBA inflates labor costs ($0.5/1.22 = 0.4098$) to obtain the percentage of total cost represented labor in the absence of DBA. Next we add the cost of materials

⁴¹ We make this assumption on the basis of conversations with construction contractors. We consider 50% to be a conservative estimate. McGraw-Hill publishes a Construction Cost Index and a Building Cost Index. Labor costs make up 80% of the CCI and 64% of the BCI. See “4Q Cost Report: Sub-Prime Ripple Effect,” *McGraw-Hill Construction ENR*, December 17, 2007. Also see Kent Gardner and Rochelle Ruffer; “Prevailing Wage in New York State: The Impact on Project Cost and Competitiveness” (Albany, NY: Center for Governmental Research, 2008) 17.

under DBA (50%) to arrive at the total cost factor ($0.5 + 0.4098 = 0.9098$). To calculate the cost of the DBA prevailing wage (inclusive of total costs) we need to subtract one from the observed cost divided by the BLS cost $\left[\left(\frac{x}{0.9098x} \right) - 1 = 0.991 = 9.91\% \right]$. The result is that DBA wages increase total construction costs by 9.91%.

To apply this calculation to a more concrete example, we take a hypothetical example of a \$2.44 billion project covered by DBA prevailing wage, of which \$1.22 billion represents both labor and material inputs. Since we have shown that the labor costs are inflated by 22%, the actual labor cost should be \$1 billion, resulting in a total project cost of \$2.22 billion under BLS wages. We divide the original total cost by the adjusted total cost and subtract one from this total. The result is the percentage that DBA wages inflate total construction costs $\left[(\$2.44 / \$2.22) - 1 = 9.91\% \right]$

According to the Congressional Budget Office “approximately \$67 billion in federal funds was authorized for construction projects covered by the Davis-Bacon Act” in 2001.⁴² This \$67 billion was approximately 32% of the \$209.3 billion total public construction spending in that year.⁴³ Using this ratio we can infer that out of the \$298 billion spent on public construction in 2007, \$95.35 billion was spent on DBA projects. Based on the calculation above we know that DBA adds 9.91% to construction costs, taxpayers are burdened by an unnecessary \$8.6 billion per year. Table 10 shows costs and possible savings in wages for both 2001 and 2007.

Table 10: Cost of Construction Projects Covered by the DBA (in millions of dollars)

year	Total DBA Cost	Labor Cost	Nominal Increase in Wages	Percentage Increase in Total Cost
2001	\$67,000.00	\$33,500.00	\$6,040.98	9.91%
2007	\$95,348.15	\$47,674.08	\$8,596.96	9.91%

⁴² U.S. Congressional Budget Office, “Budget Options,” (February 2001); available from <http://www.cbo.gov/ftpdocs/27xx/doc2731/ENTIRE-REPORT.PDF>; Internet: accessed February 1, 2008.

⁴³ U.S. Census, “Value of Public Construction Put in Place,” available from <http://www.census.gov/const/C30/pubsa2001.pdf>; Internet: accessed February 1, 2008.

Table 11: Hypothetical Costs by MSA (in millions of dollars)

	Total Cost	Labor Cost	Nominal Increase in Wages	Percent Increase
Nassau-Suffolk NY	\$20.00	\$10.00	\$3.27	19.54%
Riverside-San Bernardino-Ontario, CA	\$20.00	\$10.00	\$4.02	25.15%

MSA Wage Data**Table 12: Davis-Bacon Prevailing Wages by Metro Area**

	Brickmasons and blockmasons	Carpenters	Cement masons and concrete finishers	Electricians	Painters, construction and maintenance	Plumbers, pipefitters, and steamfitters	Roofers	Sheet metal workers	Structural iron and steel workers
Akron, OH	27.45	26.31	24.94	29.73	24.70	30.49	21.90	26.27	25.32
Albuquerque, NM	22.15	22.26	18.32	29.59	17.86	25.64	17.72	23.48	22.00
Anchorage, AK	32.18	31.93	31.42	33.97	29.38	33.00	32.12	37.69	30.79
Appleton, WI	27.98	26.11	na	26.84	20.32	28.66	18.01	26.58	na
Asheville, NC	7.77	6.66	5.27	8.36	8.00	8.06	5.60	7.21	6.66
Bakersfield, CA	32.71	34.94	28.00	32.03	26.35	26.58	25.35	33.26	30.51
Baltimore-Towson, MD	18.98	17.20	23.04	27.72	14.41	23.21	19.18	26.16	23.84
Bethesda-Gaithersburg-Frederick, MD	18.49	15.00	15.12	32.72	21.00	19.01	21.90	28.31	17.72
Billings, MT	23.03	18.29	17.71	24.75	15.00	26.05	13.50	22.24	na
Birmingham-Hoover, AL	17.56	10.74	na	9.87	9.46	10.27	8.59	12.95	13.97
Boise City-Nampa, ID	23.59	14.29	13.70	27.16	15.00	25.83	na	na	22.69
Bridgeport-Stamford-Norwalk, CT	30.50	26.65	na	35.45	28.37	33.57	32.50	36.58	na
Buffalo-Niagara Falls, NY	28.50	26.78	na	29.34	23.18	24.80	24.08	29.25	27.17
Camden, NJ	33.87	35.72	31.78	41.23	32.75	40.06	28.00	28.76	33.39
Cedar Rapids, IA	22.51	20.73	19.90	26.26	17.53	29.17	13.26	24.59	20.76
Charleston, WV	24.90	23.98	24.11	29.38	21.43	27.37	24.90	24.01	23.06
Charleston-North Charleston, SC	na	10.29	8.72	11.29	9.84	10.87	9.00	10.45	21.00
Cleveland-Elyria-Mentor, OH	27.99	27.30	27.57	32.08	24.18	30.28	24.98	29.85	27.40
Colorado Springs, CO	22.17	24.50	23.80	26.80	11.43	27.55	20.00	27.34	22.50
Dayton, OH	25.20	22.85	20.18	28.45	21.54	26.75	21.07	24.36	24.43
Denver-Aurora, CO	22.17	24.50	23.80	28.87	17.54	31.45	20.00	27.34	22.50
Des Moines-West Des Moines, IA	22.89	20.15	17.78	25.42	19.66	24.83	17.43	18.62	21.35
Edison, NJ	33.87	35.72	33.70	na	33.13	41.05	na	na	na
El Paso, TX	13.45	14.26	11.91	18.70	9.17	15.14	0.00	9.76	10.23
Erie, PA	24.35	25.02	12.96	23.90	19.52	27.54	22.01	29.24	25.03
Fort Wayne, IN	27.54	23.05	22.50	28.17	21.39	26.65	25.04	27.24	23.02
Grand Rapids-Wyoming, MI	15.04	14.40	11.71	14.94	11.96	19.82	10.29	12.00	13.20
Harrisburg-Carlisle, PA	25.35	21.76	23.60	26.50	21.27	28.73	28.00	27.85	24.92

	Brickmasons and blockmasons	Carpenters	Cement masons and concrete finishers	Electricians	Painters, construction and maintenance	Plumbers, pipefitters, and steamfitters	Roofers	Sheet metal workers	Structural iron and steel workers
Harrisonburg, VA	16.00	12.43	12.73	15.50	13.85	na	11.21	10.68	15.50
Hartford, CT	30.25	26.65	na	33.34	28.37	na	28.65	29.55	31.05
Honolulu, HI	33.15	34.95	33.10	36.75	28.70	33.10	30.10	35.97	30.00
Jackson, MS	15.67	12.74	10.79	13.08	10.06	14.07	10.76	11.81	13.04
Jacksonville, FL	12.64	10.62	11.34	20.19	7.94	12.35	10.12	17.18	12.95
Kennewick-Richland-Pasco, WA	24.56	25.68	24.68	31.90	15.34	35.69	21.93	27.21	28.22
Knoxville, TN	na	13.03	na	20.39	11.30	12.00	20.00	22.85	19.16
Lakeland, FL	12.50	10.18	10.39	10.76	8.96	11.97	9.49	11.00	9.81
Lancaster, PA	25.35	13.75	15.22	13.86	11.78	15.77	10.83	27.85	25.09
Las Vegas-Paradise, NM	28.09	30.47	na	35.09	32.48	29.49	12.73	36.94	30.51
Lexington-Fayette, KY	13.35	12.55	12.87	11.27	8.79	12.93	9.65	24.50	12.43
Lincoln, NE	18.16	14.34	10.43	22.78	11.10	15.28	11.79	26.42	22.55
Los Angeles, CA	33.78	33.61	28.00	35.47	na	30.97	29.00	27.14	0.00
Lynchburg, VA	15.00	9.17	9.40	11.29	7.34	10.40	8.15	10.08	9.26
Madison, WI	29.47	26.11	28.54	29.60	22.63	33.50	17.72	30.68	29.30
Miami, FL	15.48	13.81	0.00	23.03	10.56	14.97	11.21	20.36	23.44
Milwaukee-Racine-Waukesha, WI	31.60	28.41	27.82	30.08	25.79	33.65	18.01	33.00	28.96
Modesto, CA	31.58	33.25	25.88	32.72	28.13	33.25	22.72	31.33	30.51
Montgomery, AL	9.50	11.03	9.83	23.40	8.89	12.31	11.50	12.53	9.50
Nassau-Suffolk, NY	49.67	33.52	44.40	44.00	33.50	44.90	35.50	42.50	40.50
New Haven, CT	30.50	26.65	30.50	33.50	26.87	33.57	38.40	29.50	31.50
New Orleans-Metairie-Kenner, LA	na	13.68	12.28	21.27	14.88	24.27	12.28	13.26	18.70
Oakland-Fremont-Hayward, CA	36.10	33.25	25.88	42.26	30.91	43.24	27.80	44.90	30.51
Ogden-Clearfield, UT	na	12.65	17.41	26.51	na	18.47	25.71	25.71	11.12
Orlando-Kissimmee, FL	12.57	10.72	10.37	10.41	9.01	11.69	9.83	9.84	18.04
Palm Bay-Melbourne-Titusville, FL	13.46	11.78	11.40	12.89	9.15	10.94	10.48	10.89	12.01
Phoenix-Mesa-Scottsdale, AZ	21.97	22.00	15.25	22.35	17.70	15.00	na	25.82	24.17
Pittsburgh, PA	25.38	26.37	23.29	29.92	23.74	29.38	24.39	28.97	29.13
Port St. Lucie-Fort Pierce, FL	11.85	10.76	10.52	10.79	8.63	12.84	10.00	9.47	8.83
Portland, ME	14.78	16.45	11.96	25.80	11.03	16.78	11.70	15.49	20.15
Poughkeepsie-Middletown, NY	35.11	24.40	35.11	37.24	23.80	26.00	33.08	36.58	31.10
Richmond, VA	17.62	12.39	11.52	22.74	11.09	13.22	9.73	10.87	17.08
Riverside-San Bernardino-Ontario, CA	32.69	35.51	28.00	32.37	28.47	33.86	29.90	36.08	30.51
Roanoke, VA	16.51	11.04	8.36	10.50	7.95	10.91	10.42	9.11	11.15
Salinas, CA	31.51	27.37	25.88	35.84	30.91	37.75	32.73	36.49	30.51
Salt Lake City-Ogden-Clearfield, UT	11.75	15.67	20.32	26.29	16.85	na	13.36	25.71	21.22
San Francisco--Redwood City, CA	36.58	33.25	25.88	47.36	32.50	45.57	29.87	43.11	30.51
Santa Ana-Anaheim-Irvine, CA	32.83	35.51	28.00	35.47	26.84	30.97	29.90	33.47	30.51
Sarasota-Bradenton-Venice, FL	7.78	6.39	6.63	6.88	5.15	6.97	6.17	7.21	na
Savannah, GA	10.49	9.48	9.16	20.10	8.88	12.14	6.80	8.12	16.36
Scranton--Wilkes-Barre, PA	26.13	22.52	24.78	27.39	21.90	28.85	23.70	26.50	27.07
Seattle-Bellevue-Everett, WA	32.16	30.34	32.69	35.02	19.91	na	26.42	34.24	32.40

	Brickmasons and blockmasons	Carpenters	Cement masons and concrete finishers	Electricians	Painters, construction and maintenance	Plumbers, pipefitters, and steamfitters	Roofers	Sheet metal workers	Structural iron and steel workers
Spokane, WA	25.51	25.01	24.68	24.67	15.09	29.14	22.02	25.45	28.22
Springfield, IL	25.04	23.32	21.80	19.90	26.39	32.04	25.25	23.97	25.40
Stockton, CA	31.58	26.02	25.88	33.60	28.13	33.25	22.72	28.72	30.51
Tacoma, WA	32.16	30.34	32.69	32.71	19.91	35.55	25.75	34.24	32.40
Tampa-St. Petersburg-Clearwater, FL	11.88	10.79	10.42	10.25	9.28	11.26	9.65	10.75	9.94
Toledo, OH	23.83	22.38	25.31	21.99	23.81	27.21	24.50	21.87	26.12
Tucson, AZ	23.55	22.00	15.25	20.20	17.70	24.25	na	26.00	24.17
Warren-Troy-Farmington Hills, MI	32.29	26.96	28.93	33.24	24.19	31.38	27.52	31.67	20.84
West Palm Beach--Boynton Beach, FL	16.00	13.85	na	15.49	11.72	24.11	12.58	13.77	18.89
Wilmington, NC	7.10	6.02	5.68	6.22	5.15	6.52	5.91	6.38	6.66

Table 13: BLS Average Wages by Metro Areas

	Brickmasons and blockmasons	Carpenters	Cement masons and concrete finishers	Electricians	Painters, construction and maintenance	Plumbers, pipefitters, and steamfitters	Roofers	Sheet metal workers	Structural iron and steel workers
Akron, OH	23.36	20.42	23.77	21.51	17.42	19.35	16.55	20.46	25.63
Albuquerque, NM	14.39	14.38	14.24	18.16	13.29	19.49	12.38	18.15	17.48
Anchorage, AK	30.37	26.66	26.58	29.79	18.95	27.27	21.81	22.49	26.37
Appleton, WI	21.83	17.14	15.9	21.65	18.72	24.84	16.77	21.49	18.39
Asheville, NC	13.25	13.77	11.32	16.27	12.54	17.07	12.8	12.77	14.28
Bakersfield, CA	23.37	20.52	15.07	24.64	17.62	19.79	12.09	16.89	27.44
Baltimore-Towson, MD	19.15	19.03	18.05	21.72	17.47	22.44	18.88	19.46	23.23
Bethesda, MD	20.91	21.28	18.05	21.11	17.05	23.24	16.92	17.73	21.39
Billings, MT	16.3	14.07	18.41	21.26	18.1	22.95	14.92	15.26	19.66
Birmingham-Hoover, AL	19.23	15.48	15.48	19.33	13.08	17.65	12.92	15.11	19.05
Boise City-Nampa, ID	21.47	14.15	13.94	20.06	10.73	19.46	15.09	17.97	14.74
Bridgeport-Stamford-Norwalk, CT	27.89	23.75	22.92	22.94	19.08	25.24	18.87	19.34	31.86
Buffalo-Niagara Falls, NY	23.33	18.69	16.81	25.51	18.32	24.26	16.59	20.63	24.78
Camden, NJ Metropolitan Division	27.94	22.7	24.71	27.99	18.83	26.67	20.43	26.53	32.57
Cedar Rapids, IA	19.31	15.31	17.11	25.19	18.5	19.41	16.67	21.12	19.81
Charleston, WV	20.72	17.13	21.96	22.31	17.91	22.49	15.84	15.93	16.56
Charleston-North Charleston, SC	15.16	15.39	13.83	17.96	14.61	16.52	12.32	14.17	18.06
Cleveland-Elyria-Mentor, OH	25.01	18.66	21.48	25.04	16.78	25.59	16.52	23.85	25.67
Colorado Springs, CO	23.66	18.5	15.35	20.05	15.93	20.42	13.24	20.99	21.92
Dayton, OH	20.46	19.27	18.2	23.5	15.78	22.76	16.28	21.69	22.37
Denver-Aurora, CO	19.12	19.18	15.48	22.05	16.21	20.39	13.45	17.12	21.27
Des Moines-West Des Moines, IA	25.27	18.35	17.83	22.94	15.25	20.79	16.15	20.25	24.47
Edison, NJ Metropolitan Division	22.9	24.56	22.02	27.36	19.12	29.23	31.06	24.23	27.47
El Paso, TX	11.59	10.83	10.9	15.38	10.05	14.71	9.72	13.55	11.83
Erie, PA	19.16	15.39	15.82	23.83	14.23	21.38	16.9	22.27	21.5
Fort Wayne, IN	20.07	18.39	15.89	22.46	13.9	24.06	15.55	19.52	24.78
Grand Rapids-Wyoming, MI	20.15	17.65	18.28	22.75	17.07	22.58	14.15	22.87	23.08
Harrisburg-Carlisle, PA	22.1	18.38	17.72	21.82	14.93	19.48	16.33	18.66	17.7
Harrisonburg, VA	18.73	16.48	12.45	17.81	12.3	17.55	14.63	13.9	15.07
Hartford, CT	25.59	21.98	26.82	26.02	17.75	24.9	19.11	23.25	29.23
Honolulu, HI	26.96	26.97	27.06	27.64	23.89	23.08	23.47	28.46	24.87
Jackson, MS	15.69	13.75	14.83	17.91	14.48	15.38	13.87	13.36	13.42
Jacksonville, FL	16.92	15.9	14.04	17.44	13.48	16.97	12.89	19.44	17.83
Kennewick-Richland-Pasco, WA	26.6	20.81	20.11	29.08	17.76	27.83	18.48	23.42	29.27
Knoxville, TN	16.85	15.1	15.18	20.79	13.92	18.64	12.67	17.52	18.04
Lakeland, FL	17.65	14.37	12.78	18.5	13.52	16.87	12.13	13.61	17.8
Lancaster, PA	21.29	17.61	17.25	19.84	15.42	22.81	16.48	22.87	20.16
Las Vegas-Paradise, NV	21.51	20.36	19.83	23.99	19.74	21.1	17.83	25.01	29.83
Lexington-Fayette, KY	19.41	15.92	15.23	19.51	12.23	21.15	12.78	16.92	17.94
Lincoln, NE	22.59	18.42	15.15	18.22	13.91	21.05	14.78	19.58	14.78

	Brickmasons and blockmasons	Carpenters	Cement masons and concrete finishers	Electricians	Painters, construction and maintenance	Plumbers, pipefitters, and steamfitters	Roofers	Sheet metal workers	Structural iron and steel workers
Los Angeles, CA	21.66	22.93	20.2	25.38	18.25	20.71	20.46	21.77	25.7
Lynchburg, VA	20.65	14.74	13.06	16.63	11.88	18.57	13.1	13.51	17.75
Madison, WI	25.95	19.62	19.45	23.34	19.36	27.83	17.86	26.62	21.86
Miami-Miami Beach-Kendall, FL	15.9	14.77	14.4	18.15	14.92	18.92	14.48	17	18.16
Milwaukee, WI	25.99	21.97	20.07	24.44	17.2	29.43	18.22	25.04	25.14
Modesto, CA	18.57	20.94	14.11	26.88	17.31	22.94	22.36	22.35	15.57
Montgomery, AL	14.58	14.24	12.32	15.38	13.12	11.19	11.86	13.54	15.72
Nassau-Suffolk, NY	25.5	24.89	23.77	27.72	19.49	30.23	25.27	32.33	37.43
New Haven, CT	27.21	22.69	18.68	25.59	20.17	27.33	19.28	24.41	25.79
New Orleans-Metairie-Kenner, LA	18.04	15.49	14.24	20.73	15.24	17.88	14.58	15.01	18.42
Oakland-Fremont-Hayward, CA	28.43	26.18	23.38	33.2	19.49	26.9	18.72	24.9	29.98
Ogden-Clearfield, UT	22.38	16.32	15.79	18.91	16.89	24.26	17.73	20.58	14.39
Orlando-Kissimmee, FL	18.02	15.73	15.95	15.87	13.05	16.34	13.96	14.45	17.03
Palm Bay-Melbourne-Titusville, FL	18.71	16.77	14.21	17.79	14.01	16.05	13.31	15.68	14.93
Phoenix-Mesa-Scottsdale, AZ	17.03	16.9	16.82	17.79	14.05	18.07	14.18	16.27	15.66
Pittsburgh, PA	21.95	18.53	21.23	24.18	21.54	25.96	16.41	23.29	25.65
Port St. Lucie-Fort Pierce, FL	17.39	16.92	15.34	16.41	16.01	16.11	14.37	12.94	16.73
Portland, ME	19.26	17.35	15.44	21.63	12.84	18.48	16.67	17.02	21.44
Poughkeepsie-Middletown, NY	26.65	21.52	21.77	24.63	19.23	0	20.16	28.85	29.66
Richmond, VA	19.74	17.85	14.61	20.54	14.44	17.95	15.03	15.06	17.31
Riverside, CA	20.52	21.38	19.34	20.15	14.7	18.44	17.65	18.73	21.09
Roanoke, VA	19.58	14.47	12.92	15.25	13.04	15.7	13.35	15.4	12.64
Salinas, CA	24.62	23.88	24.04	26.38	19.38	18.44	20.14	27.02	28.6
Salt Lake City, UT	19.12	15.95	14.85	19.34	14.77	20.42	14.88	17.73	19
San Francisco--Redwood City, CA	34.6	25.95	24.06	34.31	21.96	30.8	23.91	27.6	18.57
Santa Ana-Anaheim-Irvine, CA	14.49	23.25	21.84	21.62	17.43	21.76	17.93	20.06	22.14
Sarasota-Bradenton-Venice, FL	17.8	15.26	14.46	16.37	15.72	16.43	15.16	13.91	14.84
Savannah, GA	17.15	14.72	16.33	19.83	12.8	17.88	13.64	17.27	14.89
Scranton--Wilkes-Barre, PA	17.56	18.13	19.27	22.92	18.53	23.34	12.2	21.13	26.97
Seattle-Bellevue-Everett, WA	28.27	24.19	26.42	24.47	17.4	27.76	23.22	23.26	26.27
Spokane, WA	24.79	17.75	21.08	20.24	15.19	24.99	17.79	20.42	18.35
Springfield, IL	23.93	20.4	18.28	26.99	19.07	25.75	21.82	20.2	27.1
Stockton, CA	20.82	22.17	17.23	23.1	16.82	21.42	16.48	21.27	19.38
Tacoma, WA	29.38	20.67	18.75	23.24	17.92	22.4	23.16	29.59	27.99
Tampa, FL	16.68	14.73	13.82	16.42	13.68	15.86	14.07	15.56	15.67
Toledo, OH	25.53	18.3	22.7	26.11	21.2	26.56	20.25	22.75	25.88
Tucson, AZ	20.27	15.89	15.45	18.63	12.99	19.01	15	14.96	16.36
Warren-Troy-Farmington Hills, MI	24.21	23.64	23.25	29.37	22.9	27.31	20.94	24.45	22.26
West Palm Beach, FL	18.06	16.89	14.33	18.66	14.32	16.82	14.63	16.33	23.35
Wilmington, NC	11.22	14.28	12.94	16.79	12.86	14.94	13.29	16.46	15.19

ABOUT THE AUTHORS

Paul Bachman, MSIE. Mr. Bachman is the Director of Research at the Beacon Hill Institute. He manages the institute's research projects, including the STAMP model and conducts research for other projects. Mr. Bachman has authored researcher papers on state and national tax policy and labor policy.

Sarah Glassman, MSEP. Ms. Glassman is Director of Operations at the Beacon Hill Institute. She holds a Master of Science in Economic Policy from Suffolk University.

Michael Head, MSEP. Mr. Head is a Research Economist at the Beacon Hill Institute for Public Policy Research at Suffolk University. He holds a Master of Science in Economic Policy from Suffolk University.

David G. Tuerck, PhD. Dr. Tuerck is Executive Director of the Beacon Hill Institute for Public Policy Research at Suffolk University and Chairman of the Economics Department at Suffolk University. He holds a Doctorate in Economics from the University of Virginia. His dissertation director was James M. Buchanan, Nobel Laureate in Economics.

The Beacon Hill Institute at Suffolk University in Boston focuses on federal, state and local economic policies as they affect citizens and businesses. The institute conducts research and educational programs to provide timely, concise and readable analyses that help voters, policymakers and opinion leaders understand today's leading public policy issues.

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The Beacon Hill Institute for Public Policy Research

Suffolk University

8 Ashburton Place

Boston, MA 02108

Phone: 617-573-8750 Fax: 617-994-4279

bhi@beaconhill.org

<http://www.beaconhill.org>