Implications of Clarifying the Definition of Public Works and Prevailing Wage Coverage in New York: Effects on Construction Costs, Bid Competition, Economic Development, and Apprenticeship Training.

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Executive Summary

Introduction and Purpose of the Study

The main purpose of a prevailing wage law is to protect local construction labor standards from distortions associated with publicly-funded construction.¹ Large infusions of government spending into an area, along with a contract award process that favors the lowest bidder, may attract contractors from areas where construction worker wage rates are relatively low. The infusion of low-wage contractors may result in the erosion of local compensation standards. Prevailing wage laws create a level playing field for all contractors while ensuring that public works expenditures maintain and support local area standards. New York's prevailing wage law was established in 1897. The law requires that contractors and subcontractors under a public works contract with a state or local government entity must pay prevailing wage and fringe benefit rates to all construction workers. The New York State Department of Labor determines prevailing wage schedules for each county and for detailed job classifications (carpenters, electricians, etc.). The prevailing wage and benefit rate in New York is reflective of a negotiation between a group of businesses and laborers in a particular trade in a particular area.

Many in New York are seeking to clarify the definition of a public works project and argue that prevailing wages should apply to previously excluded projects by local development corporations, municipal corporations, and industrial development agencies, etc., where the issuance of bonds and grants by the state, tax credits, and other forms of public subsidies are used to finance construction.² The purpose of this study is to examine the implications of utilizing such prevailing wages on construction costs and the level of bid competition. The impact of the proposed policy change on economic activity and economic development in New York State is also measured. Since prevailing wages in New York are based on negotiations between contractors and trade unions, the state's wage policy supports unionization in the construction industry where jointly managed union-contractor training programs are responsible for the overwhelming majority of training enrollments, expenditures and assets. The study includes a comparison of jointly managed union-contractor training programs and nonunion programs in New York with respect to minority and female enrollment and training program resources.

Research on Prevailing Wage Laws, Construction Costs, and Bid Competition

The following review of the research examining the effect of prevailing wages on construction costs makes a distinction between studies that have and have not been reviewed by experts in the field prior to publication. Research methods typically vary between studies that have and have not been peer-reviewed. The research that has been reviewed is almost always based on the examination of hundreds or thousands of contractor bids and utilizes specialized statistical techniques and software. On the other hand, research that has not been peer-reviewed,

¹ As an example, see "History, Davis-Bacon and Related Acts," Wage and Hour Division, U.S. Department of Labor. Assessed at: <u>https://www.dol.gov/whd/govcontracts/dbra.htm</u>.

² For an example from the 2018 legislative session in New York see "A05498 Summary," New York State Assembly. Accessed at: <u>http://assembly.state.ny.us/leg/?default_fld=&leg_video=&bn=A05498&term=2017&Summary=Y&Memo=Y&Text=Y.</u> Also see Fred Kotler. 2018. "ILR Impact Brief – New York State Prevailing Wage Law: Defining Public Work." IRL School, Cornell University. Accessed at: <u>https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1060&context=briefs</u>.

particularly studies that use a wage difference approach in measuring the cost impact of prevailing wages, are often based on hypothetical construction projects or incomplete economic information about the construction industry.

The preponderance of peer-reviewed research conducted in the 21st century indicates that prevailing wage laws do not increase the cost of public construction.³ Nine out of eleven peer-reviewed studies that examine the effect of the wage policy on school construction costs provide evidence supporting this conclusion. Six other studies examine the effect of prevailing wage laws on the cost of different types of construction such as highways, and office buildings, etc. Results from five of these studies suggest that prevailing wage standards do not increase construction costs. Of the combined 17 peer-reviewed studies over the last 18 years, 82% indicate that prevailing wages are not associated with increased construction costs. Why is it unlikely that prevailing wages increase construction costs? First, labor costs are a low percentage of total costs in the construction industry– approximately 23% of all building costs in the U.S. Consequently, only minor changes in labor productivity and other construction costs are needed to offset the effect of the wage policy.

Three other peer-reviewed studies examine the effect of prevailing wage laws on the cost of building affordable housing. All of these studies find increased costs ranging from 5% to 37%. There are several reasons why the results for affordable housing differ from the studies described above. Given the relatively low skills required in residential construction, low-wage, low skilled workers may have an advantage over higher paid and skilled counterparts. Regardless, all of the affordable housing studies have difficulty separating the effect of prevailing wage requirements from other low-income housing regulations that may also increase construction costs. This limitation contributes to an inflated cost estimate. Additionally, any increased cost effect of the wage policy may be influenced by changes in illegal cost-saving contractor practices when prevailing wages apply. Such practices include wage theft, worker misclassification (paying workers as contractors rather than as employees), and the hiring of undocumented laborers. According to the U.S. Department of Labor the construction industry had the highest level of back-pay settlements among low wage, high violation industries in 2016. These problems are particularly problematic in the residential segment of the industry. What is true of the construction industry nationwide is true of the industry in New York. For example, Governor Cuomo's 2017 partnership with State and District Attorneys in the New York City area was initiated in response to reports of widespread worker exploitation in construction.⁴ According to the New York State Department of Labor, immigrant workers are more likely to be victims of wage theft and to work under unsafe conditions, particularly at non-union construction sites. New York's prevailing wage policy includes regulations, such as requiring contractors to submit certified payroll records that discourage wage theft. By making certified payroll records public and accessible on-line, the State of California makes it easier for construction workers employed on prevailing wage projects to compare their earnings to those reported by the

³ This research is described in greater detail in the body of the report. For a summary of the broader research that examines the effect of prevailing wages on costs, training, safety, and the racial composition of the construction labor force see Kevin Duncan and Russell Ormiston. 2017. *Prevailing Wage Laws: What Do We Know*? Institute for Construction Economics Research (ICERES). Accessed at: <u>http://iceres.org/wp-content/uploads/2014/10/prevailing-wage-review-duncan-ormiston.pdf</u>.

⁴ See "Governor Cuomo, Attorney General Schneiderman Partner with Prosecutors to Crackdown on Wage Theft in the Construction Industry," Press Release, New York State Department of Labor, December 4, 2017. Accessed at: https://www.labor.ny.gov/pressreleases/2017/december-04-2017.shtm

contractor.⁵ Regardless, certified payroll records and other requirements of prevailing wage standards may discourage contractors who engage in illegal employment practices to reduce bids and construction costs from participating in affordable housing projects that are covered by the wage policy. As a consequence, the costs of building these types of projects are higher with the application of prevailing wage standards.

The preponderance of peer-reviewed research contrasts with the findings of research that has not been peer-reviewed, particularly with respect to studies that use a wage differential approach in measuring the cost impact of the wage policy. Studies by the Center for Government Research (CGR) and the Empire Center are examples of this type of research.⁶ The authors of the CGR study calculate that prevailing wages in New York exceed alternative market rates by 67%. Using a hypothetical construction project with labor costs equal to 54% of total construction costs, the authors conclude that the wage policy adds 36% to the cost of public construction (67% x 54%= 36%). The Empire Center study utilizes a similar wage differential approach and reports that New York's prevailing wage policy adds from 13% to 25% to the cost of public construction. The implication that public construction costs would decrease by 13%, 25%, or 36% with the elimination of prevailing wage regulations must be balanced with information from the U.S. Census Bureau indicating that labor costs (wages and benefits) only represent about 24% of total construction costs in New York.⁷

By focusing exclusively on wage differences in measuring the cost effect of prevailing wages, the approach used in the CGR and Empire Center studies ignores changes in labor productivity and other construction costs that also change with wage rates. Peer-reviewed research indicates that skilled labor replaces less-skilled workers and capital equipment replaces all grades of labor when wages rise in the construction industry. Additional research indicates that as wages increase contractors spend less on materials, supplies, fuels, etc, and earn lower profits. All of these changes tend to mitigate the effect of prevailing wage rates on total construction costs. However, the wage differential method used by CGR and the Empire Center is unable to capture the effect of these changes. This omission results in a cost estimate that is too high. This underscores the importance of using actual contractor bids to assess the cost of the wage policy.

To illustrate differences in the two approaches, the author of this study has used the wage differential method to measure the impact of federal Davis-Bacon prevailing wage requirements on the cost of highway resurfacing in Colorado.⁸ Results from the wage differential approach

https://efiling.dir.ca.gov/eCPR/pages/search. For a simple illustration of viewing a certified payroll, at the web site select a small county (Alpine) at the *County* prompt. Select the date of program inception (2-1-18) at the *Date Range From* prompt and the current date at the *Date Range To* prompt. Click *Search* and PDF copies of weekly and complete certified payrolls can be selected for public works completed in this county. Employee names, addresses, and social security numbers are redacted. ⁶ See Center for Government Research, "Prevailing Wage in New York State," January 2008 accessed at:

http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table.

⁵ See "eCPR Search," Department of Industrial Relations, State of California. Accessed at:

http://reports.cgr.org/details/1532 and Empire Center. 2017. "Prevailing Waste: New York's Costly Public Works Pay Mandate" accessed at: https://www.empirecenter.org/publications/prevailing-waste/.

⁷ See the U.S. Census Bureau, *Economic Census of Construction*, Construction: Geographic Area Series: Detailed Statistics for Establishments, accessed at:

⁸ Kevin Duncan, "The Wage Differential Method: Promising Construction Costs Savings with the Repeal or Weakening of Prevailing Wage Laws that Cannot be Delivered," September 2016. Accessed at <u>https://www.csupueblo.edu/hasan-school-of-business/ doc/kevin-duncan/wage-differential-method-critique-duncan-2016.pdf</u>.

suggest that prevailing wages increase costs from 7% to 17%. This contrasts with the results of three studies based on the statistical analysis of contractor bids indicating that highway resurfacing projects in Colorado that are covered by prevailing wages are no more costly, or less competitive than comparable projects that are not covered by prevailing wages. Additionally, bids do not change when contractors switch from projects that are and are not covered by the Davis-Bacon Act, nor do construction costs change when prevailing wages for the detailed jobs involved in highway resurfacing decrease from union rates to lower average rates. The wage differential method will indicate a prevailing wage cost impact when the statistical analysis of contractor bids provides overwhelming evidence that no such cost effect exists. As a consequence, studies based on wage differences, including the studies by the Center for Government Research and the Empire Center should not be considered when determining public policy.

A common complaint about prevailing wage is that the wage policy increases construction costs by reducing the level of bid competition. This claim is often made in the absence of any empirical evidence. There have been three peer-reviewed studies that examine the effect of prevailing wages on the level of bid competition. These studies are based on different construction projects and policies such as a broad array of public works projects in Northern California that are covered by that state's wage policy, highway construction in Colorado covered by federal Davis-Bacon wage requirements, and school construction regulated by British Columbia's minimum wage policy. The examination of project bids in California and Colorado find no difference in the level of bid competition between projects that are, and are not covered by the wage policy. The British Columbian example indicates that bid competition increased with the introduction of the wage standard with this effect diminishing over time.

The Economic Impact of Applying Prevailing Wage Coverage to Currently Excluded Publicly-Subsidized Construction

The effect of prevailing wage requirements on contractor labor costs is uneven. For those contractors who pay union wage and benefit rates, or close to union rates, the minimum wage requirement has no impact or a very small effect on overall employee compensation. It is the contractor who pays substantially less than the union rate who faces significant changes in labor cost when confronted with prevailing wage requirements. The low-wage, low-benefit contractor must make substantial changes in labor productivity and overall construction efficiency to compete with other contractors whose labor costs are not significantly affected by the wage requirements. Some of the adjustments contractors make likely involve decreased profit margins. This is particularly the case if the payment of prevailing wages is not associated with increased construction costs as the preponderance of peer-reviewed research indicates.

Consequently, applying prevailing wage coverage to projects receiving public subsidies would alter the distribution of wage and profit income in a way that would affect the state's economy. This impact is illustrated with application of prevailing wages to construction subsidized by Industrial Development Agencies (IDAs). Based on the analysis of active, statewide IDA projects in 2014, the expansion of prevailing wages would shift approximately \$2.1 billion of about \$63.4 billion in state-wide IDA-subsidized construction value (2017 dollars)

from contractor to construction worker income.⁹ Because those with lower incomes spend more of their earnings in New York, the net effect of the shift in contractor profit to construction worker wages and benefits would increase overall economic activity in the state by approximately \$1.8 billion. The corresponding net employment change is approximately 6,200 jobs. With the payment of prevailing wages on IDA-subsidized construction, state and local tax revenue would increase by approximately \$73 million.

According to the IMPLAN economic impact software, the increase in construction worker earning and health and retirement benefits would result in additional revenue for a variety of service and retail businesses in the state. For example, the increase in construction worker benefits would mean more revenue for organizations involved in insurance and financial services (over \$1.2 billion in additional revenue with over 3,000 more jobs). Hospitals and other health care providers would experience and increase in business of over \$75 million in revenue and over 460 new jobs. The impact would spread to other service and retail industries. For example, the restaurant industry could expect additional sales of over \$23 million and the creation of over 280 jobs. The dispersion of the impact across various industries reveals the economic development aspect of prevailing wages. The wage policy stimulates economic activity in industries that are not directly related to the construction industry.

In addition to providing state-wide economic benefits, prevailing wage laws contribute to increased living standards and a greater likelihood of self-sufficiency for all construction workers. Numerous studies show that more blue-collar construction workers receive employer-provided health insurance and pension benefits, and fewer earn annual incomes below the federal poverty level in states with at least adequate prevailing wage protection.¹⁰

Prevailing Wages and Apprenticeship Training

Formal apprenticeship training is the foundation of skill development in New York's construction industry. Prevailing wages create a strong incentive to employ apprentices because contractors are allowed to pay trainees a lower rate than journeyworkers. This incentive increases demand for apprentices and draws more trainees and resources into the state's training programs. Since prevailing wages in New York are based on negotiations between contractors and trade unions, the state's wage policy supports unionization in the construction industry where jointly managed union-contractor training programs are responsible for the overwhelming majority of training expenditures and assets. The result is a stable supply of trained construction employees available for work throughout the state's construction industry.

Apprenticeship training in the open shop segment of New York's construction industry is offered by individual contractors, groups of contractors involved in particular types of work, and by the Associated Builders and Contractors (ABC). In the unionized segment of the state's

https://www.osc.state.ny.us/localgov/pubs/research/ida_reports/2016/idaperformance.pdf

⁹ See "Annual Performance Report on New York State's Industrial Development Agencies. Fiscal Year Ending 2014." Office of the New York State Comptroller, June 2016. Accessed at:

¹⁰ For examples see Kevin Duncan and Frank Manzo IV. 2016. *The Economic, Fiscal, and Social Effects of Kentucky's Prevailing Wage Law.* Accessed at: <u>https://illinoisepi.org/site/wp-content/themes/hollow/docs/prevailing-wage/kentucky-report-duncan-and-manzo-2016-final.pdf</u>. See also Ari Fenn, Zhi Li, Gabriel Pleites, Chimedlkham Zorigtbaatar , and Peter Philips. 2018. "The Effect of Prevailing Wage Repeals on Construction Worker Incomes and Benefits," Public Works and Management, DOI:10.1177/1087724X18758340, p. 1-19.

construction industry, contractors who are signatories to collective bargaining agreements and unions jointly manage apprenticeship training for a trade. Funding for training in jointly managed programs is financed by a "cents per hour" addition to the total wage and benefit package negotiated with signatory contractors. These types of fees are rare in open shop training arrangements where sponsoring contractors directly pay for the cost of training.

The cents per hour funding of joint union-contractor programs results in substantial differences in training resources between the two types of programs. This difference can be illustrated in a comparison of training assets and expenditures between the ABC and jointly managed union-contractor programs in New York. ABC is the only broad-based construction association in New York that provides open shop contractors with accredited instruction to meet the requirements of state-approved programs. ABC offers apprenticeships in carpentry, operating engineer, skilled laborer, iron worker, and cement finisher/mason trades.¹¹ According to the 2015 tax filing (IRS Form 990) for the nonprofit training program affiliated with ABC, the program had three employees, approximately \$350,000 in training expenditures, and net assets of about \$149,000. Information obtained from the New York State Department of Labor indicates that there are over 225 construction apprenticeship programs in New York. Jointly managed union-contractor programs represent approximately 78% of all programs. Funding data for 11 of these programs that offer the same trade training as ABC indicates combined net assets of over \$87 million, \$18.0 million in expenditures, and 128 employees. These data are consistent with information from other states. For example, in Indiana, Illinois, and Wisconsin joint unioncontractor programs are responsible for 94%, 95%, and 99% of construction apprentice training expenditures, respectively.¹

Joint union-contractor programs in New York offer training for all construction trades (from asbestos to sheet metal workers). Furthermore, there is training in some trades that is only offered by joint programs. According to the data obtained from the New York State Department of Labor, there were no open shop apprenticeship programs for roofers, elevator/escalator constructors, boiler makers, and iron workers in 2016.

Jointly managed union-contractor training programs in New York are also responsible for almost all minority and female apprenticeship enrollments in New York. For example, 97% of minority and 98% of female construction apprentices are enrolled in union-contractor programs.¹³ Additionally, 98% of minority and 93% of female construction workers employed by or associated with the organizations providing the training are attached to joint union-contractor programs. This trend in female and minority program participation is not exclusive to

¹¹ See Merit Apprenticeship Alliance. Accessed at: <u>http://meritalliance.org/</u>.

¹² See Philips, Peter. 2015. "Indiana's Common Construction Wage Law: and Economic Impact Analysis.: Accessed at: <u>http://www.isbctc.org/Uploads/UploadedFiles/docs/Philips Indiana Report January 2015.pdf</u> and Peter Philips. 2015. "Wisconsin's Prevailing Wage Laws: An Economic Impact Analysis." Accessed at:

http://www.wisconsincontractorcoalition.com/application/files/9914/2889/7832/Wisconsin Report April 2015.pdf and Frank Manzo IV and Robert Bruno. 2016. "The Impact of Apprenticeship Programs in Illinois: An Analysis of Economic and Social Effects." Accessed at: <u>https://illinoisepi.files.wordpress.com/2016/08/pcmr-ilepi-</u> <u>impactofapprenticeshipprograms_newcover.pdf</u>. ¹³ This information was derived from the "affirmative action" letter the New York State Department of Labor sent to all

¹³ This information was derived from the "affirmative action" letter the New York State Department of Labor sent to all registered construction apprenticeship programs. The information was obtained by a Freedom of Information Act Request by the New York State Building and Construction Trades Council.

New York. For example, 94% of female and 88% of minority apprentices in Ohio are enrolled in joint union-contractor programs.¹⁴

In addition to possessing advantages in minority and female apprenticeship participation, joint union-contractor programs also have higher completion rates. While a request for this information was made to the New York State Department of Labor, the information was not available in time for this report. Data from other states reveal differences in program completion rates. For example, jointly managed programs in Kentucky have overall completion rates that are 35% higher than open shop programs.¹⁵ Completion rates in jointly managed programs are also higher for female, veteran, and African-American apprentices in Kentucky. Overall completion rates are 21% higher in Ohio's joint programs compared to open shop offerings.¹⁶ Because joint union-contractor programs have higher enrollments and completion rates, these programs are responsible for most graduates. For example, between 2004 and 2015, 79% of apprentices in Ohio were enrolled in joint programs. With a 21% higher completion rate, these programs were responsible for 83% of graduating apprentices in Ohio over the period.

Some claim that prevailing wage laws are motivated by construction union desires to limit employment to white, male construction workers. For example, in objecting to the extension of prevailing wage requirements to the construction of affordable housing in New York City, David Bernstein urges "... New York officials who care about promoting racial diversity need to stop supporting prevailing wage mandates, which only have the opposite effect of sanctioning the long-standing pattern of racial discrimination practiced by New York's construction unions."¹⁷ Bernstein's claims are not supported by the demographic information for New York's construction training programs that provide substantial evidence to the contrary. Whatever past practice has been, recent evidence indicates that construction unions are responsible for almost all minority and female apprenticeships and employment in New York's construction industry. Rather than being excluded from joint union-contractor training programs, minority and female apprentices may select these programs because of greater inclusion, higher program quality, and the greater likelihood of program completion.

Conclusion

Some business and economic development groups call for changes and limitations to New York's prevailing wage policy.¹⁸ These groups should keep in mind that a trained and skilled construction labor force stabilizes building costs over time. Prevailing wage laws support

¹⁴ See Onsarigo, Lameck; Alan Atalah; Frank Manzo IV; and Kevin Duncan. 2017. The Economic, Fiscal, and Social Effects of Ohio's Prevailing Wage Law. Accessed at: https://midwestepi.files.wordpress.com/2016/05/bowling-green-su-kent-state-ohiopw-study-4-10-17.pdf. ¹⁵ Duncan, Kevin and Frank Manzo IV. 2016. The Economic, Fiscal, and Social Effects of Kentucky's Prevailing Wage Law.

Colorado State University-Pueblo; Midwest Economic Policy Institute. Accessed at:

https://illinoisepi.files.wordpress.com/2016/12/kentucky-report-duncan-and-manzo-2016-final.pdf .

¹⁶ See Onsarigo, Lameck; Alan Atalah; Frank Manzo IV; and Kevin Duncan, 2017, above.

¹⁷ See "David E. Bernstein: The racism behind prevailing wage," Daily News Opinion by David E. Bernstein, January 25, 2016. Accessed at: <u>http://www.nydailynews.com/opinion/david-e-bernstein-racism-behind-prevailing-wage-article-1.2506556</u>. ¹⁸ See for examples "New York business groups pushing changes to wage law," Daily News, December 18, 2017. Accessed at:

http://www.nydailynews.com/news/politics/business-groups-pushing-costly-wage-law-article-1.3706108. See also, "Memorandum RE: A5498 (Bronson)/S.2975 (Murphy) regarding imposition of a prevailing wage mandate on economic development projects OPPOSE," New York State Economic Development Council, February 17, 2017. Accessed at:

training in the construction industry by creating incentives for the use of apprentices. Joint union-contractor training programs in New York are responsible for the overwhelming preponderance of training resources and minority and female apprentices. As is the case in any industry, trained construction workers are more expensive than untrained workers. Since labor costs (wages and benefits) are about 24% of total construction costs in New York, any cost effect associated with the use of trained construction workers that is not offset by increased worker productivity is expected to be small. Claims to weaken New York's prevailing wage law are short-sighted and would harm the state's construction industry. On the other hand, applying prevailing wage coverage to currently excluded publicly-subsidized construction in New York would increase training resources, apprenticeship enrollments, and the supply of skilled construction workers. This application of prevailing wage coverage would increase construction worker income and benefits in ways that would increase economic activity and enhance economic development in New York.

Purpose of Prevailing Wage Laws, New York's Current Policy, and Proposed Changes

The main purpose of a prevailing wage law is to protect local construction labor standards from distortions associated with publicly-funded construction.¹⁹ Large infusions of government spending into an area, along with a contract award process that favors the lowest bidder, may attract contractors from areas where construction worker wage rates are relatively low. The infusion of low-wage contractors may result in the erosion of local compensation standards. Prevailing wage laws create a level playing field for all contractors while ensuring that public works expenditures maintain and support local area standards.

New York's prevailing wage law was established in 1897. The law requires that contractors and subcontractors under a public works contract with a state or local government entity must pay prevailing wage and fringe benefit rates to all construction workers.²⁰ At present, public works and prevailing wage coverage do not apply to construction funded by state grants, the issuance of tax-exempt industrial revenue bonds, or to construction subsidized by local development corporations, municipal corporations, and industrial development agencies.²¹

The Labor Department determines prevailing wage schedules for each county and for detailed job classifications (carpenter, electrician, etc.). The prevailing wage and benefit rate is reflective of a negotiation between a group of businesses and laborers in a particular trade in a

 ¹⁹ As an example, see "Prevailing Wage Guide to Public Works Contracts," Montana Department of Labor and Industry.
 Accessed at: <u>http://erd.dli.mt.gov/labor-standards/public-contracts-prevailing-wage-law/prevailing-wage-guide-on-public-works-contracts</u>. See also, "Washington State Prevailing Wage Law," Washington State Department of Labor and Industries. Accessed at: <u>http://www.lni.wa.gov/IPUB/700-032-000.pdf</u>.
 ²⁰ See "The Bureau of Public Work," New York State Department of Labor. Accessed at:

²⁰ See "The Bureau of Public Work," New York State Department of Labor. Accessed at: <u>https://labor.ny.gov/workerprotection/publicwork/PWContents.shtm</u> and "General Provisions of Laws Covering Workers on Public Works Contracts," New York State Department of Labor. Accessed at: <u>https://labor.ny.gov/workerprotection/publicwork/PDFs/Art.8General%20Provisions%20of%20Laws%20Covering%20Worker.p</u> <u>df.</u>

<u>df.</u> ²¹ "Article 8 (Construction): Frequently Asked Questions," New York State Department of Labor. Accessed at: <u>https://labor.ny.gov/workerprotection/publicwork/PW_faq1.shtm#1</u>.

particular area.²² The rate and is updated annually. Prevailing wage and benefit rates are publicly available from the New York State Department of Labor.²³

New York's prevailing wage policy allows apprentices employed on public works to be paid according to the standards of the training program.²⁴ Construction industry apprentices earn a fraction of the total hourly compensation of fully-trained journey worker rate (as low as 50%). On public works projects in New York, construction workers cannot be paid as apprentices unless they are registered in a training program that is certified by the New York State Commissioner of Labor. Additionally, apprentices employed on public works projects must work under the supervision of journeyworkers in ratios that cannot exceed those promulgated by the Department of Labor.²⁵

Proposed Changes to New York's Prevailing Wage Law

There is New York legislation that would clarify the definition of a public works project and apply prevailing wage coverage to previously excluded projects.²⁶ For example, public works projects would be expanded to include construction subsidized by local development corporations, municipal corporations, and industrial development agencies, etc.

²² Ibid.

²³ "Article 8 Prevailing Wage Schedules," New York State Department of Labor. Accessed at: <u>https://applications.labor.ny.gov/wpp/publicViewPWChanges.do?method=showIt#</u>.

²⁴ See "General Provisions of Laws Covering Workers on Public Work Contracts," New York State Department of Labor . Accessed at:

 $[\]label{eq:https://labor.ny.gov/workerprotection/publicwork/PDFs/Art.8General \% 20 Provisions \% 20 of \% 20 Laws \% 20 Covering \% 20 Worker.pdf$

df. ²⁵ "Article 8 Prevailing Wage Schedules," New York State Department of Labor. Accessed at: <u>https://applications.labor.ny.gov/wpp/publicViewPWChanges.do?method=showIt#</u>.

²⁶ For the 2018 legislative session see "A05498 Summary," New York State Assembly. Accessed at: http://assembly.state.ny.us/leg/?default_fid=&leg_video=&bn=A05498&term=2017&Summary=Y&Memo=Y&Text=Y. The issue is rooted in different language used in Article 1, Section 17 of the Constitution of the State of New York that refers to the s

The issue is rooted in different language used in Article 1, section 17 of the Constitution of the State of New York that refers to the payment of prevailing wages on "any public work" to the current use of a three-pronged test to determine if a particular public work is subject to the requirements of the State Constitution. See "The Constitution of the State of New York," New York State (accessed at https://www.dos.ny.gov/info/constitution/article_1 bill of rights.html) and "Article 8 (Construction): Frequently Asked Questions," New York State Department of Labor (accessed at: https://labor.ny.gov/workerprotection/publicwork/PW faq1.shtm#0).

Public funds used to finance public works construction would be expanded to include the issuance of bonds and grants by the state, tax credits, and other forms of public subsidies, etc.

Purpose of the Study

The purpose of this study is to examine the implications of defining public work to the areas detailed above. This study contains a review of the academic research and other studies on prevailing wages and construction costs in New York and in other jurisdictions. The research on the effect of the wage policy on bid competition is also reviewed. The proposed legislation is controversial. Opponents claim that the proposed application of prevailing wage coverage will limit economic development.²⁷ On the other hand, proponents of the legislation argue that the application of prevailing wages will increase economic activity.²⁸ In response to this controversy, the report measures the impact of the proposed policy change on economic activity and economic development in New York State. The role of prevailing wages in supporting apprenticeship training in the construction industry is examined. This includes a comparison of jointly managed union-contractor training programs to nonunion programs with respect to enrollment and completion rates and financial resources. Differences in minority and female enrollments between joint union-contractor and nonunion apprenticeship programs in New York are evaluated.

Review of Research on Prevailing Wage Laws, Construction Costs, and Bid Competition

It is intuitive to think that increases in wage rates lead to increases in the costs of producing and to higher prices for goods and services. This perception is supported by data for

²⁷ "Legislative Memo," The Business Council, March 30, 2017. Accessed at: <u>http://www.bcnys.org/inside/Legmemos/2017-</u> 18/prevailing-wage-mandates.html

²⁸ "Definition of Public Works," NYS Building & Construction Trades Council, n.d. Accessed at: http://www.nybuildingtrades.com/definition-of-public-works.

the U.S. economy where labor costs are about two-thirds of all production costs.²⁹ So, an increase in wages and labor costs has a disproportionately large impact on overall costs and prices. Followers of the financial news are also aware that an increase in wage rates and labor costs accompanied by an increase in labor productivity is associated with stable production costs and inflation.³⁰ In recognizing that wages and labor productivity both affect costs, it is necessary to adjust the initial intuition that higher wages automatically mean higher costs and prices.

By extension, the initial intuition suggests that since prevailing wage laws establish a floor below which wages cannot fall, the policy contributes to increased construction costs. There are important differences between the impacts of wages on costs in the overall economy and in the construction industry that do not support the intuitive view. While labor costs are a relatively high percentage of total production costs for the overall economy, these costs are a low percentage of total costs in the construction industry. The most reliable data on construction costs can be obtained from the U.S. Census Bureau's *Economic Census of Construction*.³¹ These data are derived from a survey of construction contractors in every state, every five years. Data from the most recent *Economic Census of Construction* indicates that labor costs (wages and benefits) for all types of construction are approximately 23% of total costs in the industry.³² The

²⁹ According to data from the Bureau of Labor Statistics multifactor productivity program, labor's average share of costs in the private business sector (excluding government enterprises) is 65% for the 1987 to 2013 period. See "Private Business and Private Nonfarm Business Multifactor Productivity Tables," Multifactor Productivity, Bureau of Labor Statistics, U.S. Department of Labor. Accessed at: <u>http://www.bls.gov/mfp/mprdload.htm</u>.

³⁰ For an illustration of these relationships see "U.S. productivity rises in second quarter, keeps labor costs in check," Reuters, August, 9, 2017. Accessed at: <u>https://www.reuters.com/article/us-usa-economy-productivity/u-s-productivity-rises-in-second-quarter-keeps-labor-costs-in-check-idUSKBN1AP1FV</u>.

³¹ See the U.S. Census Bureau, *Economic Census of Construction*, Construction: Geographic Area Series: Detailed Statistics for Establishments, accessed at:

http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table. ³² The *Economic Census of Construction* for 2012 does not report labor costs as a percent of total costs. This ratio must be calculated based on other data. Here, labor cost as a percent of total construction cost is derived by dividing total construction worker payroll, plus proportionally allocated total fringe benefits, by the net value of construction work. The net value of construction is based on the value of work completed by a contractor, less the value of work subcontracted to other contractors. The *Economic Census of Construction* defines construction worker payroll as the gross earnings paid in the reporting year to all construction workers on the payroll of construction establishments. It includes all forms of compensation such as salaries, wages, commissions, dismissal pay, bonuses, and vacation and sick leave pay, prior to deductions such as employees' Social Security

corresponding figure for New York State is 24%. Numerous studies use data from the *Economic Census of Construction* for different years and segments of the construction industry and also find that labor costs are a low percent of overall construction costs.³³

While it is an established practice to consider the combined effects of wages, labor costs, and labor productivity when considering cost pressures and inflation for the U.S. economy, these relationships are almost always ignored in the policy debate over the cost impact of prevailing wages. It is important to keep in mind that wage rates in the construction industry are linked to productivity and efficiency. Blankenau and Cassou (2011) find that the use of skilled and unskilled construction labor is very sensitive to wage rates.³⁴ When construction wage rates increase, more skilled and productive construction workers replace less skilled workers. Changes in wage rates also affect the use of other construction inputs and costs. Balistreri, McDaniel, and Wong (2003) find that when wages increase more capital equipment and machinery is used in construction in a way that increases labor productivity.³⁵ Duncan and Lantsberg (2015) find that in states with average or strong prevailing wage laws, labor costs

contributions, withholding taxes, group insurance, union dues, and savings bonds. The *Economic Census of Construction* defines the net value of construction as the receipts, billings, or sales for construction work done by contractors, less the value of construction work subcontracted to others. The net value of construction does not include contractor business receipts from retail and wholesale trade, rental of equipment without operator, manufacturing, transportation, legal services, insurance, finance, rental of property and other real estate operations, and other nonconstruction activities. Receipts for separately definable architectural and engineering work for others are also excluded. Nonoperating income such as interest, dividends, the sale of fixed assets, and receipts from other business operations in foreign countries are also excluded. See Construction: Geographic Area Series: Detailed Statistics for Establishments: 2012. Accessed at: See Construction: Geographic Area Series: Detailed Statistics for Establishments: 2012. Accessed at:

http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table. ³³ See for example, Philips, Peter. 2014. "Kentucky's Prevailing Wage Law: An Economic Impact Analysis." Accessed at: http://www.faircontracting.org/wp-content/uploads/2014/02/Kentucky-Report-2014-Philips.pdf. Also see, Duncan, Kevin and Waddoups, Jeff. 2014. "Does the Release of Davis-Bacon Certified Payrolls Cause Competitive Harm to Contractors?" Accessed at:

https://www.denvergov.org/content/dam/denvergov/Portals/741/documents/PW_General/Torres%20Report%20on%20Certified %20Payrolls-%20Duncan%20and%20Waddoups%20December%202014%20Final.pdf.

 ³⁴ Blankenau, William and Cassou, Steve. 2011. "Industry Differences in the Elasticity of Substitution and Rate of Biased Technological Change Between Skilled and Unskilled Labor." *Applied Economics*, Vol. 43, pp. 3129-3142. In this study skilled workers are defined as those with 16 or more years of education and unskilled workers are defined as those with 12 or fewer years of schooling.

³⁵ Balistreri, Edward, Christine McDaniel, and Eina Vivian Wong. 2003. "An Estimation of U.S. Industry-Level Capital-Labor Substitution Elasticities: Support for Cobb-Douglas." *The North American Journal of Economics and Finance*, Vol. 14, No. 3, 343-356.

(wages and benefits) are higher, but material and fuel costs and contractor profits are lower compared to states with weak or no wage policies.³⁶ It follows that the use of higher paid and productive construction workers results in more efficient use of materials and fuels.

All of these characteristics of the construction industry require modification to the initial intuition that prevailing wage rates increase construction costs. Since labor costs are a low percent of total construction costs, relatively minor changes in labor productivity, material and fuel costs, and contractor profit are needed to offset any inflationary effect of prevailing wages. The preponderance of academic research indicates that prevailing wage laws are not associated with increased construction costs, suggesting that these types of cost-saving adjustments take place under the wage policy.

While the overwhelming majority of academic research indicates that there is no statistically significant prevailing wage cost effect, not all studies reach this conclusion. The research on this topic differs with respect to peer-review and in terms of research techniques. Research that appears in academic journals has been reviewed by peer experts before publication of the study. A peer-review is not based on whether reviewers agree with the research results. Rather, the purpose of the review is to ensure quality, provide credibility, and maintain standards in the discipline. One benefit of this type of review is that peer experts are more likely to detect errors and shortcomings that may not be obvious to casual readers. It is entirely up to casual readers to evaluate the accuracy of research that has not been peer reviewed. Additionally, methods of measuring the cost impact of prevailing wage laws range from detailed statistical analysis of hundreds or thousands of contractor bids submitted under actual market and

³⁶ Duncan, Kevin and Lantsberg, Alex. 2015. "Building the Golden State: The Economic Impacts of California's Prevailing Wage Policy." Accessed at: <u>https://www.smartcitiesprevail.org/wp-content/uploads/sites/24/2017/03/SCP-Building-the-Golden-State-WEB.pdf</u>.

competitive conditions to simple wage comparisons of hypothetical construction projects. Peerreviewed academic research uniformly relies on the statistical analysis of actual contractor bids, while many other studies base the cost effect of the wage policy on differences between prevailing and alternative market rates. These wage differential studies suffer from the same limitations as the intuitive approach to assessing the impact of wage rates on costs and prices.

Studies on the Cost of New York's Prevailing Wage Policy Based on Wage Differences

A 2008 study by Kent Gardner and Rochelle Ruffer of the Center for Governmental Research examines the effect prevailing wage requirements on the cost of public construction in the state of New York.³⁷ The study was sponsored by the New York State Economic Development Council in response to concern that the State Legislature was considering legislation to apply prevailing wage requirements to construction projects receiving subsidies from industrial development authorities. The study is based on the impact of prevailing wages on labor costs and total project costs for seven metropolitan areas in the state. Results suggest that New York's prevailing wage policy increases the cost of public construction by 36%. There are numerous shortcomings associated with wage difference method used in this study that contribute to an unrealistic cost estimate that is greater than labor's share of overall construction costs.³⁸ For example, information from the most recent the U.S. Census Bureau's *Economic Census of Construction* indicates that labor costs (wages and benefits) are 23.9% of construction

³⁷ Center for Government Research, "Prevailing Wage in New York State," January 2008. Accessed at: <u>http://reports.cgr.org/details/1532</u>.

³⁸ For a detailed examination of this method see, Kevin Duncan, "The Wage Differential Method: Promising Construction Costs Savings with the Repeal or Weakening of Prevailing Wage Laws that Cannot be Delivered," September 2016. Accessed at https://www.csupueblo.edu/hasan-school-of-business/_doc/kevin-duncan/wage-differential-method-critique-duncan-2016.pdf.

costs in New York. This is slightly higher than the corresponding average for all construction in the U.S. of 23.0%.³⁹

The study by the Center for Government Research is not based on an examination of contractor bids, but on a hypothetical construction project. To illustrate the effect of prevailing wages on labor costs the authors create a prototype project involving 200,000 hours of labor and \$5 million in material costs. Specifically, the authors compare labor costs under prevailing wages to labor costs based on alternative, market-based rates. Hourly wage information from the Occupational Employment Statistics (OES) of the Bureau of Labor Statistics is used as the alternative wage.⁴⁰ Since these wage data do not include benefits, the researchers add an hourly benefit rate equal to 25.8% of hourly wages. The weighted average alternative wage for the 17 most common construction occupations across New York State is approximately \$29.37 per hour wages and estimated benefits (based on data for 2006).⁴¹ The corresponding weighted average prevailing wage and benefit rates is about \$49.98 per hour. These data indicate that prevailing wage compensation exceeds the alternative market rate by 67%. With this wage information in hand, labor costs and total project costs under the two wage regimes for the prototype projects can be calculated as follows.⁴²

 ³⁹ See Construction: Geographic Area Series: Detailed Statistics for Establishments: 2012. Accessed at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table.
 ⁴⁰ See Occupational Employment Statistics. Accessed at: http://www.bls.gov/oes/

⁴¹ The weighted average hourly rates can be derived by dividing reported labor costs of \$5,874,734 by 200,000 hours that rounds to \$29.37 per hour. The same method can be used to determine the weighted average hourly prevailing rate.

⁴² This is based on rounded data reported at the bottom of the table on page 6 of the study by Center for Government Research, accessed at: <u>http://reports.cgr.org/details/1532</u>.

Labor and Total Costs under Alternative Market Compensation Rates:

Labor Costs = \$29.37 x 200,000 hours = \$5,874,000 Material Costs = \$5 million Total Costs = \$10,874,000

Labor and Total Costs under Prevailing Wage Compensation Rates: Labor Costs = \$48.98 x 200,000 hours = \$9,796,000 Material Costs = \$5 million Total Costs = \$14,796,000

The difference in labor costs under the two wage regimes is \$3,922,000 (\$9,796,000 - \$5,874,000). The percent difference in labor costs is the same as the same as the difference in wages (67%).⁴³ The difference in total project cost is \$3,895,000 and the percentage increase in total costs associated with prevailing wages for the state is 36% (\$3,895,000 / \$10,874,000). Using wage differences for different regions of the state, the authors estimate that applying prevailing wage requirements to IDA projects would increase the total cost of a typical construction project by 23% for upstate regions (Albany, Buffalo, Rochester, Syracuse) and 52% for downstate regions (Poughkeepsie, Long Island, NYC). All of these cost estimates are either approximately equal to, or exceed state average labor costs as a percent of total construction costs. For example, information from the most recent the U.S. Census Bureau's *Economic Census of Construction* indicates that labor costs (wages and benefits) are 23.9% of construction

 $^{^{43}}$ The difference between labor market and prevailing wage labor costs is \$3,922,000. The percentage difference between labor costs under market and prevailing wages in \$3,922,000 / \$5,874,000 = 67%.

costs in New York. This is slightly higher than the corresponding average for all construction in the U.S. of 23.0%.⁴⁴

One reason why these cost estimates are unrealistically high is that they are based on an estimate of material costs only. Under the method used by the Center for Government Research, the smaller the non-labor cost component, the larger the prevailing wage cost effect. The authors use a hypothetical material cost component of \$5 million. Under the alternative market wage scenario, labor costs are 54% of combined labor and material costs (\$5,874,000 / \$10,874,000). Under prevailing wages, labor costs are 66% of combined labor and material costs (\$9,796,000 / \$14,796,000). The midpoint between these two measures is 60% ([54% + 66%]/2). These percentages from the hypothetical example are close to the corresponding ratio of actual data reported in the *Economic Census of Construction* indicating that labor costs (wages and benefits) are 63% of combined labor and material costs.

While material and labor costs are a portion of construction costs, contractor bids also reflect over head costs (administration, depreciation expenses, propriety payments, taxes, etc.) as well as the costs of fuels, lubricants, power, rental equipment, and contractor profits, etc. The net value of a contractor's construction reported in the *Economic Census of Construction* is based on all of the payments and costs described above.⁴⁵ When labor costs are compared to this comprehensive cost measure, construction worker compensation shares averages 23.9% in New York. When this broader cost measure is used in the method employed in the study by the

⁴⁴ See U.S. Census, "Construction: Geographic Area Series: Detailed Statistics for Establishments: 2012." Accessed at: <u>http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table</u>.

⁴⁵ In the *Economic Census of Construction* the net value of construction is based on a contractor's value of construction, minus the value of work that was subcontracted and performed by other contractors. See U.S. Census, "Construction: Geographic Area Series: Detailed Statistics for Establishments: 2012." Accessed at: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table .

Center for Government Research, the estimated prevailing wage cost impact is substantially smaller. The sensitivity of the Center's prevailing wage cost estimate to the measure of construction costs used is illustrated in the following example. If labor costs under prevailing wages exceed alternative market rates by 67%, and if labor costs under market wages are 54% of total costs (labor and material costs), the cost effect of prevailing wage requirements is 36% (67% x 54%). However, if the actual measure of labor costs obtained from the *Economic Census of Construction* (23.9%) is used, the cost impact decreases to 16% (67% x 23.9%).

This cost estimate is still too high as the analysis is based the assumption of equal productivity for all workers.⁴⁶ This assumption ignores the observed changes in labor utilization when wages change in the construction industry. Contractors adjust to higher wage rates by increasing labor productivity. This means that for the method described above, labor hours will not remain equal (at 200,000 hours) under market and prevailing rates. Therefore, the labor costs under prevailing wages should be less than the estimated level of \$9,796,000. But, making this adjustment in an accurate manner is beyond the scope of this hypothetical method and can best be addressed through an examination of actual contractor bids.

When contractors face any cost change, whether it involves labor or another source, bids are adjusted accordingly. The wage difference approach used by the Center for Government Research and others assumes that the added costs of prevailing wages are passed entirely and directly through to costs and bids. However, prevailing wage policies are uneven in their effect. Since prevailing rates in New York are set according to collective bargaining rates, the wage policy does not affect the wage and labor costs of union contractors. Nonunion contractors,

⁴⁶ See page 17 of the study by Center for Government Research, accessed at: <u>http://reports.cgr.org/details/1532</u>.

particularly those who pay wages and benefits substantially lower than the union scale, are the ones that face significant wage increases on covered projects. Competition with union contractors prevents nonunion contractors from passing increased labor costs directly through to their bids. Cost-saving methods must be taken that involve more efficient and productive construction, reduce costs, and reduce profit margins. The wage difference method is unable to address these types of change and any prevailing wage cost estimate obtained from this method should be interpreted with extreme caution.

Kent Gardner and E.J. McMahon conducted a follow-up study in 2017 that examines the effect of prevailing wages on construction costs in major metropolitan areas in New York.⁴⁷ As is the case with the 2008 study, this more recent report by the Empire Center is not based on the analysis of actual contractor bids. Instead, the authors rely on a slightly modified wage difference approach. Specifically, the new method is based on differences between alternative market wages and prevailing rates for the most common construction trades and a measure of labor's contribution to total project costs. While there is insufficient reporting to reproduce the method used in this study, the authors report that prevailing wages exceed alternative market rates from 57% (Albany) to 95% (New York City). These wage differences are thought to contribute to increases in total project costs ranging from 13% (in Albany) to 25% (in New York City). While these more recent cost impacts are lower than the 36% reported in the 2008 study, these results are still affected by the limitations of a largely hypothetical illustrations versus an analysis of actual contractor bids.

⁴⁷ See Empire Center. 2017. "Prevailing Waste: New York's Costly Public Works Pay Mandate." Accessed at: https://www.empirecenter.org/publications/prevailing-waste/.

The studies by the Center of Government Research and the Empire Center are based on the assertion that large differences between alternative market rates and prevailing wages must result in increased construction costs. There have been very few studies of construction costs in New York that are based on the examination of contractor bids. Studies have been conducted in other metropolitan areas characterized by high unionization rates and large differences between OES wage data and prevailing wages with results indicating that prevailing wages are not associated with increased construction costs.⁴⁸ For example, in an examination of 340 municipal projects (airports, streets, and sewers, etc.) in five cities located in, or near the San Jose-Sunnyvale-Santa Clara metropolitan, Kim, Kuo-Liang, and Philips (2012) find that contractor bids, relative to the engineer's cost estimate of the project, were no higher in cities with prevailing wage laws than in municipalities without the wage policy.⁴⁹ The comparison of OES wage data for the San Jose-Sunnyvale-Santa Clara metropolitan area and corresponding prevailing wages for the cities included in the study by Kim, Kuo-Liang, and Philips indicate that prevailing wages exceed alternative market rates from 57% to 116% with an average of 80% for selected occupations.⁵⁰ This range in wage differences is comparable to that reported in the Empire Center study with a seven-metro area average of 72%, a lower limit of 57% (Albany) and 95% (New York City). However, the examination of contractor bids from the northern California cities indicates that prevailing wage projects are no more costly than projects that are not covered

⁴⁸ According to data obtained from the Current Population Survey Outgoing Rotation Groups for the 2003-2013 period, union density if the New York metropolitan area in construction was 33% and 32% in the San Jose metro area. See "CPS Outgoing Rotation Group," CERP data. Accessed at: <u>http://ceprdata.org/cps-uniform-data-extracts/cps-outgoing-rotation-group/</u>.

group/.
 ⁴⁹ See JaeWhan Kim, Chang Kuo-Liang, and Peter Philips. 2012. "The Effect of Prevailing Wage Regulations on Contractor Bid Participation and Behavior: A Comparison of Palo Alto, California with Four Nearby Prevailing Wage Municipalities" *Industrial Relations*, Vol. 51, Issue 4, pp. 874-891, October. This study compares bids to the engineer's estimate of project costs. This estimate is included as a control for project size.
 ⁵⁰ The comparison is made using the 29% benefit addition to OES wages for the top seven construction occupations identified in

³⁰ The comparison is made using the 29% benefit addition to OES wages for the top seven construction occupations identified in the Empire Center and Center for Government Research studies. The cities included in the study by Kim, Kuo-Lang, and Philips (2012) are Mountain View, Palo Alto, San Carlos (in San Mateo County), San Jose, and Santa Clara. Wage data from the Occupational Employment Statistics is for OES May 2016 and available at https://www.bls.gov/oes/. Applicable prevailing wage rates for California can be obtained from "Director's General Prevailing Wage Determinations," Department of Industrial Relations, State of California. Accessed at: https://www.dir.ca.gov/OPRL/dprewagedetermination.htm.

by the wage policy, despite substantial measured wage differences. How can this be the case? The examination of contractor bids includes changes in labor productivity and utilization that contractors make when competing for prevailing wage projects. The simple comparison of wage rates to determine the effect of the wage policy is unable to capture these changes. Given the numerous shortcomings of this approach and the availability of superior research methods, studies employing the wage differential method would not survive a review by expert peers. The last peer-reviewed study based on the comparison of wage differences to assess the effect of prevailing wage on total construction costs was published in 2001.⁵¹

Despite the weaknesses of the wage differential method used in the studies by the Center of Government Research and the Empire Center, their findings are referenced by organizations that seek to limit prevailing wage coverage or to weaken the wage policy. For example, the New York State Economic Development Council references the Center for Government Research study in its 2017 memorandum in opposition to applying prevailing wage coverage to projects receiving public subsidies.⁵² The state Business Council references the results of the Empire Center study in calling for changes to New York's prevailing wage law.⁵³ It is regrettable that these organizations chose to reference research that is based on the flawed wage differential method when there is abundant peer-reviewed, academic research that is based on the statistically analysis of contractor bids. The preponderance of this research reaches conclusions

⁵¹ See Keller, Edward and Hartman, William. 2001 'Prevailing Wage Rates: the Effects on School Construction Costs, Levels of Taxation, and State Reimbursements,' *Journal of Education Finance*, Vol. 27, pp. 713-728. More recently Clark (2005) compares wage rates to assess the impact of Kentucky's prevailing wage law, but this analysis is limited to the examination of labor costs, not total construction costs. See Clark, Mike. 2005. "The Effects of Prevailing Wage Laws: a Comparison of Individual Worker's Wages Earned on and off Prevailing Wage Construction Projects." *Journal of Labor Research* 26: 725-737. ⁵² See New York State Economic Development Council. 2017. "Memorandum," February 17. Accessed at: http://www.pysedc.org/wp-content/uploads/2017/02/021717-Bill-MemorA 5408-Bronson-S 2975-Murphy.pdf

http://www.nysedc.org/wp-content/uploads/2017/02/021717-Bill-Memo-A.5498-Bronson-S.2975-Murphy.pdf. ⁵³ See "New York business groups pushing for changes to wage law," Daily News, December 18, 2017. Accessed at: http://www.nydailynews.com/news/politics/business-groups-pushing-costly-wage-law-article-1.3706108.

that are at variance with the findings of the reports submitted by the Center of Government Research and the Empire Center.

Peer-Reviewed Research on the Cost Impact of Prevailing Wages

While the wage differential studies ignore other factors that change with wage rates in the construction industry, the research methods used in peer-reviewed research typically include these changes. There have been 20 peer-reviewed studies examining the cost implications of prevailing wage laws since 2000. The preponderance of the evidence indicates that prevailing wage standards are not associated with increased construction costs.

Academic research on prevailing wages typically compares total costs of projects covered by prevailing wage laws to the total costs of projects that are not covered by the wage policy, taking into consideration other factors that affect construction costs⁵⁴ Examining the total cost of construction has the advantage over the wage differential approach. The former method captures changes in wage rates and in other construction inputs and costs that occur when prevailing wages apply. Researchers often examine the effect of prevailing wages on school construction for two reasons: 1) the cost of education, including school construction is important to the public and to policy makers, and 2) since these types of projects are relatively similar the effect of the wage policy on costs can be measured with greater accuracy. Academic studies typically use statistical analysis that provides an estimate of the wage policy as well as information on whether the estimate is statistically significant. A statistically significant estimate implies causation and is not likely due to random chance. On the other hand, an estimate that is not statistically significant is likely due to random chance, implying the lack of correlation.

⁵⁴ For example, if prevailing wage projects are larger or more complex than projects that are not covered by the wage policy, and if this information is not included in the statistical analysis, results will indicate that prevailing wage projects are more expensive. Consequently, it is necessary to examine the effect of the wage policy taking into account project size and complexity.

Azari-Rad, Philips and Prus (2002) examine winning bids for 4,974 public and private schools built in states between 1991 and 1999 that were, and were not covered by prevailing wage laws.⁵⁵ Results indicated that prevailing wage laws do not have a statistically significant impact on construction costs. In a follow-up study, Azari-Rad, Philips and Prus (2003) expand their analysis to compare schools built in states with prevailing wage laws of differing strength. Regardless, their analysis of 4,653 schools built between 1991 and 1999 finds that prevailing wage laws (strong, weak, or otherwise) are not related to school construction costs.

Alan Atalah examines the effect of prevailing wages on school construction costs in two studies. Both studies are based on the examination over 8,000 bids for school construction projects built in Ohio between 2000 and 2007. Atalah (2013a) compares bids, adjusted for the square-foot size of the school, that were submitted by contractors who were signatories to collective bargaining agreements and who pay union wage and benefit rates to the bids submitted by of open shop contractors who typically pay lower rates. A comparison of average bid-costs for schools built across the state indicates that there is no statistically significant difference in this cost measure between the two groups of contractors.⁵⁶ The exception is schools built in the southern region of the state where costs by union contractors were lower than nonunion contractors. Ohio excluded school construction in 1997. Union rates are used to determine prevailing wage and benefit rates for other publicly funded construction in Ohio.⁵⁷ Wages paid

⁵⁶Atalah, Alan. 2013a. "Comparison of Union and Non-Union Bids on Ohio School Facilities Commission Construction Projects," *International Journal of Economics and Management Engineering*, Vol. 3, Issue 1, pp. 29-35.

⁵⁵ Low, winning contractor bids are the measure of total costs, but this measure excludes change orders and cost overruns that may be related to prevailing wage legislation. The two studies that have been able to collect information on add-on charges report that these additional costs are lower on projects covered by prevailing wages. See Bilginsoy, Cihan. (1999). "Labor Market Regulation and the Winner's Curse," *Economic Inquiry*, 37(3): 387-400 and Peter Philips, Garth Mangum, Norm Waitzman, and Anne Yeagle. 1995. "Losing Ground: Lessons from the Repeal of Nine "Little Davis-Bacon" Acts. Working Paper, Department of Economics, University of Utah. Accessed at:

http://www.faircontracting.org/PDFs/prevailing_wages/losingground.pdf.

⁵⁷ See "Chapter 4115: Wages and Hours on Public Works," LA Writer, Ohio Laws and Rules. Accessed at<u>http://codes.ohio.gov/orc/4115</u>.

by open shop contractors represent wages at the other extreme, if prevailing wages do not apply. If costs do not differ between these extremes, the inference is that prevailing wages do not affect costs.

The second study by Professor Atalah yields mixed results regarding the cost impact of prevailing wages.⁵⁸ This study compares bids that were submitted by different trades (plumbing, electrical, etc.) that did and did not pay union rates. Results indicate that all bids and winning bids (adjusted for the square-foot size of the school) were higher for three (16.7%) of 18 the trades that paid union rates (compared to the same trades that did not pay union rates). Specifically, all bids and winning bids were higher for union contractors doing work on existing conditions, plumbing, and earthwork. In two (11.1%) of the 18 trade categories, all bids and winning bids submitted by union contractors were lower. Specifically, HVAC and electrical union contracts had lower bid prices. There were no statistically significant differences in bidcosts per square foot for 72.2% (13/18) of the other trades, regardless of payment of union wage and benefit rates.⁵⁹ In sum, the studies by Professor Atalah find that, by and large, the payment of union wage rates are not associated with increased bid costs. There are a few cases where bids are higher for some trades when union rates are paid. There are also a few cases where bids are lower for some trades when union rates are paid. There is also evidence that for the southern region of the state, bids based on the payment of union wages are lower than bids based on nonunion wage rates.

⁵⁸ Alan Atalah. 2013. "Impact of Prevailing Wages on the Cost among the Various Construction Trades,' *Journal of Civil Engineering and Architecture*, Vol. 7, No. 4, pp. 670-676.

⁵⁹ These projects include the trades involved in the following Construction Specifications Institute categories: communications, concrete, conveying equipment, electronic safety and security, equipment, finishing, fire suppression, furnishings, masonry, openings, structural steel, thermal and moisture protection, and wood, plastics and composites work.

Keller and Hartman (2001) compare labor costs for 25 school construction projects in Pennsylvania under prevailing wage regulations and "open shop" conditions and report that Pennsylvania's prevailing wage law adds, on average, 2.25% to the cost of building public schools. However, this analysis is limited since the findings are based on the comparison of wage rates and labor costs, rather than a direct examination of the wage policy on total construction costs.⁶⁰ Vincent and Monkkonen (2010) examine 2,645 schools built across the U.S. under various regulatory settings and report a prevailing wage cost effect ranging from 8% to 13%.⁶¹ While this study takes into consideration other factors such as project size, type of school, as well as policies other than prevailing wage laws that may also affect construction costs, the effect of the business cycle is not included. Swings in economic activity have a substantial impact on material and other construction costs. For example, professors Azari-Rad, Philips, and Prus find that doubling the unemployment rate in a state is associated with a 21%decrease in school construction costs. If the states that have prevailing wage laws also have lower rates of unemployment, the cost estimate of the wage policy reported in the study by Vincent and Monkkenon is too high.

Several studies have compared construction costs for schools built with and without prevailing wage regulations. Many of these studies have taken advantage of the introduction of a prevailing wage policy in British Columbia to compare school construction costs. The introduction of this wage policy allows for a "natural experiment" by comparing construction costs before and after the policy within the same jurisdiction. This type of comparison is an opportunity to isolate the impact of the wage policy when there was no other policy change

⁶⁰ This 2001 study is the last peer-reviewed paper that uses a wage difference comparison to measure the total costs of the wage policy. See Keller, Edward and Hartman, William. 2001 'Prevailing Wage Rates: the Effects on School Construction Costs, Levels of Taxation, and State Reimbursements,' *Journal of Education Finance*, Vol. 27, pp. 713-728.
⁶¹Vincent, Jeffery and Monkkonen, Paavo. 2010. "The Impact of State Regulations on the

Cost of Public School Construction," Journal of Education Finance, Vol. 35, No. 4, spring, pp. 313-330.

affecting construction labor markets over the period of the study. The law in British Columbia was similar to strong state-level prevailing wage laws in the U.S.⁶²

Bilginsoy and Philips (2000) examine the impact of British Columbia's Skill Development and Fair Wage Policy on the construction of 54 public schools built before and after the introduction of the wage policy⁶³ Results indicate the absence of statistically different cost differences for schools built before the introduction of prevailing wages. This study does not include a control group of similar projects that were not affected by the wage policy.

Duncan, Philips, and Prus (2014) examine the effect of British Columbia's prevailing wage standard by including a control group of private school projects.⁶⁴ This analysis of 498 school projects indicates that before the introduction of the prevailing wage policy, the cost of building public schools was approximately 40% more expensive than the costs of comparable private schools. This cost differential did not change after the wage policy was introduced. These authors have also used the British Columbian example to study the effect of prevailing wage laws on the productivity and efficiency of construction.⁶⁵ There examination of 528 school projects indicates that the introduction of the wage legislation, public school projects were 16% to 19% smaller, in terms of square feet, than comparable private structures (given the same project expenditure). This size differential did not change after the policy was in effect. These results suggest that prevailing wage requirements do not alter labor or other input utilization in a way that significantly affects the relative size of covered and uncovered projects. The authors

⁶² See Duncan, Kevin; Peter Philips; and Mark Prus. (2012). "Using Stochastic Frontier Regression to Estimate the Construction Cost Efficiency of Prevailing Wage Laws," *Engineering, Construction and Architectural Management*, 19(3): 320-334.

⁶³ Bilginsoy, Cihan and Philips, Peter. 2000 'Prevailing Wage Regulations and School Construction Costs: Evidence from British Columbia.' *Journal of Education Finance*, Vol. 24, 415-432.

⁶⁴ Duncan, Kevin, Philips, Peter, and Prus, Mark. 2014. "Prevailing Wage Regulations and School Construction Costs: Cumulative Evidence from British Columbia." *Industrial Relations*, Vol. 53, No. 4, October, pp. 593-616.

⁶⁵ Duncan, Kevin, Philips, Peter, and Prus, Mark. 2006. "Prevailing Wage Legislation and Public School Construction Efficiency: A Stochastic Frontier Approach," *Construction Management and Economics*, Vol. 24, June 2006. pp. 625-634.

also find the introduction of the British Columbian wage policy was associated with an increase in the inefficiency of construction of 8.6%.⁶⁶ The examination of 438 school projects reveals that the inefficiency of construction decreased by 31.8% for projects covered by the expansion of the policy 17 months after its introduction. The net change in construction inefficiency associated with the wage policy was 23.2%. These findings suggest that the introduction of prevailing wage laws disrupted construction efficiency. However, in a relatively short period of time, the construction industry adjusted to wage requirements by actually improving overall construction efficiency in a way that is consistent with stable total costs. A similar pattern was observed with respect to cost efficiency.⁶⁷

It is the nature of empirical analysis that every study will have some flaws, even minor ones that limit the interpretation of results. It is simply not possible for any researcher to have all of the information needed for complete analysis. However, when numerous studies, employing different research techniques and sample configurations reach the same conclusion, evidence mounts in favor of the shared finding. This is the case regarding the research on prevailing wages in British Columbia. Taken together, all of the studies of prevailing wages in British Colombia provide a consistent and comprehensive analysis that fails to find an effect on school construction costs or efficiency consistent with the view that prevailing wages increase construction costs.

Of the 11 peer-reviewed studies that examine the effect of prevailing wages on school construction costs, seven provide evidence that the wage policy is not associated with increased construction costs. Two other studies find positive cost effects, but the results of one of the

⁶⁶ Duncan, Kevin, Philips, Peter, and Prus, Mark. 2009. "The Effects of Prevailing Wage Regulations on Construction Efficiency in British Columbia," *International Journal of Construction Education and Research*, Vol. 5, No.1, pp. 63-78.

⁶⁷ Duncan, Kevin, Philips, Peter, and Prus, Mark. 2012. "Using Stochastic Frontier Regression to Estimate the Construction Cost Efficiency of Prevailing Wage Laws." *Engineering, Construction and Architectural Management*, Vo. 19, No. 3, pp 320-334.

studies are questionable because the analysis is based on the outdated wage differential method. Two other studies report mixed results suggesting that, in general, prevailing wage requirements do not increase costs, but that there are some cases where costs are higher, and some cases where costs are lower under the wage policy.

Two studies by Duncan (2015a and 2015b) focus on the effect of federal requirements on the cost of highway resurfacing in Colorado. The first study compares the costs of over 130 projects funded by the federal government to projects financed by the State of Colorado over the 2000-2011 period.⁶⁸ Federal funding requires the payment of Davis-Bacon prevailing wages and adherence to the Disadvantaged Business Enterprise policy while state-funded projects in Colorado are not covered by either of the federal regulations.⁶⁹ Resurfacing projects funded by the federal government are more costly, but are also larger and more complex than state projects. After taking these and other project characteristics into account, there is no statistically significant difference in average project costs, regardless of prevailing wage coverage. Additional analysis compares resurfacing costs as contractors switch from federal to state projects.⁷⁰ The examination of 91 winning bids on highway resurfacing projects indicates that bids on less-regulated state projects are not different, in terms of statistical significance than winning bids on federal projects. Results of these studies indicate that the combined effects of the Davis-Bacon Act and the Disadvantaged Business Enterprise policy do not affect the cost or level of bid competition. On the other hand, in an examination of 50 state departments of

⁶⁸ Duncan, Kevin. 2015. "The Effect of Federal Davis-Bacon and Disadvantaged Business Enterprise Regulations on Highway Maintenance Costs." *Industrial and Labor Relations Review*, Vol. 68, No. 1, pp. 212-237.

⁶⁹ The goal of the Disadvantaged Business Enterprise provision is to ensure that small subcontracting companies, owned and controlled by socially and economically disadvantaged individuals, can compete fairly on federally funded highway, airport, and other transit projects. This provision requires the U.S Department of Transportation to ensure that at least 10 percent of the funds authorized for highway projects be expended on disadvantaged businesses. Accessed at: https://www.transportation.gov/osdbu/disadvantaged-business-enterprise/definition-disadvantaged-business-enterprise.

⁷⁰ Duncan, Kevin. 2015. "Do Federal Davis-Bacon and Disadvantaged Business Enterprise Regulations Affect Aggressive Bidding? Evidence from Highway Procurement Auction," *Journal of Public Procurement*, Vol. 15, Issue 3, pp. 291-316.

transportation, Vitaliano (2002) finds that the cost inefficiency of state-level prevailing wage laws adds about \$10 million (8%) to the annual cost of maintaining the nation's highway system.⁷¹ This impact is statistically significant.

The findings of other studies are generally consistent with those described above. An examination of 340 public works projects in five northern California cities (Palo Alto, Mountain View, San Carlos, San Jose, and Sunnyvale) finds no evidence that prevailing wage policies affect the bid process or outcome in a way that increases construction costs.⁷² Kim, Chang, and Philips (2012) do not find any support for the view that wage policies discourage bidding by nonunion contractors, reduce the number of bidders, or prevent nonunion contractors from winning bids on prevailing wage projects. Their findings indicate that prevailing wage laws of northern California cities are not associated with higher construction costs.

In an analysis of the prevailing wage standard in British Columbia, Duncan and Prus (2005) find that the introduction of the policy did not alter the construction cost differential between a wide array of 723 public and private building types.⁷³ Public structures were from 43% to 40% more expensive to build than private structures before and after the introduction of the wage policy. This study has the advantage of including a control group of projects that were not affected by the wage policy and takes into considerations the type of structure (schools, hospitals, clinics, assembly buildings etc.), project size, and other characteristics of the building.

⁷¹ Vitaliano, Donald. 2002. "An Econometric Assessment of the Economic Efficiency of State Departments of Transportation," International Journal of Transportation Economics, Vol. 29, No. 2, pp. 167-180.

⁷² Kim, JaeWhan, Chang, Kuo-Liang and Philips, Peter. 2012. "The Effect of Prevailing Wage Regulations on Contractor Bid Participation and Behavior: A Comparison of Palo Alto, California with Four Nearby Prevailing Wage Municipalities" <u>Industrial</u> <u>Relations</u>, Vol. 51, Issue 4, pp. 874-891, October.

⁷³ Duncan, Kevin and Prus, Mark. 2005. Prevailing wage laws and construction costs: evidence from British Columbia's Skills Development and Fair Wage Policy. In Hamid Azari-Rad, Peter Philips, and Mark Prus (Eds.), *The Economics of Prevailing Wage Laws*, pp. 123–148. Aldershot, UK: Ashgate.

Kaboub and Kelsay (2014) examine the construction of over 3,000 projects in 12 midwestern states between 1993 and 2002. Results for 13 different project types (hospitals, schools, manufacturing and office buildings, etc.) indicate that while public projects are more expensive than the construction of comparable private structures, the presence of prevailing wage laws did not alter this cost differential.

While the research addressing prevailing wages and the cost of building schools, highways, and offices, etc. generally finds no statistically significant cost effect, the results regarding the construction of affordable housing differ. There are three peer-reviewed studies that examine the effect of prevailing wage requirements on the cost of building affordable housing in California that was subsidized by state and federal Low-Income Housing Tax Credit policies. All three studies utilize data obtained from the California Tax Credit Allocation Committee and all of the studies find that construction and total project costs are higher when prevailing wages apply with impacts ranging between 5% and 37%.

Dunn, Quigley, and Rosenthal (2005) analyze the construction of 205 new housing projects that were completed between 1997 and 2002 and report that construction (site preparation and building) costs were from 9% to 37% higher on covered projects.⁷⁴ These authors also find that total project costs, including building, land, engineering, financing, and developer costs, etc. were from 10% to 37% higher when prevailing wages apply. Palm and Niemeier (2017) examine 496 housing projects built between 2008 and 2016 and report

⁷⁴ Dunn, Sarah; John Quigley; and Larry Rosenthal. (2005). "The Effects of Prevailing Wage Regulations on the Cost of Low-Income Housing," *Industrial and Labor Relations Review*, 59(1): 141-157.

prevailing wage cost effects between 15% and 16% per unit.⁷⁵ Littlehale's (2017) study is based on housing built between 2001 and 2011 and this author finds that prevailing wage requirements increase total project costs (excluding land acquisition costs) from 5% to 7%.⁷⁶ A 2016 study by New York City Independent Budget Office reports prevailing wage requirements added 13% to the cost of building affordable housing projects in New York.⁷⁷ This analysis is based on 201 projects and is within the range of cost impacts reported in the peer-reviewed studies. The variation in results between these three peer-reviewed papers is due to the different statistical models used by the researchers. Littlehale's model has the lower cost estimates due to additional measures of project complexity.

There are several possible explanations why the results for affordable housing differ from those of other building types. First, residential construction requires fewer skills than other building activity. In this case, low skilled, low wage workers may have a cost advantage over higher paid, higher skilled workers in this type of construction. Also, there are numerous federal and state tax subsidies and other government involvement involved in affordable housing in addition to prevailing wage regulations. Therefore, it may be difficult to separate the effect of prevailing wages on construction costs from the effects of other policies.

The additional regulations associated with affordable housing construction, particularly the submission of certified payroll records required by prevailing wage regulations, may deter those contractors who engage in wage theft and other illegal compensation standards to reduce

 ⁷⁵ Palm, Matthew and Deb Niemeier. (2017). "Does Placing Affordable Housing Near Rail Raise Development Costs? Evidence From California's Four Largest Metropolitan Planning Organizations," *Housing Policy Debate*, 1-19.
 ⁷⁶ Littlehale, Scott. Forthcoming. "Revisiting the Cost of Developing New Subsidized Housing: The Relative Import of

Construction Wage Standards and Nonprofit Development." *Berkeley Planning Journal.*

⁷⁷ See New York City Independent Budget Office. 2016. "The Impact of Prevailing Wage Requirements on Affordable Housing Construction in New York City," February. Accessed at: <u>http://www.ibo.nyc.ny.us/iboreports/the-impact-of-prevailing-wage-requirement-on-affordable-housing-construction-in-new-york-city.pdf</u>.

bids and construction costs. By making certified payroll records public and accessible on-line, the State of California has made it easier for construction workers employed on prevailing wage projects to compare their earnings to those reported by the contractor.⁷⁸ Regardless, illegal costsaving practices such as worker misclassification (paying workers as contractors instead of employees), wage theft, and the hiring of undocumented laborers are problematic in the construction industry, particularly for residential construction.⁷⁹ Regardless of the sector, construction had the highest level of back wage settlements (\$41.7 million) in 2016 among the U.S. Department of Labor's low wage, high violation industries.⁸⁰ Construction ranked second, behind food services, with respect to the number of back wage cases and workers involved.

What is true of the construction industry nationwide is true of the industry in New York. For example, in 2017 Governor Cuomo announced the results of a broad partnership with New York State Attorney General Schneiderman and the District Attorneys of all five New York City Counties, Westchester, and Nassau Counties to bring criminal charges against contractors who engaged in wage theft.⁸¹ The General Attorney's office reports that since 2011, nearly \$30 million in stolen wages for more than 21,000 workers has been recovered. The New York State Department of Labor indicated the crackdown in the downstate construction industry was initiated in response to reports of widespread worker exploitation in the industry. Immigrant workers, who comprise a disproportionate number of the construction workforce, are more likely

⁷⁸ See "eCPR Search," Department of Industrial Relations, State of California. Accessed at:

https://efiling.dir.ca.gov/eCPR/pages/search. For a simple illustration of viewing a certified payroll, at the web site select a small county (Alpine) at the *County* prompt. Select the date of program inception (2-1-18) at the *Date Range From* prompt and the current date at the *Date Range To* prompt. Click *Search* and PDF copies of weekly and complete certified payrolls can be selected for public works completed in this county. Employee names, addresses, and social security numbers are redacted. ⁷⁹ Juravich, Tom, Ablavsky, Essie, and Williams, Jake. 2015. "The Epidemic of Wage Theft in Residential Construction in Massachusetts," Labor Center, University of Massachusetts-Amherst. Accessed at: https://www.umass.edu/lrrc/sites/default/files/Wage_Theft_Report.pdf.

⁸⁰ U.S. Department of Labor, Low Wage, High Violation Industries https://www.dol.gov/whd/data/datatables.htm.

⁸¹ New York State Department of Labor. 2017. "Governor Cuomo, Attorney General Schneiderman Partner with Prosecutors to Crackdown on Wage Theft in the Construction Industry," Press Release Archive, December 4. Accessed at: https://www.labor.ny.gov/pressreleases/2017/december-04-2017.shtm

to victims of wage theft and to work under unsafe conditions, particularly at non-union construction sites. According to Manhattan District Attorney Cyrus Vance, Jr.:

"Every week, New Yorkers lose \$20 million in unpaid wages. And every day, construction workers who risk their lives doing dangerous jobs have to wonder whether they'll actually be paid for their work. Wage theft is one of the most pervasive problems in New York City and State, and in the construction industry in particular, workers are all too often preyed upon by their employers, who are able to steal millions of dollars in unpaid wages."

The point is that at least part of the increased prevailing wage cost effect found in affordable housing studies can likely be attributable to the decline in cost-saving, but illegal, employment practices when the wage policy is in effect.

There have been 20 peer-reviewed studies examining the cost implications of prevailing wage laws since 2000. Nine of the eleven school studies fail to find that prevailing wages are consistently associated with increased construction costs. Two other studies find positive cost impacts and a third study yields mixed results. There are nine additional studies that examine other types of projects with five of these studies finding that prevailing wages have no statistically significant cost effect. Of the total of 20 peer-reviewed studies, 14 (70%) fail to find a statistically significant prevailing wage cost effect.

In addition to the peer-reviewed research, there have been other studies that are based on the examination of winning contractor bid data to measure the cost effect of prevailing wages. In an examination of new construction costs in Kentucky, Michigan, and Ohio during periods in the 1990s when prevailing wage policies for school projects changed within these states, Philips (2014) finds that there was no statistically significant difference in average square foot school

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construction costs associated with a change in prevailing wage policies.⁸² This study is based on the analysis of 391 projects. Onsarigo, Atalah, Manzo, and Duncan (2017) examine 110 public schools built in Ohio between 2013 and 2014.⁸³ Some of the construction projects received federal funding and were covered by federal Davis-Bacon prevailing wage requirements. Results indicate that the cost of these schools were no different that the school construction that was not covered by the wage policy. This is one of four other studies of school construction costs in Ohio that has either been peer-reviewed or conducted by state agencies that find that prevailing wage or similar construction labor market policies are not associated with increased construction costs.⁸⁴

Prevailing Wage Laws and Bid Competition

Many prevailing wage opponents assert that one way the wage policy increases construction costs is by reducing the level of bid competition. This claim is often made in the absence of any empirical evidence.⁸⁵ There have been three peer-reviewed studies and one other report that empirically examine the effect of the wage policy on the level of bid competition. All of these studies are based on the statistical analysis of contractor bids and all find that prevailing

⁸⁴ There are numerous other studies that have not been peer-reviewed that are based on the statistical analysis of contractor bids that find do not find evidence that prevailing wage laws increase construction costs. For examples see Prus, Mark. 1996. "The Effect of State Prevailing Wage Laws on Total Construction Costs. Accessed at:

http://www.faircontracting.org/PDFs/prevailing_wages/effects_davisbacon.pdf. Prus, Mark. 1999. "Prevailing Wage Laws and School Construction Costs: An Analysis of Public School Construction in Maryland and the Mid Atlantic States." Accessed at: http://eric.ed.gov/?id=ED456630. Wial, Howard. 1999. "Do Lower Prevailing Wages Reduce Public Construction Costs," Keystone Research Center. Accessed at: http://keystoneResearch Center. Accessed at: http://keystoneResearch.org/sites/default/files/krc_prevailwage_costs.pdf. Kelsey, Michael. 2015. "The Adverse Economic Impact From Repeal of the Prevailing Wage Law in West Virginia." Accessed at: http://www.faircontracting.org/wp-content/uploads/2015/01/The-Adverse-Economic-Impact-from-Repeal-of-the-PW-Law-in-WV-Dr.-Michael-Kelsay-Full-Report.pdf.

⁸² Philips, Peter. 2014. Kentucky's Prevailing Wage Law: An Economic Impact Analysis. Accessed at: http://www.faircontracting.org/wp-content/uploads/2014/02/Kentucky-Report-2014-Philips.pdf.

 ⁸³ Onsarigo, Lameck; Alan Atalah; Frank Manzo IV; and Kevin Duncan. (2017). *The Economic, Fiscal, and Social Effects of Ohio's Prevailing Wage Law*. Kent State University; Bowling Green State University; Midwest Economic Policy Institute; Colorado State University-Pueblo. Accessed at: <u>https://illinoisepi.org/site/wp-content/themes/hollow/docs/prevailing-wage/bowling-green-su-kent-state-ohio-pw-study-4-10-17.pdf</u>.
 ⁸⁴ There are numerous other studies that have not been peer-reviewed that are based on the statistical analysis of contractor bids

⁸⁵ For an example, see George Leef. 2010. Prevailing Wage Laws: Public Interest or Special Interest Legislation? *Cato Journal*, 30(1):137-154.

wage requirements do not reduce the number of bidders. In an examination of public works projects in five northern California cities, Kim, Kuo-Liang, and Philips (2012) find no evidence that prevailing wage policies affect the number of bidders.⁸⁶ In an examination of highway construction in Colorado, Duncan (2015) finds that the level of bid competition does not differ between federally funded projects that require the payment of prevailing wage laws and adherence to the Disadvantage Business Enterprise policy and state-funded projects that are not subject to either of these policies.⁸⁷ In an examination of the of school construction costs in British Columbia, Bilginsoy (1999) finds that introduction of prevailing wage requirements was associated with an increase bid competition that diminished over time.⁸⁸ While the study of school construction costs in Ohio by Onsarigo, Atalah, Manzo, and Duncan (2017) has not been peer-reviewed, these authors also find that prevailing wage requirements are also associated with increased bid competition.⁸⁹ The level of bid competition is an important determinant of contractor bids and construction costs. All of the studies that have used data on project bids and the number of bidders as the basis of their examination find that the wage policy does not increase costs by reducing the level of bid competition.

⁸⁶ See JaeWhan Kim, Chang Kuo-Liang, and Peter Philips. 2012. "The Effect of Prevailing Wage Regulations on Contractor Bid Participation and Behavior: A Comparison of Palo Alto, California with Four Nearby Prevailing Wage Municipalities" *Industrial Relations*, Vol. 51, Issue 4, pp. 874-891, October.

⁸⁷ See Kevin Duncan. 2015. "The Effect of Federal Davis-Bacon and Disadvantaged Business Enterprise Regulations on Highway Maintenance Costs." *Industrial and Labor Relations Review*, Vol. 68, No. 1, pp. 212-237

 ⁸⁸ See Cihan Bilginsoy. 1999. "Labor Market Regulation on the Winner's Curse. *Economic Inquiry* 37: 387-400.
 ⁸⁹ See Lameck Onsarigo, Alan Atalah, Frank Manzo, and Kevin Duncan. 2017. "The Economic, Fiscal, and Social

Effects of Ohio's Prevailing Wage Law." Accessed at: <u>https://midwestepi.files.wordpress.com/2016/05/bowling-green-su-kent-state-ohio-pw-study-4-10-17.pdf</u>.

The Economic Impact of Applying Prevailing Wage Coverage to Currently Excluded Publicly-Subsidized Construction

The effect of prevailing wage requirements on contractor labor costs is uneven. For those contractors who pay union wage and benefit rates, or close to union rates, the minimum wage requirement has no impact or a very small effect on overall employee compensation. It is the contractor who pays substantially less than the union rate who faces significant changes in labor cost when confronted with prevailing wage requirements. The low-wage, low-benefit contractor must make substantial changes in labor productivity and overall construction efficiency to compete with other contractors whose labor costs are not significantly affected by the wage requirements. Some of the adjustments these contractors make likely involve lower profit margins. This is particularly the case if the payment of prevailing wages is not associated with increased construction costs as the preponderance of peer-reviewed research reveals. This identifies the basic conflict over prevailing wages: the trade-off between higher wages for construction workers and lower contractor profits.

There are winners and losers when it comes to prevailing wages. The publicly available data and peer-reviewed research indicates that without prevailing wages, construction worker incomes are lower.⁹⁰ This sets the stage for increased contractor profits.⁹¹ With the wage policy, wage income is higher and profits are lower. Important considerations for policy makers

⁹⁰ Duncan, Kevin and Lantsberg, Alex. 2015. "Building the Golden State: The Economic Impacts of California's Prevailing Wage Policy." Accessed at: <u>https://www.smartcitiesprevail.org/wp-content/uploads/sites/24/2017/03/SCP-Building-the-Golden-State-WEB.pdf</u>. See also Kessler, Daniel and Lawrence Katz. 2001. "Prevailing Wage Laws and Construction Labor Markets,"*Industrial and Labor Relations Review*, Vol. 54, No. 2, pp. 259-274.

⁹¹ According to recent research, the elasticity of construction labor demand is inelastic (-0.14). This means that total wage bill will decrease with a decrease in wage rates. A decrease in labor costs creates conditions for increased profit. The opposite is also the case. With inelastic labor demand, higher wages mean an increased overall labor costs and fewer funds available for profit. For the estimates of labor demand elasticities for construction and other industries see Maiti, Abhradeep, and Debarshi Indra. 2016. "Regional Variations in Labor Demand Elasticity: Evidence from U.S. Counties." *Journal of Regional Science*, Vol. 56, No. 4, pp. 635-658.

concern not only the effect of the wage policy on construction costs and training in the construction industry, but also the net impact on the economy associated with changes in wage and profit income. This section of the report measures the changes in wage and profit income associated with applying prevailing wage requirements to IDA-subsidized construction activity and the resulting change in state-level economic activity.⁹² These projects were selected because of the availability of information on project value and the share of value represented by construction activity. This type of detailed information is not publicly available for other development agencies that would also be affected by the proposed policy change such as Regional Economic Development Councils.⁹³

The impact is based on the best publicly available data, peer-reviewed research, and state-of-the-art economic impact software with the most recent data for New York State. Several steps are necessary to measure this impact. The most recent data on state-wide IDA projects is used to determine the amount of project value that consists of construction activity. Labor costs for IDA projects without prevailing wage requirements are compared to labor costs under the wage policy. Wage increases in construction, or any other industry are associated with reduced hours of labor demanded, the use of more productive labor, and the substitution of capital equipment for all grades of labor. These factors are considered to determine labor costs with and without the wage policy. As the preponderance of peer-reviewed research indicates, prevailing

⁹² By protecting local wage rates prevailing wage laws also protect work for local contractors and their employees in ways that increase economic activity. For an example see. Onsarigo, Lameck; Alan Atalah; Frank Manzo IV; and Kevin Duncan. (2017). *The Economic, Fiscal, and Social Effects of Ohio's Prevailing Wage Law*. Kent State University; Bowling Green State University; Midwest Economic Policy Institute; Colorado State University-Pueblo. Accessed at: https://illinoisepi.org/site/wp-content/themes/hollow/docs/prevailing-wage/bowling-green-su-kent-state-ohio-pw-study-4-10-17.pdf. Some IDAs have local hire requirements for subsidized construction work. For examples see the local hire polices for Erie and Orange counties accessed at: http://www.ecidany.com/news/article/current/2013/05/22/100158/the-erie-county-industrial-development-agency-has-adopted-a-policy-to-ensure-local-workers-are-hired-for-construction-jobs-on-agency-aided-projects and http://www.ocnyida.com/wp-content/uploads/01-12-2017-Labor-Policy-Adopted-2.pdf. To the extent these policies are enforceable, they mimic prevailing wage laws. Since local hire provisions have an impact similar to prevailing wage laws, this study examine the economic impact of prevailing wages on the distribution of wage and profit income.
⁹³ See "CFA Projects," Regional Economic Development Councils, New York State. Accessed at: https://regionalcouncils.ny.gov/cfa/projects.

wages are not associated with increased construction costs. If costs remain stable, and if efforts to increase labor productivity do not entirely offset higher prevailing wage rates, some of the adjustment will involve reduced profits for low-wage, low-benefit contractors.⁹⁴ This residual portion of IDA construction value is the basis of the economic impact.

Data Analysis

The Office of the New York State Comptroller (OSC) submitted its most recent performance report on IDAs in 2016.⁹⁵ In 2015, Comptroller DiNapoli successfully pursued legislation to improve the quality of the information that IDAs gather about the projects in their region. Additionally, the Comptroller Office worked with the Authorities Budget Office to create the Public Authority Reporting Information System (PARIS) that is a repository for IDA information that allows it to be maintained in a consistent manner. Consequently, this report contains the best publicly available information about IDA subsidized projects. IDAs are meant to advance the job opportunities, health, general prosperity and economic welfare of the people of New York State. IDAs may perform these functions by, among other things, acquiring and disposing of property, and by issuing debt. Property under the jurisdiction, control or supervision of an IDA is exempt from property taxes as well as mortgage recording taxes, and some purchases for IDA projects are eligible for exemption from State and local sales taxes. IDAs fund their operations by charging fees to businesses that obtain financial assistance for an IDA project⁹⁶

⁹⁴ There is no way to reliably measure and include additional profits that can be obtained through the use of change orders.
⁹⁵ Office of the New York State Comptroller, "Annual Performance Report on New York State's Industrial Development Agencies. Fiscal Year Ending 2014," June 2016. Accessed at: https://www.osc.state.ny.us/localgov/pubs/research/ida reports/2016/idaperformance.pdf.

⁹⁶ Ibid.

The OSC report is based on data for 2014 when there were 109 active IDAs across the state with 4,581 active development projects worth a total value of \$83.7 billion. Total project value is measured as the total value of the assets associated with the project. For example, if a company were to build a new factory in an area, the project value would be the value of construction and any equipment installed in the facility.

Manufacturing is the most common type of project receiving IDA subsidies in New York. Manufacturing accounted for 1,216 projects (27%) of all projects in 2014. The next most common category is "services" that accounts for 21% of projects (978). The services category covers a wide range of projects including construction of the Yankees and Mets stadiums, supermarket renovations, and mixed-use property development. Regardless of the type of project, construction activity, including renovations and additions, are often involved. Information from the Erie County IDA can be used to estimate the portion of a project that involves some kind of construction activity.⁹⁷ The data for Erie County are unique in that the anticipated value of manufacturing, commercial, and housing projects, etc. is divided into equipment purchases, soft costs (architectural and engineering costs) land acquisition, and construction expenditures. An examination of manufacturing projects indicates that 53% of the total value of these projects involves construction activity. On the other hand, 78% of the total value for combined commercial, residential, and retail projects, etc. consisted of construction activity. The data from the Erie County IDA is used to determine the extent of state-wide IDA projects that would be affected by prevailing wage requirements, should the policy apply to these public-private partnerships.

⁹⁷ See "Project Log," Erie County Industrial Development Agency. Accessed at: <u>http://www.ecidany.com/</u>.

Before making this determination it is important to recognize that IDAs in Nassau, Rockland, and Suffolk already have prevailing wage requirements for subsidized work.⁹⁸ While the policy for the Rockland County IDA applies to any and all construction, the policies for IDAs in Nassau and Suffolk counties apply to construction projects exceeding \$5 million. A \$5 million value threshold effectively excludes projects in Nassau and Suffolk counties from prevailing wage coverage.

The first step in determining the portion of state-wide IDA projects that involve construction activity, and would be affected by prevailing wage requirements, is to delete the value for projects in Rockland County. According to the 2016 OSC report, the total project value for Rockland County was approximately \$1.4 billion in 2014. Therefore, the state-wide value of \$83.7 billion in 2014, minus the value for Rockland County is \$82.3 billion. The data from the Erie County IDA can be used to determine how much of this net project value consists of construction. Taking into consideration the distribution of types of projects (manufacturing, commercial, etc.) and differences in the portion of projects that involve construction activity, approximately 72.7% (\$59.8 billion) in net project value involves construction activity.⁹⁹ Adjusting this figure by the most recent construction cost index available from the Bureau of Labor Statistics indicates that, in 2017 dollars, the total value of state-wide IDA projects that

⁹⁸ For the Nassau county IDA prevailing wage minimum threshold value requirement see: <u>http://nida and prevailing</u> <u>wageassauida.org/wp-content/uploads/2017/08/38 PREV%20WAGE%20POLICY%20NCIDA2017.pdf</u>. For the Suffolk County value threshold requirement see:

http://www.suffolkida.org/gallery/editor/file/IDA Applications/SC IDA Construction Wage Policy.pdf. According to the Executive Director of Rockland County IDA, if a subsidized projects involve construction, prevailing wages are required and there is no minimum threshold value.

⁹⁹ For example, weighting is based on manufacturing representing 27% of all projects (based on the 2016 OSC report) and 52% of manufacturing project value involves construction (based on data from the Erie County IDA). A similar process is used for commercial, residential, etc., projects. The value of the 384 construction projects identified in the OSC report are assigned a 100% construction weight.

consisted of construction was \$63.4 billion.¹⁰⁰ According to data from the U.S Census Bureau's *Economic Census of Construction*, labor costs (wages and benefits) represent 23.9% of total construction costs in New York State. The percentage is based on the average for aggregated construction types (commercial, residential, specialty trades, etc.) and is slightly above the national average of 23%.¹⁰¹ Using the percentage for New York indicates that approximately \$15.2 billion of total project construction value represents labor costs (\$63.4 billion x 23.9%).

IDA Project Labor Costs with and without Prevailing Wage Regulations

According to information obtained from Northeast Regional Council of Carpenters, participation in IDA-subsidized construction activity by contractors who are signatories to collective bargaining agreements participation in IDA projects is uneven across the state and typically low. As a consequence, construction workers on these projects typically earn open shop wages and benefits. Since prevailing wage and benefits are based on collective bargaining rates, information on union rates is readily available. What is more difficult to determine are open shop rates of pay since these data are not publicly available. What is important is the compensation paid to trades workers who are employed on the typical IDA project. According to data from the Erie County IDA, most subsidized construction work involves renovations and additions to existing structures. Based on feedback from construction industry professionals, the trades that are typically involved in this kind of work include carpenters, electricians, plumbers, laborers, masons, sheet metal workers and painters. An examination of several sources suggests that nonunion construction workers earn approximately 85% of the average prevailing wage rate

¹⁰⁰ Adjusted by the year-to-date for November with the construction price index obtained from the Federal Reserve Bank of St. Louis, "Producer Price Index by Commodity for Final Demand: Construction," Accessed at: <u>https://fred.stlouisfed.org/series/PPIFDC</u>.

¹⁰¹ This is the best publicly information on construction labor costs available, despite that it is an average based on union and nonunion wage and benefit rates.

in New York.¹⁰² Other data indicate that open shop benefit rates are approximately 30% of average union/prevailing rates in New York.

Data for the state-wide prevailing wage and benefit rates, for the selected trades most likely to be involved in IDA-subsidized construction, are reported in Table 1 below.¹⁰³ These wage rates are used to estimate the corresponding open shop rates for the selected trades, based on the percentage differences described above. Hourly prevailing wage rates are relatively close to average wage rates in New York measured by the Occupational Employment Statistics (OES) available from the Bureau of Labor Statistics.¹⁰⁴ Differences in hourly prevailing wage rates, OES average rates, and estimated nonunion wages are relatively small compared to differences in voluntary fringe benefits. Union contractor benefits provide much more generous health insurance and retirement benefits than nonunion builders. These two benefits represent about 79% of total benefits offered to union workers.¹⁰⁵

¹⁰² ENR reports open shop wage and benefit rates by trade for New York and New Jersey in 2016 (see "Labor Gaps Bring Steady Pay Raises," ENR, 3Q Cost Report Labor. Accessed at https://www.enr.com/ext/resources/Issues/National Issues/2016/Oct-2016/10-Oct/ENR1010 QCR3.pdf. For the occupations used in the ENR study, open shop wage rates are approximately 70% of union/prevailing wage rates (benefits are about 22%). However, it is not clear if the ENR wage survey includes residential construction workers who typically have lower skills and earnings relative to those employed in industrial (manufacturing) construction that represents much of IDA projects. Indiana reports prevailing wage rates based on either collective bargaining agreements or nonunion rates obtained from the Associated Builders and Contractors. Marion County, with high unionization rates, indicates that open shop wage rates are 81% of union rates, benefits are about 38% (see Common Construction Wage Home, Indiana Department of Labor, accessed at: https://www.in.gov/dol/2723.htm. Duncan (2016) uses an algebraic method to determine nonunion rates, given union and prevailing rates and finds that nonunion workers earn approximately 88% of the union wage (see Duncan, Kevin. 2016. "The Wage Differential Method: Promising Construction Costs Savings with the Repeal or Weakening of Prevailing Wage Laws that Cannot be Delivered," September. Accessed at https://www.csupueblo.edu/hasanschool-of-business/ doc/kevin-duncan/wage-differential-method-critique-duncan-2016.pdf.). Additional benefit information was obtained from the U.S. Department of Labor, Bureau of Labor Statistics, "Employer Costs of Employee Compensation." Accessed at: https://www.bls.gov/news.release/ecec.toc.htm. This information for 2017 indicates that nonunion voluntary fringe benefits are about 30% of union rates.

¹⁰³ Average PW rates for all 57 counties, plus the City of New York. Prevailing wage rates for the period for 07/01/2017 - 06/30/2018 were obtained from New York State Department of Labor, "Article 8 Prevailing Wage Schedules." Accessed at: https://applications.labor.ny.gov/wpp/publicViewPWChanges.do?method=showIt#.

¹⁰⁴ Occupational Employment Statistics from May 2016. Accessed at: <u>https://www.bls.gov/oes/</u>.

¹⁰⁵ Based on 2015 data for carpenters obtained from the Empire Center study, Prevailing Waste, accessed at: https://www.empirecenter.org/wp-content/uploads/2017/04/PW-final.pdf.

Trade	Prevailing	OES	Open Shop	Prevailing	Open Shop
	Wage	Average	Wage	Benefits	Benefits
Carpenter	\$31.10	\$29.76	\$26.43	\$22.65	\$6.80
Electrician	\$36.37	\$35.10	\$30.91	\$25.30	\$7.60
Plumber	\$36.95	\$36.90	\$31.41	\$25.51	\$7.65
Laborer	\$27.03	\$23.11	\$22.98	\$21.64	\$6.50
Brick Mason	\$34.27	\$35.57	\$29.13	\$22.81	\$6.84
Sheet Metal	\$32.52	\$31.20	\$27.62	\$27.51	\$8.25
Painter	\$28.04	\$24.53	\$23.83	\$19.76	\$5.93
Weighted	\$31.79	\$29.84	\$27.02	\$23.49	\$7.05
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 Table 1. Average New York State Prevailing Wage and Benefits Compared to Occupation

 Employment Wages, and Estimated Open Shop Wage Rates.

Sources: "Article 8 Prevailing Wage Schedules for 07/01/2017 - 06/30/2018," York State Department of Labor Accessed at: <u>https://applications.labor.ny.gov/wpp/publicViewPWChanges.do?method=showIt#</u> and Occupational Employment Statistics, Bureau of Labor Statistics, U.S. Department of Labor accessed <u>https://www.bls.gov/oes/</u>.

These wage and benefit data are for the selected trades are weighted for the proportion of work each trade is typically employed.¹⁰⁶ The total package under the weighted average union rate is approximately \$55.30 (\$31.79 in wages and \$23.49 in benefits) and about \$34.00 (\$27.02 in wages and \$7.05 in benefits) for open shop workers. This hourly wage information can be used to determine the number of hours needed to complete \$63.4 billion in IDA construction work if labor costs on these projects in \$15.2 billion.¹⁰⁷

If nonunion rate is 34.00 per hour, approximately 447,000 hours are needed to complete this work (447,000 hours = 15.2 billion / 34.00 per hour). If prevailing wages were required on these projects, the applicable rate would be approximately 55.30 per hour. The increase in the wages paid to construction workers would stimulate changes that would affect the number of

 ¹⁰⁶ Based on hours worked for these trades on renovation projects obtained from the Northeast Regional Council of Carpenters and on employment by trade reported by the Occupational Employment Statistics for New York, accessed at https://www.bls.gov/oes/.
 ¹⁰⁷ The wage and benefit comparisons do not take into account the use of lower paid helpers on the nonunion side and the use of

¹⁰⁷ The wage and benefit comparisons do not take into account the use of lower paid helpers on the nonunion side and the use of apprentices on the union side. Nonunion helpers earn significantly less than nonunion journeyworkers while apprentices are employed at fixed ratios relative to journeyworkers and earn reduced wages depending on their progress through the training program. Since the use of helpers likely reduces labor costs by more than the use of apprentices, the wage comparisons are likely to be too small and contribute to a relatively smaller, more conservative economic impact.

hours needed to complete the project. Construction labor demand, like the demand for other types of labor is downward sloping, meaning that an increase in wage rates is associated with a decrease in hours of labor demanded. Also, peer-reviewed research indicates that when wages increase in the construction industry, contractors take steps to increase the efficiency of construction by using more skilled workers and capital equipment.¹⁰⁸ After all of these changes are made, hours needed to complete \$63.4 billion in IDA construction projects would decrease to approximately 313 hours. With total hour prevailing wage compensation of \$55.30 per hour, labor costs would rise to \$17.3 billion dollars (from \$15.2 billion with the open shop rate of \$34.00).

The \$2.1 billion difference (\$17.3 billion - \$15.2 billion) represents the increase in labor costs that have not been adjusted away.¹⁰⁹ Since the preponderance of research indicates that

¹⁰⁸ When wages increase in construction, or any other industry, hours worked demanded will decrease. For example, recent research indicates that when wages in the construction industry increase by 1%, labor demand decreases by 0.14% (see Maiti, Abhradeep, and Debarshi Indra. 2016. "Regional Variations in Labor Demand Elasticity: Evidence from U.S. Counties." Journal of Regional Science, Vol. 56, No. 4, pp. 635-658). This low elasticity of labor demand is consistent with labor costs equal to a low percent of total construction costs. Regardless, this elasticity suggests that if wages increase from \$34.00 to \$55.30 (62%), demand for hours of work will decreased by approximately 8.7%. This means that with high wage rates, the hours of work would decrease from 447,000 to about 408,000 hours. Additionally, when wages rise in construction or any other industry, employers take steps to increase productivity to offset, at least partially, the cost effects of the increased wages. For example, skilled workers replace unskilled workers and capital equipment replaces all grades of labor (see Balistreri, Edward; Christine McDaniel; and Eina Vivian Wong. (2003). "An Estimation of U.S. Industry-Level Capital-Labor Substitution Elasticities: Support for Cobb-Douglas," The North American Journal of Economics and Finance, 14: 343-356 and Blankenau, William and Steven Cassou. (2011). "Industry Differences in the Elasticity of Substitution and Rate of Biased Technological Change between Skilled and Unskilled Labor," Applied Economics, 43: 3129-3142). The data needed to make adjustments to labor and capital equipment is not available for the type of projects used in this study. However, Duncan, Philips, and Prus (2009) report with the introduction of prevailing wage regulations in British Columbia, the inefficiency of construction increased by approximately 8.6 percentage points. However, for projects covered by the extension of the policy 17 months later, construction inefficiency decreased by about 31.8 percentage points. The net effect of these productivity changes in about 23.2% decrease in construction inefficiency (31.8 - 8.6). At the time of the British Columbian policy, prevailing wages were 119% of nonunion hourly wage (see Duncan, Philips and Prus 2014). The data reported in Table 4 (above) suggests that union wages are approximately 118%. Consequently, the effect of introducing prevailing wages on the efficiency of IDA-subsidized construction should be similar. Assuming that the net decrease in construction inefficiency applies to labor hours worked, the 23% net change is associated with a reduction in hours worked from 408,000 hours to 313,000 hours. With all of the adjustments associated with the switch to prevailing wages, labor costs with prevailing wages is approximately \$17.3 billion (\$55.3 x 313,000 hours) versus \$15.2 billion (\$34.00 x 447,000 hours). ¹⁰⁹ Based on the midpoint between \$15.2 billion and \$17.3 billion, the percent change in construction worker income and

¹⁰⁹ Based on the midpoint between \$15.2 billion and \$17.3 billion, the percent change in construction worker income and voluntary benefits (\$2.1 billion) attributed to the wage policy is approximately 13% (\$2.1 billion / \$16.25 billion). This is slightly below the combined decrease in construction worker income and voluntary benefits associated with prevailing wage repeal reported in a recent study. The decrease in combined income and voluntary benefit ranges between 13.1% and 20.2%. See Ari Fenn, Zhi Li, Gabriel Pleites, Chimedlkham Zorigtbaatar , and Peter Philips. 2018. "The Effect of Prevailing Wage Repeals on Construction Worker Incomes and Benefits," Public Works and Management, DOI:10.1177/1087724X18758340, p. 1-19.

prevailing wage laws are not associated with increased construction costs, this additional increase in wage costs is offset by a corresponding decrease in contractor profit. The amount represents about 3.3% of the total \$63.4 billion in construction activity (\$2.1 billion divided by \$63.4 billion).

The IMPLAN Economic Impact Software

The impact of the wage/profit trade-off associated with the application of prevailing wage laws to IDA-subsidized construction projects can be measured using the IMPLAN economic impact software. This economic impact analysis is based on the multiplier, or ripple effect, associated with net effect of an increase in wage income and a corresponding decrease in contractor profit income on New York's economy. IMPLAN (IMpact analysis for PLANning) was originally developed by the U.S. Department of Agriculture to assist the Forest Service with land and resource management planning. The Minnesota IMPLAN Group (MIG) started work on the data-driven model in the mid-1980s at the University of Minnesota. The software was privatized in 1993 and made available for public use. The software contains an input-output model with data available at the zip-code, county, state, and national levels.

Input-output analysis measures the inter-industry relationships within an economy. Specifically, input-output analysis is a means of measuring the market transactions between businesses and between businesses and consumers. This framework allows for the examination of how a change in one sector affects the entire economy. In this way, input-output analysis is able to analyze the economic effects of policy alternatives by measuring the multiplier, or ripple effect, as an initial change in wage and profit income stimulates further changes in transactions

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between other businesses and households. The impact is measured in terms of changes in the level of economic activity, employment, and tax revenue within a region. The results reported in this study are based on the most recent IMPLAN data for state of New York (2016). IMPLAN deflators are used to adjust for changes in prices over time. The results are reported in 2018 dollars. The specific model is based on household income impacts as well as changes in health and retirement benefits associated with the extension of prevailing wages.

Economic Impact Results

Economic impact results are reported in Table 2. The extension of prevailing wage requirements to IDA construction activity would shift approximately \$2.1 billion in income from contractors to construction workers. The wage and benefit data reported in Table 1 suggests that fringe benefits represent 42% of the total package for workers earning prevailing wages (\$23.49/\$55.28) with wage income representing the remaining 58% (\$31.79/\$55.28). Benefits include contributions to health insurance and retirement pensions, but also include items related to income (vacation pay, etc.). Netting income-related items from benefits results in 62% of the total package allocated to construction worker income with approximately 38% of the package allocated to the package and retirement plans.¹¹⁰ Based on this distribution, \$1.3 billion (62%) of the \$2.1 billion of additional construction worker income. The remaining 38% (\$800 million) is allocated between health and retirement plans. The new income for construction workers comes at the cost of reduced contractor profit of \$2.1 billion.

¹¹⁰ Based on detailed breakdown of carpenter total package for 2015 reported in based on 2015 data for carpenters obtained from the Empire Center study, Prevailing Waste, accessed at: <u>https://www.empirecenter.org/wp-content/uploads/2017/04/PW-final.pdf</u>. The impact focuses on the change in income and voluntary benefits and does not include changes in required benefits (social security and Medicare, etc.).

Spending	Direct Spending	Economic	Employment	State and Local
Category	Change	Impact	Impact	Impact
Worker Income	\$1.3 billion	\$1.4 billion	8,220	\$102.4 million
Worker	\$800 million	\$1.5 billion	4,980	\$55.8 million
Benefits				
Contractor	-\$2.1 billion	-\$1.1 billion	-7,050	-\$85.5 million
Profit				
Total	\$0.00	\$1.8 billion	6,150	\$72.7 million

 Table 2. Economic Impact Results of Applying Prevailing Wage Coverage to Construction

 Subsidized by Industrial Development Agencies.

Source IMPLAN with 2016 data for New York State.

The IMPLAN software adjusts household income impacts for spending that leaks out of the region. The spending data that is the basis of the software indicates that higher income households spend more of their income than lower income households. The spending that remains in the region examined induces additional economic activity. For example, construction workers earn relatively lower incomes.¹¹¹ As a consequence, more of this income is spent in New York. When construction workers buy retail items and services, employment and income in these industries increases. This induces additional income or what is known as the ripple (multiplier) effect. The net result for the leakage and induced effects of the additional construction worker income of \$1.3 billion is a positive \$1.4 billion. Since contractor income is relatively higher, more of the \$2.1 billion in income is already spent outside of New York. The impact of the decrease in contractor income that remained in the state is -\$1.1 billion. Since New York has well-developed insurance and financial services industries much of the \$800 million in benefits remains in the state and stimulates an additional \$1.5 billion in economic activity. The overall impact of three components is \$1.8 billion. The corresponding net employment change is approximately more 6,200 jobs. With the payment of prevailing wages on

¹¹¹ Average construction worker earning in New York in 2017 were approximately \$65,000 on average according data reported by Ormiston, Russell, Belman, Dale, and Hinkel, Matt. 2017. "New York's Prevailing Wage Law A cost Benefit Analysis." Economic Policy Institute. Accessed at: <u>https://www.epi.org/publication/new-yorks-prevailing-wage-law-a-cost-benefit-analysis/</u>.

IDA-subsidized construction state and local tax revenue will increase by approximately \$73 million.

The overall economic impact is the sum of industry-level impacts. The employment and revenue for the top 10 industries in the state that would be most affected by the extension of prevailing wages are listed in Table 3. Since the largest impact component is related to health and insurance benefits, it is not surprising that different aspects of the financial services industries would benefit from the extension of prevailing wages. The increase in construction worker income would mean more spending on health services, restaurants, and retail. Additional economic activity would stimulate the real estate and wholesale trade industries. The industry-level impact reveals the economic development aspect of prevailing wages. The wage policy stimulates economic activity in industries that are not related to the construction industry.

Table 3. Top 10 Industries Affected by Applying Prevailing Wage Coverage toConstruction Subsidized by Industrial Development Agencies,by Employment and Sales Revenue.

Industry	Jobs	Sales Revenue
Funds and trusts	1,950	\$818. 7 million
Other financial investments	958	\$265.3 million
Hospitals	330	\$56.7 million
Real estate	308	\$75.6 million
Securities and brokerages	209	\$70.1 million
Full-service restaurants	162	\$10.1 million
Offices of physicians	127	\$18.5 million
Limited-service restaurants	116	\$12.5 million
Retail - Food and beverage stores	98	\$7.0 million

Source IMPLAN with 2016 data for New York State.

The economic impact of prevailing wage laws is consistent with wage-led approaches to economic growth.¹¹² According to this view, a shift from profit to wage income results in an

¹¹² For an example, see Stockhammer, Engelbert and Onaran, Oziem. 2013. "Wage-Led Growth: Theory, Evidence, Policy," Review of Keynesian Economics, Vol. 1, Issue 1, DOI: <u>http://dx.doi.org/10.4337/roke.2013.01.04</u>.

overall increase in demand because of differences in spending propensities. This increase in demand offsets any supply-side investment and profit decreases associated with increased wages.

The distribution of profit and wage income is significant to contractors and construction workers. However, the economic impact is relatively small. For example, the impact of \$1.8 billion represents approximately 0.1% of overall economic activity in New York.¹¹³ The economic impact of prevailing wages is small for the same reason that the preponderance of research finds that construction costs are not affected by the presence of the wage policy: construction worker labor costs are a low percent of total construction costs.

Prevailing Wages and Apprenticeship Training

In addition to the fundamental goal of protecting local wage rates from distortions associated with public construction procurement, prevailing wage laws also facilitate formal training in the industry. Construction is distinct from other industries in that the inherent instability of building activity creates strong disincentives for employers and employees to invest in a highly skilled, efficient, and safe workforce. Due to fluctuations in seasons and economic activity, construction is the most unstable sector of New York's economy. Much of construction is outdoor activity and as a result, construction employment varies with the season. For example, comparing employment during the four peak summer months to the slowest four winter months indicates that construction employment decreased by 10.1% in New York over the 2016-2017 period.¹¹⁴ This rate outpaced employment fluctuations in other seasonally-sensitive industries

¹¹³ According to the Bureau of Economic Analysis, New York State's 2016 GDP was approximately \$1.5 trillion. In 2016. The IMPLAN impact reported above is based on output and sales revenue. GPD is based on value added and IMPLAN impact based on value added is \$1.1 billion or 0.07% of GDP. See "Regional Economic Accounts," Bureau of Economic Analysis, U.S. Department of Commerce. Accessed at: <u>https://www.bea.gov/regional/</u>.

¹¹⁴ These data are for all blue and white collar employees in the industry. The peak months in construction employment are typically June-September across the nation. December-March is marked by the lowest levels of employment. Data obtained from

such as New York's leisure, hospitality, and retail trade industries where employment decreased by 9.3% over the same period.¹¹⁵ The construction industry was particularly hard-hit by the Great Recession. New York's construction peaked in 2008 with 359,964 blue and white-collar employees. By 2010, employment in the industry decreased by 15.1% to 305,601 jobs. Over this same period, total employment in the state decreased by 3.6%.

The end result of instability in the construction industry is a loose attachment between contractors and their employees. When work is available, contractors take on additional workers, but typically shed employees when a project is completed, the season comes to an end, or the economy slows. As a consequence, there is little incentive for contractors to incur the expenses associated with training. There is no guarantee that the trained worker will be retained and it is likely that at some point a trained employee may work for a competing contractor. From the worker's perspective, there is also little incentive to incur the costs of training due to intermittent spells of unemployment between projects, transitions to work in other industries, and seasonal layoffs.¹¹⁶ Economic fluctuations exacerbate the training problem, with downturns resulting in fewer jobs for trainable young people followed by a shortage of skilled workers when the economy expands. The industry is currently experiencing a skilled labor shortage in construction with 60% of surveyed contractors reporting difficulty finding skilled workers during

the Quarterly Census of Wages and Employment of the Bureau of Labor Statistics, U.S. Department of Labor. Accessed at: http://www.bls.gov/cew/.

¹¹⁵ Peak employment in the leisure and hospitality industry typically occurs between May and August with the lowest employment between November-February. Peak employment in the retail industry occurs between October and January with low months between February and March. See the Quarterly Census of Employment and Wages. Accessed at: http://www.bls.gov/cew/.

¹¹⁶ For a detailed explanation see Philips, Peter, "Dual Worlds: The Two Growth Paths in U.S. Construction," in Building Chaos: An International Comparison of the Effects of Deregulation on the Construction, (Peter Philips and Gerhard Bosch, eds.) Routledge Press, London, 2003.

the third quarter of 2017.¹¹⁷ This shortage is rooted in the instability of the industry and the attendant disincentive for workers or contractors to incur the cost of training.

The challenges associated with training workers exist alongside the need for a skilled labor force that can build customized projects. Unlike manufacturing where the product and the production process are uniform, the majority of construction "output" is not standardized. Outside of residential construction, the majority of building sites, designs, and logistics vary from project to project. Broadly trained craft workers are needed to adjust to the non-routine aspects of customized construction.

The industry has responded to the mismatch between strong disincentives to train and the need for a skilled, safe, and sustained workforce by creating formal apprenticeship training programs. Apprenticeships typically involve a mix of on-the-job training and in-class theoretical education that covers the basic and specialized skills of a particular craft (for carpenters, electricians, and plumbers, etc.).¹¹⁸ During the on-the-job component of training, the apprentice earns less than the fully-trained journeyworker.¹¹⁹ With this arrangement the cost of training workers is shared between the apprentice and the employers who are sponsoring the training. Accordingly, apprenticeship programs address the disincentives that discourage employers and workers from pursuing training. Upon successful completion of the program, the apprentice becomes a certified journeyworker. The program results in a relatively homogenous skilled workforce in an industry that is otherwise largely free of certifications that reveal worker quality.

 ¹¹⁷ See "As Hurricanes Maria and Jose Approach, Construction Industry Still Suffering from Labor Shortage." Fortune,
 September 18, 2017. Accessed at: <u>http://fortune.com/2017/09/18/hurricane-maria-hurricane-jose-construction-jobs/</u>
 ¹¹⁸ On-the-job training ranges between 6,000 to 8,000 hours (3-4 years) with in-class instruction ranging between 430 to 580

hours. See Bilginsoy, Cihan. 2003. "The Hazards of Training: Attrition and Retention in Construction Industry Apprenticeship Programs." *Industrial and Labor Relations Review*, Vol. 27, Issue 1, pp. 54-67.

¹¹⁹ Compensation varies with the program, but usually starts at 50% of the hourly rate for the corresponding journey worker and increases with progression through the training program. See Bilginsoy, Cihan. 2007. "Delivering Skills: Apprenticeship Program Sponsorship and Transition from Training." *Industrial Relations*, Vol. 46, No. 4, pp. 738-763.

The Office of Apprenticeships at the U.S. Department of Labor works in conjunction with approved State Apprenticeship Agencies to set basic standards for programs that meet federal requirements for formal apprenticeship and prevailing wage work. Within this framework, sponsors have freedom to determine program content, applicant qualifications, and other aspects of the program.¹²⁰ In the open shop (nonunion) segment of the construction industry, apprenticeship programs are sponsored by a single contractor or by groups of nonunion employers. These employers unilaterally determine program content, set entry requirements, select apprenticeships, and monitor trainee progress. In the unionized sector, apprenticeship training is jointly determined and managed by unions and contractors who are signatories to collective bargaining agreements.

In the open shop sector of New York's construction industry apprenticeship training is offered through independent contractors or groups of contractors involved in particular types of work (such as the Empire State Highway Contractors Association, Inc.).¹²¹ In addition the Associated Builders and Contractors, Inc. (ABC) provides training. This is the only broad-based construction association that provides open shop contractors with accredited related instruction to meet the requirements of state-approved programs.¹²² In the unionized segment of the state's construction industry, contractors who are signatories to collective bargaining agreements and unions jointly manage apprenticeship training for a trade.

¹²⁰ See "What is Registered Apprenticeship?" ApprenticeshipUSA, Employment and Training Administration, U.S. Department of Labor. Accessed at: <u>https://www.doleta.gov/OA/apprenticeship.cfm</u>.

 ¹²¹ For more information see "Apprentice Sponsor List," New York State Department of Labor. Accessed at: https://labor.ny.gov/apprenticeship/sponsor/index.shtm
 ¹²² See "Apprentice Related Instruction," Empire Chapter, Associated Builders and Contractors. Accessed at:

¹²² See "Apprentice Related Instruction," Empire Chapter, Associated Builders and Contractors. Accessed at: <u>http://www.abcnys.org/en-us/education/apprenticeship.aspx</u>. Associated Builders and Contractors is affiliated with the nonprofit Empire State Merit Apprenticeship Alliance to oversee training finances. See Merit Apprentice Alliance accessed at: <u>http://meritalliance.org/</u>.

Unionization differs in construction compared to other industries. Certification elections that require employers to bargain in good faith that characterize unionization in manufacturing are rare in the construction industry. Due to the instability of the industry another form of unionization developed where contractors choose to enter into collective bargaining agreements to share the cost of apprenticeship training and to have access to trained workers and flexible workforce that accommodates instability in the industry. Numerous jointly managed union-contractor training programs oversee apprenticeship training programs for specific trades in New York.

There are other significant differences between open shop and jointly managed, unioncontractor apprenticeship programs. Funding for training in jointly managed programs is financed by a "cents per hour" addition that is part of the total wage and benefit package negotiated with signatory contractors. These types of fees are rare in open shop training arrangements where sponsoring contractors pay for the cost of training directly. The important distinction is that, under the union system, the costs of training the next generation of workers is included in the project bid and is paid by the project owner. This is not the case under the "open shop" arrangement.¹²³ Also, nonunion training programs such as those offered by the Associated Builders and Contractors are characterized by task driven and modular training with a lower priority placed on the full-scope craft training characteristic of union-sponsored training programs.¹²⁴ Training is obligatory for all construction workers in the unionized sector where the rotation of trainees among different contractors increases exposure to multiple aspects of the

¹²³ See Construction Industry Institute. 2007. "Construction Industry Craft Training in the United States and Canada." Accessed at <u>http://ps.businesssocialinc.com/media/uploads/abceastflorida/craftstudy.pdf</u>

¹²⁴ See Associated Builders and Contractors, Inc. "Craft Training & Apprenticeship." Accessed at: <u>http://www.abc.org/en-us/educationtraining/crafttrainingapprenticeship.aspx</u> and See Vincent, Jeff. 2004. "Analysis of Construction Industry Apprenticeship Programs in Indiana." Accessed at:

trade. On the other hand, formal apprenticeship training is not mandatory in the open shop segment where arrangements to rotate trainees among different contractors are not common.¹²⁵

An extensive body of research reveals that jointly managed union-contractor apprenticeship programs differ with respect to overall enrollment and completion rates, enrollment and completion rates for female, minority, and veteran trainees, as well financial support compared to open shop training programs. For example, a 2016 study by Duncan and Manzo that includes an examination of Kentucky's apprenticeship programs over the 2008-2016 period finds that approximately 80% of apprentices were enrolled in joint union-contractor programs.¹²⁶ These programs in Kentucky have completion rates that are 35% higher than open shop programs. Completion rates in jointly managed programs were also higher for female, veteran, and African-American apprentices. Jointly managed programs in Kentucky offer a fullarray of training ranging from laborers to operating engineers. On the other hand, 79% of apprentices enrolled in open shop programs were pursing training as electricians.

A 2017 study of Ohio's prevailing wage law by Onsarigo, Atalah, Manzo, and Duncan also includes an analysis of the state's apprenticeship programs and finds that jointly managed programs were responsible for 83% of overall apprenticeship enrollment, 94% of female, and 88% of minority enrollment.¹²⁷ From 2004 to 2015 joint union-contractor programs had completion rates that were 21% higher than open shop programs. As was the case in Kentucky, open shop programs offer a limited range of training in Ohio with 47% of apprentices pursuing

¹²⁵ Cihan Bilginsoy. 2007. "Delivering Skills: Apprenticeship Program Sponsorship and Transition from Training." *Industrial Relations*, Vol. 46, No. 4, pp. 738-763.

 ¹²⁶ Duncan, Kevin and Frank Manzo IV. (2016). *The Economic, Fiscal, and Social Effects of Kentucky's Prevailing Wage Law*.
 Colorado State University-Pueblo; Midwest Economic Policy Institute. Accessed at: <u>https://illinoisepi.org/site/wp-content/themes/hollow/docs/prevailing-wage/kentucky-report-duncan-and-manzo-2016-final.pdf</u>.
 ¹²⁷ Onsarigo, Lameck; Alan Atalah; Frank Manzo IV; and Kevin Duncan. (2017). *The Economic, Fiscal, and Social Effects of*

¹²⁷ Onsarigo, Lameck; Alan Atalah; Frank Manzo IV; and Kevin Duncan. (2017). *The Economic, Fiscal, and Social Effects of Ohio's Prevailing Wage Law.* Kent State University; Bowling Green State University; Midwest Economic Policy Institute; Colorado State University-Pueblo. Accessed at: <u>https://illinoisepi.org/site/wp-content/themes/hollow/docs/prevailing-wage/bowling-green-su-kent-state-ohio-pw-study-4-10-17.pdf</u>.

training as electricians. The distribution for jointly managed programs is more varied with 19% of trainees in programs for electricians.

Other recent studies report that joint union-contractor programs provide the vast majority of human capital investment in the construction industry. A 2015 report by Philips examines apprenticeship programs in Indiana and finds that union programs were responsible for 94% of annual training expenditures. Open shop programs represented the remaining 6% of funding.¹²⁸ Philips' corresponding figures for Wisconsin were 95% and 5%, respectively.¹²⁹ Similarly, a 2016 study by Manzo and Bruno finds that joint union-contractor programs account for 99% of all privately-funded apprenticeship expenditures in Illinois.¹³⁰

Regulatory incentives to encourage training are not extensive in the U.S. construction industry. Prevailing wage laws play an important role in training by providing strong incentives for union and nonunion contractors to employ apprentices on covered projects. For example, under New York's prevailing wage law apprentices are paid as indicated by the approved program.¹³¹ Typically, apprentice wage rates are based on a fraction of the corresponding journey rate, starting as low as 50% and increasing with program progress. This wage savings creates a high demand for apprentices on public works projects that drives skill development for the entire construction industry. According to the *Economic Census of Construction*, the value of federal, state, and local construction represents 25.4% of the total value of building activity in

http://www.wisconsincontractorcoalition.com/application/files/9914/2889/7832/Wisconsin Report April 2015.pdf. ¹³⁰ Frank Manzo IV and Robert Bruno. 2016. "The Impact of Apprenticeship Programs in Illinois: An Analysis of Economic and Social Effects." Accessed at: https://illinoisepi.files.wordpress.com/2016/08/pcmr-ilepi-

 ¹²⁸ Philips, Peter. 2015. "Indiana's Common Construction Wage Law: and Economic Impact Analysis.: Accessed at: http://www.isbctc.org/Uploads/UploadedFiles/docs/Philips_Indiana_Report_January_2015.pdf.
 ¹²⁹ Peter Philips. 2015. "Wisconsin's Prevailing Wage Laws: An Economic Impact Analysis." Accessed at:

impactofapprenticeshipprograms newcover.pdf. ¹³¹ New York State Department of Labor ,"General Provisions of Laws Covering Workers on Public Work Contracts." Accessed at:

https://labor.ny.gov/workerprotection/publicwork/PDFs/Art.8General%20Provisions%20of%20Laws%20Covering%20Worker.pdf.

New York.¹³² The large percent of building activity covered by prevailing wage regulations in New York substantially increases the demand for apprentices. As a result, more resources are expended on training. The result is an increase in the number of skilled workers who are available for work on publicly- and privately-funded construction in New York.

Consequently, it is not surprising that research shows a strong connection between prevailing wage laws and training in the construction industry. For example, Cihan Bilginsoy finds that apprenticeship enrollments are from 6% to 8% higher in states with prevailing wage laws compared to states without the wage policy.¹³³ Bilginsoy also finds that apprentices in states with prevailing wage laws complete their on-the-job and classroom training at a faster rate than apprentices in states without the wage policy. This effect is strongest in states with stronger prevailing wage laws.¹³⁴

Since a lengthy process is required to obtain information from the New York State Department of Labor, this paper is not able to examine enrollment and completion rates as other studies have done. However, limited information is available on training assets and expenditures. Recent data are also available regarding demographic characteristics of apprentices enrolled in construction training programs in New York.

¹³² U. S. Census. (2012) (a). "Construction: Geographic Area Series: Detailed" Economic Census of Construction. U.S. Census Bureau. Accessed at:

https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_23A1&prodType=table. ¹³³ Cihan Bilginsoy. 2005. "Wage Regulation and Training: The Impact of State Prevailing Wage Laws on Apprenticeship," in Hamid Azari-Rad, Peter Philips and Mark J. Prus (eds.) *The Economics of Prevailing Wage Laws*, Aldershot, UK: Ashgate, pp.149-168. ¹³⁴ Armand Thieblot developed a classification system for state prevailing wage laws into weak, average, and strong polices.

¹³⁴ Armand Thieblot developed a classification system for state prevailing wage laws into weak, average, and strong polices. These are based on the contract value threshold that prevailing wages apply, the level of coverage at the municipal, county, or state level, the types of work/trades excluded, the determination of prevailing wage rates, and other item. See Thieblot, Armand. 1995. *State Prevailing Wage Laws: An Assessment at the Start of 1995*, Associated Building Contractors, Inc., Rosslyn, VA.

Apprenticeship programs typically establish nonprofit organizations to manage training finances.¹³⁵ As a consequence, information from the Internal Revenue Service (Form 990) can be used to gather financial information about programs.¹³⁶ To illustrate differences in training finances between open shop and joint union-contractor programs, data from the Associated Builders and Contractors program is compared to corresponding joint programs. This information is reported in Table 4 and is based on tax reporting information for either 2014 or 2015. The data indicate that according to IRS Form 990 data the nonprofit affiliated with the ABC training program reported revenue of approximately \$373,000, expenditures of approximately \$350,000, net assets of about \$149,000, and three employees for the 2015 tax filing. According to the nonprofit Merit Apprentices Alliance, these resources are used to offer apprenticeships in carpentry, operating engineer, skilled laborer, iron worker and cement finisher/mason trades.¹³⁷ Several joint union-contractor programs offer training in the same trades. The financial information for 11 of these programs is also reported in Table 4.

The joint union-contractor programs are located in the New York City area and in Albany, Monroe, and Tompkins counties. The data illustrate the disparity in training resources between open shop and joint projects. Even the smallest program (for laborers) greatly exceeds the assets and expenditures of the ABC program. The combined totals for the four labor union locals equals \$2.6 million in program revenue, \$2.3 million in expenditures, and \$6.9 million in net assets. The largest training resources are the combined Iron Worker Locals #40 and #361 with \$9.4 million in revenue, \$6.3 million in expenditures, and over \$41 million in net assets.

¹³⁵ The name of the training nonprofit or training trust must be known and this is often not the same as the name of the training program. This difference makes it difficult to search for nonprofits and to find comprehensive financial information. ¹³⁶ See ProPublica. (2017). "Search the IRS 990 Filings." Nonprofit Explorer. Accessed at: https://projects.propublica.org/nonprofits/.

See "Industry Resources & Affiliations", Merit Apprenticeship Alliance. Accessed at: http://meritalliance.org/aboutus/industry-resources-affiliations/.

The combined totals for these 11 programs equals \$23.5 million in revenue, \$18.0 million in expenditures, \$87.1 million in net assets, and 128 employees. The disparity between the ABC program and the 11 joint union-contractor programs is rooted in the cumulative effect of the cents per hour training fee that is added to the total compensation package of unionized construction workers.

Training Program	Apprenticeship	Training Fund	Training Program
Name (s)	Trades	Revenue, Expenses,	Employment*
		and Net Assets*	
Associated Builders	Carpenters, Operating	Revenue=\$373,015	3 Employees
and Contractors /	Engineers, Laborers,	Expenses =\$351,129	
Empire State Merit	Iron Workers, Cement	Assets=\$148,824	
Apprentice Alliance,	Finishers/Mason		
Inc.	Trades		
Empire State	Carpenters	Revenue=\$4.2 million	51 Employees
Carpenters		Expen.=\$4.2 million	
Apprenticeship		Assets=\$9.6 million	
Committee			
(Northeast Regional			
Council of			
Carpenters Union)			
Operating Engineers	Operating Engineers	Revenue=\$4.4 million	7 Employees
(Union Locals #117,		Expen.=\$3.0 million	
#14-14B)		Assets=\$21.2 million	
Laborers (Union	Laborers	Revenue=\$2.6 million	12 Employees
Locals #1298, #91,		Expen.=\$2.3 million	
#435, #785)		Assets=\$6.9 million	
Iron Workers	Iron Workers	Revenue=\$9.4 million	29 Employees
(Union Locals #40,		Expen.=\$6.3 million	
#361)		Assets=\$41.4 million	
Cement and Mason	Cement	Revenue=\$2.9 million	29 Employees
(Union Locals #20	Finishers/Mason	Expen.=\$2.2 million	
and NY & LI	Trades	Assets=\$8.0 million	
Bricklayers)			

 Table 4. Apprentice Program Revenue, Expenses, and Net Assets for Selected Open Shop and Joint Union-Contractor Training Programs.

Sources: Propublica, Nonprofit Explorer (<u>https://projects.propublica.org/nonprofits/</u>) and Apprenticeship Sponsor List, Department of Labor, State of New York (labor.ny.gov/apprenticeship/sponsor/index.shtm). Net assets are equal to total assets minus liabilities. * Based on 2014 or 2015 IRS Form 990.

Demographic information for apprentices enrolled in joint union-contractor and open shop training programs are reported in Table 5. This information was obtained from the New York Department of Labor and is based on information collected in August of 2016.¹³⁸ Specifically, the information was derived from the "affirmative action" letter the New York State Department of Labor sent to all registered apprenticeship programs associated with the building trades.¹³⁹ The information identifies the name and address of the training program, the training type (trade), and the number of minority and female apprentices enrolled in each program. The data reported in Table 5 indicates joint union-contractor programs account for virtually all minority and female enrollment in apprenticeship programs. While the share of joint programs varies by trade (from 65% for sheet metal to 100% for numerous other programs), joint programs represent about 77% of all building trades programs.¹⁴⁰ However, 97% of minority and 98% of female apprentices in New York State and enrolled in jointly managed programs. On the other hand, open shop programs represent about 23% of all programs and about 3% of minority and 2% of female apprenticeship enrollments. Furthermore, there is training in some trades that is only offered by joint programs. According to the data obtained from the New York State Department of Labor, there were no open shop apprenticeship programs for roofers, elevator/escalator constructors, boiler makers, and iron workers in 2016. As a consequence, joint union-contractor programs were responsible for all training and all training of minority and female apprentices in these trades. Even in trades where there is some mix of joint and open shop training programs, joint union-contractors sponsored programs account for all minority

¹³⁸ This information was derived from the "affirmative action" letter the New York State Department of Labor sent to all registered construction apprenticeship programs. The information was obtained by a Freedom of Information Request FOIA request by the New York State Building and Construction Trades Council.

¹³⁹ The information is based on the programs that responded. Presumably, this represents all training programs for the state's building trades.

¹⁴⁰ Based on the information obtained from the New York State Department of Labor, there were 175 jointly managed unioncontractor apprenticeship programs and 51 nonunion training programs as of August 16, 2016. At that time there were 4,275 minority and 804 female apprentices in jointly managed programs. There were 123 minority and 18 female apprentices enrolled in nonunion programs.

apprenticeship training in asbestos, cement, and bricklayer programs and for all female apprenticeship training in asbestos, sheet metal cement, plumber/pipefitter, bricklayer, and painter programs.

Table 5. Demographic Characteristics of Apprentices Enrolled in Joint Union-Contractor				
and Open Shop Training Programs, by Trade.				
Trade	Percent Joint	Percent Minority	Percent Female	
	Union-Contactor	Apprentices in	Apprentices in	
	Managed	Joint Union-	Joint Union-	

Traue	r er cent John	rercent wintority	r el cent remaie
	Union-Contactor	Apprentices in	Apprentices in
	Managed	Joint Union-	Joint Union-
	Apprenticeship	Contractor	Contractor
	Programs	Programs	Programs
Insulation/Asbestos	86%	100%	100%
Carpenters	56%	99%	96%
Laborers	83%	96%	97%
Sheet Metal	64%	97%	100%
Roofers	100%	100%	100%
Operating Engineer	75%	77%	95%
Cement	80%	100%	100%
Mason/Plasterer			
Elevator/Escalator	100%	100%	100%
Boiler Maker	100%	100%	100%
Iron Worker	100%	100%	100%
Pipefitter/ Plumber	71%	98%	100%
Bricklayer/Tile/Terrazzo	97%	100%	100%
Painter/Glazier/Drywall	95%	99%	100%
Taper			
Electrician	54%	92%	99%
Total	78%	97%	98%

Source: New York State Department of Labor.

It is also possible to use the information obtained from the New York State Department of Labor to determine demographic characteristics of the journey trades workers who are employed by the establishments (for open shop programs) and the number of journey workers belonging to each of the union locals. These data are reported in Table 6. Since the apprentices in open shop training programs do not necessarily maintain employment with the establishment after completing training, the data in the two tables need not be consistent. Similarly, the journey workers who are members of a union local may not have received their training from the local. So, the employments and apprenticeship data for joint programs may not be perfectly correlated. Regardless, the data reported in Table 3 indicate that joint union-contractor programs are responsible for the overwhelming majority of minority and female journey worker employment in the establishments and union locals that provide training. For employees employed by or associated with the establishments conducting the training, 98% of minority and 93% of female employees are associated with joint union-contractor programs.

Trade	Percent Joint	Percent Minority	Percent Female
	Union-Contactor	Apprentices in	Apprentices in
	Managed	Joint Union-	Joint Union-
	Apprenticeship	Contractor	Contractor
	Programs	Programs	Programs
Insulation/Asbestos	86%	95%	100%
Carpenters	56%	99%	93%
Laborers	83%	97%	90%
Sheet Metal	645	93%	100%
Roofers	100%	100%	100%
Operating Engineer	75%	94%	87%
Cement	80%	100%	100%
Mason/Plasterer			
Elevator/Escalator	100%	100%	100%
Boiler Maker	100%	100%	100%
Iron Worker	100%	100%	100%
Pipefitter/ Plumber	71%	99%	96%
Bricklayer/Tile/Terrazzo	97%	100%	100%
Painter/Glazier/Drywall	95%	99%	100%
Taper			
Electrician	54%	91%	98%
Total	78%	98%	93%

 Table 6. Demographic Characteristics of Apprentices Enrolled in Joint Union-Contractor

 and Open Shop Training Programs, by Trade.

Source: New York State Department of Labor.

¹⁴¹ Based on the information obtained from the New York State Department of Labor, there were 40,837 minority and 2,745 female journey workers employed through the unions and contractors involved with jointly managed training programs as of August 2016. At the same time there were 842 minority and 204 female journey workers employed by the nonunion contractors providing apprenticeship training.

Some claim that prevailing wage laws are motivated by construction union desires to limit employment to white, male construction workers. For example, in objecting to the extension of prevailing wage requirements to the construction of affordable housing in New York City, David Bernstein urged "... New York officials who care about promoting racial diversity need to stop supporting prevailing wage mandates, which only have the opposite effect of sanctioning the long-standing pattern of racial discrimination practiced by New York's construction unions."¹⁴² Bernstein's claims are not supported by the demographic information reported in tables 2 and 3 which provide substantial evidence to the contrary. Whatever past practice was, recent evidence indicates that construction unions are responsible for almost all minority and female apprenticeships and employment in New York's construction industry.¹⁴³ Rather than being excluded from joint union-contractor training programs, minority and female apprentices may select these programs because of greater inclusion of their groups, higher program quality, and the greater likelihood of program completion.

Some business and economic development groups call for changes and limitations to New York's prevailing wage policy.¹⁴⁴ These groups should keep in mind that a trained and skilled construction labor force stabilizes building costs over time. Prevailing wage laws support training in the construction industry by creating incentives for the use of apprentices. Joint union-contractor training programs in New York are responsible for the overwhelming

¹⁴² See "David E. Bernstein: The racism behind prevailing wage," Daily News Opinion by David E. Bernstein, January 25, 2016. Accessed at: http://www.nydailynews.com/opinion/david-e-bernstein-racism-behind-prevailing-wage-article-1.2506556. ¹⁴³ For a review of the academic and other research on the effect of prevailing wage laws on the racial composition of the

construction labor force see Duncan, Kevin and Russell Ormiston. (2017). Prevailing Wage Laws: What Do We Know? Institute for Construction Economics Research (ICERES). Accessed at: http://iceres.org/wp-content/uploads/2014/10/prevailing-wagereview-duncan-ormiston.pdf. ¹⁴⁴ See for examples "New York business groups pushing changes to wage law," Daily News, December 18, 2017. Accessed at:

http://www.nydailynews.com/news/politics/business-groups-pushing-costly-wage-law-article-1.3706108. See also,

[&]quot;Memorandum RE: A5498 (Bronson)/S.2975 (Murphy) regarding imposition of a prevailing wage mandate on economic development projects OPPOSE," New York State Economic Development Council, February 17, 2017. Accessed at: http://www.nysedc.org/wp-content/uploads/2017/02/021717-Bill-Memo-A.5498-Bronson-S.2975-Murphy.pdf.

preponderance of training resources and minority and female apprentices. As is the case in any industry, trained construction workers are more expensive than untrained workers. Since labor costs (wage and benefits) are about 24% of total construction costs in New York, any cost effect associated with the use of trained construction workers that is not offset by increased worker productivity is expected to be small. Claims to weaken New York's prevailing wage law are short-sighted and would harm the state's construction industry. On the other hand, applying prevailing wage coverage to previously excluded publicly-subsidized construction in New York would increase training resources, apprenticeship enrollments, and the supply of skilled construction workers.

Selected References

Atalah, Alan. (2013) (a). "Comparison of Union and Nonunion Bids on Ohio School Facilities Commission Construction Projects," *International Journal of Economics and Management Engineering*, 3(1): 29-35.

Atalah, Alan. (2013) (b). "Impact of Prevailing Wages on the Cost among the Various Construction Trades," *Journal of Civil Engineering and Architecture*, 7(4): 670-676.

Azari-Rad, Hamid; Peter Philips; and Mark Prus. (2003). "State Prevailing Wage Laws and School Construction Costs," *Industrial Relations*, 42(3): 445-457.

Azari-Rad, Hamid; Peter Philips; and Mark Prus. (2002). "Making Hay When It Rains: The Effect Prevailing Wage Regulations, Scale Economies, Seasonal, Cyclical and Local Business Patterns Have On School Construction Costs," *Journal of Education Finance*, 27: 997-1012.

Balistreri, Edward; Christine McDaniel; and Eina Vivian Wong. (2003). "An Estimation of U.S. Industry-Level Capital-Labor Substitution Elasticities: Support for Cobb-Douglas," *The North American Journal of Economics and Finance*, 14: 343-356.

Bilginsoy, Cihan. (2017). Presentation at the 19th Annual National Alliance for Fair Contracting (NAFC) Conference.

Bilginsoy, Cihan. (2005). Wage Regulation and Training: The Impact of State Prevailing Wage Laws on Apprenticeship." *The Economics of Prevailing Wage Laws*. Editors: Hamid Azari-Rad, Peter Philips, and Mark Prus. 149-168.

Bilginsoy, Cihan. (1999). "Labor Market Regulation and the Winner's Curse," *Economic Inquiry*, 37(3): 387-400.

Bilginsoy, Cihan and Peter Philips. (2000). "Prevailing Wage Regulations and School Construction Costs: Evidence from British Columbia," *Journal of Education Finance*, 24: 415-432.

Blankenau, William and Steven Cassou. (2011). "Industry Differences in the Elasticity of Substitution and Rate of Biased Technological Change between Skilled and Unskilled Labor," *Applied Economics*, 43: 3129-3142.

Center for Government Research, "Prevailing Wage in New York State," January 2008. Accessed at: <u>http://reports.cgr.org/details/1532</u>.

Duncan, Kevin. 2016. "The Wage Differential Method: Promising Construction Costs Savings with the Repeal or Weakening of Prevailing Wage Laws that Cannot be Delivered," September. Accessed at <u>https://www.csupueblo.edu/hasan-school-of-business/_doc/kevin-duncan/wage-differential-method-critique-duncan-2016.pdf</u>.

Duncan, Kevin. (2015) (a). "The Effect of Federal Davis-Bacon and Disadvantaged Business Enterprise Regulations on Highway Maintenance Costs," *Industrial and Labor Relations Review*, 68(1): 212-237.

Duncan, Kevin. (2015) (b). "Do Federal Davis-Bacon and Disadvantaged Business Enterprise Regulations Affect Aggressive Bidding? Evidence from Highway Procurement Auctions," *Journal of Public Procurement*, 15(3): 291-316.

Duncan, Kevin. (2011). *Economic, Fiscal and Social Impacts of Prevailing Wage in San Jose, California*. Working Partnerships USA; Colorado State University-Pueblo. Summarized in "Economic, Fiscal and Social Impacts of Prevailing Wage in San Jose, California," Economic Policy Brief, April 25, 2011. Accessed at: <u>http://wpusa.org/5-13-11%20prevailing_wage_brief.pdf</u>.

Duncan, Kevin and Lantsberg, Alex. 2015. "Building the Golden State: The Economic Impacts of California's Prevailing Wage Policy." Accessed at: <u>https://www.smartcitiesprevail.org/wp-content/uploads/sites/24/2017/03/SCP-Building-the-Golden-State-WEB.pdf</u>.

Duncan, Kevin and Alex Lantsberg. (2015). *How Weakening Wisconsin's Prevailing Wage Policy Would Affect Public Construction Costs and Economic Activity*. Colorado State University-Pueblo and Smart Cities Prevail. Accessed at: <u>http://www.faircontracting.org/wpcontent/uploads/2015/05/How-Weakening-Wisconsin%E2%80%99s-Prevailing-Wage-Policy-</u> Would-Affect-Public-Construction-Costs-and-Economic-Activity2.pdf.

Duncan, Kevin and Frank Manzo IV. (2016). *The Economic, Fiscal, and Social Effects of Kentucky's Prevailing Wage Law*. Colorado State University-Pueblo; Midwest Economic Policy Institute. Accessed at: <u>https://illinoisepi.org/site/wp-content/themes/hollow/docs/prevailing-wage/kentucky-report-duncan-and-manzo-2016-final.pdf</u>.

Duncan, Kevin and Russell Ormiston. (2017). *Prevailing Wage Laws: What Do We Know*? Institute for Construction Economics Research (ICERES). Accessed at: <u>http://iceres.org/wp-content/uploads/2014/10/prevailing-wage-review-duncan-ormiston.pdf</u>.

Duncan, Kevin; Peter Philips; and Mark Prus. (2014). "Prevailing Wage Regulations and School Construction Costs: Cumulative Evidence from British Columbia," *Industrial Relations*, 53(4): 593-616.

Duncan, Kevin; Peter Philips; and Mark Prus. (2012). "Using Stochastic Frontier Regression to Estimate the Construction Cost Efficiency of Prevailing Wage Laws," *Engineering, Construction and Architectural Management*, 19(3): 320-334.

Duncan, Kevin; Peter Philips; and Mark Prus. (2009). "The Effects of Prevailing Wage Regulations on Construction Efficiency in British Columbia," *International Journal of Construction Education and Research*, 5(2): 63-78.

Duncan, Kevin; Peter Philips; and Mark Prus. (2006). "Prevailing Wage Legislation and Public School Construction Efficiency: A Stochastic Frontier Approach," *Construction Management and Economics*, 6: 625-634.

Dunn, Sarah; John Quigley; and Larry Rosenthal. (2005). "The Effects of Prevailing Wage Regulations on the Cost of Low-Income Housing," *Industrial and Labor Relations Review*, 59(1): 141-157.

Fenn, Ari, Zhi Li, Gabriel Pleites, Chimedlkham Zorigtbaatar, and Peter Philips. 2018. "The Effect of Prevailing Wage Repeals on Construction Worker Incomes and Benefits," Public Works and Management, DOI:10.1177/1087724X18758340, p. 1-19.

Empire Center. 2017. "Prevailing Waste: New York's Costly Public Works Pay Mandate." Accessed at: <u>https://www.empirecenter.org/publications/prevailing-waste/</u>.

Federal Reserve Bank of St. Louis, "Producer Price Index by Commodity for Final Demand: Construction." Accessed at: <u>https://fred.stlouisfed.org/series/PPIFDC</u>.

IMPLAN Group LLC. (2017). IMPLAN System (data and software). Accessed at: <u>http://www.implan.com/</u>.

Juravich, Tom, Ablavsky, Essie, and Williams, Jake. 2015. "The Epidemic of Wage Theft in Residential Construction in Massachusetts," Labor Center, University of Massachusetts-Amherst. Accessed at: <u>https://www.umass.edu/lrrc/sites/default/files/Wage_Theft_Report.pdf</u>.

Kaboub, Fadhel, and Kelsay, Michael. (2014). "Do Prevailing Wage Laws Increase Total Construction Costs?" *Review of Keynesian Economics*, 2(2): 189-206.

Keller, Edward and William Hartman (2001). "Prevailing Wage Rates: The Effects on School Construction Costs, Levels of Taxation, and State Reimbursements," *Journal of Education Finance*, 27(2): 713-728.

Kessler, Daniel and Lawrence Katz. 2001. "Prevailing Wage Laws and Construction Labor Markets," *Industrial and Labor Relations Review*, Vol. 54, No. 2, pp. 259-274.

Kim, Jaewhan; Chang Kuo-Liang; and Peter Philips. (2012). "The Effect of Prevailing Wage Regulations on Contractor Bid Participation and Behavior: A Comparison of Palo Alto, California with Four Nearby Prevailing Wage Municipalities," *Industrial Relations*, 51(4): 874-891.

Kotler, Fred. (2018). "ILR Impact Brief – New York State Prevailing Wage Law: Defining Public Work." IRL School, Cornell University. Accessed at: <u>https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1060&context=briefs</u>. Leef, George. (2010). "Prevailing Wage Laws: Public Interest or Special Interest Legislation?" *Cato Journal*, 30(1): 137-154.

Littlehale, Scott. Forthcoming. "Revisiting the Cost of Developing New Subsidized Housing: The Relative Import of Construction Wage Standards and Nonprofit Development." *Berkeley Planning Journal*.

Manzo IV, Frank and Robert Bruno (2016). *The Impact of Apprenticeship Programs in Illinois: An Analysis of Economic and Social Effects*. Illinois Economic Policy Institute; University of Illinois at Urbana-Champaign. Accessed at: <u>https://illinoisepi.org/site/wp-</u> <u>content/themes/hollow/docs/wages-labor-standards/pcmr-ilepi-</u> <u>impactofapprenticeshipprograms_newcover.pdf</u>

Maiti, Abhradeep, and Debarshi Indra. 2016. "Regional Variations in Labor Demand Elasticity: Evidence from U.S. Counties." *Journal of Regional Science*, Vol. 56, No. 4, pp. 635-658.

New York State Assembly, "A05498 Summary." Accessed at: <u>http://assembly.state.ny.us/leg/?default_fld=&leg_video=&bn=A05498&term=2017&Summary</u> <u>=Y&Memo=Y&Text=Y</u>.

New York City Independent Budget Office. 2016. "The Impact of Prevailing Wage Requirements on Affordable Housing Construction in New York City," February. Accessed at: <u>http://www.ibo.nyc.ny.us/iboreports/the-impact-of-prevailing-wage-requirement-on-affordable-housing-construction-in-new-york-city.pdf</u>.

New York State Department of Labor, "Article 8 Prevailing Wage Schedules." Accessed at: https://applications.labor.ny.gov/wpp/publicViewPWChanges.do?method=showIt#.

New York State Department of Labor, "General Provisions of Laws Covering Workers on Public Work Contracts." Accessed at: https://labor.ny.gov/workerprotection/publicwork/PDFs/Art.8General%20Provisions%20of%20 Laws%20Covering%20Worker.pdf.

Office of the New York State Comptroller, "Annual Performance Report on New York State's Industrial Development Agencies. Fiscal Year Ending 2014," June 2016. Accessed at: <u>https://www.osc.state.ny.us/localgov/pubs/research/ida_reports/2016/idaperformance.pdf</u>.

Ormiston, Russell, Belman, Dale, and Hinkel, Matt. 2017. "New York's Prevailing Wage Law A cost Benefit Analysis." Economic Policy Institute. Accessed at: <u>https://www.epi.org/publication/new-yorks-prevailing-wage-law-a-cost-benefit-analysis/</u>.

Onsarigo, Lameck; Alan Atalah; Frank Manzo IV; and Kevin Duncan. (2017). *The Economic, Fiscal, and Social Effects of Ohio's Prevailing Wage Law.* Kent State University; Bowling Green State University; Midwest Economic Policy Institute; Colorado State University-Pueblo.

Accessed at: <u>https://illinoisepi.org/site/wp-content/themes/hollow/docs/prevailing-wage/bowling-green-su-kent-state-ohio-pw-study-4-10-17.pdf</u>.

Palm, Matthew and Deb Niemeier. (2017). "Does Placing Affordable Housing Near Rail Raise Development Costs? Evidence From California's Four Largest Metropolitan Planning Organizations," *Housing Policy Debate*, 1-19.

Philips, Peter. (2015) (a). *Indiana's Common Construction Wage Law: An Economic Impact Analysis*. University of Utah. Accessed at: https://illinoisepi.files.wordpress.com/2017/11/indiana-ccw-philips.pdf.

Philips, Peter. (2015) (b). *Wisconsin's Prevailing-Wage Law: An Economic Impact Analysis*. University of Utah. Accessed at:

http://www.wisconsincontractorcoalition.com/application/files/9914/2889/7832/Wisconsin_Repo rt_April_2015.pdf.

Philips, Peter. (2014). *Kentucky's Prevailing Wage Law: An Economic Impact Analysis*. University of Utah. Accessed at: <u>http://www.faircontracting.org/wp-</u>content/uploads/2014/02/Kentucky-Report-2014-Philips.pdf.

Philips, Peter. (2001). A Comparison of Public School Construction Costs: In Three Midwestern States that Have Changed Their Prevailing Wage Laws in the 1990s. University of Utah. Accessed at:

http://www.faircontracting.org/PDFs/prevailing_wages/Public_School%20Peter%20Phillips.pdf.

ProPublica. (2017). "Search the IRS 990 Filings." Nonprofit Explorer. Accessed at: <u>https://projects.propublica.org/nonprofits/</u>.

State of California, Department of Industrial Relations. "eCPR Search," Accessed at: <u>https://efiling.dir.ca.gov/eCPR/pages/search</u>.

U. S. Census. (2012) (a). "Construction: Geographic Area Series: Detailed" Economic Census of Construction. U.S. Census Bureau. Accessed at:

https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_U S_23A1&prodType=table.

U. S. Census. (2022) (b). "Summary Series: General Summary: Value of Construction Work for Location of Construction Work by Subsectors and Industries for U.S. and States: 2012." Economic Census of Construction. U.S. Census Bureau. Accessed at: <u>https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_U_S_23SG04&prodType=table</u>.

U.S. Department of Labor, Bureau of Labor Statistics, "Employer Costs of Employee Compensation. Accessed at: <u>https://www.bls.gov/news.release/ecec.toc.htm</u>.

Stockhammer, Engelbert and Onaran, Oziem. 2013. "Wage-Led Growth: Theory, Evidence, Policy," Review of Keynesian Economics, Vol. 1, Issue 1, DOI: http://dx.doi.org/10.4337/roke.2013.01.04.

Vincent, Jeffrey and Paavo Monkkonen. (2010). "The Impact of State Regulations on the Costs of Public School Construction," *Journal of Education Finance*, 35(4): 313-330.

Vitaliano, Donald. (2002). "An Econometric Assessment of the Economic Efficiency of State Departments of Transportation," *International Journal of Transportation Economics*, 29(2): 167-180.