Construction Procurement Policies That Address Health Insurance:

A Cost Analysis

David C. May, ScD

C. Jeffrey Waddoups, PhD

April 2010

A collaborative research project of the New Hampshire AFL-CIO and the New Hampshire State Building and Construction Trades Council

The research undertaken for this report was supported by a grant to New Hampshire AFL-CIO EAP Services, Inc. from

CPWR THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING

nhaflcioeap@comcast.net
57 School Street – 2nd Floor
Concord, New Hampshire 03301

Research for this report was funded by CPWR - The Center for Construction Research and Training, using grant OH008307 from the National Institute of Occupational Safety and Health (NIOSH).

The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH.

CPWR is a 501(c)(3) nonprofit research and training institution created by the Building and Construction Trades Department, AFL-CIO, and serves as the research arm of the BCTD.

CPWR provides safety and health research and information for the construction trades and industry. For more information, visit www.cpwr.com.

Table of Contents

Abstract

Responsible Contractor Policies (RCPs) are policies adopted by municipalities, school districts, or other entities that set certain minimum employment standards for bidding on construction work. RCPs have been suggested as a potential remedy for bidding practices that drive down wages, reduce health insurance and retirement security, discourage job skill training and competent safety programs, and inhibit community workforce inclusion. Although carefully controlled statistical studies do not exist on the impact of RCPs, critics assert that they add significantly to construction costs. Proponents counter that there is a real cost to taxpayers and communities and to construction quality for a failure to maintain such responsible contracting policies.

This study seeks to add empirical evidence to address the debate on this issue. Of specific focus during this study were procurement policies that sought to ensure workers on RCP-covered projects have a health insurance benefit.

The construction costs of elementary schools built in Ohio from 1997 to 2008 were obtained from F.W. Dodge data. Regression models of construction costs were developed using cost data, certain building characteristics, and whether the local school board had an RCP. The data set contained a total of 321 projects, 19 percent of which were built by a school board with an RCP.

Our results indicate that once variation in school characteristics and geographic location of schools are accounted for, RCPs generally have no statistically significant impact on final bid costs. In general, results suggest that RCPs tend to be found in metropolitan areas where construction costs are relatively more expensive than in suburban or rural areas, regardless of the adopted bidding policies. Thus it is likely that market conditions in the location generally drive costs rather than the presence of RCPs. Therefore, our study supports the idea that the benefits of adopting RCPs for school construction may be obtained without significantly raising costs for taxpayers.

Key Findings of this Study

1. Responsible contractor policies (RCPs) adopted by some school districts in Ohio require bidding contractors to offer health insurance, make payments to pension plans, maintain safety standards, participate in apprenticeship training, and participate in community workforce inclusion programs.

2. RCPs governing bidding practices for building elementary schools in Ohio are concentrated in four highly populated counties: Cuyahoga (Cleveland), Franklin (Columbus), Lucas (Toledo), and Hamilton (Cincinnati). Of 321 schools built between 1997 and 2008 in the sample, 19 percent (61 schools) were bid under an RCP.

3. The mean cost per square foot of elementary schools built in Ohio between 1997 and 2008 was $128.8/sq. ft. for schools built without an RCP and $150.1/sq. ft. for schools built with an RCP (the figures are computed using 2007 dollars). The higher cost per square foot of the RCP bid schools compared to the non-RCP is statistically significant *only if the location of the school is not considered*.

4. Using regression analysis to account for building characteristics, the year the building was constructed, and the location of the building (i.e. the county), the RCP effect is no longer statistically significant. Adding the location variables to the regression equation reduces the RCP effect to statistical insignificance.

5. When bid costs of schools requiring an RCP are compared with bid costs of schools not requiring an RCP *within the same county*, the difference remains statistically insignificant.

Introduction and Background

Responsible Contractor Policies (RCPs) are ordinances or policies adopted by municipalities, school districts, or other entities that set certain minimum compensation and other standards in bidding practices for construction work. RCPs enhance the definition of contractor "responsibility" by setting standards for pay, access to pensions, health insurance, and skill training, among other items. For example, such standards often include requirements for contractors to provide pensions and employment-based health insurance, to participate in state or federally-certified apprenticeship programs, to comply with residency and/or affirmative action requirements, to provide safety training (or to maintain a certain insurance modification rate),[1] to pay prevailing wages, and to contribute to employee retirement plans. RCPs may be established as actual bidding requirements or may be used as information in the deliberation process in considering who is a qualified contractor. RCPs act as an alternative to the "just take the lowest bid" mentality by refocusing instead on the lowest *responsible* bid and by factoring certain "community benefit" standards into the definition of "responsible bid."

Critics of RCPs argue that setting bidding standards for wages and other forms of compensation unnecessarily raises construction costs, which eventually will be borne by the taxpayer. Critics also claim that RCPs limit competition, expand administrative costs, and breach confidential proprietary information of bidding contractors. These arguments have been outlined by trade groups and in various legislative and municipal deliberations (Manchester City Clerk, 2003; NH General Court, 2006; Associated Building Contractors, 2009).

Proponents of RCPs argue that benefits to workers, communities, and the industry outweigh any extra costs that may be incurred. Because there are no formal studies assessing the impact of RCPs on outcomes in construction labor markets, we rely on related literature to delineate potential benefits. Benefits are often couched in terms of encouraging high-road employment practices. For example, one important aspect of high-road employment is the access to employment-based health insurance coverage for

[1] Provision 11 of the Ohio Facilities School Commission's model responsible bidder workforce standards (see Appendix A) requires an experience modification rating of 1.5 or lower, which indicates that the contractor has maintained a certain minimum level of safety experience on previous jobs.

workers and their families. Lack of such policies has been shown to impose external cost to communities. Waddoups (2003, 2005, and 2006), for example, shows how low-road employment adds considerably to uncompensated health care costs at safety net hospitals. Such costs are borne by the community in general through higher taxes and/or higher prices for health care than would otherwise be the case. The costs are also borne by uninsured workers through increased likelihood of financial devastation and poorer health outcomes.

Other benefits associated with high-road employment practices are greater access to retirement security because of pension and retirement benefits. Consider the case of prevailing wage laws (PWL), which are meant to have similar effects on employment outcomes as RCPs, and about which there has been a substantial amount of recent research. Price (2005) finds that pension coverage fell faster in states where prevailing wage laws were repealed than in states where they were kept. Another potential benefit of high-road employment practices accompanying PWLs is the support for registered apprenticeship and skills training. Bilginsoy (2005) finds that apprentices are more likely to finish their training in PWL states, which leaves the construction sector with a larger group of fully trained workers. Adopting PWLs as a high-road practice also increases the incidence of safety training and appears to improve safety outcomes. For example, Azari-Rad (2005) found that accident rates of construction workers are between 7 and 10 percent lower in PWL states compared to non-PWL states. By encouraging responsible bidding practices, similar benefits are proposed as a result of adopting RCPs.

Beyond the benefits of reduced external costs to the community, more health care and pension coverage, better skills training, and enhanced safety outcomes, RCP proponents suggest that higher skilled construction workers resulting from RCPs and other high-road employment practices increase productivity and work quality. Thus, RCP proponents argue that construction costs will *not* be significantly raised by requiring high-road compensation packages to be included in bids. Currently, however, there exists no systematic, carefully controlled study of the impact of RCPs on construction costs that could inform the debate.

The purpose of the present study is to add empirical content to the debate over

RCPs by addressing the extent to which they affect construction costs. We conduct the analysis by focusing on elementary school construction in Ohio between the years 1997-2008. Several factors make the case of Ohio fortuitous for the purpose of this project. First, a negative GAO report on Ohio's school facilities prompted an increase in school construction starting in 1997. The building boom in new schools means that the sample of new, relatively homogeneous, school construction projects in Ohio is quite large. Second, school construction was exempted from PWLs in Ohio in 1997, which allows us to assess the effects of RCPs on costs without the confounding effects of PWLs. Third, a number of prominent school districts adopted RCPs starting in 2002. The timing of the policies means that several locations had significant school construction both with and without an RCP in place, which adds to our ability to control for locational effects on costs. Fourth, by focusing on a relatively uniform type of construction, we are better able to control for costs associated with a project's complexity. This allows us to more specifically isolate the RCP effect from other effects that may otherwise remain unobserved and thus bias the estimates.

Our results indicate that once variation in school characteristics and geographic location of schools are accounted for, there is not sufficient evidence to conclude that Responsible Contractor Policies have a statistically significant impact on final bid costs.

Our results indicate that once variation in school characteristics and geographic location of schools are accounted for, there is not sufficient evidence to conclude that RCPs have a statistically significant impact on final bid costs. More specifically, in Cuyahoga, Franklin, Lucas and Hamilton Counties, there were enough observations to test for cost differences within an individual county itself. Similarly, the results indicate that in none of the individual counties did the RCP coefficient reach conventional levels of statistical significance (a p-value of .05). These results indicate that there is not sufficient evidence to conclude that RCPs raised construction costs within the four counties.

Construction Workers and Employment-Based Health Insurance

The requirement for employer-provided health insurance is arguably the most important and hotly-debated provision found in most RCPs. The controversy over access to health insurance in the United States has simmered for decades and came to a boil following the election of 2008. As health care-related issues, including cost, insurance coverage, the plight of the uninsured, and the role of government, have continued to command attention in the Congress and at the state level, the number of uninsured in the United States was estimated to be 52 million as of January 2009 (Holmes, Ricketts, & King, 2009). This figure is up from the last U.S. Census estimate of 45.7 million (15.3 percent) just two years earlier (DeNavas-Walt, Proctor, & Smith, 2007).

The lack of health insurance often leads to economic and personal hardship and also results in the shifting of health care costs elsewhere. Compared to their insured counterparts, the uninsured are at greater risk of both diminished health and increased economic adversity. The uninsured often delay treatment resulting in more serious and costly health conditions that can result in higher costs (Hadley, 2002). Further, illness and injury contribute to economic distress and are a major cause of personal bankruptcy, because morbidity often leads to both increased medical bills and loss of income. In 2001, for example, nearly 1.5 million American individuals or couples filed for bankruptcy. In one study, over half of those surveyed cited medical bills as a contributing cause, and over a quarter indicated that it was the specific cause of bankruptcy. A prior lapse of health insurance was a strong predictor of a medical cause of personal bankruptcy (Himmelstein, Warren, Thorne, & Woolhandler, 2005). Medical debt continues to grow as a national problem. A Commonwealth Fund Biennial Health Insurance Survey found that between 2005 and 2007, the proportion of working-age Americans with accumulated medical debt rose from 34 percent to 41percent (Doty, Collins, Rustgi, & Kriss, 2008).

Currently, most workers in the United States obtain their health insurance coverage from their employment. However, the cost of health insurance continues to rise. In 2008, the average annual premium for employer-sponsored health insurance was $4,704 for single coverage and $12,680 for family coverage. Of the latter amount, the average employer contribution was $9,325 with the employee making up the difference. Since 1999

the average cost of health premiums has risen 119 percent for family coverage. Not surprisingly, in the Survey of Employer-Sponsored Health Benefits the percent of firms providing health insurance has continued to drift downward from 69 percent in 1999 to 63 percent in 2008 as companies weigh the benefits against ever increasing costs (Claxton et al., 2008).

The lack of access to employer-based heath insurance is more severe in some sectors of the economy. Based on data from the Agency for Healthcare Research and Quality, the percent of private sector, full-time employees enrolled in an employment-based health insurance plan was 63 percent in 2006 (Agency for Healthcare Research and Quality, 2009a). This has been steadily decreasing since 2000. Construction workers have consistently been below the national average and fell below the 50 percent level in 2006 (Agency for Healthcare Research and Quality, 2009a) [see Table 1]. Data from the 2005 Current Population Survey tell a similar story with 58 percent of wage-and-salary workers in construction holding employment-based health insurance and 66 percent reporting some kind of health insurance (CPWR – The Center for Construction Research and Training, 2008, p. 26).

There have been a number of reasons cited for the low incidence of health insurance among construction workers. They include the prevalence of small employers in

Table 1: All private sector firms compared to construction sector firms: Percent of firms offering health insurance and percent of all full-time employees enrolled in employment-based health insurance. Data not available for 2007 (Agency for Healthcare Research and Quality 2009).

	Year	2000	2001	2002	2003	2004	2005	2006	2008
% Full-time Employees Enrolled	All Firms	68.2	66.2	66.3	66.1	65.3	64.8	63.1	64.2
	Construction Firms	53.6	53.7	51.4	52.3	51.6	50.8	48.1	52.5
% of Firms Offering Health Insurance	All Firms	59.3	58.3	57.2	56.2	55.1	56.3	55.8	56.4
	Construction Firms	47.1	48.5	46.8	45.2	43.9	44.2	44.4	42.3

the industry, seasonality, a higher incidence of part-time employment, and the prevalence of racial minorities in the construction workforce whose coverage by employment-based health insurance is underrepresented (CPWR – The Center for Construction and Training, 2008, p. 26). Employers in the construction trades consistently offer employment-based health insurance less frequently than those in many other economic sectors (see Table 1). Current Population Survey data shows 66 percent of workers in construction with health insurance compared to 87 and 83 percent in manufacturing and services, respectively (CPWR – The Center for Construction and Training, 2008, p. 26).

Construction employers who provide health insurance for their workers express the sentiment that they are harmed by the increasing prevalence of uninsured and underinsured workers. Specifically, this criticism indicates that construction employers who fail to provide health insurance are "free-riding" – improving their bottom line and their competitive-bidding position by shifting their workers' health care costs to hospitals providing uncompensated care and other community safety nets. This in turn shifts the cost onto existing premium payers (including "responsible" construction employers) and drives up the cost of health insurance for employers who provide a comprehensive health insurance benefit (Waddoups, 2005). The magnitude of the cost shift of uncompensated care and bad debt to premium payers can be substantial. In New Hampshire hospitals, this percentage amounted to 36% of the total cost-shifting (the remainder being Medicaid and Medicare). In 2006, uncompensated care/bad debt accounted for approximately $245 in additional premium costs for each covered person (Norton, 2008). Therefore, RCP proponents argue that there is indeed a direct cost to taxpayers and communities for a construction contractor's (and any other employer's) failure to provide a workforce health insurance benefit and, conversely, that specific community economic benefit is derived from construction bidding policies requiring contractor-provided health insurance.

Previous Research on Construction Costs

In spite of the benefits to individual workers and the probable benefits to the community, opponents of RCPs argue that such policies add to construction costs. To the

authors' knowledge, there has been no systematic quantitative research specifically measuring RCPs' impact on costs. Because they sometimes support higher wages, increase the incidence of pensions and health insurance, and encourage investments in training, RCPs' impact on costs may be similar to that of PWLs and project labor agreements (PLAs). There have been a number of studies dealing with the economic impact of these policies (Azari-Rad, Philips, & Prus, 2003; Belman, Russell, William, & Kelso, 2007; Bilginsoy, Cihan & Philips, 2000; Duncan, Philips & Prus, 2009; Duncan & Prus, 2005; Dunn, Quigley & Rosenthal, 2005; Fraundorf, Farrell & Mason,1984; Thieblot, 1995).

Critics argue that PWLs and PLAs significantly increase construction costs on public projects at the expense of taxpayers. Proponents argue that they encourage the construction sector to develop along a high-wage, high-skill growth path. Furthermore, they suggest that enhanced training, substitution of skilled labor for less-skilled labor, and substitution of capital for labor largely mitigate the higher wage costs, which leaves the policies' impacts on costs negligible relative to the benefits in the form of a stable and skilled construction workforce. Similar arguments would logically apply to the impact of RCPs.

A problem in testing for the impact of policy interventions like PWLs, PLAs, and RCPs on construction costs is inability to control for all the relevant characteristics of construction projects that affect costs. If construction projects subject to the policies are systematically different than those not subject to them in ways that are not observable to the researcher, estimates of the policy effect may be biased. Ideally the researcher will be able to compare costs of projects that are exactly the same except for the policy intervention. For example, the study by Fraundorf, Farrell, and Mason (1984) is subject to this criticism because it compared public construction projects, which were subject to PWLs, to private projects, which were not. Differences in characteristics of public and private buildings not controlled for, but relevant to costs, likely biased the PWL effect upwards. Several studies have addressed the problem with unobserved heterogeneity by focusing only on school construction (Azari-Rad, et al., 2003; Belman, et al. 2007; Bilginsoy & Philips, 2000). Because schools are relatively homogeneous, focusing on them allows the

researcher to more carefully control for unobserved heterogeneity that has arguably biased cost estimates of PWLs and PLAs upward.

In the first study of prevailing wage laws and school construction costs, Bilginsoy and Philips (2000) examine the impact of British Columbia's Skill Development and Fair Wage Policy (SDFWP) of 1992, which is similar to a PWL in the U.S. Initially comparing the arithmetic means of construction costs before and after the policy without controls for project characteristics revealed a 16 percent higher cost among projects built under the SDFWP. After controlling for a number of factors including the construction business cycle, number of competitors, type of school, district dummies, and a time trend, they still found higher point estimates of costs under the policy, but the differences were not statistically significant. In another study clarifying the impact of SDFWP, Duncan and Prus (2005) used a larger sample of school projects and found that while cost inefficiencies were initially higher for schools built under SDFWP, within 17 months the inefficiencies had essentially disappeared. Such a finding suggests that the impact of prevailing wage policies does not stay constant over time, but rather contractors adjust to the new cost constraints. In similar work Azari-Rad, Philips and Prus (2003) modeled bid costs of school construction projects in the U.S. as a function of whether they were built in a state with a PWL. After controlling for other relevant factors, they failed to find evidence that schools built under PWLs were more costly.

Not all studies are as sanguine about the negligible impacts of PWLs on construction costs. Dunn, Quigley and Rosenthal (2005) for example, used data from California to find that that they increased public housing projects' total construction costs by between 9.5 and 35.9 percent depending on the specification of the model. The larger number does not appear reasonable given that labor costs are generally only about 30 percent of total construction costs. The authors speculate that perhaps higher costs associated with more detailed reporting and other administrative expenses are behind the higher estimate (Dunn, et al., 2005). Interestingly, Kessler and Katz (2001) find that repeal of state prevailing wage laws reduced wages of construction workers by a modest 4.5 percent, which appears inconsistent with Dunn, et al. (2005).

Like PWLs, PLAs also provide institutional support for higher wages and more fringe benefits to construction workers. PLAs are collectively bargained by property owners and building trades unions and require successful bidders, whether union or nonunion, to adhere to provisions such as union hiring hall referral and collectively-bargained compensation packages (Belman, et al., 2007). In this way union compensation structures are imposed on the non-union sector. To the extent that union compensation rates include higher wages, health insurance coverage, support for apprenticeship training, and contributions to retirement pensions that are often not provided for in nonunion settings, one may expect higher construction costs under PLAs. To test this idea Belman et al. (2007) gathered data on school construction projects in the New England area. Some of the projects were conducted under PLAs, while others were not. Although comparisons of mean construction costs in the PLA and non-PLA groups exhibited a statistically significant difference, once more detailed characteristics of the buildings and whether the project was located in the Boston school district were controlled for, the statistical significance evaporated. The study thus concludes that building schools under PLAs does not significantly raise costs.

Research Design Data and Methods

Ohio School Building Projects

In the present study, we examine the impact of RCPs on construction costs of elementary schools. Construction costs using elementary school building projects were studied because they are numerous, which allows for a relatively large sample size, and because they are relatively homogeneous, which keeps bias resulting from unobserved heterogeneity to a minimum.[2] More specifically, we focus on school construction projects in Ohio between the years 1997-2008 because there was an aggressive school building program following a 1996 U.S. General Accounting Office report, which ranked the quality of school facilities in Ohio poorly relative to the rest of the nation (General Accounting Office, 1996). In 1997 the Ohio Legislature established the Ohio School Facilities Commission (OSFC) to provide state funding, management oversight and technical

[2]We also included schools with students from grades K-8.

assistance, and at the same time legislators in Ohio exempted school districts from Ohio prevailing wage laws (Senate Bill102, 1997). This allowed the research design to examine the impact of RCPs without the confounding effect of a prevailing wage policy. In addition, the pace of building new schools began to increase in 2007 because of the infusion of Ohio's share of the Tobacco Settlement that was earmarked for the OSFC. The OSFC then provided a percentage of school construction funding for districts that qualified based on need. School funding is approved according to a school district ranking published by the Ohio Department of Education based on average per pupil valuation. School districts typically raise the remaining funds through tax levies. As of the end of fiscal 2007, there were 531 new school buildings occupied with another 306 in design or construction (Ohio School Facilities Commission [OSFC] 2007a, p.15).

Local Boards of Education (School Boards) have the discretion, subject to OSFC approval on projects they fund, to determine the contractor who is the lowest responsible bidder. RCPs were adopted by certain school districts in Ohio beginning in 2000. Approval of projects by the OSFC meant that the Commission could restrict the ability of boards of education to utilize certain provisions of their responsible contracting policies (as well as the desire of some to require prevailing wages). However, in February 2007, following the 2006 gubernatorial election, a newly appointed Commission, citing its commitment "to ensure that schools are built by responsible contractors employing a qualified workforce," voted to establish Model Responsible Bidder Requirements (MRBR) (OSFC, 2007b). School Districts were free to adopt these requirements in whole or in part, without further review or approval by the OSFC.

There were 17 points included in the MRBR. Boards could also adopt additional requirements, but as before these would be subject to the approval of the OSFC. Twelve requirements dealt with the financial health of the contractor, compliance with existing statutes, or previous experience of the bidder. For example, the MRBR required the use of experienced supervisors plus contractor certification that it has not been debarred from public contracts, that the bidder and its subcontractors are appropriately licensed, and that the bidder is in compliance with Ohio's Drug-Free Workplace requirements and workers'

compensation and unemployment laws. Additional OSFC MRBRs also included provisions for "a minimum health care medical plan" for employees, a safety provision (experience modification rating of 1.5 or less and an OSHA compliant safety program), contribution to a retirement program or pension, and use of experienced workers via an approved apprenticeship program (OSFC, 2007b).

The OSFC amended the MRBRs in July 2007 (see Resolution 07-98 on page 28) by dropping the OSHA program requirement (the OSFC separately required workers to be trained in either the OSHA 10 or 30 hour construction safety course) and by adding the ability of School Districts to require prevailing wages and/or a PLA (OSFC, 2007c).

F.W. Dodge Data

We obtained construction cost data on the Ohio school projects from the McGraw-Hill Construction Research & Analytics Corporation (also known as the F.W. Dodge Corporation), which provides information on accepted bid prices for construction projects nationwide. F.W. Dodge data has been used in a number of studies that have examined the cost effects of PWLs and PLAs (Azari-Rad et al., 2003; Bachman, Chisholm, Haughton, & Tuerck, 2003; Belman et al. 2007; Legislative Service Commission, 2002; Phillips, 2001; Prus, 1996 , 1999). Although the Dodge data observes accepted bid prices, they do not record final construction costs, which may vary from final costs because of change orders. Change orders during the course of construction often raise costs. For example, Belman et al. (2007) found that the average total bid cost as found in Dodge reports from a sample of schools in the Boston, MA area was 17.5 million (in 2002 dollars). After more careful investigation of final costs, the average final cost grew to 18.6 million.

Our data set contains information on newly constructed elementary schools built in the state of Ohio between 1997 and 2008.[3] Schools that combined elementary grades (K-5) with middle school grades (6-8) into single projects were also included in the sample. We excluded schools that were focused solely on middle school grades (6-8) and high schools. High schools are typically more expensive to build because of specialized

[3]A number of projects were bid in 2008, but were not scheduled to start until 2009.

classrooms, labs, athletic fields, and other amenities. We also excluded renovation projects from the sample.

Identifying Projects Built under RCPs

We gathered information on bidding policies of specific school districts from knowledgeable entities such as the state and local Building and Construction Trades Councils in Ohio, the Ohio School Facilities Commission (Columbus, OH) and the Ohio Construction Coalition (Toledo, OH). Using this information on suspected RCPs, we further investigated the bidding policies for each school district to confirm the information obtained from the knowledgeable entities. We judged a district to have adopted an RCP if it required or encouraged employment-based health insurance and had at least one other element, such as participation in state-certified apprenticeship programs, compliance with residency and/or affirmative action requirements, provisions for safety, or contributions to workers' pensions. Two school districts used PLAs to organize their construction projects, which were also included in the RCP group because the provisions in the PLA are much like those in a typical RCP. In addition, to be coded as an RCP project the specific project start date as recorded in the Dodge data had to follow the RCP implementation date. According to these criteria, we identified 61 RCP projects, two of which were built under PLAs, and 260 projects bid without RCPs.

To make sure that projects were not misclassified because of incomplete information from the knowledgeable entities listed above, we attempted to gather bidding policies from each of the remaining school districts. In all we gathered information on 78 percent of these projects and found that none of those initially identified as non-RCP met our criteria for an RCP. The remaining 22 percent of school districts were generally small and did not post minutes, policies, or other documents that would allow us definitively to ascertain their non-RCP status. Based on the experience with the 78 percent of districts for which information was available, we are relatively confident that the remaining 22 percent do not have RCP policies; however, to the extent that such projects may be misclassified as non-RCP, there may be some downward bias in the estimated RCP effect.

Econometric Model

To shed light on whether RCPs affect school construction costs, we model construction cost of a representative school project built in Ohio according to the following specification:

$$lnCost_i = \alpha + \beta_1 RCP_i + \beta_2 Square\ Feet_i + \beta_3 Building\ Characteristics_i + \lambda_i + \delta_i + \varepsilon_i,$$

where $lnCost_i$ represents a measure of construction costs, $Square\ Feet_i$ signifies the size of the building, $Building\ Characteristics_i$ is a vector of variables that controls for characteristics of a building, λ_i represents location fixed effects, and δ_i captures time fixed effects. The parameter of particular interest is β_1. A positive and statistically significant estimate of β_1 would suggest that projects built under RCPs are more costly than projects without such attributes, holding other observable factors constant.

Results

Ohio School RCP Characteristics

The final sample includes 321 construction projects, 61 of which were built under RCPs.[4] Table 2 contains information on where the RCP school projects are located geographically.

Table 2: Distribution of Elementary School Projects Built Under Responsible Contractor Policies – by County

County (Large City)	RCP	No RCP	Total
Cuyahoga (Cleveland)	15	7	22
Franklin (Columbus)	18	11	29
Lucas (Toledo)	8	16	24
Montgomery (Dayton)	0	23	23
Stark (Canton)	0	14	14
Summit (Akron)	0	16	16
Hamilton (Cincinnati)	18	13	31
Other County	2	160	162
Number in Sample	61	260	321

Source: F.W. Dodge bid price data on elementary schools in Ohio 1997-2008. The incidence of construction under responsible contractor policies gathered by the researchers.

Notice that almost all the school projects built under an RCP are located in Cuyahoga County (Cleveland), Franklin County (Columbus), Lucas County (Toledo), and Hamilton County (Cincinnati), which are relatively highly populated metropolitan areas. The results also indicate that some population centers [i.e. Montgomery (Dayton), Stark (Canton), and Summit (Akron) Counties] did not adopt RCPs within the time frame of our study.

[4] The 61 RCP projects involved the building of 66 schools.

The characteristics of RCPs by school district are provided in Table 3. Table 3 shows that most of the RCPs contain provisions for employer-based health insurance, pension contributions, safety training (or documentation of previously safe work practices), and skill development. Less often did they contain provisions for prevailing wages, workforce diversity, and PLAs.

Table 3: Selected RCP Requirements and Elementary School Construction

School District (year of policy)[8]	Number of RCP Schools (prior/ after 1/13/07)	Health Insurance	Retirement Benefits	Safety (mod rate or safety program)	Skilled Trade Personnel (participation in apprenticeship program)	Prevailing Wages	Small Business Opportunities (and/or disadvantaged / minority enterprises)	Workforce Diversity	Project Labor Agreement	Community (Workforce) Inclusion Plan
Akron (2005)	0/1						X	X	X (2008)	
Cincinnati (2002)	14/4	X	X	X			X	X		
Cleveland (2001 & 2007)	6/10	X	X	X	X	X		X		X
Columbus (2003)	12/7	X	X	X	X		X			X
Evergreen Local (2003)	1/0	X	X	X	X					X
Ironton (2007)	0/1								X	
Oregon City (2000)	1/0	X	X	X	X					X
South Point Local (2008)	0/2	X	X	X	X	X			X	
Toledo (2007)	0/7	X	X	X	X		X	X		X

[8] Other school districts also had RCPs but were not included in this database for a variety of reasons including the institution of the RCP was beyond the data cut-off date, the school building did not meet our elementary school definition (e.g., construction included 9th grade and above), or the Board revoked their RCP and/or PLA. Such districts include but are not limited to Buckeye Central Local School District, Dayton City School District, and Painesville City Local School District.

Table 4 contains descriptive statistics of the sample broken down by RCP status. RCP schools are somewhat smaller than the non-RCP counterparts (68,000 sq. ft. compared to 81,000 sq. ft.), but are also more costly at $150 per square foot compared to $129 per square foot. Thus, without consideration of other bias, the summary statistics suggest higher construction costs among RCP schools. Schools built under RCPs, however, are more likely to be multiple-story buildings than those not built under RCPs, which suggests that they are

more likely to be located in urban settings. Of the 61 school projects built under an RCP, only one was built in an Appalachian county. Most RCP projects were in urban areas, as were most non-RCP projects.[5]

Because obtaining funds through the OSFC may play a part in an RCP cost effect, we observe whether OSFC funding was used. In addition, the implementation of the policy changed significantly under the Strickland administration that began in January 2007, thus whether a school was built before or after the change in gubernatorial administrations from Taft to Strickland is also observed. The summary statistics show that 70 percent of these projects used OSFC money. The summary statistics also show that most RCP schools were built between the years 2004 and 2008. School construction without RCP coverage appears more evenly distributed over time, but still tends to be concentrated during the 2002-2008 period.

Table 4: Characteristics of Elementary Schools Built between 1997-2008 in Ohio According to Dodge Reports

	No Responsible Contractor Policy				Responsible Contractor Policy			
Variable	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Real Cost of Construction	10066.41	4681.82	472.82	38654.24	10085.09	2520.47	5608.94	19453.48
Cost Per Square Foot	128.79	21.73	51.25	184.70	150.06	19.00	98.40	198.72
Square Feet	81.05	42.16	4.50	300.00	68.15	18.71	42.90	128.50
One-Story Building	0.52	0.50	0.00	1.00	0.15	0.36	0.00	1.00
Two-Story Building	0.45	0.50	0.00	1.00	0.72	0.45	0.00	1.00
Three-Story Building	0.03	0.17	0.00	1.00	0.13	0.34	0.00	1.00
Gymnasium	0.42	0.49	0.00	1.00	0.51	0.50	0.00	1.00
Includes Grades 6-8	0.08	0.28	0.00	1.00	0.48	0.50	0.00	1.00
One School (in project)	0.94	0.24	0.00	1.00	0.95	0.22	0.00	1.00
Two Schools	0.05	0.22	0.00	1.00	0.05	0.22	0.00	1.00
Three Schools	0.01	0.09	0.00	1.00	0.00	0.00	0.00	0.00
Four Schools	0.00	0.06	0.00	1.00	0.00	0.00	0.00	0.00
OSFC Money Used	0.63	0.48	0.00	1.00	0.98	0.13	0.00	1.00
RCP Adopted during Strickland Admin.	0.00	0.00	0.00	0.00	0.46	0.50	0.00	1.00
Cuyahoga County (Cleveland)	0.03	0.16	0.00	1.00	0.25	0.43	0.00	1.00
Franklin County (Columbus)	0.04	0.20	0.00	1.00	0.30	0.46	0.00	1.00
Lucas County (Toledo)	0.06	0.24	0.00	1.00	0.13	0.34	0.00	1.00
Montgomery County (Dayton)	0.09	0.28	0.00	1.00	0.00	0.00	0.00	0.00
Stark County (Canton)	0.06	0.24	0.00	1.00	0.00	0.00	0.00	0.00
Summit County (Akron)	0.05	0.23	0.00	1.00	0.00	0.00	0.00	0.00
Hamilton County (Cincinnati)	0.05	0.22	0.00	1.00	0.30	0.46	0.00	1.00
County in Appalachia	0.13	0.33	0.00	1.00	0.02	0.13	0.00	1.00
Urban County	0.73	0.44	0.00	1.00	0.67	0.47	0.00	1.00
Other County	0.62	0.49	0.00	1.00	0.03	0.18	0.00	1.00
Year=1997	0.03	0.16	0.00	1.00	0.00	0.00	0.00	0.00
Year=1998	0.02	0.12	0.00	1.00	0.00	0.00	0.00	0.00
Year=1999	0.03	0.17	0.00	1.00	0.00	0.00	0.00	0.00
Year=2000	0.05	0.21	0.00	1.00	0.00	0.00	0.00	0.00
Year=2001	0.09	0.28	0.00	1.00	0.00	0.00	0.00	0.00
Year=2002	0.10	0.31	0.00	1.00	0.02	0.13	0.00	1.00
Year=2003	0.09	0.29	0.00	1.00	0.02	0.13	0.00	1.00
Year=2004	0.08	0.28	0.00	1.00	0.11	0.32	0.00	1.00
Year=2005	0.12	0.33	0.00	1.00	0.21	0.41	0.00	1.00
Year=2006	0.18	0.39	0.00	1.00	0.18	0.39	0.00	1.00
Year=2007	0.12	0.32	0.00	1.00	0.25	0.43	0.00	1.00
Year=2008	0.09	0.28	0.00	1.00	0.21	0.41	0.00	1.00
Number of Observations	260				61			

Source: F.W. Dodge bid price data on elementary schools in Ohio 1997-2008. The incidence of construction under responsible contractor policies gathered by the researchers.

[5]The designations of urban and Appalachian counties are the same as the designation used in studies conducted by the Legislative Service Commission's (2002) on the exemption of school construction from prevailing wage laws. The following are classified as urban counties: Allen, Belmont, Butler, Clark, Clermont, Crawford, Cuyahoga, Delaware, Fairfield, Franklin, Geauga, Greene, Hamilton, Lake, Licking, Lorain, Lucas, Madison, Mahoning, Medina, Miami, Montgomery, Pickaway, Portage, Richland, Stark, Summit, Trumbull, Warren, Wood. The following are classified as Appalachian counties: Adams, Athens, Belmont, Brown, Carroll, Clermont, Columbiana, Coshocton, Gallia, Guernsey, Harrison, Highland, Hocking, Holmes, Jackson, Jefferson, Lawrence, Meigs, Monroe, Morgan, Muskingum, Noble, Perry, Pike, Ross, Scioto, Tuscarawas, Vinton, and Washington.

Estimation Results

The first set of results located in Table 5 estimates the natural log of real bid cost. Costs are adjusted for inflation by using the consumer price index to reflect prices as they existed in 2007. The second set of results (located in Table 6) observes bid cost as the natural log of real cost per square foot. Although the parameter estimates in the two sets of results are similar and in many instances identical, the R-squared statistics naturally indicate a better fit to the data when the dependent variable is the natural log of real bid cost because of the dominance of the 'Square Feet' variable.

The first model presented in Table 5 (columns 1-2) controls for the size of the

Table 5: Parameter Estimates of Real Construction Costs: Ohio Elementary Schools Built between 1997-2008

	Model 1			Model 2			Model 3			Model 4			Model 5		
Variable	Coeff.		t stat.	Coeff.		t stat.	Coeff.		t stat.	Coeff.		t stat.	Coeff.		t stat.
Responsible Contractor Policy (RCP)	0.108	*	5.660	0.131	*	5.370	0.058		1.530	0.055		1.450	-0.071		-1.520
Natural Log of Square Feet	0.828	*	22.250	0.823	*	20.000	0.817	*	18.590	0.815	*	18.170	0.816	*	17.900
Two-Story Building	---		---	-0.032		-1.420	-0.042		-1.820	-0.042		-1.830	-0.043		-1.810
Three-Story Building	---		---	-0.036		-0.880	-0.054		-1.540	-0.054		-1.490	-0.052		-1.360
Gymnasium	---		---	-0.012		-0.580	-0.009		-0.420	-0.011		-0.520	-0.010		-0.470
Includes Grades 6-8	---		---	0.046		1.700	0.020		0.690	0.014		0.480	0.004		0.130
Two Schools	0.0428		1.13	0.054		1.360	0.049		1.240	0.053		1.340	0.058		1.490
Three Schools	0.1355	*	2.92	0.142	*	3.020	0.148	*	2.960	0.178	*	2.670	0.169	*	2.580
Four Schools	0.0662		0.99	0.059		0.820	0.076		1.010	0.123		1.280	0.112		1.150
OSFC Money Used	---		---	0.002		0.070	0.035		1.250	0.045		1.610	0.039		1.340
RCP Adopted during Strickland Admin.	---		---	-0.067		-1.670	-0.040		-1.080	-0.041		-1.090	-0.033		-0.940
Cuyahoga County (Cleveland)	---		---	---		---	0.087	*	2.110	0.077		1.770	0.071		1.310
Franklin County (Columbus)	---		---	---		---	0.047		0.860	0.033		0.580	0.030		0.330
Lucas County (Toledo)	---		---	---		---	-0.048		-1.190	-0.066		-1.500	-0.054		-1.070
Montgomery County (Dayton)	---		---	---		---	-0.008		-0.220	-0.021		-0.530	-0.014		-0.350
Stark County (Canton)	---		---	---		---	-0.068		-1.440	-0.084		-1.720	-0.083		-1.670
Summit County (Akron)	---		---	---		---	0.016		0.320	-0.001		-0.020	0.002		0.040
Hamilton County (Cincinnati)	---		---	---		---	0.124	*	3.150	0.138	*	3.070	0.110		1.810
County in Appalachia	---		---	---		---	---		---	-0.030		-0.730	-0.028		-0.690
Urban County	---		---	---		---	---		---	0.024		0.810	0.019		0.630
RCP*Cuyahoga	---		---	---		---	---		---	---		---	0.142		1.880
RCP*Franklin	---		---	---		---	---		---	---		---	0.133		1.270
RCP*Lucas	---		---	---		---	---		---	---		---	0.096		1.070
RCP*Hamilton	---		---	---		---	---		---	---		---	0.173	*	2.490
Year=1998	0.201		1.770	0.218		1.890	0.190		1.610	0.199		1.650	0.203		1.680
Year=1999	0.095		0.910	0.103		0.970	0.088		0.860	0.093		0.870	0.098		0.910
Year=2000	0.148		1.540	0.149		1.520	0.144		1.530	0.150		1.580	0.152		1.540
Year=2001	0.086		0.900	0.092		0.950	0.095		1.000	0.100		1.040	0.102		1.060
Year=2002	0.193	*	2.140	0.207	*	2.180	0.204	*	2.270	0.209	*	2.270	0.212	*	2.270
Year=2003	0.200	*	2.210	0.207	*	2.200	0.204	*	2.250	0.202	*	2.180	0.210	*	2.250
Year=2004	0.150		1.700	0.148		1.640	0.139		1.630	0.148		1.680	0.146	*	1.660
Year=2005	0.227	*	2.620	0.234	*	2.610	0.226	*	2.630	0.229	*	2.590	0.233	*	2.640
Year=2006	0.206	*	2.330	0.211	*	2.270	0.203	*	2.330	0.206	*	2.310	0.207	*	2.310
Year=2007	0.273	*	3.170	0.289	*	3.160	0.279	*	3.200	0.285	*	3.190	0.285	*	3.190
Year=2008	0.245	*	2.830	0.265	*	2.960	0.275	*	3.210	0.283	*	3.230	0.290	*	3.290
Constant	5.384	*	26.800	5.412	*	24.640	5.422	*	23.190	5.412	*	22.860	5.413	*	22.690
Number of Observations	321			321			321			321			321		
R Squared	0.8578			0.8613			0.8695			0.8706			0.8714		

Source: F.W. Dodge bid price data on elementary schools in Ohio 1997-2008. The incidence of construction under responsible contractor policies gathered by the researchers.

*Signifies statistical significance at .05 level or less.

building, whether the project was built under an RCP, the number of schools in a project, and time fixed-effects. The estimate on RCP is highly statistically significant and suggests that school construction under an RCP is correlated with 11.4 percent higher bid costs. The elasticity of cost with respect to square feet equals .83, which suggests that a 1 percent increase in square footage raises bid costs by an estimated .83 percent. However, the results for specification 1(i.e., Model 1), suggesting higher bid costs associated with RCPs likely suffer from omitted variable bias in which unobserved factors correlated with the existence of an RCP are also correlated with higher construction costs.

For example, if RCPs are more likely to be adopted for projects with

Table 6: Parameter Estimates of Real Construction Costs per Square Foot: Ohio Elementary Schools Built between 1997-2008

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variable	Coeff.	t stat.	Coeff.	t stat.	Coeff.	t stat.	Coeff.	t stat.	Coeff.	t stat.
Responsible Contractor Policy (RCP)	0.108 *	5.660	0.131 *	5.370	0.058	1.530	0.055	1.450	-0.071	-1.520
Natural Log of Square Feet	-0.172 *	-4.620	-0.177 *	-4.300	-0.183 *	-4.150	-0.185 *	-4.120	-0.184 *	-4.020
Two-Story Building	---	---	-0.032	-1.420	-0.042	-1.820	-0.042	-1.830	-0.043	-1.810
Three-Story Building	---	---	-0.036	-0.880	-0.054	-1.540	-0.054	-1.490	-0.052	-1.360
Gymnasium	---	---	-0.012	-0.580	-0.009	-0.420	-0.011	-0.520	-0.010	-0.470
Includes Grades 6-8	---	---	0.046	1.700	0.020	0.690	0.014	0.480	0.004	0.130
Two Schools	0.043	1.130	0.054	1.360	0.049	1.240	0.053	1.340	0.058	1.490
Three Schools	0.136 *	2.920	0.142 *	3.020	0.148 *	2.960	0.178 *	2.670	0.169 *	2.580
Four Schools	0.066	0.990	0.059	0.820	0.076	1.010	0.123	1.280	0.112	1.150
OSFC Money Used	---	---	0.002	0.070	0.035	1.250	0.045	1.610	0.039	1.340
RCP Adopted during Strickland Admin.	---	---	-0.067	-1.670	-0.040	-1.080	-0.041	-1.090	-0.033	-0.940
Cuyahoga County (Cleveland)	---	---	---	---	0.087 *	2.110	0.077	1.770	0.071	1.310
Franklin County (Columbus)	---	---	---	---	0.047	0.860	0.033	0.580	0.030	0.330
Lucas County (Toledo)	---	---	---	---	-0.048	-1.190	-0.066	-1.500	-0.054	-1.070
Montgomery County (Dayton)	---	---	---	---	-0.008	-0.220	-0.021	-0.530	-0.014	-0.350
Stark County (Canton)	---	---	---	---	-0.068	-1.440	-0.084	-1.720	-0.083	-1.670
Summit County (Akron)	---	---	---	---	0.016	0.320	-0.001	-0.020	0.002	0.040
Hamilton County (Cincinnati)	---	---	---	---	0.124 *	3.150	0.138 *	3.070	0.110	1.810
County in Appalachia	---	---	---	---	---	---	-0.030	-0.730	-0.028	-0.690
Urban County	---	---	---	---	---	---	0.024	0.810	0.019	0.630
RCP*Cuyahoga	---	---	---	---	---	---	---	---	0.142	1.880
RCP*Franklin	---	---	---	---	---	---	---	---	0.133	1.270
RCP*Lucas	---	---	---	---	---	---	---	---	0.096	1.070
RCP*Hamilton	---	---	---	---	---	---	---	---	0.173 *	2.490
Year=1998	0.201	1.770	0.218	1.890	0.190	1.610	0.203	1.680	0.203	1.680
Year=1999	0.095	0.910	0.103	0.970	0.088	0.860	0.098	0.910	0.098	0.910
Year=2000	0.148	1.540	0.149	1.520	0.144	1.530	0.152	1.540	0.152	1.540
Year=2001	0.086	0.900	0.092	0.950	0.095	1.000	0.102	1.060	0.102	1.060
Year=2002	0.193 *	2.140	0.207 *	2.180	0.204 *	2.270	0.212 *	2.270	0.212 *	2.270
Year=2003	0.200 *	2.210	0.207 *	2.200	0.204 *	2.250	0.210 *	2.250	0.210 *	2.250
Year=2004	0.150	1.700	0.148	1.640	0.139	1.630	0.146	1.660	0.146	1.660
Year=2005	0.227 *	2.620	0.234 *	2.610	0.226 *	2.630	0.233 *	2.640	0.233 *	2.640
Year=2006	0.206 *	2.330	0.211 *	2.270	0.203 *	2.330	0.207 *	2.310	0.207 *	2.310
Year=2007	0.273 *	3.170	0.289 *	3.160	0.279 *	3.200	0.285 *	3.190	0.285 *	3.190
Year=2008	0.245 *	2.830	0.265 *	2.960	0.275 *	3.210	0.290 *	3.290	0.290 *	3.290
Constant	5.384 *	26.800	5.412 *	24.640	5.422 *	23.190	5.413 *	22.690	5.413 *	22.690
Number of Observations	321		321		321		321		321	
R Squared	0.3357		0.3517		0.3902		0.3954		0.3991	

Source: F.W. Dodge bid price data on elementary schools in Ohio 1997-2008. The incidence of construction under responsible contractor policies gathered by the researchers.

*Signifies statistical significance at .05 level or less.

characteristics that raise bid costs, such as location within counties with large urban areas, and these characteristics are not controlled for, then the estimate on the RCP variable will be biased upward. Upward bias would cause the RCP effect to appear larger than it actually is. Specification 2 (columns 3-4) thus adds controls for whether the building is a two or three-story building and whether the bid included construction of a gymnasium. Although other more detailed characteristics are observed in the data (see for example Belman et al., (2007)), there were enough missing observations on such characteristics that it was implausible to add them as controls. The fact that our analysis focuses only on elementary schools, however, implicitly controls for many of the characteristics that could affect cost. Results in model 2 suggest that multiple stories may slightly reduce bid costs, but controlling for them does not materially affect the RCP estimate.

Specification 2 suggests that controlling for selected building characteristics does not change the RCP effect on construction costs. Does the same hold for location-fixed effects? Recall that RCPs are concentrated in four locations, Cuyahoga County (Cleveland area), Franklin County (Columbus area), Lucas County (Toledo area), and Hamilton County (Cincinnati area). If such areas are also locations where construction costs are high independent of RCPs, controlling for them should reduce the significance of the RCP variable. The estimation results of specifications 3 and 4 (columns 5-8), indeed suggest that controlling for location-fixed effects significantly alters the results on RCP costs. After controlling for location-fixed effects, the estimates remain positive, suggesting approximately 5 percent higher costs, but they are no longer statistically significant at conventional levels. Thus the higher costs appear mostly to be correlated to the fact that RCPs exist in high-cost locations and not to the RCPs themselves. Specification 4 contains additional controls for counties in urban areas more generally and counties in Appalachia. Neither of these estimates reaches statistical significance at conventional levels. We also tested for the influence of OSFC funding on construction costs which seemed to suggest higher costs but *none* was statistically significant. That such funding was utilized during the Strickland administration was not a statistically significant effect when location effects were controlled.

As previously indicated, a majority of the school construction projects built under RCPs are located in Cuyahoga County (Cleveland area), Franklin County (Columbus area), Lucas County (Toledo) and Hamilton County (Cincinnati area). Fortunately, for the purposes of our analysis, a number of schools were also constructed in these four counties without RCPs as well. In specification 5 (columns 9-10) we add interaction terms that capture the impact of RCPs on the individual locations in which they are concentrated. The interaction terms added are *RCP x Cuyahoga*, *RCP x Franklin*, *RCP x Lucas,* and *RCP x Hamilton*. The estimates on the Cuyahoga, Franklin and Lucas interaction terms do not reach statistical significance at the .05 level, thus are judged to be statistically insignificant, which suggests no cost differences between RCP and non-RCP bid costs.

There are four counties that have enough observations on schools built with and without a Responsible Contractor Policy to allow for a reasonable test of the RCP effect within a given location. The combined coefficients and standard errors suggest that there is not a statistically significant difference in costs in any of the four counties between RCP and non-RCP schools.

In Hamilton County, the coefficient on the interaction term is positive and statistically significant. This result would seem to indicate that RCP effects on bid costs are not uniform across locations and that especially in Hamilton County (Cincinnati area) the bid costs may be higher among RCP schools than non-RCP schools. However, further sensitivity analysis indicates that the non-RCP school built in Madeira City in Hamilton County during 2005 had substantially lower construction costs than other schools built during that year, If the Madeira school is removed from the analysis, the 11 percent higher cost drops to 7.8 percent and the point estimate becomes similar to those in Cuyahoga and Franklin Counties.

To definitively test whether costs associated with RCPs differ within counties, we combine the parameter estimates on the RCP and RCP* County variables and compute the appropriate standard errors. The results are presented in Table 7. There are four counties that have enough observations on schools built with and without an RCP to allow

for a reasonable test of the RCP effect within a given location. The combined coefficients and standard errors suggest that there is not a statistically significant difference in costs in any of the four counties between RCP and non-RCP schools. Thus there is no evidence that RCPs have a statistically meaningful impact on construction costs in Cuyahoga, Franklin, Lucas, or Hamilton Counties.

Table 7: Responsible Contractor Policies in Cuyahoga, Lucas, Franklin, and Hamilton Counties: Cost Regression

County	Comb.[1] Coeff.	Std. Err.	t stat.
Cuyahoga	0.071	0.065	1.094
Franklin	0.062	0.092	0.665
Lucas	0.024	0.077	0.317
Hamilton	0.102	0.060	1.710

[1]Tests the hypothesis that $\beta_{rcp}+\beta_{cnty}=0$, or that a RCP has no effect in a given county.

Conclusion

Because RCPs increase the requirements on bidders for construction projects, they are naturally controversial. Opponents argue that RCPs inflate labor costs, limit competition, expand administrative costs, and breach confidential proprietary information of bidding contractors, which unnecessarily raises construction costs that eventually will be borne by the taxpayer. On the other hand, proponents highlight potential benefits of RCPs, arguing that raising the standard for bidding encourages high-road employment practices. High-road practices include a higher incidence of employment-based health insurance, and thus fewer uncompensated care costs for safety net health care providers in the community, more support for skill formation, safer workplaces, and additional retirement security. Furthermore, the

The adoption of high-road employment policies, which include employment-based health insurance, safe workplaces, and pensions, provides obvious benefits to workers, their families, and the community. Furthermore, we find no statistically discernable differences in final bid costs between RCP and non-RCP schools. Therefore, our study supports the idea that adopting Responsible Contracting Policies for school construction may be an effective way to improve jobs and living standards of workers without significantly raising costs for taxpayers.

proponents also suggest that construction costs may not be significantly affected by requiring high-road employment practices. The purpose of our study is to provide empirical evidence to inform the debate by assessing whether RCPs affect construction costs of elementary schools in Ohio.

Initially, the summary statistics show that the average cost of RCP schools was significantly higher than non-RCP schools. However, when geographic controls were included in the model, the difference no longer reached statistical significance, which suggests that RCPs tend to be adopted in locations where construction is relatively expensive regardless of whether an RCP has been adopted. Our analysis also revealed that RCP policies covering construction of elementary schools in Ohio are concentrated in four areas, Cuyahoga (Cleveland), Franklin (Columbus), Lucas (Toledo), and Hamilton (Cincinnati) Counties. Fortunately there are enough instances of new school construction projects in each of these areas that we could estimate the RCP cost effect within each location. Our findings again indicate that within each of the four counties, there was not a statistically significant difference in costs (as measured by final bid price) between RCP and non-RCP schools.

The adoption of high-road employment policies, which call for employment-based health insurance, pensions, safe workplaces, and workforce training and apprenticeships, provides obvious benefits to workers, their families, and the community. Furthermore, we find no statistically discernable differences in final bid costs between RCP and non-RCP schools. Therefore, our study supports the idea that adopting RCPs for school construction may be an effective way to improve jobs and living standards of workers without significantly raising costs for taxpayers.

References

Agency for Healthcare Research and Quality. (2009a). *Percent of employees in establishments offering health insurance and percent of employees that are enrolled in health insurance among employees of private-sector establishments offering health insurance. Medical expenditure panel survey insurance component tables.* Data retrieved from MEPSnet/IC. <http://www.meps.ahrq.gov/mepsnet/IC/MEPSnetIC.jsp> (Additional calculations by authors).

Agency for Healthcare Research and Quality. (2009b). *Percent of private-sector establishments that offer health insurance by firm size and selected characteristics (Table I.A.2). Medical expenditure panel survey insurance component tables*. Data retrieved from MEPSnet/IC. <http://www.meps.ahrq.gov/mepsnet/IC/MEPSnetIC.jsp> (Additional calculations by authors).

Associated Builders and Contractors. (2009). *Responsible contractor ordinances*. Retrieved from http://www.abc.org/Government_Affairs/Issues/Procurement_Issues/Responsible_Contracting_Ords.aspx

Azari-Rad, H. (2005). Chapter 7. Prevailing wage laws and injury rates in construction. H. Azari-Rad, P. Philips, & M. J. Prus (Eds.), *The economics of prevailing wage laws* (pp. 169-190). Aldershot, Hampshire: Ashgate Publishing Limited.

Azari-Rad, H., Philips, P., & Prus., M. J. (2003). State prevailing wage laws and school construction costs. *Industrial Relations*, *42*(3) 445-57.

Bachman, P., Chisholm, D.C., Haughton, J., & Tuerck, D.G. (2003). *Project labor agreements and cost of school construction in Massachusetts.* Boston: Beacon Hill Institute.

Belman, D., Russell, O., William S., & Kelso, R. (2007). *The effects of project labor agreements on the cost of school construction.* Unpublished Working Paper. Retrieved from http://web.mit.edu/ipc/sloan05/Belman-Ormiston.pdf

Bilginsoy, C. (2005). Chapter 6. Wage regulation and training: The impact of state prevailing wage laws on apprenticeship. In: H. Azari-Rad, P. Philips, & M. J. Prus (Eds.), *The economics of prevailing wage laws* (pp. 149-168). Aldershot, Hampshire: Ashgate Publishing Limited.

Bilginsoy, C., & Philips, P. (2000). Prevailing wage laws and school construction costs: Evidence from British Columbia. *Journal of Education Finance*, *25*(3), 415-31.

Claxton, G., DiJulio, B., Finder, B., Jarlenski, M., McHugh, M., Hawkins, S., Pickreign, J., Whitmore H., &J Gabel. J. (2008). *Employer Health Benefits. 2008 Annual Survey*. (pp. 1-4). Retrieved from The Henry J. Kaiser Family Foundation and Health Research and Educational Trust website: http://ehbs.kff.org/pdf/7790.pdf

CPWR – The Center for Construction Research and Training. (2008). *Chapter 26. Health insurance coverage in construction and other industries in the construction chart book: The U.S. construction industry and its workers*. Silver Spring, MD: Author.

DeNavas-Walt, C., C. Proctor and J. Smith. (2007). *Income, poverty, and health insurance coverage in the United States.* (p. 19). Retrieved from http://www.census.gov/prod/2008pubs/p60-235.pdf

Doty, M., Collins, S., Rustgi, S., & Kriss. J. (2008) *Seeing red: The growing burden of medical bills and debt faced by U.S. families.* Retrieved from the Commonwealth Fund website: http:// www.commonwealthfund.org/Content/Publications/Issue-Briefs/2008/Aug/Seeing-Red--The-Growing-Burden-of-Medical-Bills-and-Debt-Faced-by-U-S--Families.aspx

Duncan, K., Philips, P., & Prus, M. (2009) The effects of prevailing wage regulations on construction efficiency in British Columbia. *International Journal of Construction Education and Research 5*(2), 63-78. **DOI:** 10.1080/15578770902952280vvv

Duncan, K. and Prus, M. (2005). Prevailing Wage Laws and Construction Costs: Evidence from British Columbia's Skills Development and Fair Wage Policy. In: H. Azari-Rad, P. Philips, & M. J. Prus (Eds.), *The economics of prevailing wage laws*. Aldershot, Hampshire: Ashgate Publishing Limited.

Dunn, S., Quigley, J.M., & Rosenthal. L.A. (2005). The effects of prevailing wage requirements on the costs of low-income housing. *Industrial and Labor Relations Review*, *59*(1), 141-157.

Fraundorf, M., Farrell, J.P., & Mason, J. F. (1984). The effect of the Davis-Bacon Act on construction costs in rural areas. *Review of Economics and Statistics*, *66*(1), 142-146.

General Accounting Office. (1996). *School facilities. America's schools report differing conditions*. GAO/ HEHS-96-103. Washington, D.C.: Author.

Hadley, J. (2002). *Sicker and poorer: The consequences of being uninsured. A review of the research on the relationship between health insurance, health, work, income and education*. Retrieved from Kaiser Commission on Medicaid and the Uninsured website: http://www.kff.org/uninsured/upload/ Briefing-Charts.pdf

Himmelstein, D. U., Warren, E., Thorne, D. & Woolhandler, S. (2005). MarketWatch: Illness and injury as contributors to bankruptcy. *Health Affairs (Millwood), Web Exclusive*, 2, February, 2005. Retrieved from http://content.healthaffairs.org/cgi/content/full/hlthaff.w5.63/DC1

Holmes, M., Ricketts, T., & King, J. (2009). *Updating uninsured estimates for current economic conditions: State specific estimates.* Chapel Hill: Cecil G. Sheps Center for Health Services Research, a unit of the University of North Carolina's Division of Health Affairs and North Carolina Institute of Medicine (NCIOM).

Kessler, D.P. & Katz, L.F. (2001). Prevailing wage laws and construction labor markets. *Industrial & Labor Relations Review, 54*,(2) 259-74.

Legislative Service Commission. (2002). *S.B. 102 Report. The effects of the exemption of school construction projects from Ohio's prevailing wage law*. Columbus, OH: Author.

Manchester City Clerk. (2003). *Minutes of Special Meeting. April 16, 2002 and June 3, 2003*. Manchester, NH: Board of Mayor and Aldermen. Retrieved from http://www.manchesternh.gov/website/ Departments/CityClerk/MeetingMinutesandAgendas/BoardofMayorandAldermen/tabid/537/ Default.aspx

NH General Court. (2006). *Report of the Procurement Methods Study Committee of the NH Legislature - Established by HB 157; Laws of 2005 (Minority Report)*. Concord, NH: NH General Court.

Norton, S. (2008). *Driving health care premiums: Cost-shifting in New Hampshire*. New Hampshire Center for Public Policy Studies. Concord, NH.

Ohio School Facilities Commission. (2007a). *Annual Report.* p. 15. Columbus, OH: Author.

Ohio School Facilities Commission. (2007b). *Resolution 07-16, Approving local school district authority to determine contractor qualification for a project.* Columbus, OH. Author.

Ohio School Facilities Commission. (2007c). *Resolution 07-98, Amending model responsible bidder requirements list and approving additional bidder criteria related to the construction workforce.* Columbus, OH. Author.

Ohio School Facilities Commission. (2008). *Fiscal Year 2009 District Eligibility List.* Columbus, OH: Author.

Phillips, P. (2001). *A comparison of public school construction costs – In three midwestern states that have changed their prevailing wage laws in the 1990s*. Salt Lake City: Economics Department, University of Utah.

Price, M.A. (2005). Chapter 10: Pension and health insurance coverage in construction labor markets. In: H. Azari-Rad, P. Philips, & M. J. Prus (Eds.), *The economics of prevailing wage laws*. Aldershot, Hampshire: Ashgate Publishing Limited.

Prus, M. J. (1996). *The effect of state prevailing wage laws on total construction costs*. Cortland, NY: Department of Economics SUNY.

Prus, M. J. (1999). *Prevailing wage laws and school construction costs. An analysis of public school construction in Maryland and the Mid Atlantic States.* Prepared for the Prince George's County Council, Maryland.

Senate Bill 102. Amended Substitute Senate Bill Number 102. 122nd General Assembly (Ohio). (1997).

Thieblot, A J. (1995). *State prevailing wage laws: An assessment at the start of1995*. Rosslyn, VA: Associated Builders and Contractors.

Waddoups, C. J. (2003). The construction industry and uncompensated health care. In: Adrienne Eaton (Ed.) *Industrial Relations Research Association Series: Proceedings of the 55th Annual Meeting*, pp. 256-63.

Waddoups, C. J. (2005). Chapter 9. Health care subsidies in construction: Does the public sector subsidize low wage contractors? In: H. Azari-Rad, P. Philips, & M. J. Prus (Eds.), *The economics of prevailing wage laws*. Aldershot, Hampshire: Ashgate Publishing Limited.

Waddoups, C. J. (2006). Public subsidies of low-wage employment: The case of uncompensated health care, *Journal of Economic Issues. 40*(3), 813-824.

APPENDIX

RESOLUTION 07-98

THE OHIO SCHOOL FACILITIES COMMISSION
JULY 26, 2007

AMENDING MODEL RESPONSIBLE BIDDER REQUIRMENTS LIST AND APPROVING ADDITIONAL BIDDER CRITERIA RELATED TO THE CONSTRUCTION WORKFORCE

WHEREAS, the 122nd Ohio General Assembly established the Ohio School Facilities Commission (Commission) under Chapter 3318 of the Ohio Revised Code (ORC); and

WHEREAS, the Commission is committed to ensuring that schools are built by responsible contractors employing a qualified workforce; and

WHEREAS, Section 3313.46 of the Ohio Revised Code requires School Districts to award contracts to contractors submitting the lowest responsible bid after competitive bidding; and

WHEREAS, Section 3318.10 of the Ohio Revised Code provides discretion for a Board of Education, subject to Commission approval, to determine which contractor is the lowest responsible bidder; and

WHEREAS, the Commission is committed to allowing additional local control to individual School Districts which will ultimately own the school buildings, and have responsibility for the upkeep and maintenance of the school buildings; and

WHEREAS, on February 15, 2007, the Commission adopted Resolution 07-16 which included Attachment A; Model Responsible Bidder Requirements which would be approved if adopted, in whole or in part, by a School District without further Commission approval; and

WHEREAS, the Commission has determined it is necessary to amend the Model Responsible Bidder Requirements adopted on February 15, 2007 as Attachment A to Resolution 07-16; and

WHEREAS, the Commission has determined to allow, subject to Commission approval, a School District participating in a Commission program to determine additional standards related to the construction workforce.

NOW, THEREFORE BE IT RESOLVED THAT:

1. A School District participating in a Commission program shall have authority by resolution of its Board of Education to establish responsible bidder criteria to ensure the projects are completed by responsible contractors employing a qualified workforce.

2. The responsible bidder criteria adopted by the Board of Education are subject to Commission approval. Subject to legal review by the Commission, all submissions by Boards of Education which contain any or all of the responsible bidder criteria as set forth in Attachment A to this Resolution shall be considered approved by the Commission. The responsible bidder criteria set forth in Attachment A to this Resolution, entitled Model Responsible Bidder Workforce Standards, replaces those responsible bidder criteria entitled Model Responsible Bidder Requirements set forth in Attachment A to Resolution 07-16 adopted by the Commission on February 15, 2007.

3. The Commission authorizes its Executive Director to approve of additional responsible bidder criteria submitted by a Board of Education to the Commission for approval.

4. Following the adoption of a Resolution of a Board of Education to establish responsibility criteria for bidders and following approval by the Commission, the Commission authorizes the Executive Director to permit a School District to include the responsible bidder criteria in the contract documents.

5. For projects advertised after October 1, 2007, the Executive Director shall only approve contracts in which the Bidder has certified that it, and its subcontractors or any other contractor performing work on the project covered under the contract of the Bidder, it has implemented a written safety program, that each member of its job site workforce has completed an OSHA 10 or 30 Hour Construction Course, and that all project supervisors and all project foremen have completed an OSHA 30 hour Construction Course.

6. The Executive Director is authorized to waive or amend provisions of a School District's Project Agreement to facilitate the implementation of this Resolution.

7. The provisions of this Resolution shall not be used to contravene Ohio's Encouraging Diversity Growth and Equity ("EDGE") Program as established by the Ohio General Assembly and implemented by the Commission.

In witness thereof, the undersigned certifies the foregoing Resolution was duly adopted at an open meeting held on July 26, 2007 by the members of the Ohio School Facilities Commission.

J. Pari Sabety, Chair

Attachment A

THE OHIO SCHOOL FACILITIES COMMISSION
MODEL RESPONSIBLE BIDDER WORKFORCE STANDARDS

The following responsible bidder criteria may be included, by a resolution of a Board of Education, in the construction contracts for school building projects undertaken pursuant to Chapter 3318 of the Ohio Revised Code. These responsible bidder criteria are reasonably related to performance of the contract work within the statutory framework set forth in Section 9.312 of the Ohio Revised Code. The responsible bidder criteria shall be evaluated in accordance with Section 3.4.3 of the Instructions to Bidders.

1. As a condition precedent to contract award after bid, The Board of Education may undertake with the Bidder a Constructability and Scope review on projects of One Hundred Thousand Dollars ($100,000.00) or more to verify that the Bidder included all required work.

2. The Low Bidder whose bid is more than twenty percent (20%) below the next lowest bidder shall list three (3) projects that are each within seventy-five percent (75%) of the bid project estimate for similar projects and that were successfully completed by the bidder not more than five (5) years ago. This information shall be provided if necessary at the post-bid scope review.

3. The Bidder shall certify it will employ supervisory personnel on this project that have three (3) or more years in the specific trade and/or maintain the appropriate state license if any.

4. The Bidder shall certify it has not been penalized or debarred from any public contracts for falsified certified payroll records or any other violation of the Fair Labor Standards Act in the last five (5) years.

5. The Bidder shall certify it has not been debarred from public contracts for prevailing wage violations or found (after all appeals) to have violated prevailing wage laws more than three times in the last ten years.

6. The Bidder shall certify it is in compliance with Ohio's Drug-Free Workplace requirements, including but not limited to, maintaining a substance abuse policy that its personnel are subject to on this project. The Bidder shall provide this policy or evidence thereof upon request.

7. The Bidder for a licensed trade contract or fire safety contract shall certify that the Bidder is licensed pursuant to Ohio Revised Code Chapter 4740 as a heating, ventilating, and air conditioning contractor, refrigeration contractor, electrical contractor, plumbing contractor, or hydronics contractor, or certified by the State Fire Marshall pursuant to R.C. 3737.65.

8. The Bidder shall certify it has not had a professional license revoked in the past five years in Ohio or any other state.

9. The Bidder shall certify it has no final judgments against it that have not been satisfied at the time of award in the total amount of fifty percent (50%) of the bid amount of this project.

10. The Bidder shall certify it has complied with unemployment and workers compensation laws for at least the two years preceding the date of bid submittal.

11. The Bidder for a trade licensed pursuant to Ohio Revised Code Chapter 4740 or requiring certification of the State Fire Marshall pursuant to R.C. 3737.65, shall certify that the Bidder will not subcontract greater than twenty-five percent (25%) of the labor (excluding materials) for its awarded contract, unless to specified subcontractors also licensed pursuant to Ohio Revised Code Chapter 4740 or certified by the State Fire Marshall pursuant to R.C. 3737.65

12. The Bidder shall certify it does not have an Experience Modification Rating of greater than 1.5 (a penalty rated employer) with respect to the Bureau of Workers Compensation risk assessment rating.

13. The Bidder shall certify that it will provide a minimum health care medical plan for those employees working on this project, and shall provide the policy or evidence thereof upon request.

14. The Bidder shall certify it will contribute to an employee pension or retirement program for those employees working on this project, and shall provide the plan or evidence thereof upon request.

15. The Bidder shall certify it shall use only construction trades personnel who were trained in a state or federally approved apprenticeship program or Career Technical program, or who are currently enrolled in a state or federally approved apprenticeship program or Career Technical Program, or who can demonstrate at least three years experience in their particular trade.

16. The Bidder shall certify it has not been debarred from any public contract; federal, state or local in the past five years.

17. The Bidder shall certify that it, and its subcontractors or any other contractor performing work on the project covered under the contract of the Bidder, shall pay the prevailing wage rate and comply with the other provisions set forth in Ohio's Prevailing Wage Law, R.C. 4115.03 through 4115.16, and O.A.C. 4101:9-4-01 through 4101:9-4–28. This includes, but is not limited to, the filing of certified payroll reports.

18. The Bidder shall certify that it, and its subcontractors or any other contractor performing work on the project covered under the contract of the Bidder, shall comply with the requirements of a project labor agreement adopted for use on the project.

A material breach of the responsible bidder criteria prior to, or during the contract performance, shall subject the contractor to all contractual remedies, including, but not limited to, termination for cause.

THIS REPORT IS A COLLABORATIVE RESEARCH PROJECT
of the
NEW HAMPSHIRE AFL-CIO

and the
NEW HAMPSHIRE STATE
BUILDING AND CONSTRUCTION TRADES COUNCIL

and was completed through the auspices of
NEW HAMPSHIRE AFL-CIO EAP SERVICES, INC.

57 SCHOOL STREET – 2ND FLOOR
CONCORD, NEW HAMPSHIRE 03301
nhaflcioeap@comcast.net