

East Tennessee State University

## Digital Commons @ East Tennessee State University

---

Undergraduate Honors Theses

Student Works

---

5-2022

### Teachers' Unions and School Choice: A Binary Regression Analysis on the Impact Teachers' Unions have on State-Level School Choice Legislation

Robert Jackson Hester

Follow this and additional works at: <https://dc.etsu.edu/honors>



Part of the [Education Economics Commons](#)

---

#### Recommended Citation

Hester, Robert Jackson, "Teachers' Unions and School Choice: A Binary Regression Analysis on the Impact Teachers' Unions have on State-Level School Choice Legislation" (2022). *Undergraduate Honors Theses*. Paper 719. <https://dc.etsu.edu/honors/719>

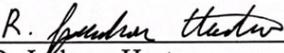
This Honors Thesis - Open Access is brought to you for free and open access by the Student Works at Digital Commons @ East Tennessee State University. It has been accepted for inclusion in Undergraduate Honors Theses by an authorized administrator of Digital Commons @ East Tennessee State University. For more information, please contact [digilib@etsu.edu](mailto:digilib@etsu.edu).

Teachers' Unions and School Choice: A Binary Regression Analysis on the Impact Teachers' Unions have on State-Level School Choice Legislation

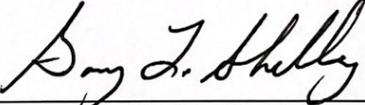
By

Robert Jackson Hester

An Undergraduate Thesis Submitted in Partial Fulfillment  
of the Requirements for the  
University Honors Scholars Program  
Honors College  
East Tennessee State University

  
R. Jackson Hester 4/12/22  
Date

  
Dr. Taylor P. Stevenson, Thesis Mentor 4/12/22  
Date

  
Dr. Gary L. Shelley, Reader 4/12/2020  
Date

### **Acknowledgements**

First, I would like to thank the members of my thesis committee: Dr. Taylor Stevenson and Dr. Gary Shelley. Without their guidance, correction, and help I could not have completed this undergraduate thesis.

Second, I would like to thank the Director of the University Honors Scholars program, Dr. Karen Kornweibel. Her support and help have been crucial to my success and development at ETSU. Her passion for her students is unmatched and I am extremely grateful for the ways she has invested in me and my peers.

## Abstract

School choice dominated discourses within educational policy in the last year; some have even described 2021 as “the year of school choice.” School choice allows public education funds to follow students to the schools or services that best fit their needs. This is often summarized by its advocates as “funding students over systems.” Generally, school choice allows market forces to influence education by providing more competition in the education market. Teachers’ unions have fought against school choice measures for years, but what impact do they have? This undergraduate thesis compares 49 states to determine if the proportion of public school teachers in teachers’ unions in a given state serves as a proxy to measure the impact of unions and to discover whether teachers’ unions influenced whether a state passed new school choice legislation in 2021. By employing a binary logistic regression analysis, the results provide evidence that as the share of public school teachers who are union members increases, a state’s likelihood to pass new school choice legislation increases. This thesis gives a broad view of the impact teachers’ unions have on school choice at the state level, but more research detailing the ways unions leverage these effects and how politicians respond to teachers’ unions in their states would be valuable.

## Introduction

Education rose to the forefront of political and academic discussions the past year for a plethora of reasons, a main reason being that many people see a need for improvement in public schools. Public schools experienced significant drops in enrollment as homeschooling families doubled from 5.4% of households in the spring of 2020 to 11.1% of households in the fall of 2020 (Eggleston & Fields, 2021). Multiple explanations elucidate this explosive growth, one explanation being the growing dissatisfaction with public schools. Amid this dissatisfaction with public schools, support for school choice programs, such as vouchers, charter schools, and educational savings accounts, is growing steadily. A Real Clear Politics survey found that 71% of voters support school choice and 65% support funding “students over systems” (2021).

School choice stirs up intense policy debates among politicians and leaders, usually along party lines. Generally, Republicans favor school choice while Democrats oppose school choice but this is not always the case (DeBray-Pelot et al., 2007). Among those most vocally opposed to school choice are teachers’ unions (Carl, 1994; Constant, 2006), such as the National Education Association (NEA) and the American Federation of Teachers (AFT). Generally, teachers’ unions oppose school choice, claiming school choice “defunds public schools.” This means lower wages, fewer jobs, less resources, and higher competition for unions and their members. Teachers’ unions function like monopolies in many ways, sometimes even as state-sanctioned monopolies. As monopolies they work to prevent competition that would disrupt their interests, thus teachers’ unions oppose school choice.

Teachers’ unions undoubtedly play an important role in the economy of education as they donate money to political campaigns, encourage members to vote for their endorsed candidates, and engage in collective bargaining. Leaders need an improved understanding of the impact

teachers' unions have on educational policy because tracking the effect of teachers' unions on legislation is difficult. This thesis attempts to provide part of that understanding by comparing 49 states to discern the impact teachers' unions have on school choice legislation from a national perspective

Studies predict that the school closures and policies resulting from the COVID-19 pandemic will “likely to lead to a reduction in global economic growth equivalent to an annual rate of 0.8 percent” (Psacharopoulos et al., 2021). This reduction will be most felt by developed economies that depend on highly educated workers. For the economy to mitigate these losses the American public school system should consider every policy available to ensure that children receive the best education available to them. Policies that provide free market incentives should especially be considered because these policies supply a level of accountability not found in a monopolized market.

Adjusted to 2021 dollars, America spent \$5,802 per student in the public school system in 1972 (National Center, 2019). Adjusted to 2021 dollars, America spent \$13,701 per student in the public school system in 2019 (National Center, 2019). This 136% increase in spending has not been accompanied by an equal increase in academic achievement (Hanushek, 1997). In fact for many of those years academic achievement declined (Meckler, 2022) . Perhaps the problem is not how much funding but who receives the funding.

## **Review of Literature**

### *School Choice*

School choice allows public education funds to follow students to the schools or services their families choose. This happens in several ways. First, charter schools exist as a non-profit alternative to public schools; charter schools are government-funded schools that operate

independently of the public school system. This allows them to exercise greater independent control over disciplinary actions, curriculum, and staffing (Sowell, 2020). Charter schools are more productive than public schools because they operate at a lower cost than traditional public schools (Hoxby, 2003). Some studies claim that charter schools have little to no positive effects on student achievement (Bettinger, 2005) while others provide evidence of increased academic performance, particularly for students who stay in charter schools for three or more years (Greene et al., 1999). Charter schools provide competition to public schools which motivates public schools to better serve families' needs. Charter schools functionally turn what was once a monopoly into an oligopoly or into a truly free market.

In addition to charter schools, tuition vouchers are another common form of school choice. Vouchers bestow families, usually with a specified low income, with money to spend on eligible education expenses, usually tuition. Some vouchers can be used for private tuition, other vouchers cannot. Voucher programs vary from state to state and city to city; each program differs in effects. In Florida, the McKay Scholarship program gives vouchers to eligible disabled students so they can attend schools that better fit their needs. One study found that the McKay Scholarship Program positively impacts public schools by lowering the likelihood of a student being diagnosed with a disability by 12% (Winters & Greene, 2011). Multiple articles provide evidence that public schools engage in strategic misdiagnosing of students to relieve financial and testing pressures (Greene, 2007; Winters & Greene, 2011). But disabled students are not the only minorities aided by vouchers; black students who left public schools for private schools experienced a 6.3% increase in test scores after using vouchers for three consecutive years (Peterson et al., 2003).

Similar to a voucher, an educational savings account (ESA) is another form of school choice, often referred to as the “gold standard” of school choice by its advocates. An ESA functions like a Health Savings Account (HSA), allowing families to make tax-exempt, capped contributions to an account designated for educational expenses such as private tuition, tutoring services, and homeschooling supplies. ESAs provide the most choices to families among all forms of school choice.

While the literature is mixed, several studies demonstrate evidence of positive impacts of school choice for students, especially for poor and minority students. These positive effects include increased productivity within public schools (Buerger & Bifulco, 2019; Hoxby, 2003; Jabbar et al., 2019); improved academic results depending on the structure of the program (Jabbar et al., 2019; Peterson et al., 2003); and even positive effects for students who remain in public schools (Egalite & Wolfe, 2016; Winters, 2012). One study even found that students who did not attend public schools were less likely to be anti-semitic and were more likely to display more positive attitudes towards Jews (Greene, 2017). Overall, these studies provide evidence that school choice programs are solutions worth considering for the problems plaguing the American public school system.

### *Unions, Their Goals, and Effects*

Interest groups have long leveraged their campaign contributions to support legislators sympathetic to their goals (Brunell, 2005; Hall & Wayman, 1990). One of the main functions of unions today is to function as an interest group. While unions are prohibited by federal law from contributing to political campaigns for federal offices, unions can give money to PACs which can give money to these campaigns. These contributions from teachers’ unions have steadily increased over recent years (*Open Secrets*, 2021). Adjusted for inflation into October 2021

dollars, donations from the NEA are up from \$5.12 million in the 2000 election cycle to \$48.03 million in the 2020 election cycle (*Open Secrets*, 2021). For the AFT the difference is \$5.70 million in the 2000 election cycle to \$18.42 million in the 2020 election cycle (*Open Secrets*, 2021). This substantial increase in spending is extremely relevant to researchers investigating the impact of special interest groups, unions, and PACs on elections and legislation.

At their core, unions follow a rent-seeking hypothesis. That is, unions seek to extract additional benefits from policymakers and employers without increasing their own contributions toward productivity (Hoxby, 1996). Teachers' unions leverage their influence to increase teachers' salaries, improve working conditions, and generally increase benefits for teachers' union members. They achieve this by advocating for smaller class sizes which are easier to manage and also forces schools to hire more teachers (union members). Unions also negotiate powerful job protections, which may lead schools to hire and keep more teachers, including teachers of poor quality, than is optimal for the same level of salary expenditures (Eberts & Stone, 1984; Sowell, 2020). The end result is an environment where unions receive these rents without contributing any equivalent gains to school productivity (or even harming productivity) as measured by student achievement (Eberts & Stone, 1984).

Early research on the impact of interest groups largely overestimated the impact of groups' financial contributions to legislators (Kau et al., 1982). In addition to interest group contributions, the party's position, signals from constituents, and personal ideology affect roll call votes (Chappell, 1982; Kau & Rubin, 1993). The effects of contributions on roll call voting were found to be more influential on votes central to a group's agenda, but less influential on issues peripheral to the group's agenda (Constant, 2006).

Constant (2006) specifically found this to be true for the Florida voucher bill, HB 752, which was heavily opposed by teachers' unions, yet passed with a slim margin in 1998. However, the Florida bill SB 1996/1182 that expanded charter schools passed in 1996 with widespread support. Constant (2006) argues the broad political support occurred because the charter school bill was not as threatening to the teachers' unions and thus it was peripheral to their interests. However, this study focuses on the time period before the massive increase in PAC spending which began with the 2000 election cycle and before the wave of school choice legislation passed in 2021.

### *Unions and Political Participation*

Besides PAC contributions, unions have another way of leveraging political power; union members are also voters. A common assumption is that union members favor Democratic candidates, but while recent elections have cast doubt on this assumption, teachers' unions still overwhelmingly support the Democratic party. At their lowest point in the past two decades, 93% of all campaign contributions to individual candidates from teachers' unions in a given election cycle went to Democrats (*Open Secrets*, 2021). While this level of one-sided support is not perfectly mirrored by the voting habits of teachers' union members, members still tend to vote in favor of Democratic candidates.

First, union members are more likely to vote than non-union members. In his working paper Richard Freeman found that union members were about 10-13 percentage points more likely to vote than non-union members, but among members and non-members with comparable characteristics this falls to 4 percentage points (2003). But members of teachers' unions are even more likely to vote. A study of 70 school districts in California, a state where over 90% of teachers belong to a union, found that teachers were six times more likely to vote than non-

teachers (Moe, 2006). Moe also found that the influence of teachers' unions is so strong in school board elections that the support of a teachers' union is often more advantageous than incumbency (2006).

Correspondingly, Freeman also found that union members favor Democratic candidates by 2 points. For teachers' union members this trend is even stronger. First, all teachers have college degrees, a demographic that favored Joe Biden by 12 points (Andre et al., 2020). Second, most teachers are female, a demographic that favored Joe Biden by 15 points (Andre et al., 2020). These two points combined with the reality that the AFT, NEA, and the Chicago Teachers' Union all endorsed Joe Biden for President in 2020 deliver strong evidence that teachers' union members favor Democratic candidates.

#### *Unions and Collective Bargaining Agreements*

In addition to campaign contributions and voting, teachers' unions achieve their goals through collective bargaining which is legal in 45 states. A study of California school districts found that districts with stronger teachers' union presence created greater constraints and allowed less flexibility to school administrators than districts with a weaker union presence (Strunk & Grissom, 2010). Collective bargaining also drives schools to keep lower quality teachers and pay those teachers more than they would in the absence of collective bargaining (Brunner & Squires, 2013; Eberts & Stone, 1984; West & Mykerezzi, 2011). Some studies estimate that through collective bargaining unions are able to attain salaries at least 5% higher than they would be otherwise (Cowen & Strunk, 2015).

#### **Framework**

At a national level several problems complicate any attempt to complete an empirical study of the financial influence of teachers' unions on state elections. First, the sheer size and

scope of teachers' unions make such a national study a Herculean task. Sixty-nine percent of public school teachers are members of unions or similar employee associations (National Center, 2018), and the NEA is the largest union in America with over 3 million members. A study tracking all \$48 million of the NEA's 2020 political donations, while enlightening and beneficial, would be nearly impossible to conduct based on the volume of donations alone.

Second, each state has different campaign finance laws. A study investigating each state legislator to find the impact teachers' unions and their PACs have on the legislator's voting behavior would take an enormous amount of time and resources, if such a study could be conducted in the first place. For context, of the \$66.4 million donated by teachers' unions in the 2020 election cycle, over \$59.5 million was "soft money" (*Open Secrets*, 2021). "Soft money" is largely unregulated by the FEC, but it cannot be used to support individual candidates in federal elections. No cap exists on soft money for political parties and spending organizations. Since the vast majority of teachers' unions' donations are soft money, tracking the influence of those dollars is nearly impossible. Even looking at money given to PACs would be grueling and difficult because teachers' unions like the NEA and AFT give to hundreds of PACs each year, and these donations to PACs constitute less than a fifth of all political spending from teachers' unions.

Since school choice legislation advances or falls primarily at the state level, a study comparing states must find a way to transcend state differences. While campaign finance laws vary among states, every state has teachers and every state has teachers' unions. This thesis asks two questions that provide a starting point for future research efforts: 1) does the proportion of teachers that are union members have an impact on the passage of new school choice legislation?

and 2) does the proportion of union membership serve as a suitable proxy for measuring the effects of teacher's unions?

This influence may manifest itself in different ways such as voting, signaling, political volunteering, or campaign donations. By looking at the presence of teachers' unions in general, this study attempts to combine all of these means of influence to examine whether teachers' unions affect school choice legislation at the state level. Additionally, this study seeks to determine if the percentage of public school teachers that are union members is even a helpful variable. Combining all the effects of unions into one variable, how many teachers are union members, may not be a helpful way to measure union influence. Further studies that focus on volunteering, voting, or campaign contributions for individual states will provide a clearer picture for the specific ways that teachers' unions influence school choice legislation at the state level.

## **Methodology and Data**

### *School Choice Legislation*

The response variable of this study is simply whether a state passed legislation in 2021 that created new school choice programs. This data comes from the American Federation for Children, which lists every school choice bill that was passed in 2021 (School Choice Victories, 2022). Twenty-two states passed school choice legislation in 2021, however this study only counts 8 of those states, those with new programs. This paper seeks to discover how teachers' unions influence *new legislation*. As the Nobel Prize winning economist Milton Friedman shrewdly observed, "Nothing is so permanent as a temporary government program." While Friedman advocated for school choice programs, his observation on the permanence of government programs still applies. Incredible difficulty must be overcome to rescind school

choice programs, especially given their popularity among parents (Heise, 2012). Teachers' unions know this and as pragmatic organizations teachers' unions should fight harder against new programs, rather than spending their resources to oppose current programs.

#### *Teacher's Union Presence*

This study also relies on data from the National Center for Education Statistics (NCES), an agency within the Department of Education. Each year the NCES sends out a variety of surveys to schools across the nation, including the National Teacher and Principal Survey (NTPS). The most recent NTPS results are from the 2017-2018 school year. Part of these results include the percentage of public school teachers that are members of a union or an employee association similar to a union (Appendix A). This NTPS had a response rate of over 50%, and it provides the data for the independent variable that measures the presence of teachers' unions in a given state. Maryland did not have a satisfactory response rate and is excluded from this study. It follows that as the share of teachers' who are union members increases, a state should be less likely to pass new school choice legislation.

#### *Teacher Salaries and Public School Revenue Receipts*

Last, this study includes the mean annual public school teacher's salary and the public school revenue receipts per student based on fall enrollment. Both of these numbers can be found in the NEA's annual "Ranking of the States 2020 and Estimates of School Statistics 2021" (NEA, 2021). The NEA's Research Department has produced this report yearly since 1952; the report, "shows how states compare on a variety of education and funding measures, such as average teacher salaries, enrollment, student-teacher ratios, general financial resources, and revenue and expenditures for the most recent school year" (NEA, 2021).

These variables are included because teachers who receive higher salaries want to keep those higher salaries, and they should behave accordingly to protect their interests. These high salaries are usually secured through collective bargaining with the help of teachers' unions. Thus, the higher a teacher's salary, the more likely they are to oppose school choice. The salaries used in this study are the mean salary for a public school teacher for 2019-2020 (Appendix B).

The variable measuring revenue receipts per student also follows this line of thinking; states with higher receipts have administrators who are more jealous of those receipts and who should fight harder against school choice measures which may reduce those receipts. The figure used in this study is the amount of revenue a public school received per student enrolled at the start of the 2019-2020 school year (Appendix C).

#### *Educational Ranking*

Furthermore, this model includes a variable that measures each state's national education ranking as measured in *U.S. News* (Pre-K - 12 Rankings, 2021). These rankings reflect an array of measurements including college readiness as measured by ACT and SAT scores, high school graduation rate, math and reading scores from the National Assessment of Educational Progress (NAEP), and pre-school enrollment. The NAEP has been billed "the nation's report card" by the Department of Education. This data was collected in 2019 and is the most recent data available from the NAEP. This ranking is included because legislators should take into account their constituents' needs when writing legislation. If a state is producing poor educational outcomes, a reasonable legislator would hopefully consider a wide array of solutions, even ones that may be inconvenient among their donors. Thus, the worse a state's educational ranking, the more likely that state's government should be to pass new school choice legislation.

### *Political Party*

Any model seeking to explain the forces preventing or propelling school choice legislation would be incomplete without some measure of the political party in control of the legislature. The percentage of state legislators that are Democrats is included to provide this explanatory variable.

### **Model**

For each state,  $s$ , whether a new school choice bill is passed is a function of unionization, average state salaries for public school teachers, revenue receipts per student, educational ranking, and Democratic presence in the legislature; specifically expressed as:

$$\begin{aligned} \text{Bill passed}_s = & \beta_0 + \beta_1 \text{union}_s + \beta_2 \text{teacher salary}_s + \beta_3 \text{revenue per student}_s + \\ & \beta_4 \text{educational ranking}_s + \beta_5 \text{Democratic legislature}_s + \epsilon_s \end{aligned}$$

where  $\text{Bill passed}_s$  denotes whether a particular state passed new school choice legislation in 2021.  $\beta_1$  is the coefficient of primary interest, the coefficient on the presence of teachers' unions. The estimated coefficient on the presence of teachers' union represents the impact teachers have in either opposing or encouraging school choice legislation. Since this equation simply measures the percentage of public school teachers that are union members, the specific means of influence are not captured by this equation. The central hypothesis is that teachers' unions do impact whether a state passes new school choice legislation. The null hypothesis assumes that teachers' unions do not significantly impact new school choice legislation, stated as  $H_0: \mu_{\text{union}} = 0$ . This null hypothesis equation is repeated for each independent variable.

### **Results**

Table 1 displays the results of estimating the successful passage of new school choice legislation in 2021. After conducting a binary logistic regression test, the null hypothesis was

rejected at the 90% confidence level for both the union and salary variables. The adjusted  $R^2$  value was 20.37%. None of the variables had a high VIF and so multicollinearity was not an issue. The full binary logistic regression analysis can be found in Appendix D.

*Table 1*

<b>Term</b>	<b>Coef</b>	<b>SE Coef</b>	<b>Z-Value</b>	<b>P-Value</b>	<b>VIF</b>
Constant	7.16	4.19	1.71	0.087	
union	3.67	2.05	1.79	0.074*	1.90
teacher salary	-0.000150	0.000087	-1.73	0.084*	2.02
revenue per student	-0.000018	0.000134	-0.13	0.895	2.06
education ranking	-0.0310	0.0264	-1.17	0.240	1.59
Democratic legislature	-3.05	2.78	-1.10	0.272	1.99

\* $p < 0.10$

Deviance R-Sq = 31.84%

Deviance R-Sq(adj) = 20.37%

$P(1) =$

$Y' = 7.16 + 3.67 \text{ union} - 0.000150 \text{ teacher salary} - 0.000018 \text{ revenue per student}$   
 $- 0.0310 \text{ education ranking} - 3.05 \text{ Democratic legislature}$

### *Teachers' Unions*

Recall the central hypothesis: teachers' unions do impact whether a state passes new school choice legislation. The p-value for the variable measuring union influence is statistically significant at the 90% confidence level, but not in the expected way because of its positive coefficient: 3.67. This means that for every 1 unit increase in union membership, the log odds of

a new school bill passing increase by 3.67. This model provides evidence that states with a higher proportion of teachers that are union members are more likely to pass new school choice legislation. While this result may appear unexpected at first, some likely explanations are presented in the discussion.

### *Teachers' Salaries*

The average salary of public school teachers was found to be statistically significant at the 90% confidence level, albeit with a coefficient of -0.000150. The evidence for the impact of salaries is small but negative as predicted. Additionally, the salary of a public school teacher may serve as a proxy for the opposition that was expected to be present in the union presence variable. Nevertheless, the effect of teachers' salary is minor.

### *Limitations*

All research includes limitations and this undergraduate thesis is no exception. First, the different variables rely on data that was not collected in the same year, but in the most recent years data was available. The variable measuring the percentage of public school teachers that are union members was gathered in 2018. After looking at union levels in multiple states, no significant drop in teachers' union membership from 2018 to 2021 was found. The salaries of public school teachers and the revenue receipts for public schools are from 2020. The education ranking is from 2021. Second, the writer of this thesis did attend a small private school with a yearly tuition of \$6,500 from 2nd-12th grade; and this certainly influenced his views on education and school choice.

### **Discussion**

Given the positive coefficient for the union variable, an important question must be addressed: does this model provide evidence that teachers' unions are supportive of new school

choice legislation? This is likely not the case. First, legislators may be responding to teachers' unions in a counterintuitive way, meaning that legislators may be trying to diminish the influence of teachers' unions in local education policy by passing school choice legislation. The effects of teachers' unions are best seen at the local level where they tend to dominate school board elections and where they secure benefits through collective bargaining (Moe, 2006). Perhaps state legislators passed new school choice legislation in 2021 attempting to combat the political efforts of unions in their states. Even if the literature were not clear that unions dislike school choice, unions like the NEA and AFT have made their opinions clear. A quick glance through the website or Twitter feed of the NEA or AFT confirms that they do not support school choice. The model's positive coefficient is not evidence that unions or their members had a sudden change of heart in 2021 as states passed school choice legislation. Rather, this positive coefficient is more likely to be evidence for the response of state legislatures to the presence and influence of teachers' unions.

Additionally, the model did not find evidence that political party was a significant influence on the passage of new school choice legislation. This could mean that state legislators are mirroring the views of their constituents; the vast majority of Americans support a plethora of school choice reforms according to a Real Clear Politics survey (2021). Convexly, it may mean that politicians, regardless of party, are equally likely to vote for new school choice legislation.

Overall, the percentage of public school teachers that are union members appears to be a poor proxy for the intended effects of teachers' unions. The opposition to school choice that teachers' unions hold was not adequately found or measured in this model. Future research that

measures the volunteering efforts, media campaigns, or political donations of unions to specific legislators will be helpful to further elucidate this issue.

As states continue to explore ways to improve educational access and quality, innovative and empowering solutions will be needed. If those solutions are to be successful and transparent, the effects of various stakeholders on the legislative process and the effects of the legislation on the constituents must be empirically discerned. This undergraduate thesis provides a starting point for future research efforts and supplies evidence that a more descriptive model should be narrower in scope. Future studies will be more enlightening by focusing on individual bills or states, not on the nation as a whole.

### References

- Andre, M. et al. (2020, Nov. 3). "National exit polls: how different groups voted." *The New York Times* <https://www.nytimes.com/interactive/2020/11/03/us/elections/exit-polls-president.html>.
- Bettinger, E. (2005) The effect of charter schools on charter students and public schools, *Economics of Education Review*, 24(2) 133-147. <https://doi.org/10.1016/j.econedurev.2004.04.009>.
- Brunell, Thomas L. (2005). The relationship between political parties and interest groups: explaining patterns of PAC contributions to candidates for Congress. *Political Research Quarterly*, 58(4), [University of Utah, Sage Publications, Inc.], 681–88, <https://doi.org/10.2307/3595653>.
- Brunner, E. J., & Squires, T. (2013). The bargaining power of teachers' unions and the allocation of school resources. *Journal of Urban Economics*, 76, 15-27. <https://doi.org/10.1016/j.jue.2013.01.003>.
- Burger, C. & Bifulco, R. (2019), The effect of charter schools on districts' student composition, costs, and efficiency: The case of New York state. *Economics of Education Review*, 69, 61-72. <https://doi.org/10.1016/j.econedurev.2019.01.003>
- Carl, J. (1994). Parental choice as national policy in England and the United States. *Comparative Education Review*, 38(3), 294-322. <https://www.jstor.org/stable/1189064>.
- Chappell, H. W. (1982). Campaign contributions and congressional voting: a simultaneous probit-Tobit model. *The Review of Economics and Statistics*, 64(1), 77–83. <https://doi.org/10.2307/1937945>.
- Constant, L. M. (2006). When money matters: campaign contributions, roll call votes, and school choice in Florida. *State Politics & Policy Quarterly*, 6(2), 195–219. <http://www.jstor.org/stable/41289386>.
- Cowen, J. M., & Strunk, K. O. (2015). The impact of teachers' unions on educational outcomes: What we know and what we need to learn. *Economics of Education Review*, 48, 208-223.
- DeBray-Pelot, E. H., Lubienski, C. A., & Scott, J. T. (2007). The institutional landscape of interest group politics and school choice. *Peabody Journal of Education*, 82(2-3), 204-230. <https://doi.org/10.1080/01619560701312947/>.

- Eberts, R. W., & Stone, J. A. (1984). *Unions and Public Schools: The Effect of Collective Bargaining on American Education*. Lexington Books, DC Heath and Company, 125 Spring Street, Lexington, MA 02173.
- Egalite, A. J., & Wolf, P. J. (2016) A review of the empirical research on private school choice, *Peabody Journal of Education*, 91(4), 441-454, DOI: 10.1080/0161956X.2016.1207436.
- Eggleston, C., & Fields, J. (2021). Census Bureau's household pulse survey shows significant increase in homeschooling rates in fall 2020. *U.S. Census Bureau*.  
<https://www.census.gov/library/stories/2021/03/homeschooling-on-the-rise-during-covid-19-pandemic.html>.
- Freeman, R. (2003, Sep.). What do unions do ... to voting? (Working Paper 9992). *National Bureau of Economic Research*. <http://www.nber.org/papers/w9992>.
- Greene, J., Peterson, P., & Du, J. (1999). Effectiveness of school choice: the Milwaukee experiment. *Education and Urban Society* 31(2) 190-213.  
<https://doi.org/10.1177%2F0013124599031002005>.
- Greene, J. (2007). Fixing Special Education. *Peabody Journal of Education*, 82(4), 703-723.  
<http://www.jstor.org/stable/25594767>.
- Greene, J. (2017). The relationship between public and private schooling and anti-Semitism. *Journal of School Choice* 11(1) 111-130. <https://doi.org/10.1080/15582159.2016.1270143>.
- Hall, R. L., & Wayman, F. W. (1990). Buying time: moneyed interests and the mobilization of bias in congressional committees. *American political science review*, 84(3), 797-820.  
<https://www.jstor.org/stable/1962767>.
- Hanushek, E. (1997) Assessing the effects of school resources on student performance: an update. *Educational Evaluation and Policy Analysis* 19(2) pp. 141-164.  
<http://hanushek.stanford.edu/publications/assessing-effects-school-resources-student-performance-update>.
- Heise, M. (2012). Law and policy entrepreneurs: empirical evidence on the expansion of school choice policy. *Notre Dame Law Review* 87(5), 1917-1940.
- Hoxby, C. M. (1996). How teachers' unions affect education production. *The Quarterly Journal of Economics*, 111 (3), 671–718, <https://doi.org/10.2307/2946669>.

- Hoxby, C. M. (2003). School choice and school productivity. could school choice be a tide that lifts all boats? *The Economics of School Choice*. In C. M. Hoxby (Eds.), *The Economics of School Choice* (pp. 287-341). University of Chicago Press.
- Jabbar, H., Fong, C. J., Germain, E., Li, D., Sanchez, J., Sun, W.-L., & Devall, M. (2019). The competitive effects of school choice on student achievement: a systematic review. *Educational Policy*. Retrieved April 24, 2021 from <https://doi.org/10.1177/0895904819874756>.
- Kau, J. B., Keenan, D., & Rubin, P. H. (1982). A general equilibrium model of congressional voting. *The Quarterly Journal of Economics*, 97(2), 271-293. <https://doi.org/10.2307/1880758>
- Kau, J. B., & Rubin, P. H. (1993). Ideology, voting, and shirking. *Public choice*, 76(1-2), 151-172. <https://www.jstor.org/stable/30025700>.
- Meckler, L. (2022, Jan. 30). Public education is facing a crisis of epic proportions. *Washington Post*. <https://www.washingtonpost.com/education/2022/01/30/public-education-crisis-enrollment-violence/>.
- Moe, T. M. (2006). The union label on the ballot box: how school employees help choose their bosses. *Education Next*, 6(3), 58+. [https://link.gale.com/apps/doc/A149158994/AONE?u=tel\\_oweb&sid=googleScholar&xid=411018b2](https://link.gale.com/apps/doc/A149158994/AONE?u=tel_oweb&sid=googleScholar&xid=411018b2).
- National Center for Education Statistics (2018) *Percentage of public school teachers who indicated that they were members of a union or an employee association similar to a union, by state: 2017–18*. [Data set]. Institute of Education Sciences. [https://nces.ed.gov/surveys/ntps/tables/ntps1718\\_20111201\\_t1s.asp](https://nces.ed.gov/surveys/ntps/tables/ntps1718_20111201_t1s.asp).
- National Center for Education Statistics (2019) *Total and current expenditures per pupil in public elementary and secondary schools: Selected years, 1919-20 through 2018-19*. [Data set]. Institute of Education Sciences. [https://nces.ed.gov/programs/digest/d21/tables/dt21\\_236.55.asp](https://nces.ed.gov/programs/digest/d21/tables/dt21_236.55.asp).
- National Education Association (NEA). (2021 Apr.). Ranking of the States 2020 and Estimates of School Statistics 2021. *NEA*. <https://www.nea.org/research-publications>.
- Open Secrets*. Teachers unions. (2021). <https://www.opensecrets.org/industries/indus.php?ind=11300>.

- Peterson, P., Howell, W., Wolf P., & Campbell, D. (2003). School vouchers: results from randomized experiments. *The Economics of School Choice*. In C. M. Hoxby (Eds.), *The Economics of School Choice* (pp. 107-144). University of Chicago Press.
- Pre-K - 12 rankings. (2021). *U.S. News*.  
<https://www.usnews.com/news/best-states/rankings/education/prek-12>.
- Psacharopoulos, G., Collis, V., Patrinos, H.A., & Vegas, E. (2021, Apr. 8). The COVID-19 cost of school closures in earnings and incomes around the world. *Comparative Education Review* 65(2). <https://doi.org/10.1086/713540>.
- Real Clear Opinion Research poll: school choice support soars. (2021, Apr. 6). *American Federation for Children*. <https://www.federationforchildren.org/real-clear-opinion-research-poll-school-choice-support-soars/>.
- School choice victories. (2022). *American Federation for Children*.  
<https://www.federationforchildren.org/school-choice-victories/>.
- Sowell, T. (2020). *Charter Schools and Their Enemies*. Basic Books.
- Strunk, K. O., & Grissom, J. A. (2010). Do strong unions shape district policies?: Collective bargaining, teacher contract restrictiveness, and the political power of teachers' unions. *Educational Evaluation and Policy Analysis*, 32(3), 389–406.  
<https://doi.org/10.3102/0162373710376665>.
- West, K. L., & Mykerezi, E. (2011). Teachers' unions and compensation: The impact of collective bargaining on salary schedules and performance pay schemes. *Economics of Education Review*, 30(1), 99-108. <https://doi.org/10.1016/j.econedurev.2010.07.007>.
- Winters, M., & Greene, J. (2011). Public school response to special education vouchers: the impact of Florida's McKay Scholarship Program on disability diagnosis and student achievement in public schools. *Educational Evaluation and Policy Analysis*, 33(2), 138-158. <http://www.jstor.org/stable/41238544>.
- Winters, M. (2012). Measuring the effect of charter schools on public school student achievement in an urban environment: evidence from New York City. *Economics of Education Review* 31 (2) 293-30. <https://doi.org/10.1016/j.econedurev.2011.08.014>

## Appendix A

### Percentage of public school teachers who indicated that they were members of a union or an employee association similar to a union, by state: 2017–18

State	Member of a union or Employee Association
United States	69.4
Alabama	73.0
Alaska	86.0
Arizona	31.0
Arkansas	26.1
California	90.7
Colorado	57.2
Connecticut	97.0
Delaware	89.2
District of Columbia	‡
Florida	52.5
Georgia	51.3
Hawaii	96.6
Idaho	49.9
Illinois	96.3
Indiana	65.4
Iowa	71.0
Kansas	51.2
Kentucky	56.7
Louisiana	51.6
Maine	77.6
Maryland	‡
Massachusetts	92.5
Michigan	84.7
Minnesota	92.5
Mississippi	33.9
Missouri	74.1
Montana	86.3
Nebraska	77.0
Nevada	57.6
New Hampshire	84.1
New Jersey	95.7
New Mexico	43.4
New York	97.4
North Carolina	19.9
North Dakota	73.6

Ohio	91.7
Oklahoma	59.4
Oregon	93.1
Pennsylvania	92.2
Rhode Island	88.9
South Carolina	23.0
South Dakota	41.8
Tennessee	43.5
Texas	51.4
Utah	46.9
Vermont	93.6
Virginia	43.3
Washington	96.7
West Virginia	73.9
Wisconsin	48.0
Wyoming	49.7

‡ Reporting standards not met. The response rate is below 50 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School Teacher Data File," 2017–18.

## Appendix B

### Average salaries of public school teachers for 2019-2020

<b>State</b>	<b>Salary(\$)</b>
United States	64,133
Alabama	54,095
Alaska	72,010
Arizona	50,782
Arkansa	50,456
California	84,531
Colorado	57,706
Connecticut	78,427*
Delaware	64,853*
Florida	49,102
Georgia	60,578
Hawaii	65,409
Idaho	52,875
Illinois	68,803
Indiana	51,745
Iowa	58,184
Kansas	51,320
Kentucky	53,907
Louisiana	51,566
Maine	55,276
Maryland	73,444
Massachusetts	84,290
Michigan	63,568
Minnesota	58,663
Mississippi	46,843
Missouri	50,817
Montana	52,135*
Nebraska	55,267
Nevada	56,672
New Hampshire	59,622
New Jersey	76,376*
New Mexico	54,256
New York	87,069*
North Carolina	54,150
North Dakota	53,525
Ohio	61,406

Oklahoma	54,096
Oregon	67,685
Pennsylvania	70,339
Rhode Island	75,336*
South Carolina	53,329
South Dakota	48,984
Tennessee	51,862
Texas	57,090
Utah	54,678
Vermont	61,108*
Virginia	57,665
Washington	76,743
West Virginia	50,238
Wisconsin	59,431
Wyoming	59,786

\* NEA Estimate

## Appendix C

### Public School Revenue Receipts Per Student in Fall Enrollment 2019-2020

<b>State</b>	<b>Revenue(\$)</b>
United States	15,673
Alabama	11,854
Alaska	20,422*
Arizona	10,801*
Arkansa	11,812
California	16,358*
Colorado	13,897
Connecticut	22,692*
Delaware	15,397*
Florida	11,493
Georgia	13,088*
Hawaii	16,897*
Idaho	9,388*
Illinois	19,786*
Indiana	13,064*
Iowa	13,855
Kansas	14,287
Kentucky	13,362
Louisiana	13,578
Maine	17,388
Maryland	18,180
Massachusetts	20,581
Michigan	13,039
Minnesota	16,492*
Mississippi	10,740
Missouri	13,949
Montana	12,831*
Nebraska	12,043*
Nevada	11,236*
New Hampshire	19,054
New Jersey	23,126*
New Mexico	14,863
New York	30,662*
North Carolina	11,776
North Dakota	16,616*
Ohio	15,062*

Oklahoma	10,757
Oregon	16,029
Pennsylvania	20,038*
Rhode Island	18,754*
South Carolina	15,012
South Dakota	12,718
Tennessee	10,332*
Texas	13,058
Utah	10,161
Vermont	21,516*
Virginia	13,877*
Washington	18,625
West Virginia	13,759*
Wisconsin	13,929*
Wyoming	19,519

\* NEA Estimate

## Appendix D

### Binary Logistic Regression: Bill passed versus union, teacher salary, revenue per student, education ranking, Democratic legislature

#### Method

Link function Normit  
Rows used 49

#### Response Information

Variable	Value	Count
Bill passed	1	8 (Event)
	0	41
	Total	49

#### Regression Equation

$P(1) = \Phi(Y')$   
 $Y' = 7.16 + 3.67 \text{ union} - 0.000150 \text{ teacher salary}$   
 $- 0.000018 \text{ revenue per student}$   
 $- 0.0310 \text{ education ranking} - 3.05 \text{ Democratic legislature}$

$\Phi = \text{CDF of the standard normal distribution}$

#### Coefficients

Term	Coef	SE Coef	Z-Value	P-Value	VIF
Constant	7.16	4.19	1.71	0.087	
union	3.67	2.05	1.79	0.074	1.90
teacher salary	-0.000150	0.000087	-1.73	0.084	2.02
revenue per student	-0.000018	0.000134	-0.13	0.895	2.06
education ranking	-0.0310	0.0264	-1.17	0.240	1.59
Democratic legislature	-3.05	2.78	-1.10	0.272	1.99

#### Model Summary

Deviance R-Sq	Deviance R-Sq(adj)	AIC	AICc	BIC	Area Under ROC Curve
31.84%	20.37%	41.73	43.73	53.08	0.8628

#### Goodness-of-Fit Tests

Test	DF	Chi-Square	P-Value
Deviance	43	29.73	0.938
Pearson	43	28.34	0.959
Hosmer-Lemeshow	8	3.54	0.896

## Analysis of Variance

Source	DF	Wald Test	
		Chi-Square	P-Value
Regression	5	6.65	0.248
union	1	3.19	0.074
teacher salary	1	2.99	0.084
revenue per student	1	0.02	0.895
education ranking	1	1.38	0.240
Democratic legislature	1	1.21	0.272

## Fits and Diagnostics for Unusual Observations

Obs	Observed		Fit	Resid	Std Resid	
	Probability					
15	1.000	0.129	2.023	2.16	R	
35	1.000	0.188	1.827	2.10	R	

*R Large residual*