IESP
Working Paper Series

Local Demand For School Choice:
Evidence from the Washington Charter School Referenda

WORKING PAPER #09-01
February 2009

Sean Corcoran
Steinhardt School
Institute For Education and Social Policy
New York University

Christiana Stoddard
Department of Agricultural Economics and Economics
Montana State University

NYU Steinhardt
Steinhardt School of Culture, Education, and Human Development

NYU Wagner
Robert F. Wagner Graduate School of Public Service

Acknowledgements

The authors would like to thank the Russell Sage Foundation for providing financial support and research assistance while one of the authors was a visiting scholar at the foundation in 2005-06. Additional thanks to Dan Goldhaber and Scott DeBurgomaster of the University of Washington, Andrea Hardy and Tom Baier of the Washington Education Association, and Chris Jansen of King County GIS for graciously providing data. Jack Buckley, Maria Fitzpatrick, Tom Husted, Jennifer Jennings, Randy Reback, Janelle Scott, and Matthew Wiswall provided valuable comments, and Erin Cocke, Lauren Porzelt, and Orly Clerge contributed their expert research assistance. All errors are solely our own.

Editorial Board

Abstract

Many U.S. states provide public funding for charter schools—deregulated and privately managed schools operating in direct competition with government-run schools. While the impact of charter schools on student achievement and sorting has been intensely studied, less is known about the demand for these alternatives. Using precinct-level returns from three ballot referenda in Washington State, we assess the relative importance of school quality and community characteristics in explaining voter support for charter schools. We find that low student achievement predicts greater charter support across school districts, but is relatively unimportant in explaining variation across precincts within districts. Residents of districts with more highly qualified teachers and greater local spending were less likely to favor charters, as were districts with high teacher union membership. The strongest predictor at all levels was political partisanship: areas with more Republican voters were strongly and consistently more likely to vote in favor of charter schools.

1. Introduction

Charter schools have emerged as favored tool of school reformers eager to use market forces to improve public education. Charters are publicly financed, yet privately managed schools in direct competition with traditional public schools for students, teachers, and funding. Proponents view charter schools as an opportunity to provide alternatives to government-operated schools, promote innovation, and incentivize low-performing schools to improve educational outcomes. Detractors argue that charters divert resources from existing public schools, lure motivated students and parents away from traditional schools, and do little to raise student achievement.

In spite of this ongoing debate, the charter school movement has made a significant impact on education policy. Forty states and D.C. permit the operation of charter schools, and more than 1.2 million students attend public charters nationwide (Consoletti and Allen, 2008). Their growth is all the more striking when contrasted with the history of tax-supported vouchers for private schooling in the U.S. With the exception of a few targeted programs, every publicly-funded voucher scheme has failed due to weak political support or judicial intervention (Bali, 2008; Kenny, 2005).[a]

Researchers have begun to evaluate the impact of charter schools on student outcomes, sorting, and teacher labor markets (Bettinger, 2005; Bifulco and Ladd, 2006; Hanushek et al., 2007), but there has been comparatively little analysis of the underlying demand by parents and other residents for these policies. Studies that have sought to uncover the latent demand for charter schools mostly rely on indirect evidence, using variation in the strength of state charter laws, observed enrollment in charter schools, or opinion polls (Glomm, Harris, and Lo, 2005; Hassell, 1999; Stoddard and Corcoran, 2007; Wong and Shen, 2004). This work is limited in its ability to

[a] As of this writing, publicly funded general education voucher programs were in operation only in Cleveland, Milwaukee, and Washington D.C. Programs that enable special education students to attend private schools are available in Arizona, Florida, Ohio, and Utah, and a statewide voucher program for students attending low-performing schools exists in Ohio. Voucher legislation in Florida and Colorado was ruled unconstitutional in those states' highest courts. Most recently, voters in the state of Utah overturned a universal voucher program passed by the legislature in 2007.

make inferences about policy preferences for several reasons. First, choice reforms adopted in state legislatures are complex, multi-dimensional, and often more representative of the efforts and compromises of interest groups and policy elites than popular demand (DeBray-Pelot, Lubienksi, and Scott, 2007; Kirst, 2007; Wong and Shen, 2004). Second, observed enrollment in charter schools is likely to be a censored measure of latent demand, due to the tight enrollment caps typical of state charter laws. Finally, opinion polls are difficult to generalize and have been subject to some criticism in this context (Moe, 2002).[b]

In this paper, we use precinct-level returns from three ballot referenda on charter schools in Washington State to better understand local preferences for school choice. This approach adds to the literature in three unique ways. First, these initiatives represent the only direct referenda on charter schools in U.S. history (Bali, 2008). In 1996, 2000, and 2004, more than two million Washington voters registered their support or opposition to charter schools. Matching local election returns to measures of student achievement, community demographics, political partisanship, and school resources, we assess the factors most strongly associated with support for charter schools. Second, we estimate voting models using observations on school districts state-wide and from precincts in King County, Washington. This approach allows us to investigate the role of district policy and characteristics, while assessing the relevance of potential aggregation bias. Finally, benefiting from repeated referenda, we are able to provide cross-sectional estimates from each ballot measure, and pooled and fixed-effects models exploiting repeated observations on local election outcomes. Unlike previous studies, this allows us to control for time-invariant, unobserved characteristics correlated with district quality, demographics, or political preferences.

[b] In recent years the annual Phi Delta Kappan/Gallup Poll of the Public's Attitudes Toward the Public Schools has asked: "do you favor or oppose the idea of charter schools?", "do you favor or oppose allowing students and parents to choose a private school to attend at public expense?" and the like. In 2006, 53 percent approved of charter schools while only 36 percent supported the voucher concept. Results from all years can be found at http://www.pdkintl.org/kappan/kpollpdf.htm [Last accessed: February 5, 2009].

Our results show that low student achievement (as measured by the percent of students not meeting state standards in math and reading) is a consistent and fairly strong predictor of electoral support for charter schools across school districts, both in the cross sections and in the panel. This is particularly true when conditioning on school and non-school inputs into education, such as income and school resources, that might be associated with voter expectations of school quality. However, precinct-level models indicate that voters are much less sensitive to neighborhood school quality. Teacher qualifications and local school financing are also strong predictors of the district charter support share. Where teachers had higher average levels of experience or education, voters were generally less likely to support charter schools. Districts that raised more in local levies—where taxpayers potentially had more to lose to charter schools—were also less supportive of charter schools. Additionally, although high property wealth districts tended to be more supportive of charter schools in the cross section, districts where property wealth per student was rising saw weaker support for charter schools.

Most interestingly, political partisanship was a much stronger predictor of charter support than school quality, at all levels of the analysis. Across precincts in King County, we find that Republican voting has an effect on charter support that is 2 to 3 times the size of any other explanatory factor in our model. Finally, we find that the state teachers union, which vocally opposed the charter school proposal in 2004, may have effectively reduced voter support through its local representation. Where union membership was high as a proportion of all teachers, turnout was high and voter support for charter schools consistently lower.

2. Theory and Evidence on the Support for School Choice

A model of voter behavior on a school choice proposal should consider how characteristics of the measure potentially affect voter utility. Benefits and costs of charter school policies will be

most salient for those with a clear interest in public schooling—parents of school-aged children and teachers, for example—but the fiscal implications of school choice will matter to a much broader constituency of taxpayers and homeowners. Political ideology and altruism may also play an important role in voter sentiment, particularly on an issue that fundamentally alters the public sector's role in providing education.

The typical charter policy has several defining features that figure prominently into the debate; these features also likely inform voters' preferences over these policies. First, charter schools provide alternatives to traditional neighborhood-zoned public schools and expand the range of educational offerings. Second, charter schools shift educational provision away from the government sector and toward private non-profit providers, with the intention of promoting greater competition, efficiency, and innovation. Third, charter schools divert students and resources away from existing schools, with tax dollars following students from traditional schools to charters. Finally, charter schools are often exempt from collective bargaining rules that govern teacher hiring policies in public school systems. This aspect of charter policy in particular has spurred opposition from teacher unions.

The constituency most likely to favor expanded school choice is households with limited access to quality schools. The empirical evidence on voucher support and parental exercise of school choice mostly confirms this pattern: households near under-performing public schools are more likely to support vouchers than those near high-performing schools, and families with children in low-quality schools are more likely to take advantage of transfer options when available.[c] Parents of students in charter schools appear to be particularly sensitive to their schools' performance (Hanushek et al., 2007), and enrollment in charter schools is systematically found to be higher in low-performing school districts (Glomm, Harris, and Lo, 2005; Stoddard and Corcoran, 2007).

[c] See, for example, the literature on vouchers (Brunner and Sonstelie, 2003; Sandy, 1992), and parental rankings in school choice programs (Hastings, Kane, and Staiger, 2006; Hastings and Weinstein, 2008).

Conditional on school quality, voters may support expanded school choice when the existing supply of schools is insufficient to accommodate heterogeneous demands for curricula or other school services. Where households lack the ability to satisfy school preferences through the existing public or private system, heterogeneous tastes for educational programs may create demand for alternatives. Tastes for school programs are unobservable, but may be correlated with income, race or ethnicity, or related student needs. Race and income have been found to be related to support for school choice programs—though not always in consistent directions (Brunner and Sonstelie, 2003; Brunner, Sonstelie, and Thayer, 2001; Catterall and Chapleau, 2001; Weiher and Tedin, 2002). Black voters, for example, are frequently found to favor school vouchers and charters, while Hispanic voters often oppose them (Bali, 2008; Stoddard and Corcoran, 2007). Household income is inconsistently related to support for school choice, but this may reflect fiscal concerns rather than curricular preferences, as discussed further below. Community composition may further fuel demand for school choice through a desire to sort on peers (Brunner and Imazeki, 2008; Elacqua, Schneider, and Buckley, 2006; Schneider and Buckley, 2002). A growing empirical literature on existing choice programs finds that students who transfer schools disproportionately move to schools aligned with their own race or socioeconomic status (Bifulco and Ladd, 2007; Booker, Zimmer, and Buddin, 2005).

The fiscal consequences of school choice also weigh into voters' views of these policies. Vouchers that subsidize private school attendance may increase or decrease the tax cost of education, depending on the number of students who move from public to private schools and their long-run impact on public school efficiency (Hoyt and Lee, 1998). To the extent there are economies of scale in education, charter schools or vouchers will have a smaller impact on per-student costs in large or urban school districts than on small or rural districts (Glomm, Harris, and Lo, 2005). Research on the political support for vouchers suggests that homeowners base their

support in part on how they expect vouchers to affect their property values (Brunner and Sonstelie, 2003; Brunner, Sonstelie, and Thayer, 2001). Policies that break the link between residential location and school attendance may fail to gain support among homeowners in communities with quality schools and correspondingly high housing values.

Finally, the debate over school choice addresses fundamental questions about the role of the public sector in providing basic education. One might thus expect politics and ideology to play a role in the support for these programs. Indeed, existing empirical evidence finds that political preferences are closely aligned with support for school choice. Republican voters are considerably more likely to support voucher referenda (Bali, 2008; Brunner and Imazeki, 2008; Brunner, Sonstelie, and Thayer, 2001; Catterall and Chapleau, 2001), and Republican majorities in state legislatures more likely to pass charter legislation (Hassel, 1999; Kenny, 2005; Wong and Shen, 2004). Teacher unions have been found to be effective in blocking or weakening state charter school laws (Stoddard and Corcoran, 2007) and influencing Congressional voting on vouchers (Gokcekus, Phillips, and Tower, 2004). Teachers in traditional schools may perceive school choice as a threat, and often vote against these policies (Brunner, Sonstelie, and Thayer, 2001; Sandy, 1992).

The deliberation over charter schools in Washington and elsewhere has touched upon all of these issues. In the next section, we provide a brief history of the charter school movement in Washington and describe how the details of the proposed referenda would have been likely to affect local schools, districts, and residents.

3. Background

3.1 The Battle Over School Choice in Washington

Washington voters have decided four proposals to expand school choice on three separate occasions, and in every case the proposal failed (Table 1).[d] Early attempts were the least successful, with fewer than 36 percent of voters in 1996 supporting charter school and voucher proposals (Initiatives 177 and 173, respectively). A 2000 proposal to authorize charter schools (Initiative 729) came closest to passage, receiving 48.2 percent approval, but support fell again in 2004 (Referendum 55) with only 41.7 percent of voters in favor of charter schools. Each of these ballot initiatives coincided with a presidential election, so voter turnout was relatively high, with 74 to 82 percent of registered voters casting ballots. A small fraction of voters abstained from voting on the charter measure, ranging from 3.3 percent abstention in 1996 to 6 percent in 2000.

While none of the charter proposals received majority support, voter approval varied substantially across localities, as seen in Figure 1. Across precincts statewide, the standard deviation in voter approval was 5.9, 6.1, and 5.3 points in 1996, 2000, and 2004. Support varied by region and urbanization, as illustrated in Figures 2-3. Rural areas, small towns, and the city of Seattle provided the weakest support for charter schools, while the referenda received their highest rates of approval in mid-sized cities and the suburbs. Even within neighborhoods and precincts in King County—which includes Seattle—support varied significantly (Figure 3). With the exception of 2000, Seattle stood out as an exception among large districts in its opposition to charter schools. Others, including Tacoma and Lake Washington, generally favored the charter initiatives, even producing majorities in 2000. (48 of the state's 296 school districts produced a majority in support of charter schools in 2000, many of these in the suburban Seattle counties of Pierce and Snohomish).

[d] Legislators tried on a number of occasions to pass a charter school bill, with legislation introduced every year between 1993 and 2003. A charter bill was ultimately signed into law in 2004 (HB 2995), but a voter petition placed on the ballot (Referendum 55) would later overturn it. In 1994 Initiative 635 would have authorized the establishment of charter schools for at-risk youth, but it failed to receive sufficient signatures for inclusion on the ballot.

Details of the charter initiatives evolved over time, reflecting the maturation of the charter school movement and a desire by backers to produce a politically palatable bill. Initiative 177 in 1996 was the most permissive, allowing for an unlimited number of new or conversion charter schools in districts whose electorate voted to permit them. Under that bill, all districts would have been required to poll their residents on conversion to "renewed school district status" which if passed would authorize charter (or "independent") schools.[e] Charters would be operated by non-profits and would receive all local, state, and federal operating funds their students would have received in a conventional school. School districts would retain the power to approve new charters, though schools whose applications were denied could appeal to the state. Charter school teachers would be exempt from collective bargaining, and even private schools would have been eligible to convert to "independent" status and receive public funding.

In contrast, Initiative 729 in 2000 and Referendum 55 in 2004 were weaker and more in line with charter laws enacted in other states. These measures imposed statewide caps on new charter schools—80 in the former and 45 in the latter—but maintained weak restrictions on conversions. Neither limited the number of conventional schools that could convert to charter; in fact, under Referendum 55, the state could mandate conversion of under-performing schools. Teachers in charter schools would have been required to participate in collective bargaining in these cases. In 2000, charter schools would constitute independent bargaining units; in 2004, charters would exist as independent bargaining units for five years, with the option of joining the district's local union in the future (conversion schools remained part of the district union).

[e] While the legislation did not use the term "charter schools," the local media covering Initiative 177 did. See, for example, "Taking the Public out of Schools," *Seattle Post-Intelligencer,* October 20, 1996.

Charter politics in Washington became increasingly heated over time.[f] Initiative 177 received very little financial backing, but by 2000 advocates had raised over $3.4 million to support the charter campaign, mostly from a single donor (Paul Allen, co-founder of Microsoft).[g] Opponents collected little more than $11,000. By 2004, charter opponents were considerably more organized. Referendum 55 originated as a petition to overturn HB 2995 passed by a bi-partisan government earlier that year. The Washington Education Association (the state teachers union) led the petition effort, but a number of other prominent state organizations supported this effort (Washington Research Council, 2004).[h] Opponents amassed more than $1.3 million to overturn the charter legislation, primarily from the National Education Association and its state affiliates. Still, at $3.9 million, contributions supporting the charter bill more than doubled that of its rivals.[i]

3.2 Fiscal Implications of the Washington Charter Referenda

All three charter proposals had important implications for the governance and fiscal health of local school districts. Section 3.1 described the extent to which these measures limited the growth of new schools and conversions and the power granted localities to influence schools operating within their boundaries. The most politically contentious issue surrounding the charter school proposals, however, was their diversion of funds away from conventional schools.

---

[f] Charter advocates Jim and Fawn Spady organized the 1996 and 2000 initiatives and led the campaign for charters during the 2004 referenda. See http://www.wacharterschools.org/index.htm [Last accessed: September 28, 2008].

[g] Allen contributed $3.275 million in support of Initiative 729 (Washington Public Disclosure Commission, http://www.pdc.wa.gov/QuerySystem/statewideballotinitatives.aspx [Last accessed: September 28, 2008].

[h] These organizations included the League of Women Voters, the state Democratic Party, and the Seattle School Board. On Seattle, see "Charter school foes file petitions to get issue on fall ballot," *Seattle Post-Intelligencer*, June 10, 2004. Democratic governor Gary Locke, the chairs of the House and Senate education committees, the Washington Research Council, and most major state newspapers and business organizations favored the original bill.

[i] In 2004 the WEA contributed $601,000 in opposition, while the NEA added $500,000. Significant contributions in favor of charters included John Walton (Wal-Mart), Bill Gates (Microsoft), and Donald Fisher (The Gap), at approximately $1 million each (Washington Public Disclosure Commission). As of 2006 contributions in favor of Initiative 729 and Referendum 55 were two of the largest in state history (see http://www.pdc.wa.gov/home/historical/pdf/MostMoneyJournal.pdf [Last accessed: November 11, 2006]).

For each student enrolling in a charter school, the revenues lost by the school district would have been substantial under any of these bills. Washington has a centralized system of finance in which state dollars comprise more than 70 percent of operating expenditures.[j] State aid is determined by a complex formula based on enrollment, pupil-staff ratios, "staff-mix factors" (which take into account the higher cost of more qualified teachers), and a statewide salary schedule. Districts are not required to spend state funds in strict accordance with this formula—in fact, they negotiate actual salaries with union locals—but state law restricts average base salaries to the statewide average.[k] In 2003-04, the median district in the state received roughly $5,800 per student in state funds for operations; federal funds contributed an additional $751.[l]

Local districts can and do supplement state revenues with special levies for operations ("excess M&O"), capital projects, and transportation. These funds are raised almost exclusively from property taxes, require voter approval, and are capped at a fixed proportion of state and federal aid (the "levy authority"). The state offers additional matching grants ("local effort assistance") to low property wealth districts. In 2003-04, 274 of the state's 296 districts raised excess M&O levies, with the median district raising $1,335 per student.[m] Generally speaking, the state does not subsidize capital projects, although an equalization aid program exists for low property wealth districts. In 2003-04, only 87 districts received state assistance for capital projects.

---

[j] Authors' calculations using Census of Governments (F-33) data from 2003-04, and Bergeson et al. (2004).

[k] Bergeson et al (2004). In 2003-04 the baseline salary level for a teacher with the minimum required education and no experience was $29,149 in most districts. Actual classroom teacher salaries in 2003-04 averaged $46,597, with an average starting salary of $30,159 (American Federation of Teachers, 2004).

[l] Bergeson et al (2004). State contributions for current operations are calculated as total revenues from the state less state contributions for capital outlay and debt service. The official fiscal impact statement for Referendum 55 prepared by the Secretary of State estimated that charter schools would receive an average of $5,287 per student in state funding. The 2004 fiscal impact statement also estimated an average of $1,226 in additional local levies would accrue to district-sponsored charters.

[m] Authors' calculations using data provided from the Washington Department of Revenue Research Division, and Bergeson et al. (2004).

All three charter proposals mandated equivalent state and federal funds for charter schools, but rules governing excess M&O and capital financing—the domain of local school districts—varied from one bill to the next. Initiative 177 was the most aggressive, requiring a full sharing of local levies with charter schools. Initiative 729 and Referendum 55, on the other hand, required districts to only share tax levies with conversions and new district-sponsored schools. As is true in most states with charter schools, capital financing for charters would not have been generous in these bills, particularly for new schools. Conversions, however, were permitted to continue leasing district facilities free of charge and qualify for state matching aid for construction.

3.3 Existing School Choice in Washington

In theory, state law already provides a modicum of choice for Washington parents. The 1990 Student Enrollment Options law requires districts design and adopt an intra-district transfer policy, and "strongly encourages" them to honor inter-district transfer requests (Bergeson et al., 2004, and Education Commission of the States). Students denied transfer requests can appeal to the state superintendent. Districts are not required to provide transportation for intra-district transfer students, but some (such as Seattle) have historically done so.

Despite a relatively liberal open enrollment, participation does not appear to be widespread in practice. According to the 2003-04 NCES Schools and Staffing Survey (SASS), 72 percent of surveyed Washington districts acknowledged an intra-district choice policy and roughly 80 percent reported having an inter-district policy, though in theory all should have both.[n] Districts that do have choice programs can impose restrictions, for example, allowing transfers only when space is deemed available. Generally speaking, there is little evidence of extensive inter-district transfers in

[n] Authors' calculations using the 2003-04 Schools and Staffing Survey. Districts are asked: "does this district have a choice program in which students can enroll in another school or district outside their attendance area without justification based on individual special needs?" In 2003-04, 59 of 77 sampled districts in Washington reported intra-district choice; 65 of 77 reported inter-district choice programs.

Washington. On average, inter-district transfer students comprise only 3 percent of enrollment in sampled SASS districts that report having an inter-district choice program.[o]

Like many states, Washington permits magnet schools, though the actual number of magnets is surprisingly difficult to discern (the NCES Common Core of Data does not identify magnet schools in Washington, and the Washington Office of Superintendent of Public Instruction does not maintain a list).[p] The 2003-04 SASS indicates enrollment in magnet schools in roughly 19 percent of sampled Washington districts. In the 1993-94 SASS, magnet school enrollment was largest in the Seattle (11,645 students) and Tacoma (7,281) school districts.

4. Empirical Model

We are interested in how voter support for the Washington charter referenda depends on local school quality and other characteristics of voters, schools, and communities. If X_{im} represents a vector of voter, school, and community characteristics relevant to voter *i*'s support for ballot measure *m*, then one can model the probability that voter *i* votes to approve measure *m* using the cumulative logistic function:

$$(1) \qquad \Pr(i \text{ votes to approve } m) = P_{im} = \frac{\exp(\alpha_m + X'_{im}\beta_m)}{[1+\exp(\alpha_m + X'_{im}\beta_m)]}$$

This empirical specification typically assumes that voter behavior is governed by a latent utility model, under which voters vote to support a proposal only when the expected utility from doing so exceeds some threshold level (see Deacon and Shapiro, 1975 and Merzyn and Ursprung, 2005 for examples). In our context, the parameters *a* and β are subscripted with *m* to allow this relationship to vary across individual ballot measures.

[o] Ibid. Unfortunately, the state of Washington does not provide inter-district transfer data.
[p] The CCD has an identifying variable for magnet schools, but they are all coded missing in Washington.

Ideally, we would like to have individual data on ballot choices, voters, and the X_i for each ballot initiative to estimate (1) using maximum likelihood. Instead, we approximate P_{im} using the aggregate proportion voting to approve charter school measure m in each community c $\left(\overline{P}_{cm}\right)$, and use aggregate voter, school, and community characteristics in place of X_{im} Community c is represented by a school district or neighborhood precinct, and X_{im} measured at the district, precinct, or census tract level. Given these, we estimate a grouped logit model, where the log-odds ratio of $\overline{P}_{cm}$ is a linear function of the aggregated X_i $\left(X_{cm}\right)$ and a random component:

$$(2) \qquad \ln\left(\frac{\overline{P}_{cm}}{1-\overline{P}_{cm}}\right) = \alpha_m + \beta'_m X_{cm} + u_{cm}$$

The coefficient vector β_m in (2) represents the partial effects of the explanatory variables x_{km} on the log-odds ratio, and can be estimated using weighted least squares.[q] For ease of interpretation we present estimated marginal effects of the x_{km} on the percent favoring charter school proposal m at the mean level of X_{cm}:

$$(3) \qquad \frac{\partial \overline{P}_m}{\partial x_{km}} = \hat{\beta}_{mk} \frac{\exp\left(\hat{\alpha}_m + \overline{X}'_{cm}\hat{\beta}_m\right)}{\left[1+\exp\left(\hat{\alpha}_m + \overline{X}'_{cm}\hat{\beta}_m\right)\right]^2}$$

The use of grouped data introduces aggregation bias, such that estimators of β in (2) will generally be biased and inconsistent for the individual-level β in equation (1). Consequently, our estimated coefficients and marginal effects should not necessarily be interpreted as estimators of individual-level parameters. Strictly speaking, they are an empirical description of differences in voting behavior across jurisdictions. A positive association between the percent of voters who are black and the charter support share, for example, cannot tell us whether this support comes from black voters or white voters in more diverse districts.

---

[q] The weights are the inverse of the square root of the variance of the u_{cm}, or: $\sqrt{votes_{cm}\left(1-\overline{P}_{cm}\right)}$, where $votes_{cm}$ represents the total number of votes cast for measure m in school district or precinct c.

The relationship between jurisdictional characteristics and electoral support for charter schools is interesting in its own right. We do, however, attempt to reduce aggregation bias in two ways. First, we estimate equation (2) using both school district and precinct-level observations. School districts—of which there are 296 in Washington—have the advantage of corresponding with the governmental units upon which the charter vote might be considered a referendum. Census and school performance data is also readily available at this level. The downside is that districts are often large and heterogeneous. Precincts, on the other hand, are small, more homogeneous, and roughly correspondent with neighborhoods. We have complete precinct-level election results from King County (the most populous in Washington) that we match to Census tracts and proximate schools using GIS.

Second, we take advantage of Washington's repeated referenda on charter schools to estimate district and precinct models with fixed effects. This approach allows us to control for fixed and potentially unobservable characteristics of communities that explain variation in voting patterns. The chief disadvantage of this strategy is that support for expanding school choice is likely to be based partly on systemic, time-invariant characteristics of communities or school districts. Some of these characteristics—such as local demographics, union strength, and existing choice—are interesting to researchers and relevant for policy. Bearing these issues in mind, we present three sets of estimates for the relationships in equation (2): separate models for each election year, a pooled model over all three years, and a fixed-effects model using school district or precinct fixed effects. Taken together, these approaches will provide a fuller picture of how voting patterns on the charter school measures relate to time-varying and time-invariant characteristics of local schools and communities, and how the relationship between voter support and particular characteristics varies across the three elections.

5. Data

Our analysis combines electoral outcomes with demographic, political, school quality, and school resource data for each election year. Vote counts for each ballot measure and for the presidential and gubernatorial races were obtained for every precinct in the state from the 39 county auditors (7,300 to 8,900 precincts, depending on the year). Precinct-level votes were then aggregated to school districts based on county mappings.[r] School and district data on student characteristics, achievement, and resources were provided by the Washington Office of Superintendent of Public Instruction (OSPI) and the NCES Common Core of Data (CCD). Tax and property wealth data were obtained from the state Department of Revenue, and local union membership from the Washington Education Association (WEA). Supplemental population and housing characteristics were taken from the 1990 and 2000 decennial censuses.

Our primary measure of student achievement is based on annual results on the Washington Assessment of Student Learning (WASL), criterion-referenced exams for assessing mastery of state academic standards.[s] As a second indicator of student achievement for secondary level students, we also use high school dropout rates by district and school. Like other states, Washington phased in its assessment system over time, gradually expanding the grades and subjects tested.

Achievement on the WASL is publicly reported at four levels (1-4): below basic, basic, proficient, and advanced; levels 3 or 4 are said to be meeting state standards. We use results from the 1997-98, 1999-00, and 2003-04 WASL administrations, and for consistency across years we

[r] The typical precinct is considerably smaller than a school district. Only in a very small minority of cases do precincts cross school district boundary lines. In these cases we distribute precinct votes equally across relevant school districts (except King County, where we are able to allocate votes according to the fraction of precinct land area in each district).

[s] See http://www.k12.wa.us/assessment/WASL/default.aspx [Last accessed: September 28, 2008].

restrict our attention to 4th, 7th, and 10th grade math and reading results.[t] It is not *a priori* clear that any one grade-subject measure of student achievement is most salient to voters assessing local school quality. We thus compute two composite measures of achievement: unweighted and grade-subject-student weighted averages of the percent failing to meet state standards in 4th, 7th, and 10th grades. Averaging across grades should also reduce year-to-year noise. Washington reports math and reading results in June, so scores for 2000 and 2004 were available to parents and voters prior to the November election. Unfortunately, the first WASL administration did not occur until *after* the 1996 referendum. Consequently our use of 1997-98 scores in our 1996 models fails to provide a contemporaneous measure of achievement in that year.[u]

Student demographics for schools and districts were obtained from the 1996, 2000, and 2004 CCD. Specifically, we use variables on enrollment by race or ethnicity (American Indian and Alaskan Native, Asian or Pacific Islander, Hispanic, black, and white), and by free lunch eligibility and special education status. An approximation of average class size was constructed as fall enrollment divided by the number of full-time equivalent teachers. As a measure of existing public school district choice, we also used CCD enrollment data to calculate the number of districts per 1,000 students within a 25-mile radius of each school district.

OSPI provided two measures of teacher qualifications for districts and schools in each year: mean years of experience, and the fraction of teachers with masters' degrees.[v] We measure union membership as the ratio of local WEA members (provided by the WEA) to FTE teachers (as

[t] Fourth graders were first tested on a voluntary basis in 1996-97, and were subject to mandatory testing in 1997-98. Seventh and tenth graders were tested voluntarily in 1997-98 and were subject to mandatory testing by 2000-01. Virtually all districts participated in voluntary testing.

[u] Grade-level performance is highly correlated across years, however: the same-district correlation between the percent of students not meeting state standards in 4th grade math in 2000 and 2004 is 0.57; in reading the correlation is 0.63. Same-district correlations for the 7th grade are 0.68 and 0.54, and are similar for the 10th grade. Same-*school* correlations are even higher across years.

[v] We thank Dan Goldhaber and Scott DeBurgomaster for providing tabulations for 1996 and 2000.

reported by the CCD).[w] Union membership is available at the district level only. Financial data, including expenditures and revenues by source, were obtained from the Census of Governments and the Washington Department of Revenue. Finally, we use several population characteristics from the 1990 and 2000 Census—the percent of adults age 25 and older who are college graduates, the percent of households with children, the percent aged 65 and older, the percent of K-12 students enrolled in private school, and the percent of working adults employed in education—measured at the school district or census tract level. Within-district estimates of income inequality are taken from Corcoran and Evans (2008).

Summary statistics for Washington school districts and King County precincts are provided in Appendix Table 1. Observations are weighted by the total number of votes cast on each ballot measure. As such, they can be interpreted as characteristics of the school district or precinct experienced by the average or "typical" voter in each election year.

Over this eight-year period, public school enrollment became less white on average, more African-American, considerably more Hispanic and Asian, and poorer (as measured by the percent of students eligible for free lunch). Reflecting Washington's demographics, the average voter's community enrolled a greater share of Asian students than black students and a non-trivial share of American Indian and Alaskan Native students. Achievement as measured by the percent of students failing to meet state standards on the WASL improved markedly between 1996 and 2004—almost implausibly so. This dramatic improvement may reflect a growing familiarity with the WASL and a rise in "teaching to the test." It is well-documented that large increases in measured proficiency are common in the years following the introduction of a new state assessment (Linn, 1999; Koretz,

[w] WEA local membership consists of teachers and other education service area employees that are also part of the teacher bargaining unit (psychologists, school counselors, and the like). This membership count does *not* include classified employees (secretaries, bus drivers, etc). Because the numerator of our union membership data may include non-teachers as well as part-time teachers, this ratio can be greater than one.

2002, 2008).[x] For our purposes the public need only view the WASL as a valid measure of student achievement (or relative achievement) in their community in a given election year; it is probably fair to say that most parents are unaware of the psychometric properties of their state assessment.

6. Results

6.1 Voter Support for Charter Schools across Washington School Districts

We begin by estimating equation (2) using data observed at the school district level. District data allows us to incorporate a demographically, spatially, and politically diverse set of communities into our analysis, and to consider the district level conditions and opportunities that may have influenced voters (district policy, union strength, and existing choice, for example). The downside is that district-level data is highly aggregated, and thus may be less informative about individual-level preferences. The precinct level results in Section 6.2 present a more disaggregated view.

Table 2 provides the estimated marginal effects from a model relating the log-odds ratio of voter support for charter schools to student achievement (WASL results and the high school dropout rate), district size and urbanicity, the percent of households with children, voter preferences on the presidential and gubernatorial races, teacher union membership, and a set of student, school, and community covariates.[y] Columns (1) to (3) provide cross-sectional estimates from each ballot measure, column (4) presents estimates from a model pooling observations from all three years and column (5) presents estimates from a panel model with district fixed effects. Year dummies are included in both the pooled and panel models. Estimated effect sizes from a one standard deviation

[x] According to OSPI, state standards of achievement are fixed from year to year. A new edition of the WASL is created each year, although every attempt is made to equate test standards across years (see http://www.k12.wa.us/assessment/WASL/FAQ.aspx#10 [Last accessed: September 28, 2008].

[y] Achievement on the WASL is measured as a grade-student-subject weighted average of the percent failing to meet state proficiency standards, and political preferences as the two-party Republican vote share. District size and urbanicity is specified as a set of dummy regressors for city, suburban fringe, and town (rural is the omitted category), and a quadratic in population. For ease of presentation some coefficients (including district size and urbanicity) have been suppressed.

increase in each covariate are provided in brackets in each cell. Though the results are not provided here, we have also estimated models excluding the Seattle Public Schools, which with more than 300,000 voters is roughly three times the size of the next largest school district in the state, and find that our estimates are not materially different.[z]

In a sparse model relating charter support to student achievement and a limited set of covariates (not shown), we found that neither student performance on the WASL nor the high school dropout rate were strong predictors of voter support for charter schools.[aa] However, conditioning on covariates that can be considered school and non-school inputs into educational production (family background and school resources, for example), we find a sizable and fairly robust positive relationship between low achievement and support for charter schools. Excepting 2000, all estimated marginal effects for the WASL measure are statistically significant at the .01 or .05 level, and have the expected sign. In columns (1) and (3), we estimate that districts one standard deviation higher in the percent of students not meeting state proficiency standards (9.4 and 9.0) had 0.87 and 1.08 percentage point higher charter approval rates—about a third of the overall standard deviation in charter support. Our estimated marginal effects and effect sizes persist in the pooled and fixed effects models of columns (4) – (5), indicating that it is not unobserved permanent characteristics correlated with quality that drive this relationship. Dropout rates also relate positively to charter support in nearly all specifications, but are only statistically significant in 2000 and the pooled model (their implied effect sizes are also much smaller than those for the WASL).[bb]

---

[z] We have also estimated models excluding the Tacoma Schools. While Seattle has considerably more voters than the other school districts in Washington, its school enrollment is only modestly larger than in other districts (48,000 versus 33,600 in Tacoma and 31,000 in Spokane).

[aa] Results available upon request. Of the three measures, poor student performance on the WASL had a positive and statistically significant relationship with charter support only in 1996. Dropout rates had a positive (and significant) relationship with charter support in 2000, but this coefficient was negative in 1996.

[bb] While district WASL results and dropout rates are modestly correlated, omitting the dropout rate has a very minor impact on our coefficient estimates and standard errors.

Table 2 suggests that school resources and the existing level of school choice may play a role in voter support for charter schools, even when conditioning on school performance. For example, districts with better-qualified teachers were systematically less likely to support charter schools. In every model, districts with more experienced teachers were, on average, less supportive of charter schools. Based on the pooled model, districts one standard deviation above the state average in teacher experience (1.3 years) had charter support shares that were 0.29 points lower on average, about 5 percent of the overall standard deviation. (The effects of teacher qualifications are statistically insignificant in our fixed effects model, but we can probably attribute this to the lack of variation in average qualifications within districts over time). Similarly, districts with more highly educated teachers were less supportive of charter schools. In some cases the implied effect size for teacher education is even larger than that for experience. Average class size as approximated by students per FTE teacher is generally positively related to charter support, although these coefficients are never statistically significant (except in the panel model, where the coefficient turns negative).

Districts with greater levels of existing choice—as measured by districts per thousand students within a 25-mile radius—were found to be less supportive of the charter measure on average. This relationship was particularly strong in 2000 and 2004, where areas with one standard deviation higher "choice" had 0.57 and 0.45 points lower approval rates on average. This result should be taken with caution, as our estimates appear to be sensitive to the measure of choice used; when we replaced this measure with a local enrollment Herfindahl index, the coefficient estimates often changed sign (other estimates were not materially affected). Again, the small and statistically insignificant coefficient in the fixed effect model is driven by the lack of variation over time in this measure of choice.

Though one might predict that districts with greater *private* school availability would be less inclined to support charters we find in almost every model that private school enrollment is *positively* related to charter support. This may reflect a systemic dissatisfaction with public schools, or that households in private schools view tax-supported charter schools as an attractive alternative. Interestingly, our estimated coefficient on private school enrollment is negative in 1996—the one year in which private schools would have been eligible to convert to charters and receive public funding.

Districts that spent more per student on public education through local levies were consistently less supportive of charter schools. Based on our fixed effects model, we estimate that districts raising one standard deviation higher local levies (about $460 per student) had charter approval shares that were 1.19 points lower on average. Given that each of the charter measures required some sharing of local revenues with startup or conversion charter schools, this result is quite sensible. Holding constant district size and locale, local spending, and the other covariates, districts with higher property wealth per student were consistently more likely to support charter schools. However, the fixed effects estimates suggest that where property wealth was rising, charter support fell. This suggests that unobserved variables correlated with property wealth may be related to more support for charters. However, areas where property wealth was rising may have felt that a shift to charter schools could erode property values and increasingly rejected the measures.

Teacher unionization, as measured by the number of WEA members per FTE teacher, is consistently negatively associated with charter support, and is a statistically significant predictor in the 2004, pooled and panel models. In 2004—when the WEA was most heavily involved in the campaign against charters—districts where union members per teacher was one standard deviation above the state average (0.1) had charter support shares that were 0.39 points lower on average. Although union membership was unlikely to vary much over time within districts during this 8-year

period, we do find a similar effect in our fixed effects model, suggesting that the 2004 referendum may have had a positive effect on WEA membership. (This is also reflected in the district means – see Appendix Table 1).

Most interestingly, political partisanship was a stronger predictor of charter support than school quality, and almost all other variables in our model. In all specifications, strongly Republican districts were considerably more likely to support the charter school measures. Appropriately capturing the role of partisanship across measures was difficult, given shifts over time in elite political support for charters, and mixed patterns of support for Republican governors and presidential candidates. As Section 3.1 described, the 2000 campaign was lop-sided and chiefly financed by Paul Allen, a Seattle resident and historically strong supporter of the Democratic Party. In 1996, both the Republican and Democratic candidates for governor opposed the charter initiative, while in 2000 both supported charter schools.[cc] Similarly, the 2004 legislation that Referendum 55 would eventually overturn was passed by a bi-partisan government. Such shifts produced unusual patterns. Republican voting for president and governor were highly correlated in each year (0.94, 0.92, and 0.97 respectively), but these votes diverged in some large school districts. Given these patterns, we chose to include both partisan indicators in our model.[dd]

On net, Republican voting tended to be strongly associated with support for charter schools. As an illustration, consider the effect sizes implied by our fixed effect model in column (5). Here we estimate that districts one standard deviation above the average in support for a Republican governor had charter approval shares 3.37 points higher on average. Given their strong correlation,

[cc] See "Education Initiatives," *Seattle Times,* November 8, 2000. The 1996 candidates were Gary Locke (D) and Ellen Craswell (R); in 2000 they were Locke and John Carlson (R).

[dd] Jointly, the Republican president and governor vote share are always highly statistically significant and have a large positive effect on the percentage supporting charters. Combining these two measures using principal components analysis results produces nearly identical effects. When controlling only for the Republican presidential vote share, the percent voting for a Republican president was strongly positively related to charter support in 1996 and 2004 but strongly *negatively* related in 2000.

these districts might also be expected to have higher than average support for a Republican president, which has a (smaller) negative coefficient. Based on simple regression one would predict that such districts would have 2.39 point lower support shares. Combining these, this hypothetical district would have a charter approval share 0.98 points higher than average, a sizable effect.

Finally, community demographic characteristics are less consistently related to charter school support across these models.[ee] For example, median income is positively and strongly related to charter support in 1996, but this effect disappears by 2000. Educational attainment is positively associated with charter support, where significant. Districts with a larger African-American population were on average more supportive of charters in 1996, but this relationship markedly weakened over time, becoming insignificant by 2004. For 1996, we estimate that districts with an black population share one standard deviation above the state mean saw voter support for charters that was more than 1.9 points higher than average. However, this estimate drops to 1.4 points in 2000 and 0.2 points in 2004. The Hispanic population share is consistently *negatively* related to charter support, and statistically significant in our fixed effects models with an effect size of -0.6.

6.2 Voter Support for Charter Schools across King County Precincts

The analysis in Table 2 examined how electoral outcomes related to characteristics observed at the school district level. This approach is sensible in that many policies and decisions affecting school quality—such as funding and teacher recruitment—are made by school districts. Other relevant factors, including urbanization, teacher union strength, and existing public and private school choice are also best measured at the district level. A clear disadvantage is aggregation bias, such that our estimates in Table 2 provide limited information on individual voting behavior.

[ee] In the interest of space we have omitted estimates for the percent elderly, the percent Asian or Pacific Islander, percent American Indian or Alaska Native populations, and percent "other" race. Non-Hispanic whites are the omitted category from our race variables.

We now re-estimate equation (2) using precinct-level election results from King County matched to census tract and proximate school characteristics. The precinct-level model differs from that presented in Table 2 in a few important ways. First, we do not include variables that are applicable or available only at the district level, including local levies, regional competition, taxable property wealth, income inequality, and the dropout rate. To control for district characteristics common to precincts, we have also experimented with school district fixed effects in select models (there are 19 school districts within King County). Second, our measure of student performance here is an *unweighted* average of the percent not meeting state standards in math and reading, across 4th, 7th, and 10th grade (or 4th and 7th only in 1996) in the geographically closest school(s) offering those grades. An unweighted average is more appropriate here to avoid giving disproportionate weight to the closest high school, which in general will be larger than nearby elementary or middle schools.[ff] Third, our school characteristics—enrollment diversity, students per teacher, and teacher qualifications—are all averaged over the geographically closest school(s) offering 4th, 7th, and 10th grades. Fourth, demographic variables from the Census were created by overlaying election precinct boundaries with 1990 and 2000 Census tract boundaries and allocating population characteristics based on land area.[gg] As a proxy for teacher union influence, which cannot be measured at the neighborhood level using membership data, we include in our models the percent of census tract workers employed in education. Finally, we include a control for precinct-level voter turnout in all of these models.

Table 3 presents our estimated marginal effects based on King County election results. The format of this table is identical to that used in Table 2, with effect sizes for a one standard deviation

[ff] Elementary schools are typically small and feed into larger middle and high schools. A grade-student weighted average of WASL scores using geographically closest schools would include many fewer 4th grade students than 7th and 10th grade students.

[gg] Unfortunately we do not have the percent of households with children in our census tract data; instead, we use the percent of families with children. Due to data limitations we are also missing the local high school dropout rate in our precinct-level analysis.

increase in each covariate provided in brackets. Our results are largely consistent with our district-level estimates, with several notable exceptions. Most prominently, we find that student performance is a much weaker predictor of charter school support at the neighborhood level than at the district level, while Republican voting is a much stronger predictor. Poor performance by neighborhood schools on the WASL is related positively to charter support in 1996, but negatively (and insignificantly) related in 2000 and 2004. Our fixed effects model, which relies on within-precinct changes over time in neighborhood school quality, suggests a positive relationship between poor student performance and charter support, but our point estimate is imprecise.

There are several plausible reconciling explanations for these differences. First, voters may be basing their votes on perceived educational opportunities in their district, as opposed to their neighborhood. Additionally, these differences may be related to the level of existing choice policies in King County. Many large King County school districts have open enrollment policies, allowing parents to choose schools outside of their traditional catchment areas.[hh] To the extent that neighborhood residence is weakly related to school assignment, parents may be more concerned about district-level school quality than proximate school quality. On the other hand, district WASL performance may be serving as a proxy for other unobserved differences in schools or neighborhoods, resulting in bias. These unobserved differences would need to be time varying, as the fixed effect estimates in the district results still suggested a large role for student performance in voter behavior. However, the precinct-level model may be less susceptible to omitted variables bias, leading to smaller estimates than those in Table 2.

In contrast to the relatively weak effect of achievement in King County, political preferences are much more strongly associated with charter support. Based on our fixed effects model in column

[hh] See Section 3.3. Bellevue, Federal Way, Highline, Issaquah, Lake Washington, and Seattle School Districts all had explicit open enrollment periods, when students could sign up for schools outside their catchment areas, and used wait lists or lotteries to allocate available spaces. Enrollment in these districts comprises slightly more than half of all King County students.

(5), a one standard deviation higher Republican vote share for governor (14.3) is associated with a 3.1 point higher rate of charter support. Republican voting for governor is again highly correlated with Republican voting for president, and given its point estimate we can offset this by a predicted -0.23, for a net effect size of 2.84. Moreover, comparing effect sizes across years we find that the predictive power of Republican voting appears to have increased over time.

Our precinct-level results are also consistent with our district model with respect to teachers union influence: here, precincts with a higher percent employed in education were significantly less supportive of the charter referenda. Based on our pooled model, precincts with a one standard deviation higher share of education workers (3.7) had 0.79 percentage point lower charter support shares, on average. As in our district results, this effect grew in importance during the later, more politically polarized elections.

A notable difference between our district and precinct-level estimates is the relationship between the Hispanic population share and charter support. While we found a zero or negative relationship between Hispanics and charter support at the district level, within King County we find a mostly consistent positive relationship. By 2004, precincts with a one standard deviation larger Hispanic population had charter support shares that were 1.0 point higher on average. (In our fixed effects model, our estimated effect for the Hispanic share continues to be negative). Our results for the African-American share are roughly similar at the precinct and district levels (with the exception of 1996, in which this estimated relationship is negative). We find some evidence that within-school racial diversity has a positive impact on charter school support, particularly in 1996 and in our fixed effects model. In the latter, we estimate that precincts whose neighborhood schools were one standard deviation above average in racial diversity had charter support shares 0.45 points higher on average. As in our district estimates, we find that precincts located near schools with higher than

average teacher qualifications were less likely to support charter schools, although the implied effect sizes are closer to zero and statistically insignificant in many cases.

Our precinct data also permit us to examine how the referenda outcomes were affected by voter turnout. In King County, turnout as a proportion of registered voters ranged from 74.2 percent in 2000 to 82.5 percent in 2004. As Table 3 shows, conditional on our other included covariates turnout was negatively associated with charter support in all three elections, though this relationship weakened over time.[ii] As might be predicted, high-turnout precincts tended to have higher incomes on average, a more educated population, and more Republican voters, while low-turnout neighborhoods had higher black and Hispanic populations and schools with lower achievement on the WASL. Interestingly, precincts with a higher proportion of workers employed in education had consistently higher rates of voter turnout, suggesting that our union effect on vote outcomes observed in Table 2 may be explained in part via higher turnout.[jj]

7. Discussion

Charter school policies have been successfully adopted in forty of the fifty U.S. states, a notable accomplishment in light of the nation's long-standing rejection of tax-supported school vouchers. While the rapid expansion of these policies has been impressive, little is known about the driving forces behind their adoption. As we discussed in Section 2, households may favor expanding

[ii] The raw correlation between precinct-level turnout and the charter support share in 1996, 2000, and 2004 were -0.35, -0.20, and -0.11, respectively. Models that do not condition on voter turnout have larger marginal effects (in absolute value) for the black and Hispanic shares, median income, and teacher experience.

[jj] We have also examined how the same student, school, and community characteristics in Table 3 relate to support for other education initiatives proposed in Washington in 1996, 2000, and 2004. We find that low achievement on the WASL is positively related to school voucher support in 1996 (Initiative 173), and *negatively* related to support for increased school funding in 2000 and 2004 (Initiatives 730 and 884). The latter result suggests that, conditional on certain school and non-school inputs, voters may be less willing to invest new tax dollars into existing schools when measured performance is lower than expected. Republican voting was an even stronger predictor of support for vouchers and a strongly negative predictor of school funding increases.

school choice for a number of different reasons. Families with limited access to quality schools may support increased choice in order to improve their educational opportunities. Heterogeneous communities may demand a broader variety of schools to satisfy unmet curricular demands or to better sort on the basis of peer composition. Charter policies themselves appeal directly to individual and community values regarding choice and the role of the public sector in providing educational services.

The three ballot referenda that would have authorized charter schools in Washington State provide a unique opportunity to weigh the relative importance of several factors—school quality and resources, community composition, political interests, and existing choice—in explaining voter support for charter schools. We examine both district and precinct level voting patterns, allowing us to both investigate district wide policies and neighborhood characteristics. While we recognize the need for caution in extrapolating from the Washington experience, we believe the models of school district and precinct voting behavior provide interesting insights into the factors that led some jurisdictions to support charter schools and others to reject them.

Many such factors are systemic, time-invariant features of communities, and our series of cross-sectional models are designed to detect such effects. Because of the repeated ballot initiatives, we are also able to exploit variation within districts and precincts over time to better identify the effects of community and school features. School quality, for example, may be related to omitted or unobservable community characteristics that explain voter support (or lack thereof) for charter schools, and repeated observations allow us to control for this.

Our results suggest that the academic performance of local schools is an important factor predictive of voter support for charter schools. This is especially true at the district level. Even conditioning on performance, school resources—such as local spending per student and teacher qualifications—also appear to play a role, as does the level of existing choice. Urbanized areas

supported charter schools in greater numbers, although much of this support came from the suburbs. Income inequality and racial heterogeneity in the public schools did not have a clear relationship with voting patterns on these referenda, although in our precinct model with fixed effects, neighborhoods with growing ethnic diversity in nearby schools were much more likely to favor charter schools.

Politics, however, is a formidable factor. Conditional on a number of covariates, including student achievement, the percent of voters supporting Republican candidates has a much larger effect on the charter support share than almost all other variables in our model, particularly at the precinct level. Similarly, teacher union membership at the district level appears to have successfully reduced voter support for the charter referenda, particularly in 2004 when the WEA was most visibly involved in their opposition.

References

Bali, V.A., 2008. The passage of education citizen initiatives: evidence from California. Educ. Policy. 22, 422-456.

Bergesen, T. et al., 2004. Organization and Financing of Washington Public Schools. Office of Superintendent of Public Instruction, Olympia, Washington.

Bettinger, E.P., 2005. The effect of charter schools on charter students and public schools. Econ. of Educ. Rev. 24, 133-147.

Bifulco, R., Ladd, H.F., 2006. The impacts of charter schools on student achievement: evidence from North Carolina. Educ. Fin. and Policy. 1, 50-90.

Bifulco, R., Ladd, H.F., 2007. School choice, racial segregation, and test-score gaps: evidence from North Carolina's charter school program. J. of Policy Anal. and Manag. 26, 31-56.

Booker, K., Zimmer, R., Buddin, R., 2005. The effect of charter schools on school peer composition. RAND Working Paper WR-306-EDU.

Brunner, E.J., Imazeki, J., 2008. Tiebout choice and universal school vouchers. J. Urban Econ. 63, 253-279.

Brunner, E.J., Sonstelie, J., 2003. Homeowners, property values, and the political economy of the school voucher. J. Urban Econ. 54, 239-257.

Brunner, E.J., Sonstelie, J., Thayer, M., 2001. Capitalization and the voucher: an analysis of precinct returns from California's Proposition 174. J. Urban Econ. 50, 517-536.

Catterall, J.S., Chapleau, R., 2003. Voting on vouchers: a socio-political analysis of California Proposition 38, Fall 2000. J. Educ. Fin. 29, 25-48.

Consoletti, A., Allen, J., 2008. Annual Survey of America's Charter Schools, 2008. Center for Education Reform, Washington, D.C.

Corcoran, S.P., Evans, W.J., 2008. Income inequality, the median voter, and the support for public education. Working Paper, New York University.

Deacon, R.T., Shapiro, P., 1975. Private preferences for collective goods revealed through voting on referenda. 65, 943-955.

DeBray-Pelot, E.H., Lubienski, C.A., Scott, J.T., 2007. The institutional landscape of interest group politics and school choice. Peabody J. of Educ. 82, 204-230.

Elacqua, G., Schneider, M., Buckley, J., 2006. School choice in Chile: is it class or the classroom? J. of Policy Anal. and Manag. 25, 577-601.

Glomm, G., Harris, D., Lo, T., 2005. Charter school location. Econ. of Educ. Rev. 24, 451-457.

Gokcekus, E., Phillips, J.J., Tower, E., 2004. School choice: money, race, and Congressional voting on vouchers. Public Choice. 119, 241-254.

Hanushek, E.A., Kain, J.F., Rivkin, S.G., Branch, G.F., 2007. Charter school quality and parental decision making with school choice. J. Pub. Econ. 91, 823-848.

Hassel, B.C., 1999. The Charter School Challenge: Avoiding the Pitfalls, Fulfilling the Promise. Brookings Institution Press, Washington, D.C.

Hastings, J.S., Weinstein, J.M., 2008. Information, school choice, and academic achievement: evidence from two experiments. Q. J. Econ. 123, 1373-1414.

Hastings, J.S., Kane, T.J., Staiger, D.O., 2006. Parental preferences and school competition: evidence from a public school choice program. NBER Working Paper No. 11805.

Hoyt, W.H., Lee, K., 1998. Educational vouchers, welfare effects, and voting. J. Pub. Econ. 69, 211-228.

Kenny, L.W., 2005. The public choice of educational choice. Pub. Choice. 124, 205-222.

Kirst, M.W., 2007. Politics of charter schools: competing national advocacy coalitions meet local politics. Peabody J. of Educ. 82, 184 - 203.

Koretz, D.M., 2002. Limitations in the use of achievement tests as measures of educators' productivity. J. of Hum. Resour. 37, 752-777.

Koretz, D.M., 2008. Measuring Up. Harvard University Press, Cambridge, Mass.

Linn, R.L., 2000. Assessments and accountability. Educ. Researcher. 29, 4-16.

Merzyn, W., Ursprung, H.W., 2004. Voter support for privatizing education: evidence on self-interest and ideology. Euro. J. of Pol. Econ. 21, 33-58.

Moe, T.M., 2002. Cooking the questions? Educ. Next. 2, 71-77.

Muir, E., Nelson, F.H., Baldaro, A., 2004. Survey and Analysis of Teacher Salary Trends. American Federation of Teachers, Washington, D.C.

Sandy, J., 1992. Evaluating the public support for educational vouchers: a case study. Econ. of Educ. Rev. 11, 249-256.

Schneider, M., Buckley, J., 2002. What do parents want from schools? evidence from the Internet. Educ. Eval. and Policy Anal. 24, 133-144.

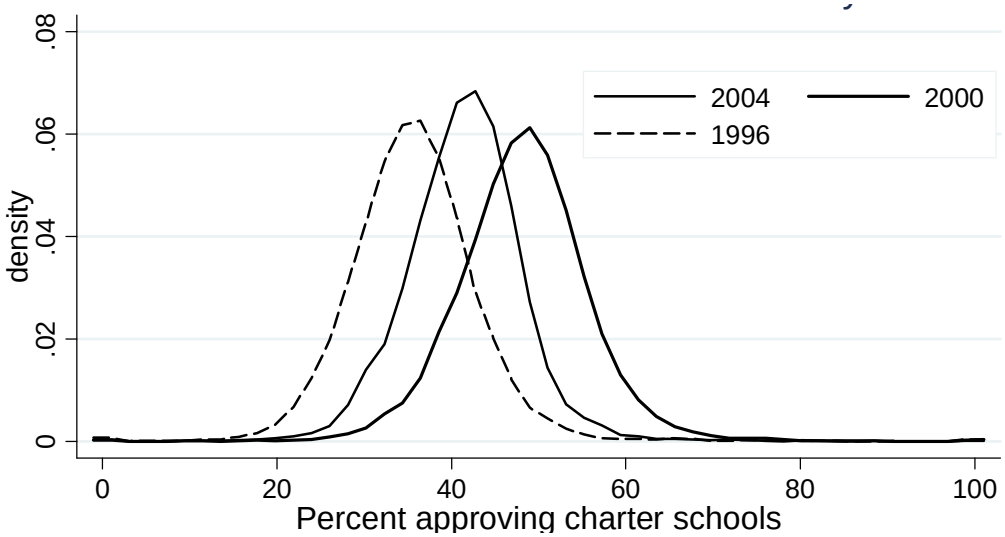
Stoddard, C., Corcoran, S.P., 2007. The political economy of school choice: support for charter schools across states and school districts. J. of Urban Econ. 62, 27-54.

Washington Research Council, 2004. Referendum 55: charter schools. Policy Brief.

Weiher, G.R., Tedin, K.L., 2002. Does choice lead to racially distinctive schools? charter schools and household preferences. J. Policy Anal. and Manag. 21, 79-92.

Wong, K.K., Shen, F.X., 2004. Political economy of charter school funding formulas: exploring state-to-state variations, in. Demoss, K., Wong, K.K. (Eds.), Money, Politics, and Law: Intersections and Conflicts in the Provision of Educational Opportunity. Eye on Education, Larchmont, NY, pp. 171-196.

Figure 1 – Distribution of Charter School Approval Rate by Year, All Washington Precincts



Notes: Kernel density plots for precinct vote shares in favor of charter schools (precincts weighted by total votes on charter initiative). N=8,922, 8,790, and 7,321 in 1996, 2000, and 2004, respectively.

Figure 2 – Percent in Favor of Charter Schools by School District, Referendum 55 (2004)

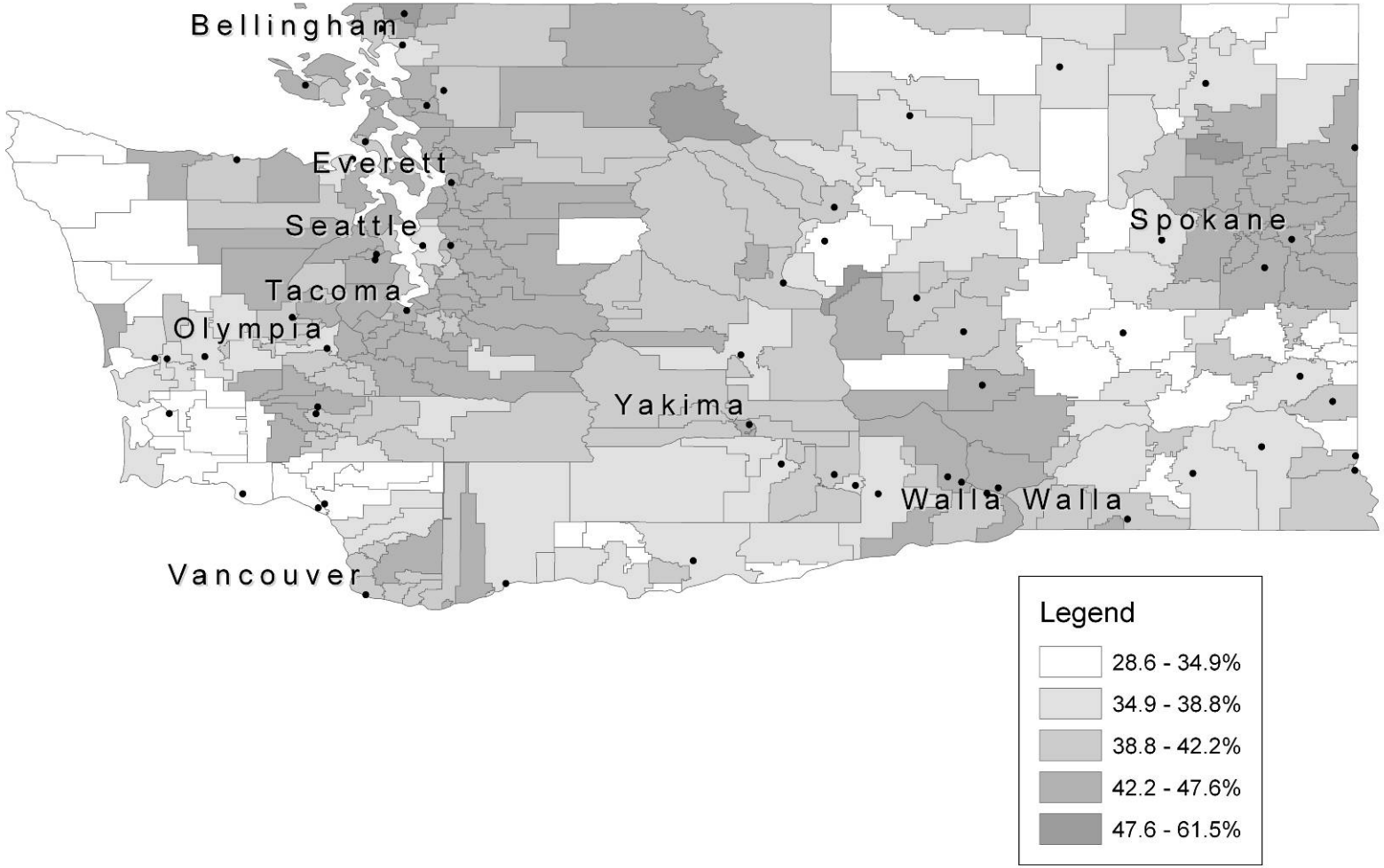


Figure 3 – Percent in Favor of Charter Schools by Precinct, King County Washington, Referendum 55 (2004)

Table 1: School choice and other education ballot measures in Washington, 1996 – 2004

Measure	Date	Brief Description	Total votes	% for	% against	% abstain	% turnout
Initiative 173	1996	Private school vouchers	2,181,714	35.5	64.5	3.3	74.7
Initiative 177	1996	Independent public schools	2,143,183	35.6	64.4	4.9	74.7
Initiative 729	2000	Charter schools	2,337,156	48.2	51.8	6.0	75.5
Referendum 55	2004	Charter schools	2,695,167	41.7	58.3	5.7	82.2
Initiative 728	2000	Lottery revenues for education	2,390,120	71.7	28.3	3.9	75.5
Initiative 732	2000	COLA for teachers	2,394,271	62.7	37.3	3.7	75.5
Initiative 884	2004	Sales tax increase for education	2,757,108	40.0	60.0	3.5	82.2

Source: Washington Secretary of State Department of Elections.

Notes: Turnout is measured as the percent of registered voters voting in the given election. Turnout in these three elections was estimated to be 56, 58, and 62 percent of the voting age population. Initiatives 728, 729, 732, and 884 are "initiatives to the people," placed directly on the general election ballot after sufficient signatures are obtained and the Secretary of State certifies the petition. Initiatives 173 and 177 are "initiatives to the legislature," which were first submitted to the state legislature; when not adopted as written they appeared on the ballot. Referendum 55 is a "referendum measure," a law passed by the legislature placed on the ballot as a result of voter petition.

Table 2: Grouped logit model of voter support for charter schools in Washington school districts
Marginal effects calculated at the mean, multiplied by 100
Standard errors in parentheses
Effect of one standard deviation increase in explanatory variable on approval share in brackets

COEFFICIENT	(1) 1996	(2) 2000	(3) 2004	(4) Pooled	(5) Panel
Percent not meeting WASL standards	0.0917*** (0.0320) **[0.8661]**	0.0389 (0.0440) **[0.3823]**	0.1208*** (0.0380) **[1.0821]**	0.0799*** (0.0230) **[1.0340]**	0.0628** (0.0320) **[0.8120]**
High school dropout rate	0.0008 (0.0350) **[0.0040]**	0.0534** (0.0260) **[0.3449]**	0.0670 (0.0510) **[0.2441]**	0.0503*** (0.0190) **[0.2589]**	-0.0110 (0.0190) **[-0.0567]**
Percent of households with children	0.0232 (0.0560) **[0.1881]**	0.1170 (0.0760) **[0.8861]**	0.0747 (0.0690) **[0.5654]**	0.0456 (0.0390) **[0.3572]**	0.1053 (0.0740) **[0.8240]**
Percent voting for Republican president	-0.0536 (0.0890) **[-0.5324]**	-0.1809*** (0.0610) **[-2.3136]**	0.1321 (0.0890) **[1.8204]**	-0.1166*** (0.0320) **[-1.4650]**	-0.2117*** (0.0430) **[-2.6599]**
Percent voting for Republican governor	0.1993** (0.0990) **[2.1337]**	0.2553*** (0.0740) **[2.7412]**	0.0241 (0.0990) **[0.2922]**	0.2397*** (0.0370) **[2.8932]**	0.2795*** (0.0430) **[3.3741]**
Union membership per FTE teacher	-0.7250 (1.7470) **[-0.0682]**	-1.1886 (1.9450) **[-0.1118]**	-3.6201** (1.6950) **[-0.3921]**	-3.4076*** (1.1440) **[-0.3426]**	-3.7500** (1.8230) **[-0.3771]**
Median household Income	0.1768*** (0.0600) **[1.3148]**	0.0181 (0.0420) **[0.2016]**	0.0047 (0.0400) **[0.0523]**	0.0299 (0.0250) **[0.3683]**	-0.1252*** (0.0440) **[-1.5429]**
Percent of adults With college degree	-0.0403 (0.0430) **[-0.4537]**	0.1412*** (0.0440) **[1.8258]**	0.0578 (0.0370) **[0.7407]**	0.0952*** (0.0230) **[1.1884]**	0.1296** (0.0700) **[1.6189]**
Percent of K-12 In private school	-0.1051** (0.0490) **[-0.6399]**	0.1322* (0.0750) **[0.6286]**	0.2122*** (0.0660) **[0.9976]**	0.0757* (0.0390) **[0.3900]**	-0.0663 (0.0640) **[-0.3418]**
Percent of population Black	0.5490*** (0.0800) **[1.9272]**	0.4255*** (0.1130) **[1.4197]**	0.0717 (0.0950) **[0.2367]**	0.3617*** (0.0590) **[1.2195]**	-0.2945 (0.1940) **[-0.9930]**
Percent of population Hispanic	-0.0406 (0.1010)	-0.0142 (0.0410)	-0.0290 (0.0370)	-0.0221 (0.0220)	-0.0849*** (0.0280)

	[-0.1014]	[-0.1138]	[-0.2205]	[-0.1496]	[-0.5738]
Percent of enrollment in Special education	0.0946*	0.0805	-0.1215	0.0522	0.0610
	(0.0520)	(0.1300)	(0.1250)	(0.0540)	(0.0520)
	[0.2437]	**[0.1056]**	**[-0.1471]**	**[0.1037]**	**[0.1212]**
Gini coefficient of Income inequality	0.0253	-0.0707	0.0628	-0.0204	0.0366
	(0.0780)	(0.0810)	(0.0770)	(0.0470)	(0.0880)
	[0.0884]	**[-0.2537]**	**[0.2250]**	**[-0.0740]**	**[0.1330]**
Districts per student (25 mile radius)	-0.0264	-0.9520***	-0.7540***	-0.1886**	0.0654
	(0.0650)	(0.2990)	(0.2600)	(0.0850)	(0.0770)
	[-0.0490]	**[-0.5671]**	**[-0.4498]**	**[-0.2113]**	**[0.0733]**
Race fractionalization index (enrollment)	-6.6842**	-1.4319	-4.5943**	-4.8058***	-10.2732***
	(2.4410)	(2.6600)	(2.2450)	(1.4650)	(3.2570)
	[-1.2719]	**[-0.2665]**	**[-0.8365]**	**[-0.9002]**	**[-1.9244]**
Students per FTE Teacher	0.1617	-0.0329	0.1895	0.0980	-0.2637*
	(0.1360)	(0.1490)	(0.1310)	(0.0870)	(0.1390)
	[0.2046]	**[-0.0418]**	**[0.2646]**	**[0.1355]**	**[-0.3647]**
Mean teacher Experience	-0.6216***	-0.2773**	-0.1397	-0.2157***	-0.0011
	(0.1450)	(0.1370)	(0.1090)	(0.0810)	(0.1230)
	[-0.7149]	**[-0.3617]**	**[-0.2030]**	**[-0.2888]**	**[-0.0015]**
Percent of teachers With MA degree	-0.0408***	-0.0969***	-0.0614***	-0.0741***	-0.0177
	(0.0160)	(0.0210)	(0.0210)	(0.0120)	(0.0250)
	[-0.3754]	**[-0.8145]**	**[-0.4742]**	**[-0.7428]**	**[-0.1769]**
Excess M&O per student (in thousands)	-2.2276***	-2.3172***	-0.1580	-1.5319***	-2.5843***
	(0.7590)	(0.6700)	(0.7420)	(0.4530)	(0.6450)
	[-0.8716]	**[-0.9506]**	**[-0.0763]**	**[-0.7026]**	**[-1.1852]**
Property wealth per student (in $100,000)	0.7928***	0.3862**	0.3110***	0.2017***	-0.3374***
	(0.1430)	(0.1520)	(0.0900)	(0.0620)	(0.0870)
	[2.0480]	**[1.1613]**	**[1.5368]**	**[0.7026]**	**[-1.3135]**
Year dummies	-	-	-	Yes	Yes
District effects	-	-	-	No	Yes
Observations	237	244	248	729	729
Adjusted R-squared	0.71	0.72	0.66	0.86	0.93

Notes: *** p<0.01, ** p<0.05, * p<0.1. Regression models also include a quadratic of school district population and three locale dummy variables (towns, urban fringe, and cities; rural districts are the omitted group), percent of population age 65+, percent of population Asian or Pacific Islander, percent of population American Indian or Alaskan Native, percent of enrollment eligible for free lunch (these estimates suppressed from table). Mean charter approval shares are 35.7, 48.2, 41.7, 42.1, and 42.1 with standard deviations 3.3, 3.9, 3.2, 6.0.

Table 3: Grouped logit model of voter support for charter schools in King County precincts
Marginal effects calculated at the mean, multiplied by 100
Standard errors in parentheses
Effect of one standard deviation increase in explanatory variable on approval share in brackets

VARIABLES	(1) 1996	(2) 2000	(3) 2004	(4) Pooled	(5) Panel
Percent not meeting WASL standards	0.0286*** (0.0090) **[0.3703]**	-0.0171 (0.0110) **[-0.2179]**	-0.0119 (0.0110) **[-0.1487]**	0.0023 (0.0060) **[0.0351]**	0.0153 (0.0100) **[0.2365]**
Percent of families with children	0.0221** (0.0090) **[0.2664]**	-0.0448*** (0.0090) **[-0.4916]**	-0.0966*** (0.0090) **[-1.0682]**	-0.0394*** (0.0060) **[-0.4479]**	0.0387*** (0.0140) **[0.4396]**
Percent voting for Republican president	0.1839*** (0.0220) **[2.4968]**	0.3685*** (0.0240) **[5.2706]**	0.0215 (0.0310) **[0.3121]**	0.0957*** (0.0120) **[1.3586]**	-0.0177 (0.0160) **[-0.2506]**
Percent voting for Republican governor	0.0714*** (0.0250) **[0.9046]**	-0.0916*** (0.0280) **[-1.1943]**	0.3322*** (0.0290) **[5.0476]**	0.2148*** (0.0130) **[3.0714]**	0.2145*** (0.0140) **[3.0671]**
Percent of employed adults in education	-0.0984*** (0.0220) **[-0.4349]**	-0.1832*** (0.0290) **[-0.5700]**	-0.2327*** (0.0290) **[-0.7179]**	-0.2165*** (0.0160) **[-0.7941]**	-0.0447** (0.0220) **[-0.1641]**
Median household Income	0.0040 (0.0100) **[0.0588]**	0.0129** (0.0050) **[0.2970]**	-0.0106** (0.0050) **[-0.2554]**	0.0051*** (0.0040) **[0.1183]**	0.0129** (0.0050) **[0.3018]**
Percent of adults With college degree	0.0375*** (0.0100) **[0.6132]**	0.0705*** (0.0080) **[1.2873]**	0.1001*** (0.0090) **[1.8220]**	0.0955*** (0.0050) **[1.7245]**	-0.0030 (0.0110) **[-0.0544]**
Percent of K-12 In private school	-0.0030 (0.0060) **[-0.0498]**	0.0342*** (0.0060) **[0.4596]**	0.0144** (0.0060) **[0.1923]**	0.0096** (0.0040) **[0.1465]**	-0.0049 (0.0050) **[-0.0741]**
Percent of population Black	-0.0336*** (0.0120) **[-0.2871]**	0.1789*** (0.0160) **[1.1909]**	0.0984*** (0.0160) **[0.6689]**	0.0738*** (0.0090) **[0.5417]**	-0.1329*** (0.0260) **[-0.9750]**
Percent of population Hispanic	0.2255*** (0.0700) **[0.3374]**	0.1611*** (0.0300) **[0.5794]**	0.2730*** (0.0280) **[1.0036]**	0.1717*** (0.0200) **[0.5594]**	-0.0961*** (0.0300) **[-0.3130]**
Enrollment diversity	3.3821***	-0.6933	-1.6844**	0.5975	2.6882***

index	(0.8990)	(0.9380)	(0.9180)	(0.5190)	(1.0240)
	[0.6018]	**[-0.1160]**	**[-0.2552]**	**[0.0994]**	**[0.4471]**
Students per FTE	0.1678***	-0.1642***	-0.2289***	-0.0367	-0.0049
teacher	(0.0530)	(0.0610)	(0.0660)	(0.0340)	(0.0400)
	[0.3204]	**[-0.2484]**	**[-0.3250]**	**[-0.0605]**	**[-0.0080]**
Mean teacher	-0.0723	-0.0485	-0.2257***	-0.1271***	-0.0078
Experience	(0.0510)	(0.0490)	(0.0570)	(0.0300)	(0.0410)
	[-0.1303]	**[-0.0881]**	**[-0.3772]**	**[-0.2398]**	**[-0.0148]**
Percent of teachers	-0.0118	-0.0155	-0.0141	0.0008	0.0317***
With MA degree	(0.0090)	(0.0120)	(0.0140)	(0.0070)	(0.0100)
	[-0.1045]	**[-0.1101]**	**[-0.0973]**	**[0.0079]**	**[0.3122]**
Voter turnout	-0.3206***	-0.2013***	-0.1566***	-0.2260***	-0.0174
	(0.0140)	(0.0130)	(0.0180)	(0.0090)	(0.0130)
	[-2.3399]	**[-1.7225]**	**[-0.9772]**	**[-1.8310]**	**[-0.1411]**
Year dummies	-	-	-	Yes	Yes
Precinct effects	-	-	-	No	Yes
Observations	2,630	2,673	2,566	7,869	7,412
Adjusted R-squared	0.482	0.490	0.577	0.724	0.823

Notes: *** p<0.01, ** p<0.05, * p<0.1. Regression models also include a quadratic of precinct population (these estimates suppressed from table). Mean charter approval shares are 35.2, 49.0, 41.2, 42.1, and 42.1 with standard deviations 5.6, 5.6, 6.0, 8.0 and 8.0.

Appendix Table 1: Descriptive statistics, Washington school districts and King County precincts

	School districts			King County precincts		
	1996	2000	2004	1996	2000	2004
N	281	296	296	2,662	2,684	2,593
Percent in favor of charter measure	35.6	48.2	41.7	35.2	49.0	41.2
Percent voting for Republican president (2-party)	42.4	47.0	46.4	35.6	36.2	34.2
Percent voting for Republican governor (2-party)	41.7	40.5	50.0	33.0	32.5	41.0
Characteristics of school district or geographically closest school(s):						
Percent not meeting WASL standards: grade-subject weighted average	62.4	53.1	40.7	62.5	49.7	39.3
Percent not meeting WASL standards: unweighted average	-	-	-	58.3	48.1	37.0
High school dropout rate	8.5	8.6	6.2	-	-	-
Percent white	76.7	74.6	71.7	66.1	64.4	60.8
Percent black	6.2	6.3	6.7	10.9	11.1	11.7
Percent Hispanic	6.3	7.8	9.8	5.5	6.5	9.0
Percent API	8.4	8.7	9.2	15.7	16.2	16.8
Percent special education	9.3	11.7	11.9	-	-	11.9
Percent free lunch eligible	18.8	24.9	25.2	-	-	23.7
Students per FTE teacher	20.4	20.0	19.4	20.8	20.9	20.1
Average years of teacher experience	13.6	13.2	13.1	13.7	12.9	12.0
Percent of teachers with a MA or higher	45.6	51.3	59.0	40.4	48.5	55.8
Union members per FTE teacher	1.1	1.1	1.2	-	-	-
Districts per thousand students (25 mile radius)	0.352	0.312	0.297	-	-	-
Excess M&O revenues per student	980	1,037	1,325	-	-	-
Property valuation per student (thousands)	423.5	476.9	653.1	-	-	-
School district or precinct population (Census):						
Median household income (thousands)	32.6	47.7	47.9	41.6	62.5	62.5
Income inequality (Gini coefficient x 100)	35.2	36.9	36.8	-	-	-
Percent in urbanized area	75.2	81.3	81.1	91.9	95.3	95.2
Percent age 25+ with a college degree	25.3	28.7	28.6	35.1	43.2	43.1
Percent households with children	36.3	33.4	33.5	47.0	45.4	45.5
Percent age 65+	11.9	11.5	11.4	11.5	11.1	11.0
Percent K-12 enrollment in private school	9.6	9.9	9.9	14.6	24.5	24.3
Percent employed in education	2.5	5.8	5.8	7.1	5.2	5.1
Median housing value (thousands)	103.6	174.0	174.1	160.1	271.8	271.6

Population percent white	87.2	79.9	80.3	87.2	79.4	79.2
Population percent black	2.7	3.0	2.9	4.0	4.3	4.4
Population percent Hispanic	4.2	6.5	6.3	2.7	4.5	4.6
Population percent API	4.2	5.9	5.8	6.7	9.9	9.9
Population percent American Indian	1.5	1.3	1.3	1.0	0.8	0.8

Notes: observations weighted by total district or precinct votes on charter school initiative.

NEW YORK UNIVERSITY

INSTITUTE FOR
Education and Social Policy

The Institute for Education and Social Policy of the Steinhardt School of Culture, Education, and Human Development and Robert F. Wagner School of Public Service at NYU conducts non-partisan scientific research about U.S. education and related social issues. Our research, policy studies, evaluations, seminar series, and technical assistance inform and support policy makers, educators, parents and others in their efforts to improve public schooling. More information is available on our website at **http://steinhardt.nyu.edu/iesp**.

82 Washington Square East, 7th Floor New York, NY 10003 p 212.998.5880 f 212.995.4564