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Whose Turn Now? The Enactment & Expansion of Private School Choice Programs across the US

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Private school choice policies have been enacted and expanded across the United States since the 1990s. By January 2021, 30 states plus the District of Columbia and Puerto Rico hosted 67 distinct private school choice policies. Why have some states adopted and expanded this education reform while others have demurred? Which states are more likely to adopt specific types of private school choice initiatives in the coming years? We present the results of an exploratory empirical analysis examining which state-level political, economic, and educational factors predict past policy decisions regarding the enactment and expansion of private school choice in 49 states from 2000 to 2016. The results from our most preferred statistical model further predict which states are more and less likely to take action towards such policies in subsequent years. The political factors involving Republican control of the governorship and legislature, prevalence of minority students in the K-12 population, and share of private school enrollment in the state prove to be highly predictive factors in school choice adoption. The economic factor of a comparatively low state per-capita GDP also consistently predicts school choice policy adoption in our models.

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Abstract

Private school choice policies have been enacted and expanded across the United States since the 1990s. By January 2021, 30 states plus the District of Columbia and Puerto Rico hosted 67 distinct private school choice policies. Why have some states adopted and expanded this education reform while others have demurred? Which states are more likely to adopt specific types of private school choice initiatives in the coming years? We present the results of an exploratory empirical analysis examining which state-level political, economic, and educational factors predict past policy decisions regarding the enactment and expansion of private school choice in 49 states from 2000 to 2016. The results from our most preferred statistical model further predict which states are more and less likely to take action towards such policies in subsequent years. The political factors involving Republican control of the governorship and legislature, prevalence of minority students in the K-12 population, and share of private school enrollment in the state prove to be highly predictive factors in school choice adoption. The economic factor of a comparatively low state per-capita GDP also consistently predicts school choice policy adoption in our models.

Executive Summary

Private school choice policies have been enacted and expanded across the United States since the 1990s. By January 2021, 30 states plus the District of Columbia and Puerto Rico hosted 67 distinct private school choice policies including school vouchers, tax credit scholarships (TCS), educational saving accounts (ESAs), and individual tax credits/deductions (EdChoice, 2021). No new states had entered the school choice column, however, since 2016, when Maryland enacted a school voucher program and South Dakota approved a TCS program. Then came 2021. By one count, the 2021 legislative session has resulted in the enactment of eight additional private school choice programs and the expansion of 13 existing ones through the middle of July (American Federation for Children, n.d.). Three states – Kentucky, Missouri, and West Virginia – enacted their first choice programs, bringing the total number of private school choice states to 33. In the words of *Forbes* columnist Mike McShane (2021), "School choice keeps winning."

Advocates of private school choice policies justify them in terms of empowering families to control their child's education, addressing education inequity concerns, and improving the entire education system via school competition (Coons, forthcoming; Friedman, 1955). However, not all states have found such arguments to be persuasive, even in the wake of the recent wave of new school choice enactments. Why have some states adopted and expanded this education reform while others have demurred? Which states are more likely to adopt specific types of private school choice initiatives in the coming years? These are central questions of this study.

In answering these questions, we present the results of an exploratory empirical analysis examining which state-level factors predict past policy decisions regarding the enactment and

expansion of private school choice in 49 states from 2000 to 2016.[1] The results from our most preferred statistical model further predict which states are more and less likely to take action towards such policies in subsequent years.

Based on classic theories of policy adoption, we claim that the likelihood of a state enacting a private school choice policy and the proportion of the K-12 student population participating in choice policies are predicted by a state's:

(1) *Political factors*, measured by a state's partisan control of policy making institutions, strength of its teacher unions, proportion of minority students, institutional commitment to school choice in the form of private school and public charter school enrollments, and policy diffusion measures;

(2) *Economic factors*, measured by a state's per capita GDP, population poverty rate, and population density; and,

(3) *Educational factors*, measured by a state's achievement on the National Assessment of Educational Progress (NAEP) test, high school graduation rate, and per-pupil educational expenditures.

Our results indicate that political, economic, and educational factors all appear to play some role in predicting private school choice policy adoption. Political factors, especially the Republican partisan control of the Legislature and Governorship, dominate our predictions. Once enacted, the expansion of private school choice programs tends to be capricious and not consistently explained by the variables in our models. The logic of private school choice adoption is different in predictable ways for vouchers and TCS programs, targeted to

[1] Nebraska is excluded from our study due to its non-partisan unicameral legislature.

disadvantaged students, compared to individual tax credits/deductions that mainly benefit higher-income families in educationally and economically better-off states.

Based on our analysis, among the 19 states lacking private school choice at the end of 2016, our model predicts five that have the highest and five that have the lowest likelihood of adopting any type of private school choice program in subsequent years (Table ES1). Two of the five states predicted to be highly likely to enact school choice after 2016 actually did so. Both Kentucky and Missouri enacted tax-credit funded ESA programs during their 2021 legislative sessions. Two of the states our model predicted to be likely to adopt private school choice programs, but that did not, have peculiar features that probably held them back. Hawaii is an island state with a single public school district and a demographically distinct student population. Michigan has an especially expansive state constitutional amendment prohibiting the public funding of religious schools via direct appropriation or tax policies (Komer, 2009, p. 346). The last of the five states predicted to enact a choice program after 2016, Idaho, has not done so. The Potato State did, however, re-purpose Covid relief funds as a temporary ESA program, by Executive Order of its Governor. None of the five states with the lowest predicted probably of adopting a private school choice program after 2016 has done so.

Table ES1

State by Rank of Predicted, but not Observed, Private School Choice Adoption

	Rank	State
Highest	1	IDAHO
	2	MISSOURI
	3	KENTUCKY
	4	HAWAII
	5	MICHIGAN
Lowest	5	NEW YORK
	4	CONNECTICUT
	3	DELAWARE
	2	ALASKA
	1	CALIFORNIA

Introduction

Just as European explorers long searched for the source of the Mississippi River, eventually finding it at Lake Itasca, political scientists have long wondered about the origin and spread of public policies. Variously called "policy adoption," "policy innovation," or "policy diffusion," the question in all cases is why do representative governments enact certain policies at specific times for particular places?

The question of what factors influence policy adoption is particularly intriguing in the case of private school choice initiatives. Such programs "provide government resources to parents to enable them to enroll their children in independent private schools of their choosing." (Wolf, 2008, p. 635). Private school choice arrangements provide either direct payments, through vouchers, or indirect subsidies, through tax-credit scholarships or personal tax credits or deductions. By January of 2021, a total of 67 private school choice policies were operating in 30 U.S. states plus the District of Columbia and Puerto Rico (Ed Choice, 2021). No new state, however, had joined the private school choice ranks since 2016. Why have some states adopted this education reform while others have demurred? That is the central question of this exploratory empirical study.

This report proceeds as follows. We first describe the private school choice programs in the United States. We then discuss the theory regarding policy adoption that informs our school choice analysis. After that, we state our formal research questions and discuss our data and analytic methodology. Then we present our results, concluding with a discussion of what those results contribute to our understanding of school choice policy development.

Private School Choice in the U.S.

What are "private school choice arrangements"? In our study, we use the EdChoice annual publication, *The ABCs of School Choice*, to identify the categories of such initiatives. Private school choice policies include school vouchers, government-funded education savings accounts (ESAs), tax-credit scholarships (TCS), and individual tax credits/deductions. We call them "arrangements" or "policies" because vouchers, ESAs, and, to a lesser extent, TCS are structured programs whereas individual tax credits/deductions are merely provisions of a state's tax code.

Broadly speaking, all four private school choice arrangements are designed to help families afford private educational services. Voucher programs allow targeted students who are disadvantaged in some respect to use public funding to pay partial or full private school tuition for their child. ESAs place a portion of the funds that the state otherwise would spend on a child's education in an account that parents can draw down to pay their chosen education providers (Butcher & Burke, 2016). TCSs allow taxpayers to claim a tax credit when they donate to nonprofit institutions that provide private school scholarships to eligible students. Individual tax credits/deductions allow parents to receive some state income tax relief for their approved educational expenses, such as private school tuition, books, and tutors.

Although all four types of private school choice arrangements aim at enhancing families' educational choices and market power, the program designs of each arrangement are quite different. Vouchers and ESAs involve reallocating government educational resources, while TCSs and individual tax credits/deductions are financed by private funds never touched by the government. In most cases, voucher funding and TCSs only can be used to subsidize private school tuition costs. Funding or tax benefits of ESAs and individual tax credits/deductions

usually can support a broader range of educational expenses besides private school tuition, such as tutoring fees, educational materials, and therapies, thus providing more of an opportunity for educational customization than vouchers. Due to these policy differences, TCSs, ESAs, and individual tax credits/deductions tend to impose lower regulatory burdens on private schools and families than vouchers (Sude, DeAngelis & Wolf, 2018), and also tend to face fewer successful constitutional challenges (Hackett, 2020).

Moreover, the four types of private school choice arrangements benefit different populations. Vouchers, TCSs, and ESAs tend to be targeted at middle- and lower-income families. Individual tax credits/deductions generally benefit higher-income families that can afford to self-finance private schooling for their children. Due to these major differences, the four private school choice arrangements likely face different political controversies and perform differently in terms of policy adoption and expansion.

By the end of 2016, when our database concludes, 30 states had at least one private school choice policy[2] (Table 1). TCSs and Vouchers were the most common types of private school choice arrangements, as 16 states had at least one tax-credit scholarship initiative and 15 states offered at least one voucher program by that time. Only five states had adopted the newer policy of education savings accounts by 2016, and eight states offered individual tax credits/deductions. Individual tax credits/deductions policies served the largest student populations (nearly 850,000), followed by TCSs (almost 240,000) and then voucher programs (nearly 165,000). As the new kid on the private school choice block, ESAs had less than 8,000 participants by the end of 2016.

[2] We exclude Washington DC from our counts and analytic sample from here on because it is not a state and does not develop its own educational policies (Stewart & Wolf, 2014).

Table 1
Counts of States with Private School Choice Programs and Student Participation, 1990-2016

School Year Ending	Any Program		Voucher		ESAs		Tax credit scholarship		Individual Tax credits/deductions	
	Enacted State	Student Participation	Enacted State	Student Participation	Enacted State	Student Participation	Enacted State	Student Participation	Enacted State	Student Participation
1990	4	N/A	3	N/A	0	0	0	0	1	N/A
…	…		…		…		…		…	
1999	8	385,901 [a, b]	5	9,759 [a, b]	0	0	1	3207	2	372,935
2000	9	579,610 [a, b]	5	11,413 [a, b]	0	0	1	15,081	3	553,116
2001	10	632,281 [a, b]	5	14,386 [a, b]	0	0	3	18,049	3	599,846
2002	10	689,175 [a]	5	23,855 [a]	0	0	3	36,932	3	628,388
2003	10	731,388 [a]	5	29,833 [a]	0	0	3	55,927	3	645,628
2004	10	766,160 [a]	5	37,475 [a]	0	0	3	58,571	3	670,114
2005	11	795,008 [a]	6	41,450 [a]	0	0	3	59,779	3	693,779
2006	12	769,340 [a]	6	42,390 [a]	0	0	5	68,377	3	658,573
2007	13	819,650 [a]	7	49,327 [a]	0	0	5	83,853	3	686,470
2008	14	888,385 [a]	8	57,733 [a]	0	0	6	104,976	4	725,676
2009	15	995,753 [a]	8	62,958 [a]	0	0	7	112,251	4	820,544
2010	16	1,025,211	9	71,956	0	0	7	108,840	4	844,415
2011	17	1,071,561	11	77,346	1	0	8	127,615	5	866,600
2012	20	1,105,291	12	92,375	1	153	11	142,288	5	870,628
2013	23	1,136,740	13	104,076	1	302	13	157,698	7	874,966
2014	24	1,183,894	13	125,242	2	761	14	202,137	7	856,515
2015	28	1,242,798	14	146,423	5	2,989	16	223,582	8	872,793
2016	30	1,253,038	15	164,623	5	7,625	16	239,431	8	848,984

SOURCE: "School Choice in America," EdChoice, last modified January 16, 2019. Retrieved from EdChoice website: http://www.edchoice.org/school-choice/school-choice-in-america.

Notes:

[a]: Student participation counts for the Maine Town Tuitioning Program are not available and thus are excluded from the calculation. [b]: Student participation counts for the Vermont Town Tuitioning Program are not available and thus are excluded from the calculation. N/A: full data are not available.

These four arrangements are not mutually exclusive. Sixteen states have enacted at least two types of private school choice policies. There remains, however, much variation across states and school choice arrangements in terms of the timing of policy adoption and the proportion of K-12 students participating. Our study focuses on identifying what social factors systematically account for this variation.

Theory

We are interested in explaining a pattern of education policy adoption in the U.S. A policy is "a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future actions" (Merriam-Webster, 1983). Identifying "the given conditions" associated with selecting private school choice from among policy alternatives motivates our study.

Policy adoption occurs in the middle of Lasswell's (1936) five-step "policy cycle," after agenda setting and policy formation and before implementation and evaluation. It is also called "policy diffusion" in modern parlance, particularly when discussing decisions at the state and local level.[3] From where do policies come? As Nelson Polsby (1984, p. 5) aptly puts it:

> Yet no sophisticated student of contemporary American policy-making believes that policies normally spring fully formed from the overtaxed brow of the President or even from his immediate entourage.

Policies are not born but made.

Why are certain policies made, or adopted, in a representative democracy such as the United States? John Kingdon (1984) argues that policy adoption requires the intersection of three

[3] Technically, policy adoption is distinct from policy diffusion when a state or locality adopts a policy that is unique, such as when Wisconsin launched an urban, means-tested school voucher program in 1990. Once a second political jurisdiction has adopted a policy, "policy adoption" and "policy diffusion" become identical terms, which is why we use them interchangeably here.

streams: politics, policy, and problem. A social problem must present itself. A specific policy cure must be at hand. Finally, the political circumstances must be favorable for the adoption of the specific policy to address the particular problem.

Polsby (1984) agrees substantially with much of Kingdon's theory but emphasizes the interaction between problem (a.k.a. "need") and politics. Polsby views Kingdon's policy stream as a separate process that produces the policy ideas that are later harvested by political actors reacting to perceived needs.

Trinitarian explanations of policy adoption remain popular in political science. Choi, Turner and Volden (2002) claim that policy diffusion in our federal system of government is the product of "Means, Motive, and Opportunity." By "means", the authors are referring to fiscal resources. By "motive", they connote social need. By "opportunity", they signify favorable political conditions.

There is a stunning consensus in the theoretical literature regarding policy adoption in the U.S. Policies are embraced when the three forces of politics, resources, and need intersect, as depicted in the central region of Figure 1. We use that triune theoretical structure to guide our analysis.

Figure 1 Three Factors Contributing to Policy Adoption

Research Questions

In this report we examine which state factors, recommended to us by theory, predict policy decisions regarding the enactment and expansion of private school choice programs in the U.S. from 2000 through 2016. We further predict which states are more likely to take action to enact or expand such programs in the coming years. We begin our time-series analysis at the turn of the millennium for several reasons. First, only nine states adopted private school choice arrangements in the 130 years between 1869 and 2000, suggesting that those pioneering choice states and their initiatives may have been largely the product of idiosyncratic factors. In contrast, 21 new states adopted choice policies in the 17 years from 2000 to 2016, indicating that the period was a crucial decision time for states regarding whether or not to join the pantheon of private school choice adoptees. Second, reliable data regarding some of our key explanatory variables were not available prior to 2000 and are not yet available systematically for the years after 2016. In sum, the research questions posed below should be understood as applying to the specific period of 2000-2016 in the United States.

We test the following hypotheses:

Hypothesis 1: Political, economic, and need factors all will have some association with the adoption and expansion of private school choice arrangements overall and for specific types of policies;

Hypothesis 2: Political factors will be the most consistent predictors of adoption and expansion of private school choice arrangements overall and for specific types of policies;

Hypothesis 3: Economic factors will trump need factors in the case of individual tax credits/deductions, which primarily benefit higher-income families.

Data and Sample Description

Our theoretical frame is dynamic policy decision-making in the U.S. We focus on individual U.S. states as the unit of analysis because education is a developmental policy with decision-making concentrated at the state and local levels (Peterson, 1981). We customize that framework for the specific case of private school choice by considering the influence of a variety of social factors in the decision to enact and expand such initiatives. These factors are categorized as political factors, resource (a.k.a. "economic") factors, and need (a.k.a. "educational") factors. All data are collected from publicly available sources such as EdChoice and the National Center for Education Statistics' (NCES) Common Core of Data (CCD).

Political Factors

The theoretical literature is clear that policy adoption in a state is likely influenced by political forces. We are interested in four dimensions of state-level politics: political identity, interest groups, institutional support for school choice, and policy influence from neighbor states.

Rival political parties tend to have clearly defined ideologies and support substantively different programmatic agendas (Ansolabehere, Snyder, & Stewart, 2011). Hassel (1990) suggests that the Republican Party platform is more frequently linked to school choice options. Kenny (2005) states that Republican partisans and political conservatives in general tend to support private school choice because they believe that the competition brought about by choice improves the efficiency of the education system as a whole. Democrats and liberals, in contrast, tend to oppose vouchers because they have a stronger faith in the public sector and are aligned politically with teachers' unions (Wolf, 2020a). Other studies, however, find that having a Republican Governor does not predict a higher likelihood of consideration or adoption of school

choice laws (Mintrom & Vergari, 1997; Witte, Shober & Manna, 2003; Wong & Shen, 2002; Wong & Langevin, 2007).

We use binary variables indicating whether or not Republicans have majority control of both chambers of the Legislature (Table 2, Column 1), whether or not a state's governor is Republican (Column 2), and whether or not Republicans have majority control of both the Legislature and Governorship (Column 3). Mathematically, the variable *Republican Government* is an interaction of *Republican Governor* and *Republican Legislature*. The value of *Republican Government* equals 1 only when both the *Republican Governor* and the *Republican Legislature* variables take the value 1.

Table 2
Count of States with Republican Control (N=49)

Year	Rep. Legislative Control (1)	Rep. Governor (2)	Rep. Government (3)
2000	18	29	15
2001	18	28	13
2002	17	26	11
2003	20	25	12
2004	21	27	12
2005	19	27	12
2006	20	28	12
2007	15	21	10
2008	14	21	10
2009	14	21	9
2010	14	23	9
2011	25	28	20
2012	27	28	22
2013	24	29	23
2014	27	28	23
2015	30	30	23
2016	30	31	23

SOURCE: Retrieved from the National Conference of State Legislature (NCSL) website: http://www.ncsl.org/research/about-state-legislatures/partisan-composition.aspx#Timelines, year 2000 through 2017.
Notes: Nebraska is excluded from the analysis due to its nonpartisan Legislature.

Another political factor we include in our study is the strength of teachers' unions. Interest groups, especially teachers' unions, play important roles in influencing policy outcomes. Moe (2011) argues teachers' unions have more influence on the public schools than any other

group in American society. Fabella (2017) also finds that the expenditures of teachers' unions, which are a proxy for the teacher union strength of the state, are significantly correlated with reducing the number of school reform bills passed at the state level.

We use the *Rank of Teacher Union Strength* developed by Winkler, Scull, and Zeehandelaar (2012) to proxy for *Teacher Union Strength* in each state. This measure is based on a composite of scores of teacher union power in the following five dimensions: Resources and Membership, Involvement in Politics, Scope of Bargaining, State Policies, and Perceived Influence (p. 27). As ranks, smaller numbers signify relatively "stronger" unions. Hawaii (rank of 1), Oregon (2) and Montana (3) are the three top states in the *Teacher Union Strength* ranking, while Arizona (rank of 47), Florida (48) and South Carolina (49) are ranked as having the "weakest" teachers' unions. The relative rankings of the states on this measure tend to be stable over time. Thus, we use *Teacher Union Strength* as a state-level time-invariant variable to estimate the effect of teacher union power on states regarding the enactment and expansion of private school choice arrangements. We expect this variable to be positively associated with the enactment and expansion of one or more private school choice arrangements, as a state with a larger value has a weaker union to oppose choice.

Countering the teachers' unions on the issue of school choice is the less organized interest group composed of parents of students of minority race or ethnicity. Private school choice programs are especially popular among African American and Latinx parents (Wolf, 2020a). When teachers' unions have succeeded in limiting choice programs, as occurred from 2009 to 2011 in the District of Columbia, black and brown parents tend to rise up in opposition (Stewart & Wolf, 2014). Thus, we include the proportion of each state's school-age that is a racial or ethnic minority as a second interest group variable in our model. We predict it will be

positively associated with the enactment and expansion of school choice policies. Summary statistics show that minority students account for 35.2% of the public-school population on average across our sample.

A third type of political factor we include in our study is institutional commitment to school choice. We expect that the greater presence of alternatives to the present system of public education in a state, the more comfortable the public will be with the enactment and expansion of one or more private school choice policies. Two variables proxy for this institutional support for private school choice: the percentage of students enrolled in charter schools and the percentage of students enrolled in private schools in the state during each school year. Enrollment information was collected from the *Digest of Education Statistics* released annually from 2000 to 2017. According to descriptive statistics (Table 3), an average of 2.0% of students were enrolled in charter schools across our sample and 10.1% of students attended private schools.

The last type of political factor is the policy diffusion indicator, which measures the extent to which a state is pressured to keep up with its neighbors regarding private school choice policies. A state's policy diffusion indicator is the proportion of adjacent states that provided a certain private school choice policy to their citizens in the current year. A state for which all of its neighboring states offered TCS, for example, would score 100 on the policy diffusion variable predicting the enactment of a TCS program.

Economic Factors

Private school choice policies save states money (Aud, 2007; Lueken, 2016; Spaulding, 2014; Trivitt & DeAngelis, 2018). The average value of vouchers and ESAs, and the average amount of state revenue foregone via TCS and individual tax credits/deductions, tends to be much less than what the state pays to educate a student in the public school system (Wolf, 2020b,

p. 28). Less wealthy states likely will be more attracted by the fiscal benefits of private school choice policies. Thus, we use per capita GDP[4] obtained from the Bureau of Economic Analysis as an economic factor we expect to be negatively associated with school choice adoptions and expansions. Conversely, we expect that the state's population poverty rate, obtained from the Current Population Survey (CPS) Annual Social and Economic (ASEC) Supplement from the U.S. Census Bureau in the corresponding year, will be positively associated with choice adoption. The average poverty rate is 12.7% across the states and years in our data.

Our final economic variable is population density, measured as population per square mile of land use. States with higher densities are settings for more efficient school choice arrangements, with more school choices within a reasonable commuting distance of many families. Thus, we expect population density to be positively associated with private school choice adoptions and expansions. The population density of each state is obtained from the Census.

Educational Factors

Inertia largely characterizes policymaking in the U.S., especially due to its constitutional system of separate powers and checks and balances. A clear public perception of a crisis often is required to spur significant policy change even at the state level (Polsby, 1984). We expect that measures of extreme educational need in states will be predictors of private school choice enactments and expansions.

The first educational need factor we include in our analysis is state National Assessment of Educational Progress (NAEP) achievement level in 8th grade math.[5] NAEP math achievement

[4] Our specific measure is chained 2009 dollars.

[5] We chose this specific NAEP test outcome because math scores are often viewed as more clearly attributable to the performance of schools while reading scores are more heavily influenced by reading activity in the home. We used 8th grade scores instead of 4th grade scores because they track student knowledge farther along in their K-12

levels measure the quality of a state's K-12 education system and provide information to education policymakers on the comparative effectiveness of schools within and across states. Between 2000 and 2016, on average 70.4% of 8th grade students achieved at or above the Basic level on the NAEP math test. We hypothesize that the lower the NAEP[6] achievement level (smaller portion of students achieving at or above the Basic level) the greater the likelihood of the state enacting or expanding a private school choice program.

High school graduation rates are a second measure of educational need that we include in our analysis. The average high school graduation rate[7] was 77.9% across states during the years covered by our data. We predict that higher state-level graduation rates will be associated with a lower likelihood of adopting or expanding private school choice arrangements.

The third educational variable we include in our analysis is per-pupil expenditures (in 2017-18 dollars). Spending more money on public schools often is proposed as a substitute for enacting or expanding private school choice programs. Thus, we expect that states with higher per-pupil expenditures will have a lower likelihood of adopting and expanding choice programs. The data regarding the three educational factors was obtained from the NCES *Digest of Education Statistics* annual reports.

educational experience, and instead of 12th grade scores because those high school score distributions are skewed by the approximately 22% of students who drop out of school before taking the 12th grade exams.

[6] Since the NAEP test is administered only during odd years, we deductively impute the even year score as the score from the previous (odd) year.

[7] We use the Average Freshmen Graduation Rate (AFGR) as our indicator of the average high school graduation rate of the state before the 2013-14 school year and use the Public High School 4-year Adjusted Cohort Graduation Rate (ACGR) as our indicator of the average high school graduation for school years 2014-15 and 2015-16.

Table 3
Summary Statistics for the Continuous Explanatory Variables and their Expected Signs

VARIABLE	Expected Sign	Summary Statistics Mean	Std. Dev.	Min	Max	Obs.
Political Factors						
Share of Charter School Enrollment (%) [a]	+	2.0	2.7	0	34.1	833
Share of Private School Enrollment (%) [a]	+	10.1	3.9	2.3	21.9	833
Proportion of Minority Students (%) [a]	+	35.5	18.3	3.2	87.2	832
Economic Factors						
Per-capita GDP (in $1,000s)[b]	-	46.1	8.8	28.9	73.5	833
Poverty Rate (%) [c]	+	12.7	3.4	4.5	23.1	833
Population Density (per square kilometer) [d]	+	185.2	249.2	1.1	1134.4	833
Educational Factors						
NAEP At or Above the Basic Level (%) [e]	-	70.4	8.4	42	86	800
High School Graduation Rate (%) [a]	-	77.9	7.7	54.2	93	784
Per-pupil Expenditure (in $1,000s) [f]	-	12.3	3.2	6.7	24.7	833

Notes: [a]: SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey," 2000-01 through 2015-16. [b]: Per-capita real GDP by state (chained 2009 dollars), Bureau of Economic Analysis. [c]: Poverty rate in all ages. SOURCE: U.S. Census Bureau, Current Population Survey (CPS) Annual Social and Economic (ASEC) Supplement, 2000 through 2016. [d]: SOURCE: U.S. Census Bureau, Current Population Survey (CPS), 2000. [e]. SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2000, 2003, 2005, 2007, 2009, 2011, 2013, and 2015 Mathematics Assessments. [f.] Current expenditure per pupil in fall enrollment in public elementary and secondary schools, by state or jurisdiction. SOURCE: U.S. Department of Education, National Center for Education Statistics, Statistics of State School Systems, 1969-70; Revenues and Expenditures for Public Elementary and Secondary Education, 1979-80; and Common Core of Data (CCD), "National Public Education Financial Survey," 1989-90 through 2015-16. Constant 2017-18 dollars based on the Consumer Price Index (CPI), prepared by the Bureau of Labor Statistics, U.S. Department of Labor, adjusted to a school-year basis. The CPI does not account for differences in inflation rates from state to state.

We estimate the model over the entire time-series of 2000-2016 to test our major hypotheses regarding the adoption of voucher, tax-credit scholarship, and individual tax credits/deductions policies.[8] Our sample of 49 states across 17 years contains 833 state-year observations, though missing data on some variables limit the sample to 784 observations for our most extensive model estimation.

[8] Since the first ESA program was not enacted until 2011, and there were only 5 such programs in existence by 2016, we lack the statistical power to determine the factors associated with the adoption of that specific subgroup of private school choice policies. We do count ESAs and their enrollments in our analyses of the factors associated with adopting or expanding any type of private school choice arrangement.

Analytic Strategy

This section summarizes our analytic methods for examining which state-level factors, recommended to us by theory, predict policy decisions regarding the enactment and expansion of private school choice programs in the U.S. from 2000 through 2016. It is pitched to a non-technical audience. For technical details regarding our statistical methods and models, please see Appendix A.

Since policy decisions were made across time, the decision whether to enact a private school choice policy is a dynamic process best captured by a longitudinal decision-making model. Once a state enacts a private school choice program, the state will not have to readopt this program in later years. Thus, we use survival models (a.k.a. event history analysis) to estimate the extent to which the various social factors influence an individual state's decisions regarding enacting private school choice policies from the year 2000 to 2016. We statistically model how likely a given state in a specific year is to "survive" and therefore continue as a state without a school choice arrangement. Each year a state without a school choice policy faces a certain "risk" of not surviving as a non-school-choice state. Our statistical models are structured around that double-negative condition, but can be more easily understood as estimating the likelihood (i.e. "risk") that a state adopts its first private school choice arrangement given conditions that year. When a state adopts its first school choice policy, the survival model uses the information about the political, economic, and educational conditions in the state that year to inform its overall determination of which factors seem to contribute to policy adoption consistently across states and over time. Then, in the next year of the time series, that state is dropped from the analysis because it has "failed to survive" as a non-school-choice state. It has made the switch

and provided as much guidance as it could, statistically, regarding which factors appear to have made a difference.

First, we estimate four different outcomes using our survival models: (1) adoption of the state's first private school choice arrangement, whatever specific policy it might be; (2) enactment of the state's first school voucher program; (3) adoption of the state's first TCS program; and, (4) enactment of the state's first individual tax credit/deduction policy. Next, we use linear regression techniques on our panel of data to estimate the proportional change of all K-12 students in a state that are participating in any private school arrangement that year. This part of the analysis signals which of the political, economic, and educational factors are associated with the overall scale of private school choice in a given state and year. Finally, we use the data from the final year of our time series, 2016, to identify which states most surprisingly "survived" without adopting any private school choice arrangements and which states most predictably "survived" as void of any private school choice. The former set of states are the most likely to adopt their first school choice policy soon after 2016, according to our model, and the latter set are the most unlikely to adopt school choice arrangements anytime soon.

Results

We examine how state-level political, economic, and educational factors influence policy decisions regarding the enactment and expansion of private school choice programs in the United States, 2000-2016. Based on the estimated results, we further predict which states are more and less likely initially to enact a policy in subsequent years.

Tables 4-7 present the estimated marginal effects of the state characteristics on the state's status as an initial enactor of a private school choice policy. The results are displayed as

likelihood ratios, with figures above 1 indicating the factor increases the likelihood of policy adoption and figures below 1 indicating the factor decreases that likelihood. Table 8 displays the estimated effects of those same factors on the expansion of private school choice initiatives. Lastly, Table 9 presents the five states with the highest and the five states with the lowest likelihood of initially enacting a private school choice policy in the years after 2016. The complete list of 19 non-choice states, ranked by their likelihood of future adoption, is in the Appendix Table A3.

Program Adoption

We first estimate the effects of state factors on the enactment of any type of choice program, then limit the "1" category of our dependent variable to specific types of private school choice policies. In Tables 4-7, we conduct a stepwise analysis to incorporate first political factors, then economic factors, and finally educational factors into the model. After that, we estimate the full model controlling for all factors simultaneously. This process detects multi-collinearity issues. Results in column 4 and 5 of Tables 4-7 are our preferred estimates.

Adoption of any private school choice arrangement

The results regarding the initial enactment of a private school choice policy are presented in Table 4. In Column 1 (i.e. model 1) we only include the time variant political factors: a state's partisan control of the legislature and governorship, the proportion of K-12 students of minority race or ethnicity, shares of enrollment in schools that are not run by the local public school district, and policy diffusion measures, as well as the time-invariant factor *Teacher Union Strength.* We find the *Republican Legislature* and *Republican Governor* factors positively predict private school choice policy adoption, with hazard ratios higher than 1 ($p<.10$). Having Republican control of either the legislature or the governorship has a positive impact on the

adoption of private school choice arrangements. These effects fade out, however, after controlling for other social factors (Columns 4 and 5).

Table 4
Effects on Likelihood of Adopting Any Private School Choice Program

VARIABLE	(1)	(2)	(3)	(4)	(5)
Political Factors					
Republican Legislative Control	1.271**			1.179	1.168
	(0.149)			(0.133)	(0.133)
Republican Governor	1.190*			1.169	1.179
	(0.114)			(0.125)	(0.128)
Republican State Control	0.887			0.892	0.927
	(0.084)			(0.089)	(0.090)
Rank of Union Strength	1.002			1.004	0.998
	(0.014)			(0.017)	(0.017)
Portion of Minority Students	1.002			1.002	1.003*
	(0.001)			(0.002)	(0.002)
Share of Charter School Enrollment	0.993			0.983	0.989
	(0.010)			(0.010)	(0.010)
Share of Private School Enrollment	1.012			1.007	1.016
	(0.008)			(0.012)	(0.013)
Proportion of Adjacent States Adopted Any Program	0.887				0.875
Economic Factors	(0.087)				(0.092)
Per Capita GDP (in $1,000s)		0.931**		0.994**	0.993**
		(0.027)		(0.003)	(0.003)
Poverty Rate		0.902		0.994	0.995
		(0.060)		(0.008)	(0.007)
Population Density		1.000		1.000	1.000
Educational Factors		(0.001)		(0.000)	(0.000)
NAEP Achievement			1.030	1.003	1.002
			(0.034)	(0.003)	(0.004)
High School Graduation Rate			1.000	0.998	1.000
			(0.038)	(0.003)	(0.003)
Per-pupil Expenditure (in $1,000s)			0.850**	0.995	1.004
			(0.066)	(0.010)	(0.010)
Observations	556	592	566	564	533

Significance level * $p<0.1$; ** $p<0.05$; *** $p<0.01$.
Notes: The dependent variable is a binary indicator of whether the state adopted a private school choice program at the certain year during 2000 to 2016 (*n subject*=49, *n events*=30). Coefficients indicate the hazard ratio of adopting a private school choice program at the base line year. Robust standard errors in parentheses, clustered at the state level. Except for the time-invariant variables *Rank of Teacher Union Strength* and *Population Density*, all other variables included in the model vary across the years.

Model 2 includes only economic factors, while Model 3 includes only educational factors. Results indicate that *Per Capita GDP* is significantly predictive of private school choice program enactment, with a higher income level associated with a lower likelihood of adopting

any type of private school choice policy ($p<.05$). Per-pupil expenditures also are significantly associated with private school choice policy adoption. States that spend comparatively more on public schools are less likely to enact choice policies ($p<.05$).

In the joint model (Columns 4 and 5[9]), only two variables significantly predict the adoption of any private school choice policy. A state with a higher proportion of minority students is predicted to have a higher likelihood of adopting a private school choice arrangement ($p<.10$). The *Per Capita GDP* variable still negatively predicts enactment of any private school choice policy ($p<.05$).

Adoption of specific types of private school choice arrangements

The state factors that predict the adoption of specific types of private school choice arrangements differ somewhat from the ones associated with the enactment of any private school choice program. They also vary across the three types of choice policies. Having a higher portion of neighbor states with voucher programs predicts a lower likelihood of adopting a voucher program in a state in the joint model ($p<.10$ in Column 5). None of the other factors in any of the models are significantly predictive of voucher adoption.

[9] The difference between Model 4 and 5 is the inclusion of the policy diffusion measure. Since Hawaii and Alaska do not have adjacent states, they are excluded from the analysis when controlling for the policy diffusion measure.

Table 5
Effects on Likelihood of Adopting a Voucher Program

VARIABLE	(1)	(2)	(3)	(4)	(5)
Political Factors					
Republican Legislative Control	1.163			1.114	1.109
	(0.204)			(0.180)	(0.206)
Republican Governor	1.104			1.100	1.072
	(0.117)			(0.149)	(0.115)
Republican State Control	1.000			0.965	1.034
	(0.123)			(0.136)	(0.130)
Rank of Union Strength	1.031			1.017	1.010
	(0.023)			(0.030)	(0.025)
Portion of Minority Students	1.003			1.001	1.005
	(0.003)			(0.002)	(0.003)
Share of Charter School Enrollment	0.996			0.997	0.992
	(0.009)			(0.008)	(0.009)
Share of Private School Enrollment	1.015			1.019	1.023
	(0.013)			(0.017)	(0.020)
Proportion of Adjacent States Adopted Vouchers	0.813				0.737*
Economic Factors	(0.121)				(0.131)
Per Capita GAD (in $1,000s)		0.938		1.000	0.993
		(0.040)		(0.005)	(0.007)
Poverty Rate		1.026		1.011	1.008
		(0.098)		(0.016)	(0.010)
Population Density		1.000		1.000	1.000
Educational Factors		(0.001)		(0.000)	(0.000)
NAEP Achievement			1.026	1.001	1.002
			(0.048)	(0.005)	(0.007)
High School Graduation Rate			0.987	1.000	1.004
			(0.051)	(0.005)	(0.007)
Per-pupil Expenditure (in $1,000s)			0.821	0.975	0.991
			(0.103)	(0.023)	(0.025)
Observations	668	671	702	671	640

Significant level * $p<0.1$; ** $p<0.05$; *** $p<0.01$.
Notes: The dependent variable is a binary indicator of whether the state adopted a voucher program at the certain year during 2000 to 2016 (*n subject* =49, *n events*=15). Coefficients indicate the hazard ratios of adopting a voucher program at the base line year. Robust standard errors in parentheses, clustered at the state level. Except for the time-invariant variables *Rank of Teacher Union Strength* and *Population Density*, all other variables included in the model vary across the years.

In contrast with the voucher results, the factors predicting tax-credit scholarship (TCS) adoption are clearer (Table 6). A state with a divided government, with Republican control over only the legislature or governorship, is predicted to have a higher likelihood of adopting a TCS program, significant at the $p<.05$ level. This finding aligns with our hypothesis. However, having a fully Republican-controlled government negatively predicts the adoption of TCS programs

with a hazard ratio less than 1 (p<.10), which is contrary to our hypothesis. States with higher proportions of minority students are more likely to adopt a TCS program, as we hypothesized (p<.10 in Models 1 and 5). The *Share of Charter School Enrollment* and the *Proportion of Neighboring States Adopted TCS* also negatively predict TCS adoption at the p<.05 level of significance or higher, while the *Share of Private School Enrollment* tends to be a positive predictor of enacting a TCS program. In Model 5, states with lower with lower per capita GDP and states with lower poverty rates tend to be more likely to adopt a TCS program. Higher high school graduation rates are negatively associated with TCS adoption in Model 4, as expected (p<.05).

Error! Reference source not found.7 presents the effects of factors on state adoption of individual tax credit/deduction policies that support families that self-finance private schooling for their children. In joint models (Column 4 and 5), *Republican Governor* is positively predictive of a state's adoption of individual tax credits/deductions, significant at the p<.05 level or higher. The share of *Private School Enrollment* is consistently positively associated with individual tax credits/deductions (p<.05 or higher). States that had higher proportions of adjacent states with individual tax credits/deductions tended to have a lower likelihood of enacting such policies, significant at the p<.01 level. Meanwhile, states with lower incomes, poverty rates, and high school graduation rates tended to have a higher likelihood of enacting an individual tax credit/deduction policy.

Table 6
Effects on Likelihood of Adopting a Tax-credit Scholarship Program.

VARIABLE	(1)	(2)	(3)	(4)	(5)
Political Factors					
Republican Legislative Control	1.314**			1.262*	1.251*
	(0.153)			(0.165)	(0.162)
Republican Governor	1.261**			1.231*	1.245*
	(0.138)			(0.137)	(0.148)
Republican State Control	0.824*			0.819	0.880
	(0.093)			(0.100)	(0.105)
Rank of Union Strength	1.005			1.014	1.008
	(0.024)			(0.021)	(0.027)
Portion of Minority Students	1.004*			1.002	1.005*
	(0.002)			(0.002)	(0.003)
Share of Charter School Enrollment	0.979**			0.977**	0.974***
	(0.010)			(0.011)	(0.008)
Share of Private School Enrollment	1.011**			1.011	1.016***
	(0.005)			(0.008)	(0.006)
Proportion of Adjacent States Adopted TCS	0.608***				0.576***
Economic Factors	(0.083)				(0.089)
Per Capita GDP (in $1,000s)		0.943		0.997	0.993**
		(0.035)		(0.003)	(0.003)
Poverty Rate		0.970		0.988	0.983**
		(0.076)		(0.008)	(0.007)
Population Density		1.001		1.000	1.000
Educational Factors		(0.001)		(0.000)	(0.000)
NAEP Achievement			1.010	1.006	1.002
			(0.045)	(0.004)	(0.005)
High School Graduation Rate			0.965	0.992**	0.995
			(0.045)	(0.003)	(0.004)
Per-pupil Expenditure (in $1,000s)			0.910	0.998	1.003
			(0.079)	(0.009)	(0.012)
Observations	691	691	725	691	660

Significant level * $p<0.1$; ** $p<0.05$; *** $p<0.01$.
Notes: The dependent variable is a binary indicator of whether the state adopted a tax-credit scholarship program at the certain year during 2000 to 2016 (n=49, *n events*=18). Coefficients indicate the hazard ratios of adopting a tax-credit scholarship program at the base line year. Robust standard errors in parentheses, clustered at the state level. Except for the time-invariant variables *Rank of Teacher Union Strength* and *Population Density*, all other variables included in the model vary across the years.

Table 7
Effects on Likelihood of Adopting an Individual Tax Credits/Deductions Policy

VARIABLE	(1)	(2)	(3)	(4)	(5)
Political Factors					
Republican Legislative Control	1.515			1.066	1.123
	(0.486)			(0.131)	(0.123)
Republican Governor	1.556			1.768***	1.648**
	(0.447)			(0.377)	(0.395)
Republican State Control	0.892			1.049	1.005
	(0.270)			(0.109)	(0.149)
Rank of Union Strength	1.002			0.987	0.967
	(0.028)			(0.043)	(0.042)
Portion of Minority Students	1.001			1.001	1.008
	(0.002)			(0.003)	(0.009)
Share of Charter School Enrollment	0.966**			0.974	0.971
	(0.015)			(0.034)	(0.050)
Share of Private School Enrollment	1.058***			1.079**	1.108***
	(0.022)			(0.040)	(0.042)
Proportion of Adjacent States Adopted ITC	0.905				0.712***
Economic Factors	(0.105)				(0.073)
Per Capita GAD (in $1,000s)		0.963		0.989	0.982***
		(0.052)		(0.007)	(0.007)
Poverty Rate		0.877		0.981**	0.984
		(0.111)		(0.009)	(0.022)
Population Density		0.999		0.999	0.999
Educational Factors		(0.002)		(0.001)	(0.001)
NAEP Achievement			0.991	1.011	1.022
			(0.067)	(0.016)	(0.019)
High School Graduation Rate			1.043	0.987*	0.995
			(0.086)	(0.007)	(0.007)
Per-pupil Expenditure (in $1,000s)			0.892	0.980	0.965
			(0.130)	(0.050)	(0.072)
Observations	731	731	765	731	700

Significant level * $p<0.1$; ** $p<0.05$; *** $p<0.01$.
Notes: The dependent variable is a binary indicator of whether the state adopted an individual tax credit or deduction policy at the certain year during 2000 to 2016 (*n state*=49, *n events*=8). Coefficients indicate the hazard ratios of adopting an individual tax credit or deduction policy at the base line year. Robust standard errors in parentheses, clustered at the state level. Except for the time-invariant variables *Rank of Teacher Union Strength* and *Population Density*, all other variables included in the model vary across the years.

As we hypothesized, the decision-making logic surrounding the individual tax-credit/ deduction arrangements differs from the logic surrounding the adoption of the other private school choice policies, as it favors middle- and high-income families rather than disadvantaged families. The larger-than-1 hazard ratios of the *Share of Private School Enrollment* variable in Columns 4 and 5 in ***Error! Reference source not found.***7 reveal these reimbursements from the

state for self-financing alternative schooling are especially likely to be enacted in states with higher shares of students attending private schools.

Program Expansions

Table 8 presents the results of the effects of state factors on the expansion of private school choice programs for states that had adopted any school choice arrangements. Program size is measured as the ratio of program enrollments relative to the K-12 public school enrollment that year. The figures thus represent regression coefficients that signal the average change in the percentage of the K-12 student population using private school choice (or just a voucher, or just a TCS, or just an individual tax credit/deduction) associated with a one-unit change in the state-level variable. For predicting the expansion of specific types of private school choice policies, we conduct analyses both with and without the *Republican Government* interaction term included. Two time-invariant variables, the *Strength of Teacher Union* and *Population Density*, are omitted in our analysis here because we control for state and year fixed effects.

Overall, state characteristics do not significantly predict private school choice program expansion (Column 1). Once a choice program has been enacted in a state, it tends to grow at about the same rate over time, regardless of the political, economic, and educational conditions there.

Comparing the effect of state factors on program expansion across all three specific forms of private school choice, we find that the expansion of different types of private school choice arrangements are driven by different factors. States that change from non-Republican Government to *Republican Government* tend to experience increases in voucher enrollment shares of 0.771 percentage points (Column 2), which aligns with our hypothesis, significant at

the $p<.05$ level. *Per-pupil Educational Expenditures* tend to negatively predict voucher enrollment shares, with each $1000 increase in per-pupil spending associated with a decline of 0.317 percent points in the proportion of K-12 students using vouchers ($p<.01$). This negative association between per-pupil expenditure and voucher enrollment shares within states was expected. None of the remaining factors consistently predict voucher enrollment share.

Partisan control of government also tends to influence TCS enrollment shares. Within states, the relative size of TCS enrollments (Column 3) is positively correlated with a *Republican Governor*: a state switch from a non-Republican Governor to a Republican Governor predicts an expansion of the voucher program enrollment share by 0.52 percentage points. The overall insignificant effect of most of the partisan control results may be due to a lack of variation across time within states, as only a few states with private school choice programs have experienced switches of either legislative or gubernatorial partisan control during the period of our study. Increased Per Capita GDP negatively predicts the expansion of TCS programs, as a $1,000 increase in Per Capita GDP is predicted to drop the TCS enrollment share by 0.148 percentage points, significant at the $p<.01$ level.

Since individual tax credit/deduction expansions tend to benefit higher-income families, we expect their expansion logic to be different from that of vouchers and TCS. Results largely align with our hypothesis. Changes in the *Proportion Minority Enrollment* factor over time have a large negative association with individual tax credit/deduction expansions ($p<.01$). A 1 percentage point increase in the *Share of Charter School Enrollment* predicts an expansion of individual tax credits/deductions enrollment share by 2.3 percentage points, significant at the $p<.05$ level. An increase in the share of private school enrollment, on the contrary, is negatively associated with individual tax credit/deduction enrollment share in the state.

Table 8

Effects on the Expansion of Private School Choice Programs

VARIABLE	All Programs	Voucher	Tax-credit Scholarship	Individual Tax Credits/Deductions
Political Factors				
Republican-controlled Legislature	-0.023	-0.216	-0.109	-1.577
	(0.635)	(0.216)	(0.196)	(1.446)
Republican Governor	-1.071	-0.295	0.520**	-1.109
	(1.205)	(0.205)	(0.236)	(0.990)
Republican-controlled Government	2.187	0.771**	-0.591	-1.329
	(1.704)	(0.328)	(0.471)	(1.718)
Portion of Minority Students	-0.512	-0.001	-0.223	-1.709***
	(0.393)	(0.100)	(0.129)	(0.366)
Share of Charter School Enrollment	-0.018	0.002	0.004	2.301**
	(0.045)	(0.007)	(0.008)	(0.701)
Share of Private School Enrollment	-0.317	0.127	-0.012	-0.833***
	(0.564)	(0.116)	(0.078)	(0.220)
Proportion of Adjacent States Adopted	0.408	-0.452	0.045	19.405***
	(1.173)	(0.712)	(0.416)	(4.390)
Economic Factors				
Poverty Rate	-0.025	-0.003	-0.052	-0.603***
	(0.091)	(0.038)	(0.049)	(0.161)
Per Capita GDP (in $1,000)	-0.118	-0.020	-0.148***	0.481
	(0.168)	(0.049)	(0.041)	(0.475)
Educational Factors				
NAEP at or Above Basic Level (%)	0.147	0.021	0.046	0.767**
	(0.121)	(0.038)	(0.072)	(0.299)
High School Graduation Rate	-0.014	-0.050	-0.018	0.267**
	(0.087)	(0.041)	(0.013)	(0.081)
Per-pupil Expenditure (in $1,000)	-0.517	-0.317***	-0.088	-1.079
	(0.652)	(0.089)	(0.132)	(0.651)
Constant	22.295	4.947	12.436***	-13.809
	(27.653)	(7.217)	(1.941)	(29.506)
Number of State/Year Observations	233	113	105	69
Year FE	YES	YES	YES	YES
State FE	YES	YES	YES	YES

Significant level * $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Notes:* Dependent variable is the ratio of the enrollment of targeted program relative to the public-school enrollment within state in year t. Two time-invariant variables the *Teacher Union Strength* and the *Population Density* are omitted from the estimation. Robust standard errors in parentheses, and standard errors are clustered at the state-year level.

Partisan control variables are not as predictive of individual tax credit/deduction policy expansions as they are of voucher and TCS expansions. States experiencing an increased proportion of neighbor states adopting individual tax credit/deduction policies experienced a larger expansion in them. Increases in the *Poverty Rate* tend to be negatively associated with individual tax credit/deduction expansions ($p<.01$). Educational factors tend to have a significant impact on individual tax credit/deduction expansions. For instance, within states over time, a higher proportion of students achieving at or above the basic level of NAEP 8th grade math test and a higher *High School Graduation Rate* predict a larger enrollment share for individual tax credit/deduction policies. Meanwhile, *Per-pupil Expenditure* does not appear to influence individual tax credit/deduction expansions within states over time.

Future Enactment

The hallmark of sound social science is its ability to predict future outcomes. After estimating the effects of state-level factors on the enactment and expansion of private school choice policies, we further predict each state's relative hazard ratio of initially adopting a private school choice program after 2016, with a higher relative hazard ratio indicating a greater likelihood of adopting a private school choice arrangement in later years. Table 9 presents the five states with the highest hazard ratios and another five states with the lowest hazard ratios of enacting any private school choice policy for the first time in later years. The states with the highest ratios are predicted to be the low-hanging fruit for initial enactment of a private school choice arrangement, given their conditions, while the states with the lowest ratios are predicted to be the toughest school choice nuts to crack.

Table 9
State by Rank of Predicted Hazard Ratio for Future Initial Policy Adoption

	Rank	State
Highest	1	IDAHO
	2	MISSOURI
	3	KENTUCKY
	4	HAWAII
	5	MICHIGAN
Lowest	5	NEW YORK
	4	CONNECTICUT
	3	DELAWARE
	2	ALASKA
	1	CALIFORNIA

Notes: Rankings are based on the predicted hazard ratio estimated from Column 4 of Table 4. A greater hazard ratio predicts a higher likelihood of adopting the associated policy at a later time.

This outlier analysis largely validates the accuracy of our predictive model. Two of the five states predicted to be highly likely to enact school choice after 2016 did so. Both Kentucky and Missouri enacted tax-credit funded ESA programs during their 2021 legislative sessions. Two other states that our model predicted to be likely to adopt private school choice programs have peculiar features that probably held them back. Hawaii is an island state with a single public school district and an ethnic composition unique in the U.S. Michigan has an especially expansive state constitutional amendment prohibiting the public funding of religious schools via direct appropriation or tax policies (Komer, 2009, p. 346). Although Michigan legislators occasionally attempt to enact private school choice initiatives, including in 2021, the fact that state courts likely would invalidate any enacted programs, based on current juris prudence, likely undermines the strength of any school choice push in the Great Lakes State. The last of the five states predicted to enact a choice program after 2016, Idaho, has not done so, violating our model's prediction. The Potato State did, however, re-purpose Covid relief funds by Executive Order of its Governor in 2020 into a temporary ESA program that provided expense

reimbursements to 24,563 low-income Idaho students that averaged almost $2000 (Idaho State Board of Education, 2021).

None of the five states with the lowest predicted probably of adopting a private school choice program after 2016 has done so as of this writing. New York, Connecticut, Delaware, Alaska, and California remain void of any policies promoting private school choice, as our model accurately predicted. The political conditions favorable to private school choice enactment are largely absent from these five states. Except Alaska, our negatively-predictive outlier states have consistent unified Democratic control of their governments plus strong teachers' unions. A teachers' union member from Delaware currently lives in the White House. Alaska, though it often experiences unified Republican control of its government, has few private schools as well as economic and educational conditions that are not predictive of private school choice enactment any time soon. Even the tidal wave of support for school choice that culminated in 2021 being declared a "Year of School Choice" was not enough to bring choice to these five states with settings so inhospitable towards the enactment of such policies.

As a final robustness test of our model's prediction power, we use the same model to predict states' adoption of any private school choice program in the years 2011-2016 based on their characteristics from 2000 to 2010 (Appendix Table A4). Five of the 10 states predicted to be most likely to adopt at least one type of school choice program in year 2011-2016 did so. Colorado, South Dakota, South Carolina, Kansas and Mississippi all moved into the school choice column during that five-year period, as predicted by our model. The five states predicted to enact an initial private school choice program from 2011 to 2016 that did not flip to choice states included Missouri, which did so in 2021, Delaware, which moved from "likely to enact school choice" in 2011 to "unlikely to enact school choice" in 2016 as its key conditions

changed, and the peculiar cases of Michigan and Hawaii discussed earlier. Idaho was the state predicted to be most likely to enact private school choice in both 2011-2016 and 2017-2021 but failed to do so both times, though, again, its' Governor established a temporary ESA program as a Covid relief measure. Of the 10 states predicted least likely to enact their first private school choice program in 2011-2016, only Maryland did so, passing a highly constrained voucher program in 2016.

Discussion and Conclusion

We present here the results of an exploratory empirical analysis of state characteristics that predict higher or lower likelihoods of private school choice policy adoption as well as program expansion after enactment. This report is observational in design. All we can identify is systematic associations between factors. We cannot necessarily confirm that the relationships are causal. We also are limited to 49 political jurisdictions over a 17-year period in which a substantial number of states switched from non-adopters to adopters of private school choice arrangements. Missing data reduced our sample slightly when including NAEP achievement, as 11 states did not report their NAEP math test score in 2000. Thus, readers should treat our findings with caution.

Table 10 compares the signs and significance of the coefficients with our predictions for both program adoption and program expansion. Our first hypothesis was that political, economic, and educational factors all will influence choice policy adoption and expansion. This hypothesis is partially confirmed by our analysis. At least some measures of the political and economic conditions in the states are statistically significant predictors of policy adoption in our model estimations. None of the three educational factors – NAEP math proficiency rates, high school graduation rates, and per-pupil expenditures – are significant predictors of overall private school

choice adoption or the enactment of specific types of choice.

Our second hypothesis was that political factors would be the most consistent and predictable factors influencing the adoption and expansion of private school choice programs. That hypothesis is largely confirmed by our statistical analysis here, as 7 of 32 results regarding eight political factors are statistically significant findings in the forecasted direction in estimating private school choice adoption. Among the eight political factors, Republican control of policymaking institutions tends to be the most consistent positive predictor of private school choice policy adoption and expansion. In states with a divided government, *Republican Legislature* and *Republican Governor* tend to be positively predictive of adoption of tax-credit scholarships specifically and having a *Republican Governor* is also positively associated with the adoption of individual tax credits/deductions. When it comes to enacting a new private school choice arrangement, Republican control of one policymaking institution appears to be more important than Republican control of both institutions, likely because Republican policymakers press school choice as a wedge issue when state governments are divided.

Two additional political factors are significant predictors of policy adoption in the expected direction for multiple outcomes. A higher proportion of minority students is associated with greater likelihoods of states initially adopting any private school choice program and enacting a TCS program, specifically. A larger share of K-12 students already enrolled in private schools is associated with increased likelihoods of states adopting a TCS program or individual tax-credit/deductions policy. A larger *supply* of private schooling in a state makes greater *demands* for government support of private school choice specifically through the tax system. Higher proportions of minority students are negatively predictive of individual tax-

Table 10

Summary of the Estimated Impacts

VARIABLE	Expected Sign	ADDOPTION				EXPANSION			
		ALL	VOU-CHER	TAX-CREDIT	INDIVIDUAL TAX-CREDITS/ DEDUCTIONS	ALL	VOU-CHER	TAX-CREDIT	INDIVIDUAL TAX-CREDITS/ DEDUCTIONS
Political Factors									
Republican-controlled Legislature	+			+					
Republican Governor	+			+	+			+	
Republican-controlled Government	+						+		
Rank of Union Strength	+								
Portion of Minority Students	+	+		+					-
Share of Charter School Enrollment	+			-					+
Share of Private School Enrollment	+			+	+				-
Proportion of Adj. States Adopted	+		-	-	-				+
Economic Factors									
Per Capita GDP	-	-		-	-			-	
Poverty Rate	+			-					-
Population Density	+								
Educational Factors									
NAEP at or Above Basic Level (%)	-								+
High School Graduation Rate	-								+
Per-pupil Expenditure (in $1,000s)	-						-		

Notes: cells populated if at least one of the coefficients in the two preferred models was significant.

- : coefficient is negative and significant at least at $p<0.1$

+: coefficient is positive and significant at least at $p<0.1$

BLANK: coefficient is not significantly different from 0 at $p<0.1$

GREEN the sign aligns with the hypothesis

PEACH the sign does not align with the hypothesis

credit/deduction policy expansion, perhaps because smaller proportions of minority parents than white parents self-finance private schooling (Murnane, Reardon, Mbekeani & Lamb, 2018).

Partisan control also is predictive of private school choice expansion, as switching to a government fully controlled by Republicans is significantly predictive of expansion of voucher programs within states and switching to a *Republican Governor* is significantly predictive of expansion of a TCS program. There is a political logic to this overall pattern of results. States with consistently unified Republican control likely are heavily influenced by their teachers' unions, which recognize that the Republicans are the only game in town. Furthermore, under such conditions, Republican politicians feel less urgency to employ wedge issues like school choice, since the Democratic Party in their state is not a viable threat to their power. In politically competitive states, Republican governors especially push to enact school choice programs, to differentiate themselves from their Democrat opponents.

States with smaller shares of *Charter School Enrollment* tend to have a greater chance of adopting voucher programs, which is contrary to our expectation. It is possible that states with larger public charter school sectors feel less political urgency to support private school enrollments through voucher programs, since at least some parents can access school choice through charter schooling. Charter enrollments were positive predictors of the expansion of individual tax-credit/deduction programs, however.

While the eight political variables are less successful in predicting the expansions of existing private school choice arrangements than they are in predicting adoptions, the theoretical predictions involving political factors are the best overall performers in our exploratory study. The glaring exception is the policy diffusion variable, which yields statistically significant predictions that are counter to our expectations in three cases and consistent with our

expectations only in the case of expanding individual tax-credit/deductions. Apparently, states prefer to differentiate themselves from their neighbors when they decide whether to adopt private school choice arrangements, and which specific type of choice policy to enact.

The economic and educational factors generally performed less well than the political factors in the analysis. The exception is *Per Capita GDP*, which performs according to our expectations by serving as a significant negative predictor of the initial adoption of any private school choice program, the adoption of TCS programs and individual tax-credit/deductions policies specifically, and the expansion of TCS programs. Lower-income states are more attracted to private school choice arrangements than are their higher-income counterparts. *Poverty Rate* is negatively predictive of initial TCS program adoption and individual tax-credit/deduction expansion, but those results contradict our expectations. *Population Density* is one of only two of the 14 variables in the analysis not significantly associated with any of the outcomes, the other being teachers' union strength. The three educational factors produce all non-significant results with the exceptions of *NAEP Math Proficiency* rates and *High School Graduation* rates positively predicting individual tax-credit/deduction expansions and *Per-pupil Expenditures* negatively predicting voucher program expansions.

These results lead us to our third and final hypothesis that individual tax-credits/deductions would display a different logic surrounding policy adoption and expansion than other private school choice policies. Individual tax credits/deductions are more beneficial to higher-income families while voucher and TCS programs are overwhelmingly targeted to disadvantaged student populations. The contrast regarding the policy logic of individual tax-credits/deductions and other private school choice arrangements is most stark when we compare the analytic results regarding individual tax-credit/deduction expansions with those for TCS

adoption. Republican control of the governorship and legislature bear no association with the expansion of individual tax-credits/deductions, whereas both factors significantly contribute to the adoption of TCS programs. The proportion of minority students and the share of private school enrollment in a state are both negatively predictive of individual tax-credits/deductions expansion while being positively predictive of TCS adoption. The share of charter school enrollments and the proportion of neighboring states with similar policies is positively predictive of individual tax-credits/deductions expansion but negatively predictive of TCS adoption. Higher NAEP math proficiency and higher graduation rates are positively associated with individual tax-credit/deduction expansion but have no association with TCS program adoption. Although the poverty rate is negatively predictive of both individual tax-credit/deduction expansion and TCS program adoption, otherwise, the conditions that are favorable for individual tax-credit/deduction expansion are almost the direct opposite of the conditions that are favorable for TCS adoption. When state policymakers have a relatively advantaged K-12 student population, they are more likely to direct more dollars to economically advantaged families for self-financing private schooling then they are to adopt tax-credit scholarship programs targeted to disadvantaged families.

We think that the ultimate takeaway of this exploratory analysis is that the answer to what factors lead states to adopt private school choice programs is, “it depends.” What it depends most clearly upon is politics.

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Appendix A. Details Regarding Statistical Methods and Models

We employ survival analysis models to estimate the effect of social factors on individual state initial adoption of private school choice arrangements, using the calendar year as our unit of time. Survival analysis is a standard statistical approach for state policy innovation studies. Berry and Berry (1990) first introduced this model for studying policy innovation. It then became widely accepted as the most effective tool to estimate the causes of policy innovation among states, including school choice initiatives (Mintrom, 1997; Wong & Langevin, 2007; Holyoke et al., 2009).

We assume the state is exposed to the "risk" of initially adopting private school choice arrangements at a rate of:

$$\mathrm{h}(t_{ij}) = \Pr(\mathrm{T}_i = \mathrm{j} | \mathrm{T}_i \geq \mathrm{j}) \quad (1)$$

where *h(t)* is the hazard ratio that individual state *i* adopts a private school choice policy during time *j* under the condition that individual states had not yet adopted any policy prior to *j*. Once the state enacts a private school choice policy in year *j*, the state is no longer at risk and, effectively, is censored from the analysis.

Mathematically, the estimated hazard function of adopting a private school choice arrangement $\hat{h}(t)$ in year *j* is:

$$\hat{h}(t_j) = \frac{n\ events_j}{n\ at\ risk_j} \quad (2)$$

where $n\ events_j$ refers to the number of states that enacted a private school choice arrangement in year *j* and $n\ at\ risk_j$ represent the number of states that did not have any private school choice arrangement prior to year *j* (Singer & Willett, 2003, p.332). Thus, in the Life Table of enacting a private school choice policy (Table A1), we present the risk set as the number of states that had never enacted the targeted policy by the beginning of year *j* in Column 1, and

present the number of states that enacted the targeted policy in year *j* in Column 2. We estimate hazard functions $\hat{h}(t_j)$ of each target policy from year 2000 to 2016 to be the rates in Column 5. Hazard ratios of enacting any private school choice policy and hazard ratios of adopting vouchers, TCS, and individual tax credits/deductions are presented separately.

Since ESAs did not exist until 2011 and were confined to Arizona and Florida prior to 2015, we exclude this policy from our analysis due to low analytical power. This exclusion only affects the classification of Tennessee regarding the variable "enacted a private school choice program," as the other four states with ESAs by 2016 already had another form of private school choice prior to ESA adoption. In our data, Tennessee switches from a non-enacted (0) to an enacted (1) state in 2015, with its enactment of an ESA program, but remains coded 0 for the more specific dependent variables of "enacted a voucher program," "enacted a TCS program," and "enacted an individual tax credits/deductions policy."

Table A1

Life Table Describing When Initial Private School Choice Arrangements Were Adopted

Year *j*	Risk Set at year *j* [a] (1)	State Adopting in Year *j* (2)	Cumulative Number of Adoptions (3)	Cumulative Proportion of Adoption (4)	Hazard Function $\widehat{h}(t_j)$ (5)
Any Private School Choice Arrangement					
2000	49	9	9	0.184	0.184
2001	40	1	10	0.204	0.025
2002	39	0	10	0.204	0.000
2003	39	0	10	0.204	0.000
2004	39	0	10	0.204	0.000
2005	39	1	11	0.224	0.026
2006	38	1	12	0.245	0.026
2007	37	1	13	0.265	0.027
2008	36	1	14	0.286	0.028
2009	35	1	15	0.306	0.029
2010	34	1	16	0.327	0.029
2011	33	1	17	0.347	0.030
2012	32	3	20	0.408	0.094
2013	29	3	23	0.469	0.103
2014	26	1	24	0.490	0.038
2015	25	4	28	0.571	0.160
2016	21	2	30	0.612	0.095
Vouchers					
2000	49	5	5	0.102	0.102
2001	44	0	5	0.102	0.000
2002	44	0	5	0.102	0.000
2003	44	0	5	0.102	0.000
2004	44	0	5	0.102	0.000
2005	44	1	6	0.122	0.023
2006	43	0	6	0.122	0.000
2007	43	1	7	0.143	0.023
2008	42	1	8	0.163	0.024
2009	41	0	8	0.163	0.000
2010	41	1	9	0.184	0.024
2011	40	2	11	0.224	0.050
2012	38	1	12	0.245	0.026
2013	37	1	13	0.265	0.027
2014	36	0	13	0.265	0.000
2015	36	1	14	0.286	0.028
2016	35	1	15	0.306	0.029

Table A1 (Continued)

Year *j*	Risk Set at year *j* [a] (1)	State Adopting in Year *j* (2)	Cumulative Number of Adoptions (3)	Cumulative Proportion of Adoption (4)	Hazard Function $\hat{h}(t_j)$ (5)
Tax credit scholarships					
2000	49	1	1	0.020	0.020
2001	48	2	3	0.061	0.042
2002	48	0	3	0.061	0.000
2003	48	0	3	0.061	0.000
2004	48	0	3	0.061	0.000
2005	48	0	3	0.061	0.000
2006	46	2	5	0.102	0.043
2007	46	0	5	0.102	0.000
2008	44	1	6	0.122	0.023
2009	43	1	7	0.143	0.023
2010	43	0	7	0.143	0.000
2011	42	1	8	0.163	0.024
2012	41	3	11	0.224	0.073
2013	38	2	13	0.265	0.053
2014	36	1	14	0.286	0.028
2015	35	2	16	0.327	0.057
2016	36	1	17	0.347	0.028
Individual Tax credits/deductions					
2000	49	3	3	0.061	0.061
2001	46	0	3	0.061	0.000
2002	46	0	3	0.061	0.000
2003	46	0	3	0.061	0.000
2004	46	0	3	0.061	0.000
2005	46	0	3	0.061	0.000
2006	46	0	3	0.061	0.000
2007	46	0	3	0.061	0.000
2008	46	1	4	0.082	0.022
2009	45	0	4	0.082	0.000
2010	45	0	4	0.082	0.000
2011	45	1	5	0.102	0.022
2012	44	0	5	0.102	0.000
2013	44	2	7	0.143	0.045
2014	42	0	7	0.143	0.000
2015	42	1	8	0.163	0.024
2016	41	0	8	0.163	0.000

SOURCE: "School Choice in America," EdChoice, last modified January 16, 2019. Retrieved from EdChoice website: http://www.edchoice.org/school-choice/school-choice-in-america.
Notes: [a]: The risk set presented here excludes Nebraska and thus is calculated with 49 states at the baseline year.

Our specific survival analysis tool is a Cox Proportional Hazard model which includes multiple predictors, both continuous and categorical, for estimating the risk of initial private school choice policy adoption:

$$h(t_{ij}) = h_0(t_j)\exp(\boldsymbol{PoliticalFactors}'_{ij}.\boldsymbol{\beta} + \boldsymbol{NeedFactors}'_{ij}.\boldsymbol{\gamma} + \boldsymbol{ResourceFactors}'_{ij}.\boldsymbol{\rho}) \quad (3)$$

where the dependent variable is the hazard ratio of state *i* at time *j* enacting its first private school choice policy as a function of three vectors of risk variables: political factors, need factors, and resource factors.

In all, the Cox Proportional Hazard Model in this case estimates the effect of the state's characteristics on whether or not it has self-selected to enact its first private school choice policy.[10] The hazard ratios β_i are not interpreted in the same manner as coefficients in multiple regressions. Since the model is in exponential form, a variable with a hazard ratio larger than 1 signals a higher probability of the hazard (initial enactment), while a variable with a hazard ratio smaller than 1 signals a lower probability of the hazard.

Policy Expansion

For the second part of our analysis, we use panel data analyses with state and year fixed effects to estimate how various social factors further influence the magnitude of the private school choice programs within states from the year 2000 to 2016. At the state level, the magnitude of the arrangements is hypothesized to be influenced by a similar cluster of factors:

$$Y_{ij} = a_0 + \boldsymbol{PoliticalFactors}'_{ij}.\boldsymbol{\beta} + \boldsymbol{NeedFactors}'_{ij}.\boldsymbol{\gamma} + \boldsymbol{ResourceFactors}'_{ij}.\boldsymbol{\rho} + \theta_i + \delta_j + \varepsilon_{ij} \quad (4)$$

where Y_{ij} is the magnitude of a given state *i*'s private school choice arrangement in year *j*, measured as the ratio of enrollment in all private school choice arrangements to total public school enrollment. The political, need, and resource factors are the same as Equation 3. θ and δ refer to state and year fixed effects, respectively, and ε refers to the random error of state *i* in

[10] In other words, our statistical models "identify" off switches from a dependent variable value of 0 in the previous year to a dependent variable value of 1 in the given year.

year *j*. Among the states that had adopted at least one private school choice arrangement, an average of 7.5% of annual public school enrollments were through a private school choice policy across the years in our sample. The rate has declined recently, as fewer states have adopted broad individual tax credits/deductions and large states like Illinois have launched new private school choice programs (Table A2).

Table A2
Size of Program Enrollment (%)

School Year Ending	Any Private School Choice Arrangement	Vouchers	Tax credit scholarships	Individual Tax credits/deductions
2000	9.8	0.4	1.8	21.8
2001	10.5	0.4	2.1	23.4
2002	9.3	1.3	1.5	25.1
2003	9.7	1.4	1.3	25.8
2004	10.1	1.7	1.3	26.7
2005	10.5	1.8	1.3	27.7
2006	8.9	1.1	1.5	26.2
2007	8.5	1.3	1.1	27.1
2008	8.3	1.1	1.6	28.4
2009	8.8	1.0	1.4	24.7
2010	7.9	1.2	1.4	25.0
2011	7.2	1.2	1.3	19.1
2012	7.0	1.2	1.5	19.1
2013	6.0	1.2	1.0	15.8
2014	5.6	1.4	1.1	13.2
2015	5.5	1.5	1.2	13.2
2016	5.0	1.6	1.1	12.7

SOURCE: Retrieved from the "School Choice in America," EdChoice, last modified January 16, 2019. Retrieved from EdChoice website: http://www.edchoice.org/school-choice/school-choice-in-america.
Notes: Size=program enrollment/public school enrollment, as percentage points.

Future Enactment

For the third part of our analysis, we predict which states are more and less likely to enact their first private school choice policy in the near future, based on estimated hazard ratios of policy adoption from Equation 3. We first predict each state's hazard ratio of enacting a private school choice arrangement in later years, and then sort the remaining states who have not yet enacted a private school choice policy in rank order based on their hazard ratio. A state with the highest hazard ratio is ranked first as facing the greatest "risk" of adopting a policy, while a state

with the lowest hazard ratio is ranked last (Table A3). As a robustness test, we limit our model to the first 11 years of the time series, 2000-10, and use the resulting model estimates to identify the most and least likely states to adopt their first private school choice arrangement from 2011 through 2016 (Table A4).

Table A3
Private School Choice Program Enactment Likelihood Rank (2016)

Rank	State
1	IDAHO
2	MISSOURI
3	KENTUCKY
4	HAWAII
5	MICHIGAN
6	TEXAS
7	NEW JERSEY
8	NEW MEXICO
9	NORTH DAKOTA
10	MASSACHUSETTS
11	WYOMING
12	WEST VIRGINIA
13	WASHINGTON
14	OREGON
15	NEW YORK
16	CONNECTICUT
17	DELAWARE
18	ALASKA
19	CALIFORNIA

Notes: State by rank of predicted hazard ratio (based on the Cox Proportional Hazard Models), from the highest to the lowest. The list includes every state that did not have any private school choice arrangement by the end of 2016, except Nebraska, which was excluded from the analysis due to its nonpartisan legislature.

Table A4

Private School Choice Program Enactment Likelihood Rank (2010)

Rank	State
1	IDAHO
2	MISSOURI
3	DELAWARE
4	COLORADO*
5	MICHIGAN
6	SOUTH DAKOTA*
7	SOUTH CAROLINA*
8	HAWAII
9	KANSAS*
10	MISSISSIPPI*
	…
24	OREGON
25	CALIFORNIA
26	CONNECTICUT
27	MARYLAND *
28	NEW MEXICO
29	WASHINGTON
30	ALASKA
31	NEW YORK
32	WEST VIRGINIA
33	WYOMING

Notes: State by rank of predicted hazard ratio (based on the Cox Proportional Hazard Models), from the highest to the lowest. The list includes states that did not have any private school choice arrangement by the end of 2010, except Nebraska, which was excluded from the analysis due to its nonpartisan legislature.

* States adopted any type of private school choice program between 2011 and 2016.