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Home Is Where the School Is: The Impact of Homeschool Legislation on School Choice

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From 1982–1997, 35 states adopted legislation, referred to as homeschool rights, that explicitly granted families the right to educate their children at home. Using data from the National Household Education Survey, this article examines the impact that this legislation has had on the decision to homeschool a child versus the alternatives of attending a public or private school. We estimate a multinomial logit model of school choice where we condition on a variety of individual, county, and state level covariates that may influence this decision. We find the probability a young child is homeschooled increases meaningfully, by 1.4 percentage points, following the passage of homeschool rights in their state.

KEYWORDS *school choice, homeschooling*

Homeschooling has become a popular alternative to attending public and private schools in the United States. Figure 1 displays the percentage of students enrolled in homeschools out of the population of school-age eligible children, by age group. Data on the number of homeschool students were obtained from one of the few sources of information on homeschooling, the National Household Education Survey (NHES). Figures 2 and 3 show the percentage of students enrolled in public (traditional and charter) and private schools over the same period. The percentage of students enrolled in homeschools increased steeply over time, while enrollment in other institutions has been relatively flat (private) or even slightly decreasing (public).[1]

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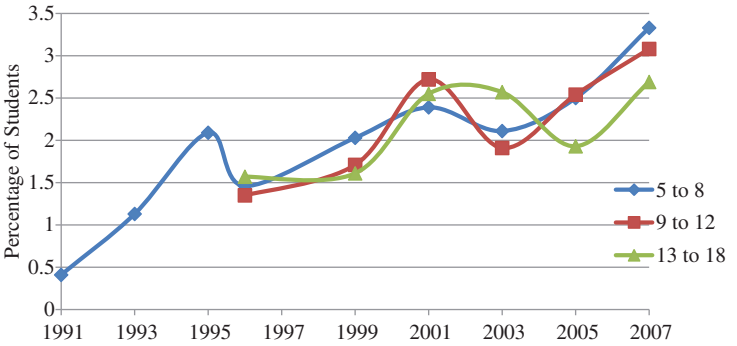

FIGURE 1 Homeschool attendance, by age group.

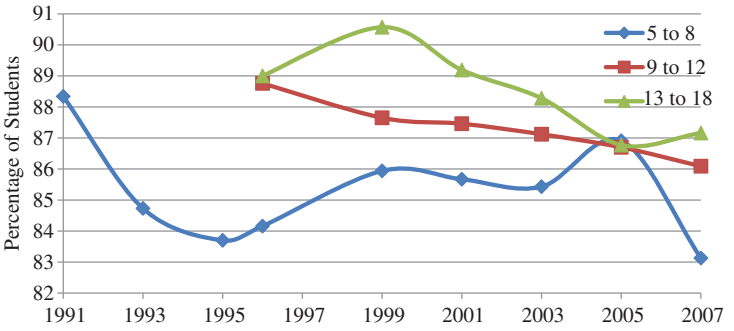

FIGURE 2 Public school attendance, by age group.

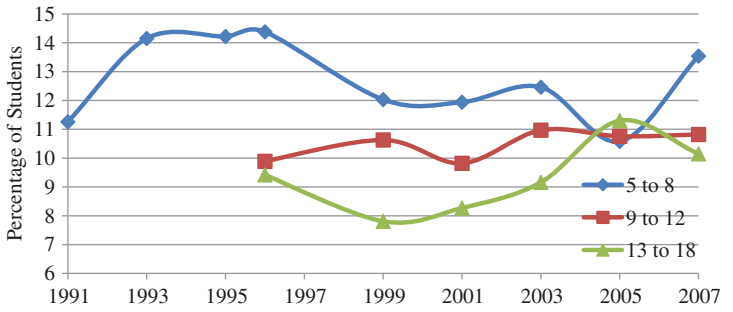

FIGURE 3 Private school attendance, by age group.

Homeschooling has a number of implications not only for children who are homeschooled, but also for school competition, school finance, and residential sorting. Studies have found that homeschool students outperform their public school counterparts on achievement tests (Ray, 2010), although this finding may be biased by unobserved factors that affect school choice and academic outcomes. In terms of competition, schools actively compete

with one another to attract and retain students. Homeschooling increases a household's school choice set, and as a result, this can impact the actions that institution-based schools undertake (e.g., hire more experienced teachers, offer Advanced Placement courses) to attract students.

Homeschooling can also affect school finances because the revenue for public and private schools (hereafter, institution-based schools) is tied to pupil enrollment via funding formulas or tuition charges. The direction of the effect may be ambiguous: For instance, if a child is taught at home rather than in a public school, the school does not receive per-pupil-funding from the state for that child. At the same time, homeschooling families make property tax payments which contribute to local school funding but don't draw on school resources (Nevada Policy Research Institute, 2005).[2] Finally, with respect to residential location, the Tiebout (1956) model predicts that households will locate where the level of services offered in a community meet their needs, and school quality has been found to be a particularly valuable amenity (Black, 1999; Figlio & Lucas, 2004). With homeschools, school choice is detached from the housing market, potentially resulting in a sorting of households across areas that is very different than what would otherwise be predicted (Brunner, Cho, & Reback, 2012).

Given the far-reaching implications of homeschooling, a fundamental task for educators and policy makers is to understand how the legislation proposed and enacted by these stakeholders influences households' decisions to homeschool. Arguably speaking, the most prominent set of legislation on homeschooling occurred in the past half century with the passage of homeschool rights. Prior to the passage of these laws there was much ambiguity and uncertainty about whether children could be educated at home and whether families were in violation of truancy laws if they did.[3] Homeschool rights clarified this issue for families by explicitly stating it was legal to homeschool.

The goal of this article is to examine how homeschool rights effects the likelihood of homeschooling a child versus enrolling them in a private or public school. A vast literature exists examining the effect that legislation like vouchers, charter school lotteries, and interdistrict/intradistrict choice can have on enrollment decisions (Bettinger, 2005; Campbell, West, & Peterson, 2005; Howell, 2004; Howell, Wolf, Campbell, & Peterson, 2002; Reback, 2008; Rouse, 1998; Welsch, Statz, & Skidmore, 2010). To the best of our knowledge however, there has yet to be an analysis of the effect of legislation that is specific to homeschooling, on schooling decisions. The results from such an analysis can provide valuable information to lawmakers and educational administrators for understanding the implications of public policy which is aimed at expanding school choice.

We conduct our analysis using pooled cross sections of data on children from the NHES from 1993–2007. This dataset offers a rich amount of information about children and their families, including whether they are enrolled

in a homeschool, public, or private school. In addition we observe zip code of residence, allowing us to gather information on local public and private school options. We estimate a model of school choice where we control for whether or not a state has homeschool rights, along with a variety of covariates which could plausibly affect the school choice decision, such as family characteristics (e.g., income), characteristics of the local public and private schools (student–teacher ratio), and state level characteristics (labor force participation).

Our results indicate that the presence of homeschool rights in a state increased the probability that children age five to eight are homeschooled by 1.4 percentage points. We also find that the enactment of homeschool rights in a state reduces the likelihood of public school attendance by close to 0.6 percentage points and private school attendance by 0.8 percentage points. We find no effect of homeschool rights on the schooling choices of older children, which suggests that other factors may have a larger influence on schooling decisions at older ages.

BACKGROUND AND LITERATURE REVIEW

History of Homeschool Legislation

With the passage of compulsory education laws in the mid 1800s, the number of homeschooling families began to dwindle as children were required to attend institution-based schools. During the late 1970s, critics of public education began to argue in favor of parent-led education and families were encouraged to openly homeschool (Gaither, 2008). At this time, there was little precedent for whether homeschooling was legal or illegal in a particular state. The exceptions are Oklahoma, Nevada, and Utah which approved legislation prior to 1960 that legalized homeschooling. Outside of these states, parents that homeschooled were accused of breaking compulsory education laws, and subject to punishment (Ishizuka, 2000). Courts began to hear claims on a case-by-case basis. Proponents of homeschooling claimed their rights based on the First and Fourteenth Amendment (freedom of religion and right to privacy which covers parental liberty), or by interpreting their states' compulsory education law in a way that favored homeschooling. A popular argument was that homeschools qualified as private schools, which were exempt from compulsory education laws (Gaither, 2008; Klicka, 2002).

To clarify their position, starting in the early 1980s, a number of states enacted legislation that explicitly granted parents the right to homeschool, which are referred to as homeschool rights. Figure 4 displays the adoption of these rights over time. Between 1982 and 1991, 32 states enacted legislation, three more states did so in 1996–1997, and one state plus the District of Columbia did so in 2008–2009. Information on the year each

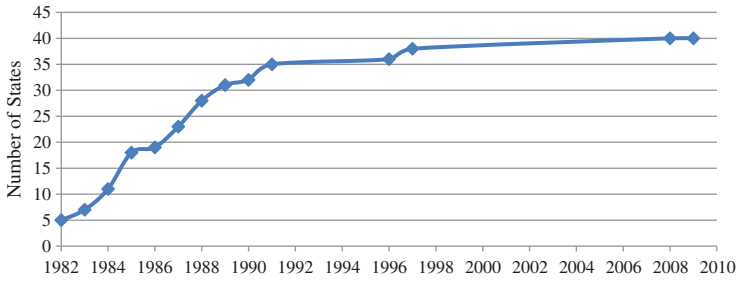

FIGURE 4 Number of states with homeschool rights legislation, by year of adoption.

state adopted homeschool rights was obtained from the Home School Legal Defense Association (an advocacy group for homeschoolers; HSLDA), and cross-verified using information from Klicka (2002), Gaither (2008) and a review of legislative statutes. With the introduction of homeschool rights, ambiguity about whether a parent has the authority to educate their child at home dissipated.

States where homeschool rights were never adopted evolved over time to allow for homeschooling through the "umbrella" of a private school. In these states, parents must register as a private school or as an affiliate of an established private school to homeschool (Ishizuka, 2000). The exact years that these states began to allow for the private school option is not well-documented, however several sources (Djupe & Olson, 2003; Hanna, 2012) indicate homeschooling was legal in all states (either through homeschool rights or via the private school option) by the early 1990s.[4] Practically speaking, the private school option allows families to educate children at home, but the lack of a specific statute has led to challenges to parents' rights. For instance, California is a state without a homeschool statute, but allows for homeschooling if a child is enrolled in a private school where instructors are "capable" of teaching, or are taught by a certified instructor. Challenges of who qualifies as a "capable" teacher resulted in a series of court cases in the 1990s and again in 2008, creating uncertainty about the right of parents to homeschool (HSLDA, 2011a).

In the analysis that follows, we examine how the passage of homeschool rights affected families' decision to educate their children at home versus in a public or private school. We use information on the timing of adoption of legislation across states, and the year a child was born to identify children who became age eligible to enter into school before or after their state adopted homeschool legislation. Using this information, we develop a model of school choice where we estimate how the probability of being homeschooled, attending a public school, or a private school is influenced by whether or not a child's state enacted homeschool legislation by the time he/she was age-eligible to enter into school. In the sections that follow, we describe the nature of the data and regression model.

Relevant Literature

There are a number of studies which examine why households homeschool. The majority of these studies document characteristics of homeschooling families. Several studies (Bauman, 2002; Boschee & Boschee, 2011; Howell & Sheran, 2008) find a higher rate of homeschooling among White families and families with one employed adult. Isenberg (2007) finds that mothers from low income families are more likely to homeschool, and Houston and Toma (2003) conclude that homeschooling is influenced by the degree of female educational attainment in an area.

Ray (2010) highlights the most commonly cited reasons for homeschooling, which includes: developing a more individualized curriculum than is traditionally available for a child in an institution-based school, to enhance relationships between siblings and parents, and to teach children in a way that is more in line with a family's beliefs and value system. Isenberg (2007) similarly finds that households choose to homeschool for academic as well as religious reasons.

Finally, a handful of studies have examined how local school characteristics influence the decision to homeschool. Isenberg (2007) finds that families are more likely to homeschool if local public school quality is low and private school tuition is high. In a similar vein, Ray (2010) documents that some families homeschool to provide an environment without the physical violence and drug and alcohol use that children may be exposed to in institution-based schools.

Although these papers provide interesting information about characteristics of homeschool families, and how local school quality affects homeschooling, next to nothing is known about how legislation or other policy levers affect the decision to home school. The only exception (to the best of our knowledge) is work by Houston and Toma (2003) which examines whether the decision to home school is affected by state laws requiring home school students to have their achievement assessed by standardized exams. The authors find that there are fewer home school students in states which mandate testing.

DATA

We use data from the NHES for the analysis. The NHES is conducted by the National Center for Education Statistics and administered in most odd years starting in 1991 and most recently in 2007. In each survey year households with at least one child were interviewed. In the data we observe basic demographic and socioeconomic characteristics of households such as the age, sex, and race of each household member, along with family income, parents' highest educational attainment, employment status, marital status, zip code of residence, and state of residence.[5] Although surveyed households may have

multiple children, detailed information is only collected for one randomly selected child. For this child we observe his/her year of birth, and whether or not the child is *currently* enrolled in a public school, private school, or attends a homeschool (parents provide this information). In some years, follow up questions were asked about why the child is homeschooled, and whether or not the child takes any classes at a traditional school. We describe these responses in detail below.

For our analysis, we pool the NHES data from the 1993 to 2007 surveys. We do not use the data from the 1991 survey because information about zip code was not collected in that year and as will be described below, we control for characteristics of local public and private schools in our regression analysis which necessitates knowing zip code. We restrict the sample to children between the ages of five and 18 to correspond with the ages that children typically attend school.[6] We run our analysis separately for three age groups: five to eight, nine to 12, and 13 to 18. We do this for two reasons: First, the age range of children varies across NHES survey years, and only children age five to eight are consistently surveyed across years (information for children nine and above was not collected until 1996). Second, we are interested in analyzing whether the effect of legislation varies with age: Homeschool legislation might be a stronger determinant of school choice at younger ages compared to later ages when other considerations come into play. For instance, at older ages, more importance may be given to whether a parent is able to teach advanced topics (e.g., chemistry, calculus) or whether a child can be homeschooled and still attend school for certain courses or extracurricular activities. Our results largely echo this: We find no significant effects of legislation on the likelihood of homeschooling for teens, but find a large, positive effect for young children.

Table 1 displays the (weighted) average characteristics of children in our sample, broken down by their school enrollment status. Generally speaking, homeschoolers are more likely to be White, in families where parents are married, and live in rural areas compared to public and private school attendees. We include all the covariates in the table as controls in our regression models to capture family and geographic characteristics which may influence school choice. Note that all children in the sample were born between 1975 and 2003 (inclusive).

We merge in state level data (for each NHES survey year) on male and female labor force participation rates from the U.S. Census, which we include in the regressions to act as a measure of parents' availability to stay at home and educate their children.[7] We construct measures of religiosity for each NHES year from the General Social Survey (GSS). The GSS is a series of cross-sectional surveys that collects information on individuals' religious affiliations. We calculate the percentage of individuals who identify themselves as being religious (self-identified Protestant, Catholic, Jewish/Other, No Religion). Unfortunately, the GSS does not contain state information,

TABLE 1 Descriptive Statistics of Students in NHES, by School Enrollment, NHES: 1993–2007

	Homeschool		Public		Private	
Individual and family covariates						
Male	0.484	[0.5][a]	0.517	[0.5][c]	0.505	[0.5]
Minority	0.212	[0.409][a,b]	0.393	[0.488][c]	0.264	[0.441]
HH Income						
$20,000–$40,000	0.266	[0.362][b]	0.263	[0.44][c]	0.176	[0.381]
$40,000–$75,000	0.358	[0.442][a,b]	0.281	[0.45][c]	0.302	[0.459]
$75,000 plus	0.221	[0.415][b]	0.216	[0.412][c]	0.424	[0.494]
Married	0.771	[0.421][a,b]	0.614	[0.489][c]	0.704	[0.457]
Parent's degree						
High school	0.175	[0.38][a,b]	0.284	[0.451][c]	0.137	[0.344]
Some college	0.328	[0.469][a,b]	0.305	[0.461][c]	0.242	[0.428]
College or more	0.468	[0.499][a,b]	0.322	[0.467][c]	0.596	[0.491]
HH size	5.150	[1.647][a,b]	4.436	[1.339][c]	4.400	[1.295]
Rural	0.325	[0.469][a,b]	0.240	[0.427][c]	0.141	[0.348]
Suburban	0.166	[0.372]	0.161	[0.367]	0.163	[0.369]
State covariates						
Male LFP	74.103	[3.043][b]	74.204	[3.067][c]	73.947	[3.007]
Female LFP	59.904	[3.609][a,b]	59.609	[3.603]	59.555	[3.638]
Ln median HH income	10.832	[0.128][b]	10.838	[0.131][c]	10.844	[0.13]
Religious affiliation						
Catholic	23.821	[9.006][a,b]	24.767	[9.789][c]	26.025	[10.229]
Protestant	54.276	[14.165][b]	53.615	[14.76][c]	52.821	[14.717]
Jewish + other	7.508	[3.362]	7.562	[3.471][c]	7.482	[3.429]
County level school covariates						
Number of public schools	181.761	[308.347][a,b]	240.098	[380.07][c]	284.145	[407.768]
Pupil–teacher ratio public	16.960	[2.933]	17.052	[3.337][c]	16.948	[3.238]
Number of private schools	86.289	[202.781][a,b]	120.160	[256.593][c]	152.022	[278.798]
Pupil–teacher ratio private	12.093	[2.722][a,b]	12.454	[2.743][c]	12.927	[2.435]
N	1636		74381		11329	

Note. Averages are calculated using NHES survey weights.

[a]Denotes the difference between homeschool and public school students is statistically different from zero at the 5% level.

[b]Denotes the difference between homeschool and private school students is statistically different from zero at the 5% level.

[c]Denotes the difference between public school and private school students is statistically different from zero at the 5% level.

but does identify Census region of residence. We aggregate responses at the region level, and merge this information to the NHES sample. Religious or moral reasons can influence the schooling decision, but because no information is available on religion in the NHES, we control for this using the aggregate measure from the GSS.[8] Finally to control for the quality of public and private school options within a family's area, we use information from the NHES on household's zip code to determine which county they live in. We then merge in county-level data on the number of private and public schools, and the average pupil–teacher-ratio for each NHES year. We obtained this information from the Common Core of Data and Private School Universe Survey maintained by the National Center for Education Statistics. Descriptive statistics for all these covariates are displayed in Table 1.[9]

As discussed above, in a subset of survey years, follow up questions were asked about why parents decided to homeschool, and if a child attended a traditional school for academic courses. Responses to these questions are given in Table 2, along with the breakdown of homeschool participation for all ages across all survey years. First, consider the data on homeschool attendance by age. Somewhat unexpectedly, the percentage of homeschoolers is similar across age ranges; a priori we may expect fewer homeschool students in older grades because the high school curriculum can be more challenging for parents to teach compared to elementary grade topics. However, in the second row we see that a greater fraction of older homeschool students are enrolled in some courses at schools, which suggests that these students may complement home-based education with curricular instruction in institution-based schools. Finally, it should be noted that there is considerable heterogeneity in homeschooling rates across states; although the average over our sample period is close to 1.87% across all ages, this masks considerable variation. For instance, Montana has the highest homeschooling rate of 4%, while Connecticut has a rate of 0.4%.

Retrospective information about schooling decisions is not well-documented in the NHES, so it is difficult to provide detailed information about students' movements in and out of homeschooling. Isenberg (2006) uses the 1996 NHES which collects historical information on some children's schooling, and finds that attrition after the first year can be nontrivial: After one year of homeschooling, 63% of these students continue to be homeschooled. Thereafter however, students have a greater likelihood of continuing with home education. Finally, in the NHES parents indicated a variety of reasons for why they homeschooled. As Table 2 indicates, the two most popular reasons are dissatisfaction with traditional schools and the desire to teach their children in settings aligned with their faith and moral beliefs.

TABLE 2 Descriptive Characteristics of Homeschooled Children

Child is homeschooled

	Age						
	5 to 6	7 to 8	9 to 10	11 to 12	13 to 14	15 to 16	17 to 18
% of students	2.21	1.74	2.20	2.18	2.00	2.30	2.20

Child attends school for some academic courses (among homeschooled children)

	Age						
	5 to 6	7 to 8	9 to 10	11 to 12	13 to 14	15 to 16	17 to 18
% of students	15.64	12.46	14.30	16.37	17.23	27.17	24.62

Reasons that child is homeschooled (among homeschooled children)

	NHES Year				
	1996	1999	2001	2003	2007
Religious/moral	37.68	42.56	50.92	71.31	81.57
Not satisfied with schools	83.52	68.57	68.20	67.21	72.22
Disability/illness	31.78	16.25	14.66	34.86	25.91
Other	49.00	26.57	19.07	20.64	32.16

Note. Averages are calculated using NHES survey weights.

ESTIMATION STRATEGY

Model Specification

To examine the relationship between homeschool rights and the decision to attend a public, private, or homeschool we estimate a multinomial logit model of school choice. We estimate the probabilityoption by:

$$\Pr\left(y_{ibcst} = k\right) = \delta_0 + \delta_1 X_{ibcst} + \delta_2 W_{cst} + \delta_3 V_{st} + \delta_4 Statute_{bs} + B_b + S_s + T_t + \varepsilon_{icst} \quad \text{(Eq. 1)}$$

The subscripts refer to individual student i, born in birth year b, living in county c and state s and observed in survey year t. There are three schooling options (k): y = 0 (homeschool), y = 1 (public school), and y = 3 (private school). X_{icbst} is a vector of individual and family characteristics, W_{cst} is a vector of county-level time varying school characteristics, V_{st} is a vector of state-level time varying characteristics.[10] All the covariates included in the model are listed in Table 1. We use survey weights provided by the NHES and cluster standard errors at the state level in all regressions.

We formulate our policy variable, $Statute_{bs}$ under the limitations imposed by the structure of our data. In particular, the NHES was conducted from 1993–2007, which does not overlap with the years in which the majority of states enacted homeschool legislation. All but five of the states that passed homeschool legislation did so prior to 1993 (moreover, two of the five states passed legislation after 2007). In order to create overlap between the observations in the NHES and the years that legislation took effect, we utilize information on each child's year of birth. All the observations in our sample were born between 1975 and 2003, and we can identify whether or not legislation was in place in a state by the time a child reached schooling age. To that end, we formulate $Statute_{bs}$ as a binary variable equal to one if, by the time a child is age three, his/her state of residence has enacted homeschool rights, and zero otherwise.

$Statute_{bs}$ is intended to capture how the presence of homeschool rights in a state affects a child's schooling decisions at any point in the future (in our analysis, the year the child is surveyed in the NHES). The intuition behind this framework is that families begin to undertake decisions about children's future schooling in the 1 or 2 years leading up to potential school entry (circa age five). For example, if a family lives in an area where they are not satisfied with the local public school, that family may send the child to a private school, educate the child at home, or move to an area with better schools. Because such a decision requires nontrivial investment (e.g., saving for school tuition, mobility costs), families likely begin to think about schooling options in the couple of years leading up to reaching school-age. As a result, the existence of homeschool rights when a child is age three could have a meaningful impact on future schooling choices: If a state has

made homeschooling explicitly legal by this time, the family may be more likely to homeschool when the time comes.

$B_b, S_s$and T_t are a complete series of dummy variables for children's year of birth, state of residence, and survey year. The inclusion of B_b and S_s are particularly important for our identification strategy: The former controls for factors that are shared among individuals that are born in the same year, and the latter controls for factors that are shared among children living in the same state. As a result, our model estimates the effect of legislation by comparing the schooling decisions of children who live in the same state but differ in whether or not they turned three before or after their state enacted homeschool legislation, and then this is compared to the analogous difference in schooling decisions of same-aged children who reside in states where legislation was not passed in that year or never passed at all. Equation 1 can essentially be viewed as a difference-in-differences model, where the first difference (comparison of students within the same state), provides us with a measure of the effect of legislation along with the effect of any other factors that evolve over time that affect school choice (i.e., confounders). The second difference (comparing students in states with legislation to those without) provides us with information on how school choice evolves over time even in the absence of homeschool legislation, which allows us to net out the effect of confounding factors. The end result is our estimate of the effect of homeschool legislation on school choice, $\hat{\delta}_4$.

There are two aspects of our model that are important to note. First, we use the year a child turns three as a natural benchmark from which to estimate the effect of legislation. It is certainly possible though that legislation which is passed *after* a child turns three could affect his/her future schooling choices. For instance, if legislation is passed when a child is eight years old, this could affect whether the child is homeschooled at some time in the future. We define $Statute_{bs}$ in such a way that it is only set equal to one if a child was exposed to a homeschool law from age three (we denote this is as "full exposure" to legislation), whereas it is equal to zero if a child was exposed to a homeschool law at any time after age three ("partial exposure") or never at all. We anticipate that children who were only partially exposed to legislation will be less influenced by legislation than those with full exposure because their families spent at least some time in the two years leading up to school entry without homeschool rights in their state.

Second, as discussed above we estimate the model separately by age group. We do this to examine whether there are differential effects of legislation at various ages. For instance, legislation may have a smaller (or no) effect on homeschooling of older students, if say, other factors appear over time that are more important predictors of school choice for these older children. Because of the way our policy variable, $Statute_{bs}$ is defined, more time has elapsed between when we measure exposure (legislation by age three) and when we observe schooling decisions for older students (say, 10 years

later for 13 year olds) compared to younger students (say, four years later for seven year olds). For the former, the longer time frame suggests that more factors have the potential to affect schooling decisions.

Nonrandom Adoption of Homeschool Legislation

Prior to presenting the results, it is important to consider whether there are any reasons why the model above will produce biased estimates of the effect of homeschool legislation on homeschooling. There are two main concerns: First, it may be the case that states which adopt homeschool rights are just fundamentally different from those that don't in unobserved ways which affect schooling decisions. As a result, when we compare outcomes across students from different states, we will only net out confounding factors which are common to students in all states, but we will not be able to net out any state-specific factors. Second, there is a concern that the results are driven by pre-existing trends. That is, states which adopted homeschool rights may have already been trending towards higher levels of homeschooling, and the results may simply be a continuation of this trend.

With respect to the first issue, it is important to remember that homeschooling is a legal activity in *all* states. The differences across states stems only from the way that homeschooling is implemented—that is, whether a state allows for homeschooling through homeschool rights or a private school option. While it is entirely speculative to say, which approach a state takes may have been the result of idiosyncrasies in the legislative process rather than some unobservable characteristics that affect homeschooling participation directly. That said, to address this concern we also estimate Equation 1 using only the subset of states that ever adopted legislation. Doing this alleviates comparing students from potentially noncomparable states. The results are discussed in more detail below, but briefly speaking, we find quantitatively similar results as in the full sample.

With respect to the second issue, it is difficult to provide any empirical or anecdotal evidence on pre-existing levels of homeschooling in each state because of the lack of data prior to the early 1990s. We can gain some inference however about trends in other variables which are likely related to the homeschooling decision and gauge whether there were pronounced differences across states prior to the adoption of homeschool rights. In particular, we use the DDB Needham Life Style Survey which was conducted from 1975–1998 and collects data on the civic and social activities and opinions of adults in the United States. Each survey year, individuals are asked whether they believe children receive a good education in schools.[11] This can be informative about homeschooling, because individuals who are dissatisfied with traditional schooling options may be more likely to homeschool. We plot responses to this question for states that adopted homeschool rights between 1982–1997 and states which never did in Figure 5. For the first

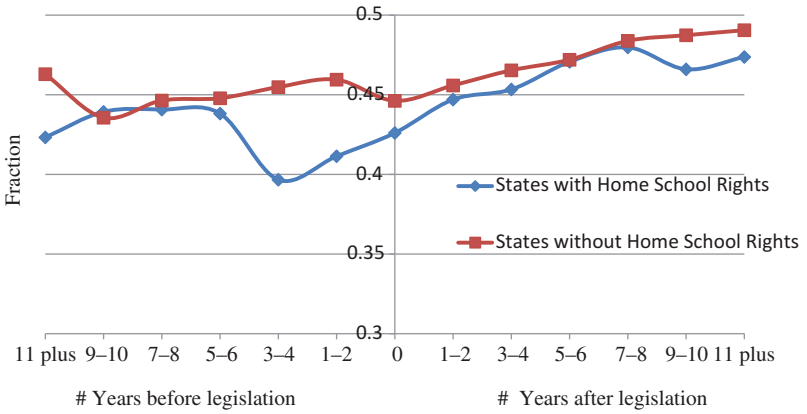

FIGURE 5 Fraction of individuals responding that children cannot get a good education in schools.

group, we center each state at the year in which that state adopted legislation (year zero), and on either side are the years leading up to and after the year legislation was enacted. For states that never adopted rights, because there is no year of adoption to center around, we follow the approach outlined by Ayres and Levitt (1998) where we use each of the corresponding years for the states that did enact legislation as the centering point, and take the average across these states and years. We calculate averages for lead and lag years analogously.

As can be seen in the years leading up to the legislation, trends in states without homeschool rights were relatively flat or slightly increasing, whereas for states with homeschool rights the pattern is initially flat, with a drop down at 3–4 years before adoption, and then an increase after. The drop down is of concern because it suggests that in the years leading up to adoption, states which adopted legislation experienced a change in public satisfaction with schools, compared to states that did not adopt. That said, the direction of the change is not in the direction we would expect if we think that states which adopted legislation had higher rates of homeschooling prior to adoption. The fact that public opinion on the quality of schools *improved* in these states suggests that if anything, there would be lower levels of homeschooling in these states preadoption because families are satisfied with their institution-based schooling options.

RESULTS

The results from Equation 1 for children age five to eight are presented in Table 3, for nine to 12 in Table 4, and 13 to 18 year olds in Table 5. The results for each age group are from a single multinomial logit model where

TABLE 3 Marginal Effects From Multinomial Logit Model and Estimates of the Effect of Homeschool Rights on the Likelihood of Attending a Homeschool, Public, or Private School for Five to Eight Year Olds

	Homeschool		Public		Private	
Statute [s.e.]	0.014	[0.006][c]	−0.006	[0.018]	−0.008	[0.02]
Male	0.000	[0.002]	0.012	[0.005][c]	−0.012	[0.004][c]
Minority	−0.015	[0.002][c]	0.037	[0.007][c]	−0.022	[0.007][c]
HH income						
$0–$20,000	0.009	[0.004][b]	0.112	[0.018][c]	−0.121	[0.018][c]
$20,000–$40,000	0.012	[0.003]	0.068	[0.0119][c]	−0.080	[0.011][c]
$40,000–$75,000	0.007	[0.003][b]	0.036	[0.01][c]	−0.043	[0.009][c]
Married	0.006	[0.002][c]	0.004	[0.007]	−0.011	[0.006][a]
Highest degree						
High school	0.008	[0.006]	−0.069	[0.018][c]	0.061	[0.017][c]
Some college	0.019	[0.007][c]	−0.123	[0.016][c]	0.104	[0.016][c]
College or more	0.027	[0.006][c]	−0.187	[0.015][c]	0.160	[0.015][c]
HH size	0.009	[0.0007][c]	0.001	[0.005]	−0.010	[0.0049][b]
Rural	0.000	[0.003]	0.054	[0.009][c]	−0.054	[0.009][c]
Suburban	−0.001	[0.003]	0.029	[0.009][c]	−0.028	[0.007][c]
Male LFP	0.004	[0.002][c]	−0.003	[0.003]	−0.001	[0.003]
Female LFP	−0.002	[0.001]	−0.002	[0.004]	0.003	[0.003]
Catholic	0.000	[0.0007]	−0.001	[0.002]	0.001	[0.002]
Protestant	0.000	[0.0008]	0.002	[0.002]	−0.002	[0.0014]
Jewish/other	−0.001	[0.0012]	0.000	[0.002]	0.001	[0.002]
Ln median HH income	0.033	[0.04]	0.010	[0.08]	−0.043	[0.064]
Number private schools	0.000	[0.00001]	0.000	[0.00003]	0.000	[0.00002]
Pupil teacher ratio private	0.000	[0.0006]	−0.008	[0.0013]	0.008	[0.0013][c]
Number public schools	0.000	[0.000008]	0.000	[0.00003][a]	0.000	[0.00003][a]
Pupil teacher ratio public	0.000	[0.0007]	0.001	[0.002]	−0.001	[0.0021]
N	33378		33378		33378	
Mean enrollment	0.021		0.846		0.132	
State dummies	Y		Y		Y	
Birth year dummies	Y		Y		Y	
Survey year dummies	Y		Y		Y	

Note. Standard errors are clustered at the state level. Regressions are weighted using NHES survey weights.
[a]Denotes statistically different from zero at the 10% level, [b]at the 5% level, and [c]at the 1% level.

our omitted category is attend homeschool. We present the marginal effects evaluated at the mean of all the variables in the tables.[12] The three outcomes are presented in Column 1 (homeschool), Column 2 (attend a public school), and Column 3 (attend a private school). The coefficient on our policy variable of interest is presented in the first row of each column. Note that a property of the multinomial logit is that the marginal effects for a given variable sum to zero across rows (e.g., summing the coefficient estimate on *Statute* in Table 3 across outcomes: $0.014 + -0.006 + -0.008 = 0$).

Consider the results for the youngest age group (Table 3) first. The estimates indicate that among children of this age group, those who live in states where homeschool rights legislation was in place by the time they turned three have a 1.4 percentage point increase in the probability of being

TABLE 4 Marginal Effects From Multinomial Logit Model and Estimates of the Effect of Home School Rights on the Likelihood of Attending a Homeschool, Public, or Private School for Nine to 12 Year Olds

	Homeschool		Public		Private	
Statute [s.e.]	−0.009	[0.006]	−0.009	[0.014]	0.018	[0.015]
Male	−0.003	[0.003]	0.005	[0.005]	−0.002	[0.004]
Minority	−0.017	[0.005][c]	0.060	[0.01][c]	−0.043	[0.008]
HH Income						
$0–$20,000	0.006	[0.005]	0.092	[0.018][c]	−0.098	[0.016]
$20,000–$40,000	0.015	[0.003][c]	0.048	[0.013][c]	−0.063	[0.012]
$40,000–$75,000	0.011	[0.002][c]	0.024	[0.006][c]	−0.035	[0.006]
Married	0.005	[0.004]	0.013	[0.007][a]	−0.018	[0.006]
Highest degree						
High school	0.026	[0.01][b]	−0.016	[0.02]	−0.009	[0.02]
Some college	0.038	[0.01][c]	−0.058	[0.02][c]	0.020	[0.018]
College or more	0.044	[0.01][c]	−0.117	[0.02][c]	0.073	[0.018]
HH size	0.009	[0.001][c]	−0.013	[0.005][c]	0.004	[0.004]
Rural	0.008	[0.003][b]	0.047	[0.009][c]	−0.055	[0.008]
Suburban	−0.005	[0.004]	0.046	[0.01][c]	−0.041	[0.009]
Male LFP	−0.002	[0.001]	0.001	[0.004]	0.001	[0.004]
Female LFP	0.003	[0.001][c]	−0.002	[0.003]	−0.001	[0.003]
Catholic	0.000	[0.0008]	−0.001	[0.002]	0.000	[0.002]
Protestant	0.000	[0.0006]	−0.001	[0.002]	0.001	[0.002]
Jewish/other	−0.001	[0.0008]	0.001	[0.002]	0.000	[0.002]
Ln median HH income	0.034	[0.03]	−0.066	[0.08]	0.033	[0.07]
Number private schools	0.000	[0.00003][a]	0.000	[0.00005]	0.000	[0.00005]
Pupil teacher ratio private	0.000	[0.0006]	−0.005	[0.002][c]	0.005	[0.002]
Number public schools	0.000	[0.00002][a]	0.000	[0.00004][b]	0.000	[0.00003]
Pupil teacher ratio public	0.000	[0.0008]	−0.001	[0.0008]	0.001	[0.0008]
N	27183		27183		27183	
Mean enrollment	0.021		0.870		0.109	
State dummies	Y		Y		Y	
Birth year dummies	Y		Y		Y	
Survey year dummies	Y		Y		Y	

Note. Standard errors are clustered at the state level. Regressions are weighted using NHES survey weights.
[a]Denotes statistically different from zero at the 10% level, [b]at the 5% level, and [c]at the 1% level.

homeschooled. The results also indicate a 0.6 percentage point reduction in the probability of attending public school, and a 0.8 percentage point reduction in the likelihood of enrolling in a private school, however these results are not statistically different from zero. These effect sizes are nontrivial and suggest that children which are homeschooled as a result of state legislation are drawn from *both* public and private institutions, although the effect on the latter group is slightly larger (in percentage terms).

Turning to the results for older children in Tables 4 and 5, we observe no significant effect of legislation on any of the three schooling choices. Moreover, focusing just on homeschooling, the sign of the marginal effect is negative in both tables. While we find an effect of legislation on the decision to homeschool in the first few years after a child becomes eligible

TABLE 5 Marginal Effects From Multinomial Logit Model and Estimates of the Effect of Home School Rights on the Likelihood of Attending a Homeschool, Public, or Private School for 13 to 18 Year Olds

	Home School		Public		Private	
Statute [s.e.]	−0.004	[0.004]	0.006	[0.007]	−0.002	[0.007]
Male	−0.005	[0.002][b]	0.003	[0.005]	0.002	[0.004]
Minority	−0.019	[0.003][c]	0.054	[0.01][c]	−0.035	[0.009][c]
HH Income						
$0–$20,000	0.026	[0.005][c]	0.051	[0.014][c]	−0.077	[0.014][c]
$20,000–$40,000	0.018	[0.003][c]	0.033	[0.008][c]	−0.051	[0.007][c]
$40,000–$75,000	0.015	[0.004][c]	0.025	[0.006][c]	−0.041	[0.006][c]
Married	−0.004	[0.003]	0.007	[0.007]	−0.003	[0.007]
Highest degree						
High school	0.008	[0.006]	−0.034	[0.017][b]	0.026	[0.016]
Some college	0.016	[0.007][b]	−0.070	[0.016][c]	0.054	[0.016][c]
College or more	0.020	[0.006][c]	−0.123	[0.015][c]	0.103	[0.016][c]
HH size	0.006	[0.001][c]	−0.007	[0.004][b]	0.002	[0.003]
Rural	0.005	[0.002][b]	0.054	[0.01][c]	−0.058	[0.01][c]
Suburban	0.003	[0.003]	0.019	[0.006][c]	−0.022	[0.005][c]
Male LFP	−0.001	[0.002]	0.000	[0.003]	0.001	[0.003]
Female LFP	0.000	[0.001]	−0.006	[0.003]	0.006	[0.003][b]
Catholic	0.002	[0.0008][b]	−0.003	[0.002][b]	0.002	[0.002]
Protestant	0.001	[0.0007][a]	−0.002	[0.001][a]	0.001	[0.001]
Jewish/other	0.001	[0.001]	0.000	[0.002]	−0.001	[0.002]
Ln median HH income	0.009	[0.04]	−0.054	[0.07]	0.045	[0.063]
Number private schools	0.000	[0.00001]	0.000	[0.00005]	0.000	[0.00005]
Pupil teacher ratio private	0.000	[0.0005]	−0.006	[0.002][c]	0.006	[0.002][c]
Number public schools	0.000	[0.000009]	0.000	[0.00004]	0.000	[0.00004]
Pupil teacher ratio public	0.000	[0.0002]	−0.001	[0.001]	0.001	[0.001]
N	26785		26785		26785	
Mean enrollment	0.021		0.883		0.095	
State dummies	Y		Y		Y	
Birth year dummies	Y		Y		Y	
Survey year dummies	Y		Y		Y	

Note. Standard errors are clustered at the state level. Regressions are weighted using NHES survey weights.
[a]Denotes statistically different from zero at the 10% level, [b]at the 5% level, and [c]at the 1% level.

to attend school, there is no evidence of effects later in life. There are a few potential reasons for this. First, our model estimates the effect of legislation that is in place by the time a child turns three, and this simply may not have a bearing on outcomes later in life (e.g., when a child is of middle and high school age). Other factors could have a more influential effect on schooling decisions at later ages.[13] Second, we assume that the state children are surveyed in is the one that they were born in, and we model exposure to that state's legislation on schooling decisions. For older students, there may be more misclassification, because the likelihood of moving from the birth state increases with age. Misclassification will attenuate the estimates, which could potentially explain the small effect sizes for older students.[14]

TABLE 6 Marginal Effects From Multinomial Logit and Estimates of the Effect of Home School Rights on the Likelihood of Attending a Homeschool, Public, or Private School for Five to Eight Year Olds in States With Home School Rights Only

	Homeschool		Public		Private	
Statute [s.e.]	0.018	[0.007][c]	−0.006	[0.019]	−0.012	[0.021]
Male	0.000	[0.002]	0.012	[0.006][b]	−0.011	[0.005][b]
Minority	−0.015	[0.004][c]	0.044	[0.007][c]	−0.029	[0.006][c]
HH Income						
$0–$20,000	0.010	[0.005][a]	0.110	[0.02][c]	−0.119	[0.02]
$20,000–$40,000	0.016	[0.004][c]	0.062	[0.012][c]	−0.079	[0.011]
$40,000–$75,000	0.010	[0.004][b]	0.035	[0.01][c]	−0.045	[0.009]
Married	0.007	[0.004][b]	−0.003	[0.008]	−0.004	[0.007]
Highest degree						
High school	0.012	[0.009]	−0.077	[0.027][c]	0.066	[0.025]
Some college	0.024	[0.011][b]	−0.133	[0.026][c]	0.109	[0.025]
College or more	0.032	[0.009][c]	−0.189	[0.027][c]	0.157	[0.024]
HH size	0.010	[0.0008][c]	0.000	[0.005]	−0.009	[0.005]
Rural	−0.002	[0.004]	0.048	[0.009][c]	−0.046	[0.01]
Suburban	−0.001	[0.005]	0.023	[0.014][a]	−0.022	[0.011]
Male LFP	0.005	[0.002][b]	−0.004	[0.004]	0.000	[0.004]
Female LFP	−0.003	[0.001][b]	0.000	[0.004]	0.002	[0.003]
Catholic	0.000	[0.001]	0.000	[0.002]	0.000	[0.002]
Protestant	0.000	[0.001]	0.003	[0.002][a]	−0.003	[0.002]
Jewish/other	−0.001	[0.002]	0.001	[0.003]	0.000	[0.003]
Ln median HH income	0.049	[0.051]	0.012	[0.1]	−0.061	[0.083]
Number private schools	0.000	[0.00007]	0.000	[0.00005][c]	0.000	[0.00008]
Pupil teacher ratio private	0.001	[0.0008]	−0.008	[0.001][c]	0.008	[0.001]
Number public schools	0.000	[0.00003]	0.000	[0.00003]	0.000	[0.00002]
Pupil teacher ratio public	0.000	[0.0006]	0.002	[0.002]	−0.002	[0.002]
N	20453		20453		20453	
Mean enrollment	0.023		0.845		0.132	
State dummies	Y		Y		Y	
Birth year dummies	Y		Y		Y	
Survey year dummies	Y		Y		Y	

Note. Standard errors are clustered at the state level. Regressions are weighted using NHES survey weights.
[a]Denotes statistically different from zero at the 10% level, [b]at the 5% level, and [c]at the 1% level.

In Table 6, we present the results from our regression model for five to eight year olds where we restrict the sample to the states which adopted homeschool rights between 1982–1997 (again, we present the marginal effects).[15] Recall, there may be some concern that states which did and did not adopt legislation are fundamentally different from one another, and therefore the comparison of student across states does not produce unbiased estimates of the effect of legislation. In practice, the point estimates are very similar, but slightly larger in magnitude to those in Table 3: We find that homeschool rights legislation is associated with a 1.8 percentage point increase in the probability of being homeschooled, a 0.6 percentage point decrease in attending a public school, and a 1.2 percentage point decrease

in the likelihood of attending a private school (again, the latter two estimates are not statistically significant). In results omitted for brevity (available upon request), we re-estimate Equation 1 on the subset of states for older students, and find results that are similar in sign and magnitude to Tables 4 and 5: That is, we find no significant effect of legislation on enrollment in home, public, or private schools. Overall, the results in Table 6 provide no meaningful evidence that our findings in Table 3 are driven by unobserved state factors.

Finally, in an analysis omitted for brevity, but available upon request, we check the sensitivity of our findings in Tables 3–5 by including an indicator for whether or not the state a child resides in had a charter school law in place by the time the child reached schooling age. Charter school laws, in the same way as homeschool rights, open up the choice set of a household, and could be an important determinant of what type of school a child attends. When we include the indicator, the coefficient estimates on homeschool rights hardly change and remain significant in the case of homeschooling. The estimates on the charter school laws are not significant except for in the case of private schooling when they are negative and indicate a reduction in the probability of attending a private school by 1.5 percentage points.

CONCLUSION

Homeschooling has grown in popularity in recent decades. What was once a practice with limited participation and few resources has grown into a community with over a million and a half homeschooled children. Homeschooling represents a shift away from institution-based education toward a setting that can be entirely personalized and customized towards an individual child. Homeschooling has meaningful practical implications not only for the children and families involved in it, but also for the traditional schools these children are drawn from and the communities homeschooling families live in.

Practitioners and policy makers are interested in understanding the mechanisms and implications of expanded school choice, and homeschools represent a unique form of choice that is not yet well understood. Although the characteristics of homeschooling families have been documented in previous research, little information is known about the way state legislation has influenced homeschooling. This is an important omission, given the potential use of legislation as a policy lever to influence families' schooling decisions. This article provides the first analysis of what has been arguably the largest reform in homeschooling legislation in the United States—the introduction of homeschool rights during the 1980s to mid 1990s. The results from this analysis indicate that homeschool rights have a large, positive impact on the likelihood of homeschooling (among young children), and that substitution

toward homeschooling reduces the probability of attending both public and private schools.

There are some limitations to the current study. First, the empirical strategy is restricted by a lack of data on homeschooling prior to the early 1990s. Rather than observing individuals-and their schooling decisions-before and after legislation was enacted, we only observe the outcomes of individuals who turned three before and after their state enacted legislation. Second, we only observe information about *current* enrollment in a public, private, or homeschool, making it impossible to assess the effect of legislation across multiple years for the same individual. Third, we lack achievement data in the NHES, which prevents us from examining a central question of interest for researchers, practitioners, and policy makers: What is the causal impact of homeschooling on children's future outcomes?

Despite the limitations outlined above, this research provides useful information to policy-makers and educational administrators regarding families' school decision making process. It also highlights the need for more systematic data to be collected on homeschooling in order to gain more insight on this form of school choice. Given more data, it would be interesting to examine the effects of homeschooling on achievement and labor market outcomes, as well as how local public and private schools respond to the competition induced by homeschools.

NOTES

1. These figures are based on the author's calculations using weighted data from the NHES. The NHES did not collect information about homeschooling for children age 9 and above prior to 1996. As a result we present trends separately by age group in Figures 1, 2, and 3. Data on the number of school-age eligible children were obtained from the National Center for Education Statistics.

2. Two other issues complicate how institution-based schools could be affected (monetarily) by homeschools: (a) Schools often receive funding based on prior year enrollments, which may not accurately reflect any changes that result from children moving in and out of homeschools, and (b) some schools may receive funds for providing auxiliary services to homeschool students such as administering standardized tests (Howell & Sheran, 2008).

3. In the states without homeschool rights, families are allowed to homeschool their children under a private school option. As will be discussed in the second section, this option has sometimes led to challenges of parents rights to homeschool.

4. The fact that homeschooling was legal in all states by the early 1990s suggests that a state such as Michigan, which enacted homeschool rights in 1996, may have allowed homeschooling under a private school option prior to 1996 (similarly for Alaska, Delaware, Idaho, and Washington, DC, which enacted legislation after 1996). In fact, Michigan is one of many states that allow families to homeschool either through homeschool rights, or via a private school option. Families may find it beneficial to choose one option over the other for bureaucratic reasons (HSLDA, 2011b).

5. We obtained zip code, state of residence, and year of birth information by obtaining a restricted-use data license from the National Center for Education Statistics.

6. The NHES only asks whether children five and above are enrolled in a homeschool. The exceptions are the 2003 and 2007 surveys where parents of children age 4 and above were asked if the child attends a homeschool. The sample is small: In 2003, 7 out of 30 four year olds attended a homeschool and in 2007, 4 out of 42 four year olds were homeschooled. We focus on ages five and above for uniformity across survey years.

7. Although we observe labor force participation of parents in the NHES we do not include this as a control in our regression models because employment status is likely jointly determined with homeschool status.

8. We constructed average religious affiliations for a region using GSS survey weights. The eight regions are: East North Central, East, East South Central, Middle Atlantic, Mountain, New England, Pacific, South Atlantic, West North Central, and West South Central. The GSS is the only source of data on religiosity which overlaps with the survey years in the NHES. Another source of data on religiosity in communities (available at the state and county level is the Association of Religion Data Archives, however this data is only collected every decade, e.g., 1990, 2000, 2010). Because our analysis utilizes variation over time to identify the effects of state legislation, we ultimately utilized the data from the GSS which provides variation over time, even though it is at an aggregate level.

9. In the case that there is missing data regarding these county level measures of public and private schools, we use the average value for the variable within a given state/year.

10. As mentioned in the third section, we constructed a measure of religiosity that only varies at the Census region level. For brevity, we include this covariate in the vector V_{st}.

11. Survey respondents were asked to choose the response that best matches their opinion about the following statement: "Children cannot get a good education in schools today." Responses: Definitely Disagree, Generally Disagree, Moderately Disagree, Moderately Agree, Generally Agree, Definitely Agree. For the graph, we group responses into two broad categories: Agree (Moderately, Generally, Definitely) and Disagree (Definitely, Generally, Moderately). Results are not qualitatively changed if we make reasonable adjustments to the groupings.

12. In the case of binary regressors, marginal effects are calculated for discrete changes of the binary variable from 0 to 1.

13. Moreover, we do not observe a child's prior schooling decisions (e.g., whether they attended a homeschool in the past). To the extent that previous schooling decisions are strong predictors of future decisions, we miss an important control variable in our model for older children. That said, to the extent that legislation influences homeschooling at early ages, and this is correlated with homeschooling at later ages, we would expect to see an effect of legislation.

14. In an omitted analysis, we attempted to construct the history of homeschooling for individuals where retrospective information was collected (e.g., 1996 NHES). We intended to use this information to examine how the probability of homeschool attendance varies for the same child before and after that child's state passed homeschool rights. Unfortunately, the sample is prohibitively small to gain any meaningful inference.

15. We eliminate the states that *only* have a private school option for homeschooling in this analysis. See Note 3 for more information.

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