Education, Land, and Location

Edited by Gregory K. Ingram and Daphne A. Kenyon

Land Policy Series

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CONTENTS

14

Community Characteristics of Homeschooling: The Case of Virginia

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School choice factors into most discussions on reforming America's education system. It is either held up as a constructive force that enables parents to choose the educational environment best suited to their children's needs and creates competitive forces on schools to continually improve the service they provide, or put down as a destructive force that drains away vital financial resources and innovative talent badly needed by the public school system (Booker et al. 2008; Carruthers 2012; Chubb and Moe 1990; Rouse 1998). The debate and academic research have focused primarily on expanding school vouchers to defray the costs of private schooling and increasing the number of charter schools as a form of choice within the public system (Gill et al. 2007). Receiving far less attention is another increasingly common school choice option, homeschooling.

Homeschooling, the educating of students at home typically by a parent, is a legal school choice option in all 50 states and the District of Columbia. The percentage of America's students educated at home steadily increased from 1.7 percent in 1999 to 2.9 percent in 2007, a level in excess of the 2.1 percent enrolled in charter schools (National Center for Education Statistics 2012).[1] And while charter schools have continued to grow, particularly in response to the federal Race to the Top competition, much of that growth has been contained to more-urban areas, where the population is able to support both traditional and charter schools. Over three-fourths of charter schools were located in city and suburban communities in 2010, compared with half of noncharter public schools (National

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1. Throughout this chapter, school years are referred to by the spring of the school year (e.g., 2012 refers to the 2011–2012 school year).

Center for Education Statistics 2012). Homeschooling as a school choice option is available in both rural and urban communities and is poised for further expansion. Continued advancements in and acceptance of distance learning programs offer the promise of alleviating the burden homeschooling places on parents by shifting instruction delivery to the computer (Clark and Berge 2012; Huerta, González, and d'Entrement 2006).

As with other forms of school choice, the ultimate interest in homeschooling for families, policy makers, and researchers alike is its impact on students with respect to both short- and long-term and cognitive and emotional-social outcomes. Severe data limitations complicate efforts at rigorous quantitative evaluations of homeschooling (Isenberg 2007). Identification of homeschooled students is limited, as not all states require all homeschooling families to register with their local school districts. Measurement of impact on academic achievement is curtailed, as only a handful of states require homeschooled students to participate in state accountability testing systems. Despite all this, there remains much to be learned about homeschooling.

Before impact evaluations can be carried out and the results appropriately interpreted, researchers must first better understand where homeschooling occurs, where it is growing, and what relationships there may be between communities and the decision to homeschool. The current study does just that in the commonwealth of Virginia. The national push for the legal recognition of families' right to homeschool their children began in Virginia with the establishment of the Home School Legal Defense Association (HSLDA) in 1983. Although only one state is considered here, homeschooling in Virginia shares several key features with most other states: like 39 other states and the District of Columbia, Virginia requires parents to notify the school division (school districts in Virginia are referred to as divisions) of their intent to homeschool, and like 25 other states, Virginia requires parents to submit test scores, professional evaluation of a student's progress, or both (HSLDA 2008). Combining school division–level data on the number of homeschooled students between 1995 and 2012 with data from a variety of sources on community and school characteristics, this study answers four research questions:

1. What are the statewide homeschooling trends in Virginia?
2. What types of communities have stronger revealed preferences for homeschooling versus public schooling?
3. In what types of communities are preferences for homeschooling versus public schooling growing the fastest?
4. Is there any evidence of a causal impact of community and school characteristics on preferences for homeschooling?

This analysis was informed by two prior studies: Isenberg's (2002) study of homeschooling in Wisconsin during the 2001–2002 school year, and Houston and Toma's (2003) study of homeschooling in Kentucky between the 1991–1992

and 1995–1996 school years. For the current case study of Virginia, similar data were used to test similar hypotheses about family decisions to homeschool their children and make several important contributions. First, by focusing on Virginia, the study expands current knowledge of homeschooling to a southern state with educational, social, and political systems meaningfully different from those in Wisconsin. Second, the study provides an update of sorts in that it leverages data through 2012, a full decade beyond Isenberg's (2002) analysis and 15 years beyond Houston and Toma's (2003) data set. Finally, the study enhances researchers' understanding through the use of time-variant community characteristics, enabling an analysis of trends and changes in homeschooling not permitted by the time-invariant data to which the earlier authors had access.

Homeschooling in Virginia

Homeschooling has been legal in Virginia in some form since the early 1950s. Families currently have three homeschooling options: home education, religious exemption, and private tutoring.[2] Home education, the most popular option, is governed by the home instruction statute adopted in 1984,[3] clarifying that home instruction by parents satisfies the commonwealth's compulsory attendance law. The parent must either (1) hold a high school diploma; (2) meet the qualifications for a teacher established by the board of education; (3) provide a curriculum that can be implemented via a correspondence or distance learning program; or (4) present evidence of ability to provide an adequate education for the child. What constitutes such evidence is locally determined. Parents are required to notify the school division superintendent by August 15 of their intent to homeschool their child under this option and to provide evidence of academic progress by August 1 of the following year. This evidence can be either (1) a score in or above the fourth stanine on any nationally normed standardized exam; or (2) any evaluation or assessment that the school division superintendent determines to indicate that the child has made adequate educational progress.[4]

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2. HSLDA (2011–2012) suggests that there may be a fourth option in its summary of Virginia's law. Parents can create a private school based in one family's home, with a distance learning program to other family homes. No data exist to speak to the frequency with which families avail themselves of this option. The 2010 Private School Universe Survey, however, suggests that this option is rarely if ever used. In 2010, Virginia had 17 private schools, with a total K–12 enrollment of 733 students, whose primary purpose was to support homeschooling. None of these schools were located in private homes. The Virginia Department of Education's homeschooling handbook (Virginia Department of Education 2012) makes no mention of this option.

3. Code of Virginia §22.1-254.1.

4. The minimum score on any nationally normed standardized exam was lowered in 1993 from the 40th percentile to the 4th stanine (23rd percentile) after successful lobbying efforts by homeschooling advocacy and membership organizations.

The right to claim a religious exemption to public schooling, the second most common option, was Virginia's first legal option for parents wishing to homeschool their children.[5] A clause in the compulsory attendance law exempts parents opposed to school attendance "by reason of bona fide religious training or belief." The clause clarifies that these reasons do not include "essentially political, sociological or philosophical views or a merely personal moral code." Parents choosing to homeschool under this option are required only to notify the school division superintendent and justify their claim of religious exemption in the first year the child is homeschooled and if the family relocates to a different school division. No evidence of educational progress is required.

Finally, children may be homeschooled if they are instructed by a tutor (parent, guardian, or other adult) who holds a valid Virginia teaching license.[6] Parents are required only to provide a one-time notification to the school division superintendent of their intent to homeschool under this option. No evidence of educational progress is required.

It is left to the discretion of local school divisions whether to permit home-schooled students to enroll in specific public school courses and participate in extracurricular activities. School divisions do have a financial incentive to allow homeschooled students to enroll in courses, as they count toward the division's average daily membership (ADM)—0.25 per course for a 0.5 maximum—which factors into the amount of education aid received from the commonwealth. Part-time enrollment, however, is quite uncommon. In 2011, total part-time enrollment across all divisions equaled 318 ADM. At most, this represents 1,272 homeschooled students, or 8.7 percent of homeschoolers in 2011. There is an ongoing statewide effort to require divisions to allow access to extracurricular activities; however, the most recent legislation failed to pass the state senate in February 2013, despite support from several homeschooling advocacy and membership organizations.

The three organizations advocating for and supporting homeschooling in Virginia are differently motivated: protecting constitutional rights and family freedoms, protecting family religious beliefs, and providing quality home education. The HSLDA, headquartered in Virginia, was founded in 1983 at a time when homeschooling was not legal in most states and focuses its efforts on legal advocacy "to defend and advance the constitutional right of parents to direct the education of their children and to protect family freedoms" (HSLDA n.d.). The Home Educators Association of Virginia (HEAV) is guided by religious principles. According to its website, HEAV operates "within the context of a biblical world-view" to "help and encourage parents to fulfill their God-given rights and responsibilities to educate their own children" (HEAV n.d.). Finally, the Organization

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5. Code of Virginia §22.1-254(B)(1).

6. Code of Virginia §22.1-254(A).

of Virginia Homeschoolers was formed in 1993 by a former vice president of HEAV who saw the need for an organization appealing to a broader array of families rather than exclusively to conservative Christians (Seaborne 2004).

Homeschooling Research

Research by two sociologists, Van Galen (1991) and Stevens (2001), is often credited as engendering the common notion that homeschooling families are motivated by either ideological or pedagogical reasons. Ideologues believe that the public schools cannot provide their children with an education consistent with the values and morals at the core of their religious beliefs. Even worse, fear some, the public schools will instill values and morals anathema to their own. For these families, home education allows them to incorporate their religion into the curriculum and instruction in ways prohibited by the principle of separation of church and state. Pedagogues judge the quality of education provided by the public schools as not meeting their children's academic and social needs. By homeschooling, they can tailor the curriculum and instruction to enable their children to excel in ways a public school education would not. While the two groups are linked conceptually (ideologues see religious instruction as essential to the quality pedagogues prioritize), both are supported by the research as separate motivations for homeschooling.

Surveys of homeschooling families consistently reveal religion to be paramount for many of them. Thirty-six percent of homeschooling families responding to the 2007 National Household Education Survey listed "to provide religious or moral instruction" as the most important reason they homeschooled, while 88 percent said it was one of the reasons (National Center for Education Statistics 2012). This is not surprising given that the movement to guarantee families' rights to homeschool their children was directed in large part by the HSLDA, an organization with close ties to the Moral Majority and the Christian Coalition. Homeschooling families, compared with public school families, report stronger religious beliefs, are more likely to attend religious services more than once a week, and are more likely to believe that the Bible is the actual word of God (Howell and Sheran 2008). In politics, they are more likely to be Republicans and conservative (Collom 2005; Howell and Sheran 2008). Religious beliefs significantly predict homeschooling even after controlling for other factors. Communities with higher levels of Evangelical Protestants have higher rates of homeschooling (Isenberg 2002, 2006).

The ability to provide a better education is the other main reason families provide homeschooling. Among homeschooling families in 2007, 21 percent indicated that the most important reason was "concern about the environment at other schools," and 17 percent reported "dissatisfaction with academic instruction at other schools"; 73 percent and 88 percent, respectively, cited these as at least one reason for homeschooling (National Center for Education Statistics

2012). In multivariate tests, several measures of school quality predict homeschooling. Homeschooling was more popular in Kentucky districts with higher dropout rates during the mid-1990s, less popular in states with higher per pupil expenditures in 1996, less popular in Wisconsin districts with higher scores on the eighth-grade Wisconsin Knowledge and Concepts Examination in 2002, and less popular in states with higher scores on the fourth- and eighth-grade National Assessment of Educational Progress mathematics exams in 1996, 1999, and 2003 (Houston and Toma 2003; Isenberg 2002, 2006). Families' ability to influence school quality also factors into their decisions.

When families are less able to bring about the type of public schooling they want for their children, they are more likely to homeschool. Several political economy hypotheses are supported by the literature. Kentucky districts with greater income dispersion among residents had higher homeschooling rates (Houston and Toma 2003). The underlying theory is that education preferences vary with income and schools cannot cater to a wide array of preferences. Families are, therefore, less likely to have their individual preferences met, increasing the likelihood of homeschooling. Another means of influencing schools is by exerting control over education budgets. Nationally in 1999, families were less likely to homeschool in states where a higher percentage of education funds were raised locally (Isenberg 2002, 2006). The theory here is that monies from the state and federal governments come with conditions, whereas local monies can be spent as the local community sees fit. As families' influence over local schools declines, they are more likely to exercise school choice. Whether homeschooling is the form of school choice selected ought to depend on the availability of other forms of choice.

Isenberg (2002, 2006) tested several variants of the school choice theory in his analysis of homeschooling patterns nationwide. To capture the potential for families to switch to other public schools in the region, he included a public school choice index equal to one minus the Herfindahl index of enrollment in the regional public school districts. He examined the availability of the private school option with a measure of the number of private schools per student. The theory predicts that families will be less likely to homeschool when they have a larger set of school choice options. Neither of Isenberg's tests supports the theory, however.

Should families homeschool their children, they must decide which parent will exit the labor force (or curtail his or her labor force involvement) and determine whether this budget constraint can support homeschooling. It is, therefore, not surprising that homeschooling parents are more likely to be married and that the likelihood of homeschooling increases with the number of adults in the household (Houston and Toma 2003; Howell and Sheran 2008; Isenberg 2002, 2006). Mothers shoulder most of the homeschooling responsibilities (Collom 2005; Stevens 2001). Homeschooling mothers are more than twice as likely as other mothers to be out of the labor force (Howell and Sheran 2008; Isenberg

2002). As the educational attainment of the mother increases, families are more likely to homeschool, at least up to the point where the mother holds a bachelor's or advanced degree (Houston and Toma 2003; Isenberg 2002). With a college or graduate degree, the parent's earning potential is too great for the family to forgo. The same pattern holds for family income. Homeschooling increases with income until the point where families are able to use the additional income to purchase rather than produce school quality (Isenberg 2006). Additionally, given that the costs of such a purchase increase with the number of children, larger families are more likely to homeschool (Howell and Sheran 2008; Isenberg 2002), perhaps reflecting the costs of private education or the potential for greater division of household labor (Isenberg 2006). Prior public or private school teaching experience may also play a role. Twenty-nine percent of parent/teachers linked to a cyber charter school in California had taught previously (Collom 2005). Thus, the decision to homeschool is both complex and fluid.

Many families arrive at different decisions for each of their children. Among homeschooling families with at least two children, 55 percent send at least one to school (Isenberg 2006). They may also choose to enroll some children in school part-time. Among homeschooled students in 2007, 16 percent were enrolled in school part-time, with almost 70 percent attending for less than 10 hours a week (Grady, Bielick, and Aud 2010). Children also are allowed to participate in extracurricular activities in slightly less than half the states (HSLDA 2012). One estimate indicates that the average daily home instruction lasts 4.82 hours (Collom 2005).

Finally, families must revisit the decision to homeschool annually, and many opt to reenroll their children in more formal schooling. Most homeschooling lasts less than four years (Isenberg 2002). Almost 40 percent of homeschooled students return to public or private schools after just one year (Isenberg 2006). Children in religious families experience more homeschooling compared with those in secular families, with 48 percent still homeschooled after six years, compared with only 15 percent of secular homeschooled students (Isenberg 2006).

For any given family, these factors work together and against one another in the family's decision whether to homeschool. Families are more likely to homeschool when they view the public schools less favorably, either because schools do not reflect their religious beliefs (ideologues) or do not provide an acceptable level of quality (pedagogues) or because the family feels they cannot change the school to reflect their religious beliefs or meet their quality requirements (political economy). They are less likely to homeschool when there are more affordable schooling options (school choice). They are also less likely to homeschool when the household budget is less able to support it because, for example, neither parent is able to exit the labor force or the parents do not feel sufficiently prepared to provide a quality education (household economy). With the data gathered on Virginia, this study was able to test how each of these theories, though not each of the individual factors previous studies emphasized, influence family deci-

sions to send their children to public schools or educate their children at home themselves.

Theories of Homeschooling as School Choice

The decision whether to homeschool a child is made collectively by a household. A family will choose to homeschool if doing so provides more utility than any other type of schooling under consideration (home, public, or private school). The utility, U_{ijk}, household i derives from schooling option j in school division k is determined by family characteristics, x_{ik}, school characteristics, s_{jk}, characteristics of other households choosing a given schooling option that capture peer effects, $\bar{x}_{jk}$, and other unobserved traits of the household that are assumed to vary randomly across households, $U_{ijk} = \alpha'x_{ik} + \beta's_{jk} + \delta'\bar{x}_{jk} + \varepsilon_{ijk}$ (equation 1).

(1) $U_{ijk} = \alpha'x_{ik} + \beta's_{jk} + \delta'\bar{x}_{jk} + \varepsilon_{ijk}$

The homeschooling literature has posited and tested several theories about the set of family and school characteristics that influence household utility. The current analysis of homeschooling in Virginia borrows heavily from this research.

The data available on homeschooling in Virginia are not at the household level, but rather are aggregated to the school division. In the current study, each of these theories was tested with respect to community preferences for home versus public schools. Isenberg (2002) provides a nice explanation of how the interpretation of relationships between household characteristics and homeschooling changes when household preferences are aggregated. The average utility, $\bar{U}_{jk}$, households derive from schooling option j in school division k is determined by the average characteristics of the households in the division, $\bar{x}_k$, characteristics, s_{jk}, and other unobserved traits of the households, $\bar{\varepsilon}_{ijk}$ (equation 2).

(2) $\bar{U}_{jk} = \alpha'\bar{x}_k + \beta's_{jk} + \delta'\bar{x}_k + \bar{\varepsilon}_{ijk}$
        $= (\alpha' + \delta')\bar{x}_k + \beta's_{jk} + \bar{\varepsilon}_{jk}$

Given that aggregate household characteristics are rarely available separately by schooling option, it is impossible to separate household effects from peer effects. The two effects can only be disentangled if there is a strong prior expectation that a given characteristic influences demand for homeschooling through either household or peer effects.

The next section summarizes the data and measures analyzed in this study and the analytic methodology employed. The results of the analysis for each of the four research questions are presented in the following section. Results from Virginia are then discussed in relation to those from Wisconsin and Kentucky in order to begin constructing a national picture of community preferences for home versus public schools.

Data and Methods

All education and noneducation data analyzed are publicly available online from either Virginia or federal departments and agencies. (See table A14.1 for more details on data sources.) The Virginia Department of Education provides annual school division–level data on three components of this analysis: home and public school enrollment by grade level and performance on the statewide Standards of Learning and End of Course exams. Additional annual school division–level data on enrollment, education expenditures and revenues, and private school location and enrollment were extracted from national surveys conducted by the National Center for Education Statistics: Common Core of Data Public Elementary/Secondary School Universe Survey, Common Core of Data School District Financial Survey, and Private School Universe Survey, respectively. Information on noneducation community characteristics were all aggregated to the county or city level. Annual data on the size of the youth population (ages 5–19) by race/ethnicity, youth poverty rates (ages 5–17), and median household income were extracted from U.S. Census Bureau files. Labor force participation and unemployment figures were assembled from U.S. Bureau of Labor Statistics files. Finally, results of presidential, gubernatorial, and senatorial elections were downloaded from Dave Leip's Atlas of U.S. Presidential Elections (Leip 2013).

The structure of Virginia's school divisions facilitates easy mapping of education to noneducation data. There are 132 school divisions in Virginia. These are the communities analyzed here. Each of the 94 counties operates a division, as do 36 of the 42 independent cities, with the remaining cities belonging to a county-level school division.[7] Two incorporated towns also operate their own school divisions. All Virginia cities are independent of counties and, therefore, are considered separate places by the U.S. Census Bureau. Noneducation data for cities not operating their own school division are combined with data for the county of whose school division they were a member before linking to a school division. The two town divisions are linked to the counties in which they are incorporated.

The data available on homeschooling in Virginia detail school division–level enrollment by two of the three homeschooling options: home education and religious exemption. Beginning in 2003, the files also break each category into three grade levels: elementary school (K–5), middle school (6–8), and high school (9–12). These figures, as is the case with most states' homeschooling data, understate the true enrollment for two reasons. First, the law does not require parents claiming a religious exemption to public school to register each year, but rather only when first making the claim and when moving between school divisions.

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7. Between 1995 and 2012, two independent cities, neither of which operated their own school division, reverted to towns. A third independent city reverted to a town in July 2013. It also does not operate a school division.

Second, no data on the number of students homeschooled by a tutor, who must hold a valid Virginia teaching license, are provided. Prior analyses of data from the National Household Education Survey, however, suggest that home school enrollment via this option is small. Not all parents of homeschooled children hold at least a bachelor's degree (a requirement for a Virginia teaching license): less than 22 percent in 1996, less than 32 percent in 1999, and 50 percent in 2007 (Bauman 2002; Grady, Bielick, and Aud 2010). And while the percentage has increased, not all the parents with the bachelor's degree will be the parent directing the children's education at home (rather than realize increased earning potential through work outside the home), and not all parents with a bachelor's degree will have completed the requirements for a Virginia teaching license.

Guided by theories of school choice, and the choice to homeschool in particular, I created the following measures of community demographic, economic health, conservative values, school quality, school choice, and political economy.

- **Community type.** Each community is classified as rural, town, suburb, or city using the National Center for Education Statistics' urban-centric locale codes (Phan and Glander 2007). This is the only time-invariant community characteristic included in the analysis.
- **Demographics.** To test for differences across racial and ethnic groups in families' decisions to homeschool their children, the percentage of a community's youth population being black, Hispanic, white, or other race/ethnicity (American Indian, Native Hawaiian, Asian, Pacific Islander, or multiracial) was calculated.
- **Household economics.** The four economic measures are median household income (2012 U.S. dollars), the unemployment rate, the youth poverty rate (ages 5–17), and the labor force participation rate, estimated as the size of the labor force as a percentage of the working-age population age 15 and above.[8]
- **Conservative values.** A community's conservative values were proxied by the Republican Party candidate's share of votes cast in statewide presidential, gubernatorial, and U.S. senatorial elections.[9]

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8. Official annual county- and city-level statistics on the labor force participation rate are unavailable. The estimate here is an approximation in that it uses a broader definition of the working-age population. The U.S. Bureau of Labor Statistics defines the working-age population as all noninstitutionalized civilian persons age 16 and above (Toossi 2012).

9. For the 7 of the 18 years when no statewide elections were held, the nearest year's results were assigned: 1995 was assigned the average of the 1994 senatorial and 1996 presidential and senatorial results; 1998, the 1997 gubernatorial results; 1999, the average of the 2000 presidential and senatorial results; 2003, the average of the 2002 senatorial and 2004 presidential results; 2007, the average of the 2006 senatorial and the 2008 presidential and senatorial results; 2010, the 2009 gubernatorial results; and 2011, the average of the 2012 presidential and senatorial results.

- **School quality.** To test the school quality hypothesis, two measures parents are likely to observe about the local public schools were constructed: per pupil expenditures (2012 U.S. dollars) and performance on statewide accountability exams. The constructed school performance index equals the average percentage of students passing the Standards of Learning reading and mathematics exams and the End of Course exams in English (grades 9–11), Algebra 1, Geometry, and Algebra 2, which is then standardized within year.[10]
- **School choice.** To test the school choice hypothesis, three measures of school choice were calculated: (1) the availability of public school choice (an indicator that a charter or magnet school exists in the school division); (2) the number of private schools in the division per student; and (3) a public school choice index. The public school choice index is equal to one minus the Herfindahl index of enrollment in the regional public school divisions (Hoxby 2000; Isenberg 2002).
- **Political economy.** To test the political economy hypothesis, two measures were constructed: the median division enrollment and the fraction of school division education revenues derived from local sources.

Descriptive statistics of all these variables are provided in table 14.1.

Similar to the analyses of Isenberg (2002) and Houston and Toma (2003), community preferences for home schools versus public schools were modeled via a logistic regression (equation 3).

$$(3) \qquad \ln\left(Home_{jt}/Public_{jt}\right) = \alpha_0 + \alpha_1 Time_t + \beta' X_{jt} + \varepsilon_{jt}$$

The log odds of home school enrollment versus public school enrollment in school division j in time t is regressed on a linear time trend, capturing a trend in homeschooling preferences common across all communities, and the set of community characteristics measured for school division j in time t, X_{jt}. Standard errors are clustered on the school division to address concerns that the error term is serially correlated. All results reported are from a second-stage regression applying weights to each observation (equation 4) to correct for the heteroscedasticity resulting from each observation representing different numbers of students (Greene 2000).

$$(4) \qquad w_{jt} = \left(n_{jt}\left(\frac{e^{\theta' Z_{jt}}}{1+e^{\theta' Z_{jt}}}\right)\left(\frac{1}{1+e^{\theta' Z_{jt}}}\right)\right)^{.5}$$

The value of $\theta' Z_{jt}$ is the predicted outcome from the unweighted estimation of equation 1.

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10. Division-level subject percentage passing statistics are available for 2006–2012. Division-level statistics for 1998–2005 are estimated, with each test weighted by grade enrollment.

Table 14.1
Descriptive Statistics of Local and Regional Community Characteristics, 1998–2012

	Mean	Std. Dev.	Min.	Max.
Log odds homeschooling	−3.903	0.753	−7.053	−1.999
Local community characteristics				
Fraction youth population black	0.220	0.194	0.000	0.900
Fraction youth population Hispanic	0.043	0.053	0.000	0.405
Fraction youth population other race/ethnicity	0.037	0.031	0.000	0.228
City	0.122	0.327	0.000	1.000
Suburb	0.137	0.344	0.000	1.000
Town	0.149	0.356	0.000	1.000
Rural	0.592	0.492	0.000	1.000
Fraction conservative votes	0.567	0.136	0.094	0.911
Labor force participation rate (%)	60.241	7.869	35.867	87.435
Youth poverty rate (%)	16.553	7.883	2.000	62.000
Unemployment rate (%)	5.031	2.659	1.100	23.400
Median household income (US$1,000)	52.626	16.730	28.335	125.376
School performance index (standard deviation units)	0.000	0.947	−4.629	2.358
Per pupil expenditures (US$1,000)	13.226	7.923	6.793	80.408
Public school choice available	0.165	0.371	0.000	1.000
Private schools per student (N × 1,000)	0.480	0.567	0.000	4.367
Fraction education revenues from local sources	0.450	0.152	0.130	0.932
Regional community characteristics				
Fraction youth population black	0.225	0.160	0.000	0.694
Fraction youth population Hispanic	0.047	0.043	0.000	0.264
Fraction youth population other race/ethnicity	0.046	0.037	0.000	0.169
City	0.187	0.219	0.000	0.707
Suburb	0.204	0.269	0.000	0.727
Town	0.133	0.321	0.000	1.000
Rural	0.476	0.396	0.000	1.000
Fraction conservative votes	0.570	0.113	0.262	0.892

(continued)

Table 14.1
(continued)

	Mean	Std. Dev.	Min.	Max.
Labor force participation rate (%)	60.916	7.113	35.867	87.435
Youth poverty rate (%)	15.612	6.565	5.369	62.000
Unemployment rate (%)	4.797	2.446	1.234	23.400
Median household income (US$1,000)	54.789	16.916	28.335	101.272
School performance index (standard deviation units)	0.001	0.601	−2.975	2.292
Per pupil expenditures (US$1,000)	13.247	5.482	7.519	56.182
Public school choice available	0.457	0.498	0.000	1.000
Private schools per student (N × 1,000)	0.461	0.478	0.000	4.367
School choice index	0.445	0.381	0.000	0.859
Median enrollment (1,000s)	5.540	3.649	1.545	13.569
Fraction education revenues from local sources	0.461	0.141	0.130	0.859

Notes: N = 1,968 for all variables. This excludes the four school division–year observations with missing home school enrollment. Missing data for other variables were imputed as averages of neighboring year values for the same school division.
Sources: Calculations based on data from a variety of sources. See text for details.

Given that the community characteristics included in the model vary over time within a community, the relationship between both the level and change of community characteristics and homeschooling were explored. Adding school division fixed effects to equation 3 tests for the relationship between the changes in a community's characteristics and the growth in homeschooling preferences. Fixed effects capture the association between all time-invariant community characteristics and homeschooling.

This basic model was tweaked slightly to identify characteristics of communities in which homeschooling preferences are growing faster and to identify community characteristics that may cause families to homeschool their children. To assess the relative growth of homeschooling, a characteristic, for example conservative values, was selected and school divisions were divided into thirds (least conservative, median, and most conservative) based on the average value of the characteristic across all years. Indicators for the top and bottom third groups were then included as main effects and interacted with the time trend variable. (To test differences among community types, rural communities served as the reference group.) Wald postestimation tests were used to assess the equivalency of the included time trend interaction variables.

To ascribe causation to any estimated relationship between community characteristics and homeschooling, the endogeneity of residential choice must be addressed. The strategy Isenberg (2002) employed was applied here. Assuming that a primary job ties a family to a given region, the family is free to select where to reside among communities within that region. The local community characteristics are, therefore, endogenous, while the regional community characteristics are exogenous (Boyd et al. 2005; Figlio and Stone 2000; Hoxby 2000; Miller 2012; Nechyba and Strauss 1998). In these models, a school division's region is one of the 11 metropolitan statistical areas within the state or the individual rural county. Metropolitan statistical areas, while likely appropriate to address the endogeneity of residential choice, may define too large a geographic area for the examination of school choice, as some families consider schooling options only within a narrow radius around their home (Burgess et al. 2009; Hastings, Kane, and Staiger 2005). Results from these models may, therefore, not completely isolate the causal relationship of community characteristics on the decision to homeschool.

Results

Homeschooling as a form of school choice has grown increasingly popular in Virginia, with the number of homeschooled students more than tripling between 1995 and 2012, while public school enrollment increased 18.6 percent (table 14.2). The number of homeschooled students increased at an annual rate of 13.7 percent, to 2.5 percent of all home- and public-schooled students in 2012. Over the 18 years, the number of students homeschooled under the religious exemption clause grew at a faster rate than the number homeschooled under the home instruction statute (home education), 16.8 versus 13.0 percent, to 0.5 and 2.0 percent of all home- and public-schooled students in 2012, respectively (table 14.3).

While this analysis is primarily concerned with families' decisions to educate their children at home rather than enroll them in public schools, Virginia families, of course, are also free to choose to enroll their children in private schools. Comparing statewide patterns in home versus private school enrollments provides a more complete picture of school choice decisions in Virginia (table 14.2). Private school enrollment increased approximately 2.8 percent annually between 1994 and 2010, more than public school enrollment but less than home school enrollment.[11] As a percentage of Virginia's school-age population (approximated as the

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11. Exact annual numbers of Virginia's school-age residents enrolled in private schools are not available. Private school enrollment figures analyzed here are taken from the Private School Universe Survey, conducted every other year. These figures include out-of-state residents attending private schools located in Virginia, but exclude Virginia residents attending out-of-state private schools. Additionally, 2010 is the most recent school year for which these data are available. All private schools that (1) are vocational/technical schools, early

Table 14.2
Statewide Enrollment in Home, Public, and Private Schools, 1995–2012

	Home School (N)	Public School (N)	Home School[a] (%)	Private School[b] (N)	Private School[c] (%)	Alternative Home School[c] (%)
1995	9,628	1,060,809	0.90	70,473	6.18	0.84
1996	10,539	1,079,854	0.97	85,779	7.29	0.90
1997	12,199	1,096,279	1.10	85,779	7.18	1.02
1998	13,852	1,110,723	1.23	96,303	7.89	1.13
1999	14,854	1,122,714	1.31	96,303	7.80	1.20
2000	16,476	1,132,673	1.43	91,029	7.34	1.33
2001	18,799	1,143,807	1.62	91,029	7.26	1.50
2002	21,121	1,162,045	1.79	106,984	8.29	1.64
2003	22,021	1,176,128	1.84	106,984	8.20	1.69
2004	23,730	1,190,742	1.95	99,445	7.57	1.81
2005	23,252	1,203,697	1.90	99,445	7.50	1.75
2006	25,047	1,213,767	2.02	109,084	8.09	1.86
2007	26,931	1,220,992	2.16	109,084	8.04	1.98
2008	27,316	1,231,506	2.17	105,947	7.76	2.00
2009	29,569	1,235,746	2.34	105,947	7.73	2.16
2010	30,310	1,245,270	2.38	102,332	7.43	2.20
2011	31,978	1,252,450	2.49	102,332	7.38	2.31
2012	32,064	1,258,521	2.48	102,332	7.35	2.30

[a] Percentage of total enrollment in home and public schools.
[b] Data collected every other (even) year through 2010. Data from prior year carried forward.
[c] Percentage of total enrollment in home, public, and private schools.
Sources: Calculations based on home school and public school enrollment data from the Virginia Department of Education and private school enrollment from the Private School Universe Survey.

sum enrollment of home, public, and private schools), private school enrollment grew 1.1 percent per year, to 7.4 percent in 2012, relative to an annual growth rate for home schools of 10.2 percent, to 2.3 percent in 2012. Growth rates are rather similar if the school-age population is approximated using U.S. Census Bureau estimates of either the population ages 5–17 or the population ages 5–19, rather than the observed enrollment in home, public, and private schools.

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childhood or daycare centers, or alternative schools; (2) are located in private homes; or (3) have a primary purpose of supporting home schools were excluded.

Table 14.3
Statewide Enrollment by Homeschooling Type, 1995–2012

	Home Education (N)	Religious Exemption (N)	Home Education[a] (%)	Religious Exemption[a] (%)	Share Home Education[b] (%)
1995	7,861	1,767	0.73	0.17	81.65
1996	8,400	2,139	0.77	0.20	79.70
1997	9,586	2,613	0.86	0.24	78.58
1998	10,803	3,049	0.96	0.27	77.99
1999	11,443	3,411	1.01	0.30	77.04
2000	12,776	3,700	1.11	0.32	77.54
2001	14,323	4,476	1.23	0.38	76.19
2002	16,268	4,853	1.37	0.41	77.02
2003	16,542	5,479	1.38	0.46	75.12
2004	18,102	5,628	1.49	0.46	76.28
2005	17,448	5,804	1.42	0.47	75.04
2006	18,693	6,354	1.51	0.51	74.63
2007	20,240	6,691	1.62	0.54	75.16
2008	20,694	6,622	1.64	0.53	75.76
2009	22,621	6,948	1.79	0.55	76.50
2010	23,290	7,020	1.83	0.55	76.84
2011	24,682	7,296	1.92	0.57	77.18
2012	25,255	6,809	1.96	0.53	78.76

[a] Percentage of total enrollment in home and public schools.
[b] Percentage of total enrollment in home schools.
Source: Calculations based on home school and public school enrollment data from the Virginia Department of Education.

Homeschooling increased at the elementary, middle, and high school levels between 2003 and 2012, the only years for which such data are available (table 14.4). Annual growth rates increased with schooling level from 4.7 percent in the elementary grades (K–5) to 5.4 percent in the middle grades (6–8) and 7.1 percent in the high school grades (9–12). Since 2007, homeschooling has been more popular for the middle school grades than for the elementary school grades, with homeschooling rates for high school slightly lower. As a percentage of the school-age population in 2012, 2.4 percent of the middle grades students were homeschooled, compared with 2.3 percent for the elementary grades, and 1.9 percent of the high school grades. Private school enrollment, both in numbers and as a percentage, decreased over this period in both the elementary and middle school grades and decreased as a percentage in the high school grades.

Table 14.4
Statewide Enrollment in Home, Public, and Private Schools by Grade Level, 2003–2012

	Elementary School (K–5)					Middle School (6–8)					High School (9–12)				
	Home (N)	Public (N)	Private (N)	Home (%)	Private (%)	Home (N)	Public (N)	Private (N)	Home (%)	Private (%)	Home (N)	Public (N)	Private (N)	Home (%)	Private (%)
2003	9,873	532,084	40,187	1.70	6.90	4,978	283,717	21,343	1.61	6.88	4,840	344,868	23,425	1.30	6.28
2004	10,113	532,504	36,133	1.75	6.24	5,217	287,294	20,072	1.67	6.42	5,381	354,031	22,159	1.41	5.81
2005	10,634	534,206	36,133	1.83	6.22	5,579	286,897	20,072	1.79	6.42	5,553	364,224	22,159	1.42	5.65
2006	11,040	537,289	39,056	1.88	6.65	5,768	284,142	21,095	1.85	6.78	5,877	372,317	24,229	1.46	6.02
2007	12,299	540,836	39,056	2.08	6.60	6,504	280,458	21,095	2.11	6.85	6,659	378,755	24,229	1.63	5.91
2008	12,481	544,728	37,224	2.10	6.26	6,491	277,032	20,599	2.13	6.77	6,978	380,413	24,902	1.69	6.04
2009	13,125	550,783	37,224	2.18	6.19	7,101	274,165	20,599	2.35	6.82	7,581	380,131	24,902	1.84	6.04
2010	13,882	558,305	35,388	2.28	5.82	7,132	275,050	19,828	2.36	6.57	7,720	380,720	24,232	1.87	5.87
2011	14,569	563,412	35,388	2.38	5.77	7,440	277,161	19,828	2.44	6.51	8,005	379,463	24,232	1.94	5.89
2012	14,053	567,902	35,388	2.28	5.73	7,407	281,563	19,828	2.40	6.42	7,914	376,155	24,232	1.94	5.93

Note: All percentages are of total enrollment in home, public, and private schools.
Sources: Calculations based on home school and public school enrollment data from the Virginia Department of Education and private school enrollment data from the Private School Universe Survey.

Contraction in private school enrollment was not solely the result of the Great Recession (2007–2009), as these patterns were also evident through 2008.

WHERE IS HOMESCHOOLING MORE COMMON?

In Virginia, homeschooling is most common in rural areas, echoing the evidence from other states (Houston and Toma 2003; Isenberg 2002). More children in rural than in other communities were homeschooled as a percentage of the community type's home and public school population in each year included in this analysis (table 14.5). Three-point-eight percent of students in the average rural school division were homeschooled in 2012, compared with 3.1 percent in town divisions, 2.1 percent in suburban divisions, and 1.8 percent in city divisions. While these differences are driven in part by differences in community characteristics, they remain even after controlling for household and school characteristics (table 14.6). The models in table 14.6 were estimated on three samples: (1) all

Table 14.5
Percent of Students Enrolled in Home Schools by Community Type, 1995–2012

	Rural	Town	Suburb	City
1995	1.32	0.79	0.91	0.59
1996	1.42	0.92	0.80	0.65
1997	1.63	1.01	1.08	0.71
1998	1.83	1.25	1.24	0.77
1999	1.96	1.36	1.25	0.88
2000	2.19	1.43	1.36	0.97
2001	2.42	1.32	1.52	1.05
2002	2.75	1.60	1.59	1.18
2003	2.92	1.74	1.69	1.22
2004	3.11	1.84	1.86	1.40
2005	3.27	1.99	1.61	1.29
2006	3.35	1.95	1.69	1.34
2007	3.32	2.29	1.70	1.46
2008	3.43	2.66	1.65	1.48
2009	3.75	2.58	1.91	1.63
2010	3.78	2.70	1.94	1.71
2011	3.86	2.84	2.01	1.68
2012	3.80	3.05	2.06	1.77

Source: Calculations based on home school and public school enrollment data from the Virginia Department of Education.

Table 14.6
Estimated Log Odds Coefficients for the Association Between Local Community Characteristics and Community Preferences for Homeschooling, 1998–2012

	Community Characteristics			Change in Community Characteristics		
	All	More Rural	More Urban	All	More Rural	More Urban
Time trend	0.080***	0.085***	0.071***	0.052***	0.058***	0.054**
	(0.008)	(0.011)	(0.016)	(0.007)	(0.010)	(0.016)
City	-0.194		-0.300+			
	(0.168)		(0.166)			
Town	0.179	-0.244+				
	(0.186)	(0.146)				
Rural	0.432***					
	(0.127)					
ln(fraction youth population black)	-0.009	0.003	-0.074	0.045	0.065	0.209
	(0.036)	(0.038)	(0.118)	(0.084)	(0.105)	(0.158)
ln(fraction youth population Hispanic)	-0.069	-0.035	-0.073	0.010	0.020	-0.279
	(0.049)	(0.054)	(0.112)	(0.060)	(0.067)	(0.200)
ln(fraction youth population other race/ethnicity)	0.006	-0.023	-0.006	0.025	0.003	0.184
	(0.041)	(0.047)	(0.200)	(0.024)	(0.024)	(0.109)
Labor force participation rate	0.233***	0.253***	-0.068	0.008	0.014	0.017
	(0.057)	(0.070)	(0.108)	(0.037)	(0.034)	(0.076)
(squared)	-0.002***	-0.002**	0.000	0.000	0.000	0.000
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
Youth poverty rate	-0.017+	-0.021	-0.011	-0.018***	-0.020**	-0.015*
	(0.009)	(0.014)	(0.010)	(0.005)	(0.006)	(0.007)
Unemployment rate	-0.021	-0.020	-0.023	-0.002	0.002	-0.009
	(0.013)	(0.014)	(0.026)	(0.006)	(0.007)	(0.012)

	(1)	(2)	(3)	(4)	(5)	(6)
Median household income (US$1,000)	-0.001 (0.005)	-0.005 (0.006)	0.001 (0.008)	-0.008+ (0.004)	-0.008 (0.005)	-0.010 (0.007)
Fraction conservative votes	4.152*** (0.989)	1.869 (1.231)	5.332*** (1.332)	-0.070 (0.418)	-0.338 (0.525)	-0.302 (0.568)
(squared)	-2.878*** (0.776)	-1.156 (0.941)	-3.894** (1.087)	0.261 (0.322)	0.396 (0.412)	0.468 (0.441)
School performance index	-0.069 (0.042)	-0.040 (0.052)	-0.078 (0.079)	0.018 (0.021)	0.012 (0.028)	0.003 (0.030)
Per pupil expenditures (US$1,000)	-0.002 (0.002)	-0.007 (0.005)	0.003 (0.003)	-0.002 (0.002)	-0.004 (0.003)	0.001 (0.002)
Public school choice available	-0.104 (0.063)	-0.105 (0.066)	-0.048 (0.079)	-0.020 (0.039)	-0.044 (0.047)	0.010 (0.060)
Private schools per student (N × 1,000)	0.176* (0.070)	0.174* (0.083)	-0.015 (0.144)	0.065 (0.050)	0.064 (0.058)	0.052 (0.110)
Fraction education revenues from local sources	0.730* (0.293)	0.913** (0.314)	0.355 (0.568)	-0.433+ (0.231)	-0.493+ (0.282)	-0.144 (0.432)
Constant	-12.914*** (1.878)	-12.401*** (2.256)	-3.229 (3.797)	-3.266** (1.100)	-3.113** (1.170)	-4.082+ (2.280)
Community fixed effects	No	No	No	Yes	Yes	Yes
Mean log odds homeschool	-3.903	-3.753	-4.330	-3.903	-3.753	-4.330
Number	1,968	1,458	510	1,968	1,458	510
Adjusted R²	0.499	0.417	0.396	0.834	0.800	0.796
F-statistic	28.632	21.955	14.144	32.969	30.469	14.761

Note: Robust standard errors (clustered on the school division) in parentheses.
+, *, **, *** = statistically significant at <0.10, <0.05, <0.01, and <0.001 levels.
Sources: Calculations based on home school and public school enrollment data from the Virginia Department of Education as well as data from a variety of other sources. See text for details.

school divisions; (2) the 98 more-rural school divisions (those classified as either rural or town); and (3) the 34 more-urban school divisions (those classified as either city or suburb). The models by community type allow for the testing of whether specific theories of homeschooling apply differently in rural versus urban areas.

Homeschooling is also more common in communities with healthy household economies, more widely held conservative values, more private school opportunities, and greater reliance on local revenues to cover public education costs (table 14.6). The odds of choosing home school versus public school are higher in communities with greater labor force participation, although the relative difference in the odds increases at a decreasing rate. This may reflect the need for some household labor force participation to enable one parent to focus his or her productive energies on providing home-based education, which becomes untenable as both parents increase their time in the labor force. It may also reflect peer effects to the extent that households respond to the number of two-worker families in their community by questioning their own commitment to their children relative to wealth generation and thus decide to homeschool their children. There is no evidence that this relationship holds in more-urban communities.

The average household in a community with more widely held conservative values is more likely to choose to homeschool than the average household in a community with less widely held conservative values, although the difference in likelihood increases at a decreasing rate as the difference between the two communities grows. Given the well-established connections between conservative Christians and homeschooling, particularly in Virginia, this relationship is not surprising and is more likely to reflect household preferences than peer effects if only households holding these values have as part of their utility function the conservative values of other households in the school division. This relationship holds more strongly in more-urban than in more-rural communities.

The results for the school choice and political economy theories run counter to the predictions. Homeschooling is more common in more-rural communities with greater private school availability. This association is likely capturing the positive association between the presence of private schools and the desire within the community for school choice (for both private schools and home schools). Preferences for home schools relative to public schools are also stronger in communities that are more dependent on local revenues for public education, particularly more-rural communities. This may reflect the education funding formula in Virginia, which requires divisions to cover more of the costs locally as land values, adjusted gross incomes, and taxable retail sales increase. These community characteristics are themselves positively correlated with household characteristics theorized to be positively correlated with homeschooling (e.g., household income and educational attainment).

Changes in a community's youth poverty rate are negatively associated with the decision to homeschool. This relationship holds across all communities and likely reflects households' need to dedicate their labor to income generation rather

than home education. A peer effects explanation would imply that the average household derives greater utility from the public schools when more students are poor, which lacks face validity. There is suggestive evidence ($P < 0.10$) of a negative association between the reliance on local revenues for public education and homeschooling, primarily in more-rural communities, aligning with the political economy theory of homeschooling.

WHERE IS HOMESCHOOLING GROWING AT A FASTER PACE?

While preferences for homeschooling grew at different rates across various types of communities between 1998 and 2012, most of these differences can be explained by other community characteristics (table 14.7). Only the characteristics previously shown to be significantly correlated with homeschooling were analyzed. For example, preferences grew more slowly in suburban communities than in any other type of community (perhaps in support of the school quality theory), at a faster rate in more conservative than in less conservative communities, and at a slower rate in communities highly reliant on local education revenues, all as predicted by the theory (see the first column of results for each characteristic). These differences, however, became insignificant once all other community and school characteristics were included in the models (see the second column of results for each characteristic). There were no significant differences in homeschooling growth in the school performance index or the youth poverty rate.

Table 14.7
Estimated Growth in Preferences for Homeschooling by Selected Local Community Characteristics, 1998–2012

	Community Type			Conservative Values	
	Without Controls	With Controls		Without Controls	With Controls
Time	0.057***	0.079***	Time	0.045***	0.062***
	(0.004)	(0.010)		(0.005)	(0.009)
Town*Time	0.010	0.015	Low*Time	0.008	0.007
	(0.010)	(0.012)		(0.007)	(0.007)
Suburb*Time	−0.023**	−0.006	High*Time	0.015+	0.012
	(0.007)	(0.009)		(0.008)	(0.009)
City*Time	−0.003	0.011	Low	−0.501***	−0.335**
	(0.007)	(0.015)		(0.125)	(0.103)
City	−0.873***	−0.652***	High	0.250*	0.030
	(0.130)	(0.141)		(0.113)	(0.107)
Suburb	−0.442***	−0.418**			
	(0.122)	(0.137)			

(continued)

Table 14.7
(continued)

	Community Type				Conservative Values	
	Without Controls	With Controls			Without Controls	With Controls
Town	−0.366*	−0.291*				
	(0.167)	(0.146)				
Adjusted R^2	0.320	0.497			0.288	0.503
F-statistic	60.560	24.482			74.122	24.620

	Private School Availability		Labor Force Participation Rate		Fraction Local Revenues	
	Without Controls	With Controls	Without Controls	With Controls	Without Controls	With Controls
Time	0.043***	0.066***	0.061***	0.084***	0.060***	0.071***
	(0.005)	(0.008)	(0.005)	(0.010)	(0.004)	(0.009)
Low*Time	0.022**	0.018*	−0.007	−0.011	−0.006	−0.011
	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)
High*Time	0.012	0.010	−0.015*	−0.018*	−0.015*	−0.008
	(0.008)	(0.009)	(0.007)	(0.008)	(0.007)	(0.008)
Low	0.071	−0.252*	−0.395**	−0.281*	−0.329*	−0.276*
	(0.122)	(0.112)	(0.143)	(0.127)	(0.136)	(0.106)
High	−0.042	−0.018	−0.106	−0.208+	−0.108	0.001
	(0.163)	(0.094)	(0.148)	(0.111)	(0.147)	(0.094)
Adjusted R^2	0.111	0.494	0.147	0.467	0.138	0.494
F-statistic	79.968	25.924	68.311	28.804	74.762	27.432

Notes: N = 1,968 for all models. Estimated coefficients are in log odds. Robust standard errors (clustered on the school division) in parentheses. Full results available from author upon request. Average values over the full period of the focal characteristic by group are as follows: (1) conservative values = 0.471, 0.561, 0.624; (2) school choice index = 0.113, 0.372, 0.776; (3) labor force participation = 53.5, 60.1, 68.0; and (4) fraction local revenues = 0.333, 0.455, 0.599.
+, *, **, *** = statistically significant at <0.10, <0.05, 0.01, and <0.001 levels.
Sources: Calculations based on home school and public school enrollment data from the Virginia Department of Education as well as data from a variety of other sources. See text for details.

Significant differences remained among communities, though, with respect to the availability of private schools and the labor force participation rate. Home-schooling grew at a faster rate in communities in regions with less private school availability than in communities with median availability, and it grew at a slower rate in communities with high relative to median labor force participation. The school choice and political economy theories predict these results, respectively.

IS THERE CAUSAL EVIDENCE OF THE EFFECT OF COMMUNITY CHARACTERISTICS ON HOME SCHOOL CHOICE?

As mentioned earlier, in order to infer causality in estimated coefficients from these models of homeschooling, it must be assumed that households are tied to a region by a primary job and that these regions reflect the geography of the families' schooling decisions. Aggregating all community characteristics up to the region may permit causal inference. The results echo many of the earlier findings (table 14.8). Families living in more rural and more (and increasingly) conservative regions are more likely to homeschool. Families living in communities with greater labor force participation and higher (and increasing) youth poverty rates are less likely to homeschool. Contrary to the school quality theory, families in rural communities are more likely to homeschool if local schools perform at higher levels. There are no significant effects for any measure of school choice or political economy.

Table 14.8

Estimated Log Odds Coefficients for the Effects of Regional Community Characteristics on Community Preferences for Homeschooling, 1998–2012

	Regional Characteristics			Change in Regional Characteristics		
	All	More Rural	More Urban	All	More Rural	More Urban
Time trend	0.075***	0.081***	0.033	0.068***	0.065***	0.047
	(0.011)	(0.011)	(0.020)	(0.012)	(0.011)	(0.032)
Fraction population in city or suburb	−0.842*	−0.380	−0.333	4.589	4.893	4.905
	(0.389)	(0.344)	(0.680)	(3.547)	(4.005)	(4.025)
ln(fraction youth population black)	0.057	0.092+	−0.233+	−0.022	−0.030	1.364
	(0.049)	(0.048)	(0.126)	(0.064)	(0.064)	(0.809)
ln(fraction youth population Hispanic)	0.030	0.037	−0.127	0.140*	0.149*	−0.033
	(0.059)	(0.058)	(0.243)	(0.065)	(0.066)	(0.327)
ln(fraction youth population other race/ethnicity)	−0.047	−0.100*	0.519*	−0.067+	−0.057	0.499*
	(0.052)	(0.043)	(0.232)	(0.039)	(0.040)	(0.231)
Labor force participation rate	0.196**	0.179*	−0.034	0.100	0.109	−0.054
	(0.073)	(0.070)	(0.252)	(0.074)	(0.075)	(0.205)
(squared)	−0.002*	−0.001*	0.000	−0.001	−0.001	0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Youth poverty rate	−0.043***	−0.040***	−0.028*	−0.032***	−0.032***	−0.037*
	(0.009)	(0.009)	(0.013)	(0.007)	(0.007)	(0.015)

(continued)

Table 14.8
(continued)

	Regional Characteristics			Change in Regional Characteristics		
	All	More Rural	More Urban	All	More Rural	More Urban
Unemployment rate	−0.019	−0.025+	−0.004	−0.016	−0.014	0.015
	(0.015)	(0.014)	(0.029)	(0.012)	(0.011)	(0.021)
Median household income (US$1,000)	−0.004	0.002	−0.027+	0.016**	0.014*	0.002
	(0.007)	(0.007)	(0.014)	(0.005)	(0.005)	(0.009)
Fraction conservative votes	0.487**	0.530**	0.119	0.478***	0.352**	0.126
	(0.162)	(0.168)	(0.181)	(0.131)	(0.108)	(0.181)
School performance index	0.110+	0.112*	−0.105	0.089+	0.090+	0.177+
	(0.061)	(0.054)	(0.129)	(0.053)	(0.051)	(0.101)
Per pupil expenditures (US$1,000)	−0.003	−0.002	−0.004	0.000	−0.001	−0.002
	(0.004)	(0.004)	(0.009)	(0.003)	(0.003)	(0.005)
Public school choice available	−0.018	0.067	−0.085	−0.025	0.015	−0.043
	(0.073)	(0.075)	(0.086)	(0.040)	(0.047)	(0.065)
Private schools per student (N × 1,000)	0.069	0.090	−0.745	0.071	0.066	−0.394
	(0.066)	(0.064)	(0.461)	(0.075)	(0.078)	(0.467)
School choice index	0.181	0.040	0.660	−5.736	−1.879	−4.307
	(0.328)	(0.326)	(1.125)	(3.603)	(3.131)	(4.996)
Median enrollment (1,000s)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fraction education revenues from local sources	0.323	0.060	0.952	0.216	0.250	0.989
	(0.461)	(0.401)	(1.001)	(0.512)	(0.487)	(0.938)
Regional fixed effects	No	No	No	Yes	Yes	Yes
Mean log odds home school	0.020	0.023	0.013	0.020	0.023	0.013
Number	1,968	1,458	510	1,968	1,458	510
Adjusted R^2	0.253	0.401	0.230	0.320	0.391	0.136
F-statistic	23.524	21.348	51.367	34.468	18.662	50.470

Note: Robust standard errors (clustered on the school division) in parentheses.
+, *, **, *** = statistically significant at <0.10, <0.05, <0.01, and <0.001 levels.
Sources: Calculations based on home school and public school enrollment data from the Virginia Department of Education as well as data from a variety of other sources. See text for details.

Conclusions

Leveraging 15 years of division-level data on enrollment and community characteristics, this analysis tested several hypotheses regarding families' homeschooling decisions. It used the Isenberg (2002) and Houston and Toma (2003) case studies of Wisconsin and Kentucky, respectively, as a jumping-off point to analyze homeschooling in Virginia. All three studies used similar data to test a similar set of theories. The results from these studies will allow researchers to begin constructing a national picture of community preferences for home versus public schools that future studies in additional states can refine.

All three studies support the ideologue hypothesis. In Virginia, homeschooling is more common and growing faster in more conservative than in less conservative communities. The positive association between conservative values and homeschooling is strongest in rural communities, accounting for the endogeneity of residential choice. Isenberg (2002) found the same relationship in Wisconsin using data on membership in Evangelical Protestant religious denominations. Houston and Toma (2003) also found a positive association between homeschooling and membership in Evangelical churches in Kentucky, although the coefficient was insignificant. Houston and Toma did not test for differences between rural and urban communities.

The lack of findings supporting the school quality hypothesis in Virginia runs contrary to the other two studies. Perhaps this is because average proficiency rates are not sufficiently fine-grained to capture variation in school quality—they only detect movement of students across a single threshold. Isenberg (2002) used mean scale scores on Wisconsin's eighth-grade math assessment. To assess this possibility, all the models were reestimated using a school quality index based on standardized mean scale scores averaged across the same reading/English and mathematics tests. The measure was available only for 2006–2012. The results remain insignificant and are frequently wrong-signed.

Another potential explanation for the lack of school quality findings could be that the bulk of the observations in this study are from post–No Child Left Behind (NCLB) years. The student achievement measures applied here reflect the testing and school accountability measures the law places on states and schools. Both the Wisconsin tests and Kentucky high school dropout rates reflect the pre-NCLB environment. Many states and communities have been frustrated by what they view as the one-size-fits-all approach of this top-down federal mandate. School quality concerns may still be motivating families to homeschool, but these concerns are not necessarily reflected in student exam performance. Such motivations may include the desire to avoid the increasingly standardized curriculum, the heavy focus on assessments, or the stress created by pressure to meet externally imposed goals. To test this theory, an interpreted time series model was estimated to assess whether the trends in homeschooling changed due to NCLB implementation. The results suggest a possible positive effect on homeschooling in urban communities ($P < 0.10$). This echoes the Wisconsin result showing

school quality to be the primary motivator for families to homeschool in urban areas, while ideological differences dominate in rural communities.

As explained earlier, the lack of data on individual families complicates testing of the household economy hypothesis, the third primary theory on family decisions to homeschool. All three studies used community aggregate data that combined household and peer effects. Perhaps due to these limitations, or perhaps due to the use of different measures, the findings from the three studies are mixed. In Virginia, communities with higher and increasing youth poverty rates, decreasing median household income, and higher labor force participation rates have lower rates of homeschooling. In Wisconsin, median income and youth poverty rates are not significant predictors of homeschooling; however, homeschooling is more common in communities with a higher percentage of families with school-age children headed by a married couple. Poverty is also unrelated to homeschooling in Kentucky, but rates of homeschooling there are lower in communities with higher income earned by males, similar to findings from Virginia suggesting homeschooling is less common in communities with higher household income.

There is even less agreement across the three states with respect to the remaining hypotheses. The political economy hypothesis finds support in Virginia, where homeschooling rates are higher in communities becoming more reliant on state and federal education dollars, and in Kentucky, where communities with greater income dispersion have higher homeschooling rates. The school choice hypothesis is weakly supported in Virginia, not supported in Wisconsin, and untested in Kentucky.

Finally, families in rural communities are more likely to homeschool than families in nonrural areas. This is a consistent finding across the three states even after accounting for other predictors of homeschooling and the endogeneity of residential choice. There remains an unmeasured difference between rural and nonrural communities factoring into the household utility function, making home schools more appealing relative to public schools for rural families. Future research unpacking this difference will be very important if the results of the utility maximization process are to be adjusted to either encourage or discourage homeschooling.

More and more Virginia families are availing themselves of school choice options. Between 1994 and 2010, the percentage of students educated outside the public schools increased from 8 percent to almost 10 percent. This was driven by more and more families deciding that homeschooling maximizes their utility relative to public or private schools. By 2012, 2.3 percent of Virginia's students were homeschooled. Students are most likely to be homeschooled in the middle school grades and least likely to be homeschooled in the high school grades. Homeschooling is more common and expanding more quickly in more-rural than in more-urban communities.

Despite the increased popularity of homeschooling, not just in Virginia but nationwide, researchers' understanding of homeschooling is underdeveloped relative to other forms of school choice. State-specific analyses like the current case study of Virginia are vital to that understanding. Caution is warranted in generalizing from these studies to all other states, especially as the laws and regulations pertaining to homeschooling are the province of individual states. There are no federal policies or programs to engender the same degree of homogeneity across states as seen in public schooling. Virginia's homeschooling laws, though, are similar to those in many other states in several key aspects. Furthermore, many of the findings from Virginia echo those from Kentucky and Wisconsin. Additional studies are needed.

Longitudinal aggregate data like that analyzed here or the very small sample of homeschooling families in the National Household Education Survey are the best data now available, but their weaknesses significantly limit what researchers know about the decision to homeschool and its effects. Why do families choose to homeschool some but not all of their children? How frequently do students move between home schools and public schools, and what drives this mobility? Does homeschooling improve academic achievement, measured through test performance, graduation rates, postsecondary educational attainment, and the like? Do these effects vary by how long students are homeschooled or by whether homeschooling occurs during the elementary or secondary grades? State-level longitudinal databases of individual students have proved invaluable in answering these questions in other educational settings, and recent policy debates have raised the possibility of ensuring that homeschooled students are included in them. Efforts in this direction are meeting stiff resistance from the HSLDA, though, which believes that such databases "threaten the privacy of students, could be abused by government officials or business interests that may gain access to the data, threaten the safety of young people if their data is [*sic*] breached, and are not necessary in order to educate young people" (Estrada 2013). With or without the inclusion of homeschooled students in longitudinal data systems, these and other important questions about homeschooling remain.

In the meantime, given that there will always be families choosing to homeschool, parents and communities would do well to focus their efforts on maximizing homeschooling effectiveness. Proposals to impose additional regulations and accountability are unlikely to be successful. Encouraging and facilitating the use of distance learning programs could prove beneficial in that greater student learning could occur in subject areas in which parents may struggle themselves. Expanding part-time enrollment opportunities through which homeschooled students attend local public schools for specific classes could also be mutually advantageous. All children deserve access to a great education, and homeschooling may provide that for some. Homeschooling, like all other forms of education, must continually adapt and improve to meet student needs.

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Table A14.1
Data Descriptions and Sources

Data Description	Years	Source
School division enrollment and public school type	2003–2012	Virginia Department of Education
	1995–2012	National Center for Education Statistics, Common Core of Data Public Elementary/Secondary School Universe Survey
Homeschool enrollment	1995–2012	Virginia Department of Education
School performance	1998–2012	Virginia Department of Education
Community type	2009	National Center for Education Statistics, urban-centric locale codes
School division expenditures and revenues	1995–2010	National Center for Education Statistics, Common Core of Data School District Financial Survey
Private school location and enrollment	1994–2010 (even years)	National Center for Education Statistics, Private School Universe Survey
Population ages 5–9 by race/ethnicity	1994–2011	U.S. Census Bureau
Poverty rate for ages 5–17	1994–2011	U.S. Census Bureau, Small Area Income and Poverty Estimates
Median household income	1994–2011	U.S. Census Bureau, Small Area Income and Poverty Estimates
Labor force participation and unemployment rate	1994–2011	U.S. Bureau of Labor Statistics
Presidential election results	1996, 2000, 2004, 2008, 2012	Dave Leip, *Atlas of U.S. Presidential Elections*
Gubernatorial election results	1997, 2001, 2005, 2009	Dave Leip, *Atlas of U.S. Presidential Elections*
Senatorial election results	1994, 1996, 2000, 2002, 2006, 2008, 2012	Dave Leip, *Atlas of U.S. Presidential Elections*

Notes: Year for all education data refers to the spring of the school year. Year for all noneducation data refers to the calendar year and is applied to the following school year (e.g., population data for calendar year 2010 is applied to school year 2011).