



## Does choice increase information? Evidence from online school search behavior<sup>☆</sup>



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### A B S T R A C T

We examine whether changes in the local school choice environment affect the amount of information parents collect about local school quality, using data on over 100 million searches from Greatschools.org. We link monthly data on search frequency in local “Search Units” to information on changes in local open enrollment options driven by No Child Left Behind (NCLB) sanctions as well as state school choice policies including open enrollment, tuition vouchers, charitable scholarship tax credits, and tuition tax credits. Our results indicate that NCLB-driven expansions in school choice have large, positive effects on the frequency of searches done for schools in that area. We find less evidence that state choice policies affect online search behavior, however search frequency also increases when charter school penetration in a given area rises. These estimates suggest that the information parents have about local schools is endogenous to the choice environment they face, and that parental information depends not just on the availability of data but also the incentive to seek and use it.

### 1. Introduction

School choice policies, which allow students to attend local schools other than the ones to which they are zoned, have grown considerably in popularity over the past several decades. For example, from 1993 to 2007, the percent of students attending their assigned public school dropped from 80 to 73 (Grady, Bielick, & Aud, 2010). This shift is driven by the increasing prevalence of charter schools, intra- and inter-district school choice programs, and private school attendance that is supported by tuition voucher programs and tax credits. Furthermore, the 2001 No Child Left Behind Act included provisions that students who attend “failing” Title I schools should be allowed to attend a nearby non-failing school of their choosing. School choice thus has become a prevalent feature of American K-12 education that has served to reduce the historic link between where a family lives and the schools

their children attend.

Concurrent with the rise in school choice policies has been a dramatic increase in the information available to parents about local schools. A combination of publicly-released school “report cards,” state standardized test results, publicly-released value-added data and online information aggregators make detailed school quality information easier to access today than ever before. A core reason behind providing such information to parents is to hold schools accountable for their performance. Information about school performance can lead parents to put pressure on schools to improve test scores, or it can induce parents to switch schools, thereby increasing competition.<sup>1</sup> How much parents know about local school quality also can play a central role in driving school choice effects: heterogeneity in parental knowledge about schooling options may explain some of the wide variation in results from existing school choice research.<sup>2</sup> Consistent with this hypothesis,

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<sup>1</sup> Prior research has found that competitive pressures due to schools accountability policies have short- and long-run positive effects on student outcomes (Rockoff & Turner, 2010; Rouse, Hannaway, Goldhaber, & Figlio, 2007; Deming, Cohodes, Jennings, & Jencks, 2013). School accountability policies more broadly have been shown to increase student achievement as well (Carnoy & Loeb, 2002; Hanushek & Raymond, 2005).

<sup>2</sup> Existing estimates of the effect of school choice on student outcomes are ambiguous. A large body of work examines the effect of open enrollment policies (Hastings, Kane & Staiger, 2006; Deming, Hastings, Kane, & Staiger, 2014; Cullen, Jacob & Levitt, 2006) as well as charter schools (Abdulkadiroğlu, Angrist, Dynarski, Kane, & Pathak, 2011; Dobbie & Fryer, 2011; Angrist, Pathak & Walters, 2013; Bettinger, 2005; Bifulco & Ladd, 2006; Hanushek, Kain & Rivkin, 2007; Sass, 2006) on student achievement. These papers do not reach consistent conclusions. There also is some evidence that charter schools increase students' behavioral outcomes even when they do not increase test scores (Imberman, 2011). A similar inconsistency exists across studies examining the effect of private school tuition vouchers on student academic outcomes (Rouse, 1998; Howell, Wolf & Campbell, 2002; Krueger & Zhu, 2004).

some prior work has found that providing choice-eligible families with simple and salient information about local school quality leads them to select higher-quality schools that increase student outcomes (Hastings & Weinstein, 2008).

Parental knowledge about local school quality is a core input into the market forces that drive competition across schools as well as into the effects of school choice policies. It therefore is important to understand how parents obtain school quality information and what policymakers can do to facilitate the dissemination of such information. However, little prior research has examined how much information parents have about local schooling options and the tools that can be used to expand their knowledge about school quality.

In this paper, we focus on the relationship between parental knowledge about school quality and the school choice environment. We provide new evidence on how information acquisition responds to increases in the demand for information driven by school choice policies in an environment in which school quality data are free and easy to access. Our analysis constitutes the first direct assessment of how the demand for school quality information responds to the choice environment by linking unique data from GreatSchools.org – the largest online school quality search engine – to variation in the local school choice policies available to families.

The impact of school choice policies on whether and how parents search for school quality information is a parameter of interest for three reasons. First, part of the benefits of school choice may be due to more accurate parental decision-making, driven by the better information on school quality parents collect in response to choice opportunities. School choice policies can increase the demand for information, which leads to a more-informed school selection and thus, potentially, higher student achievement. This may be particularly true for low-SES families, who face constraints in their ability to move to areas with higher-quality schools and as a result face low returns to accumulating information absent school choice. Examining how the demand for school quality information responds to changes in the local choice environment allows us to provide direct evidence on this core mechanism through which school choice can influence student achievement.

Second, our results help explain why many parents still appear to have incomplete information about schools even though such information is ubiquitous. Our estimates demonstrate that even in an environment in which the cost of information is uniformly low, substantial disparities in use of that information exist. The reason for this is that information must not only be easily accessible, but parents also must have an incentive to seek it out. Those with very limited choice sets may, quite rationally, not access information that is available to them.<sup>3</sup> The resulting lack of information among many families can render accountability policies and the vast amount of publicly-available school quality data less effective.<sup>4</sup> Thus, making school quality information publicly available may not be sufficient to undo information asymmetries, as parents also may need to be induced to collect such information. School choice policies can provide these incentives, and this paper is the first in the literature to examine whether they have this effect.

Third, our estimates highlight the potential role for the Internet in lowering informational costs to families. Hastings and Weinstein (2008) show that when parents are given information about local schooling quality, it affects their choice of schools. Our results indicate that providing this type of information online and by a third party induces

families to collect the information themselves when combined with school choice policies. From a policy perspective, this is an important finding because it suggests online school quality information can enhance the effectiveness of school choice by facilitating information acquisition. Policymakers could explicitly pair choice policies with references to the type of online resource we study to increase the impact of these policies at a very low cost.

Until now, the lack of data on parental information-gathering patterns has precluded empirical study of how parents acquire knowledge about the quality of local schools and how this varies with school choice opportunities. To fill this gap, we use online searching behavior from GreatSchools Inc., a nonprofit organization whose website provides comparison information and reviews on all U.S. K-12 schools. The website provides simple and straightforward information on school test scores, user reviews, and school demographics in a manner that enables comparisons across schools.

We obtained all search terms entered into their search engine between January 1, 2010 and October 31, 2013, comprising over 100 million individual searches. These data allow us to measure how frequently searches are performed for schools in each city and in counties outside of cities that we can identify in the data. We combine the GreatSchools search data with state-level measures of school choice policies that relate to open enrollment, private school vouchers, charitable scholarship tax credits, and tuition tax credits. We also calculate city- and county-level proportions of the schools subject to choice under the NCLB provisions for Title I schools for the 39 states that constitute our analysis sample.<sup>5</sup> As well, we examine whether online information searches respond to the entry of charter schools in an area. Together, these variables provide comprehensive information about the choice environment people face in different areas of the country at any given time.

We estimate difference-in-difference models that exploit within-district changes over time in NCLB-driven open enrollment as well as within-state changes over time in school choice policies. This approach allows us to relate changes in choice policies and opportunities at the state or local level to changes in online searches for schools in an area. We also estimate parametric event study models to examine whether the adoption of specific state choice policies affects search prevalence. Our results indicate that parent knowledge about school quality is responsive to NCLB-based open enrollment: search frequency increases by over 70% due to a 10 percentage point increase in the prevalence of NCLB-based choice in a local area. Taken together, state choice policies have no effect on search prevalence though. Analysis of individual state laws, while generally imprecise, indicates that tuition vouchers lead to increases in search as well.

We additionally examine how charter school entry and exit relates to online school quality search behavior. There is a strong relationship between charter school penetration and search: adding one more charter school to an area is associated with a 5% increase in online school search activity. We believe these results are suggestive of a link between charter schools and school quality information, but we lack explicitly exogenous variation in charter prevalence that renders these estimates more suggestive than definitive.

Overall, our results indicate that choice policies can induce information search behavior and that this search behavior is greatly facilitated by the availability of online information. The type of information provided by GreatSchools.org has been shown by previous studies to lead parents to choose schools that increase student achievement (Hastings & Weinstein, 2008). It is beyond the scope of this study to determine whether the information search behavior we observe leads to different school choices or to impacts on academic outcomes. However, that expanding school choice can lead parents to

<sup>3</sup> Consistent with this hypothesis, Kisida and Wolf (2010) show evidence from a randomized voucher experiment in Washington, DC that treated parents had more accurate knowledge of the number of children in their child's school and class.

<sup>4</sup> Prior research has shown that the public release of school quality information has either no effect or a very short-run effect on property values (Figlio & Lucas, 2006; Imberman & Lovenheim, 2016; Fiva & Kirkeboen, 2011). These findings are consistent with parents facing constraints in their ability to act on school quality information in the absence of school choice.

<sup>5</sup> As discussed in Section 3, NCLB choice status was only available in our analysis period for 39 states, so we restrict our analysis to these states.

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