

Technical Report

SPECIAL EDUCATION IDENTIFICATION IN THE LOUISIANA SCHOLARSHIP PROGRAM

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SCHOOL CHOICE
DEMONSTRATION
PROJECT

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**SPECIAL EDUCATION IDENTIFICATION IN THE LOUISIANA SCHOLARSHIP
PROGRAM**

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Special Education Identification in the Louisiana Scholarship Program

Abstract

The debate over school vouchers continues as more states offer government dollars to fund private schooling for students as a method of improving choice and quality in K-12 education. Previous research in the charter school sector has found that special education enrollment discrepancies between charters and traditional public schools is likely due to a mixture in parental choice making, differential identification practices, and the removal of special education labels. This study is the first experimental analysis of the impact of a enrollment in a private school choice program on special education identification and de-identification. Using data for almost 2,000 students who were randomly assigned to private schools in the Louisiana Scholarship Program (LSP), we find no statistically significant over impact of enrollment in a student's first choice school on being either identified or de-identified in special education. Analyzing annual trends results in lower probabilities of identification for students in the LSP in Year 2 and Year 3 of the program and higher probabilities of de-identification in Year 2.

Introduction

Private school choice programs have existed in the United States since the late nineteenth century, when Vermont (1869) and Maine (1873) established town tuitioning programs to enable rural students to attend private schools of choice (Hammons, 2002). Programs take any of three forms: government issued vouchers, tax-credit scholarships, or Education Savings Accounts (ESAs), which operate like flexible medical or child-care spending accounts. By the close of 2016, by our count there were 50 private school choice programs in 26 states plus the District of Columbia (EdChoice, 2016). Private school choice programs were theorized by Milton Friedman (1955) to give parents options in where to educate their students, thereby increasing competition and improving schools as well as reducing the tie between schooling and housing markets. While research on private school choice programs has focused on questions of constitutionality, segregation, and overall student achievement effects, this study aims to examine the education of students with disabilities in the Louisiana Scholarship Program (LSP), a statewide means-tested school voucher program.¹

While increased school choice offers students with disabilities the chance to enroll in unique private schools to meet individual needs (Lake, 2010), once enrolled families relinquish their legal rights under the Individuals with Disabilities in Education Act (IDEA). Special education advocates fear that students with disabilities will not receive necessary supports and services once enrolled in private schools (Mead, 2007). Voucher and school choice proponents, however, argue that parents and students can choose the school that will provide the supports they desire rather than relying on legal mandates in the public school system (Greene & Buck, 2010; Lake & Jacobs, 2008).

¹ The program was initially called the Student Scholarships for Educational Excellence Program.

This research aims to better understand the implications that voucher usage has on students with disabilities in the context of a means-tested statewide voucher program. In particular, we examine a subset of students eligible for the LSP who are identified as having disabilities. Our analysis utilizes randomization from the LSP's lottery process to determine the achievement impacts of the program on 185 students with disabilities. Using student-level standardized test scores and controlling for baseline characteristics, we estimate the effect of enrollment in a private school using a voucher on test score achievement after three years of the LSP for the eligible applicants with disabilities. Moreover, we expand on the literature regarding the special education identification and de-classification practices in school choice programs.

In the following sections, we review the findings on voucher and tax-credit scholarship performance impacts from experimental designs and provide a description of some of the main issues related to students with disabilities in choice settings. Next, we describe the LSP lottery process and outline our data and analytical strategy. We then provide a presentation of our academic achievement findings. The final section provides analyses of the probability of special education identification and de-classification. We conclude with a brief discussion of the implications of this work.

Prior Literature

School Vouchers and Tax-Credit Scholarships

Over the last two decades, there has been a dramatic increase in the number of policies focused on providing funding for students to attend private schools through vouchers or other policy mechanisms. There are currently 50 voucher, tax-credit scholarship, and Education Savings Account (ESA) programs in 26 states and the District of Columbia. Eighteen of these programs are specifically aimed at students with disabilities (EdChoice, 2016). Researchers have used

randomized control trials (RCT's) to evaluate several private school choice programs over the last 20 years. Through the use of the natural experiment caused by oversubscription to these programs and subsequent random lotteries, these evaluations eliminated selection bias concerns that otherwise can bedevil school choice research.

The first RCT of a voucher program was conducted by Greene, Peterson, & Du (1998) of the Milwaukee Parental Choice Program. The study reported that student test scores were higher in math and reading after three or more years of exposure to the program. Rouse (1998) conducted a replication of the initial Milwaukee RCT, using different estimation strategies and concluding that the program only produced positive impacts in math.

Privately funded partial-tuition scholarships in Dayton, Ohio, Washington, D.C, and New York City were evaluated using an RCT design by Howell et al. (2002). In all three cities, students offered a voucher experienced positive overall achievement effects but only for African American students. The positive effects of the program disappeared in the third year of the evaluation in Washington, D.C. Subsequent replication studies of the New York wing of the three-city study reported a mix of positive achievement effects for African Americans (Barnard et al. 2003; Jin, Barnard & Rubin, 2010) and no statistically significant impacts for any subgroups of students (Krueger & Zhu 2004; Bitler et al. 2015).

Greene (2001) conducted an RCT of a privately funded scholarship program in Charlotte, reporting positive achievement effects after just one year. Cowen (2008) conducted a replication study of the Charlotte program and confirmed moderately large and statistically significant positive effects in reading after only one year of the program.

Wolf et al. (2013) conducted an experimental evaluation of the D.C. Opportunity Scholarship Program, the first federally funded voucher program. After five years of program

implementation, evaluators found positive overall effects on reading and math that were only marginally statistically significant, at the level of $p < .10$, but clearer positive effects for the subgroups of females, students with relatively higher baseline test scores, and students who had not attended a school in need of improvement before joining the program. Mills and Wolf (2016) recently released a test-score analysis of the Louisiana Scholarship Program, reporting large negative impacts in math after one year that decreased somewhat but remained statistically significant after two years.

None of the evaluations of voucher programs in the United States have included the academic achievement of students with disabilities as a subgroup in their analyses, although students in special education participate in the programs and the evaluations. Many of these programs have enrollment caps that make the special education subgroup so small that researchers have little ability to study them as a distinct group. For this reason, most of the literature on private school choice and students with disabilities focuses on parental satisfaction and differences in identification of students as disabled in choice settings.

The most recent non-experimental evaluation of the Milwaukee Parental Choice Program found statistically significant positive growth in reading scores for all students participating in the program but math effects that were not statistically significant (Witte et al., 2014). Further analysis of enrollment rates for students with disabilities participating in the Milwaukee Parental Choice Program showed considerable differences in the identification of students as having disabilities as they moved in and out of the private school sector but similar levels of school satisfaction regardless of whether students with disabilities were in public or private schools (Wolf, Witte, & Fleming, 2012).

While currently there are 18 voucher, tax-credit scholarships, and ESA programs in the United States targeted specifically to students with disabilities, Florida's John M. McKay Scholarship for Students with Disabilities Program is the only one that has been evaluated empirically. Greene and Forster (2003) surveyed families of students who were current or former participants. They found that parents of McKay participants had significantly higher satisfaction with their private school than with their prior public schools. Greene and Forster also found that parents reported smaller class sizes, fewer incidents of bullying, and decreased behavioral problems for their students. Future research needs to be conducted to determine whether these same results occur when students with disabilities take part in voucher programs that are not restricted to students with special needs.

Legal Issues of Students with Disabilities in Private Schools

The focus on supporting the unique needs of students with disabilities in schools has continued to grow since the passage of Section 504 of the Rehabilitation Act of 1973 (Department of Education, 2013), which prohibits the discrimination of individuals on the basis of disability. The legal protections for students with disabilities increased with the passage of the Education of All Handicapped Children Act (EAHCA) of 1975, Americans with Disabilities Act (ADA) of 1990, and finally the Individuals with Disabilities Education Act (IDEA) in 1997 which was renewed in 2004. These federal laws entitled students with disabilities to access to a free and appropriate education (FAPE). With the newest legislation, IDEA also stipulates that students with disabilities be educated in the least restrictive environment, so that they may be educated to the extent possible with their non-disabled peers and still receive FAPE. The specifications for each student's learning environment is detailed in their Individual Education Program (IEP), which is updated yearly by an IEP team, composed of the student's family and school staff (Wolf

& Hassel, 2001). As of the 2011-12 school year, of the over 6.4 million students with an IEP, comprising 12.9% of the student population ages 3-21, 61% were educated in the general education classroom at least 80% of the time (U.S. Department of Education, 2016).

Legislation pertaining to students with disabilities has had important implications for special education in the United States, but also has created challenges for students with disabilities who participate in private school voucher programs (Bon, Decker & Strassfeld, 2016). When a parent chooses to enroll a student with a disability in a school voucher program, they relinquish their legal rights under Section 504, which only applies to organizations accepting federal funds (Taylor, 2009). Title III of the 1990 ADA Act states that private schools must meet nondiscrimination requirements that prohibit exclusion, segregation, and unequal treatment (Department of Justice, 2009). This legislation would provide reasonable guarantees of rights to students with disabilities participating in a voucher program; however, ADA does not apply to religious organizations (Taylor, 2009) and most private schools participating in voucher programs are religious.

The reauthorization of IDEA in 2004 brought new implications for students with disabilities who attend private schools through parental choice. § 300.131 clearly states that local education agencies (LEA's) must "identify, locate, and evaluate" students with disabilities in private schools, including religious schools, as part of their child find process (IDEA, 2004). The LEA must meet with private school representatives to determine the number of students with disabilities enrolled in order to provide equitable services to those the students would receive in the public schools (IDEA, 2004). While this requirement does not guarantee an individual's right to services or an entitlement to funds, it does provide private schools with resources to support students with disabilities. A study conducted for the United States Conference of

Catholic Bishops (USCCB, 2002) looked specifically at how this legislation was being implemented in 2,800 Catholic schools in twenty-one states serving over a million students. Less than one percent of students identified as having a disability enrolled in Catholic schools were receiving services for their disabilities through IDEA funds. In this study as well as Wolf, Witte, and Fleming's (2012) study of the Milwaukee Parental Choice program, private school administrators reported great challenges in obtaining the supports needed from the LEA.

Identification and Enrollment

Much of the choice literature regarding students with disabilities is concentrated on concerns that choice schools discriminate against these students in the enrollment process, resulting in a low proportion of students with disabilities taking part in school choice. The USCCB's 2002 survey found that 7 percent of students enrolled in Catholic schools were identified as having a disability. Wolf, Witte, and Fleming (2012) had similar findings that at least 7.5 percent and possibly as many as 14.6 percent of students participating in the Milwaukee Parental Choice Program had a disability. This research team also found no statistical disadvantage during school admittance to students based on disability (Wolf, 2013).

Nearly every voucher program requires participating schools to comply with some sort of nondiscrimination requirement. For example, Virginia's Education Improvement Scholarships Tax Credit program only requires that schools comply with Title VI of the Civil Rights Act of 1964 (EdChoice, 2016). That law only prohibits discrimination on the basis of race and national origin (Department of Justice, 2013). Private schools in Louisiana are only required to comply with *Brumfield v. Dodd*, a federal nondiscrimination court order for the purpose of racial desegregation (Louisiana Department of Education, 2014).

Most of the literature on school choice and special education revolves around concerns over enrollment discrimination in the charter sector (Heubert, 1997; Horn & Miron, 2000; Rhim, 2008; Garda, 2012). In recent years, however, several studies have systematically analyzed the movement of students with disabilities in and out of the charter sector as well as in and out of special education eligibility status (Setren, 2015; Winters, 2013; 2014; 2015). These studies, as with Wolf, Witte, and Fleming's (2012) analysis of vouchers in Milwaukee, suggest that discrepancies in the enrollment rate of students with disabilities across school sectors are an issue of parental choice, student mobility, and differential declassification practices rather than necessarily one of discrimination.

Special Education and School Choice

The premise behind special education is the individualization of student learning experiences in order to enable students to meet their goals. This is very similar to the goal of school choice, which offers students and parents various options for schooling based on their specific needs. These two ideals meet when school choice programs enable students with disabilities and their families to choose the particular school that they think will meet their educational needs (Lake, 2010). In particular, many school choice models provide students with disabilities of varying severity an opportunity to be fully included in the general education population at their schools (Setren, 2015) due to a lack of economy of scale for self-contained programs. Small private and public charter schools simply cannot afford to exclude their students with special needs from the rest of their school population.

Inclusion of students with disabilities into general education classrooms potentially provides them with the least restrictive environment possible. Public schools have been legally required to place students with disabilities in the least restrictive environment since the EAHCA

of 1975. While we assume that integrating students with disabilities into general education classrooms is beneficial, the research studying the effects of inclusion on academic achievement is limited (Cosier, Causton-Theoharis, & Theoharis, 2013; Mills, Cole, Jenkins, & Dale, 1998; Rea, McLaughlin, & Walther-Thomas, 2002; Waldron & McLeskey, 1998). Systematic reviews, with higher external validity than small scale studies, indicate that inclusive practices are at least as effective as less inclusive settings in improving academic achievement, particularly for younger students with disabilities (Freeman & Alkin, 2000; Kalambouka et al., 2005; Lindsey, 2007; Salend & Duhaney, 2009).

While school choice may result in high parental satisfaction on the part of participating parents (Greene & Forster, 2003), very little is known about the effect of choice programs on academic achievement for students with disabilities. Angrist et al (2013) and Setren (2015) analyze the longer-term outcomes for students with disabilities in Boston charter schools. Both studies find large positive and statistically significant effects of winning a charter lottery on the academic achievement of students with disabilities. While they find negative effects of charters for on-time graduation of students with disabilities, the effects are null if the outcome is five-year graduation rates (Angrist et al, 2013; Setren, 2015). Voucher programs, especially, have not always required standardized testing of participating students, so an accurate relationship between achievement and participation in the program is difficult to calculate. As Ohio's Jon Peterson Special Needs Scholarship Program is the only voucher program for students with disabilities that requires this population to participate in testing, and the sample sizes of students with disabilities participating in many other voucher and tax credit scholarship programs are quite small, the comparative achievement for students with disabilities enrolled in a voucher program to those who remain in the public schools remains unknown.

This research aims to fill the gap in the literature on students with disabilities who are offered a voucher to attend a private school. We analyze the characteristics of students with disabilities who applied to the LSP as well as those who specifically won the lottery to enroll in a participating voucher school. Furthermore, we provide estimates of the effect of the LSP on math and English language arts achievement for students with disabilities who were awarded scholarships. A final analysis focuses on special education identification differences between students who received vouchers and those who did not. In the following section, we describe the data and analytical strategy used to estimate these effects.

Program Background

In 2008, the Louisiana Scholarship Program (LSP)—formerly known as the Student Scholarships for Educational Excellence Program—was piloted in New Orleans through Act 509. The program provides students with a voucher to attend private school at no cost. To be eligible, a student must live in a household with income at or below 250 percent of the federal poverty line and attend a school district that was deemed to be academically in crisis, a school that became part of the Recovery School District (RSD), and a city with a total population of at least 300,000 people (Tyler, 2011). New Orleans was the only city in Louisiana that met those criteria. In its first year, just over 1,000 students were awarded scholarships to attend private schools, and this number grew to over 2,000 in the 2011-12 school year.

Louisiana passed Act 2 in 2012 to expand the LSP to the entire state of Louisiana. The statewide scholarship program continued to use household income to determine eligibility, but it altered the criteria to include students who had attended a Louisiana public school that had received a grade of “C”, “D”, or “F” in the state’s accountability system (Act No. 2 of 2012). For the 2012-13 school year, approximately 10,400 students submitted applications and 5,600

students were awarded scholarships based on a random “Roth” placement lottery to attend one of the 130 participating schools.² The voucher amount per student was equal to the lesser of the revenue the local public school would have received from the state or the total cost of private school tuition and fees. The average tuition for private schools participating in the LSP ranged from \$2,966 to \$8,999, with a median of \$4,925. This amount can be compared to Louisiana’s per pupil funding from the state’s minimum foundation formula of \$8,500 (LDE, 2013f).

Parents of students with disabilities who received special education services previously at their public school and enrolled in a participating private school were required to sign a document upon enrollment stating their acceptance only of the services that the private school made available to all students. If, however, the parent enrolled the student in a participating private school that had delivered services for students with disabilities for at least two years by teachers with special education certification and in accordance with the students’ IEP, the state would supplement the voucher with the cost of providing special education services (Act No. 2 of 2012). Through searches of all the participating schools’ websites, 48 of the 130 private schools participating in the program specified school based resources for struggling learners or students with disabilities. The services ranged from mental health counseling to the provision of special day classes for students with severe needs. Further research is needed to determine if these programs were developed in response to the LSP or if they were present beforehand.

Alongside the LSP, in 2010, Louisiana started the School Choice Pilot Program for Certain Students with Exceptionalities. Students are only eligible for this program if they have an IEP due to the disabilities of developmental delay, other health impairment, specific learning

² A “Roth” lottery is a placement lottery governed by a special algorithm, pioneered by Nobel Laureate Alvin E. Roth, which generates incentives to express one’s true rank-order preferences of schools in the context of school choice (e.g. Abdulkadiroglu, Pathak, and Roth 2005).

disability, autism, mental disability, emotional disturbance, or traumatic brain injury and are currently enrolled in a Louisiana public school (LDE, 2013a). Students with the types of disabilities that render them eligible for this voucher program are rare, thankfully. Furthermore, private schools are only able to participate in the program if they are located in a parish with a population over 190,000.³ For the 2013-14 school year, 17 schools participated in the program. Finally, the special education voucher only covers 50 percent of the state’s minimum foundation amount or the school’s tuition, whichever is less. This amounts to about \$2,200 across the state on average (LDE, 2013a). Participation in the program is also determined by a separate random lottery. While not specified by the state of Louisiana, it is assumed that a student cannot participate in both the special education and means-tested voucher programs.

Research Methodology

Experimental Design

With the expansion of the LSP in 2012 to a statewide program, the Louisiana Department of Education introduced a deferred acceptance lottery, similar to the process utilized in New York City’s public school choice program (see Abdulkadiroglu, Pathak, & Roth, 2005). This lottery allowed parents to choose up to five private schools, ranking their school preferences. The lottery algorithm placed students into grade level available seats within the schools in their preference list. Students were also given priorities in the lottery based on certain characteristics.

In the first year of the program, the Louisiana Department of Education (LDE) gave students with “multiple birth siblings”⁴ an automatic placement into voucher receiving schools. The lottery mechanism assigned students to available grade openings at participating schools

³ Seven total parishes meet this eligibility requirement; Caddo, Calcasieu, East Baton Rouge, Jefferson, Lafayette, Orleans, and St. Tammany.

⁴ “Multiple birth siblings” are twins, triplets, etc.

based on preference categories. Students with disabilities were treated as their own group within the lottery process with specific seats in schools designated for students with this status. Thus, we created risk sets that include disability status so that students with and without disabilities are only compared to those students with the same status. After omitting students with multiple birth siblings and those who attended a school with an accountability rating of “B,”⁵ we grouped students in the following priority categories:

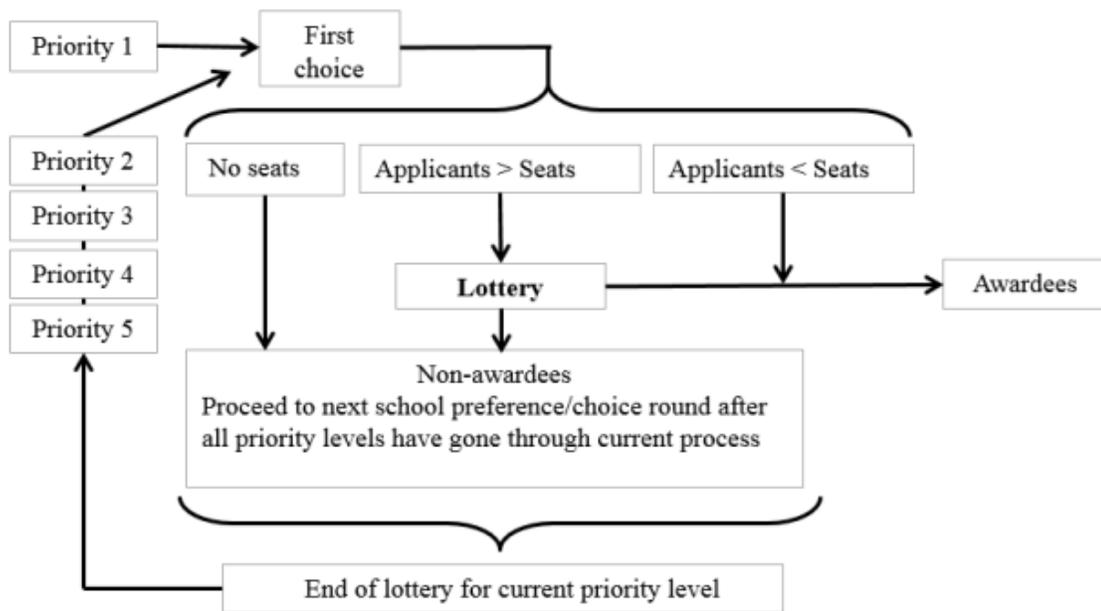
- Priority 1 - Students who received LSP scholarships in the prior school year who are applying to the same school
- Priority 2 - Siblings of Priority 1 awardees in the current round
- Priority 3 - Students who received LSP scholarships in the prior school year who are applying to a different school
- Priority 4 – New applicants who attended public schools that received a “D” or “F” grade in Louisiana’s school accountability system at baseline
- Priority 5 – New applicants who attended public schools that received a “C” grade in Louisiana’s school accountability system at baseline
- Priority 6 – New applicants who are applying for kindergarten placements

The lottery process first attempts to place students in the first priority category into their first choice school based on available seats in the student’s grade level. If there are enough available seats in the school and grade for all applicants in Priority 1, all students are offered a scholarship. When no seats in a school and grade level are available in which students apply, no students are offered a scholarship. Once all students in Priority 1 are placed in a school and grade level, students in Priority 2 with the same school and grade level first choice school preference

⁵ These students were not eligible for the program.

are offered a scholarship. After going through each priority category for first choice school preferences, the lottery algorithm continues the process by utilizing students' second choice schools. This process repeats itself until all students have been awarded or not awarded a scholarship.

Figure 1: Louisiana Scholarship Program lottery process



Mills and Wolf (2016)

Not all students actually take part in a lottery, however. Only in cases where there are more students in the same priority category and special education status than seats in a school and grade available is an actual lottery conducted. Thus, we identify students as having participated in a lottery if the percentage of students awarded a scholarship in their given risk set⁶ is between zero and 100. For our RCT analyses, we focus just on this sample of students since

⁶ Risk sets are constructed from students in the same priority category, school preference, grade, and special education designation.

they are the only students who we can determine were randomly awarded a scholarship to attend a private school as part of the LSP.

Data Description

The data for this study come from three sources. Student-level information on LSP eligibility and scholarship usage as well as student performance outcomes were provided by the Louisiana Department of Education (LDE) in accordance with our data agreement with the state. The LDE additionally provided information on participating public and private schools, and this information was supplemented with publicly available data from the National Center for Education Statistics (NCES), Common Core of Data (CCD) and Private School Universe Survey (PSS), when necessary.

The primary data for our analysis are drawn from student applications in the year 2011-12 (“Baseline”) and the state assessment results for the 2011-12 (“Baseline”), 2012-13 (“Year 1”), 2013-14 (“Year 2”), and 2014-15 (“Year 3”) school years. In our analysis of identification and de-identification, we choose to only refer to a student as in special education if indicated in testing data. Application data was only available at Baseline, making this an inconsistent data source. The Louisiana state assessment system use IEP status to distinguish students with disabilities among LEAP/iLEAP test takers. We also identify students as in special education in the testing data if they took a modified or alternative assessment in any year.

In addition to individual performance outcomes, the state-provided assessment data files include information on student demographics as well as participation in school programs such as free- or reduced-price lunch (FRL), limited English proficient (LEP), and special education. Our analysis includes these baseline covariates in order to improve effect estimate precision.

Fortunately, none of the LSP eligible students with disabilities who met our testing data requirements had missing data on baseline covariate values.

Sample Selection Process

The student-level data provided by the LDE indicate an initial sample of 9,829 eligible LSP applicants in the first year of the statewide expansion of the program. Of these, 5,771 students received LSP scholarship placements in a specific private school and 4,058 did not receive a voucher-supported placement. We then exclude 1,965 students with multiple birth siblings and those who attended schools with a grade of “B” at the time of application along with students who were awarded scholarships for the New Orleans Pilot Program. Of the remaining 2,401 students who have baseline test scores and are in grades 3-6, only 254 have disabilities⁷ and therefore remain in our sample. Of the sample of 254 students with disabilities, 113 faced a lottery for scholarship award and placement (Table 1).

Table 1: Sample selection process for participant effects analysis

	Total Records	Received Scholarship
Eligible LSP applicants	9,809	5,771
— not participating in former New Orleans pilot	8,070	4,072
— identified as in Special Education at baseline	977	412

Source. Authors’ calculations.

Students with Disabilities and Non-Disabled Peers at Baseline

First, we compare our applicants in special education to the overall eligible applicants for the LSP. We also include statistics on the state of Louisiana’s students in special education in order

⁷ We only identify students at baseline using testing data in order to maintain uniformity across years in which application data cannot be updated.

to compare our sample to the larger population (Table 2). For the sample of students without disabilities, the final placement conducted by the Louisiana Department of Education (LDE) resulted in an even distribution of students into the treatment and comparison groups on the basis of gender. The special education subgroup, like the overall Louisiana special education population, has a disproportionate rate of male students compared to females. This finding is not especially concerning as we know that males are often disproportionately placed in special education. Similarly, there is a seven percentage point difference between the overall sample and the special education subgroup in regards to free or reduced lunch participation.

Table 2: Special education eligible applicants compared to other applicants and Louisiana’s special education population at baseline

	Other Eligible Applicants		Special Education Eligible Applicants		LA Non-Applicant Special Education	
	N	%	N	%	N	%
Total	8,784		1,379		43,060	
Gender						
Female	4,325	49.2%	545	39.5%	13,879	32.2%
Male	4,459	50.8%	834	60.5%	29,181	67.8%
Ethnicity						
Black	7,629	86.9%	1,252	90.8%	22,472	52.1%
Hispanic	228	2.6%	29	2.1%	1,034	2.4%
White	680	7.7%	19	1.4%	18,613	43.2%
Other	247	2.8%	26	1.9%	1,012	2.3%
FRL						
Yes	5,315	63.2%	947	70.8%	33,923	78.7%
No	3,100	36.8%	391	29.2%	8,924	20.7%

Notes. Sample represents all students with baseline testing data.

Source. Authors’ calculations.

Predictably, students with disabilities in our sample are also far more likely than their non-disabled peers to score “approaching basic” and “unsatisfactory,” the lowest proficiency levels, on their baseline achievement tests (See Table 3). Students with disabilities and their non-disabled peers score in the “advanced” or “mastery” range with equal infrequency. The best a student who takes the modified assessment can score is the “basic” proficiency level; but, we do not see that this increases the likelihood that a student with a disability will reach the “basic” level compared to their non-disabled peers. The vast majority of modified test takers score in the “foundational” and “pre-foundational” levels, which are categorized under “unsatisfactory.”

Table 3: Test scores levels for special education eligible applicants compared to other at baseline

	Other		Special Education	
	N	%	N	%
Proficiency - ELA				
Advanced	41	1.3%	3	0.4%
Mastery	305	9.8%	42	5.3%
Basic	1,398	44.8%	229	28.8%
Approaching Basic	931	29.8%	253	31.8%
Unsatisfactory	446	14.3%	268	33.7%
Proficiency - Math				
Advanced	41	1.3%	2	0.3%
Mastery	305	9.8%	42	5.3%
Basic	1,398	44.8%	229	28.8%
Approaching Basic	931	29.8%	253	31.9%
Unsatisfactory	446	14.3%	268	33.8%

Note: The LAA2, modified assessment level of unsatisfactory is split into two categories: Foundational and pre-Foundational (lowest).

Disaggregating Students with Disabilities

Looking further at the distribution of disabilities in our sample included in our analysis we analyze the difference in the disabilities of students offered a private school placement and those who were not (Table 4). Overall, the two groups are very similar. The largest differences are a three percentage point lower rate of awardees with intellectual disabilities and three percentage points higher rate of awardees with a speech or language impairment. Moreover, in comparison to the state of Louisiana, the disabilities of students offered placement in a private school and those who were not are nearly identical. In 2012, Louisiana enrolled a higher proportion of students with specific learning disabilities and a lower proportion with speech or language impairments. While students with speech and language impairments often receive fewer services and considered one of the least severe disabilities, this can similarly be said for specific learning disabilities.

Table 4: Description of the special education sample in relation to Louisiana

	Awarded Scholarship†		Not Awarded Scholarship †		LA State Special Education ††	
	N	%	N	%	N	%
Total	319		367		70,029	
Autism	11	3.4%	13	3.5%	3,683	5.3%
Deaf - Blindness	0	0.0%	0	0.0%	5	0.0%
Developmental Delay (3-9)	36	11.3%	40	10.9%	5,857	8.4%
Emotional Disturbance	14	4.4%	14	3.8%	1,756	2.5%
Hearing Impairment	7	2.2%	4	1.1%	1,148	1.6%
Intellectual Disability	18	5.6%	33	9.0%	7,185	10.3%
Multiple Disabilities	5	1.6%	9	2.5%	944	1.3%
Orthopedic Impairment	4	1.3%	3	0.8%	1,066	1.5%
Other Health Impairment	25	7.8%	30	8.2%	9,553	13.6%
Specific Learning Disability	94	29.5%	107	29.2%	23,196	33.1%
Speech/Lang. Impairment	102	32.0%	106	28.9%	14,931	21.3%
Traumatic Brain Injury	0	0.0%	0	0.0%	228	0.3%
Visual Impairment	3	0.9%	8	2.2%	477	0.7%

Notes. Special education sample includes all students with disabilities with baseline test scores while enrolled in grade three through six and did not have multiple births. Louisiana does not differentiate between mild and moderate mental disabilities.

Sources. † Authors' calculations †† DATA.gov (2012)

Schools of choice often declassify students as special education (Wolf, Witte, & Fleming, 2012; Setren, 2015; Winters, 2013; 2014; 2015; Winters, Carpenter II, & Clayton, 2017). To see whether this pattern is true in the LSP, we looked at the difference between students offered private school placement and those not offered a placement who changed classification from the baseline to the third year of the program (Table 5). Simply observing the percent differences between students awarded and not awarded a scholarship does not indicate large differences between the two groups. This trend will be analyzed more rigorously later in this report. Table 6 looks at the year-by-year trends. While there still lacks a clear pattern of identification or de-identification, it is at least interesting to observe the large numbers of students who change their disability status multiple time.

Table 5: Changes in special education identification from baseline to Year 3

	Award Scholarship		Not Awarded Scholarship	
	N	%	N	%
Classification Switchers				
Did not switch	541	80.6%	867	85.5%
Special Ed to General Ed	94	14.0%	100	9.9%
General Ed to Special Ed	36	5.4%	47	4.6%

Table 6: Changes in special education identification from baseline through Year 3

	Award Scholarship		Not Awarded Scholarship	
	N	%	N	%
Classification Switchers				
not-not-not-not	423	63.0%	653	64.4%
not-not-not-sped	15	2.2%	20	2.0%
not-not-sped-not	11	1.6%	56	5.5%
not-not-sped-sped	13	1.9%	8	0.8%
not-sped-not-not	72	10.7%	73	7.2%
not-sped-not-sped	4	0.6%	7	0.7%
not-sped-sped-not	0	0.0%	13	1.3%
not-sped-sped-sped	4	0.6%	12	1.2%
sped-not-not-not	63	9.4%	50	4.9%
sped-not-not-sped	2	0.3%	2	0.2%
sped-not-sped-not	6	0.9%	6	0.6%
sped-not-sped-sped	5	0.7%	12	1.2%
sped-sped-not-not	19	2.8%	25	2.5%
sped-sped-not-sped	5	0.7%	6	0.6%
sped-sped-sped-not	6	0.9%	19	1.9%
sped-sped-sped-sped	23	3.4%	52	5.1%

Analytical Strategy

In order to better identify differential probabilities of identification and de-identification in special education over time, we estimate annual probabilities. We begin with our two models to estimate the probability of identification or de-identification, y_1 , and probability of attending a lottery, y_2 .

$$y_1 = 1[\mathbf{z}_1 \boldsymbol{\delta}_1 + \alpha_1 y_2 + u_1 > 0] \quad (4)$$

$$y_2 = 1[\mathbf{z}_2\boldsymbol{\delta}_2 + v_2 > 0] \quad (5)$$

Our error terms, (u_2, v_2) , are uncorrelated with \mathbf{z} , but correlated with one another. If we estimated these models separately, our estimates would be inconsistent (Wooldridge, 2010). Instead, we estimate our models using a bivariate probit to model the probability of enrolling in the LSP simultaneously with the probability of identification or de-identification. Based on Wooldridge (2010) and Cameron and Trivedi (2009) we estimate our model as:

$$P(y_1 = 1|y_2 = 1, \mathbf{z}) = E[P(y_1 = 1|v_2, \mathbf{z})|y_2 = 1, \mathbf{z}] \quad (6)$$

We estimate our bivariate probit models disaggregated to observe annual patterns of identification and de-identification. Additionally, we analyze the probability of being identified or de-identified by the end of three years in the program for all students, those initially not identified, and those who were identified at baseline as having special education services.

Wolf, Witte, and Fleming (2012) conducted student fixed effects to estimate the probability of a student being identified or de-identified in the Milwaukee Parental Choice Program (MPCP). This estimation strategy relies on students who change schooling sectors at least once during the analysis time. Modeling non-linear panel data in this way will not produce consistent estimates if T_i is small, which will result in bias estimates of unobservable student characteristics also biases are estimates of β (Cameron & Trivedi, 2009). With only four years of data, we determined that this is not the most reliable method of estimating causal effects of the LSP on student identification and de-identification.

Results

We present our bivariate probit marginal effects of the probability of being identified for special education services or having that label removed by the third year of the program are displayed in Table 7. Our results are consistent with prior literature on identification and de-identification in

special education. Estimates for the effect of de-identification for students in special education who enroll in the LSP are about 60 percentage points higher than the control group from a base rate of de-identification of about 25 percent. These results are not statistically significant in our fully specified and preferred model. Over eighteen percent of students are newly identified for special education over the three years. For students enrolled in the program, they were seven percentage points less likely to be newly identified for special education than students in the control group. In total, students who enrolled in the LSP were just over 14 percentage points less likely to be in special education by the third year in the program.

Table 7: Bivariate probit marginal effects for the likelihood of identification and de-identification for special education, lotteried sample

	<i>Simple (no controls)</i>	<i>Fully Specified</i>
Special education de-identification	0.592*** (0.000)	0.610 (0.316)
General education identification	-0.091*** (0.000)	-0.070** (0.045)
Overall probability of special education	-0.143** (0.014)	-0.118 (0.519)

*** - $p < .01$, ** - $p < .05$, * - $p < 0.10$

Notes. Performance measures are standardized within test type and grade based on the score distributions of members of the control group. All models control for modified assessment. Standard errors could not be calculated for marginal effects, but were calculated in initial bivariate probit models to account for nesting of observations at in lottery risk sets.

In addition to our overall analyses, we present our disaggregated annual effects of enrolling in an LSP private school on identification and de-identification in each year of the program (Table 8). We see that there are differential probabilities between treatment and control for the identification for special education in the second and third year. Students who enrolled in their first choice LSP private school were 9.4 percentage points less likely to be identified for special education in the second year of the program. By the third year, this dropped to a 4.4

percentage point lower likelihood of being identified for special education for the treatment group when the average rate of identification was 4.6 percent. In the second year of the program we see nearly a 50 percentage point higher likelihood of having one's special education label removed for students enrolled in their first choice private school when the average likelihood of de-identification was 55 percent. These effects reverse direction in the third year of the program, most likely because there are so few students left who need to be de-identified in the private schools following the first and second years. These trends likely demonstrate the differential equilibrium in special education identification between the private and public schools.

Figure 2 depicts the trends in identification and de-identification over the three years of the program. This representation shows the large swing in de-identification effects for students who participated in the LSP in Year 3 of the program. Given the de-identification in the first two years of the program, it is unsurprising that there is a drop in the third year when there are few students left who may be on the margin of benefiting from their special education label.

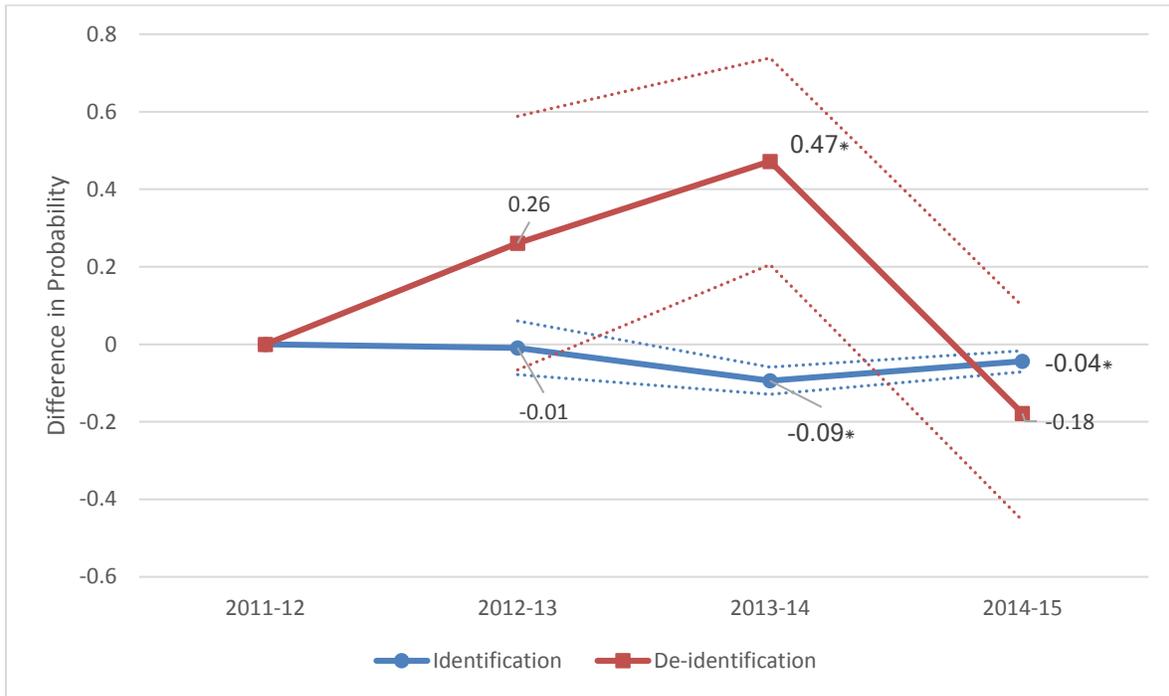
Table 8: Bivariate probit marginal effects for the likelihood of identification and de-identification for special education, lotteried sample

	Year 1		Year 2		Year 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Identification	-0.014 (0.036)	-0.009 (0.035)	-0.106*** (0.018)	-0.094*** (0.018)	-0.049*** (0.012)	-0.044*** (0.014)
Observations	1033	1,033	994	994	1,065	1,065
De- Identification	0.233* (0.121)	0.261 (0.167)	0.523*** (0.0767)	0.472*** (0.136)	-0.313*** (0.0408)	-0.178 (0.141)
Observations	206	206	242	242	197	197
Demographics		X		X		X
Total Choices		X		X		X
NOLA		X		X		X

*** - $p < .01$, ** - $p < .05$, * - $p < 0.10$

Notes. Performance measures are standardized within test type and grade based on the score distributions of members of the control group. All models control for modified assessment. Standard errors could not be calculated for marginal effects, but were calculated in initial bivariate probit models to account for nesting of observations at in lottery risk sets. Excluded comparison group is African American students.

Figure 2: Trends in identification and de-identification for special education in the LSP



Notes. * indicates estimate is statistically significant at the 95% confidence level. Dotted lines indicate the confidence intervals around the estimates. The 0 line represents no difference in status between LSP scholarship users and their control group counterparts. Estimates derived from Cox Hazard Duration Models.

Discussion

This report offers an analysis of the first three years of the Louisiana Scholarship Program (LSP) for students with disability. While our results are largely inconclusive, we believe there are a number of ways in which this work will benefit the existing literature on the experiences of students with disabilities in school choice programs. First, we establish that 13% of the eligible applicants to the LSP in its first year were students with disabilities. This rate of application is identical to the overall state of Louisiana’s special education enrollment. While other school choice programs have low special education enrollment, the LSP demonstrates a desire of parents of students with disabilities to have access to private school choice.

Second, this research represents the first attempt to estimate the causal relationship between enrolling in a private school through a publicly funded voucher and special education identification. As prior literature found that schools of choice are more likely to remove the special education label when students with disabilities enroll, we find similar results, though these are not robust to our preferred specifications. We clearly see that students who participate in the LSP are less likely than the control group to be identified for special education. While not robust to our preferred specification, it does appear that students in the program are overall less likely to be in special education by the third year. Our individual year probit models show evidence that in both Year 2 and Year 3 of the program, students who won scholarships were less likely to be identified for special education; and in Year 2, they were more likely to have a special education label removed.

As a society, it is unclear whether identifying students for special education is positive or negative. If students who truly have disabilities and need services are identified, then we assume it is positive. The assumption is often that schools over-identify students as needing special education services in order to acquire additional funding, exempt students from accountability, or remove them from the general education classrooms. Thus, reducing identification is typically considered a positive policy change. Conversely, a reduction in identification may mean that students who need services are not being served. As we do not know the true disability incidence rate in the population, we cannot determine what a desirable outcome is in this case.

These findings have limitations. First, the results are based on a small sample of students identified and de-identified who won a lottery to attend their first choice LSP private school. This small sample, along with our analytical requirements, restricts the statistical power of our analysis. Furthermore, we identify students with disabilities using the state testing data. Non-

tested students with disabilities cannot be included in our study. For this reason, we also caution against generalizing these findings to all the students with disabilities participating in the LSP and other private school voucher programs.

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Appendix

The analysis in this appendix serves as a robustness check of our overall discrete duration model findings using Cox proportional hazard models in place of probit estimations.

Analytic strategy

In order to estimate the average effect of scholarship award to a student's first choice school on the likelihood of identification to special education and likelihood of having a disability identification removed, we use a Cox proportional hazard model. We estimate using a hazard function defined as:

$$h(t|\mathbf{x}_j) = h_0(t)\exp(\mathbf{x}_j\boldsymbol{\beta}_x) \quad (1)$$

and derive the likelihood function:

$$L(\boldsymbol{\beta}) = \prod_{j=1}^n \left\{ \frac{\exp(\mathbf{x}_j\boldsymbol{\beta})}{\sum_{i \in R_j} \exp(\mathbf{x}_i\boldsymbol{\beta})} \right\} \quad (2)$$

Because the variable of enrollment in the LSP is endogenous, we still want to leverage our lottery process to identify causal effects in our survival analysis. The survival analysis routines offered do not provide for a two stage process in which the first stage predicts the probability of enrollment in an LSP private school based on receiving a scholarship to the student's first choice school. We manually compute the first stage (6) using a probit model⁸ and use the predicted probability of enrollment in an LSP school as our variable of interest in our Cox hazard models.⁹

$$E_i = \delta A_i + \mathbf{X}\boldsymbol{\beta} + u_{it} \quad (3)$$

Results

We utilize both the Cox proportional hazard models and discrete duration models to estimate the probability of special education identification and de-identification over the three years of the

⁸ E is the indicator for whether student i was awarded a scholarship. A is our variable identifying whether a student was awarded a scholarship for the LSP to attend their first choice school. X is a vector of individual baseline covariates, including student achievement in ELA and math, used to improve model precision.

⁹ The `stcox` routine in Stata is used for these estimations.

LSP. Our special education identifier comes from the annual testing data that indicates whether a student is in special education or general education.¹⁰

We present the results of our analysis over the three years of the LSP in Table 15. Hazard ratios are presented and should be interpreted as a one percent higher probability of disability identification for students who enrolled in their LSP first choice school for every 0.01 above one. For example, in our most specified model (Column 4), our estimate on LSP enrollment is 1.373 for identification, which equates to a 37.3 percent higher probability of special education identification for students who enrolled in their first choice LSP private school compared to the control group, though the difference is not statistically significant. Over eighteen percent of students are newly identified for special education, and about 25 percent of students lost their special education identifications over the three years the program was in place. Interestingly, we also see a lower likelihood of students having their special education identification removed if they won a lottery to attend their first choice school. As none of the results in Table 15 are statistically significant, we cannot conclude with confidence that an LSP scholarship award affected the identification or de-identification of students with disabilities.

¹⁰ In Year 3, disability category included gifted and talented, which we exclude from the categorization of special education.

Appendix Table 1: Cox hazard ratios for the likelihood of identification and de-identification for special education, lotteried sample

	(1)	(2)	(3)	(4)
Identification	0.531* (0.195)	1.313 (0.590)	1.400 (0.579)	1.373 (0.601)
Observations	2,570	2,570	2,570	2,570
De-Identification	1.822*** (0.356)	0.925 (0.242)	0.855 (0.201)	0.856 (0.190)
Observations	353	353	353	353
Demographics		X	X	X
Total Choices			X	X
NOLA				X

*** - $p < .01$, ** - $p < .05$, * - $p < 0.10$

Notes. Performance measures are standardized within test type and grade based on the score distributions of members of the control group. All models control for modified assessment. Standard errors (presented in parentheses) account for nesting of observations at in lottery risk sets. Excluded comparison group is African American students.