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The School Choice Voucher: A 'Get Out of Jail' Card?

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Abstract

In this report we examine crime rates for young adults who experienced Milwaukee's citywide voucher program as high school students and a comparable group of their peers who had been public school students. Using unique data collected as part of a longitudinal evaluation of the program, we consider criminal activity by youth initially exposed to voucher schools and those in public schools at the same time. We also consider subsequent criminal activity by the students that stayed in the voucher program through 12th grade compared to those who were in public schools for the same period. We show that the mere exposure to private schooling through a voucher is associated with lower rates of criminal activity but the relationship is not robust to different analytic samples or measures of crime. We find a more consistent statistically significant negative relationship between students that stayed in the voucher program through 12th grade and criminal activity (meaning persistent voucher students commit fewer crimes). These results are apparent when controlling for a robust set of student demographics, test scores, and parental characteristics. We conclude that merely being exposed to private schooling for a short time through a voucher program may not have a significant impact on criminal activity, though persistently attending a private school through a voucher program can decrease subsequent criminal activity, especially for males.

Keywords: school vouchers, school choice, public program evaluation, crime, non-cognitive skills

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Introduction

School choice programs include a variety of mechanisms by which parents can actively choose their child's school as opposed to accepting a default residential assignment, including securing a residence in a specific neighborhood to gain access to a particular public school (a.k.a. Tiebout Choice), public charter schools, intra-district and inter-district public school choice, and private school choice. School choice can be conveniently divided into public school choice and private school choice in the form of self-financed private schooling, government vouchers, tax-credit scholarships or Education Savings Accounts.

Most evaluations of public school choice focus on student educational outcomes such as standardized test scores, high school graduation rates, and college enrollment rates (e.g. CREDO 2013; Booker et al. 2009). Some public school choice studies measure the success of choice programs in boosting parent satisfaction or promoting social goals such as reducing achievement gaps, increasing racial integration, and promoting civic values (e.g., Betts, Rice, Zau, Tang, & Koedel, 2006; Bifulco & Ladd, 2007; Zimmer et al., 2009; Wolf 2007).

The literature on private school choice parallels that of public school choice regarding its focus on student achievement and attainment (e.g. Greene, Peterson & Du, 1999; Metcalf et al., 2003; Rouse, 1998; Witte 2000; Howell et al. 2002; Cowen 2008; Wolf et al. 2013; Cowen et al. 2013; Witte et al. 2014). Some studies examine the effects of private school choice on parent satisfaction and views of safety (e.g., Witte, 2000; Howell et al., 2006; Kisida & Wolf, 2015). A few private school choice studies have examined the effects of choice on racial integration and civic values (e.g. Greene, Mills, & Buck, 2010; Campbell, 2008; Wolf et al., 2001).

Many commentators argue that schools have a responsibility beyond what is measured by standardized test scores (Macedo & Wolf, 2004; Lawton, Cairns, & Gardner, 2004; Zimmer et al., 2009). These test scores can, at best, only measure some of the cognitive abilities of the students (Egalite, Mills, & Greene, 2014; Hitt & Trivitt, 2013; Hitt, Trivitt, & Cheng, 2014). Schools can also be thought of as social institutions that aim to improve the non-cognitive skills of students as well (Arthur & Davidson, 2000). The combination of cognitive and non-cognitive advancement of students can lead to better life outcomes as measured by lifetime earnings, employment and citizenship (Reynolds, Temple, & Ou, 2010). We can evaluate the citizenship of a given student by many metrics including their lack of criminal activity as adults.

Throughout U. S. history one of the main arguments for allocating additional resources to schooling is that it can reduce criminal activity (West, 1965). There are many reasons to believe that individuals with higher levels of education will be less likely to commit crimes. Schools can teach people to be better citizens, increase social cohesion and increase democratic participation (Tooley, 2000). Moreover, educational attainment improves the economic prospects of young adults, providing them with a greater financial incentive to stay out of trouble (Rouse, 2005). Though crime rates have recently dropped in America, the country is still considered to be "the most violent advanced industrial society on earth" (Currie, 2013). Crime is most problematic in urban areas, where students have less access to quality schools. Access to higher quality schools, or more school choices in general, could have social benefits related to crime reduction.

Most studies that look at schooling impacts on criminal activity do not take school choice into consideration. These studies primarily have focused on the effects of drop-out rates and broad schooling laws (Anderson, 2015; Lochner, 2010; Luallen, 2006). Other studies have looked at

schooling desegregation and its impacts on crime (Billings et al., 2012; Weiner et al., 2009), or how educational attainment can affect later criminal activity (Lochner & Moretti, 2001; Lochner, 2011; Machin et al., 2011; Groot & Brink, 2010; Oreopoulos & Salvanes, 2011). These evaluations indicate that higher levels of education cause less criminal activity, but they do not examine differences in outcomes based on the type of schooling. In short, few school choice studies focus on the effects of choice on crime, while few "causes of crime" studies focus on the role of school choice or school type in preventing criminal behavior.

David Deming provides one of the few studies at the intersection of school choice and crime. He compares the criminal activity of students that won and lost the charter school lottery in the Charlotte-Mecklenburg County of North Carolina in 2002. He finds that exposure to the charter school through winning the lottery significantly decreased the likelihood of a high-risk student committing a crime (Deming, 2011). Dills & Hernandez-Julian (2011) conduct a similar study using national data to determine how Tiebout school choice is related to criminal activity. They find that a one standard deviation increase in choice is associated with a reduction in juvenile crime of about 40%.

We conduct the first analysis of the effect of a private school choice program on the criminal behavior of young adults, using data from the Milwaukee Parental Choice Program (MPCP). The MPCP is the nation's first urban school voucher system, currently enrolling over 27,000 students in over 110 different private schools. Our results suggest that sustained participation in the MPCP has a significant downward effect on the likelihood of a student engaging in criminal activity as a young adult. We proceed with our analysis by describing the tuition voucher program on which our evaluation is based, and the data and analytical procedures

we employ. Next, we present tables and statistical models of the conditions that predict different types of criminal activity, including the role of private schooling through the MPCP. We conclude with a discussion of our results and what they mean for future research in the school choice arena.

Background, Data, and Student Matching Procedure

Background

The MPCP was launched in 1990 as a pilot program to test the concept of private school vouchers for low-income urban students. Initially, program enrollment was capped at 1.5% of MPS enrollment, or about 500 students, and only seven non-religious private schools were allowed to participate (Witte, 2000). Starting in 1996, the enrollment cap was raised substantially and repeatedly, until it was eliminated in 2012, and religious schools were permitted to enroll voucher students starting in 1998. These policy decisions, which allowed both demand and supply to grow, resulted in the program enrolling about 25% of all K-12 students in the city of Milwaukee in 2014-15.

The MPCP is a government-run school voucher program. Students first enroll in a participating private school of their choosing and then, through the school, apply to the Wisconsin Department of Public Instruction for tuition assistance. This sequencing of events – school choice first and voucher second – distinguishes the MPCP from other school voucher programs in Cleveland, Ohio; Washington, DC; and the states of Indiana and Ohio, where students first are awarded vouchers and then choose their private school. In the baseline study year of 2006 the voucher was worth up to $6,501 per year, about 40% less than the average per

pupil expenditure in MPS (Costrell, 2008). To qualify for a voucher, applicants had to live in the city of Milwaukee, be entering grades K-12, and have a family income at or below 175% of the poverty level, an amount slightly below the ceiling to qualify for the federal lunch program.

Data and Methods

In most cases, vouchers were not randomly assigned to students in Milwaukee via lottery. Although schools in the program are required to admit students by lottery when a given grade in a particular school is oversubscribed, school personnel tend to recruit voucher students until that ceiling is reached and then stop recruiting. As a result, most of the grades in most of the voucher schools do not require lotteries.

To generate comparable groups for the analysis we used comparison groups constructed through an algorithm that matched MPCP (i.e. voucher) students with Milwaukee Public School (MPS) students based on grade, neighborhood, race, gender, English Language Learner (ELL) status and math and reading test scores (Witte et al., 2008). First, the entire census of 801 MPCP students who were in 9th grade in the fall of 2006, along with a representative sample of 290 MPCP students in 8th grade that year, were organized into a total program sample of 1091. Researchers first matched these voucher students to the set of MPS students in their same grade within the same neighborhood census tract. Census tracts largely define neighborhoods in Milwaukee, and families who live in the same neighborhoods tend to share similar unmeasured background factors such as moral values. Matches were further restricted to MPS students that were in the same 5% bandwidth of 2006 test scores. Finally, the specific MPS student that would serve as the match for each MPCP student was selected based on the nearest-neighbor propensity score calculated by student demographics of race, gender, ELL status, and test score.

All but two students in the program sample were successfully matched. The result is a treatment group of 1089 students exposed to a voucher in 2006 and a matched group of 1089 highly similar comparison students in MPS in 2006, for a total analytic sample of 2178. Previous research shows that this type of nonexperimental matching design largely replicates "gold standard" experimental results (Bifulco, 2012).

Table 1 provides information about the two matched groups of students in our analysis. They do not differ regarding the key characteristics of race and baseline math scores, but there are statistically significant differences in gender at the $p < 0.05$ level and reading scores at the $p < 0.01$ level. Students that were enrolled in MPCP at the baseline year of 2006 are more likely to be female and more likely to have higher reading scores. These differences are controlled for in our model estimations below.

Table 1: Statistics on Model Covariates

	MPCP in 2006	MPS in 2006
Female	0.58**	0.53
Black	0.72	0.71
Hispanic	0.17	0.17
Asian	0.03	0.04
White	0.07	0.08
Math in 2006	-0.03	0.03
Reading in 2006	0.14***	0.00
N	1089	1089

Notes: ** p<0.05, *** p<0.01.

After students were matched, their parents were surveyed by telephone to gather important family background information such as family income, mother's and father's education, and whether both parents lived in the home. A total of 69% of parents responded – a very high response rate for a telephone survey. For our more complete model estimations we use this subsample of 1506 students whose parents were survey respondents so that we can control

for family background characteristics that might otherwise bias our estimation of the voucher program effect on criminal activity.

For our dependent variables we use the Wisconsin Court System Circuit Court Access[2] to search for cases using student first name, last name and date of birth. We use seven different categories for dependent variables. First, we classify criminal activity based on the type of crime committed. Our categories for convicted criminals are: felony, misdemeanor, traffic-related, theft-related and drug-related. We also examine two other categories: whether the student was convicted of any type of crime and whether the student was accused of any type of crime. Criminal records are not present in the data unless the student was an adult at the time of the crime. Students graduate around the age of 18, so the effects of voucher exposure at a young age are captured. Since we searched the database during the summer and fall of 2015, the students in our sample were 22-25 years old at the time.

Table 2 summarizes our full sample of 2,178 unique students and their characteristics. Around 4% of the sample were found guilty of a felony, 9% of a misdemeanor, 19% of a traffic-related crime, 5% of theft and 6% of a drug-related crime. With little variation in our dependent variables, it may be difficult with our current sample size to detect any differences (if they exist) across our comparison groups for most types of crime.

[2] These data can be found at https://wcca.wicourts.gov/simpleCaseSearch.xsl

Table 2: Descriptive Statistics of Variables

Variable	N	Mean	Std. Dev.	Min	Max
Grade in 2006	2178	8.74	.44	8	9
Asian	2178	.04	.19	0	1
Black	2178	.70	.46	0	1
Hispanic	2178	.18	.39	0	1
White	2178	.07	.26	0	1
Female	2178	.55	.50	0	1
MPCP 2006	2178	.50	.50	0	1
Full Dose	2178	.20	.40	0	1
Income>50	1401	.11	.31	0	1
35<Income<50	1401	.14	.35	0	1
25<Income<35	1401	.18	.39	0	1
Parent HS Grad	1506	.29	.45	0	1
Parent Some College	1506	.33	.47	0	1
Parent Completed College	1506	.15	.35	0	1
Math Z Score	2178	.00	.87	-3.13	3
Read Z Score	2178	.07	.90	-2.97	2.54
Both Parents in HH	1502	.34	.47	0	1
Parent Frequent Churchgoer	1500	.58	.49	0	1
Felony	2178	.04	.20	0	1
Misdemeanor	2178	.09	.29	0	1
Traffic	2178	.19	.39	0	1
Theft	2178	.05	.21	0	1
Drugs	2178	.06	.24	0	1

Models and Results

Criminal Intent-to-Treat (ITT) Effects Controlling for Student Characteristics

Our basic model conditions the probability that a given student, i, reached a certain criminal activity outcome as follows:

$$Prob\ (Criminal\ Activity)\ =\ \beta_0 + \delta_1 MPCP06_i + \beta_1 X_i + \beta_2 test_{2006} + \varepsilon_i$$

which we estimate via probit, where for each outcome of interest (felony, misdemeanor, traffic-related, theft-related, drug-related; found guilty of any type of crime; or simply accused of a

crime)[3], $\delta_1$is the difference associated with exposure to MPCP (enrolled in the MPCP in 2006) after accounting for the vector X of student race, gender, and baseline grade (8th or 9th) indicators; and $test_{2006}$, a vector of student math and reading test scores in 2006, standardized to have a mean of zero and a standard deviation of one. Since we control for student 2006 test scores, any effect that the MPCP has on reducing criminal behavior by boosting student test scores would be captured by that control variable for students in the program prior to 2006, making our independent estimate of the effect of the MPCP overly conservative.[4] We use robust standard errors in all probit models due to the heteroskedastic nature of models with binary dependent variables.

We start with an Intent-to-Treat (ITT) analysis, as all of the students in the MPCP group are coded "1" for MPCP06 regardless of how long they persisted in the program. This section of the analysis estimates the effect of "exposure" to the MPCP (for whatever duration of time) on subsequent criminal behavior. We use this ITT approach at the outset of our analysis because non-random sorting of students across sectors took place after the 2006 baseline year (Cowen et al., 2012) that otherwise might bias our estimates of the program's effect.

The sample size drops to 2095 for felonies since the race labeled "Asian" predicted 0 perfectly and, therefore, all Asian students had to be omitted from the analysis. The rest of the types of crimes had a sample size of 1842 because several student names were matched to crimes

[3] Each observation is coded "1" or "0" for each category. Young adults who had committed multiple crimes in a given category were rare but, when they occurred, they were simply coded "1" for the category. We did this because using an actual count of crimes instead of a 0/1 classification would have required us to use a more complex statistical operation (ordered probit) that would have been highly inefficient given the distribution of our data.

[4] Previous research using some of these same data suggests that any test score effects of the voucher program were modest, only in reading, and only clear in the year in which the test was "high stakes" for the voucher students and private schools (Witte et al. 2014).

but without the confirmatory match of their birth dates. Since we could not determine conclusively that the student did or did not commit the crime based on the information, we omitted those cases from our analysis.

For our initial ITT analysis, exposure to the MPCP has tiny and inconsistent effects on our seven crime measures (Table 3). For five of the outcome variables (misdemeanor, accused, convicted, drugs, and traffic) participation in the MPCP has a negative effect on crime and for one classification (theft) it has a positive effect. Importantly, none of the coefficients estimating the effect of the MPCP on crime outcomes achieves statistical significance at the $p < 0.1$ level. It appears that merely being exposed to private schooling through a voucher may not produce a statistically significant change in one's early propensity to commit crimes.

Results from the control variables suggest that our finding of no significant correlation between the MPCP and criminal behavior is not solely due to the noisy nature of the data. Female students were less likely to be associated with any of these criminal activities at levels that were statistically significant with high confidence. Black students were significantly more likely to be accused or convicted of crimes in general. Asian students were less likely to be connected with drug crimes and, in some cases, students with higher test scores were less likely to be associated with crimes. The exception to that rule, the positive association between math scores and traffic violations, likely is because high school students who are doing better in math are more likely to have the resources to own and drive a car than are students who are doing poorly in math.

Table 3: Probit ITT Estimates with Student Controls

	(1) accused	(2) convict	(3) misdem	(4) felony	(5) drugs	(6) traffic	(7) theft
mpcp06	**-0.02**	**-0.02**	**-0.01**	**0.00**	**-0.01**	**-0.02**	**0.01**
	(0.28)	**(0.44)**	**(0.39)**	**(0.91)**	**(0.30)**	**(0.34)**	**(0.57)**
grade06	0.02	0.01	0.00	0.00	0.02	-0.01	-0.00
	(0.49)	(0.64)	(0.83)	(0.89)	(0.24)	(0.57)	(0.84)
asian	-0.08	-0.06	-0.07	0.00	-0.11**	0.02	0.00
	(0.29)	(0.43)	(0.19)	(.)	(0.05)	(0.72)	(.)
black	0.08*	0.08**	0.04+	0.01	-0.02	0.05	0.03
	(0.05)	(0.04)	(0.13)	(0.44)	(0.28)	(0.16)	(0.22)
hispanic	0.03	0.05	-0.02	-0.02	-0.02	0.07*	-0.03
	(0.55)	(0.28)	(0.42)	(0.41)	(0.49)	(0.09)	(0.25)
female	-0.28***	-0.27***	-0.11***	-0.09***	-0.11***	-0.15***	-0.09***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
math	0.01	0.02	-0.02***	0.01	0.00	0.03**	0.00
	(0.45)	(0.24)	(0.00)	(0.22)	(0.73)	(0.04)	(0.67)
read	-0.02	-0.01	0.00	-0.01**	-0.00	0.00	-0.01
	(0.27)	(0.41)	(0.94)	(0.04)	(0.76)	(0.74)	(0.18)
N	1842	1842	2178	2095	1842	1842	1780

p-values in parentheses
+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Criminal Intent-to-Treat (ITT) Effects Controlling for Student and Parent Characteristics

The second model we estimate, via probit, is as follows:

$$Prob\ (Criminal\ Activity) = \beta_0 + \delta_1 MPCP06_i + \beta_1 X_i + \beta_2 test_{2006} + \beta_3 Z_i + \varepsilon_i$$

where for each outcome of interest, δ_1 is the difference associated with exposure to MPCP (enrolled in the MPCP in 2006) after accounting for the vector X of student race, gender, and baseline grade (8th or 9th) indicators; vector Z of parent income levels, education levels, churchgoing activity,

and whether both parents lived at home; and $test_{2006}$, a vector of student math and reading test scores in 2006, standardized to have a mean of zero and a standard deviation of one.

The sample size drops to 1354 in the parental characteristics models since not all parents responded to the surveys. This can lead to bias since certain types of parents may be more or less likely to complete surveys and those tendencies could be correlated with participation in the MPCP. The model itself, however, might mitigate bias because it includes measures of key variables that otherwise might confound the relationship between MPCP participation and crime. Thus, this element of the analysis involves a better model estimated on a worse sample.

When we control for parental characteristics, as displayed in Table 4, we can see that MPCP exposure is associated with a reduction in every type of crime except theft, which has a coefficient of zero. The effect of the MPCP on reducing criminal behavior is statistically insignificant at the $p < 0.1$ level except for the case of the general category of simply being accused of a crime. Being accused of a crime was one of the few crime categories, along with traffic violations, containing more than trivial variation in the dependent variable and therefore provided us greater statistical power to identify a significant relationship between the voucher program and crime. Mere exposure to a voucher program at baseline results in students being 5 percentage points less likely of being accused of a crime as young adults, all else equal.

Most of the control variables for parental characteristics behave as expected in the estimations. Having two parents in the home is strongly and consistently associated with a reduced likelihood of all types of criminal activity. The children of parents with more exposure to college are less likely to commit various crimes. The children of families with higher incomes actually

are more likely to commit misdemeanors or drug crimes, ceteris paribus, but that could be because, within a low-income population, more resources bring with them more temptations.

Table 4: Probit ITT Estimates with Parent and Student Controls

	(1) accused	(2) convict	(3) misdem	(4) felony	(5) drugs	(6) traffic	(7) theft
mpcp06	**-0.05***	**-0.04**	**-0.02+**	**-0.00**	**-0.02**	**-0.03**	**0.00**
	(0.071)	**(0.188)**	**(0.114)**	**(0.807)**	**(0.270)**	**(0.225)**	**(0.703)**
grade06	0.05*	0.05*	0.01	0.01	0.03*	0.01	0.00
	(0.070)	(0.084)	(0.473)	(0.294)	(0.068)	(0.805)	(0.721)
asian	-0.21*	-0.24*	0.00	0.00	0.00	-0.10	0.00
	(0.097)	(0.084)	(.)	(.)	(.)	(0.363)	(.)
black	0.08+	0.08+	0.04	0.05+	-0.01	0.05	0.08**
	(0.125)	(0.113)	(0.198)	(0.110)	(0.601)	(0.265)	(0.042)
hispanic	0.04	0.06	-0.00	0.04	0.00	0.09*	0.04
	(0.485)	(0.285)	(0.914)	(0.235)	(0.944)	(0.087)	(0.392)
female	-0.30***	-0.29***	-0.13***	-0.08***	-0.12***	-0.15***	-0.09***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
math	0.01	0.01	-0.03***	0.01+	0.00	0.02	0.00
	(0.721)	(0.418)	(0.004)	(0.121)	(0.796)	(0.196)	(0.569)
read	-0.01	-0.01	0.01	-0.01	0.01	0.01	-0.00
	(0.685)	(0.678)	(0.319)	(0.215)	(0.606)	(0.628)	(0.554)
high income	-0.03	-0.01	0.01	0.01	0.06**	-0.02	0.01
	(0.496)	(0.815)	(0.632)	(0.549)	(0.019)	(0.583)	(0.605)
mid income	-0.03	-0.03	0.02	0.01	0.01	-0.04	0.00
	(0.409)	(0.447)	(0.437)	(0.557)	(0.700)	(0.241)	(0.906)
low income	0.02	0.04	0.04**	-0.00	0.04**	0.00	0.02
	(0.607)	(0.241)	(0.034)	(0.784)	(0.033)	(0.886)	(0.200)
hsgrad_par	0.01	-0.00	-0.00	-0.01	-0.01	0.03	-0.04**
	(0.727)	(0.966)	(0.845)	(0.398)	(0.710)	(0.377)	(0.024)

somecoll	-0.06	-0.05	-0.03+	-0.01	-0.05**	0.02	-0.05**
	(0.166)	(0.200)	(0.139)	(0.347)	(0.025)	(0.636)	(0.013)
college	-0.01	-0.01	-0.03	-0.03	-0.05*	0.06	-0.05**
	(0.821)	(0.812)	(0.235)	(0.198)	(0.080)	(0.207)	(0.026)
both_par	-0.09**	-0.09***	-0.07***	-0.04***	-0.04**	-0.06*	-0.05***
	(0.010)	(0.006)	(0.001)	(0.002)	(0.030)	(0.069)	(0.005)
church	-0.02	-0.03	0.01	0.00	0.01	-0.05*	-0.01
	(0.558)	(0.316)	(0.637)	(0.782)	(0.387)	(0.054)	(0.459)
N	1177	1177	1354	1354	1154	1177	1154

p-values in parentheses
+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Merely being enrolled in the MPCP in 2006 is only significantly associated with a reduction in crime in one of the 14 "Intent-to-Treat" model estimations in our analysis. It may be that the kind of character transformation required to truly change the criminal destinies of young, low-income, urban students necessitates that they receive more sustained exposure to a positive private school environment. Thus, even though mere exposure to the MPCP might not produce a clear reduction in subsequent criminal behavior, sustained exposure to private schooling through the voucher program could have such effects. Therefore, we proceed to measure the effect of remaining in the program for 4 or 5 years, for baseline 9th graders and 8th graders respectively, on criminal activity.

For this "Local Average Treatment Effect" (LATE) analysis we cannot simply compare the criminal records of persistent MPCP participants with all other students in the sample (non-persistent MPCP students and all MPS) or even to all matched MPS students. The students who persist in the MPCP all the way to high school graduation are a selective group, more likely to be female, white, Hispanic, and to have higher test scores than the students who did not persist in

the program (Cowen et al., 2012). Although we could control for differences in these measurable factors in our models, the fact that MPCP persisters differ from their peers so clearly on measurable factors suggests that they also differ from them on unmeasurable factors such as grit and conscientiousness that are related to the propensity to commit crimes. A simple comparison of the criminal activity of sustained participants in the MPCP with matched MPS students would produce estimates of MPCP program effects that likely would be biased in the direction of over estimating the effect of the MPCP on reducing crime. Because of this concern, we use Instrumental Variables (IV) in the context of Probit to attempt to remove selection bias from the *fulldose* variable of interest.

Criminal LATE Using IV Probit Controlling for Student Characteristics

We are interested in understanding the effect of getting the full intended dose of the voucher program treatment on subsequent student criminal activity. We define full dose as a 2006 voucher student staying within the program through 12th grade. We use the exposure to the voucher in 2006 as an Instrumental Variable since it can predict if the child is going to get the full dose of the program. Enrollment in the MPCP in the baseline year is a strong, relevant instrument, since the correlation between the instrument and the supposedly endogenous variable in the first stage of the IV Probit estimation is 0.49. The instrument is exogenous based on the assumption that the original matching procedure is successful in approximating random assignment. Central to this assumption is the fact that we matched students on neighborhood as well as key student background characteristics such as test scores, an approach that appears to proxy for parent motivation and moral values. Bifulco (2012) finds in his within-study replications that matching procedures like ours are the best way to replicate experimental results.

Our third model conditions the probability that a given student, i, reached a certain criminal activity outcome as follows:

$$Prob\ (Criminal\ Activity) = \beta_0 + \delta_1 \sim MPCPfulldose_i + \beta_1 X_i + \beta_2 test_{2006} + \varepsilon_i$$
$$Prob\ (MPCP\text{fulldose}) = \alpha_0 + \pi_1 MPCP06_i + \alpha_1 X_i + \alpha_2 test_{2006} + \varepsilon_i$$

which we estimate via probit, where for each outcome of interest, $\delta_1$is the difference associated with persistence in the MPCP (enrolled in the MPCP through 12th grade) after accounting for the vector X of student race, gender, and baseline grade (8th or 9th) indicators; and $test_{2006}$, a vector of student math and reading test scores in 2006, standardized to have a mean of zero and a standard deviation of one. We use MPCP06 (exposure to the voucher in 2006) as our instrument for being enrolled in the program through 12th grade, with *~MPCPfulldose* as the predicted value of *MPCPfulldose* from the first stage. Because *MPCPfulldose* represents the group-wide prediction of persisting in the program, and not the actual sorting behavior of students, it is much less likely to be biased in estimating the effect of the MPCP on crime.

The results displayed in Table 5 show that six of the categories of crimes (misdemeanor, felony, accused, convict, drugs, and traffic) have negative coefficients while only one (theft) has a positive coefficient. None of these are statistically significant, although some of them are substantively large (over 4 percentage points). The IV Probit model is notorious for inefficiency, as the replacement of a possibly endogenous actual variable with its unbiased predicted value dissipates study power and, therefore, increases the risk of Type II estimation errors (false negatives). To gain greater precision in our estimates, we proceed to our final IV Probit estimation which adds parent controls to the model.

Table 5: IV Probit LATE Estimates with Student Controls

	(1) accused	(2) convict	(3) misdem	(4) felony	(5) drugs	(6) traffic	(7) theft
~fulldose	**-0.06**	**-0.04**	**-0.04**	**-0.01**	**-0.03**	**-0.05**	**0.01**
	(0.28)	**(0.44)**	**(0.21)**	**(0.63)**	**(0.30)**	**(0.34)**	**(0.87)**
grade06	0.02	0.01	0.01	0.00	0.02	-0.01	-0.00
	(0.38)	(0.55)	(0.71)	(0.86)	(0.17)	(0.71)	(0.78)
asian	-0.08	-0.06	-0.07	0.00	-0.11**	0.02	0.00
	(0.31)	(0.45)	(0.17)	(.)	(0.05)	(0.70)	(.)
black	0.08*	0.08**	0.04	0.01	-0.02	0.05	0.03
	(0.06)	(0.05)	(0.15)	(0.46)	(0.26)	(0.18)	(0.24)
hispanic	0.03	0.05	-0.03	-0.02	-0.02	0.07*	-0.04
	(0.53)	(0.27)	(0.40)	(0.40)	(0.51)	(0.08)	(0.23)
female	-0.28***	-0.27***	-0.11***	-0.09***	-0.11***	-0.15***	-0.09***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
math	0.01	0.02	-0.02***	0.01	0.00	0.03**	0.00
	(0.42)	(0.22)	(0.00)	(0.23)	(0.70)	(0.03)	(0.69)
read	-0.01	-0.01	0.00	-0.01*	-0.00	0.01	-0.01
	(0.34)	(0.47)	(0.86)	(0.06)	(0.86)	(0.67)	(0.19)
N	1842	1842	2178	2095	1842	1842	1780

p-values in parentheses
+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Criminal LATE Using IV Probit Controlling for Student and Parent Characteristics

The fourth model is as follows:

$$Prob\ (Criminal\ Activity) = \beta_0 + \delta_1 \sim MPCPfulldose_i + \beta_1 X_i + \beta_2 test_{2006} + \beta_3 Z_i + \varepsilon_i$$
$$Prob\ (MPCP\text{fulldose}) = \alpha_0 + \pi_1 MPCP06_i + \alpha_1 X_i + \alpha_2 test_{2006} + \alpha_3 Z_i + \varepsilon_i$$

which we estimate via probit, where for each outcome of interest, $\delta_1$is the difference associated with persistence in the MPCP (enrolled in the MPCP through 12th grade) after accounting for the vector X of student race, gender, and baseline grade (8th or 9th) indicators; vector Z of parent

income levels, education levels, churchgoing activity, and whether both parents lived at home; and $test_{2006}$, a vector of student math and reading test scores in 2006, standardized to have a mean of zero and a standard deviation of one. Again, we instrument for actual MPCP persistence by replacing that variable with the prediction of persistence obtained by using 2006 MPCP enrollment as an instrumental variable in the first stage of an IV Probit estimation.

The results, displayed in Table 6, show the estimated Local Average Treatment Effect after adjusting for non-compliance by instrumenting for whether or not a student received a full dose of the MPCP treatment. The signs of all the coefficients on the full dose variable are negative, except theft, which has a coefficient of zero. Full exposure to the voucher program again is statistically insignificant in its association with every type of crime except for misdemeanors and simply being accused of a crime. Full exposure to the voucher program in high school resulted in students being about 7 percentage points less likely to be found guilty of a misdemeanor, all else equal. Full exposure to the voucher program in high school resulted in students being about 12 percentage points less likely to be accused of any crime, all else equal. Again, most control variables behave as expected, with being female and living in a household with two parents demonstrating consistently strong effects on reducing the likelihood of criminal activity.

Table 6: IV Probit LATE Estimates with Parent and Student Controls

	(1) accused	(2) convict	(3) misdem	(4) felony	(5) drugs	(6) traffic	(7) theft
~fulldose	**-0.12***	**-0.08**	**-0.07***	**-0.02**	**-0.04**	**-0.07**	**0.00**
	(0.066)	**(0.183)**	**(0.053)**	**(0.494)**	**(0.274)**	**(0.223)**	**(0.963)**
grade06	0.07**	0.06**	0.02	0.01	0.04**	0.01	0.00
	(0.032)	(0.049)	(0.310)	(0.254)	(0.041)	(0.613)	(0.807)
asian	-0.20+	-0.23+	0.00	0.00	0.00	-0.10	0.00
	(0.125)	(0.103)	(.)	(.)	(.)	(0.390)	(.)
black	0.08+	0.08+	0.04	0.04+	-0.01	0.05	0.08**
	(0.133)	(0.120)	(0.228)	(0.112)	(0.585)	(0.272)	(0.040)
hispanic	0.05	0.07	-0.00	0.04	0.01	0.09*	0.03
	(0.393)	(0.240)	(0.957)	(0.236)	(0.865)	(0.070)	(0.408)
female	-0.29***	-0.28***	-0.13***	-0.08***	-0.12***	-0.15***	-0.09***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
math	0.01	0.01	-0.03***	0.01+	0.00	0.02	0.00
	(0.694)	(0.403)	(0.003)	(0.132)	(0.787)	(0.187)	(0.576)
read	-0.01	-0.01	0.01	-0.01	0.01	0.01	-0.00
	(0.778)	(0.749)	(0.285)	(0.289)	(0.563)	(0.580)	(0.576)
high income	-0.04	-0.01	0.02	0.01	0.06**	-0.03	0.01
	(0.477)	(0.798)	(0.615)	(0.546)	(0.019)	(0.569)	(0.614)
mid income	-0.03	-0.03	0.02	0.01	0.01	-0.04	0.00
	(0.436)	(0.469)	(0.388)	(0.565)	(0.668)	(0.259)	(0.933)
low income	0.02	0.04	0.04**	-0.00	0.04**	0.00	0.02
	(0.599)	(0.240)	(0.025)	(0.765)	(0.032)	(0.899)	(0.205)
hsgrad_par	0.01	-0.00	-0.00	-0.01	-0.01	0.03	-0.04**
	(0.733)	(0.961)	(0.876)	(0.439)	(0.701)	(0.394)	(0.028)
somecoll	-0.05	-0.05	-0.03	-0.01	-0.05**	0.02	-0.04**
	(0.202)	(0.229)	(0.170)	(0.398)	(0.030)	(0.597)	(0.016)
college	-0.00	-0.00	-0.03	-0.02	-0.04+	0.06	-0.05**
	(0.994)	(0.937)	(0.339)	(0.222)	(0.109)	(0.172)	(0.030)
both_par	-0.09***	-0.09***	-0.07***	-0.04***	-0.04**	-0.06*	-0.05***

	(0.009)	(0.005)	(0.001)	(0.002)	(0.029)	(0.066)	(0.006)
church	-0.01	-0.02	0.01	0.00	0.01	-0.04*	-0.01
	(0.652)	(0.371)	(0.597)	(0.783)	(0.360)	(0.073)	(0.444)
N	1177	1177	1354	1354	1154	1177	1154

p-values in parentheses
+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Criminal Average Treatment Effect Using Propensity Score Matching

The IV Probit approach, though assumed to be necessary in this case, is analytically inefficient. To gain more efficiency in our estimation of the Average Treatment Effect (ATE) of full exposure to the MPCP program on crime we use propensity score matching to pair up full dose MPCP students with the MPS students most likely to have been persistent MPCP participants had they been enrolled in MPCP in 2006, based on student and family background factors. Table 7 indicates that students getting the *full dose* of the program commit less crimes on average compared to MPS students with a "full dose" propensity, for certain types of crime. At the 99% level of confidence, students that got the full dose were 5 percentage points less likely to be found guilty of a misdemeanor and 3 percentage points less likely to be found guilty of a felony. At the 95% confidence level they were 2 percentage points less likely to be convicted of theft.

Table 7: Propensity Score Matching ATE Estimates with Student Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	accused	**convict**	**misdem**	**felony**	**drugs**	**traffic**	**theft**
fulldose	-0.04	-0.03	-0.05***	-0.03***	-0.03+	0.02	-0.02*
	(0.272)	(0.444)	(0.005)	(0.000)	(0.114)	(0.635)	(0.098)
N	1842	1842	2178	2178	1842	1842	1842

p-values in parentheses
+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Male Subgroup ITT Using Probit Controlling for Student and Parent Characteristics

Since males are much more likely to commit crimes than their female counterparts, we continue with a male subgroup analysis using the three different approaches which all control for student and parent characteristics. First, we start with ITT estimates for males that were exposed to the voucher program at baseline. These results, found in Table 8 below, are negative but are not statistically significant. Again, it appears that mere exposure to the program at baseline does not have a statistically significant effect for males.

Table 8: Male Probit ITT Estimates with Parent and Student Controls

	(1) accused	(2) convict	(3) misdem	(4) felony	(5) drugs	(6) traffic	(7) theft
mpcp06	**-0.06**	**-0.03**	**-0.03+**	**0.00**	**-0.02**	**-0.04**	**0.00**
	(0.152)	**(0.363)**	**(0.105)**	**(0.982)**	**(0.196)**	**(0.232)**	**(0.740)**
fem*mpcp06	0.01	-0.00	0.02	-0.02	0.02	0.02	0.00
	(0.828)	(0.955)	(0.582)	(0.481)	(0.476)	(0.636)	(0.993)
grade06	0.05*	0.05*	0.01	0.01	0.03*	0.01	0.00
	(0.073)	(0.083)	(0.482)	(0.288)	(0.074)	(0.827)	(0.722)
asian	-0.21*	-0.24*	0.00	0.00	0.00	-0.10	0.00
	(0.097)	(0.084)	(.)	(.)	(.)	(0.363)	(.)
black	0.08+	0.08+	0.04	0.05+	-0.01	0.05	0.08**
	(0.125)	(0.113)	(0.202)	(0.109)	(0.593)	(0.264)	(0.041)
hispanic	0.04	0.06	-0.01	0.04	0.00	0.09*	0.04
	(0.486)	(0.285)	(0.892)	(0.231)	(0.967)	(0.088)	(0.390)
female	-0.30***	-0.29***	-0.14***	-0.07***	-0.14***	-0.16***	-0.09***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
math	0.01	0.01	-0.03***	0.01+	0.00	0.02	0.00

	(0.715)	(0.420)	(0.004)	(0.123)	(0.786)	(0.192)	(0.571)
read	-0.01	-0.01	0.01	-0.01	0.01	0.01	-0.00
	(0.691)	(0.677)	(0.306)	(0.189)	(0.585)	(0.616)	(0.552)
high income	-0.03	-0.01	0.02	0.01	0.06**	-0.02	0.01
	(0.498)	(0.815)	(0.633)	(0.557)	(0.017)	(0.592)	(0.605)
mid income	-0.03	-0.03	0.02	0.01	0.01	-0.04	0.00
	(0.416)	(0.444)	(0.437)	(0.579)	(0.684)	(0.254)	(0.905)
low income	0.02	0.04	0.04**	-0.00	0.04**	0.00	0.02
	(0.605)	(0.241)	(0.034)	(0.767)	(0.032)	(0.882)	(0.199)
hsgrad_par	0.01	-0.00	-0.00	-0.01	-0.01	0.03	-0.04**
	(0.723)	(0.965)	(0.854)	(0.382)	(0.723)	(0.370)	(0.025)
somecoll	-0.06	-0.05	-0.03+	-0.01	-0.05**	0.02	-0.05**
	(0.168)	(0.200)	(0.141)	(0.353)	(0.026)	(0.625)	(0.013)
college	-0.01	-0.01	-0.03	-0.03	-0.05*	0.06	-0.05**
	(0.820)	(0.812)	(0.236)	(0.203)	(0.081)	(0.207)	(0.026)
both_par	-0.09**	-0.09***	-0.07***	-0.04***	-0.04**	-0.06*	-0.05***
	(0.010)	(0.006)	(0.001)	(0.002)	(0.030)	(0.069)	(0.005)
church	-0.02	-0.03	0.01	0.00	0.01	-0.05*	-0.01
	(0.568)	(0.315)	(0.615)	(0.826)	(0.362)	(0.058)	(0.459)
N	1177	1177	1354	1354	1154	1177	1154

p-values in parentheses
+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Male Subgroup LATE Using IV Probit Controlling for Student and Parent Characteristics

We continue with a male subgroup analysis using the IV Probit approach controlling for student and parent characteristics. Here, we examine the effect of the full dose of the program on male students and present results in Table 9.

The signs of all the coefficients on the full dose male variable are negative, except for theft, which is zero. The magnitudes of the coefficients on the full dose variable are much larger

for males, but standard errors are still relatively high since the estimates are derived from the male half of the original sample. Full exposure to the voucher program has a statistically significant negative relationship with a student being accused of any type of crime and being found guilty of a misdemeanor. Full exposure to the voucher program in high school resulted in male students being about 17 percentage points less likely to be accused of any crime, and about 9 percentage points less likely to be found guilty of a misdemeanor, all else equal. Again, most control variables behave as expected, with being female and living in a household with two parents demonstrating consistently strong effects on reducing the likelihood of criminal activity. Here, being in a higher grade at baseline is associated with a higher likelihood of male students being found guilty of certain types of crimes, perhaps because they are, on average, a year older than the baseline 8th graders also in the sample.

Table 9: Male IV Probit LATE Estimates with Parent and Student Controls

	(1) accused	(2) convict	(3) misdem	(4) felony	(5) drugs	(6) traffic	(7) theft
~fulldose	**-0.17***	**-0.11**	**-0.09***	**-0.01**	**-0.06**	**-0.12**	**0.00**
	(0.084)	**(0.248)**	**(0.066)**	**(0.733)**	**(0.232)**	**(0.167)**	**(0.912)**
fem*fulldose	0.09	0.05	0.05	-0.04	0.06	0.10	0.00
	(0.460)	(0.684)	(0.500)	(0.515)	(0.451)	(0.385)	(0.989)
grade06	0.06**	0.06*	0.02	0.01	0.04**	0.01	0.00
	(0.036)	(0.052)	(0.313)	(0.250)	(0.045)	(0.646)	(0.807)
asian	-0.19+	-0.23+	0.00	0.00	0.00	-0.10	0.00
	(0.128)	(0.105)	(.)	(.)	(.)	(0.396)	(.)
black	0.08+	0.08+	0.04	0.04+	-0.02	0.05	0.08**
	(0.134)	(0.122)	(0.237)	(0.110)	(0.578)	(0.275)	(0.040)
hispanic	0.05	0.07	-0.00	0.04	0.00	0.09*	0.03
	(0.404)	(0.246)	(0.929)	(0.232)	(0.892)	(0.076)	(0.407)
female	-0.31***	-0.29***	-0.14***	-0.07***	-0.14***	-0.17***	-0.09***

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
math	0.01	0.01	-0.03***	0.01+	0.00	0.02	0.00
	(0.660)	(0.390)	(0.004)	(0.141)	(0.764)	(0.174)	(0.579)
read	-0.00	-0.01	0.01	-0.01	0.01	0.01	-0.00
	(0.800)	(0.762)	(0.275)	(0.262)	(0.548)	(0.559)	(0.573)
high income	-0.04	-0.01	0.02	0.01	0.06**	-0.03	0.01
	(0.476)	(0.798)	(0.623)	(0.550)	(0.016)	(0.576)	(0.618)
mid income	-0.03	-0.03	0.02	0.01	0.01	-0.04	0.00
	(0.465)	(0.485)	(0.388)	(0.584)	(0.642)	(0.286)	(0.937)
low income	0.02	0.04	0.04**	-0.00	0.05**	0.00	0.02
	(0.591)	(0.237)	(0.026)	(0.752)	(0.032)	(0.885)	(0.207)
hsgrad_par	0.01	-0.00	-0.00	-0.01	-0.01	0.03	-0.04**
	(0.725)	(0.966)	(0.876)	(0.426)	(0.713)	(0.384)	(0.028)
somecoll	-0.05	-0.05	-0.03	-0.01	-0.05**	0.02	-0.04**
	(0.213)	(0.236)	(0.170)	(0.404)	(0.030)	(0.577)	(0.016)
college	-0.00	-0.00	-0.03	-0.02	-0.05+	0.06	-0.05**
	(0.993)	(0.936)	(0.338)	(0.229)	(0.110)	(0.174)	(0.030)
both_par	-0.09***	-0.09***	-0.07***	-0.04***	-0.04**	-0.06*	-0.05***
	(0.010)	(0.006)	(0.001)	(0.002)	(0.030)	(0.069)	(0.006)
church	-0.01	-0.02	0.01	0.00	0.02	-0.04*	-0.01
	(0.682)	(0.385)	(0.574)	(0.822)	(0.344)	(0.083)	(0.446)
N	1177	1177	1354	1354	1154	1177	1154

p-values in parentheses
+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Male Subgroup Average Treatment Effect Using Propensity Score Matching

Again, since the IV Probit approach is analytically inefficient, we also use propensity score matching for the male subgroup analysis. Table 10 indicates that male students getting the full dose of the program commit less crimes on average compared to male MPS students with a "full dose" propensity, for every type of crime. At the 99% level of confidence, male students were

about 11 percentage points less likely to be found guilty of a misdemeanor, 6 percentage points less likely to be found guilty of a felony, 25 percentage points less likely to be accused of any type of crime, 22 percentage points less likely to be convicted of any type of crime, and 11 percentage points less likely to be found guilty of a drug-related crime. At the 95% level of confidence, male students were about 13 percentage points less likely to commit a traffic-related crime and 7 percentage points less likely to commit a theft-related crime.

Table 10: Male Propensity Score Matching ATE Estimates with Student Controls

	(1) **accused**	(2) **convict**	(3) **misdem**	(4) **felony**	(5) **drugs**	(6) **traffic**	(7) **theft**
fulldose	-0.25***	-0.22***	-0.11***	-0.06***	-0.11***	-0.13**	-0.07**
	(0.000)	(0.002)	(0.002)	(0.000)	(0.000)	(0.043)	(0.013)
N	509	509	608	608	509	509	509

p-values in parentheses
+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

Overall Results & Discussion

The evidence from our five analytic model estimations on seven crime variables summarized in Table 11 suggests that participation in the MPCP school voucher program may lead to a decrease in a variety of different types of criminal activity later in life. The clearest results emerge from our most efficient statistical models: those that include parental control variables or use propensity score matching in place of IV Probit to correct for assumed selectivity in our full dose measure of program exposure. Our model estimates indicate that experiencing the MPCP

throughout high school reduces the likelihood of a student committing a misdemeanor as a young adult by 5 to 7 percentage points, of committing a felony by 3 percentage points, and of being accused of any crime by 5 to 12 percentage points.

Table 11: Effect Estimates by Model

Test	Accused	Convict	Misdem	Felony	Drugs	Traffic	Theft
ITT Probit	-0.02	-0.02	-0.01	0.00	-0.01	-0.02	0.01
ITT (Parental Controls) Probit	-0.05*	-0.04	-0.02+	0.00	-0.02	-0.03	0.00
ITT (Parental Controls) Male	-0.06	-0.03	-0.03+	0.00	-0.02	-0.04	0.00
LATE IV Probit	-0.06	-0.04	-0.04	-0.01	-0.03	-0.05	0.01
LATE (Parental Controls) IV Probit	-0.12*	-0.08	-0.07*	-0.02	-0.04	-0.07	0.00
LATE (Parental Controls) IV Probit Male Subgroup	-0.17*	-0.11	-0.09*	-0.01	-0.06	-0.12	0.00
ATE Propensity Score Matching	-0.04	-0.03	-0.05***	-0.03***	-0.03+	0.02	-0.02*
ATE Propensity Score Matching Male Subgroup	-0.25***	-0.22***	-0.11***	-0.06***	-0.11***	-0.13**	-0.07**

+ p<0.15, * p<0.1, ** p<0.05, *** p<0.01

These effects of the Milwaukee school voucher program on reducing crime are remarkably similar to the estimated effect of a 50% reduction in criminal activity from participating in public school choice identified by Deming (2011) and 40% reduction due to residential school choice specified by Dills and Hernandez-Julian (2007). The statistically significant percentage point reductions in crime associated with a full dose of the MPCP in our analysis, as a percentage of their respective incidence rates, are 75% for felonies, 56-78% for misdemeanors and 21-50% for any accusation. The two previous studies of school choice and crime had much larger samples than our study, contributing to their more precise and consistent

estimates of choice effects, but for at least some of our estimates of the effect of private school choice on crime reduction, we obtain statistically significant results that confirm those of the prior studies.

The subgroup results for males are larger in percentage point magnitude and have statistically significant reductions for all seven types of crime. The statistically significant reductions relative to incidence rates for males are 79% for felonies, 54-66% for misdemeanors, 93% for drug-related crimes, 51% for traffic-related crimes, 87% for theft, 30-52% for any accusation and 42% for any conviction (Table 12).

Table 12: Statistically Significant Relative Crime Reduction Estimates of MPCP

Group	Accused	Convict	Misdem	Felony	Drugs	Traffic	Theft
All Students	21-50%	-	56-78%	75%	-	-	-
Male Subgroup	30-52%	42%	54-66%	79%	93%	51%	87%

This is the first empirical study of the effect of a private school choice program on subsequent student criminal activity. Although the rates of criminal activity in our sample are refreshingly low, in part because these young adults from low-income urban families had only been adults for 4-7 years when we scanned the database for any criminal records, we still are able to identify a significant association between attending a private school throughout high school, via the Milwaukee Parental Choice Program, and subsequent lower levels of criminal activity in most of our more efficient statistical models. Importantly, none of our estimates indicated that exposure to the MPCP resulted in a statistically significant increase in subsequent criminal activity. The effects of the MPCP on crime that we estimate all are neutral-to-negative (with "negative" meaning crime reduction), with the clearest reductions in crime due to the

MPCP evident where we would most expect them: for young men who experienced a "full dose" of private schooling throughout their high school years.

This study has a number of limitations that we mention throughout the report. Because students were not randomly assigned to the MPCP or the public school comparison group, we cannot assume causality regarding the relationship between the voucher program and crime and must, instead, infer causality. We think that causal inference is justified in this case because: (1) there are strong theoretical reasons to expect that private schooling through a voucher program will reduce criminal behavior; (2) we use a variety of reputable statistical methods to reduce the threat of bias in our effect estimates, including "intent-to-treat", Instrumental Variables, and highly sophisticated student matching approaches; (3) our results differ little regarding the direction of the MPCP effect on crime (it is almost always negative, signaling a reduction in criminal activity) regardless of the estimation method used; (4) we observe the clearest reductions in crime due to the MPCP where we would expect to see them – on males based on our most efficient model estimations; and, (5) no previous experimental or quasi-experimental study of the effect of school vouchers and crime exists. Although our study is not perfect, it is the best study yet conducted on whether or not access to private schooling through vouchers leads to reductions in criminal behavior.

Since avoiding contact with the legal system is one of the strongest predictors of a variety of future quality of life indicators, and low-income urban students often are at high-risk of eventually committing crimes, the case for more research on the effect of school choice programs on crime prevention is compelling. Research on exactly how and why parental school choice reduces the proclivity of students to commit crimes would be especially welcome.

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