The Protective Effects of Student Reassignment: Evidence from a Districtwide Socioeconomic Integration Plan

Thurston Domina
James Carter
University of North Carolina at Chapel Hill

Deven Carlson
Oklahoma University

Matthew Lenard
Harvard University

Andrew McEachin
RAND Corporation

Introduction

In the wake of court-ordered desegregation following *Brown v. Board of Education*, a considerable body of research has demonstrated that desegregation increases student achievement, improves labor market outcomes, and reduces exposure to the criminal justice system (Ashenfelter, 2006; Baum-Snow & Lutz, 2011; Billings, Deming, & Rockoff, 2014; Card & Rothstein, 2007; Guryan, 2004; Johnson, 2011; LaFree & Arum, 2006; Mickelson, Bottia, & Lambert, 2013; Reber, 2010; Weiner, Lutz, & Ludwig, 2009). However, we know less about the various treatments that contribute to these effects. Such treatments include the redistribution of resources, peer effects, and student reassignment.

We examine one such treatment—student reassignment—and estimate the effects of involuntarily reassigning students to different schools in order to achieve district-wide diversity goals. Our analyses take advantage of an innovative socioeconomic desegregation plan that the Wake County Public School System (WCPSS) implemented between 2000 and 2010. WCPSS aimed to distribute students across the district's schools so that no more than 40 percent of students at any school would be eligible for free or reduced-price lunch (FRL) and no more than 25 percent of students performed below grade level (on state standardized tests). As part of its strategy for achieving these targets, WCPSS divided the district into approximately 1,500 geographic nodes and assigned each node to a "base" elementary, middle, and high school that served as the default school for students in the node to attend. To maintain the desired level of socioeconomic and achievement balance, WCPSS annually reassigned a number of nodes—and thus the students residing within them—to a different set of base schools.

Methods

In partnership with WCPSS, we have built a unique panel dataset that contains annual information on all students enrolled in WCPSS between 1999-00 and 2010-11, the period during which the district implemented the policy. In each of these years, we observe students' basic

demographic and academic characteristics, their home address and residential node identifier, the school to which their residential node was assigned, and the school in which they were enrolled.

We utilize a difference-in-differences strategy with an event-study specification to estimate the effect of being reassigned on several outcome variables: academic achievement, absenteeism, and suspensions. In addition to estimating the direct effects of reassignment, we also estimate two spillover parameters for non-reassigned students: 1) Effects on students attending schools that receive reassigned students and 2) Effects on students attending schools from which students were reassigned. Our main specification takes the following shape:

$$Y_{inst} = \sum_{r=1}^{4}\left(\sum_{k\leq -3}^{k\geq 3} \delta_k T_{itkr}\right) + 1(T_{itk=0} = 0)(\pi_{k=0}^{in} f_{st}^{in}) + 1(T_{itk=0} = 0)\,(\pi_{k=0}^{out} f_{st}^{out}) + X_{inst}\beta + \mu_{ng} + \sigma_t + \varepsilon_{inst}$$

where *Y* represents the outcome of interest for student *i* who lives in node *n* and attends school *s* in calendar year *t*. We specify the treatment for reassigned students via a matrix of dummy variables that indicate years relative to reassignment, which we index with *k*. When $k < 0$, T_{itkr} is a dummy variable indicating that a student lives in a node that will be reassigned in *k* years. When $k \geq 0$, T_{itkr} takes a value of 1 if the student lived in a node at the time of its reassignment *k* years ago. We specify the reference category in this matrix of dummy variables to be k = -1. We include the f_{st}^{in} and f_{st}^{out} terms to measure the potential spillover effects of reassignment. The former term measures a school's receipt of reassigned students, and is defined as the proportion of all students assigned to school *s* in year *t* who were assigned to a different school the prior year. The latter term measures the proportion of students reassigned out of a school, and is defined as of the proportion of students assigned to school *s* in year *t* - 1 who were assigned to a different school the following year.

The remainder of the model consist of a vector of observable student characteristics, X_{inst}, including dummies for student gender, race/ethnicity, Limited English Proficiency status, and special education status, a node/grade fixed effect, μ_{ng}, a year fixed effect, σ_t, and an error term ε_{inst}. We estimate this model via OLS with standard errors clustered at the node level.

Results

Our main results are shown in Table 1 and Figure 1. Overall, we find little evidence to suggest that outcomes for reassigned students differed from outcomes for students who were not reassigned in the years prior to reassignment. These findings thus allay concerns about the possibility that the timing of WCPSS decisions to reassign students in nodes were non-random conditional on observables and node fixed effects. However, outcomes for reassigned students diverge with reassignment and in the years that follow, suggesting that school reassignment had modest desirable effects on student outcomes.

We find that reassignment had no immediate effect on reassigned students' mathematics achievement, but within two years of reassignment, reassigned students' mathematics scores were slightly higher than they would have been had they not been reassigned. We do not find a

significant effect on student reading achievement. Reassigned students are less likely to be suspended in the years immediately following their school reassignment. We also find longer-term protective effects of reassignment on chronic absenteeism.

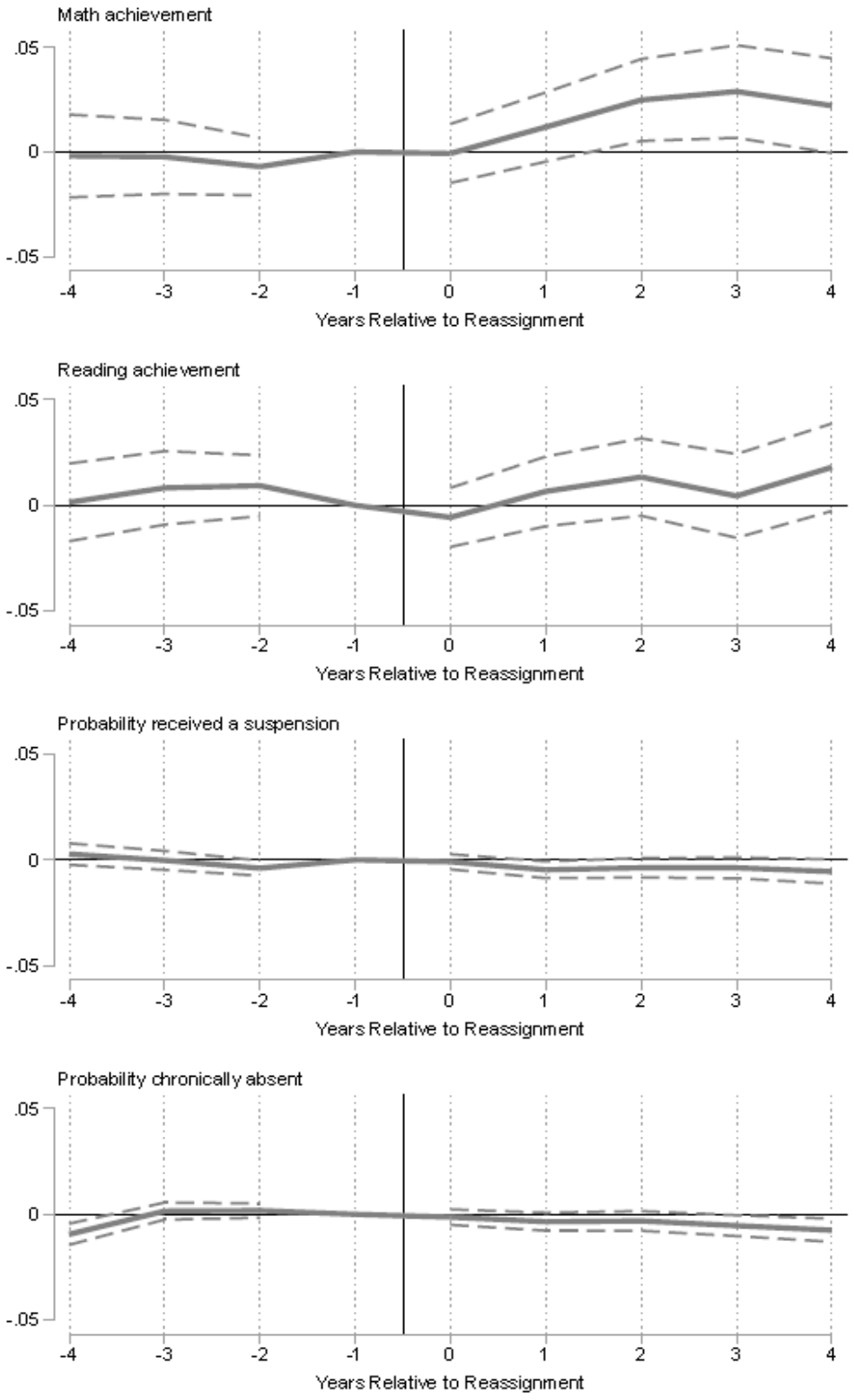
Discussion

During its period of socioeconomic-based reassignment, WCPSS was one of the fastest growing large school systems in the nation (USDOE, 2017). This enrollment growth placed intense strain on the system, forcing district leaders build new schools, update existing facilities, and modify school calendars – all while continuing to reassign students in order to meet systemwide diversity goals. One school board member protested the diversity policy at the time, writing, "This policy has resulted in … great hardships for [student's] families, and with no factual evidence provided by [the board] of this policy's benefit to our children's academic achievement" (Geary, 2009). In fact, we find that such fears were ultimately unfounded. WCPSS's reassignment policy had small, positive effects on math achievement and contributed to reducing the likelihood of suspension and chronic absenteeism. This work sheds light on a common, but understudied, feature of contemporary desegregation policies and suggests a framework for measuring its impacts in other large districts.

Table 1: Average effects of school reassignment on reassigned students and average spillover effects on nonreassigned students

	Changed school	Math ach.	Reading ach.	Prob. suspended	Prob. chronic absence	Prop. of days absent
4+ years prior to 1st reassignment	-0.014**	-0.002	0.001	0.003	-0.009***	0.001
	0.004	0.01	0.009	0.003	0.003	0.001
3 years prior to 1st reassignment	-0.014**	-0.002	0.008	0	0.002	0
	0.005	0.009	0.009	0.002	0.002	0.001
2 years prior to 1st reassignment	-0.002	-0.007	0.009	-0.004*	0.002	0
	0.004	0.007	0.007	0.002	0.002	0
1 year prior to 1st reassignment		--	--	--	--	--
Year of 1st reassignment	0.269***	-0.001	-0.006	-0.001	-0.001	-0.001*
	0.007	0.007	0.007	0.002	0.002	0
1 year after 1st reassignment	-0.009*	0.012	0.007	-0.005*	-0.003	-0.002***
	0.004	0.008	0.008	0.002	0.002	0.001
2 years after 1st reassignment	-0.015**	0.025*	0.013	-0.004	-0.003	-0.002**
	0.005	0.01	0.009	0.002	0.002	0.001
3 years after 1st reassignment	-0.020***	0.029*	0.004	-0.004	-0.005*	-0.003***
	0.005	0.011	0.01	0.003	0.003	0.001
4+ years after 1st reassignment	-0.016***	0.022	0.018	-0.006	-0.008**	-0.003***
	0.004	0.012	0.011	0.003	0.003	0.001
Fraction of students reassigned into non-reassigned students school	0.043*	0.032	0.009	0	0.007	0
	0.019	0.019	0.018	0.005	0.005	0.001
Fraction of students reassigned out of non-reassigned students' school	0.289***	-0.114***	-0.091***	-0.001	0.005	0.003*
	0.021	0.021	0.019	0.005	0.005	0.001
Lead (Fraction of students reassigned into non-reassigned students school)	-0.009	0.014	-0.001	-0.002	0.016***	0.002*
	0.009	0.019	0.018	0.004	0.005	0.001
Lead (Fraction of students reassigned out of non-reassigned students' school)	-0.029*	-0.043*	-0.022	-0.007	0.001	0.002
	0.012	0.019	0.017	0.004	0.004	0.001
Controls for race/ethnicity, grade fixed effects, year fixed effects, and node fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
	0.049	0.243	0.227	0.025	0.024	0.007
N	1071138	529755	527922	1071138	1071138	650839

Figure 1, Panels A-D: Event study effects of school reassignment on achievement and discipline



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