



The effect of school closings on student achievement

Quentin Brummet*^{*}

Center for Administrative Records Research and Applications, U.S. Census Bureau, Washington, DC 20233, United States



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ABSTRACT

Many school districts across the country are shutting schools, but school closing policies remain a very controversial issue. The current study investigates the effects of school closing policies on student achievement by examining over 200 school closings in Michigan. Relative to the previous literature, the analysis uses a broader set of school closings to thoroughly investigate heterogeneity in treatment effects based on the performance level of the closed school. The results indicate that, on average, school closings in Michigan did no persistent harm to the achievement of displaced students. Moreover, students displaced from relatively low-performing schools experience achievement gains. The displacement of students and teachers creates modest negative spillover effects on the receiving schools, however. Hence, the closing of low-performing schools may generate some achievement gains for displaced students, but not without imposing spillover effects on a large number of students in receiving schools.

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1. Introduction

Over 1800 public schools were shut in the United States after the 2008–2009 academic year alone (Common Core of Data, 2011). School closings have become common nationwide, and urban centers such as Chicago, Detroit, Kansas City, New Orleans, Oakland, Philadelphia, and Pittsburgh have all recently closed schools. In addition, as policy discussions increasingly focus on high-stakes accountability, some policymakers have suggested shutting the lowest-performing schools and shifting students to higher-performing schools as a way to increase student achievement. Community leaders and teachers unions often vehemently oppose these school closings, however. In fact, during the recent teacher strike in Chicago, the president of the Chicago Teachers Union described the district's desire to shut schools with excess capacity as the "big elephant in the room" (Lah and Botelho, 2012). Given this controversy, understanding how school closings influence student achievement is essential for policymakers, because the extent to which districts should utilize closing policies depends crucially on the effect of closings on student achievement.

Theoretically, the effect of shutting schools on student achievement is ambiguous. On the one hand, school closings may cause harm to students, because the closings disrupt peer and teacher networks. This disruption may affect the displaced students who are forced to change schools as well as students at the receiving schools who experience an influx of new students and teachers. On the other hand, being displaced

from low-performing schools may expose students to higher-quality peer groups and teachers, generating achievement gains. Hence, if students are systematically moved to higher-quality schools, the net effect of the displacement could very well be positive. Which of these effects dominates and under what circumstances is an open empirical question.

This paper provides evidence on the nature of these effects by examining school closings in Michigan. Michigan provides an excellent setting for examining school closings because a large number of schools have shut in the past decade. Using statewide student-level microdata to follow students after displacement, the study estimates the effects of school closings on both displaced students and students in nearby receiving schools. Because schools may be selected to close on the basis of their past test scores, the analysis examines the achievement trajectories of these schools prior to closure. By documenting the magnitude of the dip in test scores prior to closure, the analysis generates plausible bounds on the effect of closing schools. This bounding approach does not deliver point identified estimates, but generates policy relevant conclusions while relying on less restrictive assumptions than an approach that attempted to match closed schools to a control group of schools on the basis of past test scores. In addition, the current study examines a wide range of school closings and hence is better able than prior studies to estimate heterogeneous effects based on the performance level of the closed school. Identifying this heterogeneity is key for extrapolating these results to other settings. In particular, understanding whether districts should adopt policies of closing particularly low-performing schools will depend on the effects that closing low-performing schools generates on the achievement of both displaced students and students in the receiving schools.

* Tel.: +1 301 763 5939.

E-mail address: quentin.o.brummet@census.gov.

The results indicate that school closings in Michigan did no persistent harm to the achievement of displaced students. For reading, students experience no significant change in test scores at the time of displacement. For mathematics, students in closed schools are falling behind their peers in the district prior to closure, and this dip prior to displacement is not the result of formal school closing announcements. Student achievement in mathematics remains low in the first year in their new school, but improves markedly thereafter. In the second year following displacement, student test scores in mathematics are substantially higher than they were in the year prior to being displaced. This result suggests plausible bounds on the effect of school closings on student achievement. If the drop in test scores prior to closure is driven by a multiple period transitory shock, then the results indicate no long term effect of school closings on student achievement. If instead the drop prior to closing represents a declining trend in student achievement at the closed school, displacement has a positive impact on mathematics achievement for displaced students. In either case, school closings create modest negative spillover effects onto students in receiving schools, however, and these effects persist for multiple years. All of these results are robust to controlling for district-wide time trends and selective mobility of students out of schools prior to closure.

Intuitively, the effect of displacement varies based on the performance level of the closed school. In mathematics, students displaced from relatively low-performing schools experience gains in achievement compared to their prior performance at the closed school. In addition, the estimated effects on receiving schools vary with respect to the performance level of the closed schools. If students are displaced from relatively low-performing schools, the spillover effects are larger in magnitude. Further analysis shows positive effects in math from displacing students together to the same receiving school, but these effects are only temporary and fade after two or three years.

These results imply that districts forced to close schools due to changing demographics or financial problems do no persistent harm to the achievement of displaced students, and the spillover effects onto students in receiving schools are modest in magnitude. In addition, displaced students experience improvements in achievement if they are displaced from schools that are low-performing relative to nearby schools. Hence, school closings can be effective in raising the achievement of students in low-performing schools while imposing only modest negative spillover effects. However, a large scale policy to close low-performing schools will fail to improve average achievement district-wide because any gains from displaced students will be offset by achievement losses for students in receiving schools.

The paper proceeds as follows. Section 2 discusses the relevant literature, Section 3 describes the context and institutional details surrounding school closings in Michigan, and Section 4 outlines a conceptual model of how school closings can be expected to affect student achievement. Section 5 then discusses the data used in the analysis and Section 6 presents the empirical specification and results. Section 7 concludes, discussing policy implications of the results.

2. Literature review

The qualitative literature on school closings documents concern from both teachers and administrators that students displaced from closed schools would suffer from the displacement (Lipman and Person, 2007; Steiner, 2009; Kirshner et al., 2010). For example, Kirshner et al. (2010) investigate the closing of one large urban high school. In addition to documenting achievement losses, they report roughly 40% of students surveyed reported that they felt a sense of loss or that friendships and relationships were disrupted by the displacement. Whether this sort of disruption generates persistent achievement effects across a wide range of school closings is an empirical question.

The few quantitative studies to investigate school closing policies in particular districts have found mixed results, however.¹ Sacerdote (2012) examines the achievement of students forced to leave school due to Hurricane Katrina. His results indicate that students experience temporary sharp declines in test scores following displacement, but make up substantial ground thereafter and in many cases experience long-run achievement gains as a result of the displacement. The circumstances faced by Katrina evacuees are unique, however, and it is impossible to understand whether these results are driven by changes in family and residential circumstances due to the hurricane. In Chicago Public Schools, De la Torre and Gwynne (2009) evaluate school closings aimed at chronically low-performing schools, and find that the closings led to transitory drops in test scores.² The most comprehensive published study to date is Engberg et al. (2012), which investigates the closing of approximately 20 schools in an anonymous urban school district. The authors find that displaced students are harmed substantially, but these effects can be mitigated by sending displaced students to higher quality schools. Due to data limitations, however, they are unable to examine the achievement trajectory of students in closed schools prior to displacement. In addition, the policy investigated by Engberg et al. (2012) displaced 25% of the students in the school district in the same year. Because this large upheaval affected the majority of students in the district either directly or through spillover effects, it may be difficult to apply these results to other settings.

This disagreement about the effects of school closing policies is likely due to the fact that these results pertain to specific school closing policies, and not able to investigate broad-base and heterogeneous closing policies such as those investigated in the present analysis. By examining a larger variety of school closings, the current study seeks to add to this existing literature in three ways. First, the study examines a broader set of closings than these previous studies, and uses this large data set to investigate heterogeneity of school closing effects on the basis of school performance. Second, by using statewide micro-data, the analysis is able to account for students who leave the district after a school closing. This allows the analysis to be robust to non-random selection of students leaving the school district after a school closing. Last, the study pays particular attention to the role of teachers in school closing policies. In many school closings in Michigan, teachers are retained in the district after displacement. This generates additional spillover effects in a possibly distinct set of receiving schools.

The effect of shifting students from one school to another has also been studied in a variety of other contexts. For instance, a large literature documents achievement losses for students who change schools voluntarily or as part of a structural transition from elementary to middle school.³ As well, the school choice literature uses random lottery admissions to examine the effect of being admitted to school choice programs on a variety of student outcomes, but students who apply to school choice programs are a select sample and hence different from students displaced by school closings.⁴ The literatures on desegregation and peer effects also investigate the effect of shifting students from one school to another.⁵ All of these policies differ from school closings in that they do not include the mobility of teachers that is typically generated

¹ A related literature that explores the effects of school turnarounds and reconstitutions (i.e., replacing school staff without shifting students to other schools) finds mixed results for student outcomes (Gill et al., 2007; Hess, 2003; Brady, 2003; Malen et al., 2002).

² Ongoing work by Barrow et al. (2012) investigates a similar set of school closings from Chicago and finds persistent drops in test scores for displaced students.

³ Recent prominent papers in the voluntary student mobility literature include Hanushek et al. (2004), Xu et al. (2009), and Loeb and Valant (2011). See Rockoff and Lockwood (2010) for an examination of student mobility from elementary to middle school.

⁴ Prominent examples of the school choice literature include Rouse (1998), Cullen et al. (2005), Abdulkadiroğlu et al. (2011) and Deming (2011).

⁵ See Guryan (2004) or Reber (2010) for studies on the effects of desegregation policies and student outcomes. Imberman et al. (2012) and Angrist and Lang (2004) are prominent examples of studies that use exogenous movement of students to estimate the magnitude and structure of peer effects.

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