



credo
CENTER FOR RESEARCH ON EDUCATION OUTCOMES

Lights Off: Practice and Impact of
Closing Low-Performing Schools
2017

Volume I

Lights Off: Practice and Impact of Closing Low-Performing Schools

2017

Volume I

Chunping Han, Ph.D. – Lead Analyst
Margaret E. Raymond, Ph.D. – Project Director
James L. Woodworth, Ph.D. – Research Analyst
Yohannes Negassi, M.A. – Research Analyst
W. Payton Richardson, M.A. – Research Analyst
Will Snow, M.A. – Database Manager



credo
CENTER FOR RESEARCH ON EDUCATION OUTCOMES

© 2017 CREDO

Center for Research on Education Outcomes
Stanford University
Stanford, CA
<http://credo.stanford.edu>

CREDO, the Center for Research on Education Outcomes at Stanford University, was established to improve empirical evidence about education reform and student performance at the primary and secondary levels. CREDO at Stanford University supports education organizations and policymakers in using reliable research and program evaluation to assess the performance of education initiatives. CREDO's valuable insight helps educators and policymakers strengthen their focus on the results from innovative programs, curricula, policies and accountability practices.

Acknowledgments

CREDO gratefully acknowledges the support of the state education agencies and school districts which contributed their data to this partnership. Our data access partnerships form the foundation of CREDO's work, without which studies like this would be impossible. We strive daily to justify the confidence you have placed in us.

CREDO also acknowledges the support of the Smith Richardson Foundation for this research.

Disclaimers

The views expressed herein do not necessarily represent the positions or policies of the organizations noted above. No official endorsement of any product, commodity, service or enterprise mentioned in this publication is intended or should be inferred. The analysis and conclusions contained herein are exclusively those of the authors and are not endorsed by any of CREDO's supporting organizations, their governing boards, or the state governments, state education departments or school districts that participated in this study.

This research result used data collected and maintained by the Michigan Department of Education (MDE) and/or Michigan's Center for Educational Performance and Information (CEPI). Results, information and opinions solely represent the analysis, information and opinions of the author(s) and are not endorsed by, or reflect the views or positions of, grantors, MDE and CEPI or any employee thereof.

The research presented here utilizes confidential data from the Rhode Island Department of Education. The views expressed here are those of the author(s) and do not necessarily represent those of RIDE or other data contributors. Any error is contributable to the author(s).

The conclusions of this research do not necessarily reflect the opinions or official position of the Texas Education Agency, the Texas Higher Education Coordinating Board or the State of Texas.

Table of Contents

Executive Summary	1
Introduction.....	1
Project Approach.....	2
Major Findings	3
Implications	5
1. Introduction.....	7
Purpose of the Study	7
Context.....	7
Current Literature on School Closures	9
Research Questions in the Study	10
Outline of the Report.....	10
2. Methods and Data	11
Identifying Closed Low-Performing Schools	11
Data Structure	12
Analytic Approaches.....	14
Presentation of Results	14
3. Landscape of Closure of Low-Performing Schools	15
Distributions of Closed Low-Performing Schools	15
Rate of Closures of Low-Performing Schools	20
What Do Closed Schools Look Like?	26
Academic Performance	27
Enrollment.....	33
Summary of the Landscape of Closures	34
4. Are Similarly Low-Performing Schools Treated Equivalently?.....	35
Achievement of Charter and TPS Closures by State	35
Rate of Closures by Achievement	38
Rate of Charter and TPS Closures by Achievement.....	38
Demographics of Closed and Not-Closed Low-Performing Schools	39
Closure Rate by Poverty Level.....	40
Closure Rate by the Percentage of Minority Students	43
Rate of Charter Closures by Year of Operation.....	45
Summary of Equivalence of Closures	46

Table of Figures

Figure 1: Distribution of Closures of Low-Performing Schools by Sector	16
Figure 2: Distribution of Closures of Low-Performing Schools by Sector and Year.....	17
Figure 3: Distribution of Closures of Low-Performing Schools by Sector and Grade Span	19
Figure 4: Distribution of Closures of Low-Performing Schools by Sector and Locale	20
Figure 5: Rate of Closures of Low-Performing Schools by Sector	21
Figure 6: Rate of Closures of Low-Performing Schools by Sector and Year.....	22
Figure 7: Rate of Closures of Low-Performing Schools by Sector and Pre- and Post-SIG Adoption.....	24
Figure 8: Rate of Closures of Low-Performing Schools by Sector and Grade Span.....	25
Figure 9: Rate of Closures of Low-Performing Schools by Sector and Locale	26
Figure 10: Trend in Reading Achievement of Closed and Not-Closed Low-Performing Schools by Sector	27
Figure 11: Trend in Math Achievement of Closed and Not-Closed Low-Performing Schools by Sector	28
Figure 12: Trend in Reading Achievement of Closed Charter Schools and Closed TPS	29
Figure 13: Trend in Math Achievement of Closed Charter Schools and Closed TPS	29
Figure 14: Trend in Reading Growth of Closed and Not-Closed Low-Performing Schools by Sector	30
Figure 15: Trend in Math Growth of Closed and Not-Closed Low-Performing Schools by Sector	31
Figure 16: Trend in Reading Growth of Closed Charter Schools and Closed TPS.....	32
Figure 17: Trend in Math Growth of Closed Charter Schools and Closed TPS.....	32
Figure 18: Trend in Enrollment of Closed and Not-Closed Low-Performing Schools by Sector	33
Figure 19: Trend in Enrollment of Closed Charter Schools and Closed TPS.....	34
Figure 20: Rate of Closures of Low-Performing Schools in the Bottom Four State Ventiles of Achievement by Sector	39
Figure 21: Rate of Closures of Higher-Poverty and Lower-Poverty Low-Performing Schools by Sector	41
Figure 22: Rate of Closures of Higher-Poverty and Lower-Poverty Low-Performing Schools in Each of the Bottom Four State Ventiles of Achievement: Charter Sector	42
Figure 23: Rate of Closures of Higher-Poverty and Lower-Poverty Low-Performing Schools in Each of the Bottom Four State Ventiles of Achievement: TPS Sector.....	42
Figure 24: Rate of Closures of Higher-Minority and Lower-Minority Low-Performing Schools by Sector	43
Figure 25: Rate of Closures of Higher-Minority and Lower-Minority Low-Performing Schools in Each of the Bottom Four State Ventiles of Achievement: Charter Sector	44
Figure 26: Rate of Closures of Higher-Minority and Lower-Minority Low-Performing Schools in Each of the Bottom Four State Ventiles of Achievement: TPS Sector	44

Table of Tables

Table 1: States and Years with Low-Performing Schools under Study	13
Table 2: Distribution of Closures of Low-Performing Schools by Sector and State	18
Table 3: Rate of Closures of Low-Performing Schools by Sector and State	23
Table 4: Notations for the Final Year of Operation and Pre-Closure Periods	26
Table 5: Average Reading and Math Achievement of Closing Low-Performing Schools by Sector and State	37
Table 6: Demographics of Closed and Not-Closed Low-Performing Schools by Sector	40
Table 7: Rate of Closures of Low-Performing Charter Schools by Years of Operation.....	45

List of Acronyms & Definitions

CCD	Common Core of Data
CREDO	Center for Research on Education Outcomes
ELLs	English Language Learners
FERPA	Family Educational Rights and Privacy Act
NAEP	National Assessment of Educational Progress
NCES	National Center for Education Statistics
SIG	School Improvement Grants
TPS	Traditional Public School
VCR	Virtual Control Record
Growth	The year-to-year change in academic performance relative to one's peers. Growth can be positive or negative.

Lights Off: Practice and Impact of Closing Low-Performing Schools 2017

Volume I

Executive Summary

Introduction

For decades, communities across the country have grappled with the problem of public K-12 schools that do not deliver high-quality education to the students they serve. After more than a decade of school-based accountability, policymakers have increasingly realized that there are limits to how much effort should be made to turn around a low-performing school. Many education leaders feel a strong sense of urgency that the life chances of the students enrolled in these schools are diminished with each year of continued operation and endorse closure of those schools.

The option of closing schools that persistently perform poorly has gained traction. There are two parallel systems that engage in school closure in the public K-12 education realm. For more than a decade, the charter school sector has become more insistent in closing schools that do not meet certain academic performance benchmarks. Closure is the ultimate consequence in the contractual bargain charter school operators strike with their authorizers: Do well and your charter will be renewed, but do poorly and your charter (potentially) will lose the chance to continue. Charter schools may be closed because of academic failure, though the actual risk is diminished where their overseers are timid about demanding it. The traditional public school (TPS) arena was historically resistant to closures, especially in regions where the threat of labor reprisals was credible. But given the persistent trends in low performance in many TPS and about 15 years of evidence that alternative strategies have not produced substantial improvement, the use of closure as a policy intervention has grown in TPS across the country.

Closures of low-performing schools are usually hotly contested events. Supporters claim that by closing schools, students will be removed from an unproductive environment and be better off under the wing of other educators. They also believe that closing low-quality schools holds out the chance

to transfer the building and facilities to other uses. Opponents are concerned that school closures will disrupt students' educational experiences, cause psychological stress and impair their outcomes.

Despite heated debates over the practice, empirical evidence about school closure is limited in scope and time and has produced mixed findings. The record is particularly weak about what school settings closure students move to and how they progress academically in the post-closure era. Lacking reliable information on school closures, policymakers, educators and parents risk the future learning of affected students.

Taking advantage of the multistate, longitudinal dataset of unprecedented scale that CREDO has built under FERPA (Family Educational Rights and Privacy Act)-compliant agreements with its state education agency partners, we systematically examined closure of low-performing public schools in both the charter and TPS sectors. Our investigation covered four broad areas. First, we built a national picture of school closures, for the first time providing a comparative accounting of the practice across sectors and across the country. Given the variation we observed, we examined whether equivalently performing schools faced comparable treatment across the country. From a focus on school outcomes, we shifted the focus to the schooling trajectory of students who were enrolled in closing schools in the final years of operation. Finally, and in many ways most importantly, we studied the impact of school closure on the academic progress of closure students. By addressing these questions, we hope to provide a solid foundation for informed evaluations of – and constructive discussions on – closure as a policy instrument to cope with academically low-performing schools.

Project Approach

We used the longitudinally linked data that CREDO had developed in partnership with 26 state education agencies to pursue our inquiry. We identified low-performing, full-time, regular (non-alternative) schools and closures in those 26 states from academic year 2006-07 to 2012-13, depending on the availability of data. A school was defined as low-performing if its average reading and math scores were both in the bottom 20 percent (i.e., the bottom four ventiles) in a state in a given year as well as the previous year.¹ Then we flagged the low-performing schools as closed based on the codes of the Common Core of Data (CCD) from the National Center for Education Statistics (NCES). A total of 1,522 low-performing schools, including 1,204 TPS and 318 charters, were closed in the 26 states during our study period.

Different analyses were conducted to address different questions. One group of questions aimed to provide for the first time an aggregate picture of the practice of closing low-performing schools across the country. We used descriptive analyses and tests of differences in statistics between groups to explore what the national landscape of closing low-performing schools looked like, whether similarly low-performing schools were treated equivalently, whether there was an early transfer of students in

¹ Each ventile covers 5 percent of the school population. The first ventile includes the lowest-performing 5 percent of schools in a state in terms of achievement. The 20th ventile includes the highest-performing 5 percent of schools in a state in terms of achievement.

the year before the official closure, and what sectors and school settings displaced students moved to after their schools had closed.

The second group of questions focused on the fates of students who were enrolled in the final years of operation in the low-performing schools that closed. We employed the Virtual Control Record (VCR) method developed by CREDO in our analysis of the academic impact of closure on individual students. Using the VCR approach, a “virtual twin” was constructed for each closure student by drawing on the available records of students with identical traits and identical or very similar baseline test scores but who were enrolled in continuing low-performing schools in the same sector (charter or TPS). If matched, this virtual twin would differ from the closure student only in that one student attended a closed school. We then estimated the impact of school closure by comparing the academic progress of closure students and their virtual twins (or peers) from the same sector. The VCR matching protocol has been assessed against other possible study designs and judged to be reliable and valuable by peer reviewers.

To study the academic performance across low-performing schools, we relied on scores students received on state standardized achievement tests. Achievement tests capture what a student knows at a point in time. These test results were fitted into a bell curve format that enabled us to see how students moved from year to year in terms of academic performance and how students’ scores compared to students in other states in the study.

Two successive test scores allow us to see how much progress a student makes over a one-year period; this is also known as a growth score. Growth scores have the advantage that they allow us to zero in on the contributions of schools separately from other things that affect point-in-time scores. The parsed effect of schools in turn gives us the chance to see how students’ academic progress changes as the conditions of their education transform. This is the analytic foundation for our examination of the academic impact of school closure.

To assist the reader in interpreting the meaning of the effect sizes in our impact analysis, we include an estimate of the number of days of learning required to achieve a particular effect size.

Major Findings

Our analyses revealed the following major findings:

Closures of low-performing schools were prevalent but not evenly distributed. Closures were on the rise in the study period. Geographically, closures appeared to be concentrated in a few key states, especially so in the TPS sector. Considering locale and grade span, closure was mostly an urban phenomenon focused largely on elementary schools, where students have a longer time to recover and communities tend to have more than one school in the system to receive affected students. High school closures were rarer, probably because of strong community affinity and scarcer alternatives.

Low-performing schools that were eventually closed exhibited clear signs of weakness in the years leading to closure compared to other low-performing schools. Closing schools had lower

academic performance and smaller student enrollment than low-performing schools that were permitted to remain open. In fact, there were steady declines in both academic achievement and growth in closing schools in the last three years before closure. Enrollment in those schools also dwindled in the last few years of operation.

Variations in closures of low-performing schools by sector were particularly salient. Although the number of charter closures was smaller than that of TPS closures, the percentage of low-performing schools getting closed was higher in the charter sector than in the TPS sector. This pattern was particularly pronounced in the first (from the bottom) state ventile of achievement. On average, the academic performance of closed charter schools was lower than that of closed TPS. However, the performance differences between the charter and TPS closures varied widely from state to state, suggesting that districts and charter authorizers operated in different legislative and regulatory environments. It was also clear that within states, decision-makers in the charter and TPS arenas exercised varying degrees of political will and drew on different approaches when they determined how to deal with low-performing schools.

Closures of low-performing schools were not blind to socioeconomic status or race/ethnicity of the students who were enrolled. In both the charter and TPS sectors, and particularly in the lowest ventile of achievement, low-performing schools with a larger share of black and Hispanic students were more likely to be closed than similarly performing schools with a smaller share of disadvantaged minority students. Moreover, the closure rates for higher-poverty low-performing TPS in the bottom two ventiles surpassed the rates for lower-poverty TPS of similarly low performance. These observed inequivalent tendencies raise the issue of equity in decision-making about school closures.

There was an obvious early departure of students before the official closure. In both sectors a higher percentage of students transferred from closing schools one year before the official closure than did students attending continuing low-performing schools in the same period. The rate of early transfers was higher for closing charters than for closing TPS. Early leavers from both charter and TPS closures had worse academic performance than students who remained until the official closure as well as students who transferred from not-closed low-performing schools in the same sector in the same year.

A little less than half of displaced closure students landed in better schools. This held for both sectors. A higher share of displaced charter students ended up in better school settings than did TPS closure students, compatible with the stronger capabilities of parents of charter school students in maneuvering school choices. The chance for superior placement among students who left in the year before school closure was somewhat higher, implying some advantage for early departure given limited seats available in better local schools. Some students who did not land well in the first one or two years after closure attended a better school in the next year. However, the dominant pattern was for the schools that students attended in the second and third years following closure to mirror the quality of their schools in the previous year. The pattern possibly reflected families' preference for stability over improved quality in their choice of schools or the realistic constraint of the options for

quality alternatives. These findings resonate with a widely held concern that there is a shortage of better options for students displaced by school closures. This concern is well-founded, as better schools are critically important for students' future academic progress.

The quality of the receiving school made a significant difference in post-closure student outcomes. Closure students who attended better schools tended to make greater academic gains than did their peers from not-closed low-performing schools in the same sector, while those ending up in worse or equivalent schools had weaker academic growth than their peers in comparable low-performing settings. This pattern was stronger for TPS closure students. The finding also held for a number of racial-ethnic groups and was particularly salient for black and Hispanic closure students. The effect was most pronounced for black and Hispanic students in poverty. However, the academic benefit of closure is systematically constrained, as the supply of superior alternatives for closure students is limited and there are systemic access challenges such as parent information and district placement practices.

Implications

Views on how to deal with academically failing schools diverge among policymakers, educators and parents. As the most radical measure, closure has received politically charged debate. The findings revealed in this study establish a foundation for evidence-based discussion about the implications of closing low-performing schools.

Closing chronically low-performing schools seems to be an inevitable option. The widespread failure of school improvement strategies makes the option of keeping chronically low-performing TPS schools in the hope of making progress over time unattractive and impractical. Previous research by CREDO has also demonstrated that a charter school that performs poorly at the beginning is very unlikely to improve later on (Peltason & Raymond, 2013; Woodworth & Raymond, 2013). Hence, closing persistently low-performing schools seems to be pushed to the front as an inevitable alternative. Our findings point out several intricacies, and call for caution, in implementing this bold policy measure.

Decision-makers need to assure equity in dealing with low-performing schools. Only a small fraction of low-performing schools have been closed, and our evidence suggests that closures of low-performing schools were biased by non-academic factors. In particular, closures were tilted toward the most disadvantaged schools such as the ones with higher concentrations of students in poverty and higher shares of black and Hispanic students, which raises the issue of equity in the practice of closures. Districts and charter authorizers face exposure in this regard. They will benefit from reviewing their policies and processes for closures. They should identify and refrain from explicit and unconscious biases in decision-making about closing low-performing schools.

Distinct patterns of closures in the charter and TPS sectors call for attention to accountability in both systems. School districts have been more tolerant of low-performing TPS, as evidenced by lower rates of closures of low-performing schools in sum and by category in the TPS sector than in the

charter sector. Although districts are likely to be confronted with greater pressure from various stakeholders when dealing with academically failing schools, the well-being of students should be their top concern. Responsible districts should never let chronically low-performing schools continuously erode student learning outcomes. In the charter sector, there should not be schools with very poor performance, particularly in the lowest state ventile, since the contract with authorizers obliges individual schools to meet certain academic goals. The existence of poorly performing charter schools raises the question of how accountability is implemented. Apparently, agreement with the terms on paper is not always sufficient. What matters more is the will on the part of charter authorizers to execute the terms and take action when things go wrong in schools.

Individual states will benefit from reviewing their closure criteria and processes and from learning from the experiences of successful states. The state is the locus for the formulation and supervision of many education policies and practices. Our data demonstrated that states varied extensively in the prevalence of closing low-performing schools, the academic criteria that were applied in the decision about closures, and the focus on ensuring student academic progress in post-closure periods. Individual states have yet to review the level of rigor in their making and implementation of policies and practices for coping with low-performing schools. They can also learn useful lessons from their counterparts that have successfully closed low-performing schools, relocated closure students to better schools and promoted improved academic performance of closure students after closure.

The quality of the receiving schools plays a significant role in the academic progress of closure students. However, superior alternatives are limited. Innovative measures are called for to yield positive outcomes for students. Closing low-performing schools alone does not automatically lead to better outcomes for students, but needs to be accompanied by effective follow-up measures to ensure better treatment of students. Our findings of the role that the quality of the receiving school played in the academic progress of closure students suggest it is crucial to assign affected students to higher-performing schools. However, we cannot pin all our hopes on currently higher-performing schools if there are many students to place. Not even half of the displaced students in our analysis were able to land in better schools. The chance for superior placement will grow slimmer if there are further increases in the practice of closure. Additional options need to be designed – starting new schools, for example. It is true that new schools are likely to be mixed in quality. But if poorly performing schools are closed and better schools are kept, there will be an accumulation of high-quality schools over time.

1. Introduction

Purpose of the Study

For decades, communities across the country have grappled with the problem of public K-12 schools that do not deliver high-quality education to the students they serve. After more than a decade of school-based accountability, policymakers increasingly realize that there are limits to how much effort should be made to turn around a low-performing school. For example, the U.S. Department of Education invested \$7 billion in implementing school intervention models in schools with poor performance through School Improvement Grants (SIG), one of the largest education grant programs funded by the federal government. Most of the money was spent on models that attempted to keep and improve failing schools. However, the final report for SIG evaluation reveals, “Overall, across all grades, we found that implementing any SIG-funded model had no significant impacts on math or reading test scores, high school graduation, or college enrollment” (Dragoset et al., 2017). The prospect of perpetuating investments in low-performing schools with little or no impact is unattractive politically and financially. Many education leaders feel a strong sense of urgency that the life chances of the students enrolled in these schools are diminished with each year of continued operation and endorse closure of these schools.

The option of closing schools that persistently perform poorly has gained traction. By closing schools, the theory goes, students will be removed from the unproductive environment and be better off under the wing of other educators. Closing low-quality schools also holds out the chance to transfer the building and facilities to other uses. The image that emerges is of a clean and straightforward process that seamlessly reassigns students and removes the low-performing schools with a surgeon’s precision. Unfortunately, that is not how it works.

This study examines closures of low-performing public schools and their impact on the academic fates of closure students. Our intent is to present to decision-makers and the general public unbiased, data-driven evidence for deeper discussion of closure as a policy instrument to cope with chronically failing schools. We found that closures of low-performing schools were on the rise and were handled differently in the charter and TPS sectors. We also found that a little less than half of students displaced by closures landed in better schools, while the quality of the receiving school made a significant difference in post-closure academic progress of closure students.

Context

Two parallel systems engage in school closure in the public K-12 education realm. For more than a decade, the charter school sector has become more insistent in closing schools that do not meet certain academic performance benchmarks. Closure is the ultimate consequence in the contractual bargain charter school operators strike with their authorizers: Do well and your charter will be renewed, but do poorly and your charter (potentially) will lose the chance to continue. Charter schools may be closed because of academic failure, though the actual risk is diminished where their overseers are timid about demanding it.

The traditional public school (TPS) arena was historically resistant to closures, especially in regions where the threat of labor reprisals was credible. But given the persistent trends in low performance in many TPS and about 15 years of evidence that alternative strategies have not produced substantial improvement, the use of closure as a policy intervention has grown in TPS across the country. The education leaders who have taken a strong stand on closing TPS for academic failure have had strong positional authority and deep political pockets. Former Education Secretary Arne Duncan accused education agencies and their leaders of being "unwilling to close failing schools and create better options" (Duncan, 2009). In New York City, former mayor Michael Bloomberg closed 140 schools for low academic performance (CBS News, 2013). A few state education agencies have created "recovery districts" to remove low-performing schools from local district control, close the schools and transfer the students to other campuses. But improvement has not occurred subsequently under direct operation in the recovery district.

From the outset of the practice, closure has rested on the presumption of superior alternatives, as exemplified by Secretary Duncan: "This may seem like surrender, but in some cases it's the only responsible thing to do. It instantly improves the learning conditions for those kids and brings a failing school to a swift and thorough conclusion" (Duncan, 2009). This view received support from many reform advocates (Hess & Gift, 2008; Smarick, 2010). Superintendents, state chiefs and charter school authorizers in favor of closures take a leap of faith that students who attend low-performing schools that are ultimately closed will be able to move to better schools and gain academic progress. Similarly, school closure is seen as a means of raising the average achievement level across a district by eliminating the low-performing schools in the belief that they will be replaced by higher-performing institutions.

Closures of low-performing schools are usually hotly contested events, though the flash points differ across stakeholders. Some education leaders opposing school closures believe students are the root causes of school poor performance. For example, Jimmy Gittings, a vice president for the American Federation of School Administrators, argued, "The foundation in the development of a child begins at home. We are not getting that foundation. That's why our schools aren't strong" (Tavernise, 2010).

Teachers and their unions protest the loss of positions, often blaming the district or charter operator for failure to provide sufficient remedial support to bring about improvements. Districts decry the loss of state and federal funding that accompanies closures and worry about how remaining schools can absorb the students from the closed ones.

Parents are ambivalent about the practice. They recognize the inconvenience and disruption of searching out new school options for their children. They fear that their children will find the transition difficult, further hindering their academic progress. Worse, some parents and students fear the reaction they might receive when students' deficiencies are realized at the next school they attend. Moreover, they have a legitimate concern in many cases about the quality of the alternatives they will be offered.

In addition to academic concerns, communities protest closures due to the loss of neighborhood schools, the end of a school's often-multigenerational history, empathy for those who will lose their jobs or lack of authentic engagement with the community around the closure policy and practice.

Current Literature on School Closures

Despite heated debates over the practice, much of what we know about school closure is fragmented and anecdotal. The vast majority of low-performing schools slated for closure are in communities that have the highest concentrations of ethnic minorities and poverty (Burdick-Will, Keels, & Schuble, 2013; Nathanson, Corcoran, & Baker-Smith, 2013). What school settings closure students move to and how they progress academically in the post-closure era are less clear.

Research on the fates of closure students is thin and geographically limited and has produced mixed findings. Carlson and Lavertu (2015) found that the majority of displaced students from closed urban schools in Ohio landed in higher-quality schools. The scenario in Chicago changed over time. Only 6 percent of students affected by closures between 2001 and 2006 ended up in top-performing Chicago public schools and placements for the remaining students did not improve their chances for success (de la Torre & Gwynne, 2009). In 2013, 93 percent of displaced students went to schools that were better than the closed ones thanks to Chicago Public Schools' (CPS) implementation of measures supporting the transition of the students (de la Torre et al., 2015).² In Denver, despite a transition plan, the school closures that occurred in 2007 showed the difficulty in ensuring that all of the affected students ended up in better schools (Steiner, 2009).

Results about the academic impact of school closures in the existing literature are also inconsistent. Positive effects were found in Ohio urban districts, in New York City high schools and in New Orleans (Bross, Harris, & Liu, 2016; Carlson & Lavertu, 2015; Kemple, 2016). Barrow, Park and Schanzenbach (2011) focused on students displaced by school closures for academic failure under the Chicago Renaissance 2010 policy and found that closure of 24 elementary schools had no impact on the performance of students. Bross, Harris, and Liu (2016) discovered negative effects for displaced high school students in Baton Rouge, Louisiana. Ozek, Hansen, & Gonzalez (2012) demonstrated that displaced students had declining performance in the final year before closing *and* the first year of transfer, but the effect dissipated in the second year. Several studies probed the role of the receiving school and revealed more positive learning outcomes for closure students who moved to higher-quality schools (Bross, Harris, & Liu, 2016; Carlson & Lavertu, 2015; de la Torre & Gwynne, 2009; Engberg, Gill, Zamorro, & Zimmer, 2012; Stroub & Richards, 2016).

Each of the above studies, however, is limited in scope and time. Lacking reliable information on school closures, policymakers, educators and parents risk the future learning of students affected by closure.

² "CPS assigned all displaced students to a 'welcoming school' that was rated higher-performing than their closed schools. The district made investments in these welcoming schools and expanded the already existing Safe Passage program to include routes to these schools with adult monitors" (de la Torre et al., 2015, p.1).

Research Questions in the Study

Taking advantage of the multistate, longitudinal dataset that CREDO has built under FERPA (Family Educational Rights and Privacy Act)-compliant agreements with its state education agency partners, this study systematically examined closure of low-performing public schools in both the charter and TPS sectors. The areas of investigation included the national landscape of school closures, equivalence in the treatment of similarly performing schools, schooling trajectory of students who are enrolled in closing schools and the impact of closure on the academic progress of closure students. This report is guided by the following four sets of questions:

1. What does the landscape of closing low-performing schools look like nationally? Are the schools that eventually get closed for academic failure lower-performing than those that are allowed to remain open? Do charter schools get closed at higher or lower levels of achievement than TPS?
2. Are the fates of similarly low-performing schools treated equivalently across the country and within states? If among the worst schools only a subset is closed, are there discernible school attributes that distinguish the schools that are closed?
3. What happens to the students enrolled in low-performing schools? Is there obvious early departure of students in the year before the closure? Do the students who leave before the schools close look different from those who stay until closure? Are students attending closing schools able to find superior placements? Do school placements differ depending on the timing of the student departure?
4. How does the academic progress of students from closed schools compare to that of peers from low-performing schools that remain open? Does the impact vary by state, lapsed time since closure, number of closures experienced, student subgroup and the quality of the receiving school?

By addressing these questions, we hope to provide a solid foundation for informed evaluations of – and constructive discussions on – closure as a policy instrument to cope with academically low-performing schools. As will be shown in ensuing chapters, incidences and consequences of closures differ across sectors, states and other categories. The patterns offer helpful insights into the differences in closure mechanisms and practices to address the academic needs of affected students, which have a bearing on future policies and practices related to school closures across the country.

Outline of the Report

This report is composed of two volumes. Volume I focuses on the low-performing schools that closed. Chapter 2 gives a brief description of the data and analytic approaches, including how closed low-performing schools were identified, which states and years were covered in the study, and what analyses were conducted to address different questions. Chapter 3 depicts the national landscape of closures of low-performing schools. It finds a rise in school closures over time, higher closure rates in the charter sector than in TPS, varying likelihoods of closure across states, and concentrations of closures in elementary schools and in urban areas. Schools that were eventually closed show weaker academic performance and lower student enrollment in the years leading to closure than low-

performing schools that remained open. Chapter 4 evaluates the equivalence of treatment of similarly low-performing schools. Higher-minority schools were more slated for closure than lower-minority counterparts in both the charter and TPS sectors. Higher-poverty TPS were also more prone to be closed than lower-poverty TPS of similar performance.

In Volume II, we explore what happened to students who attended closing low-performing schools. We start with a quick roadmap for Volume II. Then Chapter 5 examines the pre- and post-closure transfers of students who were enrolled in closing schools. An obvious early departure of students in the year before school closures emerged. Slightly less than half of the students who were directly affected by closure were placed into a better school than the closed one in the year following closure. The schools which the majority of displaced students attended in the second and third years after closure were of the same quality as the schools they went to in the previous year. Chapter 6 looks into the impact of closure on student academic progress and reveals the remarkable role of the quality of the receiving school. Closure students with superior school placement made greater academic gains than their peers from continuing low-performing schools in the same sector, while those ending up in inferior or similar-performing schools had weaker growth than their counterparts from comparable low-performing settings. Chapter 7 concludes the whole report, highlighting major findings and discussing their implications for closure-related policies and practices.

2. Methods and Data

Identifying Closed Low-Performing Schools

We focused on full-time, regular (not alternative) public schools when we searched for schools that have been closed due to low academic performance. Alternative schools were excluded based on the assumption that the motivations and practices for their closure are different and merit a separate study. Thus, only regular schools consisting of full-time students constituted the pool from which we gleaned low-performing closures.

Closed low-performing schools were identified in several steps. First, we estimated the performance of each school in a year by averaging the test scores of the students in the school for reading and for math, using longitudinal student test data. Then the schools in the same state and in the same year were ranked by their performance. A school was defined as low-performing if its average reading and math scores were both in the bottom 20 percent (i.e., the bottom four ventiles) in a state in a given year as well as the previous year.³ After that, we combed the Common Core of Data (CCD) from the

³ Each ventile covered 5 percent of the school population. The first ventile included the lowest-performing 5 percent of schools in a state in terms of achievement. The 20th ventile included the highest-performing 5 percent of schools in a state in terms of achievement.

National Center for Education Statistics (NCES), flagging the low-performing schools that were coded as closed by NCES and recording the last year of operation for the closed school.

Data Structure

Table 1 lists the 26 states and the years from which we identify low-performing schools and closures.⁴ We split New York state into two units – New York City and upper New York State – as education policies, practices and outcomes differ considerably in the two regions. This division runs through our analysis and the rest of the report. A total of 1,522 closed low-performing schools were identified within our data window. In some analyses we trace school and student trajectories at least one year before or after closure. In those cases we use data for the year before the first year and the year after the last year as indicated in Table 1.

⁴ For Missouri, only Kansas City and St. Louis were included in the study due to the availability of data. High school test scores for Michigan for 2005 were not available. Since we identified low-performing schools and closures based on school performance in a given year and the previous year, closed low-performing high schools in Michigan in 2006, if there were any, were not covered in the study.

Table 1: States and Years with Low-Performing Schools under Study

State	Number of Years in Study	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Arizona	7	X	X	X	X	X	X	X
Arkansas	7	X	X	X	X	X	X	X
California	6	X	X	X	X	X	X	
Colorado	7	X	X	X	X	X	X	X
District of Columbia	7	X	X	X	X	X	X	X
Florida	7	X	X	X	X	X	X	X
Georgia	7	X	X	X	X	X	X	X
Illinois	4				X	X	X	X
Louisiana	7	X	X	X	X	X	X	X
Massachusetts	7	X	X	X	X	X	X	X
Michigan	6	X	X	X	X	X	X	
Minnesota	7	X	X	X	X	X	X	X
Missouri	7	X	X	X	X	X	X	X
Nevada	7	X	X	X	X	X	X	X
New Jersey	6		X	X	X	X	X	X
New Mexico	7	X	X	X	X	X	X	X
New York City	7	X	X	X	X	X	X	X
New York State	7	X	X	X	X	X	X	X
North Carolina	2						X	X
Ohio	7	X	X	X	X	X	X	X
Oregon	7	X	X	X	X	X	X	X
Pennsylvania	6		X	X	X	X	X	X
Rhode Island	6	X	X	X	X	X	X	
Tennessee	7	X	X	X	X	X	X	X
Texas	6		X	X	X	X	X	X
Utah	7	X	X	X	X	X	X	X
Wisconsin	6	X	X	X	X	X	X	

Note: For Missouri, only Kansas City and St. Louis were included in the study. Closed low-performing high schools in Michigan in 2006, if there were any, were not included.

Analytic Approaches

Different analyses were conducted to address different questions. One group of questions aimed to provide for the first time an aggregate picture of the practice of closing low-performing schools across the country. We used descriptive analyses and tests of differences in statistics between groups to explore what the national landscape of closing low-performing schools looked like, whether similarly low-performing schools were treated equivalently, whether there was an early transfer of students in the year before the official closure, and what sectors and school settings displaced students moved to after their schools had closed.



[Click here for an infographic about the Virtual Control Record method.](#)

The second group of questions focused on the fates of students who were enrolled in the final years of operation in the low-performing schools that closed. We employed the Virtual Control Record (VCR) method developed by CREDO (Davis & Raymond, 2012) in our analysis of the academic impact of closure on individual students. Using the VCR approach, a “virtual twin” was constructed for each closure student by drawing on the available records of students with identical traits and identical or very similar baseline test scores but who were enrolled in continuing low-

performing schools in the same sector (charter or TPS). If matched, this virtual twin would differ from the closure student only in that one student attended a closed school. We then estimated the impact of school closure by comparing the academic progress of closure students and their virtual twins (also referred to as “peers” interchangeably in the rest of the report) from the same sector. Further technical details of selecting VCRs are presented in Appendix B in Volume II. The VCR matching protocol has been assessed against other possible study designs and judged to be reliable and valuable by peer reviewers (Fortson, Verbitsky-Savitz, Kopa, & Gleason, 2012).

Presentation of Results

To study academic performance across low-performing schools, we relied on scores students received on state standardized achievement tests. Achievement tests capture what a student knows at a point in time. These test results were fitted into a bell curve format that enabled us to see how students moved from year to year in terms of academic performance and how students’ scores compared to students in other states in the study.

Two successive test scores allow us to see how much progress a student makes over a one-year period; this is also known as a growth score. Growth scores have the advantage that they allow us to zero in on the contributions of schools separately from other things that affect point-in-time scores. The parsed effect of schools in turn gives us the chance to see how students’ academic progress changes as the conditions of their education transform. This is the analytic foundation for our examination of the academic impact of school closure.

To assist the reader in interpreting the meaning of the effect sizes in our impact analysis, we include an estimate of the number of days of learning required to achieve a particular effect size. This estimate was calculated by Dr. Eric Hanushek and Dr. Margaret Raymond based on the latest National Assessment of Educational Progress (NAEP) test scores. Using a standard 180-day school year, each one standard deviation (s.d.) change in effect size is equivalent to 570 days of learning.

3. Landscape of Closure of Low-Performing Schools

Earlier work on school closures has been highly localized in scope. One of the benefits of CREDO's data-sharing partnerships with many state education agencies is the unprecedented ability to provide a wide-angle view of the practice of school closures across the 26 states included in this study. At the same time, we wish to provide important comparisons of the practice in the charter school arena and in traditional school districts. The patterns show that states differed in their use of school closure in important ways. In addition, the conditions of charter school policy imposed a different discipline upon charter schools than their district counterparts, which also surfaced distinct patterns of closures.

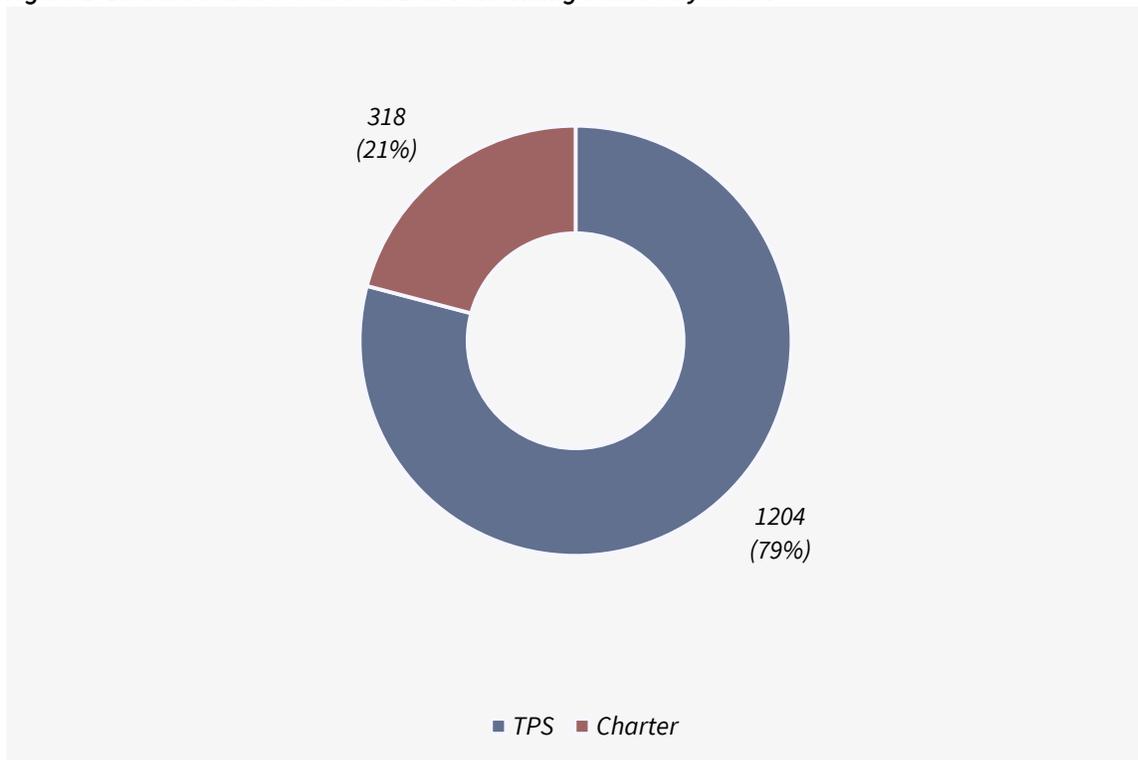
To paint a full picture of school closures in our participating states requires several passes at the data. We describe the distribution and the likelihood of closures of low-performing schools in the aggregate. We follow with results by sector (i.e., charter schools or district schools) and then further refine by state, year, grade span and locale. Then we describe the trends in academic performance and student enrollment of closed charter and TPS schools over time.

We regarded a school as low-performing if both its reading and math achievement scores were in the bottom 20 percent (i.e., bottom four ventiles) in its home state in a two-year period. They were coded as low-performing at the end of the second year.

Distributions of Closed Low-Performing Schools

A total of 1,522 low-performing schools were closed in the 26 states in the study period. Among them, 318 were charter schools and 1,204 were traditional public schools (TPS) as seen in Figure 1.

Figure 1: Distribution of Closures of Low-Performing Schools by Sector



The number of closures of low-performing schools differs across years as displayed in Figure 2 and shows an overall rising trend over the study period.⁵ The dip in 2009 was possibly due to the recession, which might raise concerns about teacher and staff layoffs induced by closures in a difficult economy.

⁵ California, Michigan, Rhode Island and Wisconsin were not included for 2012. If the same numbers of low-performing schools were closed in these four states in 2012 as in 2011, the number of charter closures for our 26 states in 2012 would be 64 and the number of TPS closures would be 236, leading to a total of 300 closures in 2012.

Figure 2: Distribution of Closures of Low-Performing Schools by Sector and Year

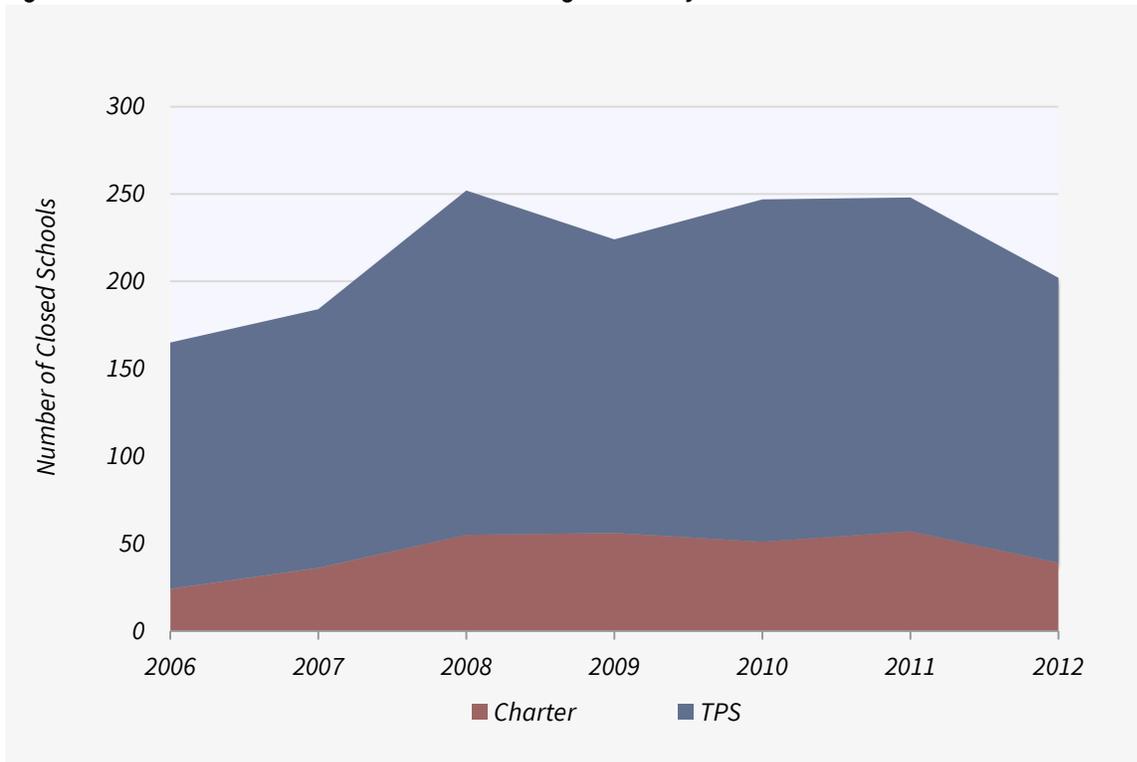


Table 2 presents the distribution of closed low-performing schools across states. The percentages distribution is shaded in red for charter closures and in blue for TPS closures. Darker hues reflect states that had larger fractions of the closures. The number of closures ranged from zero in Nevada, New York City, Rhode Island and Utah to 53 in Ohio in the charter arena and from one in Nevada to 183 in Michigan in the TPS sector. It needs to be noted as well that Detroit alone had 14 charter closures and 82 TPS closures during the years under study, which contributed to a large number of closures in Michigan.

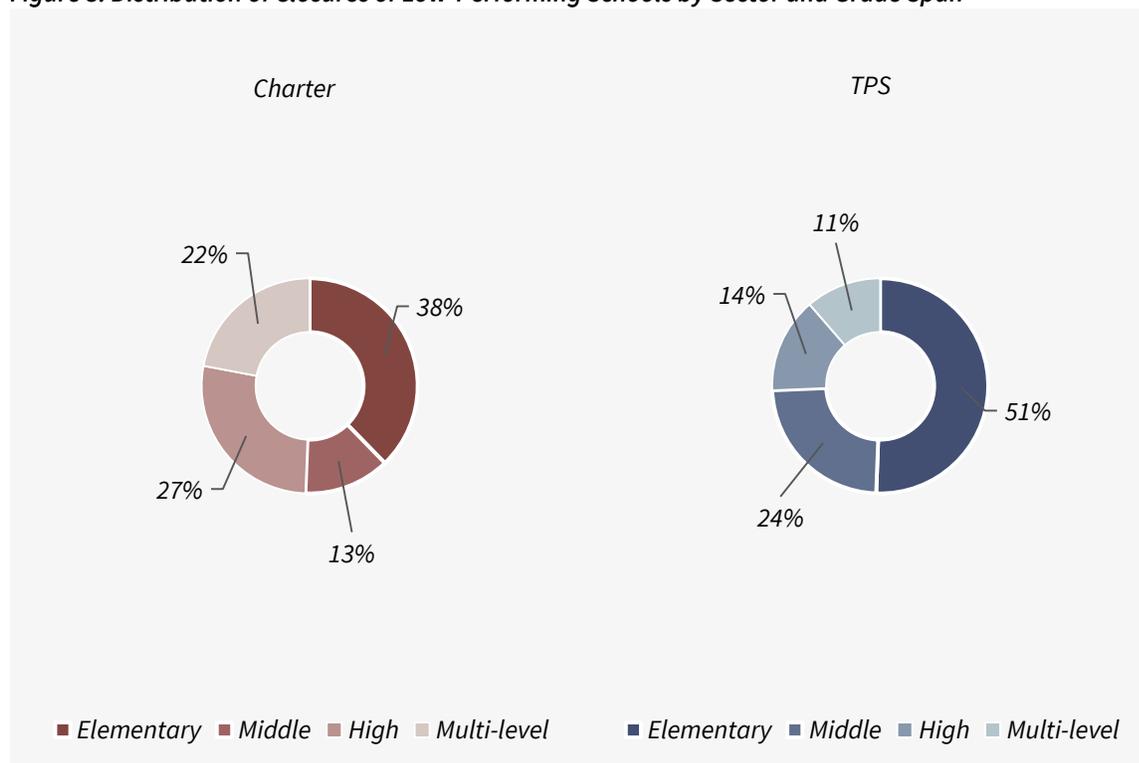
Table 2: Distribution of Closures of Low-Performing Schools by Sector and State

State	Number of Years under study	Number of Charter Closures	% Distribution of Charter Closures by State	Number of TPS Closures	% Distribution of TPS Closures by State
Arizona	7	33	10.4%	14	1.2%
Arkansas	7	5	1.6%	34	2.8%
California	6	44	13.8%	90	7.5%
Colorado	6	11	3.5%	47	3.9%
District of Columbia	7	3	0.9%	9	0.7%
Florida	7	34	10.7%	24	2.0%
Georgia	7	7	2.2%	59	4.9%
Illinois	4	1	0.3%	66	5.5%
Louisiana	7	1	0.3%	58	4.8%
Massachusetts	7	3	0.9%	55	4.6%
Michigan	6	30	9.4%	183	15.2%
Minnesota	7	18	5.7%	62	5.1%
Missouri	7	8	2.5%	7	0.6%
Nevada	7	0	0.0%	1	0.1%
New Jersey	7	6	1.9%	33	2.7%
New Mexico	7	3	0.9%	3	0.2%
New York City	7	0	0.0%	31	2.6%
New York State	7	5	1.6%	37	3.1%
North Carolina	2	3	0.9%	5	0.4%
Ohio	7	53	16.7%	112	9.3%
Oregon	7	5	1.6%	18	1.5%
Pennsylvania	6	3	0.9%	91	7.6%
Rhode Island	7	0	0.0%	9	0.7%
Tennessee	7	2	0.6%	24	2.0%
Texas	6	8	2.5%	74	6.1%
Utah	7	0	0.0%	15	1.2%
Wisconsin	6	32	10.1%	43	3.6%

Note: For Missouri, only Kansas City and St. Louis were studied.

A look at the breakdown by grade span in Figure 3 indicates that elementary schools accounted for the largest number of low-performing closures in both charter and TPS sectors. About 38 percent of charter closures were elementary schools, followed by high schools that make up 27 percent.⁶ The percentages of closed charter middle and multi-level (serving students from more than one grade span) schools were smaller. In the TPS sector, 51 percent of closures were elementary schools, followed by middle, high, and multi-level schools, which constituted 24, 14 and 11 percent respectively.

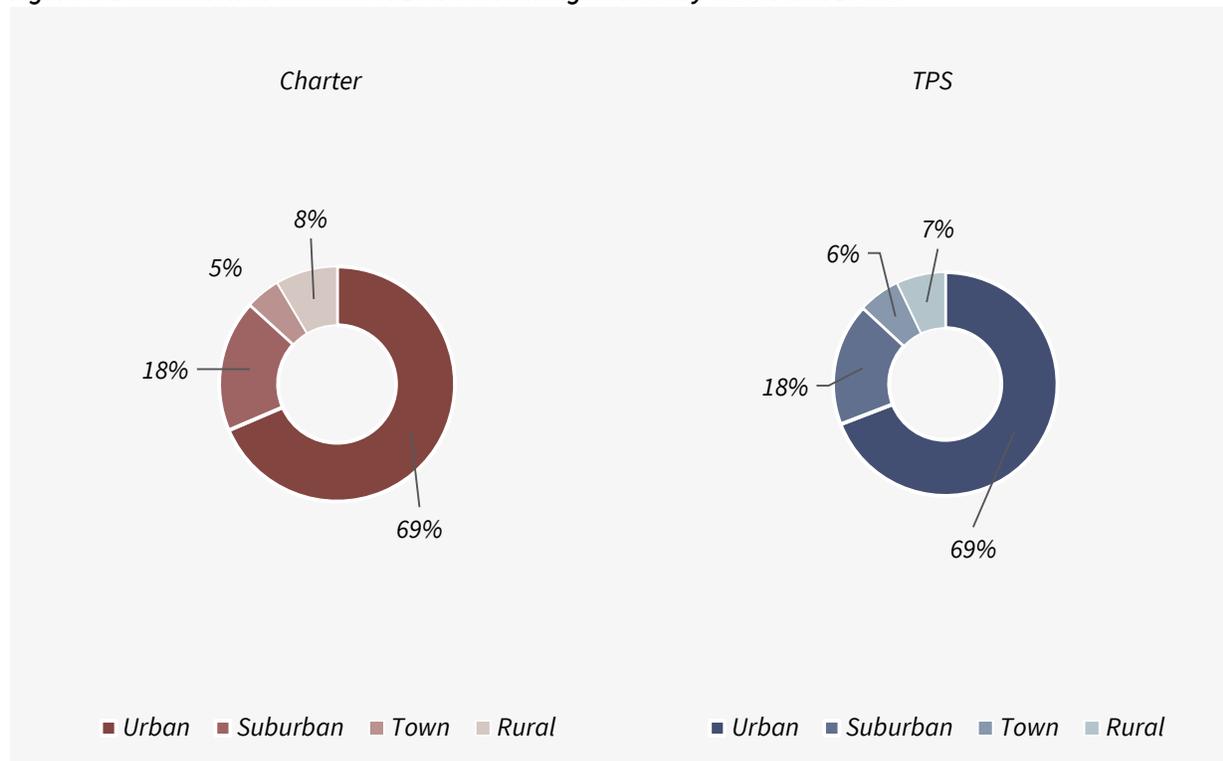
Figure 3: Distribution of Closures of Low-Performing Schools by Sector and Grade Span



⁶ While we used NCES level designations for this study, we counted any school with the lowest grade of grade 9 or higher to be a high school. NCES classifies schools as high schools only if they serve 12th grade students.

Much media attention has focused on school closures in major cities. Our data illustrated the concentration of closures in urban areas. Nonetheless, there were closures in other locales as well. Figure 4 shows that in both charter and TPS sectors, around 70 percent of closed schools were located in urban areas and nearly 20 percent of closures were suburban. The percentages of closures in towns and in rural areas were in the single digits. It is interesting that these distributions were nearly identical.

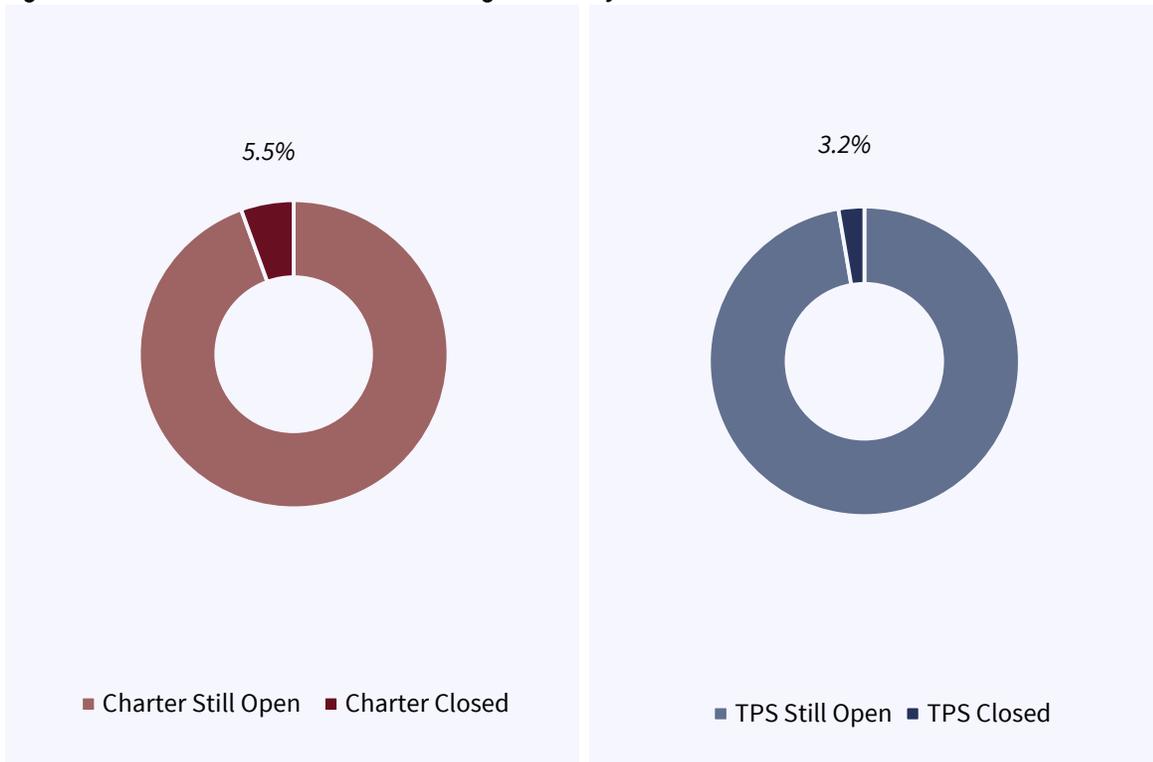
Figure 4: Distribution of Closures of Low-Performing Schools by Sector and Locale



Rate of Closures of Low-Performing Schools

Only a small fraction of low-performing schools were closed, while most were permitted to remain open. As shown in Figure 5, only 5.5 percent of low-performing charter schools were closed. The rate for low-performing TPS schools was even lower, standing at 3.2 percent.

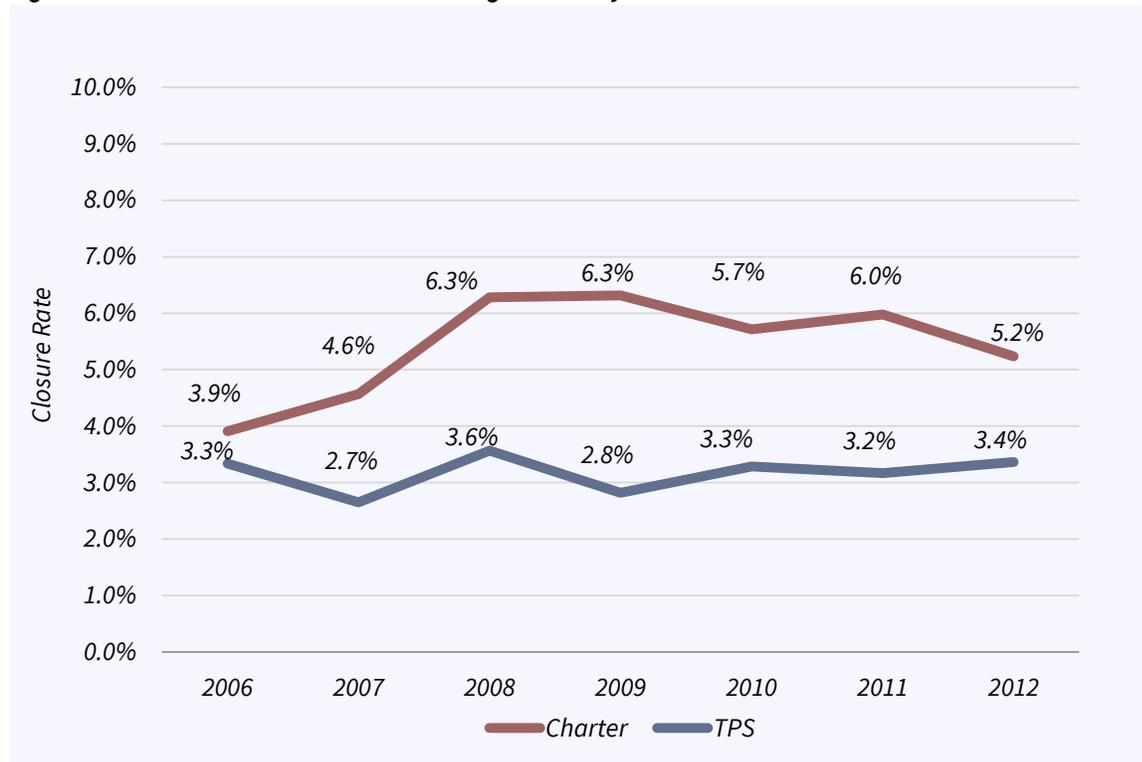
Figure 5: Rate of Closures of Low-Performing Schools by Sector



Note: The difference in the rate of closures between the two sectors is significant at the level of 0.01.

Year-by-year comparison in Figure 6 indicates that the rate of closures of low-performing charter schools has increased over time, from 3.9 percent in 2006 to a high of 6.3 percent in 2009; later years also showed an increased use of closure. The trend mirrors activity in many of the states included in this study to more diligently address the problem of charter schools that were not performing well. Conversely, closure of traditional public schools has remained largely stable over the same period, albeit at the lower rate as mentioned earlier.

Figure 6: Rate of Closures of Low-Performing Schools by Sector and Year



The disaggregation of closure rates by state in Table 3 reveals that the majority of the states have closed a higher percentage of low-performing schools in the charter sector than in TPS. The District of Columbia (D.C.) and Missouri (Kansas City and St. Louis) stood out in terms of the rate of charter closures. Many other states have also shut down a non-trivial percentage of low-performing charter schools. This pattern demonstrates that some authorizers take seriously their role as gatekeeper of the academic quality of the charter schools under their supervision. In contrast, the closure rate in the TPS arena was generally low, and only a few states (such as Michigan and D.C.) have pushed the use of closures to deal with low-performing schools.

Table 3: Rate of Closures of Low-Performing Schools by Sector and State

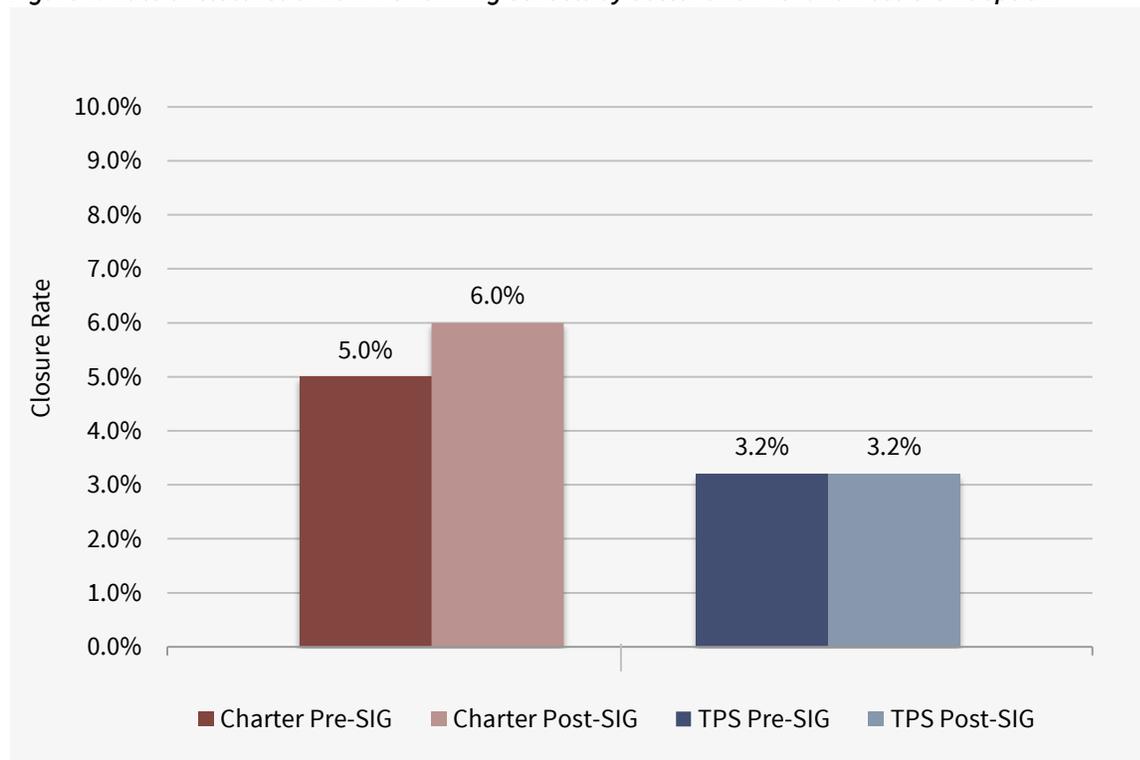
State	Number of Years under study	Number of Charter Closures	Rate of Charter Closures	Number of TPS Closures	Rate of TPS Closures
Arizona	7	33	4.5%	14	2.1%
Arkansas	7	5	16.7%	34	5.0%
California	6	44	7.5%	90	2.0%
Colorado	6	11	8.9%	47	3.2%
District of Columbia	7	3	21.4%	9	7.0%
Florida	7	34	11.4%	24	1.0%
Georgia	7	7	10.6%	59	3.3%
Illinois	4	1	0.9%	66	3.5%
Louisiana	7	1	16.7%	58	6.1%
Massachusetts	7	3	4.9%	55	3.4%
Michigan	6	30	5.6%	183	9.1%
Minnesota	7	18	3.9%	62	5.8%
Missouri	7	8	28.6%	7	5.8%
Nevada	7	0	0.0%	1	0.2%
New Jersey	7	6	4.9%	33	1.8%
New Mexico	7	3	2.6%	3	0.7%
New York City	7	0	0.0%	31	3.6%
New York State	7	5	5.7%	37	1.5%
North Carolina	2	3	10.0%	5	1.1%
Ohio	7	53	4.2%	112	5.1%
Oregon	7	5	4.5%	18	2.7%
Pennsylvania	6	3	0.8%	91	4.1%
Rhode Island	7	0	0.0%	9	3.7%
Tennessee	7	2	5.4%	24	1.7%
Texas	6	8	4.0%	74	1.9%
Utah	7	0	0.0%	15	2.7%
Wisconsin	6	32	11.4%	43	3.3%

Note: For Missouri, only Kansas City and St. Louis were studied.

In 2009, the federal School Improvement Grants (SIG) program received an additional \$3 billion, the largest-ever amount of federal funds, through the American Recovery and Reinvestment Act. SIG outlined four possible interventions including closure. SIG invested the largest share of the funds in schemes to revive low-performing schools. Note that SIG applied to TPS only, as charter schools already had prescribed solutions for poor performance, namely that they would forfeit their charters. Thus, the implementation of SIG created an independent shift in the policy environment for TPS but not for charter schools. One possibility is that through the offering of the three other interventions, SIG pushed the use of closure lower in the option set or delayed its use, in which case we would see a decline in the use of closure in TPS. In the alternative, the focus on low-performing TPS may have contributed to the greater use of closure with underperforming charter schools seen in the last years of the study.

We classified the years before 2009-2010 in the study period as the pre-SIG era and 2009-2010 and the following years as the post-SIG era. The closure rates for each period are presented in Figure 7. The rate of closures in the charter sector was slightly higher in the post-SIG era than in the pre-SIG era, but the difference was not statistically significant. No change in the closure rate took place in the TPS sector from pre-SIG to post-SIG. The findings suggest that the use of closure was not affected by SIG, at least in the few years following its adoption.

Figure 7: Rate of Closures of Low-Performing Schools by Sector and Pre- and Post-SIG Adoption



Note: Illinois and North Carolina were excluded in the comparison as their data were only available for post-SIG years.

Figure 8 compares the likelihood of low-performing schools getting closed by grade span in the charter and TPS sectors. Although the number of closures was the largest at the elementary level, as shown in Figure 3, the share of low-performing middle schools slated to be closed was the highest in both sectors, standing at 8.6 percent and 4.5 percent in the charter and TPS sectors respectively. The rates of closures of low-performing schools for the other three grade spans ranked differently between the two sectors. Furthermore, the lowest rate of closures in the charter sector (4.8 percent for multi-level schools) was still higher than the highest closure rate in the TPS sector (4.5 percent for middle schools).

Figure 8: Rate of Closures of Low-Performing Schools by Sector and Grade Span

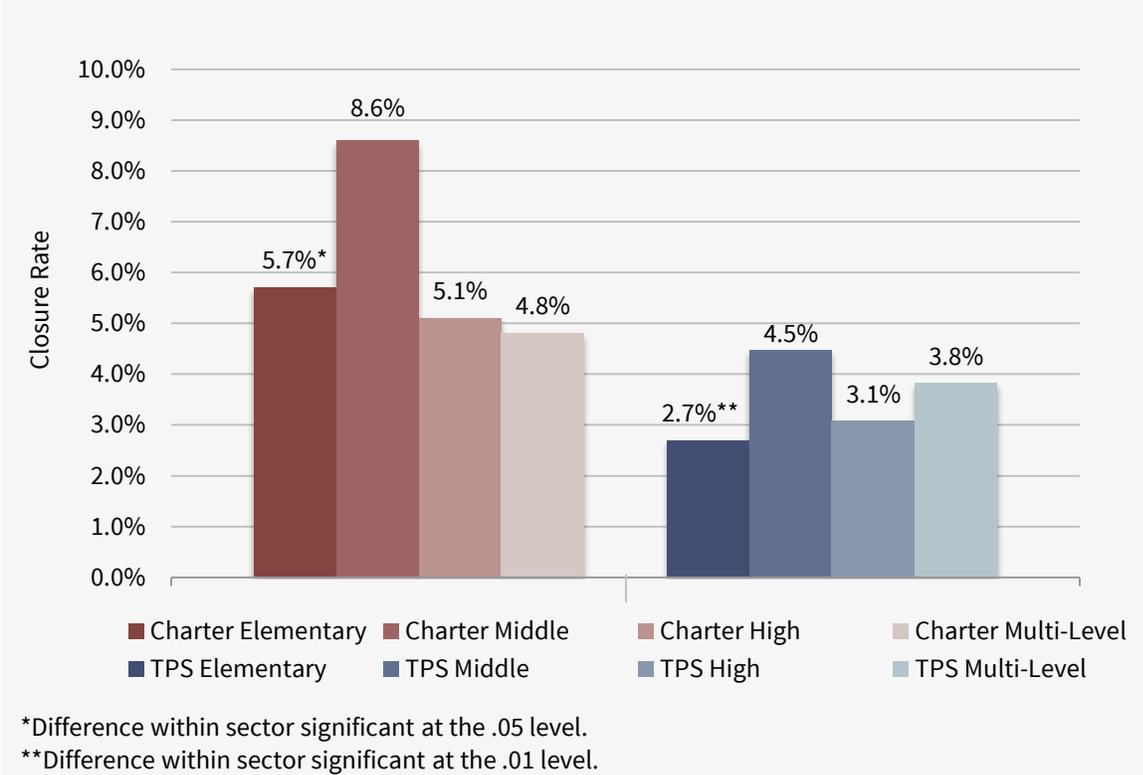
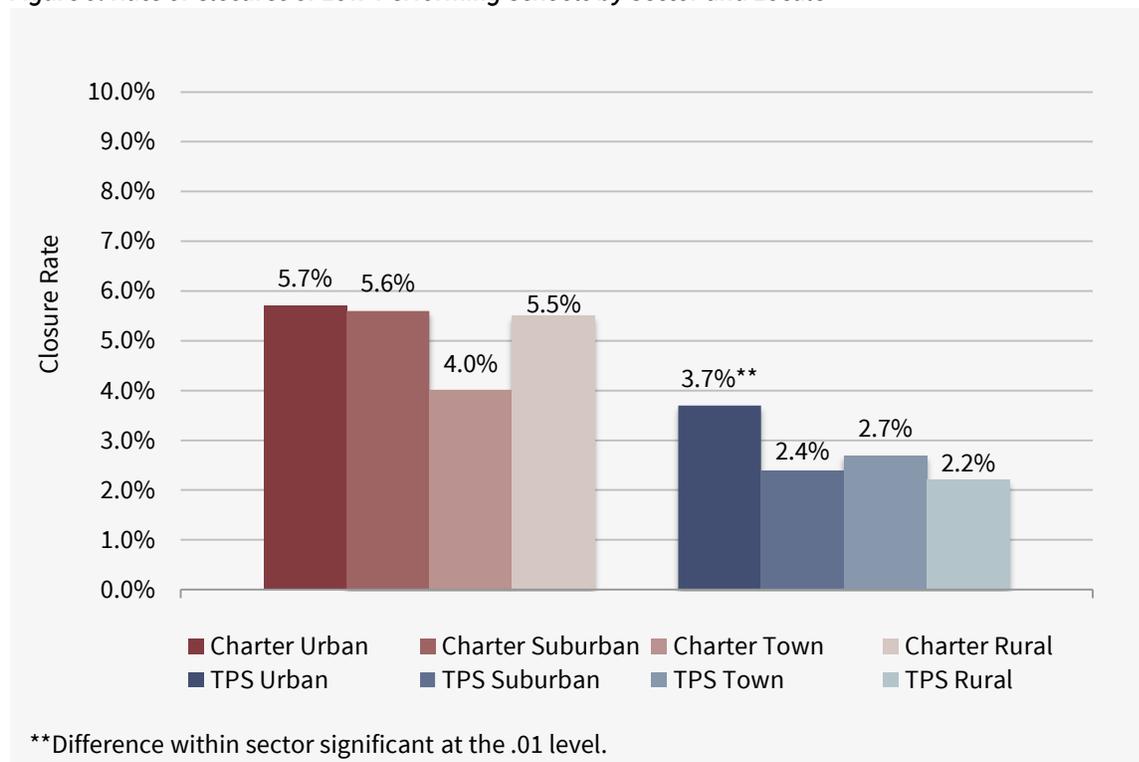


Figure 9 displays a more salient difference in the rate of closures by locale in school districts compared to the charter sector. No significant difference was found in the closure rate across locales in the charter sector, and the rates of charter closures in urban areas, suburbs, and rural areas were very close to each other.⁷ In the TPS sector, low-performing schools in urban areas faced the greatest likelihood of being closed, with a rate of closure (3.7 percent) significantly higher than the rates in the

⁷ The number of charter closures in towns and rural areas was small, which might make the charter closure rates in these two locales unstable.

other locales. The figure reinforces the notion that TPS closures in many areas of the country would leave no education option for the students in the low-performing schools.

Figure 9: Rate of Closures of Low-Performing Schools by Sector and Locale



What Do Closed Schools Look Like?

The performance profile of closed schools is surprising. One might expect the schools that eventually get closed would be lower-performing than those that are allowed to remain open. One might also expect that charter schools would be tapped for closure if they are low-performing and no better than the local TPS option. We examined the trends in academic performance and enrollment in closed charter and TPS schools from three years before closure to the final year of operation, making comparisons with similarly performing schools that remained open. For the convenience of reporting the findings, we use subscript notation as described in Table 4 to identify the years before a school closes, as shown below. School performance in t_{-1} is most likely used by authorities to make decisions about closure in t_0 .

Table 4: Notations for the Final Year of Operation and Pre-Closure Periods

Time Period Relative to School Closure	Reference
Final year of operation for the closed schools	t_0
The school year before closure	t_{-1}
The school year two years before closure	t_{-2}
The school year three years before closure	t_{-3}

Academic Performance

Figures 10 and 11 depict the average reading and math achievement of closed low-performing schools from t_{-3} to t_0 as compared to low-performing schools that remained open. Both closed and not-closed low-performing schools had highly negative achievement scores for reading and math in all the years. The average math scores were lower than the average reading scores for both closed and not-closed low-performing schools in both sectors and in all the years.

Figure 10: Trend in Reading Achievement of Closed and Not-Closed Low-Performing Schools by Sector

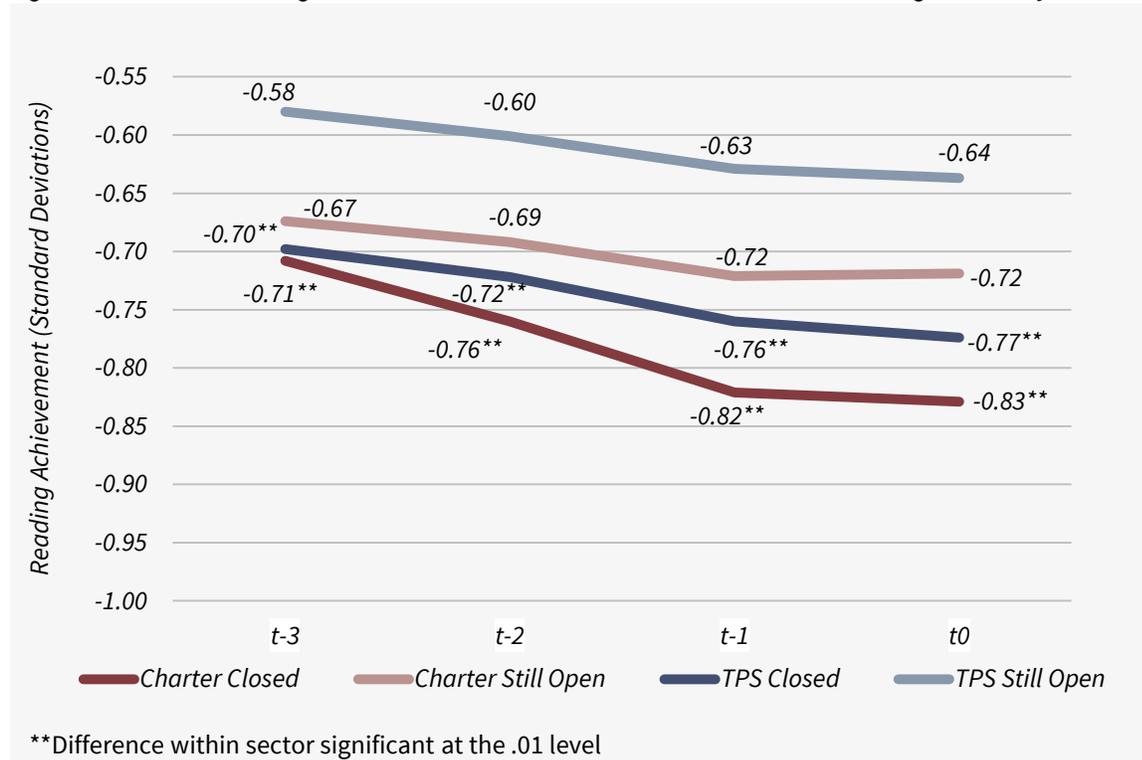
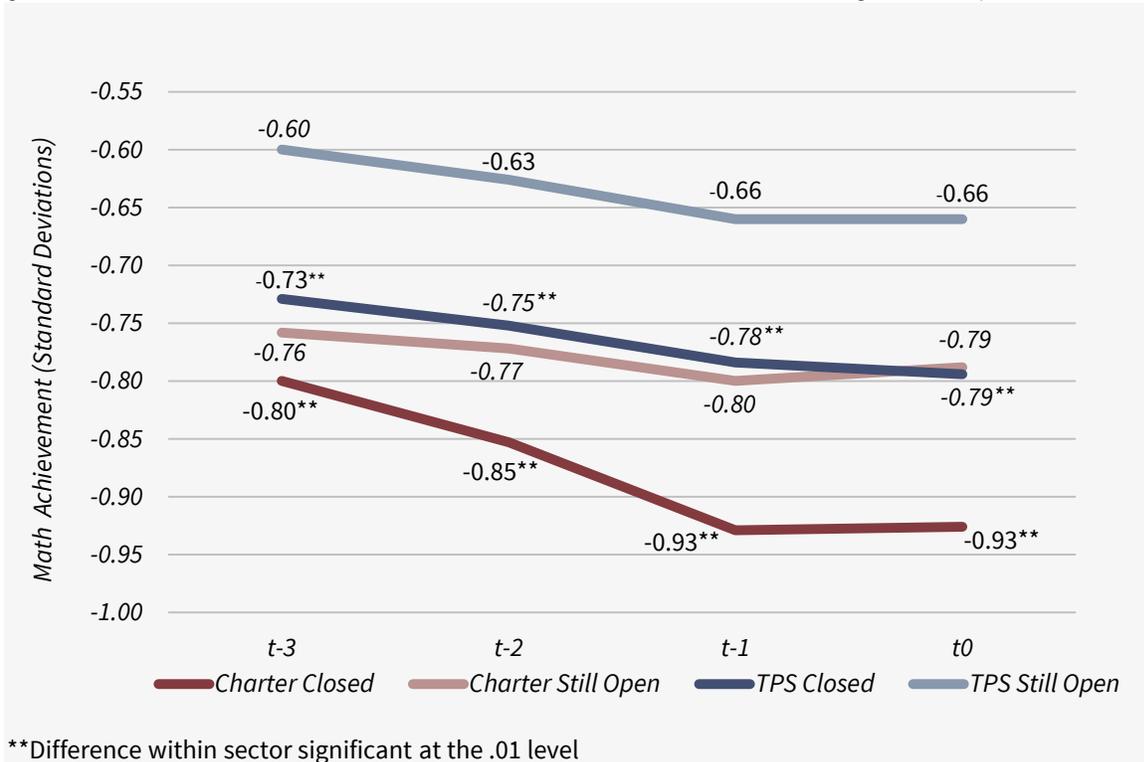


Figure 11: Trend in Math Achievement of Closed and Not-Closed Low-Performing Schools by Sector



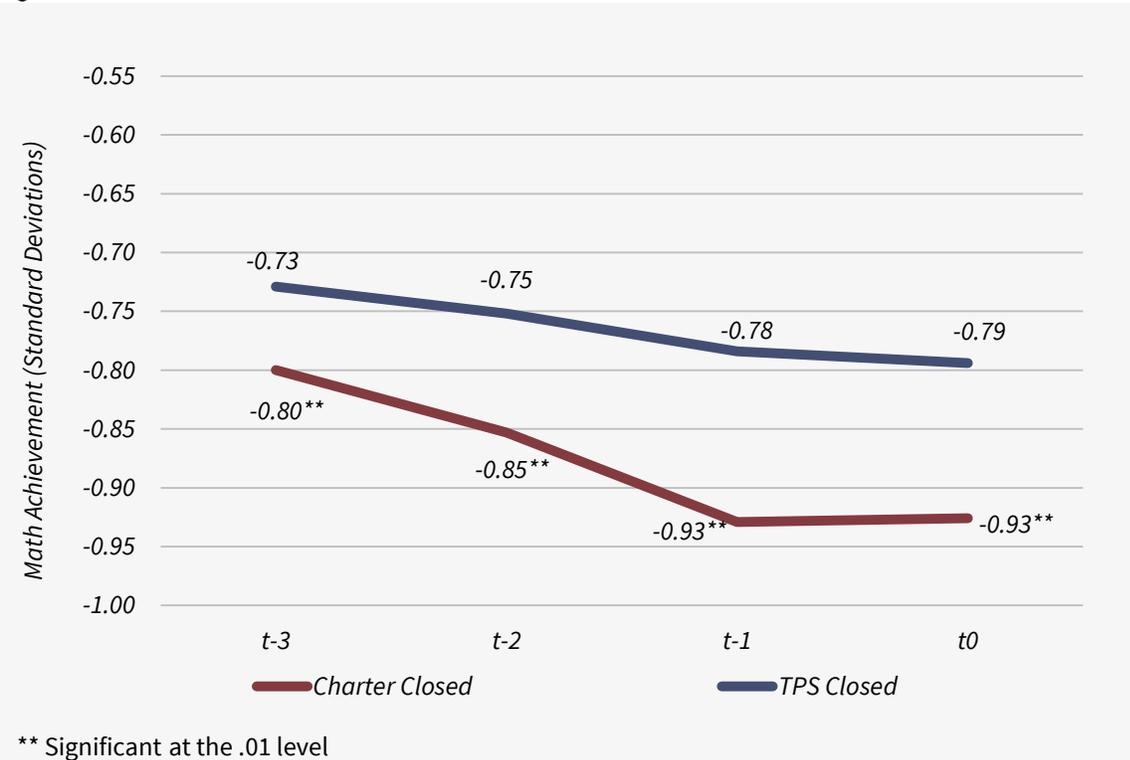
Both the reading and math scores of closed schools kept declining from t_{-3} to t_{-1} and stayed flat in t_0 , a sign of chronic deterioration in achievement in schools slated for closure from several years before the official closure. In addition, schools that got closed performed more poorly than the low-performing schools that were permitted to remain open. As plotted in Figures 10 and 11, closed schools performed significantly worse than did low-performing schools that were not closed in both subjects in both sectors through all the years, and the gaps between closed and not-closed schools expanded continuously along with the passing of time.

Figures 12 and 13 indicate that low-performing charter schools got closed at a lower level of achievement than low-performing TPS. Specifically, the average scores in both subjects of closed charter schools were significantly worse than those of closed TPS schools in all the years, except for no significant difference in reading in t_{-3} .

Figure 12: Trend in Reading Achievement of Closed Charter Schools and Closed TPS



Figure 13: Trend in Math Achievement of Closed Charter Schools and Closed TPS



Figures 14 and 15 below show the trend in the average growth in reading and math for closed schools and the other low-performing schools that remained open. Recall that growth was measured as the change in achievement from one year to the next. By and large, both closed and not-closed low-performing schools had negative growth scores in reading and math from t_2 onward. The negative values indicate worse performance of a school in a year relative to the previous year. Again, the gains in math were weaker than the gains in reading for both closed and not-closed low-performing schools in both sectors and in all years.

Figure 14: Trend in Reading Growth of Closed and Not-Closed Low-Performing Schools by Sector

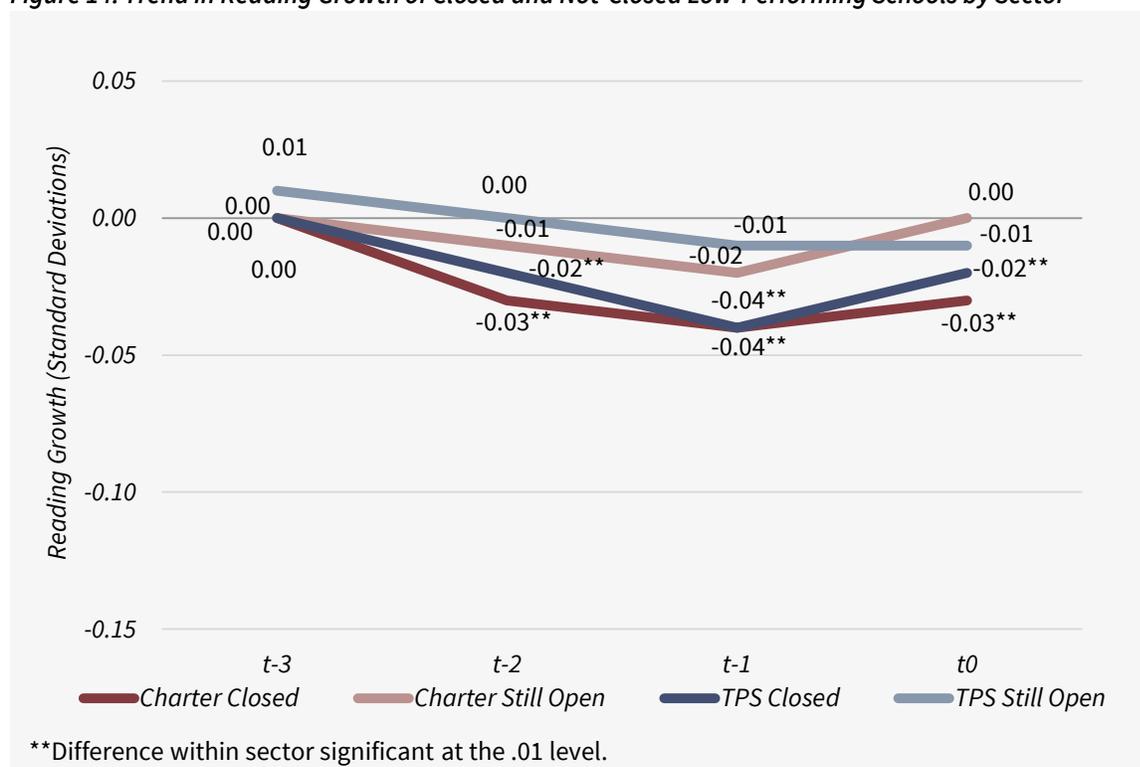
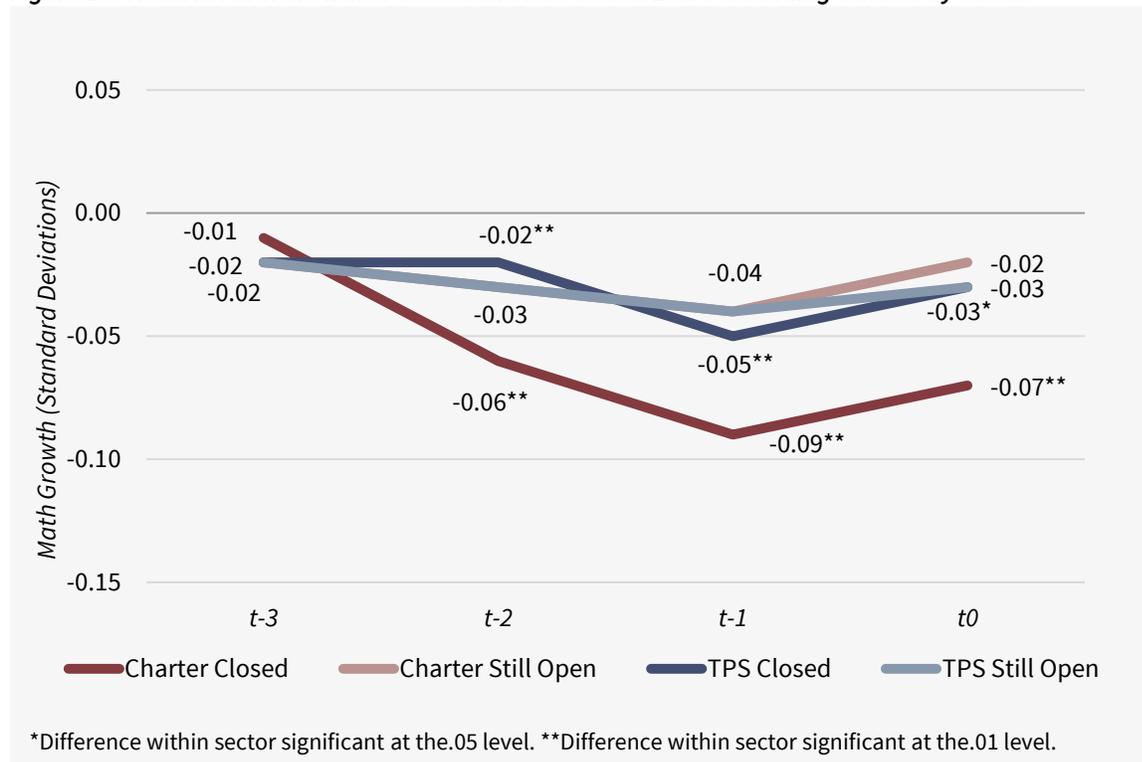


Figure 15: Trend in Math Growth of Closed and Not-Closed Low-Performing Schools by Sector



Note: The sections of the line “Charter Still Open” for t₃, t₂, and t₁ were completely covered by those of the “TPS Still Open” line as the math growth scores for these two categories of schools in t₃, t₂, and t₁ were the same. Corresponding growth scores were shown for the “TPS Still open” line.

Both reading and math growth scores in closed charter and TPS low-performing schools slipped from t₃ to t₁. Although the growth scores recovered slightly in t₀, they remained negative. This temporal trend again exhibited chronically poor academic performance of low-performing schools that were eventually closed. Compared to low-performing schools that remained open, closed schools made overall weaker progress in both subjects in the years leading up to closure. The combination of lower levels of achievement (as shown earlier) and smaller learning gains seemed to seal the fate of closing schools.

Figures 16 and 17 illustrate modest disadvantages in academic progress of closed charter schools relative to closed TPS. While reading growth was not significantly different between closed charter and traditional public schools in any year, closed charter schools had significantly less gain in math than closed TPS from t₂ to t₀, another sign of lower academic performance among closed charters than among closed TPS.

Figure 16: Trend in Reading Growth of Closed Charter Schools and Closed TPS

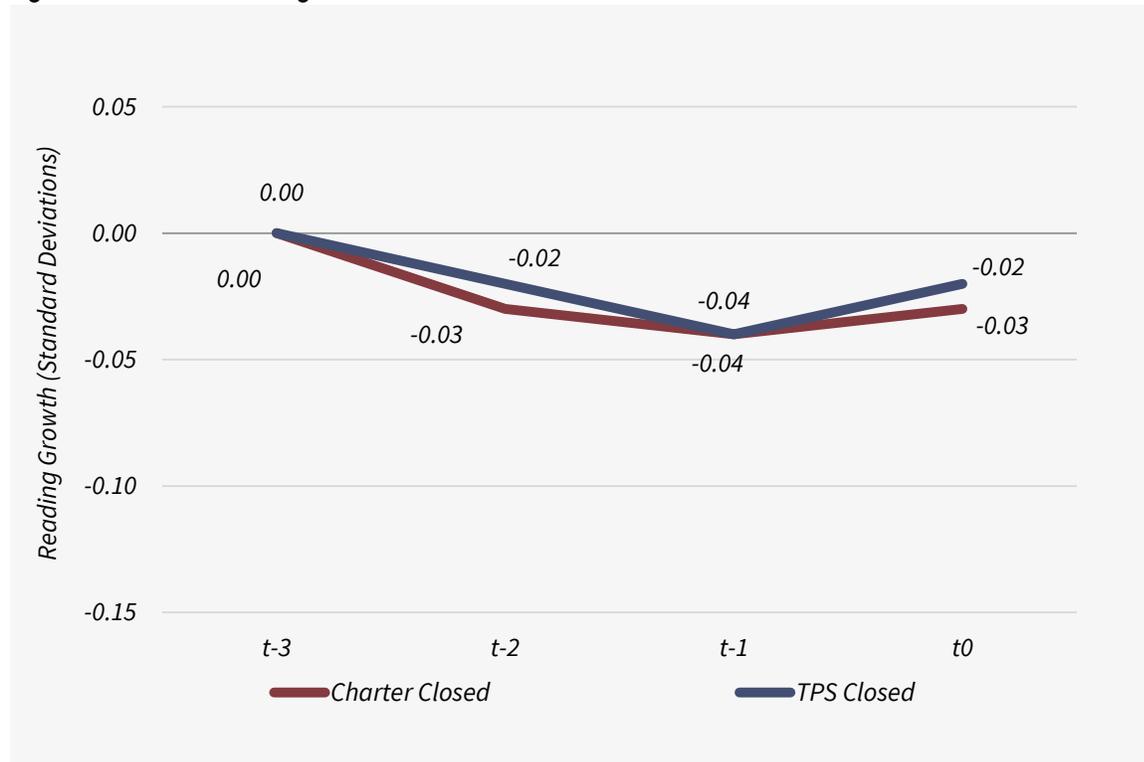
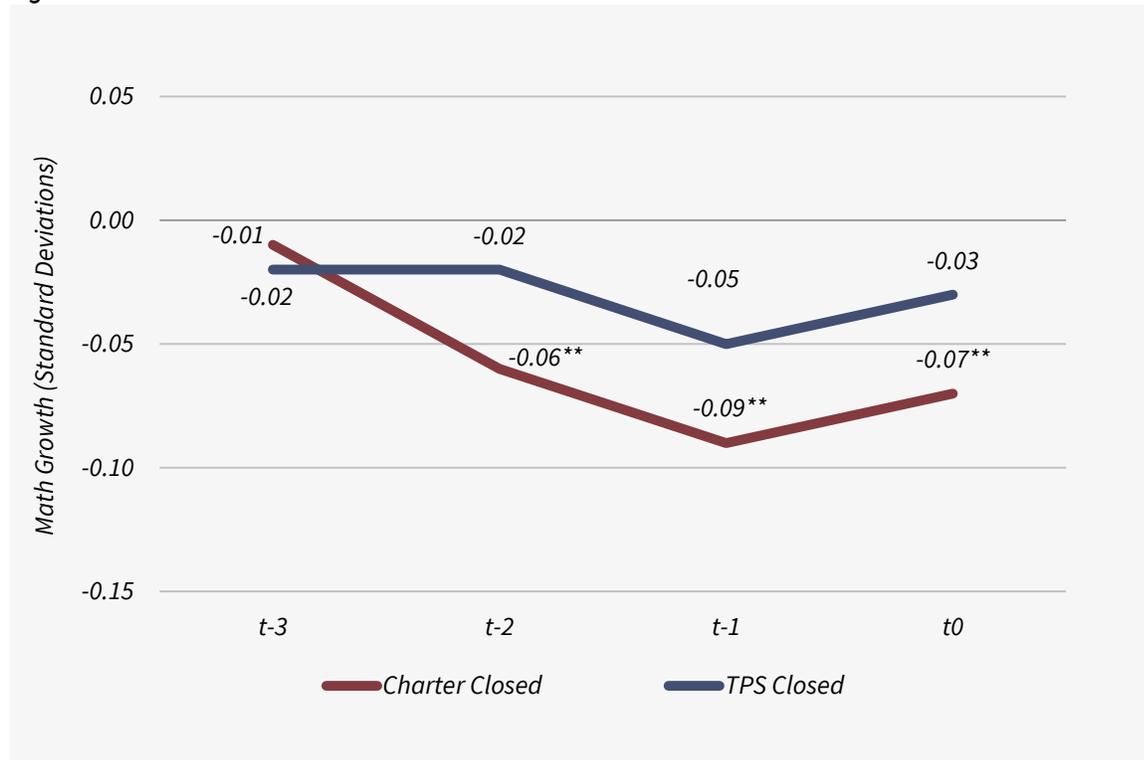


Figure 17: Trend in Math Growth of Closed Charter Schools and Closed TPS



Enrollment

Closed schools did not only turn worse academically in the last few years of operation, but also witnessed a decline in student enrollment. Figure 18 displays a continuous decrease in the average enrollment in closed low-performing schools from t_{-3} to t_0 in both charter and TPS sectors. Overall, charter schools had lower enrollment than TPS (Figures 18 and 19), which is the case across all levels of performance nationally. Furthermore, closed schools had lower enrollment than the other low-performing schools remaining open in both sectors in all the years, and the differences were statistically significant except for t_{-3} in the charter sector.

Figure 18: Trend in Enrollment of Closed and Not-Closed Low-Performing Schools by Sector

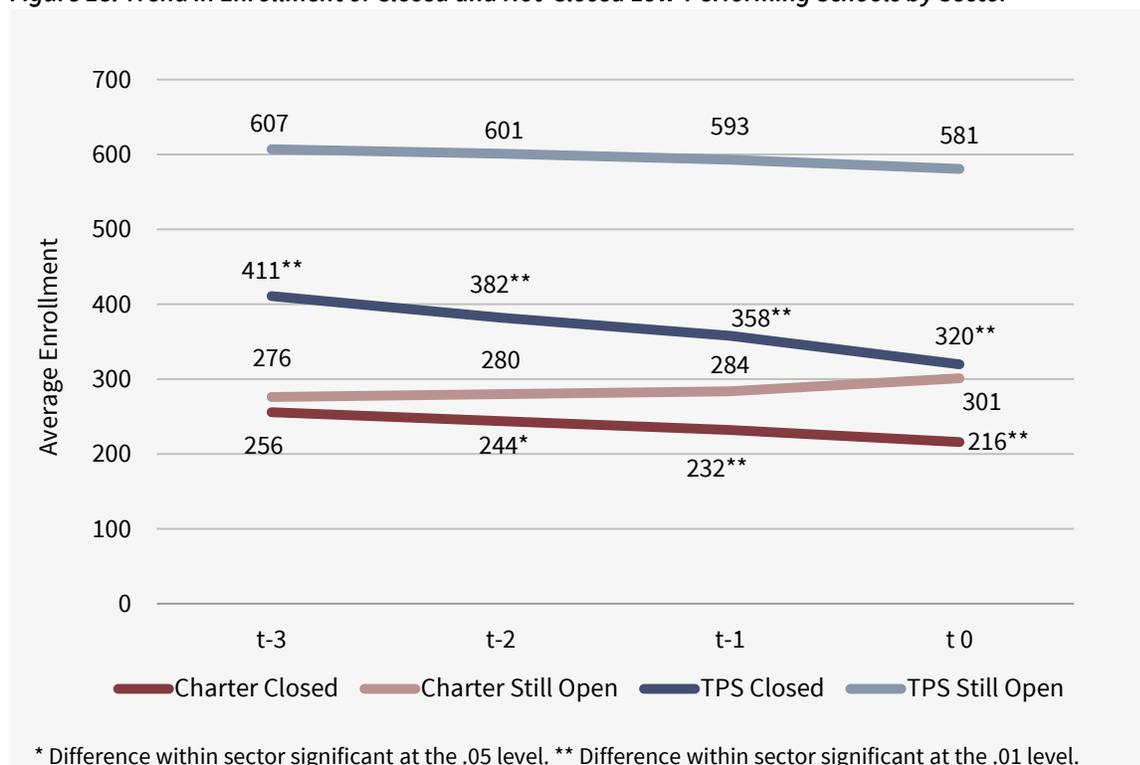
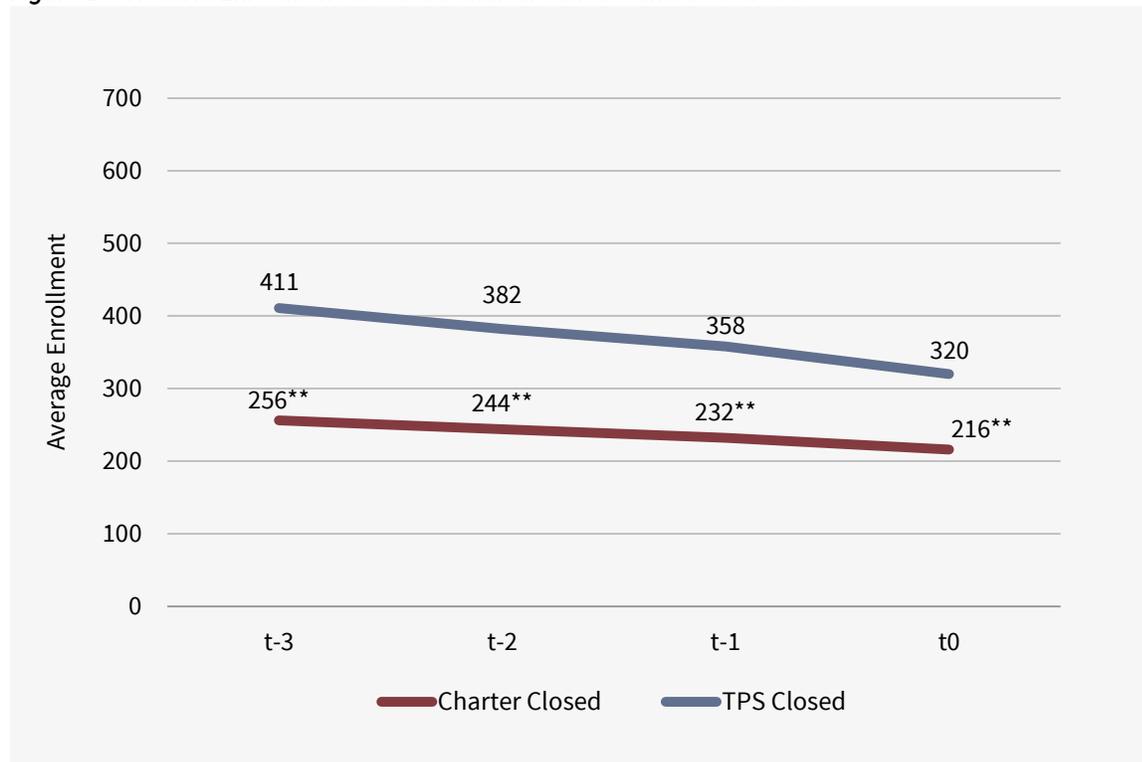


Figure 19: Trend in Enrollment of Closed Charter Schools and Closed TPS



Summary of the Landscape of Closures

This chapter illustrates an intricate landscape of closing academically low-performing schools. There were closures in all the states in the study period. However, closures were unevenly distributed and the likelihood for low-performing schools to be closed varied across states. The national scenario of closures appeared to be driven by a few key states, even more so in the TPS sector.

Elementary schools had the largest number of closures in absolute terms among all grade spans. Among low-performing schools, middle schools had the highest rates of closure. The focus of closures on elementary and middle schools might reflect the assumption that students have a longer time to recover and the availability of more than one school in the local system. High school closures were rarer, possibly because of strong community affinity and scarcer alternatives for students if they were displaced by closure.

Considering locale, closure of low-performing schools was largely an urban phenomenon, which is not surprising given rarer available receiving schools for affected students in suburbs, towns and rural areas.

The variations in closures between charter and TPS sectors were particularly salient. Although the number of charter closures was smaller than the number of TPS closures, a higher percentage of low-performing charter schools than low-performing TPS were closed. Disaggregation by state further

revealed a greater likelihood of low-performing charter schools getting closed than TPS in the majority of the states under study. These differences demonstrated a stronger inclination of using closure to hold schools academically accountable among charter authorizers than among districts.

Low-performing schools slated to be closed showed apparent signs of weakness in the years leading to closure. They had lower levels of academic achievement, weaker learning gains and smaller student enrollment than low-performing schools that were permitted to remain open in both charter and TPS sectors. In fact, there were visible downward trends in academic performance as well as in enrollment in closing schools in the last few years of operation. On average, closing charter schools were lower performing and enrolled a smaller number of students than closing TPS schools. These trends were observable almost in real time, but there seemed to be a lag in time before the radical action of closure was taken. In this sense, charter authorizers' determination and practice of shutting down low-performing schools still fell short of the stipulation in their contract with charter schools, although they were more likely to close poor-performing schools relative to districts. Meanwhile, districts were evidently tolerant of low levels of, and deterioration in, performance and enrollment. The adoption of SIG since 2009, rather than providing an impetus to employing practices that protect students, seemed to have given some education leaders extra time and resources for sustaining low-performing schools.

4. Are Similarly Low-Performing Schools Treated Equivalently?

Many policymakers consider equity in terms of student outcomes across various groups. There is another way that equity emerges: How are similarly performing schools treated? An important focus of this study examines the fates of low-performing schools across geographies, sectors and school attributes. The multistate, longitudinal data collected by CREDO provide a unique opportunity to ask, "Are similarly low-performing schools treated equivalently?" As shown in this chapter, non-academic biases were involved in the actions of education leaders, which created important inequities in how their schools and students fared.

Achievement of Charter and TPS Closures by State

The preceding section presented aggregate evidence that charter schools that closed had lower performance compared to TPS closures. We disaggregated the evidence by state to see if there were differences in the practice across our partner states. The breakdown of the comparison by state revealed striking differences. Table 5 reports by state the academic achievement of closed charters and closed TPS in t_{-1} , which is the period that was likely to be used by local authorities to make closure decisions.⁸ Within each sector, reading and math achievement scores of closed schools varied

⁸ There were no closed low-performing charter schools in Nevada, New York City, Rhode Island and Utah within our data window, so no scores for closed charters are reported for these four states.

substantially across states, from below -1.00 s.d. to about -.50 s.d. The relative performance of closing charters as compared to closing TPS also differed from state to state.⁹ Low-performing charter schools got closed at higher levels of achievement than TPS in six states. Closing charter schools performed worse than closing TPS in 13 states. No significant difference in either subject between closing charters and TPS was found in two states. In the remaining two states, closing charters performed better in one subject but worse in the other subject. These differences illuminated widely varying academic criteria in the practice of closing underperforming schools across states and sectors.

⁹ This comparison depended on lower performance in either subject.

Table 5: Average Reading and Math Achievement of Closing Low-Performing Schools by Sector and State

	Reading Achievement		Math Achievement	
	Charter Closed	TPS Closed	Charter Closed	TPS Closed
Arizona	-0.93**	-0.78	-1.00**	-0.82
Arkansas	-0.77**	-0.64	-0.83**	-0.65
California	-0.66	-0.67	-0.71**	-0.68
Colorado	-0.83**	-0.75	-1.04**	-0.78
District of Columbia	-0.58**	-0.78	-0.79	-0.80
Florida	-0.90**	-0.67	-1.08**	-0.72
Georgia	-0.66	-0.64	-0.72*	-0.68
Illinois	-0.65	-0.71	-0.80	-0.75
Louisiana	-0.50**	-0.76	-0.63	-0.71
Massachusetts	-0.80**	-0.95	-0.96	-0.91
Michigan	-0.70**	-0.79	-0.83	-0.85
Minnesota	-1.14**	-0.93	-1.30**	-0.93
Missouri	-0.74**	-0.49	-0.81**	-0.54
Nevada	--	-1.48	--	-1.35
New Jersey	-0.86**	-0.96	-0.96**	-0.89
New Mexico	-0.55	-0.65	-0.75	-0.69
New York City	--	-0.62	--	-0.66
New York State	-0.62**	-0.83	-0.57**	-0.97
North Carolina	-0.84	-0.81	-1.10**	-0.77
Ohio	-1.15**	-0.90	-1.22**	-0.93
Oregon	-0.84**	-0.56	-0.84**	-0.53
Pennsylvania	-0.93	-0.90	-0.99**	-0.89
Rhode Island	--	-0.83	--	-0.81
Tennessee	-0.56**	-0.83	-1.08*	-0.84
Texas	-0.83**	-0.59	-1.21**	-0.63
Utah	--	-0.61	--	-0.63
Wisconsin	-0.98**	-1.11	-1.12**	-1.21

Note: There were no closed low-performing charter schools in Nevada, New York City, Rhode Island and Utah within our data window, so no scores for the closed charters are reported for these four states.

* Difference in the achievement in a subject between closed charter and TPS significant at the 0.05 level.

** Difference in the achievement in a subject between closed charter and TPS significant at the 0.01 level.

Rate of Closures by Achievement

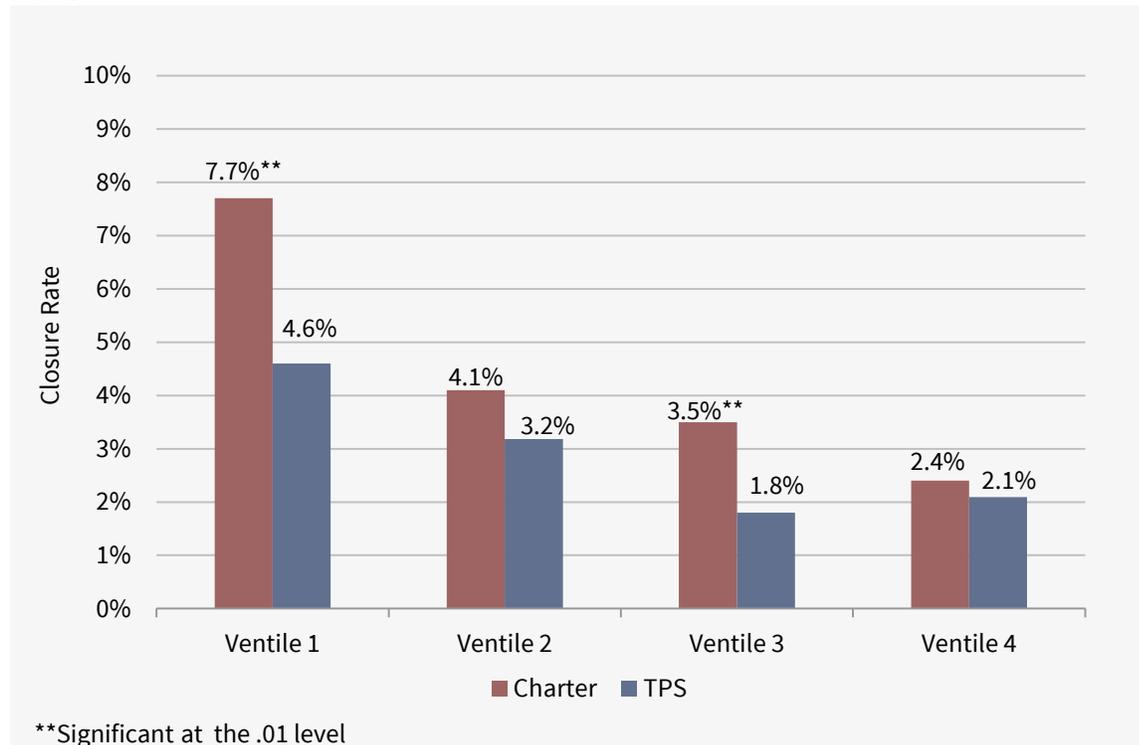
One way of examining equity in the policy and practice of closing low-performing schools is whether they are simply a perfunctory exercise. To explore this, we looked at how differently schools of similar performance were treated and whether there were system-driven inequalities that affected students directly, such as poverty and racial biases. We presented the findings using math achievement for brevity; our analyses revealed similar patterns when reading achievement was the focus.

Rate of Charter and TPS Closures by Achievement

As described in the previous chapter, a higher share (5.5 percent) of low-performing charter schools was closed than among low-performing TPS (3.2 percent). One obvious question is whether the treatment was equivalent across the range of performance: Did the lowest performing schools have different rates of closure than the higher-but-still-low-performing schools? One might expect authorizers and districts to have a greater focus on the lowest-performing schools in their care. Figure 20 shows the rate of closure broken down by each of the four lowest ventiles of math achievement on state achievement tests.¹⁰ Lower-performing schools had higher rates of closure than higher-performing ones in both sectors. With the exception of the lowest-ventile charter schools, the rate did not exceed 5 percent in any group. At the same time, the closure rates were higher in the charter sector than in the TPS sector in all four ventiles, and the differences were statistically significant in the first and third ventiles.

¹⁰ Each ventile represents 5 percent of schools in a state. Thus, Figure 20 represents the 20 percent of lowest-performing schools in the dataset.

Figure 20: Rate of Closures of Low-Performing Schools in the Bottom Four State Ventiles of Achievement by Sector



Demographics of Closed and Not-Closed Low-Performing Schools

The question of equitable treatment of schools extends to considerations of poverty and race. We took a look at overall differences in student characteristics of closed and not-closed low-performing schools first. Then we zeroed in on a more rigorous examination of closure practices for schools with similar performance but different demographic compositions of students. Table 6 shows that regardless of sector, closed schools had higher shares of students in poverty (i.e., eligible for free or reduced-price lunch) and black students and lower percentages of white and Hispanic students than low-performing schools that remained open.¹¹ Note that the combined share of black and Hispanic students was larger for closed schools in both sectors. Closed schools had a smaller percentage of English language learners than the other low-performing schools in both sectors. TPS closures had a slightly larger share of special education students than not-closed low-performing TPS.

One possible explanation of these differences is that schools cluster unevenly and result in some groups having larger representation in lower ventiles than others. If that were the case, the more frequent use of closure in lower ventiles discussed in the previous section might explain some or most of the variation in Table 6. To explore this, we tested the differences in the likelihood of closure for schools with different student demographics, even at a similar performance level. We focused on

¹¹ The percentages of Asian-Pacific, Native American and multiracial students were very small and not shown and discussed here.

comparisons of schools with different levels of poverty and different shares of minority students, since Table 6 displays salient overrepresentation of students in poverty and underserved minority students among closed schools.

Table 6: Demographics of Closed and Not-Closed Low-Performing Schools by Sector

	Charter		TPS	
	Closed	Still Open	Closed	Still Open
Number of Tested Students	35,809	846,888	229,829	12,685,753
Students in Poverty	80%**	76%	87%**	83%
Special Ed Students	11%	11%	14%**	13%
ELL Students	9%**	10%	13%**	20%
White Students	11%**	17%	11%**	13%
Black Students	58%**	49%	56%**	38%
Hispanic Students	27%**	29%	28%**	44%

**Significant at the 0.01 level.

Closure Rate by Poverty Level

Are schools with more students in poverty more prone to closure? Do schools with fewer poor kids get to remain open, even when they have similar levels of performance? To probe this question, we divided low-performing schools into two groups: higher-poverty schools in which 80 percent or more of the students were eligible for free or reduced-price lunch and lower-poverty schools with fewer than 80 percent of students receiving free or reduced-price lunch.¹²

Figure 21 shows that in both sectors, schools with higher shares of students in poverty had a higher closure rate than schools serving a lower share of poor students, but the difference was only statistically significant in the TPS sector.¹³ This finding may seem counterintuitive since the rates of closure were higher in charter schools. However, since authorizers are expected to take action with low-performing schools, the lack of strong significance may reflect more even practices by authorizers than in district settings. Figures 22 and 23 further show no significant difference between higher- and lower-poverty charter schools in each of the bottom four ventiles, while the difference in TPS was primarily driven by the actions with the schools in the bottom two ventiles.¹⁴ Taking into consideration the number and rate of TPS closures in the third and fourth ventiles, it is clear that districts were concentrating their use of closure on only the most dire performers.

¹² The 80 percent threshold is admittedly arbitrary. We conducted this analysis at other values as well and found that different thresholds created groups that were so unequal that they confounded the ability to test the hypothesis.

¹³ The difference in charter schools was weakly significant at the 0.10 level.

¹⁴ The differences in the first two ventiles in the charter sector were weakly significant at the 0.10 level.

Figure 21: Rate of Closures of Higher-Poverty and Lower-Poverty Low-Performing Schools by Sector

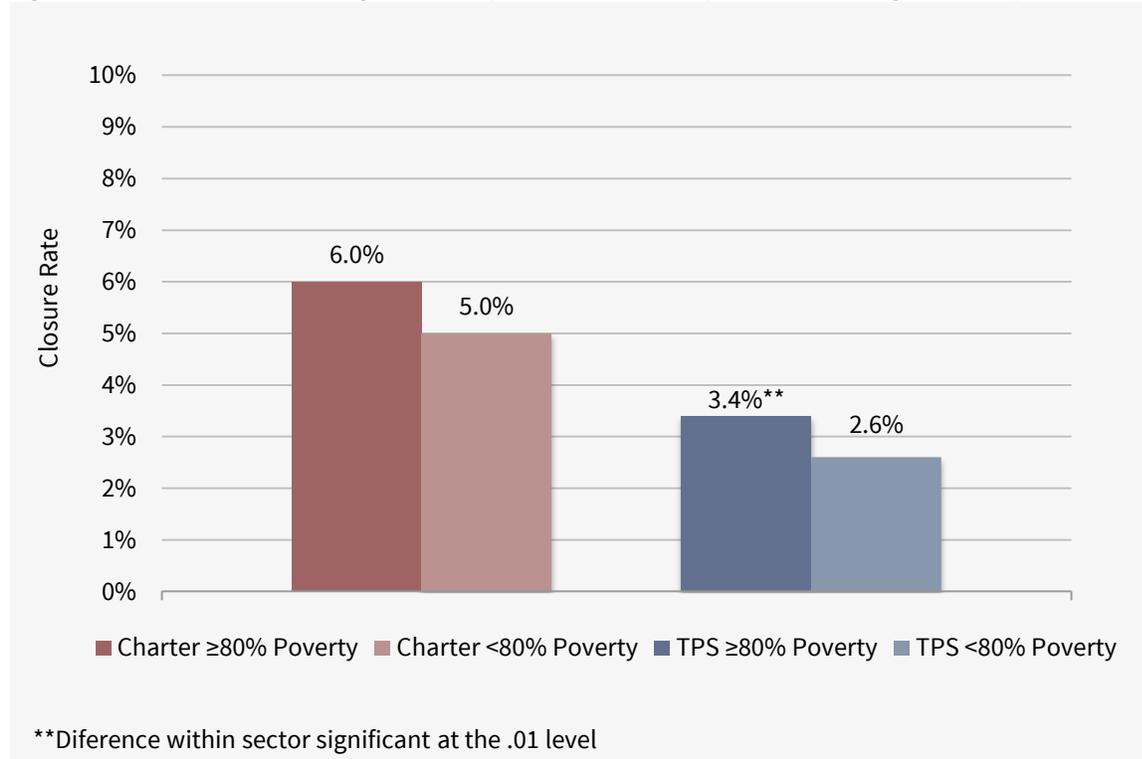


Figure 22: Rate of Closures of Higher-Poverty and Lower-Poverty Low-Performing Schools in Each of the Bottom Four State Ventiles of Achievement: Charter Sector

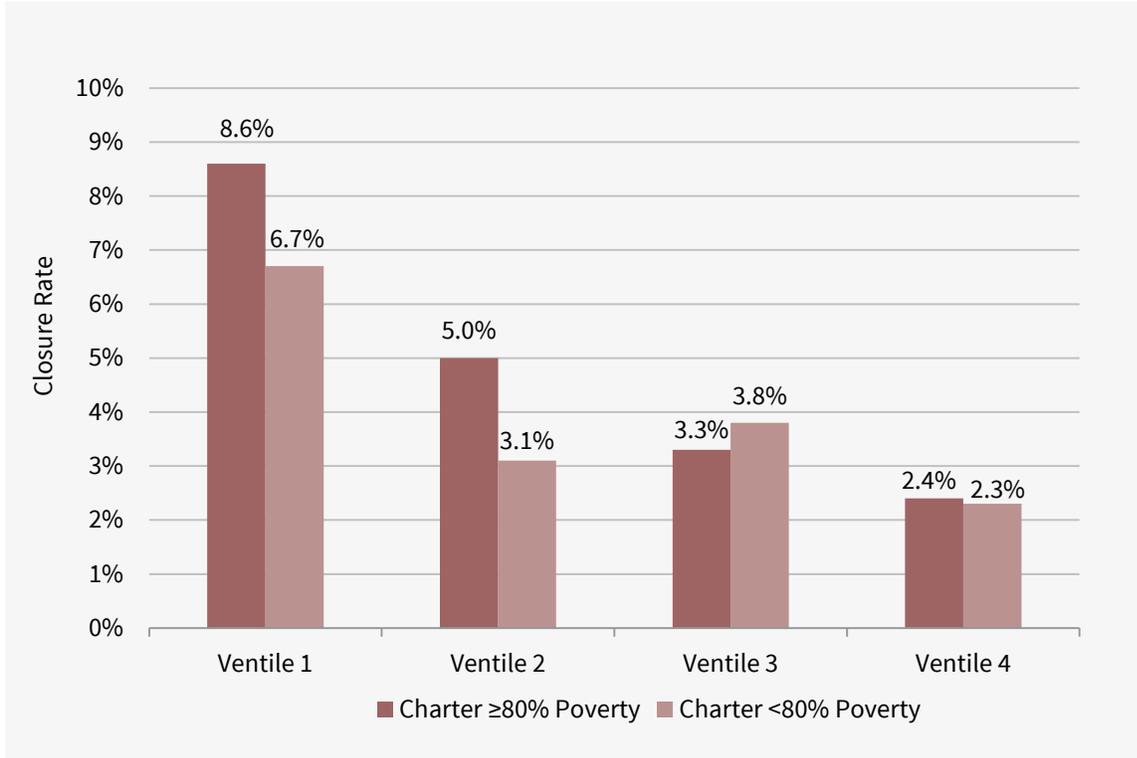
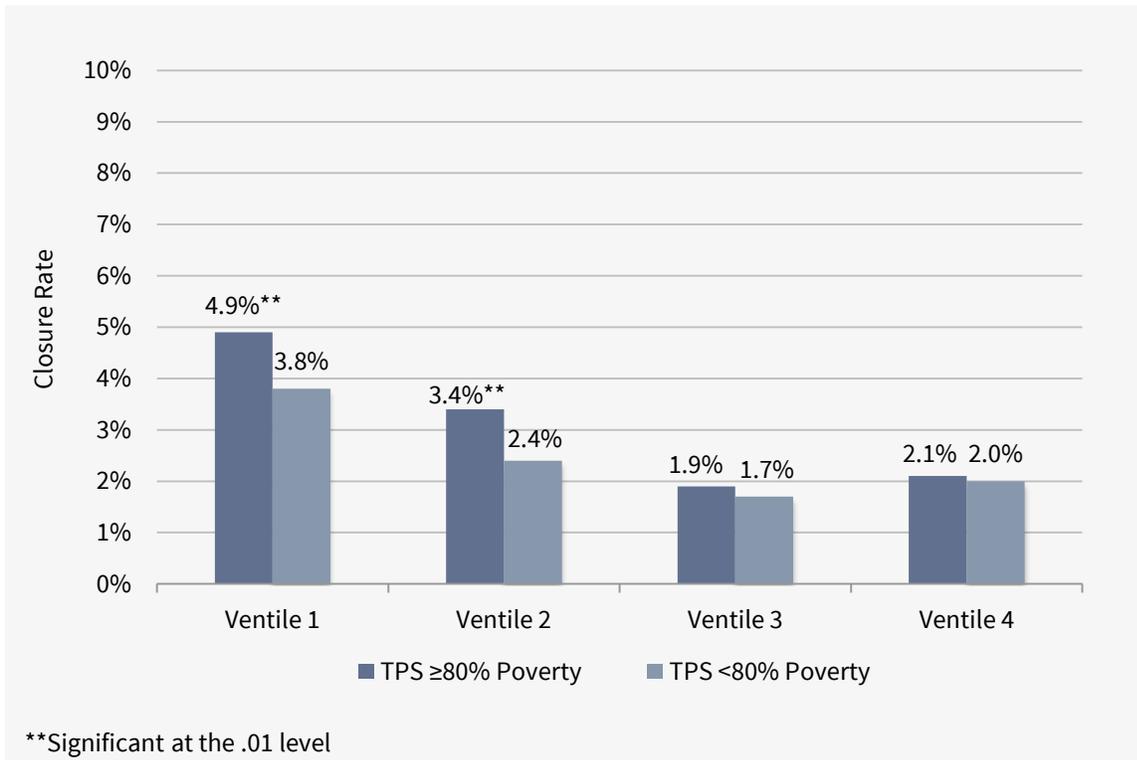


Figure 23: Rate of Closures of Higher-Poverty and Lower-Poverty Low-Performing Schools in Each of the Bottom Four State Ventiles of Achievement: TPS Sector



Closure Rate by the Percentage of Minority Students

Another inequity concern involves whether low-performing schools with different percentages of underserved minority students face different chances of getting closed, even when the schools are in the same bracket of performance. To examine this question, we grouped schools into two categories: higher-minority schools with 80 percent or more black and Hispanic students and lower-minority schools where black and Hispanic students accounted for less than 80 percent.

Evidence of minority bias surfaced from our analysis. Figure 24 illustrates that for all low-performing schools, those of higher minority were significantly more slated to be closed than lower-minority ones in both charter and TPS sectors. The bias recurred in nuanced comparisons in each of the four ventiles, as shown in Figures 25 and 26. In the charter sector, a significantly higher percentage of higher-minority schools got closed than lower-minority schools in the first and third ventiles. In the TPS sector, the differential treatment of higher- and lower-minority schools was driven exclusively by the actions with ventile-one schools, and it was the only time that TPS closed more than 5 percent of low-performing schools in a group.

Figure 24: Rate of Closures of Higher-Minority and Lower-Minority Low-Performing Schools by Sector

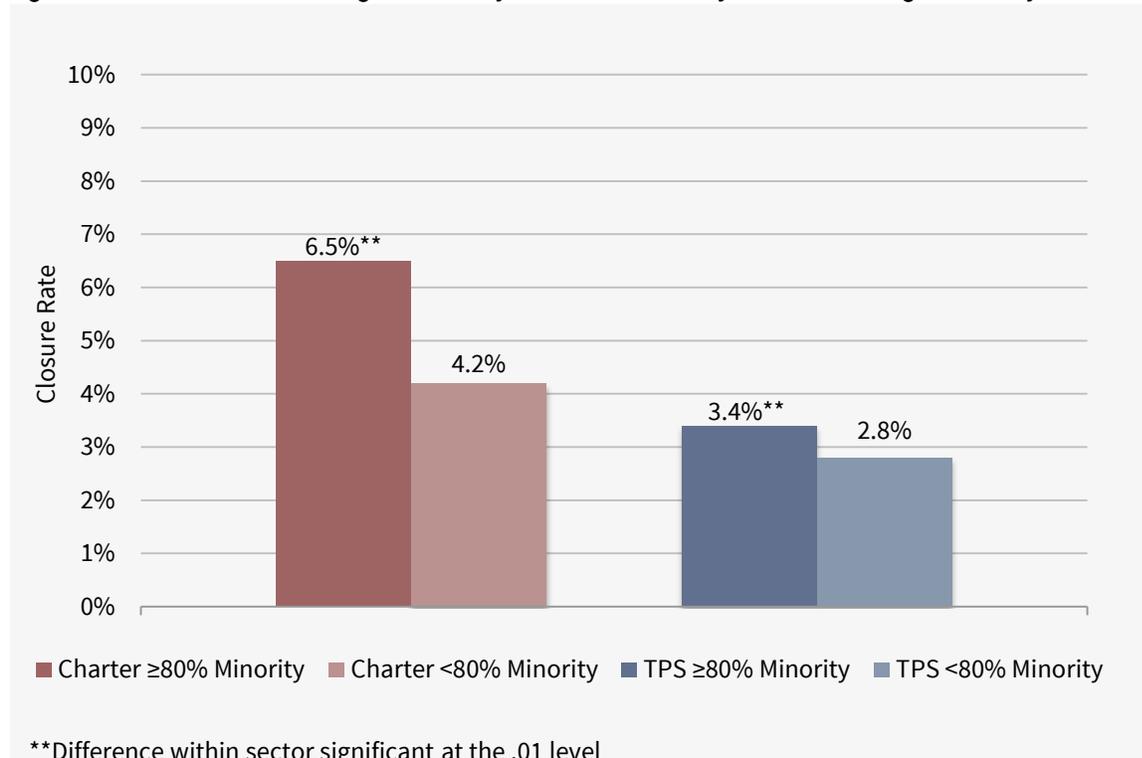


Figure 25: Rate of Closures of Higher-Minority and Lower-Minority Low-Performing Schools in Each of the Bottom Four State Ventiles of Achievement: Charter Sector

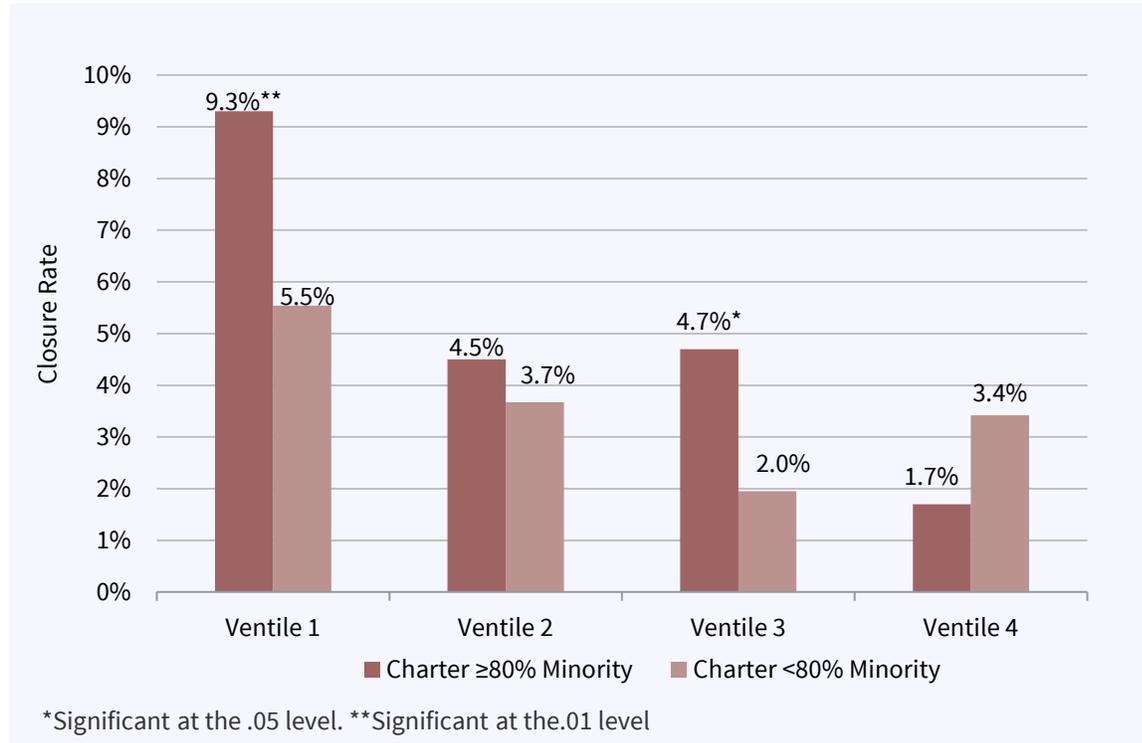
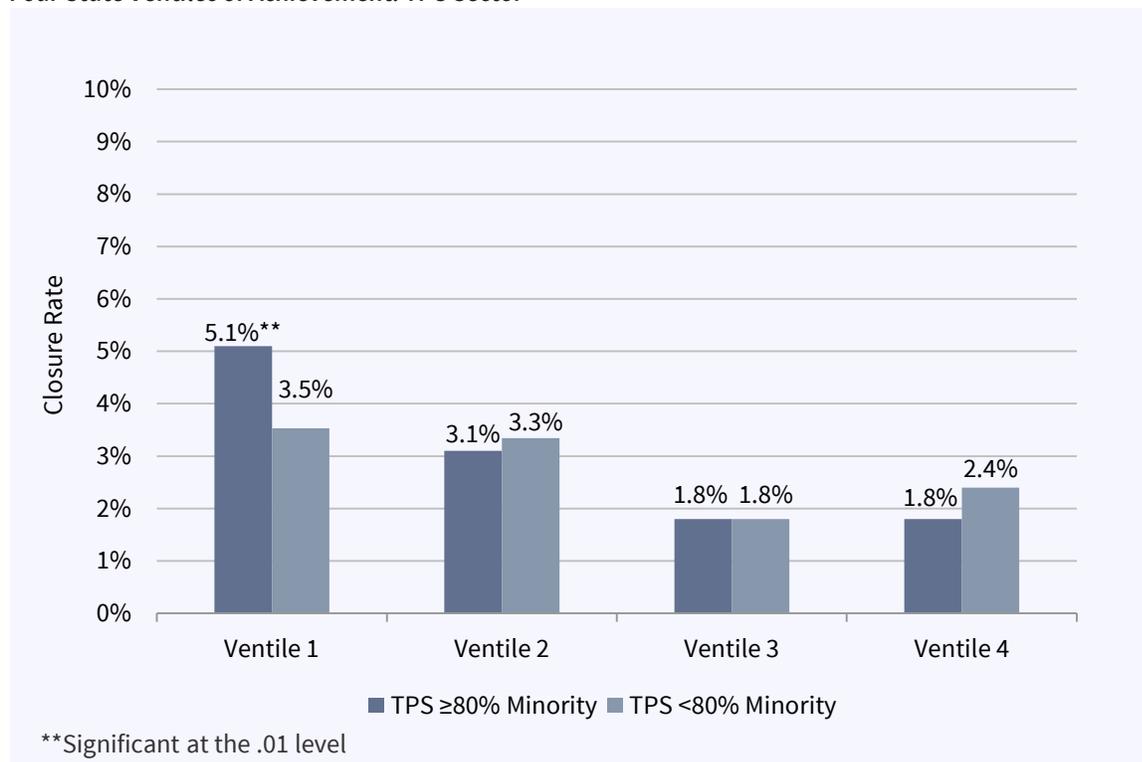


Figure 26: Rate of Closures of Higher-Minority and Lower-Minority Low-Performing Schools in Each of the Bottom Four State Ventiles of Achievement: TPS Sector



Rate of Charter Closures by Year of Operation

Earlier CREDO work on the quality of new charter schools suggested that most charter schools exhibited consistent performance that was observable early in the life of the school. Schools that showed early evidence of high student performance tended to stay high performers and the opposite was also true: schools with weak early performance rarely improved over time. This pattern raises a question about the timing of school closures: Do poor charter performers close when it becomes clear they are struggling, or does the use of fixed terms in the charter agreement defer review and action to specific intervals? TPS have different operating principles. In addition, most TPS have longer histories, so it is not feasible to examine closure by age in these schools.

Table 7 reveals no striking turning point in time at which low-performing charter schools faced a higher risk of being closed.¹⁵ The steady rate of closures suggests that intervention with low-performing schools was generated by the flow of information about them, not cadenced by the contract terms.

Table 7: Rate of Closures of Low-Performing Charter Schools by Years of Operation

Years of Operation	Number of All Charter Low-Performing Schools	Number of Closed Charter Low-Performing Schools	Rate of Closures of Charter Low-Performing Schools
2	574	33	6%
3	580	31	5%
4	552	29	5%
5	554	31	6%
6	497	22	4%
7	532	31	6%
8	429	22	5%
9	348	20	6%
10	267	17	6%
11	196	11	6%
12	108	6	6%
13	51	5	10%
(Missing value)	1,056	60	6%

¹⁵ As we identified low-performing schools and closures according to the school performance in a given year and the previous year, the results in the table start from two years of operation.

Summary of Equivalence of Closures

In several important ways, similarly low-performing schools were not treated equivalently in closure decisions. The rigor in applying academic criteria to closure of low-performing schools varied across the country. Regardless of sector, state to state, low-performing schools got closed at highly varied levels of academic achievement. The relative performance of charter schools slated for closure as compared to closing TPS also differed widely by state.

Academic concerns played some role in the closure decision, as evidenced by higher rates of closure of lower-ventile schools than for higher-ventile schools in both sectors. There is an open question about why such small shares of even the lowest-ventile schools continued. Regardless, students were not receiving equivalent protection. Some TPS districts and charter authorizers showed evidence of bias in their choice of closures among equivalently performing schools. In both sectors, higher-minority schools, particularly those in the lowest ventile, were more prone to be closed than similarly performing lower-minority schools. In addition, the closure rates of higher-poverty TPS in the bottom two ventiles were higher than the rates for lower-poverty TPS of similar performance. Apparently, charter authorizers did not always exclusively rely on academic criteria in dealing with underperforming schools, as agreed in the charter law. TPS districts' poverty and racial biases in their practice of closure run counter to many district leaders' claim that TPS are a haven for educational equity. These system-driven biases have important consequences for students.