



Turning the Tide:

Evidence on State Takeover and District Turnaround from Lawrence, Massachusetts

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Introduction

Turning around chronically underperforming schools and districts has long been an elusive goal, despite prioritization at the highest levels of government. Researchers have examined school-level turnaround, but studies of district-wide improvement are more limited. Most of the evidence that does exist on district-level turnaround comes from exceptional settings rather than examples driven by state accountability policy. Massachusetts' Lawrence Public Schools (LPS) provide a unique opportunity to examine an accountability-driven state takeover and district-wide turnaround effort. A recently released working paper compares changes in Lawrence students' achievement before and after the turnaround to changes in the achievement of similar students in districts not experiencing any turnaround efforts.¹

The findings show that the turnaround's first two years produced dramatic achievement gains in math and modest positive gains in English Language Arts (ELA), particularly for the district's large population of First Language Not English (FLNE) students. Intensive small-group instruction over week-long vacation breaks by highly regarded teachers (referred to as

"Acceleration Academies") was one particularly effective aspect of the turnaround, explaining part of the estimated overall effect in math and all of the estimated effect in ELA. There is no evidence of slippage on any other academic outcomes and some evidence of improvements in grade progression among high school students. The combined achievement effect of intensive small-group instruction and the rest of the turnaround bundle is comparable to the impact of injecting high-performing charter school practices into low-performing traditional public schools. These results provide encouraging evidence that accountability-driven improvement of chronically underperforming districts is possible.

Background

In recent years, considerable Federal resources have been devoted toward turning around underperforming schools and districts. The Obama administration's signature education initiative, Race to the Top, awarded \$4.35 billion to states in competitive grant funding based in part on states' turnaround plans. This was on top of \$3 billion in new funding for School Improvement Grants (SIG), aimed at turning around the lowest-performing five percent of public K-12 schools. States have taken a

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variety of approaches to addressing chronic underperformance. Through its Elementary and Secondary Education Act Flexibility Program, the U.S. Department of Education (U.S. ED) has encouraged states to adopt tiered accountability systems targeting the lowest performers for intensive interventions and has held up the Massachusetts system as an exemplar. This system has three distinct features. First, it classifies schools and districts into five levels based on performance. Second, it requires low-performing schools and districts to implement rapid improvement plans. Third, it allows the State to takeover schools and districts at the very lowest levels of achievement.

LPS has a long history of underperformance, but the State took particular notice after reviewing results for the 2010-11 school year. Lawrence was in the bottom five districts in the State based on the percentage of students considered proficient on the ELA and math Massachusetts Comprehensive Assessment (MCAS) exams.

Studies of state takeovers prior to 2000 have found that states have had some success with district financial management, but less success with improving student academic outcomes. However, these takeovers predate No Child Left Behind (NCLB) and thus did not all occur in a policy context with standardized performance information and federally mandated high-stakes testing. A few recent papers have explored more contemporary examples of entire districts undergoing turnaround, sometimes in the context of state

takeover. Many of these studies focus, however, on exceptional circumstances, such as New Orleans, where reforms were tied up with the aftermath of the Hurricane Katrina disaster.

In contrast, the Lawrence paper examines the effects of the first two years of the State of Massachusetts' accountability-driven takeover and attempted turnaround of the LPS. This turnaround was a policy response stemming directly from state law that has since been repeated with Massachusetts' takeover of the Holyoke Public Schools and Southbridge Public Schools. Furthermore, with the recent passage of the Every Student Succeeds Act (ESSA), states will play an even greater role in addressing school and district underperformance. As a result, the need to identify and evaluate accountability models to inform the design of state systems has never been greater.

The Context: Lawrence, MA

Lawrence is a mid-sized, historically industrial city about 30 miles north of Boston that is considered, based on several measures, to be one of the most economically disadvantaged cities in the Commonwealth of Massachusetts. As of 2011, the school district enrolled approximately 13,000 students in 28 schools. Roughly 90 percent of LPS students were low-income and 80 percent had a first language other than English.

LPS has a long history of underperformance, but the State took particular notice after reviewing results for the 2010-11 school year. Lawrence was in the bottom five districts in the State based on the percentage of students considered proficient on the ELA and math Massachusetts Comprehensive Assessment System (MCAS) exams. Three quarters of the schools in the districts experienced declines in achievement between 2009-10 and 2010-11 and only about half of all students were graduating

high school within four years. Due to this poor performance, the Massachusetts Board of Elementary and Secondary Education classified LPS as a Level 5 district, the lowest rating in the state's accountability system, and placed the District into receivership in the fall of 2011. LPS was the first Massachusetts school district to be placed in receivership and taken over by the State since the passage of the State's 2010 Achievement Gap Act which granted the State the authority to intervene and take control of Level 5 districts.

Receivership did not automatically come with large amounts of additional funding. According to the Massachusetts Department of Elementary and Secondary Education (MA DESE), per pupil spending increased only slightly in the first year of the turnaround from \$13,272 in 2011-12 to \$13,852 in 2012-13. This was relatively similar to the state average for 2012-13 of \$14,021. However, in the second year of the turnaround, LPS did receive more than \$2 million in Race to the Top funding and more than \$3 million in School Redesign Grants through the federal School Improvement Grant program. In addition, LPS has received some private funding, from individual donors and foundations, to support special programs such as the Acceleration Academies.

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The Lawrence Public Schools Turnaround

In January of 2012, the State appointed a Receiver: Jeffrey Riley, a former Boston Public Schools teacher, principal and deputy superintendent. Riley was given all the authority of the previous Superintendent and School Committee. The Achievement Gap Act also gave the Receiver broad discretion to alter district-wide policies including the collective bargaining agreement, to require staff to reapply for their positions, and to unilaterally extend the school day or year district-wide. The Receiver spent the Spring of 2012 gathering information, recruiting and hiring a central office team, visiting schools and planning for the next academic year. This brief covers the first two years of turnaround implementation: 2012-13 and 2013-14. During this period, the turnaround strategy had five primary components.

First, ambitious performance targets raised expectations for the students and the staff. These targets included improving the district's ELA and math growth and proficiency rates on MCAS tests and the graduation and dropout rates. Second, the District reduced spending on the central office, pushing resources to the school-level. Under a model called "Open Architecture," all schools benefited from expanded autonomies such as control over their budgets, staffing, professional development, and school calendars. However, the District provided differentiated levels of supports to schools based on their prior performance and perceived capacity, with some schools' plans subject to greater central scrutiny prior to approval. In addition, while the majority of schools remained under traditional management, the District handed over a small number of the lowest performing schools to outside operators. All schools, even those managed by charter operators, were unionized and retained neighborhood- rather than choice-

based student assignment policies.

Third was an effort to improve the quality – both skill level and growth mindset – of the District’s administrators and teachers. Half of the principals were replaced in the first two years. The District actively replaced between eight and ten percent of teachers in year one. Between dismissals, resignations and retirements, roughly one-third of teachers turned over within the first two years. In year two, the District replaced its teacher compensation system with a performance-based career ladder model that introduced new teacher leadership roles. The fourth turnaround plan feature was a greater emphasis on the effective use of data to drive instructional improvement. School teams received data coaching to support this shift.

The fifth and final major turnaround component was increased learning time, including an expanded school day, enrichment activities, tutoring, and special programs. By year two, the school year was expanded by at least 200 hours for all first through eight grade students. The District worked with several local enrichment providers to expand offerings such as theater, dance, arts, music and sports. One particularly notable component of the expanded learning time efforts was the “Acceleration Academies.” These programs provided struggling students with targeted instruction in a single subject, delivered in small groups of roughly ten, by select teachers over week-long vacation breaks. Administrators aim for a total of 25 hours of instruction over the course of the week, but instruction in the core subject is typically broken up by two “specials” per day, covering topics ranging from theater, visual art, music, sports, technology, to cooking. The District’s primary goal is to provide the students who need it most with additional time in front of a talented teacher. These teachers were recruited from both within and outside of

Lawrence and applied through a competitive process. Principals nominated students from their individual schools to participate in the program. The District recommended focusing on students in the lowest two categories of proficiency ratings based on the previous year’s MCAS exams, although the District does not mandate principals use any particular selection criteria. When pitching the program to parents and students, educators emphasize that the Superintendent has selected them for a special opportunity to get extra academic help.

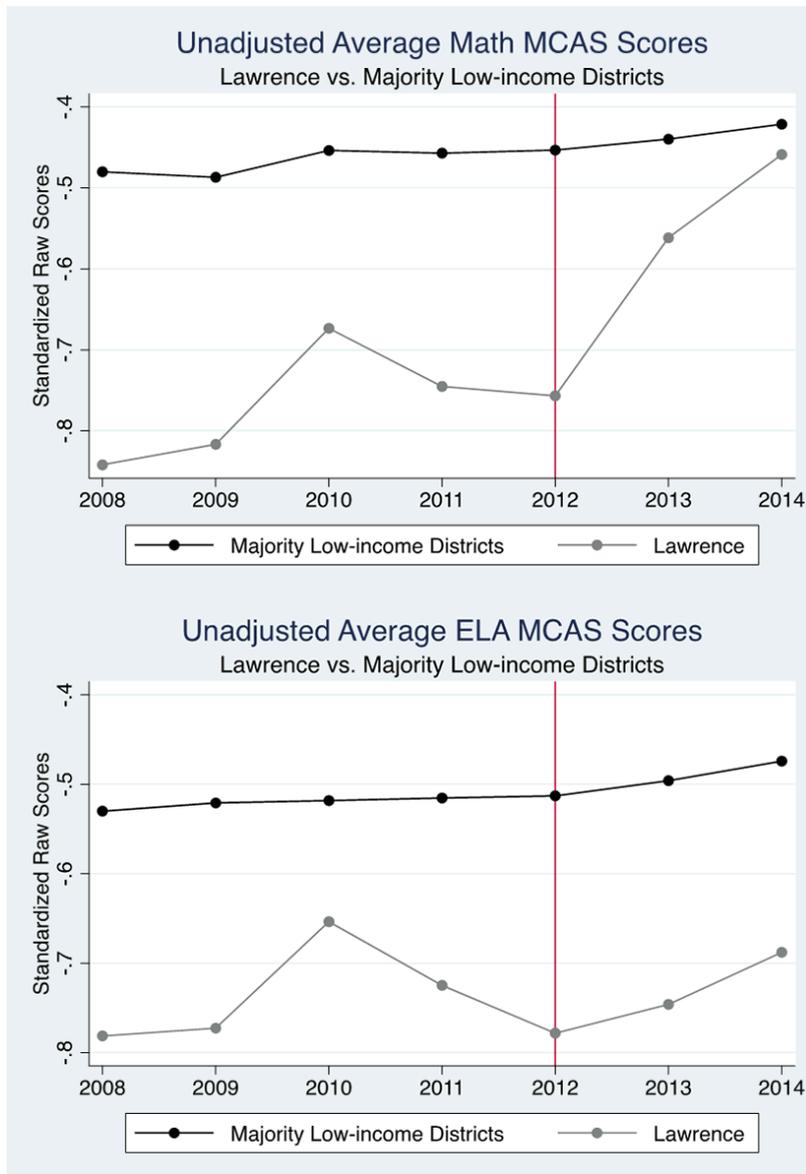
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Data Description

The MA DESE provided student-level administrative data on all students in the state from the 2007-08 to the 2013-14 school year, including information on each student’s grade, school, district, demographic characteristics, standardized test scores, attendance and high school graduation status. The full sample includes over 500,000 unique students in each year. The analysis focuses on a sample that includes the roughly one-fourth of students attending the 50 or so school districts in the state in which at least half of the students qualified for free or reduced price lunch as of 2007-08. These districts provide a more relevant comparison to LPS.

The primary measures of academic achievement are students’ scores on the statewide mathematics and ELA MCAS exams, given in 3rd-8th and 10th grades. Additional

Figure 1: Overall Mean Math and ELA MCAS Scores



outcomes include school attendance, grade progression, probability of remaining in the same district, probability of remaining enrolled in school, and probability of taking the MCAS in any given year. The state data is supplemented with records provided by LPS on Acceleration Academy participation. In 2012-13 a total of 1,570, or 21 percent of LPS students, participated in at least one Acceleration Academy. In 2014, participation roughly doubled.

Analysis and Results

Basic Trends in Math and ELA Achievement.

The paper begins by using the raw data to explore achievement trends in Lawrence and other districts. Figure 1 illustrates Lawrence's chronic underperformance prior to the receivership. Panel A presents math MCAS scores for all tested Lawrence students and students in other majority low-income districts in Massachusetts. These are standardized so that the mean for the State as a whole is zero. For the five years leading up to the turnaround,

Lawrence students underperformed both Massachusetts as a whole and other majority low-income districts. In 2013, the first full year of the turnaround, math scores in Lawrence rose relative to the rest of the state, closing roughly two-thirds of the gap between LPS and other majority low-income districts, and then rose again, nearly closing that gap in 2014. Math scores in other low-income districts remained relatively flat during this time. This clear break from trend already suggests that the turnaround may have had large impacts on math achievement in Lawrence.

Panel B suggests that in ELA, prior to the turnaround, Lawrence substantially underperformed the rest of the state and other low-income districts. ELA scores do rise slightly in 2013 and again in 2014 but so do the scores of other low-income districts. Combined with the noisiness of ELA scores in Lawrence's pre-turnaround period, this makes it less clear

whether increases in ELA scores are due to the turnaround itself.

Turnaround Impacts on Math Achievement. To more rigorously study the overall effect of the turnaround, the paper relies on a difference-in-differences analysis. This allows a comparison of the change in achievement for Lawrence students before and after the turnaround to the change for other similar students who did not experience the Lawrence turnaround over this period. Specifically, Lawrence students are compared to students in other majority low-income districts in Massachusetts who are identical to the Lawrence students in terms of their prior MCAS achievement and school attendance, as well as their demographic characteristics. Demographic controls include measures of gender, race, free or reduced price lunch status, First Language Not English (FLNE) status, Limited English Proficiency status and special education status. The paper

Table 1: Acceleration Academy Participation Effect on Test Scores

	Math		ELA	
	(1) 2013	(2) 2014	(3) 2013	(4) 2014
2013 Math Acceleration Academy	.12** (.027)	.06 (.041)	-.005 (.029)	.06 (.040)
2013 ELA Acceleration Academy	.04 (.026)	.04 (.038)	.09** (.028)	.07 (.039)
Rest of Lawrence Turnaround	.11** (.011)	.19** (.013)	-.04** (.012)	.01 (.016)
N of Students	149,988	147,508	150,288	147,794
2014 Math Acceleration Academy		.18** (.027)		.11** (.030)
2014 ELA Acceleration Academy		.06* (.026)		.11** (.028)
Rest of Lawrence Turnaround		.13** (.016)		-.04* (.018)
N of Students		147,508		147,794

*Note: Standard errors are clustered at the student level ($\wedge p < .10$; * $p < .05$; ** $p < .01$). All estimates come from a regression of the listed outcome on two three-way interactions between the year, an indicator for enrollment in the Lawrence Public Schools, and an indicator for participation in an Acceleration Academy by subject, as well as a two-way interaction between the year and enrollment in the Lawrence Public Schools. All models include lagged test scores and attendance, as well as grade-by-year and student fixed effects. For all 2014 estimates, 2012 values for the lagged test scores and attendance are used. The sample for the 2013 estimates excludes 2014 observations and 2014 estimates exclude 2013 observations. All samples include only students in districts outside of Lawrence that were majority low-income in 2008.*

includes comparisons estimated in multiple ways, for instance, comparing the same school-grade combinations to themselves over time and controlling for any shocks common to a given grade in a particular year, such as changes in exam difficulty. Finally, the paper includes an analysis of within-student changes, comparing students to themselves over time before and after the turnaround. Regardless of the approach to estimating the turnaround effect, the results for math consistently show

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that the turnaround raised Lawrence students' math achievement by 0.17 standard deviations. To put the size of this effect in perspective, the overall achievement gap between low-income and non-low-income students in Massachusetts as a whole is roughly 0.80 standard deviations. Therefore, the turnaround effect in math was the size of over twenty percent of the social class-based achievement gap. In sum, all of the estimates suggest that the turnaround had large positive impacts on math achievement.

Turnaround Impacts on ELA Achievement. In ELA, the paper includes the same set of models and all estimates suggest much more modest

impacts in ELA than in math. Specifically, the turnaround had no apparent impact on ELA scores in its first year and at best small positive impacts in its second year, on the order of 0.03 standard deviations. In both math and ELA, Lawrence's FLNE students appear to have benefitted somewhat more from the turnaround than non-FLNE students, on average.

Acceleration Academies. Next, the study examines whether achievement gains depend on whether Lawrence students participated in an Acceleration Academy. Again, this is accomplished by comparing students to themselves over time in order to address the potential concern that students who were and were not nominated for Academies were different on unobserved dimensions that could explain differences in achievement gains regardless of Academy participation. This brief focuses on the 2013 Academy results.² These estimates suggest that 2013 non-participants' math scores rose by 0.11 standard deviations, whereas Academy participants' scores rose by an additional 0.12 standard deviations, for a total first-year improvement of 0.23 standard deviations. In other words, LPS students who did not participate in the 2013 math Acceleration Academy showed substantial gains on average, but those who did participate showed even larger gains. These results are displayed in column (1) of Table 1. The second column suggests that roughly half of the 2013 Academy effect faded out by 2014, although overall turnaround effects continued to increase.

The story is somewhat different for reading achievement. Estimates suggest that Lawrence students who did not participate in the 2013 ELA Academies lost ground slightly, but this estimate is small and somewhat sensitive to the choice of pre-period. Academy participants gained about 0.09 standard deviations relative to non-participants, for an overall first-year gain

of 0.06 standard deviations. The fourth column suggests that these gains largely persisted into 2014. In other words, the overall small positive effect of the turnaround in ELA is entirely concentrated among Acceleration Academy participants.

It should be noted that the estimates of the effects of the 2013 Acceleration Academies could in theory be biased by “differential selection” into participation. In other words, Academy participants could show greater improvement than non-participants for the very same reasons they were selected into the Academy. To account for this, the Acceleration Academy models control for the prior achievement and attendance variables that LPS administrators described as being part of that selection process. One model also includes student fixed effects to compare students to themselves before and after participation in an Academy. One indication that such controls are sufficient to largely eliminate bias in the 2013 estimates is the fact that there are clear positive impacts of each Acceleration Academy on its

The bulk of the evidence thus suggests that Acceleration Academies were an important component of LPS’ turnaround success, although the rest of the turnaround bundle still resulted in math gains for Lawrence students who did not participate in Academies.

own subject but no effects of each Academy on the other subject. If differential selection were an issue here, researchers would expect to see similar impacts of a given Academy across both subjects.

The bulk of the evidence thus suggests that Acceleration Academies were an important component of LPS’ turnaround success, although the rest of the turnaround bundle still resulted in math gains for Lawrence students who did not participate in Academies.

Turnaround Impacts on Other Academic Outcomes. There is no evidence of any impacts, either positive or negative, on any of the other non-test academic outcomes explored. This included days of school attendance, overall grade progression, the probability a student transferred district, the probability that a student remained enrolled in school, the probability a student took the MCAS exam, or the probability of graduating in 12th grade, conditional on having progressed to 12th grade. The one exception is grade progression among high school students. By year two, the turnaround appears to have made Lawrence high school students about nine percentage points more likely to progress to the next grade.

Conclusion

This new study illustrates that the Lawrence Public Schools receivership has demonstrated promising early results, particularly in terms of students’ mathematics achievement and among the district’s large FLNE population. Students exposed to the first two years of the turnaround appear to have made substantially larger mathematics achievement gains than demographically similar students in other majority low-income school districts across Massachusetts. In ELA, there is some evidence of small positive effects by year two. There is also suggestive evidence that the turnaround increased the probability that Lawrence high school students progress from one grade to the next and no evidence of slippage on any of the other outcomes we explored. Students who participated in Acceleration Academy programs over week-long vacation breaks made larger

gains in both ELA and math than did non-participants within and outside of Lawrence. Math gains are larger among Academy participants, but the overall math effects cannot be fully explained by Academy participation. Gains in ELA are more fully concentrated among ELA Academy participants.

The size of these effects is notable. In year one, the combined average effect of Acceleration Academy participation, plus the remaining bundle of turnaround reforms was 0.23 standard deviations in math and 0.05 standard deviations in reading. These effects can be put into context through a comparison with the size of effects found in two other studies of related interventions. The combined effects of Acceleration Academy participation plus the rest of the Lawrence turnaround are slightly larger than the effects of injecting high-performing charter schools practices into

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low-performing, traditional public schools in Houston, Texas.³ Lawrence effects are somewhat smaller than, but still comparable to the effects of grandfathering traditional public school students into charter schools in New Orleans and Boston.⁴ It is also worth noting that, in contrast to New Orleans, only about three percent of Lawrence's 2013 test-takers were in schools and grades taken over by outside operators. Therefore, only a small fraction of the widespread achievement gains

we observe are attributable to such outside operators.

Based on the year one results alone, the Acceleration Academies seem especially effective, particularly given that they involve only one week of intensive instruction. Although at first glance this may seem like a low-intensity intervention, it is important to keep in mind that participating students receive at least 25 hours of additional instruction in a given subject over the course of the week. The District argues that this adds up to more hours of instruction in a core subject than a student gets in a typical month of school. LPS estimates that this program costs approximately \$800 per student per week. These Acceleration Academy programs might be a useful and scalable strategy for schools looking to improve the performance of struggling students in core content areas, regardless of whether or not their districts are pursuing an aggressive district-wide turnaround effort.

It is important to keep in mind that these findings focus solely on results from the first two years of the turnaround. The turnaround has since included additional interventions including piloting full-day Kindergarten for four-year-olds, implementing a new teacher contract that mandates school-based teacher leadership teams, attempting to equalize funding between schools, and creating a district-wide family engagement office. Not only is it unclear how these additional changes will impact student achievement in the short run, it is uncertain whether the short-term gains observed will be sustained over time and translate to longer-term outcomes of interest such as college enrollment and persistence, particularly if and when the Receivership is phased out and local control of the District is reinstated. Lawrence has made impressive gains, but there is still work to be done to realize the goal of eliminating the gap between

Lawrence and Statewide averages. Despite these open questions, this study undoubtedly provides an encouraging proof point that accountability-driven improvement of chronically underperforming districts serving primarily low-income and FLNE students is indeed possible.

Endnotes

1. Schueler, B., Goodman, J. & Deming, D. (2016). Can States Take Over and Turn Around School Districts? Evidence from Lawrence, Massachusetts. *NBER Working Paper No. 21895*.
2. The paper includes the same analysis for the 2014 Acceleration Academies in the bottom panel of Table 1, but the focus of this brief is the 2013 results. Estimating the 2014 impacts is complicated by the fact that 2014 participation status may be correlated with 2013 participation and other unobservable shocks to students in 2013. We are therefore less confident in a causal interpretation of these estimates.
3. Fryer, R. (2014). Injecting Charter School Best Practices into Traditional Public Schools: Evidence from Field Experiments. *Quarterly Journal of Economics*.
4. Abdulkadiroglu, A., Angrist, J., Hull, P. & Pathak P. (2014). Charters Without Lotteries: Testing Takeovers in New Orleans and Boston. *NBER Working Paper 20792*.