CAN SCHOOL INTEGRATION INCREASE STUDENT ACHIEVEMENT?
EVIDENCE FROM HARTFORD PUBLIC SCHOOLS

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By

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CAN SCHOOL INTEGRATION INCREASE STUDENT ACHIEVEMENT?
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ABSTRACT

Since Brown vs. Board of Ed prohibited de jure school segregation, the national black-white achievement gap has reflected trends in school integration. Hundreds of programs and policies since then have had only incremental impacts on the disparities in educational outcomes based on race and socioeconomic status. In Hartford, CT, the 1999 Sheff vs. O’Neill case required the State of Connecticut to create an integration program to reduce racial isolation in Hartford’s segregated inner city schools. As a result, Hartford implemented a proactive integration policy. Between 2008 and 2013 the number of poor black and Hispanic students attending an integrated school in Hartford increased twenty percentage points. A difference-in-difference approach was used to test whether this policy had an effect on reading, writing and math proficiency rates, holding demographic factors constant. The study finds that integration status has a positive and highly significant effect on proficiency rates in math and reading and no effect on writing proficiency.
O, let my land be a land where Liberty
Is crowned with no false patriotic wreath,
But opportunity is real, and life is free,
Equality is in the air we breathe.

Langston Hughes, “Let America Be America Again”
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INTRODUCTION

America is a diverse society in which educational differences have the potential to become a progressively larger source of inequality and social conflict. Many people now recognize that eliminating these differences has become a moral and pragmatic imperative. (Miller, 1995)

In the US we believe that education is the great equalizer, but we have acted on that belief inconsistently throughout our nation’s history. Today, the black-white achievement gap persists despite broad school reform efforts ranging from increased spending to higher accountability to better teacher education. This thesis will use a difference-in-difference analysis of an integration effort in Hartford, Connecticut to determine whether purposeful integration increased student achievement, with the hope that Hartford’s outcomes can support policy decisions in other cities.

On May 7, 1954, the Supreme Court ruled that segregation in schools was illegal (Brown v. Board of Ed, 1954). This case marked a promise of better opportunity for the next generation. During the 1960s, schools across the country integrated in compliance with this ruling. Integration did reduce the black-white achievement gap: between 1970 and 1988, the black-white achievement gap narrowed by 46% (NCES, 2012). Further studies determined that higher achievement led to better life outcomes: blacks who spent five or more years in desegregated schools earned 25% more than those that did not (Johnson, 2011). They were less likely to be incarcerated, and more likely to be healthy as adults (ibid). Integration had no negative effect on whites’ earnings, incarceration, or health.
Yet over the years, segregation crept back. Detroit’s 1974 Miliken v. Bradley case decided that segregation was constitutional as long as it was not a product of the district’s explicit policy (Miliken v. Bradley, 1974). In the early 2000s, federal judges struck down mandates that had ordered deliberate integration policies (Greenberg, Grewal, Kalogrides, Reardon, 2011). Meanwhile, between 1960-1970 whites began moving out of cities, leaving minorities behind in the urban core. Neighborhoods and schools became resegregated (Fry and Taylor, 2012, Frankenberg, Lee, and Orfield 2003; Orfield, Kucsera, and Siegel-Hawley 2012). Even though integration was shown to have positive effects on minority students and no negative effects on white students, many districts did not pursue desegregation efforts once federal mandates were removed.

![Figure 1: White flight across America, between 1960 and 1970. Source: NYSTROM/Herff Jones, 2015](image)

Within these re-segregated schools, expectations of students, resources, and traditions were different (Kozol, 2005). These inequities perpetrated an achievement gap, which
contributes to a gap in social outcomes between whites and minority students (Hanushek, Kain and Rivkin, 2009, Perry 2010).

![Figure 2: The Black-White Achievement Gap between 1971-2012. Source: NCES, 2014.](image)

Myriad public and non-profit efforts have been targeted at the racial achievement gap.¹ Head Start, Title I, local at-risk funding, teacher evaluations, instructional reforms, and non-profits like Teach for America all focus on providing more equitable educational opportunities for minority students.² But despite this multi-sector, multifaceted push for

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¹ The Department of Education lists 22 nationwide initiatives and projects; there are more than two million non-profits in the US, according to the National Center for Charitable Statistics at the Urban Institute. If one-twentieth of those non-profits did work related to education, that would be over one hundred thousand programs related to education reform. In addition to these, there are also state and local education initiatives and programs.

² Mission statements for these organizations each mention equalizing educational opportunity for students from all backgrounds. Head Start: “The National Head Start Association (NHSA) is a nonprofit
educational equity, the black-white student achievement gap has actually widened slightly since 1988, when integration was at its peak (NCES, 2012).

**Table I:**
Percent Of Black Students In Schools With More Than Half Minority Students
By Region, 1968-1980

<table>
<thead>
<tr>
<th></th>
<th>Total U.S.</th>
<th>Southern States</th>
<th>Border States</th>
<th>Northeast States</th>
<th>Midwest States</th>
<th>West States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>76.6</td>
<td>80.9</td>
<td>71.6</td>
<td>66.8</td>
<td>77.3</td>
<td>72.2</td>
</tr>
<tr>
<td>1972</td>
<td>63.6</td>
<td>55.3</td>
<td>67.2</td>
<td>69.9</td>
<td>75.3</td>
<td>68.1</td>
</tr>
<tr>
<td>1976</td>
<td>62.4</td>
<td>54.9</td>
<td>60.1</td>
<td>72.5</td>
<td>70.3</td>
<td>67.4</td>
</tr>
<tr>
<td>1980</td>
<td>62.9</td>
<td>57.1</td>
<td>59.2</td>
<td>79.9</td>
<td>69.5</td>
<td>66.8</td>
</tr>
<tr>
<td>Change</td>
<td>-13.7</td>
<td>-23.8</td>
<td>-12.4</td>
<td>+13.1</td>
<td>-7.8</td>
<td>-5.4</td>
</tr>
</tbody>
</table>

Can renewed integration efforts increase student achievement? A few cities have recommitted to integration efforts, with mixed results. This thesis will examine whether school integration efforts in Hartford, Connecticut reduced the achievement gap for minority students between 2007-2013.

**BACKGROUND**

*The unique story initiated by Connecticut’s Supreme Court is of great regional and national importance, not as a grand solution to a very deeply embedded problem but as an important example of what can be done through the wise use of choice programs with clear civil rights objectives and major educational innovations.*

(Orfield, 2015)

organization committed to the belief that every child, regardless of circumstances at birth, has the ability to succeed in life.” Title I: “Title I… provides financial assistance to local educational agencies (LEAs) and schools with high numbers or high percentages of children from low-income families to help ensure that all children meet challenging state academic standards.” Teach for America: “Our mission is to enlist, develop, and mobilize as many as possible of our nation's most promising future leaders to grow and strengthen the movement for educational equity and excellence.”
Sheff vs. O’Neill: The Catalyst for Integration Efforts in Hartford, CT

In 1989 in Hartford, Connecticut, the parents of 4th grader Milo Sheff and seventeen other children began a civil action against the state for providing a racially isolated and therefore unequal education to their children. Some plaintiffs were black, some were Latino or white. Even though segregation in their schools was no result of state policy—rather as a result of racially homogenous neighborhoods— the plaintiffs claimed that the state was responsible for proactively integrating these schools.

In 1995, Judge Harry Hammer ruled in favor of the state, writing in his decision that Connecticut was not responsible for correcting educational inequities due to de facto segregation, only for ensuring that no de jure segregation took place. In 1996, John Brittain, a civil rights lawyer, appealed Hammer’s decision. The initial ruling was overturned by the Connecticut Supreme Court on the basis that Connecticut had an obligation to provide students with equal educational opportunities. According to their decision, that meant the state had to provide students an education that was not impaired by racial and ethnic isolation (Sheff vs. O’Neill, 1999). In compliance with the court’s ruling, the legislature called for additional spending on magnet schools, voluntary interdistrict transfer programs, and interdistrict coop programs. It prohibited redrawing of district boundaries (ibid).

3 Precedent for Hammer’s decision could be found in Miliken v. Bradley, among other cases.

4 While there was some language in the Connecticut State Constitution about equitable school funding, the Supreme Court’s decision deviated from other US Supreme Court precedents that have held that only de jure segregation is unconstitutional. Relevant language from the eighth article of the Constitution of the State of Connecticut reads, “The interest of [the school fund] shall be inviolably appropriated to the support and encouragement of the public schools throughout the state, and for the equal benefit of all the people thereof….and no law shall ever be made, authorizing such fund to be diverted to any other use than the encouragement and support of public schools, among the several school societies, as justice and equity shall require.”
In 2003, a legal settlement between the plaintiffs and the state formalized the definitions, integration targets and programs the state would support to comply with the Sheff vs. O’Neill ruling. The state funded two main programs: the Interdistrict Magnet Program and the Project Choice Transfer Program (Dougherty, Estevez, Wanzer and Tatem, 2006). The goal was that at least 30% of poor black and Hispanic students living in downtown Hartford would attend integrated schools by June 2007.

This settlement effectively created a natural experiment in Hartford. Because the ruling concerned Hartford and its suburban ring but not the other segregated school systems in Connecticut, any change in achievement trends in Hartford that did not occur in other cities could be attributed to the integration policy. If integration efforts narrowed the achievement gap, integration could begin to be investigated as a strategy for school reform.

*Hartford: An Ethnographic and Political History of Inequality in Connecticut’s Capitol*

Due to a strong manufacturing and shipping industry, Hartford was the wealthiest city in the country by the late 19th century (Clark, 1876). Today it is the second-wealthiest city in the nation (Lee, 2015). Attracted by its wealth and booming manufacturing sector, immigrants flooded to Hartford during the first half of the twentieth century, including a tide of Puerto Rican immigrants right after World War II.

But in the late 1950s, as suburbs around Hartford sprang up to make room for its new

---

5 A note about language: For the purpose of this study, “integrated” and “desegregated” mean different things. While all schools in the US were ordered to be desegregated by Brown vs. Board of Ed in 1954, being desegregated is necessary but not sufficient for being integrated. If a desegregated school’s neighborhood has only black and Hispanic residents, then it is, in the language of the Sheff case, racially isolated. This distinction can also be thought of in terms of de jure and de facto segregation. While segregation in Hartford was de facto, the court ruled that the Department of Education had a responsibility to create integrated educational environments. According to the terms of the settlement agreement, schools were considered integrated if they had at least 25% but not more than 75% black and Hispanic children in attendance.
residents, the city’s core began to decline. Businesses moved to less expensive locations in the suburbs and wealthy whites followed them at increasing rates. In the 1990s, Hartford’s population shrank by 11 percent (1999 Census).

![Map of Integration Efforts in 1966](image)

*Figure 3: Map of Integration Efforts in 1966, The Hartford Times. Source: Hartford Public Library.*

Despite its historic wealth, a series of recent economic policies, such as high taxes on everything from income to sales to unemployment insurance, have made Connecticut one of the most hostile climates to small business in the country (Powell, 2013). By 2012, Connecticut was last in the country for economic growth; that year it was the only state whose economy actually shrunk (BEA, 2012). This took a toll on employment and economic mobility prospects for residents. That year, 17.3% of the workforce was unemployed and more than a quarter lived below the poverty line (De Avila, 2012). Between 1996 and 2006, the number of small businesses in the state declined by 2.2%, when the average change in all other states was a 10% increase (ibid). As a result of a
barren employment landscape, crime is pervasive in some parts of the urban core. In 2013, Hartford was the 24th most dangerous city in the US and the 4th most dangerous city under 200,000 people (Warner, Fuchs and Lubin, 2013; FBI, 2013).

Limited economic opportunity and high crime rates contribute to the state of housing and school segregation between inner-city Hartford and its suburban neighbors. In 1987-88, the school year before Sheff vs. O’Neill was filed, there were 25,000 students in the Hartford Public School District, 90.5% of whom were ethnic minorities, while the surrounding suburbs were 2-30% minority (Brenz, 2013). Virtually all students who attended segregated schools were also poor, and achieved at much lower rates than their white affluent peers (Orfield, 2015). This led to Elizabeth Sheff’s 1989 decision to sue the state on grounds that isolated education is not equal education, a conclusion that much subsequent econometric research has justified (NCES report 2015-018, among others). Importantly, due to its longstanding history of anti-slavery sentiment, Hartford as a city was open to Sheff’s view on the state’s responsibility: teachers and principals testified against the state in the Sheff proceedings, giving evidence that was crucial to both the Supreme Court’s decision and to public sentiment about the case (Green, 1993).

The 2003 and 2008 Sheff Settlements: Goals, Programs and Results

In the initial 2003 Sheff settlement, the goal was that 30% of public school minority students living in Hartford would have an integrated educational experience by June 2007. The settlement defined “integrated” schools as schools where minorities constituted more than 25% and less than 75% of students. There were three main initiatives through which the state sought to achieve this goal:
1) **Interdistrict Magnet Schools.** These schools, mostly located in the urban core, were designed to attract suburban students to attend school in the city. They offered specialized curricula, often with new facilities like a performing arts center or a planetarium.

2) **The Open Choice Program.** This program allows inner city minorities to transfer to a suburban district school. The hosting district specifies how many Open Choice students they will accept each year.

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**Figure 4:** Hartford Public Schools offers students the opportunity to choose from a variety of school options through the Regional School Choice Office Lottery. HPS partners with other magnet and charter providers as well as suburban open choice districts.

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3) **The Reverse Choice Program.** This much smaller program allows students from the suburbs to transfer into an urban district school.

<table>
<thead>
<tr>
<th>Year</th>
<th>Goal</th>
<th>Actual</th>
</tr>
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<tbody>
<tr>
<td>2002-2003</td>
<td>30%</td>
<td>10%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>30%</td>
<td>13%</td>
</tr>
<tr>
<td>2006-2007</td>
<td>30%</td>
<td>17%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>41%</td>
<td>--</td>
</tr>
<tr>
<td>2010-2011</td>
<td>41%</td>
<td>--</td>
</tr>
<tr>
<td>2012-2013</td>
<td>41%</td>
<td>37%</td>
</tr>
<tr>
<td>2015-2016</td>
<td>47.5%</td>
<td>45.5%</td>
</tr>
</tbody>
</table>

*Data for this table was compiled from settlement documents and the Connecticut Mirror’s reports on integration levels. Empty boxes represent years when integration was not measured.*

Students from either the Hartford urban core or the hosting districts were eligible to participate in both programs. Spots were allotted through the Greater Hartford Regional School Choice Lottery.

In 2003 when Sheff and the State of Connecticut reached this initial settlement, only 11% of Hartford minority students were receiving an integrated education (Orfield, 2015). By 2007 that number had grown to 16.9%, but it had still fallen far short of its goal of 30% (Orfield, 2009). Some magnet schools had too many minorities (>75%) while others had too few (<25%) (Rioual, 2013). Further, many minorities attending magnets were actually coming into Hartford from the suburbs, where their home districts would have been more integrated than the options available to city residents (ibid). As a result, the state and the plaintiffs negotiated a new settlement in 2008. This time, they aimed for 80% of lottery applicants to be accommodated in an integrated education environment by June 2013 (Connecticut General Assembly, 2008), with a fallback goal
of 41% of poor black and Hispanic students from the urban core being enrolled in reduced-isolation settings. The state promised more resources and greater political efforts to meet the increased goals. There was dramatic improvement—by 2013, 43% of Hartford minority students attended a racially integrated school (Orfield, 2015).

Demand for the programs operated under the integration efforts is high. Many more families enter the lottery than can be accommodated in either of the programs (Dougherty, 2014). Even though Hartford surpassed its 2013 fallback goal of 41% of minority students in reduced isolation schools in 2013, it did not succeed in placing 80% of lottery applicants. Sheff and the state are currently in ongoing negotiations about future requirements, with another ruling expected in the next 1-2 years (Megan, 2015). There may be future settlements which require the city to meet this growing demand.

Several studies have been done using Hartford data from 2003 to 2008, which find a positive effect of integration on student achievement scores in math and reading (e.g., Bifulco, 2009; Cobb, 2011). Further, positive effects of magnet schools on student achievement have been found in Hartford (Orfield, 2015). But no study has yet been done to evaluate the impact of integration on academic outcomes since the Phase II settlement efforts in 2008. Because the percent of students attending an integrated school increased from just below 17% to 43% in the five years following those renewed integration efforts, any impact on student achievement in Hartford during those years can add to the body of evidence for policymakers considering whether integration can work as a citywide education reform strategy.
LITERATURE REVIEW:

DOES INTEGRATION IMPACT WHAT STUDENTS ACHIEVE?

In the 1966 Coleman Report, formally titled *Equality of Educational Opportunity*, researchers from Johns Hopkins concluded that poor black students learn better in well-integrated classrooms (Coleman et al, 1966). Over the subsequent 50 years, researchers explored and tested this conclusion to inform policy decisions, particularly in light of the growing achievement gap amongst our country’s high and low achievers. Research has shown that school segregation impacts student achievement when it concentrates race, when it concentrates poverty, and when it reduces students’ self-worth.

*Racial Diversity Promotes Achievement: Theory and Evidence*

According to sociological theory, attending a racially diverse school develops self-awareness and critical thinking as students learn about people who are different from them and prepares them to succeed in a racially integrated world. This exposure may stimulate their creativity, ability to see diverse perspectives, and curiosity about the world, leading to higher academic achievement through the cultivation of attitudes and mindsets (Schofield, 1995, and Wells & Crain, 1994).

There are mixed results on whether higher levels of integration lead to higher student achievement. Cook and Evans (2000) found that little of the black-white gap in NAEP scores can be attributed to segregation level. Card and Rothstein (2007) found that neighborhood segregation had consistently negative effects on student achievement, but that school segregation had no independent effect. The most recent result, Hanushek, Kain and Rivkin (2009), found that the more segregated a school was, the worse its black
students performed academically, while segregation had insignificant effects on white
achievement. The magnitude of their finding was significant: according to their analysis,
if all Texas schools had the mean share of black enrollment, the black-white achievement
gap for 7th graders would be reduced by 10% (Hanushek, Kain & Rivkin, 352). One
potential explanation why these studies found such different results is that it was hard to
find exogenous variation in racial composition in the data used for these studies.

Socioeconomic Status is the Best Predictor of Student Success: Theory and Evidence

Theory about poverty and its influence on student achievement suggests that low
socioeconomic status (SES) influences student preparation for school, parental
involvement in education, and student aspirations beyond school (American
Psychological Association, 2014). Students in low-SES households are less likely to
have developed academic and social skills before starting school (Lacour, 2011). Once
they start school, they are less likely to receive help from their parents with homework or
to have parents engage in school activities. (US Department of Health and Human
Services, 2000). As they reach high school, they are less likely to stay enrolled and
graduate and are more likely to feel as though material is either not relevant or not
interesting to them (Yazzie-Mintz, 2007).

The empirical evidence on the implications of poverty on student achievement is
far less mixed than the effects of integration. Studies have shown that students’ own
socioeconomic status and that of their peers is positively related to achievement. The
Coleman Report found that the best predictor of student academic achievement was
family socioeconomic status, and the second-best predictor was the socioeconomic status
of the other students in the school (Coleman, 1966). Rusk (2002) studied public schools in Madison-Dane County, WI, and found that a 1% increase in middle class classmates was associated with a 0.64 percentage point gain in reading and a 0.72 percentage point gain in math. Rumberger and Palardy (2005) found that a school’s SES was as impactful as a family’s SES on student achievement growth in math, science, reading and history. The PISA 2006 report found neighborhood effects of socioeconomic status: students from any socioeconomic background performed better in a high SES school than a low SES school (PISA, 2006). Perry (2010) found that increases in a school’s mean SES were associated with consistent increases in student achievement, and that this relationship held regardless of students’ individual SES.

Self-Worth: The Psychological Theory Behind an Omitted Variable

The final avenue through which segregation impacts achievement is students’ self-worth. Sociological theory postulates that students who attend segregated schools develop an attitude that they are not “worth it” when they see how run-down their school is or how little their teachers care (Epps, 1975). Recent ethnographies of race relations in the US have cited broken windows and trash left out on the street in poor minority communities as physical manifestations of the world’s value for them (Coates, 2015, among others).

While this theory does not have the empirical evidence that the other two do, it is included here because psychological studies of black children that connected low self-esteem to segregated schooling were the main social science evidence of harm from segregation cited in Brown vs. Board of Education (Hanushek, 2009). In spite of
numerous qualitative studies of the self-worth effect, quantitative social science research has not explored this theory or its relationship to race and SES. Many studies instead try to isolate the effects of schools’ racial and socioeconomic composition, when in fact the two constructs are very much interwoven in the lived realities of schools (Mickelson, 2010). Without explicit studies of the impact of segregation on students’ self image, the psychological effects should be considered an omitted variable. When students attend schools in both racially and socioeconomically isolated neighborhoods, the self-worth effect most likely amplifies the negative effects of race and SES on student achievement.

Results of Integration Efforts on Student Achievement

Brown vs. Board of Ed’s prohibition of *de jure* segregation was correlated with an increase in student achievement. In 1988 when integration rates peaked, the black-white achievement gap had closed 54% (The Nation’s Report Card, NCES 2012). After 1988, the trends in *de facto* segregation began to undo the progress made by *Brown vs. Board of Ed* and the achievement gap began to widen again.

Based on the substantial empirical evidence that integration is positively correlated with achievement growth, a number of cities have used proactive integration as an education reform strategy. Some have found positive effects on student achievement or psychological metrics, but others have demonstrated no or negative impact.

A few examples of integration with positive results include Louisville and Jefferson County, Kentucky; Seattle, Washington; LaCrosse, Wisconsin; and Cambridge, Massachusetts (Semuels, 2015; Kahlenberg, 2012; and Cowen Institute, 2011). In 2008, Orfield, et. al., reported that students who attended integrated schools in Jefferson County
and Seattle “have reported that interracial schooling experiences have been valuable and have made them better prepared to live and work in diverse communities.” (Orfield, 104). Kahlenberg (2000) shows that through peer effects, economic integration in LaCrosse supports academic growth.

Those cities where integration efforts were ineffective include Detroit, which only made it two years before being released from its court order by the *Milliken v. Bradley* case, and Metco in Boston, where public opposition shut the program down. Detroit did not collect enough data for an empirical evaluation of the program’s effect. Boston lasted long enough that economists could evaluate impact: Angrist and Lang (2004) found that there was little positive impact on student achievement, but that blacks in receiving districts could be negatively impacted by the arrival of lower-achieving black students.

Research finds that integration methods and public opinion are crucial to the positive relationship with student achievement. Today, the most successful form of integration has been the magnet school, which pulls parents, students and faculty from diverse communities into a new school (Kahlenberg, 2000). Following that, open choice programs with friendly receiving districts have been correlated with positive effects on student achievement. Receiving districts which did not voluntarily extend spaces to urban students, as in Boston’s Metco and the Detroit program, fare worst.

The comparison between Louisville, KY and Detroit, MI shows how two originally similar districts have diverged since their decisions about integration. In 1972 when the courts ordered these two districts to integrate, their demographics looked similar: they had equally segregated schools and proportionally-sized racial ghettos (Orfield, 2015). In 1974 their paths diverged: *Miliken v. Bradley* freed Detroit from the
integration mandate, while Louisville kept theirs. In 2000, the average black student in Detroit attended school with less than 2% white students, whereas black students in Louisville were likely to attend schools that were half white (ibid). A comparison of student achievement on NAEP fourth grade reading tests in 2011 showed that twice as many students scored at goal or higher in Louisville as in Detroit (NAEP District Summary Tables, 2011). Further, there are stark economic differences: in 2010 Detroit had 28 jobs per hundred residents while Louisville had 61 (Orfield, 2015). Between 2005-2015, Detroit lost 25% of its population while Louisville’s increased by 7% (ibid).

There are many factors besides their school integration policies that have influenced these cities’ evolution, but this case study invites researchers to consider and investigate whether school integration policies can impact housing, race relations, economic opportunity and growth of enterprise in a city that chooses to integrate.
In Hartford, research on the impact of integration on student achievement was done prior to 2012 when integration levels were less than 30% (e.g., Bifulco, 2009, and Cobb, 2011). These analyses determined that the effects of integration programs were positive and statistically significant on reading and math scores of middle and high school students (Cobb, 2009). In the years since those studies came out, integration rates have risen from 30% of minority students in Hartford attending integrated schools to 45.5% (Thomas, 2013). The data from the past three years thus provides more variation in integration rates. This thesis will use the Hartford data from the years between 2007-2014 to show the impact of the integration policy on student test scores.
CONCEPTUAL MODEL

HOW CAN INTEGRATION IMPROVE STUDENT OUTCOMES?

I hypothesize that higher levels of school integration improve academic achievement for black and Hispanic students without affecting white students. I expect that the more even the ratio of black and Hispanic students to white and Asian students, the greater the improvement in student outcomes for blacks and Hispanics.

To derive the conceptual model, I returned to the research, which suggests that integrating schools changes student outcomes predominantly through school quality, peer effects, and psychological effects. Some researchers have found that integration mainly acts through improved school quality (Rumberger & Palardy, 2005). Others have found that the effect comes from peer effects; that is, minorities benefit from being in a school with whites or Asians (Hanushek, Kain & Rivkin, 2000). The following figure presents a conceptual model for how racial integration could catalyze improved educational outcomes. Consistent with the existing literature, this model suggests that a more even ratio of blacks and Hispanics to whites and Asians will improve student outcomes for blacks and Hispanics without significant impact on whites and Asians.
School quality, the first channel through which integration impacts achievement, can be determined by racial composition through increased funds or better advocacy. In the context of Hartford, white and Asian students attending integrated schools are almost all from a middle or high SES households (Orfield, 2015). High-SES households pay more in taxes, which means more money is available for school budgets. Further, more than 40% of low-income students don’t get a fair share of state and local education funding (US Department of Education, 2011). While low-income schools receive supplements from federal programs like Title I, this money often comes with restrictions that could impact how effectively it is deployed (Formula Fairness Campaign, 2015).

School quality could also be impacted through parent involvement. Parental advocacy can include demanding better information about what students are learning, pushing to recruit and retain higher quality teachers, volunteering at school activities, or even working on homework with one’s child. These behaviors have been shown to have

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*Figure 6: Conceptual Model for How School Integration Impacts Student Outcomes.*

School Integration
At least 25% but not more than 75% of students are black or Hispanic

School Quality is Higher
* higher teacher expectations
* more rigorous coursework
* students feel safer at school

Peer Effects
wealthy classmates are strong academically and behaviorally, students build relationships with classmates who are different.

Psychological Effects
students feel that they are “as good as” white and Asian students in the eyes of society

Improved Student Outcomes for Blacks and Hispanics
e.g., student achievement increases, graduation rates rise
strong positive effects on student achievement (Hill & Taylor, 2004). According to the U.S. Department of Health and Human Services, only 36% of low-income parents were involved with three or more school activities on a regular basis, compared with 59% of parents above the poverty line (HHS, 2015). When students from low social-capital families attend an integrated school, they benefit from the increased parent engagement. Rumberger and Palardy (2005) found that the most important channels through which school quality impacts achievement for black and Hispanic students are increased teacher expectations, more homework assigned, more rigorous courses taught, and students feeling safer at school.

Peer effects are the second channel through which integration impacts student academic outcomes. Children from affluent families are more likely to be academically advanced coming into school, while children from low SES families begin kindergarten with less linguistic capability than their middle-class and affluent peers (Purcell-Gates, McIntyre & Freppon, 1995). Students from affluent families are more likely to demonstrate constructive learning behaviors, whereas low SES is associated with higher levels of emotional and behavioral difficulties like anxiety, depression and ADD/ADHD (Weissman et al., 1984; Goodman, 1999; Spencer et al., 2002), and higher levels of aggression (Molnar et al., 2008). Research suggests that low SES students benefit from the academic preparation of their peers and assimilate to standards of behavior demonstrated by high SES students (Coleman, 1966; Rusk, 2002; Perry, 2010). Peer effects can also impact student achievement via social skills. Attending an integrated school has been shown to make students more comfortable around others of different backgrounds and less racially prejudiced (Wells, Holme, Revilla, & Atanda,
In the 2006 *Parents Involved* case, 553 social scientists signed an amicus brief stating that integrated education exposes students to cultural knowledge and social perspectives and promotes critical thinking (Amici Brief for the American Council on Education, 2007). Black and Hispanic students also graduate and attend college at a higher rate when attending integrated schools (Bachman, 1971). These skills and further education in turn sets them up for better job prospects beyond graduation (Garda, 2011).

The third channel through which integration impacts student outcomes for low-income black and Hispanic students is via psychological effects. Kenneth and Mamie Clark found that black children were likely to view black as “bad and ugly” and white as “good and pretty” (Clark and Clark, 1939). This trend is combined with the impact of low SES. According to the American Psychological Association, lower SES is linked to negative psychological outcomes like depression, learning disabilities, and a tendency to give up on tasks, while high SES corresponds with positive outcomes like optimism, self-esteem and perceived control (2015).

**EMPIRICAL STRATEGY:**

**CONNECTICUT DISTRICT LEVEL DATA**

**AND THE DIFFERENCE IN DIFFERENCES MODEL**

A difference in difference approach can be used to test the hypothesis about whether the integration program changed the trajectory of student outcomes in Hartford. The study will compare academic achievement trends in Hartford integrated schools (the “treatment group”) to achievement trends in other similar cities in Connecticut (“the control group”), before and after the integration efforts. Based on the difference between
treatment and control before 2008 and the difference after, an integration effect on achievement can be estimated.

In late 2008, the state of Connecticut reached a new settlement where the state agreed to increase the proportion of inner-city minority students attending integrated, or “reduced isolation,” schools. The pre-integration years are 2006-2008. Between 2008 and 2011 the proportion of inner city minority students in integrated schools increased by 20 percentage points. The post-integration years will be considered 2011-2013.

All school districts in Connecticut for which the state reports achievement data are included in the sample. Below are some descriptive statistics at the county level.

Table III: Descriptive Statistics on Connecticut Counties

<table>
<thead>
<tr>
<th>County Name</th>
<th>2010 Pop</th>
<th>Avg Adult Ed</th>
<th>% FRL</th>
<th>% Black/Hisp</th>
<th>AvgInc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fairfield</td>
<td>916,829</td>
<td>11.81</td>
<td>22.6</td>
<td>25.6</td>
<td>$82,283</td>
</tr>
<tr>
<td>Hartford</td>
<td>894,014</td>
<td>11.56</td>
<td>25.9</td>
<td>30.2</td>
<td>$64,967</td>
</tr>
<tr>
<td>Litchfield</td>
<td>189,927</td>
<td>11.87</td>
<td>17.8</td>
<td>7.8</td>
<td>$71,338</td>
</tr>
<tr>
<td>Middlesex</td>
<td>165,676</td>
<td>11.93</td>
<td>13.3</td>
<td>10.5</td>
<td>$76,994</td>
</tr>
<tr>
<td>New Haven</td>
<td>862,477</td>
<td>11.80</td>
<td>31.4</td>
<td>30.6</td>
<td>$61,996</td>
</tr>
<tr>
<td>New London</td>
<td>274,055</td>
<td>11.93</td>
<td>24.6</td>
<td>17.5</td>
<td>$66,583</td>
</tr>
<tr>
<td>Tolland</td>
<td>152,691</td>
<td>11.93</td>
<td>13.5</td>
<td>8.4</td>
<td>$80,529</td>
</tr>
<tr>
<td>Windham</td>
<td>118,428</td>
<td>11.93</td>
<td>29.4</td>
<td>12.4</td>
<td>$59,333</td>
</tr>
</tbody>
</table>

Fairfield, Hartford and New Haven counties are home to the state’s largest cities but also to some of the most affluent and well-educated suburbs. For example, Fairfield County has nearly 23% of students that qualify for free and reduced lunch, yet the mean family income there is over $82,000. The poor black and Hispanic families in Bridgeport, a city

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7 Full variable names: Column I: 2010 county population, Column II: Average Adult Educational Attainment, Column III: Percent of students receiving free or reduced lunch, Column IV: Percent of students that are black or Hispanic, and Column V: 2013 Average Income.
in Fairfield County, earn much less than $82,000 a year, but these disparities are muted by the pockets of extreme wealth that exist in other parts of the county. In Fairfield, Hartford and New Haven counties, the percent of students receiving free and reduced lunch tracks the percent of black and Hispanic students quite closely, whereas in counties without big cities, such as Litchfield or Windham, there are poor white and Asian students, too. The combination of urban poverty and racial segregation in these cities has sparked a charter movement, independent of the Sheff integration settlement.

Bridgeport and New Haven are of particular interest as comparison districts. They have similar attributes to Hartford: urban cores surrounded by suburbs, similar crime rates and similar economic opportunities (Rizzo, 2013). Hartford has a greater poor black and Hispanic population that New Haven, but a smaller one than Bridgeport. Importantly, all three were trending similarly during the period of interest. All three cities are in close proximity and thus subject to similar shocks from the recession. All
three experienced an increase in the presence of charter schools and Teach for America (Connecticut State Department of Education, 2015). All three implemented Common Core State Standards in 2010 (CT SDE, 2010). One notable difference was that Hartford built a cadre of magnet schools during the early 2000s to serve as the primary integration strategy for the Sheff settlement, while magnet growth in other cities stagnated.

Table IV: Student Demographics in Comparison Cities

<table>
<thead>
<tr>
<th>City</th>
<th>% BH</th>
<th>%FRL</th>
<th>%SpecEd</th>
<th>%ELL</th>
<th>%Mag</th>
<th>%Char</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridgeport</td>
<td>92.4</td>
<td>87.2</td>
<td>9.8</td>
<td>7.7</td>
<td>1.9</td>
<td>44.8</td>
</tr>
<tr>
<td>Hartford</td>
<td>64.0</td>
<td>53.9</td>
<td>14.3</td>
<td>4.6</td>
<td>18.4</td>
<td>36.0</td>
</tr>
<tr>
<td>New Haven</td>
<td>54.7</td>
<td>44.7</td>
<td>7.1</td>
<td>3.8</td>
<td>10.1</td>
<td>34.0</td>
</tr>
<tr>
<td>Stamford</td>
<td>62.5</td>
<td>53.9</td>
<td>9.1</td>
<td>10.9</td>
<td>5.7</td>
<td>20.0</td>
</tr>
<tr>
<td>Waterbury</td>
<td>73.9</td>
<td>77.3</td>
<td>16.3</td>
<td>11.4</td>
<td>11.2</td>
<td>0.0</td>
</tr>
<tr>
<td>All other CT</td>
<td>12.4</td>
<td>29.4</td>
<td>14.6</td>
<td>2.6</td>
<td>0.6</td>
<td>0.0</td>
</tr>
</tbody>
</table>

The state of Connecticut sponsors multiple data sets which can be combined to give a picture of how integration impacted student achievement.

The dependent variable is student proficiency, measured as percent of students in the district scoring proficient or above on the Connecticut Mastery Test and the Connecticut Academic Performance Test in grades 3, 5, 8 and 10 during the years observed. Students take these tests in math, reading and writing once a year. The test represents a standard metric of student achievement that is consistent over time. Ideally, the regression could have been done using 2014 and 2015 data, but the most recent data available was for 2011-12 and 2012-13. As integration did increase after 2012-2013, any

---

8 Full variable names: Column I: Percent Black and Hispanic, Column II: Percent of students receiving Free and Reduced Lunch, Column III: Percent of students classified as Special Education, Column IV: Percent of students classified as English Language Learners, Column V: Percent of LEAs that are Magnets, Column VI: Percent of that are Charters.
effect shown on the 2012 and 2013 years would be expected to be stronger in 2014 and 2015 as integration levels continued to rise.

Control variables are obtained from the Common Core of Data. These include racial composition of the district, percent of students qualifying for free and reduced-price lunch, the percent of Special Education students, the percent of English Language Learner students, the average adult educational attainment, and the average school staff per pupil ratio. Each of these controls will make the estimate for the impact of integration on achievement more accurate by controlling for the well-documented effects of being minority, poor, ELL or special education on student achievement.

Indicator variables were created for the treatment group (integrated schools in Hartford), for post-2010 (after the 2008 resettlement of the Sheff v. O’Neill integration went into effect), and for charter/magnet status. The coefficient of interest will be on the interaction between an indicator variable for treatment and for post-2010.

**Regression Equation**

\[
\text{ProficiencyRate}_{it} = \beta_0 + \beta_1 (\text{IntegrationStatus}) + \beta_2 (\text{Post2010}) + \beta_3 (\text{IntegrationStatus*Post2009}) + \beta_4 (\text{PercentBlack/Hisp}_{it}) + \beta_5 (\text{PercentFRL}_{it}) + \beta_6 (\text{AdultEducAttainment}_{it}) + \beta_7 (\text{ELL}_{it}) + \beta_8 (\text{SpecialEd}_{it}) + \epsilon_{it}
\]

*Figure 8: Regression equation of interest.*

*For each variable, I use data from district i and year t.*

---

9 While these data were available at the school level, achievement data was only available at the district level. To perform the analysis, school-level observations were collapsed to generate district averages. This means that the controls are less accurate, because not all schools within a district have the same staff per pupil or the same rates of poverty. The Sheff settlement requires integration at the school level because having an even number of white and non-white students promotes the learning objectives discussed earlier; having controls at the district level makes it harder to control for the things that make individual schools different.
I hypothesize that integrating a district will increase student proficiency rates. While academic, social and labor market outcomes are all important metrics for the success of an integration effort, only academic data is available at this time. A positive result in academic gains bodes well for social and labor market indicators when this population of integrated students graduates.

RESULTS

According to a difference-in-difference analysis, increased integration rates in Hartford have a positive and statistically significant effect on reading and math proficiency rates. Implementing integration policy in Hartford as a result of the Sheff settlement moved integration levels in Hartford from 17% to 37% (see Table I). This 20 percentage point increase in the percent of inner-city black and Hispanic students in integrated schools is associated with a 5.7 percentage point increase in math proficiency and a 10.9 percentage point increase in reading proficiency (see the “Integration x Post 2010” coefficients in Table V). Writing proficiency increases were also positive but not statistically significant.\(^\text{10}\)

\(^{10}\) This may have been because not all grades in the sample reported test scores for writing. Therefore, although each district has a writing proficiency rate, this rate was generated from fewer grades reported.
Table V:  
Fully Controlled Model Using Math, Reading, and Writing Proficiency Scores

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Math Proficiency</th>
<th>Reading Proficiency</th>
<th>Writing Proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration Status</td>
<td>-7.529*** (2.371)</td>
<td>-10.55*** (2.811)</td>
<td>-5.434** (2.550)</td>
</tr>
<tr>
<td>Post-2010</td>
<td>4.557*** (0.399)</td>
<td>6.113*** (0.419)</td>
<td>3.165*** (0.334)</td>
</tr>
<tr>
<td>Integration*Post-2010</td>
<td>5.720** (2.694)</td>
<td>10.89*** (3.190)</td>
<td>2.279 (3.008)</td>
</tr>
<tr>
<td>% Black/Hispanic</td>
<td>-7.575*** (2.746)</td>
<td>-9.363*** (2.786)</td>
<td>-3.202 (2.201)</td>
</tr>
<tr>
<td>% FRL</td>
<td>-26.11*** (3.137)</td>
<td>-31.37*** (3.666)</td>
<td>-23.41*** (2.748)</td>
</tr>
<tr>
<td>% Special Education</td>
<td>-46.25*** (6.476)</td>
<td>-46.35*** (5.258)</td>
<td>-42.92*** (4.814)</td>
</tr>
<tr>
<td>% ELL</td>
<td>-52.93*** (9.909)</td>
<td>-39.83*** (8.250)</td>
<td>-33.52*** (7.765)</td>
</tr>
<tr>
<td>Avg Adult Education</td>
<td>-0.417 (0.656)</td>
<td>-0.688 (0.599)</td>
<td>-1.211** (0.496)</td>
</tr>
<tr>
<td>School Staff Per Pupil</td>
<td>-12.52* (7.238)</td>
<td>-7.905 (6.162)</td>
<td>-2.923 (3.757)</td>
</tr>
<tr>
<td>Constant</td>
<td>105.9*** (7.606)</td>
<td>104.3*** (6.971)</td>
<td>113.6*** (5.764)</td>
</tr>
<tr>
<td>Observations</td>
<td>2,211</td>
<td>2,207</td>
<td>2,213</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.656</td>
<td>0.667</td>
<td>0.587</td>
</tr>
</tbody>
</table>

Robust Standard Errors in Parentheses

*** p<0.01  ** p<0.05  * p<0.1

In all three models, the controls on student characteristics are negative and typically highly statistically significant. A 1 percentage point increase in special education or ELL population tends to have the largest negative effect on predicted
proficiency rates, followed by increasing the percent of poor students. A 1 percentage point increase in black and Hispanic enrollment also has a negative and statistically significant impact on math and reading proficiency rates, but at a much smaller magnitude. Average adult education and school staff per pupil did not have statistically significant effects on proficiency rates.

Attending school in an integrated LEA in Hartford is associated with a negative and statistically significant effect on proficiency rates. Because race, socioeconomic status and other factors are already controlled for, this effect can be interpreted as the effect of being located in Hartford on student proficiency rates. Schools located in Hartford have lower proficiency rates, on average, than the rest of Connecticut.

Similarly, there is a positive and statistically significant impact of time on student test scores. Students in the after-policy period of 2011-2013 scored better, on average, than students tested between 2006-2008. This could be a result of the rising trends in charter schools, which were not controlled for in this model. It could also be a product of improved teacher quality due to the increasing presence of Teach for America teachers. It could even be a product of greater awareness and advocacy for public education in Connecticut due to changes like the Sheff settlement or implementation of the Common Core.

Overall, a high level of variation is explained by the model, with an $R^2$ of approximately 0.65 for both reading and math proficiency rates.

Table IV captures students who attend integrated schools in Hartford city. It does not include students in the Open Choice component of the integration program. Many students who get bussed from the inner city out to a suburban school are among only a
few transferring Hartford students in their whole school. Before SY 2015-16, the State added 325 Open Choice seats for Hartford students, but that is distributed over 28 receiving districts in the Hartford suburban ring. That means about 10 new students from Hartford joined each *district* last fall, which is at most a handful of new students per school. These schools do not meet the integration definition set out in Sheff, and from a statistical perspective, there is likely very little difference on average from the addition of these few inner-city students.

Studies of the Metco integration program in Boston found that integration had no effect on incoming students but actually hurt students in receiving districts. Table VI shows the impact of integration on suburban choice districts. For math, reading and writing, impacts are negative and of very small magnitude, and none are statistically significant. Hosting Hartford urban students through the open choice program had no effect on proficiency rates in the receiving districts.
Table VI:
The Impact of Integration on Proficiency Rates in Suburban Open Choice Districts

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Math Proficiency</td>
<td>Reading Proficiency</td>
<td>Writing Proficiency</td>
</tr>
<tr>
<td>Suburban Open Choice</td>
<td>0.767***</td>
<td>0.929*</td>
<td>0.972***</td>
</tr>
<tr>
<td></td>
<td>(0.375)</td>
<td>(0.530)</td>
<td>(0.371)</td>
</tr>
<tr>
<td>Post 2010</td>
<td>4.521***</td>
<td>6.277***</td>
<td>3.136***</td>
</tr>
<tr>
<td></td>
<td>(0.414)</td>
<td>(0.433)</td>
<td>(0.354)</td>
</tr>
<tr>
<td>Suburban Open Choice*Post 2010</td>
<td>-0.232</td>
<td>-0.655</td>
<td>-0.670</td>
</tr>
<tr>
<td></td>
<td>(0.553)</td>
<td>(0.709)</td>
<td>(0.519)</td>
</tr>
<tr>
<td>% Black/Hisp</td>
<td>-8.321***</td>
<td>-10.23***</td>
<td>-3.858*</td>
</tr>
<tr>
<td></td>
<td>(2.744)</td>
<td>(2.777)</td>
<td>(2.214)</td>
</tr>
<tr>
<td>% FRL</td>
<td>-25.20***</td>
<td>-30.50***</td>
<td>-22.53***</td>
</tr>
<tr>
<td></td>
<td>(3.136)</td>
<td>(3.664)</td>
<td>(2.739)</td>
</tr>
<tr>
<td>% SpEd</td>
<td>-47.38***</td>
<td>-47.44***</td>
<td>-43.97***</td>
</tr>
<tr>
<td></td>
<td>(6.514)</td>
<td>(5.138)</td>
<td>(5.013)</td>
</tr>
<tr>
<td>% ELL</td>
<td>-52.08***</td>
<td>-39.03***</td>
<td>-32.57***</td>
</tr>
<tr>
<td></td>
<td>(9.917)</td>
<td>(8.213)</td>
<td>(7.831)</td>
</tr>
<tr>
<td>Avg Adult Ed</td>
<td>-0.0335</td>
<td>-0.452</td>
<td>-0.730</td>
</tr>
<tr>
<td></td>
<td>(0.570)</td>
<td>(0.528)</td>
<td>(0.461)</td>
</tr>
<tr>
<td>School Staff Per Pupil</td>
<td>-12.70*</td>
<td>-8.049</td>
<td>-3.178</td>
</tr>
<tr>
<td></td>
<td>(7.231)</td>
<td>(6.168)</td>
<td>(3.773)</td>
</tr>
<tr>
<td>Constant</td>
<td>101.3***</td>
<td>101.4***</td>
<td>107.8***</td>
</tr>
<tr>
<td></td>
<td>(6.649)</td>
<td>(6.249)</td>
<td>(5.403)</td>
</tr>
<tr>
<td>Observations</td>
<td>2,211</td>
<td>2,207</td>
<td>2,213</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.655</td>
<td>0.665</td>
<td>0.586</td>
</tr>
</tbody>
</table>

Robust Standard Errors in Parentheses
*** p<0.01   ** p<0.05   * p<0.1

Some critics of Hartford’s integration policy point to the fact that it rests upon magnet schools to make integration appealing (Courant Editorial Staff, 2016). Magnet schools are costly: they cost approximately $2,500 more per student than traditional
public schools (Megan, 2015). Yet they are a key tenet of Hartford’s Open Choice integration strategy. Even though Table II shows that other counties in Connecticut are wealthier, on average, than Hartford, median household income in Hartford is still 121% of the median household income nationwide (American Community Survey, 2015). It may be that on some level, the city’s wealth makes it possible to “afford” integration. Cities that could not afford to build 19 new magnet schools in the course of a decade might not be able to execute a voluntary integration strategy. This represents a threat to the study’s external validity of the model.

To test whether magnet schools accounted for the positive relationship between integration and achievement, Table VII examines the impact of non-district status (either charter or magnet) on student achievement. First a controlled model was run with an indicator for non-district (meaning the LEA is run by either a charter or a magnet network). Next the model was run with an indicator for charter-only LEA, and last magnet-only LEA. Non-district status has a positive and statistically significant effect on math and reading proficiency rates (regressions 1 and 4). In regressions 2-3 and 5-6, this effect decomposes into an even stronger and highly statistically significant effect of charter status on proficiency rates, and a small negative but not statistically significant effect of magnet status on proficiency rates. This suggests that magnet schools are not the reason for integration’s positive effects in Hartford as critics have claimed.

It is unclear why charters have such a high and statistically significant effect on proficiency rates. The most obvious explanation is that their instructional and organizational practices may actually be better than the district schools’ practices. Another possibility is non-random selection of students into charter schools. In the past,
Table VII: The Relationship Between School Type on Math Proficiency Rates

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1.511)</td>
<td>(2.890)</td>
<td>(2.664)</td>
<td>(2.757)</td>
<td>(2.780)</td>
<td>(2.747)</td>
</tr>
<tr>
<td>% Poor</td>
<td>-25.15***</td>
<td>-25.46***</td>
<td>-23.36***</td>
<td>-29.32***</td>
<td>-29.25***</td>
<td>-28.06***</td>
</tr>
<tr>
<td></td>
<td>(1.568)</td>
<td>(2.929)</td>
<td>(2.929)</td>
<td>(3.397)</td>
<td>(3.372)</td>
<td>(3.327)</td>
</tr>
<tr>
<td>% SpecEd</td>
<td>-34.82***</td>
<td>-34.53***</td>
<td>-50.63***</td>
<td>-37.93***</td>
<td>-39.99***</td>
<td>-48.49***</td>
</tr>
<tr>
<td>% ELL</td>
<td>-53.33***</td>
<td>-47.44***</td>
<td>-65.76***</td>
<td>-47.74***</td>
<td>-49.49***</td>
<td>-57.28***</td>
</tr>
<tr>
<td></td>
<td>(5.882)</td>
<td>(10.97)</td>
<td>(9.949)</td>
<td>(9.387)</td>
<td>(9.489)</td>
<td>(8.890)</td>
</tr>
<tr>
<td>Avg Adult Ed</td>
<td>2.536***</td>
<td>2.455***</td>
<td>2.377***</td>
<td>2.988***</td>
<td>2.920**</td>
<td>2.900***</td>
</tr>
<tr>
<td></td>
<td>(0.383)</td>
<td>(0.496)</td>
<td>(0.506)</td>
<td>(0.515)</td>
<td>(0.515)</td>
<td>(0.519)</td>
</tr>
<tr>
<td>Staff/Student</td>
<td>-13.97***</td>
<td>-5.977</td>
<td>-6.553</td>
<td>-7.573</td>
<td>-1.987</td>
<td>-4.426</td>
</tr>
<tr>
<td></td>
<td>(2.924)</td>
<td>(7.644)</td>
<td>(7.542)</td>
<td>(6.850)</td>
<td>(6.374)</td>
<td>(7.001)</td>
</tr>
<tr>
<td>Non-District</td>
<td>6.557***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.195)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charter</td>
<td>10.34***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.188)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnet</td>
<td></td>
<td>-3.938</td>
<td></td>
<td></td>
<td>-0.323</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.510)</td>
<td></td>
<td></td>
<td>(2.275)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>71.78***</td>
<td>71.54***</td>
<td>74.15***</td>
<td>62.26***</td>
<td>62.46***</td>
<td>63.88***</td>
</tr>
<tr>
<td>Observations</td>
<td>2,211</td>
<td>2,211</td>
<td>2,211</td>
<td>2,207</td>
<td>2,207</td>
<td>2,207</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.634</td>
<td>0.640</td>
<td>0.630</td>
<td>0.628</td>
<td>0.628</td>
<td>0.625</td>
</tr>
</tbody>
</table>

Robust Standard Errors in Parentheses

*** p<0.01    ** p<0.05    * p<0.1

some charters have been accused of “cream-skimming” to get the best students (Altonji, Huang and Taber, 2010, and Cullen and Rivkin, 2003). Another possibility is that charters classify a high level of students as special education so as to exempt them from reporting the lowest student scores. These hypotheses could be tested using longitudinal
achievement data at the student level to examine whether, on average, students that matriculated to charters scored higher than their district peers before entering charters, or whether attending a charter school increases a student’s likelihood of being classified as special education. Other controls, such as teacher education and salary levels, per pupil spending, and parent engagement could be included to isolate whether charters themselves are correlated with higher achievement.

Table VII also demonstrates a potential source of negative bias muting the coefficient of integration on achievement. During the period in which magnet schools and integration were used as a reform strategy in Hartford, charter schools were also used statewide to provide options for poor and minority families. ¹¹ Charters improve academic scores, as is shown by regressions 2 and 5 above, but are highly segregated (National Association for Public Charter Schools, 2014). In interpreting Table VII and considering the impact of increased charter presence in Hartford, it is important to consider that charter schools increase racial isolation (in other words, decrease integration) but also increase student achievement. This likely muted the effect of integration on achievement found in Hartford in the regressions from Table V. It also likely improved the schooling options for minority children in other cities, making the comparison benchmark higher during years after the proliferation of the charter movement.

¹¹ According to the National Alliance for Public Charter Schools’ 2014 State-by-State analysis, charters became legal in 1996 and as of 2013–14, there were 18 public charter schools and 6,981 students enrolled in them. 88% of these were located in urban areas, while only 49% of all schools are located in urban areas.
POTENTIAL LIMITATIONS

The greatest limitation of this study is that the data is at the district level, which mutes the effect of integration on individual schools and individual students. Future studies should use student-level longitudinal data, if possible, to evaluate whether students performed better in integrated settings than racially-isolated ones.

Another potential threat to the external validity of this study is that magnet schools are expensive. Even Connecticut is currently engaged in a school funding lawsuit that may threaten the future of its magnet programs (Courant, 2015). Can other cities that have lower tax revenues than Hartford afford to create good magnet schools? If not, are there alternatives that would allow them to follow a voluntary integration strategy that works?

Attending an integrated school is highly correlated with attending a magnet school. This opens the internal validity of the study up to a number of threats due to omitted variable bias. It may be that students who opt into Hartford’s Open Choice programs have parents who are more committed to their educational outcomes. It may be that they are smarter, so their parents are more committed to their education. It may be that they are second and third children of parents who had negative experiences in the Hartford Public Schools and have committed to ensuring better for their other kids. If any of these stories were true, it would bias the estimated effect of integration downwards, towards zero. None of these omitted variables could be controlled for with the data available.
DIRECTIONS FOR FURTHER RESEARCH

Further research should be done to improve the precision and expand the validity of these results. To confirm that integration has a positive and statistically significant impact on achievement data, this difference-in-difference model could be replicated using the following adjustments:

1) *Use 2014 and 2015 data* to understand the effect of a longer lag and higher levels of integration. Some of the ways in which integration impacts achievement may take time to bear out their full effect.

2) *Use school- or individual-level achievement results.* District-level achievement data limited the nuance of this analysis. Looking at the effect of attending an integrated school on school averages or individual scores could be far more instructive.

3) *Change the dependent variable to another metric of student success.* Test scores are one of many metrics of achievement. The effect of integration could be explored differently by using high school graduation rates, college outcomes, civic engagement outcomes, or earnings outcomes as the dependent variable instead.

Based on the positive effect found in this study, another potential question is, what is the best method for integration? One way to study this relationship would be to look at the impact of LEA type on achievement. If, as this study found, charters have a consistent positive association with achievement, such a finding could opt that integration be done using charters instead of magnets. This question has significant financial sustainability ramifications as well.
Finally, to determine the external validity of school integration as a reform policy, it would be helpful to study whether city characteristics, such as wealth, size, racial composition and urban concentration influenced integration’s relationship with student achievement. This could be done by comparing achievement gains in all cities with integration policies, and controlling for the characteristics mentioned above. Such a study could illuminate whether, perhaps, it might be easier to integrate a highly concentrated city like New York, or harder to integrate a racially dichotomous one.

POLICY IMPLICATIONS

There are three main policy recommendations for the state of Connecticut:

1) *Integrate schools using school choice.* Based on the positive impacts on achievement in Hartford, Connecticut should support integration through school choice. Policies could include easing the regulatory environment for new charter networks, providing financial or logistical supports to open choice programs in other cities, and funding new magnet schools.

2) *Track school level data in more readily available formats.* One key to understanding the return on investment in Hartford schools is precise, school- or student-level data on achievement. Connecticut’s data reporting is fragmented and imprecise. Graduation rates are not available before 2010 and student achievement scores are missing after 2013. By collecting better data and improving access for researchers, Connecticut can get a clear picture of how various policies impact student achievement.
3) *Commit school funding to support equal opportunities for all children.* In a school funding case currently on the Connecticut Supreme court docket, magnets and other special programs risk losing their funding. Connecticut should commit to spending equal amounts on schooling opportunities regardless of a child’s zip code.

CONCLUSIONS

Increasing integration levels in Hartford, CT by twenty percentage points between 2008 and 2013 had a positive and statistically significant impact on student proficiency rates in math and reading. Small changes in integration level (suburban districts) had no effect on proficiency rates. LEA type had an important impact on student achievement, and the increase in charters in CT likely muted the impact of integration in Hartford alone. These findings have important policy implications for Connecticut: sustain its integration efforts through funding and conducive policies, and increase data transparency for further evaluations. Further research should be done to understand the longer-term educational and civic outcomes of integration and how its relationship with achievement varies as city characteristics change.
REFERENCES


