THE EFFECT OF CHARTER SCHOOLS ON THE ACADEMIC PERFORMANCE OF AFRICAN AMERICAN AND LATINO STUDENTS

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Abstract

of

THE EFFECT OF CHARTER SCHOOLS ON THE ACADEMIC PERFORMANCE OF AFRICAN AMERICAN AND LATINO STUDENTS

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Michael Lynch

In comparison to whites, Hispanic and African American students have the lowest standardized test scores, lowest high school graduation rates, and are less likely to go to college. This achievement gap not only hurts the African American and Hispanic communities, but increases economic inequality and decreases social mobility. For the most part, traditional schools have struggled to effectively educate African American and Latino students, while some charter schools ("charters") have not only closed the gap but have enabled their lowest performing students to surpass their more affluent and white peers. This study aims to estimate the effect charters have on the Academic Performance Index (API) scores of African American and Latino students and determine whether they are helping to close the achievement gap.

This thesis uses the California Department of Education's API database and an ordinary least squares regression to estimate the effect charters have on the API scores of African American and Latino students. After controlling for several independent variables, I found that Latino students who attend charter schools perform worse than Latino students who attend traditional schools. However, the drop is even greater for

whites who attend charter schools versus those who attend traditional schools thereby leading to a decrease in the achievement gap between Latinos and whites. Although reducing the achievement gap is a laudable accomplishment, in this case, it is not something to applaud. This phenomenon also occurred after controlling for additional independent variables including student characteristics and school demographics. In addition, I found that African American students who attend charter schools perform similarly to African American students who attend traditional schools, even after controlling for additional variables.

Within the past decade, charter schools have exploded across the state without much research showing that they are consistently improving academic performance. Despite their focus on improving the academic performance of traditionally underperforming students, my research shows that most charter schools are not fulfilling their purpose. Based on my findings, I recommend policy makers limit charter school growth and focus on implementing evidence-based policies that improve student performance such as early childhood education, additional learning time and establishing a college going culture.

_____, Committee Chair
Edward P. Lascher Jr., PhD

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Date

DEDICATION

To my parents, Cliff and Aladrian Lynch, whose continuous sacrifice enabled me to be where I am today. To my older brother, CJ Lynch, your constant support has given me the confidence to obtain my goals. To my wonderful, beautiful wife, whose love, encouragement and strength has not only given me the strength to preserver through the tough times, but has enabled me to accomplish the few nuggets of success I have obtained thus far. Lastly, to my Lord and savior Jesus Christ, Thank You!

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To my readers, Ted and Su Jin, thank you for your patience, diligence and guidance in helping me finish!

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CHAPER I: INTRODUCTION

Frustrated with traditional public schools and their lack of innovation, Minnesota created the first charter school in 1992. Since this time, the number of charter schools has increased drastically, especially in California. After only two decades, the charter school movement in California has spurred the creation of 1,065 of America's 6,000 charter schools (USC School Performance Dashboard, 2013). Charters are normally exempt from the majority of state statues and restrictions that apply to traditional public schools. This gives them flexibility in areas such as curriculum and learning time. Education reformers saw charters as laboratories of innovation, places where teachers, principals and all educators could create new ideas that increased student achievement and closed the achievement gap between low-income students, blacks, Latinos and their white peers. However, the original opponents were concerned about the creation of charters because they feared that they would "cherry pick" the best students and prevent poor performing students from enrolling. Over the last decade, the conversation around charters has shifted to which type of school can better educates students and can close the achievement gap: charters or traditional public schools.

Some charter schools across the nation have been able to become just what their founders envisioned, laboratories of innovation and centers of excellence for all students, while others have struggled to effectively educate their students as well as traditional public schools. The City of Sacramento's highest performing elementary school as determined by its Academic Performance Index (API) is a charter called PS7 Elementary. The school's API is 911, which is 133 points above the state average. The API is a

composite measure of several standardized tests administrated by the California Department of Education. API scores range from 200 to 1000 and are based on student performance on statewide assessments. The test measures various skills such as math, English and science. PS7 enrolls primarily African American, Hispanic and low income students; students who have historically underperformed on state assessments. The school is now widely recognized as one of the few schools in the area that have successfully closed the achievement gap (PS7 Recognized as California Charter School of the Year, 2012). This has occurred while other charter schools have shown not to be as effective as traditional public schools. Last year, 28 charter schools closed across the state, which shows that some schools are performing far below their expectations (Sankin, 2013).

Over the past ten years, the number of charter schools has increased by more than 1000 percent (USC School Performance Dashboard, 2013). After two decades of continuous expansion California has become the leader in charter growth, which now make up almost 10 percent of all public schools in the state (USC School Performance Dashboard, 2013). There are two different types of charters in California, conversion and startup. A conversion charter is a school that is converted from a traditional public school by acquiring the signatures of a least 50 percent of the teachers at the traditional school (Orlick, 2012). Conversions have various levels of autonomy that often depend on the actual charter agreement; some are independent of the school district while others are not. Startup charters are schools that acquire their own facilities, do not have attendance boundaries and accept applications from all students. The charter developers can start a charter one of two ways: (1) obtain the signatures of 50 percent of the teachers interested

in teaching at the school, or (2) 50 percent of the parents of pupils expected to enroll at the school. If a startup school reaches its capacity then the school is required by law to have a blind admissions lottery (California State Code, Education Code, 2014).

Despite a rapid expansion of charters and some success with historically underperforming students, an achievement gap continues to exist. On almost all positive academic metrics, African Americans and Latinos are at the bottom. Researchers have identified several primary reasons as to the causes of the achievement gap. These reasons include:

- "Inequitable distribution of skilled, experienced teachers
- Insufficient and inequitable school funding
- Inadequate, obsolete, and unbalanced distribution of facilities, technology and, instructional materials
- Inequitable access to demanding, rigorous pre-college coursework
- Institutional racism
- Lack of cultural competence among teachers, school staff, administrators, curriculum and assessment developers and the school system itself (Bailey & Dziko, , 2008). "

Educational equality and opportunity is this generation's major civil rights issue because it inhibits economic mobility by decreasing a child's possibility that they will graduate high school, attend college, enter the middle class and ultimately live the American dream (Horn, 2014).

The question driving the present thesis is whether the general movement toward charter schools can help address the achievement gap. As stated earlier, charter schools in some cases have been able to close the achievement gap primarily through providing greater autonomy to govern their schools. The autonomy allows for schools to have longer school days, adopt specialized curriculum, and require greater parent involvement. So it seems possible (but not certain) that charter schools in general provide more opportunities for disadvantaged children.

This thesis examines the effect charters are having on African American and Latino students through a logistic regression. The dependent variable in this study is the 2008-2012 API scores of African American, Latino and White students in California. The unit of analysis for this study is charter elementary schools. The causal variables include race, income, parent education level and whether or not the teacher has a teaching credential. Moreover, the data are derived from the yearly standardized test administered by local school districts and collected by the California Department of Education.

I do not presume that movement toward charter schools is the silver bullet to fix our nation's complex education problems. However, I hypothesize that charters are having a positive effect as it pertains to the academic performance of African American and Latino students, a negative effect on white students and is helping to close the achievement gap.

Losing the American Dream

The American dream is predicated on the idea that anybody, despite their country of origin, race, gender or family income, can ascend the economic ladder by hard work

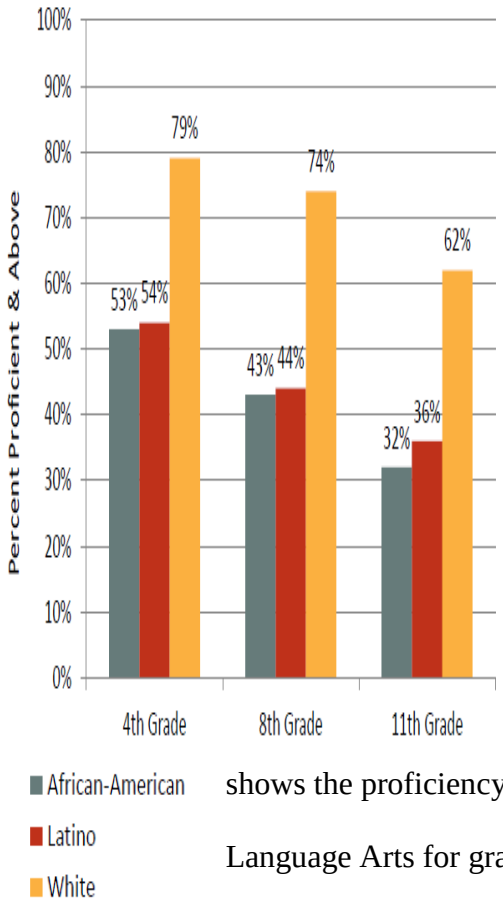
and perseverance. President Obama himself reaffirmed America's commitment to the dream of equality of opportunity during his second inaugural address stating "we are true to our creed when a little girl born into the bleakest poverty knows that she has the same chance to succeed as anybody else, because she is an American; she is free, and she is equal, not just in the eyes of God but also in our own." However, for millions of Americans, specifically African Americans and Latinos, economic mobility is a dream. "According to Issacs (2007), only 58 percent of Americans born into the bottom fifth of income earners move out of that category, and just 6 percent born into the bottom fifth move into the top. Economic mobility in the United States is lower than in most of Europe and lower than in all of Scandinavia."

African Americans and Latinos have poverty rates far above the national average and, as a result of such high rates, have the largest percentage of their population to be in the bottom fifth income bracket (Issacs, 2007). Although America has prided itself on being a casteless society, it has over the past several decades became the antithesis of what it wants to be, a caste system. A caste system is a society in which individuals born into a certain economic class stay in that class despite motivation or drive. Economic mobility is partially dependent upon educational attainment, specifically obtaining a college degree (Haskins, 2009). However, this becomes difficult when an entire class of people is performing below average on academic assessments and graduating high school and college far below the numbers that are needed to live the American dream.

What does the Achievement Gap Look Like?

The achievement gap first becomes apparent early in a student's academic career. In California, only 53% of low income 4th grade African American students and 54% of low income Latino students are proficient in English on standardized state academic performance tests compared to 79% of middle and upper income white students (Ramanathan, 2013). As these students grow older it gets worse. By the time they reach the 11th grade, 32% of low income African American students and 36% of low income Latino students are proficient in English, compared to 62% of middle and upper income white students (Ramanathan, 2013). Table 1 shows the proficiency rates of the California State Test in English-Language Arts for grades 4, 8 and 11for African Americans, Latinos, and whites.

Table 1: CST English-Language Arts Proficiency



Historically, when compared to other ethnicities, African American and Latino students have performed near the bottom in almost every academic indicator including grade matriculation, standardized testing, high school graduation, college matriculation and college graduation. Not only have they performed near the bottom, they are often far below average and the recommended level of performance. In 2009, the National

Association for Education Progress (NAEP) mathematics scores for both Latino and white students increased but the scores showed that the achievement gap between the two groups did not change significantly from 1990 to 2009 (Rahman, 2011). For black and White students age 9 and 13, their scores on NAEP mathematics test also were higher than on the 2004 tests. "However, a 23 point Black-White achievement gap in mathematics for age 9 students in 2004 was narrower than in the first assessment in 1978 but not significantly different from the gap in the most recent previous assessment in 1999. The same was true for the 26 point gap at age 13 (Vanneman, 2009)." The mathematics scores for both Latinos and African Americans were below the national average.

One of the best examples of the achievement gap can be shown by the differences in API scores. As of 2012, Blacks and Latinos had an API score of 709 and 743 while whites and Asians had scores of 855 and 906, respectively (2012-13 Accountability Progress Reporting (APR), n.d.). The statewide average API is 791 and the goal API for all students as stated by the California Department of Education is 800 (2012-13 Accountability Progress Reporting (APR), n.d.). Blacks and Latinos are both below the average and goal API.

There are also glaring achievement gaps in one of the most important academic metrics, high school graduation rates. Across the state, 68 percent of African Americans and 75 percent of Hispanics graduate high school, compared to 87 percent of whites and 91 percent of Asians (Cohort Outcome Data for the Class of 2012-13). The statewide average is 80 percent (Cohort Outcome Data for the Class of 2012-13). The college

achievement gap is similar to the K-12 achievement gap. Only 13 percent of Latinos and 18 percent of blacks have a bachelor's degree, compared to 29 percent of whites and 50 percent of Asians (Ogunwole, 2012).

The statistics become even more troubling when examining academic attainment based on race and gender. African American and Hispanic males are last in all positive academic indicators while they are the most likely to drop out of high school and least likely to complete the A-G requirements, which are the classes required to attend a CSU or UC. Thirteen percent of Latino males and 19 percent of black males have a bachelor's degree, compared to 56 percent of Asians and 30 percent of whites (FAST FACTS: Status of Boys and Men of Color, n.d.). Black men also have the lowest college graduation rate across all four sectors of higher education including the community college, California State University (CSU) system, University of California system and private colleges. An average of one black and Latino man graduates from the CSU for every two Black/Latina women (The State of Higher Education in California: Racial & Gender Gap Analysis, n.d.).

For decades, educators and policymakers have been aware of the poor performance of African Americans and Latinos. Several Supreme Court cases including Brown v. Board of Education (1954) and Serrano v. Priest (1971) were predicated on the notion that certain individuals, including low-income blacks and Latinos, did not have access to an adequate education. The achievement gap has also been a focus of major state and federal policy initiatives including Governor Brown's Local Control Funding Formula, President Lyndon Johnson's War on Poverty, President George W. Bush's No

Child Left Behind, and most recently President Barack Obama's Race to the Top. Each one of these policies was aimed at increasing the performance of underperforming students. President Johnson's War on poverty sought to close the achievement gap by creating free preschool for low income children. President Obama has sought to increase student performance by giving school districts grants for improving test scores and implementing teacher contracts based partially on performance. (Barack Obama's Race to the Top). Despite such attention and some improvement amongst black and Latino students, they continue to be the worst performing students in California and across the nation. I believe the achievement gap has continued because there has not been a continuous effort over several decades from our nation's policymakers to improve student performance. Normally, once progress has been made, an individual gets elected that dismantles their predecessor's programs. A prime example is President Ronald Regan's dismantling of President Johnson's War on Poverty programs.

What are the Causes of the Achievement Gap?

Researchers have identified several primary reasons as to the causes of the achievement gap. These reasons include:

- "Inequitable distribution of skilled, experienced teachers
- Insufficient and inequitable school funding
- Inadequate, obsolete, and unbalanced distribution of facilities, technology and, instructional materials
- Inequitable access to demanding, rigorous pre-college coursework
- Institutional racism

- Lack of cultural competence among teachers, school staff, administrators, curriculum and assessment developers and the school system itself (Bailey, 2008)."

The inequitable distribution of skilled, experienced teachers is one of the primary causes of the achievement gap. According to the Darling-Hammond and Post (2000), the difference in teacher quality is one of the main reasons why minorities perform far below whites. Recent studies using longitudinal databases of teacher effects at the classroom level in Tennessee and Texas have shown that students who are taught by ineffective teachers several years in a row have lower achievement in math and reading. The study showed that the difference can be as much as 50 percentile points over three years. In addition, this same study revealed that minority children, particularly African Americans were nearly twice as likely to be assigned ineffective teachers and half as likely to be assigned an effective teacher (Darling-Hammond et. al, 2000).

Unequal school funding is also a major driver of the achievement gap. The wealthiest 10 percent of school districts spend nearly ten times the bottom 10 percent (Linda Darling Hammond and Laura Post, 2000). This unequal distribution of wealth leaves minority students, specifically black and Latino students with less money to hire quality teachers, principals and fewer and lower quality books, computers and other essential materials (Linda Darling Hammond and Laura Post, 2000). Latinos and blacks also have disproportionately lower access and participation in demanding college-preparatory coursework. According to an analysis done by Chapman (2012), whites and Asians in New York City attend high schools with twice the number of AP courses as

blacks and Latinos. One of the main reasons why Latinos do not attend college at the same rates as other ethnic groups may be their lack of enrollment in college preparation courses. Only 10 percent of Latino students are enrolled in AP courses compared 66 percent of white students (Closing the Achievement Gap: Focus on Latino Students, 2004).

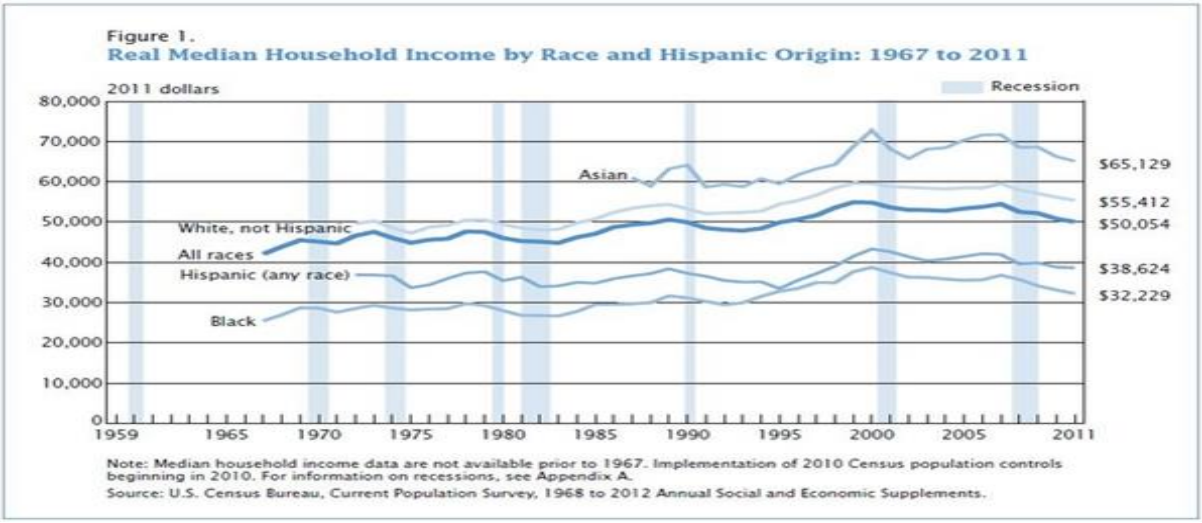
Institutional racism and a lack of cultural competence in schools are primarily shown through a school's suspension rates. African American students are suspended at significantly higher rates than Hispanics and white students. "Thirty five percent of black students in grades 7-12 have been suspended or expelled at some point in their academic careers compared to 20% of Hispanics and 15% of whites at some point in their school careers (Loosen et. al, 2013)." According to Loosen and Martinez (2013) a student who gets suspended once doubles his or her chance of dropping out of high school. Holding all other factors constant, researchers have identified that despite similar behaviors among all students, African Americans are more likely to be suspended for the same behaviors as whites and Asians. This shows that there is an institutional racism that still permeates schools across California. Getting suspended just once doubles the chances a student will drop out of high school (Loosen and Martinez, 2013). These missed learning opportunities not only decrease the chance a student graduates but inhibits academic growth and decreases academic achievement.

The Economic Consequences of Poor Academic Performance

As a result of both poor academic performance and college completion, the African American and Latino communities have suffered severe economic losses

compared to the economic gains made by Asians and Whites over the past several decades. These losses are evident in various ways including high unemployment and poverty rates. As of June 2014, California had an unemployment rate of 7.3 percent while individuals who graduated with at least a bachelor's degree had a 4 percent unemployment rate (Employment Projections, 2014). However, the unemployment rate for blacks is almost double at 11 percent (Labor Force Statistics from the Current Population Survey, 2014). College graduates not only have lower unemployment rates but higher median incomes and lower poverty rates. In California, 35% and 33% of Africans Americans and Latinos live below the poverty line in comparison to only 13% of whites (Poverty Rate by Race/Ethnicity, n.d.). Empirical evidence shows that poor academic performance in primary and secondary school is strongly correlated with poverty (Ladd, 2011).

The effect of poor performance in school extends beyond high unemployment and poverty rates and has created vast economic inequality. The median annual income of



blacks and Latinos is $32,229 and $38, 624 (Walt et. al, 2012). However, whites and Asians have median incomes of $55,412 and $65,129 (Walt et. al, 2012). The difference of income can be primarily attributed to educational attainment. Asians and whites both have significantly higher high school graduation and college completion rates than blacks and Latinos. The Bureau of Labor and Statistics cites that individuals with a bachelor's degree have a median annual income of $57, 616 compared to $33, 852 for individuals with just a high school diploma (Earnings and Unemployment by Educational Attainment, 2014).

Moreover, income inequality has created disproportionate wealth distributions across the US. According to the Pew Research Center, the median wealth of white households is 20 times that of black households and 18 times that of Hispanic households (Kochhar et. al, 2011). Wealth is different from income because it shows an individual or families ability to accumulate resources such as property and investments over time. The current wealth distribution is the most lopsided since the government began publishing such data a quarter century ago (Kochhar et. al, 2011).

The economic consequences of poor academic performance are felt not only within individual communities but also within our state and national economy. Lower median incomes result in lower tax revenues. The loss in revenue translates into less or not as robust public services. In addition, since most blacks and Latinos have lower median incomes compared to whites and Asians because of lower college completion rates, they also have less money to spend when considering purchases that build wealth and stimulate the economy such as buying a house, stocks, car or eating at a restaurant.

This can slow national economic growth which creates a drain on the economy. Furthermore, the state of California is the largest employer in the state, lower revenues not only mean fewer services, but fewer middle class government jobs and public investments which historically have been a pathway to the middle class for blacks and Latinos.

However, one of the most dramatic socio-economic consequences of poor academic performance is that high school dropouts, who are primarily African American students, are funneled into the criminal justice system because of poor educational attainment. Blacks are 6% of California's population but account for 29% of the state prison population. Educational attainment is directly correlated with an increased lifetime risk of incarceration. The greater educated individuals become the less likely they are to go to jail or prison. Higher education enables greater job security, higher incomes and the ability to live in safe neighborhoods. These items combined decrease the possibility of people committing crimes. Seventy five percent of all inmates currently in prison did not graduate high school (Harlow, 2003). Only 59% of African Americans graduate high school in the State of California (Cohort Outcome Data for the Class of 2012-13). Black men who choose not to attend college increase their possibilities of being incarcerated by 32% (Western et. al, 2013). Although other factors can be attributed to higher incarceration rates within the African American community such as racial bias in the sentencing and over policed neighborhoods, the correlation between who spends time in prison and who does not is evident in educational attainment.

Increased prison spending has a tangible economic impact on the lives of California residents. It diverts taxpayer dollars away from high yielding public investments such as higher education, infrastructure, healthcare, parks and clean energy. The average cost to house an inmate in state prison is $50,000 per year (Lupkin, 2011). Prison related spending has increased 436% since 1980 and has gone from 3 percent of the state's general fund to 11.2 percent in 2011 (Lupkin, 2011). The individuals primarily being funneled into the prison system are high school dropouts, specifically blacks and Hispanics, which make up more than 80% of the prison population. The effects of incarceration do not stop once an individual leaves the facility but continues into their daily life. They have higher unemployment rates, are more likely to be homeless and their children are more likely to live in single parent homes. Policymakers have a choice whether to spend tax revenue on education, social services or prisons. However, given the vast increases in prison related spending the legislature has clearly shown a propensity to spend tax payer dollars on housing state prison inmates instead of improving high school graduation rates which will decrease the likelihood an individual will go to prison.

If California is going to reduce its prison costs, decrease income inequality and increase social mobility, then state policy makers must begin to address the educational needs of the African American and Latino community. It is essential that public policy reflect the challenges that Africans Americans and Latinos face across California, including discrimination in school and the workplace. Recent evidence shows that charters are more effectively educating low-income students, Hispanics and African Americans. A recent nationwide report by Stanford's Center for Research on Education

Outcomes (2013) concludes that traditionally underserved students who attend charter schools, including low income, African American and Hispanic students attain a higher level of educational achievement than their peers who attend traditional schools. This thesis will begin to examine this question and see if it is true in California.

Why Charter Schools May Work Better

Most researchers agree that the empirical evidence of the effectiveness of charters is inconclusive. Moreover, there is lack of agreement about the reasons why charters sometimes may increase performance. Indeed, this is one of the most contentious disputes surrounding the charter vs. traditional debate. Through my research, I discovered very few studies that documented the specific practices that increase charter performance. Some of the research cited increased autonomy from school districts as one the main drivers of performance (Charter schools: Finding out the facts: At a glance , 2014). Greater autonomy reportedly has several positive benefits for charters including more control of their school budgets, curriculum, class sizes and ability to require parents to actively participate in their child's school.

The large majority of teachers at charter schools are also not unionized and therefore do not have collective bargaining contracts. This allows charter administrators to bypass their union if they wish to increase the number of school days per year and classroom time, both of which are proven to increase performance. Charters also supposedly increase achievement because of school choice and increased competition, which I will talk more about in Chapter 2. The critics of charters attribute their success to "cherry picking" the best students and refusing to admit lower performing students.

Conclusion

Understanding the effects of charters may help us to better understand how best to address the achievement gap and the academic performance of African American and Latino students. If charter schools show that they can greatly improve the academic performance of African American and Latino students and close the achievement gap then should policy makers make greater investments in these schools?

CHAPTER 2: LITERATURE REVIEW

This chapter will focus on the literature that has been written on charter schools and how they compare to traditional schools. First, I will review the studies that discuss the impact of charters on student achievement. Overall, scholars are divided in their conclusions on the effect of charters and their ability to close the achievement gap. Next, I review research that examines the specific reasons why charter schools may affect achievement. However, not much academic work has been done on why some charters do or do not positively influence students. Lastly, I will discuss the variables that affect a student's success including household income, parent education level, race/ethnicity and the type of school a student attends. It is clear from the literature that the effect of charters on African American and Latino students is inconclusive, hence more study is needed**.**

Impact of Charters on Student Achievement

Evidence on Overall Charter School Performance from Outside California

Overall, the literature on the effects of charter schools is mixed and the exact effect oftentimes depends on the research design. Betts and Tang (2011) reviewed the literature on the effect of charters and determined that in some cases charters are outperforming traditional schools in terms of reading and math achievement, whereas in other cases they are performing similarly or worse. However, Hoxby (2004) used a lottery analysis which showed that on state exams, charter students are 5.2 percent more likely to be proficient in reading and 3.2 percent more likely to be proficient in math. When charter schools become oversubscribed, most states require students to be selected

through a lottery. A lottery analysis is when researchers compare the performance of students who were either lotteried in or lotteried out of a charter. According to scholars, this research design is the best because it enables researchers to determine the exact effect a charter school has on test scores and allows them to compare virtually identical students who both had a similar desire to attend a charter school. Students who normally attend charters usually have more motivated and engaged parents, which can affect student performance (Hoxby & Rockoff, 2005). Using a lottery analysis allows researchers to control for this variable.

In an analysis of children, attending Boston charter schools based on a lottery selection, as compared to those attending the City's public schools, Abdulkadiroglu *et. al* (2009) discovered that charter school attendance raises student achievement from 0.09 to 0.17 standard deviations in English language arts, and 0.18 to 0.54 standard deviations in math. Furthermore, Angirst *et al* found that urban charter schools outperform more rural charter schools. In Boston where the study was conducted, urban charters generate gains of 0.32 deviations away from the mean in math and .15 per year enrolled. In contrast, non-urban charter middle schools lose ground relative to their public school peers at a rate of .12 deviations per year in math and .14 per year in English (Waltersy, 2011).

Using student level data over a five-year period to perform a regression analysis, Bifulco and Ladd concluded that students enrolled in North Carolina charter schools did worse than their peers enrolled in traditional schools. Specifically, 'students in charter schools gain 0.10 standard deviations less in reading and 0.16 standard deviations less in math, on average, than the same students enrolled in traditional public schools (Robert

Bifulco, 2006).” However, in another study on the Harlem Children’s Zone Fryer and Dobbie (2011) found much different results. The Harlem Children’s Zone is a 97 block area in Central Harlem where charter schools partner with community based organizations to provide services to residents and their children in their school. The study found that charter schools within the Harlem Children’s Zone increased 6th graders math scores by one standard deviation and one quarter and one third in English Language Arts (Will Dobbie, Ronald Fryer, 2009). These gains are sufficient to close the achievement gap in math and reduce it by half in English. In addition, 3rd grade students enrolled in charters across the Harlem Children’s Zone gained four fifths to one and a half a standard deviation in both math and ELA by third grade, closing the racial achievement gap in both subjects (Will Dobbie, Ronald Fryer, 2009).

Evidence on California Charter School Research

In a 2004 report by RAND on California charter schools, RAND compared the average growth rate in charter schools' API score with that of other public schools (Assessing California's Charter Schools, 2004). The study performed a data analysis of 750 charter schools to compute their findings. RAND found that statewide, the average growth in charter schools' API score was not significantly different from that of other public schools (Assessing California's Charter Schools, 2004). Changing the comparison group and restricting the analysis only to school districts that have at least one charter school, RAND similarly found that the average growth rate in charter schools' API score was not significantly different from neighboring public schools (Buddin, 2013). The report also concluded that charters generally perform on par with traditional public

schools on achievement tests, but they have not closed the achievement gaps for minorities and have not had the expected competitive effects on traditional public schools (Buddin, 2013).

In a data analysis of 1065 charters and traditional schools, California charters, on average, experienced lower graduation rates compared to all non-charter public schools according to a University of Southern California study (USC School Performance Dashboard, 2013). Charters are underrepresented in the top schools for graduation rates and are over represented in the range with the lowest graduation rate (USC School Performance Dashboard, 2013). This can possibly be a result of charters being overrepresented in poor urban areas, which typically have lower graduation rates (USC School Performance Dashboard, 2013).

The performance of charters within California also differs by what type of charter it is— conversion or startup. As mentioned earlier, a conversion charter is a traditional school that has been converted to a charter while a startup is a completely new school that does not inherit facilities, faculty or students from the traditional school. According to Zimmer and Buddin (2006), startup charters outperform conversions. Through a multilevel regression model with approximately 9,114,624 observations, Zimmer and Buddin concluded that charter students are scoring 1.46 and 2.26 percentile points lower than similar students in traditional schools (Ron Zimmer and Richard Buddin, 2006). The results from the study show that nonclassroom-based charters, schools where the majority of the student's time are based in nonclassroom activities, are pulling down the scores from regular conversion and startups. As compared to traditional public schools,

classroom based conversion schools have mixed results where the reading score is the same as traditional schools while the math is a little lower. However, when comparing both types of charters, startups are actually outperforming traditional schools (Ron Zimmer and Richard Buddin, 2006).

Why Charter Schools May Influence Student Achievement

Despite scholars disagreeing on the overall performance of charter schools, research has shown there is some consensus on why certain high performing charter schools do well (Hoxby, 2009). Charter schools that positively affect student achievement and make strides towards closing the achievement gap exhibit certain attributes, such as (1) longer school days and extended school year, (2) a more effective small rewards/small punishment system and disciplinary strategy, and (3) a strong college-going culture.

Longer School Days and Extended Academic Years

The research clearly states that high performing charter schools have longer school days and extended academic years than traditional schools. Hoxby (2009) studied 78 charter schools in New York City (NYC) and discovered they were able to positively affect school performance because of their longer school year. The average NYC charter school experiences a school year that is two and a half weeks longer and a school day that is 90 minutes longer than traditional schools (Hoxby, 2009). By using a multiple-variable regression, Hoxby showed that schools with ten more days in the year have achievement effects that are 0.15 standard deviations higher. The author states that this association is

strong because most charter school students attend school for a least 10 more days than traditional schools.

In a study of NYC charter schools, Hoxby found that one of main reason why some charters outperformed traditional public schools was not only because they have longer school days, but because they spend more time per day on English than traditional schools. Eight grade lotteried in students score 23 points higher than their lotteried out peers. This gain decreased the achievement gap by 66 percent. The vast majority of students who attended an NYC charter school have a positive effect in English.

Banks, Bodkin and Heissel's (2011) analysis of the best practices of North Carolina charters showed that top performing charter schools not only require students to go to school more often, but mandate instruction time for students who are struggling academically. Students at each one of the state's top performing charters average an 8.5 hour school day, compared to about 7 hours in traditional public schools (Banks et al, 2009). The extra hours the students spent in schools translated into 39 extra school days.

Almond's (2012) literature analysis examined the effect charters were having on black charter students and discovered that the highest performing charters have longer school days and extended academic years. She notes that KIPP, one of the most successful charter organizations in America, students attend class for nine hours a day and attend Saturday school and summer school (Almond, 2011). The extra sessions at KIPP are designed to catch students up and move them ahead, primarily because the schools serve mainly low income students who normally begin school below grade level.

More effective small rewards/small punishment disciplinary system

The literature states that charters schools that perform well have a more effective rewards/small punishment disciplinary system. In the 1990's, as a result of increased juvenile crime schools across the nation adopted zero tolerance and overly punitive policies. These polices stipulated that for certain offenses, students shall automatically be suspended or expelled, despite the circumstances or frequency of the offense. As a result of these policies, suspension and expulsion rates across the states sky rocketed which not only disproportionately affected African Americans and Latinos but have greatly contributed to slower academic growth for these populations.

While traditional public schools have been slow to repeal these ineffective policies, successful charters across the nation have developed less punitive and greater restorative justice approaches to bad behavior. Hoxby's (2009) study of NYC charters found that the more effective charters have policies that only provide small rewards to students who do well. When a student misbehaves, teachers in successful charters were allowed to deal with it through small classroom level infractions, rather than administratively driven infractions. Through a logistic regression, Hoxby found that this policy had a .18 effect on a student's performance, *ceteris paribus*. In a study of successful North Carolina charters, Banks's et al found that charters that had a greater restorative justice approach and provide character education have an easier time handling disciplinary problems. At these successful charters, schools also bring the entire student body together when problems arise. A high performing charter school in North Carolina brought the entire 8th grade together for an all-day meeting to address bullying concerns. However, it is important to note that the vast majority of these charter schools are

significantly smaller than traditional public schools. The size of the charter school affects their ability to handle disciplinary problems at the classroom level.

Strong college going culture

The charter schools that have a positive effect on student achievement also have a strong college going culture. Banks et al found that most high performing charters in North Carolina take students on annual college tours, provide free SAT/ACT help, assistance in applying for the financial aid and help students fill out college applications. Banks also found that at KIPP Charlotte students visit a minimum of 16 colleges by the time they are in 8th grade, which helps to strengthen the college going culture (Banks et al, 2011). In a study of five high performing charter schools that serve predominantly low income students in Massachusetts, Merseth (2009) found that three of the five schools clearly stated in their mission statement that their focus is to prepare students for college. After the school converted to a charter school, students in one Chicago high school increased their college going rate from 54% to 33%, with 99% of the same students. The school's mission statement was clearly focused on college preparation (Fanner-Hinton & Adams, 2006).

Injecting Charter Best Practices into Failing Traditional Schools

Foyer (2014) discovered that by injecting a charter school's best practices to low traditional schools, it increased student academic performance. Beginning in the 2010-2011 school year, "Foyer implemented five best practices of charter schools in several failing Houston public schools, these variables included increased time, better human capital, more student-level differentiation, frequent use of data to alter the scope and

sequence of classroom instruction, and a culture of high expectations (Foyer, 2014).” Students in the 16 elementary schools improved 18.4 standard deviations in math which was enough to close the achievement gap. Students who attended secondary school in Houston increased .146 standard deviations in math which closed the achievement gap by half. However, the results for reading were not as impactful and were statistically zero, meaning that the charters best practices had virtually no effect. They study also showed that Hispanic students were the largest beneficiaries of the experiment. Elementary school Hispanic students gained .225 standard deviations in math while black students gained .103 standard deviations in math (Foyer, 2014). Similarly, secondary Hispanic students gained .198 standard deviations in math and black students gained .065 standard deviations (Foyer, 2014).

Why Charter Schools Do Not Influence Student Achievement

Throughout my research I found several studies that compared the performance of charter schools vs. traditional schools and the specific reasons why some charters outperform traditional schools. However, I found very little academic research stating the specific reasons why charter schools “do not” influence student achievement. Given the robust discussion on this topic, I expected to find an abundance of studies stating the specific reasons why charter schools are not performing well or why they have no effect. I suspect that the reason I could not find research on this topic is because charters often close before researchers can conduct studies on why some charters are failing. Most charter agreements provide only 5 years for a charter school to increase academic

performance; if they do not then they are required by law to close. In 2012, California closed 28 charter schools because of poor performance.

I found only one study authored by Foyer and Hamilton (2012) that correlated various traditional education practices of charter schools with poor performance. The authors found that input measures associated with a traditional education including class size, per-pupil expenditure, the number of teachers with teaching certification and advance degrees were not associated with school effectives (Foyer, 2012). As discussed above, Foyer and Hamilton found that charter schools that increased achievement had longer school days, extended academic years and a strong college going culture.

Impact of Charters on Minority Students

African American Students

Race is an important factor in identifying a student's academic success. According to a twenty seven state report done by Stanford University's Center for Research on Educational Outcomes (CREDO), low income, African American and Hispanic students perform better when attending a charter school. The study used a virtual twin model of 58, 315, 452 students who went to both charter and traditional schools. The virtual twin model used several explanatory variables including: grade level, gender, race/ethnicity, free or reduced-price lunch eligibility, English language learner status, special education status and prior test score on state achievement tests. Cremena identified that black students in charter schools have seven additional days of learning, based on a 180 day calendar, in reading compared to their counterparts at traditional schools. Toney (2011) performed a linear regression model with data from 950 schools to

measure the performance of black students in California charters compared to black students who attended traditional schools. She showed that black charter school students outperformed their peers in traditional schools at about four times the rate (Toney, 2011).

Latino/ Hispanic Students

Recent evidences shows that Hispanic students see mixed benefits from attending charter schools. The CREDO study documented that Hispanic students attending charters performed worse than their peers in traditional schools. However, in a logistic regression of 4,430 students, Hoxby (2005) showed that charters in primarily Hispanic areas raise the achievement of Hispanics by 7.6 percent in reading and 4.1 percent in math. In this same study, the effects of charter school performance on African American students were not statistically significant.

White & Asian Students

White students on average have higher test scores, high school graduation and college matriculation rates than African Americans and Hispanics. However, some studies indicate the performance of whites decreases when enrolling in charters. White students lose a total of seven days of learning when enrolling in charters (Cremata, 2013). A CREDO based charter study of Los Angeles charters found that whites gained 2 additional days in reading and 1 additional day in math (Angeles, 2013). While Asians have higher learning gains in charters than whites, their growth is still insignificant as compared to their traditional school peers. They gain 3 days in reading and 2 days in math. However, these results need to be considered in the context of the academic learning gaps between Blacks, Hispanics, whites and Asian traditional school students

(Cremata, 2013). For example, Hispanic students in poverty see positive benefits from attending charter schools, but even with this large boost, Hispanic students in poverty at charters still have lower learning gains than white students at traditional schools (Cremata, 2013). Despite the statistical learning gains made by minorities in charters, the achievement gap between Hispanics and African Americans continues to be significant.

Summary

Evidence suggests that African American students are having positive gains in charters. The results for Hispanics are mixed, but when controlling for poverty and English learners, the gains are positive. Asians and whites do not perform as well in charters as they do in traditional schools. The research on the effect of charters on low income and minority students across the nation, specifically African American students, is inconclusive because of the few studies that specifically isolate the race of students and produce statistically significant results.

Social Variables that Impact Student Achievement

Previous research has identified several different social variables that impact a student's achievement. This section discusses only two of those variables in which scholars commonly cite as the most important, household income and parent education level.

Household Income

Researchers have identified income as one of the most important variables for determining a student's likelihood of success. The 1966 Coleman Report was the first major study to prove a correlation between a student's success and their household

income. New research from the National Assessment of Educational Progress have confirmed decades of research which document the achievement gap. The report showed that across the country 40 percent of the difference in average reading test scores and 46 percent of the difference in average math scores are associated with the variation in child poverty rates (Ladd, 2011). In addition, Reardon (2011) in an examination of testing data from 1943-2001 showed that the achievement gap between children from high and low income families is roughly 30 to 40 percent larger among children born in 2001 than those born in 1975.

Family income is also an important driver of a child's ability to develop important cognitive skills early in life such as reading and counting. Before enrolling in kindergarten, children normally learn these skills through their parents. These skills play a crucial role in their future academic success. In the 1990's a team of researchers followed a group of 40 families' that consisted of various incomes including low, middle and high earners. They concluded that by the age of 3, a wealthy family's child will have heard 3 million more words than a child who comes from a low income household (Closing The 'Word Gap' Between Rich And Poo, 2013). Moreover, the number of places a child is exposed to before enrolling in school also directly impacts their academic success. Dr. Phillips used survey data from the Panel Study of Income Dynamics on 3,653 children to determine that affluent children spend 1,300 more hours than their low income children before age 6 in places other than their homes or daycare such as museums, or environments that stimulate greater brain activity (Phillips, 2010). This

additional exposure enables high income children to be further ahead than their low and middle income peers when beginning their academic journey.

Income also matters when it comes to performance in charter schools. Slovacek, Kunnan and Kim (2002) performed a linear regression on 3,336 traditional and charter schools to determine the effect charters have on low income students. Their study used several factors as control variables including whether or not the student was on free and reduced lunch, the number of teachers with full credentials or emergency credentials, student mobility, English language learner eligibility, enrollment size and which type of charter school the student attended. Through the regression they figured out that each percentage point of the student body that was considered low income resulted in a 1.2 point decline in a charters API score. Traditional schools had a 2.6 percentage decrease in API scores as for every 1 percent increase in low income students.

Parent Education Level

According to Reardon (2011), a child's academic success is not only positively correlated with their household income but also their parent's education attainment, a variable often left out in most education research. Parents are not only role models to their children, but provide help with homework, engagement in intellectual activities, and teach students valuable study skills that are needed in order to be successful in school. According to the National Institutes of Health, children with college level educated parents have fewer problems that can impede learning experiences (Seifert, 2013). Standardized test scores are also influenced by a parent's education level. "A 2005 study by the Institute of Social Research at the University of Michigan found that a parent's

education directly affects standardized achievement testing scores (Seifert, 2013).” The researchers used data from a national, cross-sectional study of children that included 868 8 –12-year-olds, divided approximately equally across gender (436 females, 433 males). They found a .29 correlation with a parent’s education level and test scores. This effect was the same for Whites and African Americans, the only two races studied (Davis-Kean, 2005).

Summary

Income and parent education level are both important factors in a child’s education. Research has found that income is the best predictor of a child’s success in school. In addition, a parent’s education level also has a strong correlation with a student’s test scores. Despite the strong evidence regarding the correlation between a parent’s education level and a student’s success, most of the regression based literature which I reviewed did not use it as an explanatory variable in the regression models. Omitting this variable is troubling given the effect it has on a student’s success.

Conclusion

In reviewing the literature, I found that the overall effect of charter schools is inconclusive. However, I did find a consensus among researchers that high performing charters are increasing student performance by having longer school days, extended academic years, more effective small rewards/small punishment disciplinary system and a strong college going culture. Other studies showed that African American students are doing better in charters than in traditional schools while the research on Hispanic students is mixed. Overall, charter schools do not appear to dramatically affect the performance of

whites and Asians students; however, their performance still surpasses African Americans and Hispanics in both types of schools. The research has also shown that two of the best indicators of a student's success are household income and parent education level.

I conclude my literature review by noting several gaps in the current studies regarding charter schools. Despite the plethora of research that exists on charter schools and how they compare to traditional schools, very few studies have examined the academic performance of traditionally underserved populations, including African American and Latino students. The CREDO (2013) and Toni (2011) research were the only studies I discovered that found a statistically significant effect regarding charters on black and Latino students in California. However, both of the research designs have selection bias issues. In addition, I only found a few studies that were California specific. African Americans are disproportionately enrolled in charter schools across the state but yet very little research has been done documenting the effectives of charters in California. My study aims to fill that gap.

CHAPTER 3: METHOLODLGY

For decades, traditional public schools in urban, suburban and rural communities have failed to provide an adequate education for the majority of black and Hispanic students, leaving many of them trapped in generational cycles of poverty and hopelessness. Some charter schools across the nation, such as KIPP Academy, have been able to not only increase the performance of traditionally underperforming students but close the achievement gap. The performance of charter schools such as KIPP raises the possibility that charter schools may more effective helpful for African American and Latino students. Understanding the impacts of charters is critical to informing policy makers as to the best type of school that improves student performance, increases educational attainment and decreases economic inequality.

In this chapter I will outline the methodology used to assess whether attending a charter school results in positive outcomes for students. First, I will discuss the dependent and explanatory variables as well as my unit of analysis. Next, I will describe the regression equation and its use in crafting the regression analysis. Lastly, I will explain my limitations associated with using API data at the school level, data collection methods and multicollinearity.

The literature review clearly states that race, household income and parent education levels all are important predictors of a student's success. This study aims to answer two central, remaining questions;

1. What is the effect of charters on the API scores of African American and Latino elementary students and do they perform better than their peers in traditional school?
2. Do charter schools, as compared to traditional public schools, help close the achievement gap?

This study focuses on elementary school students because research shows that if charters schools will make a difference, it will most likely take place while a student is in elementary school.

Regression Equation

Student= (African American API, Latino API and White API)

The dependent variable in this study is the 2008-2012 API scores of African American, Latino and white students within California elementary schools. Average California API scores vary widely across ethnic groups. According to the CDE, in 2012, African American elementary students between the grades of 2-6 had an API score of 745, the lowest of any other race/ethnicity. Hispanic elementary school students had an API score of 771, the second lowest of all other ethnicities. English learners had a score almost twenty points higher than African Americans, despite learning English as a second language. White elementary school students had an API score of 879, 108 points higher than Latino students and 134 points higher than black students.

The unit of analysis for this study is charter elementary schools, with around 5,900 charter elementary schools included in each regression, That is, I will be comparing average API scores for particular groups within different California elementary schools.

Individual level data was my preferred unit of analysis; however, this data was unavailable. The independent variables I assume will cause an effect on the dependent variable are grouped into two areas: school and background characteristics. Following is a more detailed explanation of what is included in each category and why.

Type of School=f (charter school, non-charter school)

The key independent variable in this study is charter school. In order to measure the variable I had to code it as 1, which signifies that the school is a charter school, and 0 which means that the school is not a charter. This study does not differentiate between the type of charter school (starup, conversion, etc) because the data did not allow for such a comparison. In addition, it was not the purpose of this study to compare the performance on different types of charters, rather than the effect charters are having on African American and Latino students. However, by leaving this measure out it leaves out the ability to distinguish across different types of charter schools.

Background characteristics= f(Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, parent education level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students)

Research has shown that a student's background strongly influences their academic performance. The factors that influence a student's performance include demographic characteristics such as race/ethnicity, household income and parent education levels. This section outlines the variables I used to control for the effect of charters on African American and Latino students.

A key independent variable within my study is the percent of the race/ethnicity at each charter school. The races included are African Americans, Latinos/Hispanics, Whites and Pacific Islanders. These variables are included because it will allow me to see how an increase or decrease in a specific race changes the effect of the dependent variable. I also include these variables within my study because of possible cohort effects. African Americans and Latinos are more likely than whites to qualify for free and reduced lunch. Therefore, I suspect that as the percentage of whites increases within a charter school the API scores of blacks and Latinos will also rise. The percent of Asian Americans is left out in order to have a reference variable

Information on how poverty affects a student's API scores (dependent variable) is measured by the independent variable, percent of students on free or reduced lunch. I suspect that as the percentage of students who qualifies for free and reduced lunch increases who qualify the API scores of African Americans and Latinos decrease. The variable parent education includes the highest grade obtained by a single parent. Researchers also generally agree that one of the most important variables in student success is parental education. Existing research has shown that as a parent's educational attainment increases, so does the performance of students. I suspect that this variable also holds true within my regression.

The research has shown that a large increase in the amount of Gifted and Talented Education Program (GATE) can increase a school's test scores. This variable is being controlled in order to examine the cohort effects of an increase population of GATE students. As the GATE population rises, I am sure that API scores will also rise. The

percent of migrant and education students typically has a negative effect on a school's performance, primarily because of the difficulties associated with being a part of a migrant family and learning English as a second language. It will most likely not be any different in this regression. However, I believe reclassifying a student as proficient in English should have a positive effect on both African American and Latino student's API.

Problems with Data and Study Limitations

As mentioned above, the unit of analysis for this study was charter elementary schools and all data used for this report was taken from the California Department of Education's API database. The main drawback from using the API database was the data was only available at the school level, not individual student level data which most researchers agree is the best unit of analysis. According to Zimmer and Buddin (2005) "school level-data can cause serious limitations because it masks changes over time in a school's student population, coupled with performance variation across different subjects." The ideal data set would have been California's Longitudinal Pupil Achievement Data System (CALPADS) which tracks every student's academic performance in California through their 12th grade year. However, I was unable to retrieve the data base because the state only allows access to local educational agencies and researchers who have been granted prior permission.

Last of all, the ideal methodology would be a lottery analysis with individual student level data, coupled with a regression analysis. As described in the literature review a lottery analysis is when researchers compare the performance of students who

were either lotteried in or lotteried out of a charter. According to scholars, this research design is the best because it enables researchers to determine the exact effect a charter school has on test scores and allows them to compare virtually identical students who both had a similar desire to attend a charter school. Students who normally attend charters usually have more motivated and engaged parents, which can affect student performance (Hoxby & Rockoff, 2005). Using a lottery analysis allows researchers to control for this variable. A lottery analysis is not possible if a charter school is not oversubscribed, when admissions are not based on random selection, or when the information on students who did not get selected is not available (Hoxby & Rockoff, 2005). However, in this study a lottery analysis is not available because I do not have access to a lottery data set.

Model Specification

In order to gauge the effect of charters and examine whether or not they are helping to close the achievement gap, I performed an ordinary least squares regressions using 2 different models. Table 2-4 below describes each model. I also chose to use Log Lin as my preferred functional form because it allowed me to better interpret the coefficients as units and allowed for an easier explanation on the exact effect charters have on the API scores of African American and Latino students.

As mentioned above, I structured my study into two different models, which examined how my dependent variables and main explanatory variable, charter school, changes after additional variables are controlled for. Model 1 estimates the difference in the African American, Latino and white API scores between students who attend charter

schools versus those who attend traditional schools. Model 2 adds several additional variables including all of the background characteristics listed above to isolate the impact of charter schools. This model also helped me to understand why the difference in API scores exists between charters and traditional schools.

Table 2: African American Model Specifications

Model	Dependent Variable	Main Independent Variable	Additional Independent Variables
1	2012 African American API	Charter School	None
2	2012 African American API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students
1	2011 African American API	Charter School	None
2	2011 African American API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students
1	2010 African American API	Charter School	None
2	2010 African American API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students
1	2009 African American API	Charter School	None
2	2009 African American API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students, Full Credential*, Emergency Credential*
1	2008 African American API	Charter School	None
2	2008 African American API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students, Full Credential*, Emergency Credential*

Table 3: Latino Model Specifications

Model	Dependent Variable	Main Independent Variable	Additional Independent Variables
1	2012 Latino API	Charter School	None
2	2012 Latino API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students)
1	2011 Latino API	Charter School	None
2	2011 Latino API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students
2	2010 Latino API	Charter School	None
3	2010 Latino API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students
1	2009 Latino API	Charter School	None
2	2009 Latino API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students, Full Credential*, Emergency Credential*
1	2008 Latino API	Charter School	None
2	2008 Latino API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students, Full Credential*, Emergency Credential*)

Table 4: White Model Specifications

Model	Dependent Variable	Main Independent Variable	Additional Independent Variables
1	2012 White API	Charter School	None
2	2012 White API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students)
1	2011 White API	Charter School	None
2	2011 White API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students
1	2010 White API	Charter School	None
2	2010 White API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students
1	2009 White API	Charter School	None
2	2009 White API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students, Full Credential*, Emergency Credential*
1	2008 White API	Charter School	None
2	2008 White API	Charter School	Percent of Race/Ethnicity, Percent of students on Free or Reduced Lunch, Parent Education Level, Number of Students Enrolled, Percentage of GATE students, Percent of Migrant Education students, Percent of Reclassified Fluent English Proficient students, Full Credential*, Emergency Credential*)

Data

This data are derived from the yearly-standardized test administered by local school districts and collected by the California Department of Education (CDE). I choose to use this source because (1) I wanted the data source to be California specific (2) I was familiar with the information having used it in prior academic work and (3) the API data

are very extensive, easy to read and publicly available. Table 2 provides a description for the variables used in the regression analysis. Figure 1 in Appendix A shows the correlation between each of the explanatory variables.

Table 3 also provides a brief description of the dependent and explanatory variables used in the regression. In addition, table 3 also shows the reference variables, which I left out in order to provide a reference point for the regression. Figure 1 in Appendix A is also important to mention in this section because it shows the correlation between each variable.

Table 5: Regression Variables

Dependent Variable	**Description**	**Source**
2008-2012 Africa American Academic Performance Index Scores	Scores of African American elementary school students on state standardized exams	API Data, California Department of Education
2008-2012 Latino Academic Performance Index Scores	Scores of Latino elementary school students on state standardized exams	API Data, California Department of Education
2008-2012 White Academic Performance Index Scores	Scores of White elementary school students on state standardized exams	API Data, California Department of Education
Explanatory Variables		
Student		
African American	Percentage of Students who are African American	API Data, California Department of Education
White	Percentage of Students who are Asian	API Data, California Department of Education
American Indian	Percentage of Students who are American Indian	API Data, California Department of Education
Filipino	Percentage of Students who are Filipino	API Data, California Department of Education
Pacific Islander	Percentage of Students who are Pacific Islander	API Data, California Department of Education
Mixed Race	Percentage of Students who are Mixed Race	API Data, California Department of Education
School		
Enrollment	Number of Students Enrolled on the First Day of Testing for Grades 2-11	API Data, California Department of Education
Charter Dummy	The dummy variable for whether or not the school is a	API Data, California Department of Education

	charter	
Free or Reduced Lunch	Percentage of low income students tested who qualify for Free or Reduced lunch	API Data, California Department of Education
GATE	Percent of participants in Gifted and Talented education programs	API Data, California Department of Education
Migrant Education	Percent of participants in migrant education programs	API Data, California Department of Education
Reclassified Fluent English Proficient	Percent of Reclassified Fluent-English-Proficient (RFEP) students	API Data, California Department of Education
Full Credentials *data only available up to 2009	Percent Teachers at a school with Full Credentials	API Data, California Department of Education
Emergency Credentials *data only available up to 2009	Percent Teachers at a school with Emergency Credentials	API Data, California Department of Education
Percentage Tested	Percentage of students tested in a school	API Data, California Department of Education
Social		
Response/Parent Education	Percentage of students and/or parents who responded about parent education level	API Data, California Department of Education
High School Graduate	Percentage of students whose highest parent education level is a high school graduate.	API Data, California Department of Education
Some College	Percentage of students whose highest parent education level is some college.	API Data, California Department of Education
College Graduate	Percentage of students whose highest parent education level is college graduate.	API Data, California Department of Education
Graduate School	Percentage of students whose highest parent education level is graduate school.	API Data, California Department of Education
Reference variables		
Asian	Percentage of students who are White (non-Hispanic)	API Data, California Department of Education
Not High School Graduate	Percentage of students whose highest parent did not graduate from high school	API Data, California Department of Education

Multicollinearity

In order to check for multicollinearity I ran pairwise correlations for all the independent variables. Appendix A shows the correlation and the relationship between

each explanatory variable. Most researchers agree that for two variables to be highly correlated the coefficient must be greater than 0.8. Given that none of the explanatory variables have a coefficient greater than 0.8, I can conclude that none of the variables are highly correlated with one another. In addition, I purposely omitted the variable English learners because it is highly correlated with the Percentage of Hispanic students.

To be sure, multicoorleanirity does not exist in my study I also ran a Variance Inflation Factor test (VIF). Table 3 below shows the results of the VIF test. Researchers have identified that if a VIF is over five then it could possibly suffer from multicoorleanirity. After running the VIF test, Free or Reduced lunch had a score of 6.1 and College Graduate had a 5.01. This shows that my regression does suffer from multicoorleanity. However, I chose not to reject these variables in my final regression because the literature behind the variables is extensive and definite on the relationship. In addition, dropping the variables does not significantly change the results and can cause omitted variable bias and specification bias.

Table 6: Variance Inflation

Variables	VIF	1/VIF
Free or Reduced Lunch	6.10	0.164014
College Graduate	5.01	0.199780
Graduate School	4.68	0.213810
High School Graduate	3.80	0.263055
English Language Learners	3.31	0.302300
Some College	2.31	0.432462
African American Charter School Effect (Main)	2.19	0.456941
African American	1.95	0.512315
Charter Dummy	1.81	0.553232
Reclassified Fluent English Proficient	1.80	0.554083
Asian	1.47	0.679185
Filipino	1.47	0.681026
Response/Parent Education	1.34	0.747433
Mixed Race	1.25	0.797114
Migrant Education	1.13	0.886224
GATE	1.23	0.812741
Disabled	1.22	0.816851
Percentage Tested	1.17	0.855851
American Indian	1.12	0.895397
Year Around	1.05	0.955536
Pacific Islander	1.12	0.889252
Enrollment	1.21	0.829239
Mean VIF	2.17	

CHAPTER 4: RESULTS

Through two different regression models, both of which were used for each ethnicity and used data from 2008-2012, I estimated the effect charter schools have on the API scores of African American, Latino, and white students and whether or not they are helping to close the achievement gap. This chapter begins by discussing the effects charters and certain independent variables have on the API scores of African American students. I follow this section by doing the same for Latino students and then white students. I conclude the chapter by estimating whether or not charter schools are helping to close the achievement gap. As I stated in Chapter 3, this thesis aims to answer two central questions:

1. What is the effect of charters on the API scores of African American and Latino elementary school students and how do they compare to their peers in traditional schools?
2. Do charter schools, as compared to traditional public schools, help close the achievement gap?

I structured my study into two different models that examined how my dependent variables (API scores for each racial, ethnic group) and main explanatory variable (charter school) changes after additional variables are added. **Model 1** estimates the difference in the African American, Latino and white API scores between students who attend charter schools versus those who attend traditional schools. **Model 2** adds several variables to isolate the impact of charter schools.

Charter Effects on the API Scores of African American Students

My findings indicate that African American students who attend charter schools perform no better than African American students who attend traditional schools. In 2012, the API scores of African American students who attended charter schools were 14 points higher than African American students who attended traditional schools. However, after controlling for additional variables including student characteristics and school demographics, I find that African American students at charter schools perform no better than African American students at traditional schools. My results for 2008, 2010, and 2011 also showed that African American students at charters performed similarly to their peers in traditional schools, even after controlling for additional variables.

The only year of my study that showed that charters increased the API scores of black students was in 2009 when African American students who attended charter schools had API scores that were 35 points higher than African American students who attended traditional schools. After controlling for additional variables including student characteristics and school demographics, black students saw their increase drop to 23 points. Despite the drop, this difference is significant. This drop can possibly be explained by charters enrolling higher rates of African American students whose parents are more educated than the parents of African American children who attend traditional schools.

School Demographics are Important in Determining African American API Scores

In each year of the study, parents' education, percent of the school's students who are American Indian, percent of the school's students classified as migrant education,

percent of the schools whose students are eligible for free and reduced lunch (proxy for poverty), and percent of students who qualified for GATE were all significant predictors of the API scores of African American students. The addition of these variables in Model 2 changed the effect charters have on African American students, which shows that the effect of charter school are mitigated by introducing other factors.

Parent Education Effect on African American API Scores

Previous research has shown that parent education dramatically affects the academic performance of students (Abdulkadiroglu et. al, 2009 & Reardon, 2011). Typically the more educated a parent is, the better the child performs in school. In this study, I find parent education significantly affected the API scores of African American students with the impact varying from year to year. In each year, parents who went to college but did not finish had a positive impact on API scores. For example, in 2010, a 20 percent increase in the number of parents who obtained some college increased was related to an 11 point increase in African American API scores. These results were also consistent year to year. Parents who graduated from college had the most significant effect on black API. In 2012, a 20 percent increase in the number of parents who graduated from college was related to a 42 point increase in the API scores of black students. This trend was consistent from 2008-2012, with increases ranging from 25-42 points. In addition, this effect was larger than the percent of parents who completed graduate school by at least 10 points every year of the study.

Percent of GATE Students Effect on Black API Scores

Another positive influence on the API scores of African American students was the percent of GATE students within a school. For example, in 2009 a 20 percent increase in a school's GATE population was related to a 43-point increase in African American API. The research was silent on this phenomenon. However, the finding can probably be explained by the typical profile of a GATE student. These individuals normally have above average test scores, are more likely to be engaged at school, have regular attendance and greater parent involvement. All of which are factors that contribute to a school and student's success.

American Indian on African American API Scores

The largest negative impact in 2012, 2009 and 2008 on black API scores was the percent of American Indians within a school. In 2012, a 20-point increase in the percentage of American Indian students was related to a 128-point decrease in African American API scores. The research I reviewed did not specify why this relationship occurs.

Migrant Education Effect on African American API Scores

In 2008 and 2010, the largest negative impact on black API was the percent of migrant education students within a school. In 2010, a 20 percent increase in a charter's migrant education students was related to a 128 point decrease in African American API scores.

Free and Reduced Lunch Effect on Black API Scores

The percentage of free and reduced lunch students within a school also influences the API scores of African American students. In 2010, a 20 percent increase in the

number of students who are free and reduced lunch eligible was related to a 18 point decrease in Black API scores. This trend was consistent over the years of the study and lowers the API scores of this group to the same level as English learners.

Charter Effects on the API Scores of Latino Students

Overall, charter schools have a negative effect on Latino students. From 2008-2012, the API scores of Latinos were 10-18 points lower if they attended a charter school compared to Latino students who attended traditional schools. This result is consistent with existing research which shows the performance of Latino students decreasing when they enroll in charters (CREDO, 2009). In 2010 the API of Latinos who attended charters dropped by 18 points, the most of any other year. This phenomenon can possibly be explained by deep cuts made to schools during the Great Recession. Charter schools during this time period saw their budgets reduced by millions of dollars, causing them to shorten their academic year, increase class sizes and cut valuable academic programs. However, traditional schools during this time period also saw their budgets cuts, similar to charter schools. It is not clear exactly why major cuts would have hurt charters more than traditional schools.

School Demographics are Important in Determining Latino API Scores

Parent Education Effect on the API Scores of Latino Students

Similar to African American students, parent education had a significant effect on API scores. The number of parents who completed some college had the largest effect on this group. In 2008 and 2009, a 19 point Latino API increased was related to a 20 percent increase in the number of parents who attended college but did not graduate. I am unsure

why this phenomenon occurs. The second largest effect was the number of parents who graduated from college. In 2010, a 20% increase in the number of parents who graduated from college was correlated to a 17-point increase in the API scores of Latinos. This figure was consistent every year of the study. Also similar to the results for African American students, the graduate school variable yielded smaller effects and was correlated with an 11 point bump for a 20 percent increase in the number of parents who completed graduate school.

Free and Reduced Lunch Eligibility Effect on Latino API Scores

The poverty levels within a school also affected Latino API. In 2011, a 20 percent increase in the number of students who qualify for free and reduced lunch was correlated with a 18 point Latino API decrease. This is a substantial impact. The poverty effect was similar throughout the study.

Migrant Education Students Effect on Latino API Scores

One of the largest negative impacts on Latino API was the percent of migrant education students within a charter school. In 2012, a 20 percent increase in migrant education students was related to a 36 point decrease in Latino API scores. This decrease is enough to drop Latino API to the lowest of all other ethnicities.

Pacific Islander Students Effect on Latino API Scores

Another interesting finding was the effect Pacific Islanders have on the performance of Latino students. In 2011, a 20 percent increase in the number of Pacific Islander students was related to a 70-point decrease in the API of Hispanics, the largest decrease of any other year. Pacific Islander students typically perform better than Latinos

on almost all academic metrics, which in most cases increases a school's API. However, in this regression it decreased Latino API.

Charter Effects on the API Scores of White Students

The API scores of white students was examined in this study in order to determine if charter schools were helping to close the black-white and Latino-white achievement gaps. Whites saw a significant decrease in API scores when they enrolled in charter schools. From 2012-2008 under Model 1, which did not control for additional background variables, white API decreased by 7-22 points if they were enrolled in a charter school compared to whites in traditional schools. Under Model 2, after controlling for additional variables including student characteristics and school demographics, the API dropped by 26-42 points. Appendix A shows these results. This regression was consistent with existing research that shows that whites typically perform worse in charters than traditional schools (CREDO, 2009).

The Achievement Gap

Charter schools are closing the achievement gap between Latino and white students but it is primarily due to a decrease in white API scores when they enroll in charters. Table 6 below describes how charters affected the achievement gap from 2008-2012. As noted above, Latino API scores decrease when attending charters, but white API decreases even more than Latinos, causing the achievement gap to shrink. For example, in 2012 Latino and white students had a 108 point difference in their API scores; this gap is the achievement gap. During this same year, the API scores of Latinos were 11 points lower if they attended a charter school compared to Latino students who

attended traditional school. The API scores of Whites were 26 points lower if they attended a charter school compared to white students who attended traditional schools, which dropped their API from 879 to 853. As a result of both students attending a charter school the achievement gap is now only 93 points, as compared 108 points when both students attend a traditional school. In order to figure out the percentage, I divided 15 points by the point difference in the original achievement gap which was 108 points, which means that in 2012 charter schools closed the achievement gap between white and Latino students by 14 percent.

In 2009, the only year data is available for black students, the achievement gap between black and white students decreased by 7 percent. This occurred primarily because of an increase in the API scores of black students who attended charters and a decrease in white API scores. From 2012-2010 and 2008, charters schools performed similarly to traditional schools in their ability to close the achievement gap for African American students.

Table 7: The Charter Elementary Achievement Gap Chart

The Charter Elementary Achievement Gap Chart					
Race	Year	Overall API Score	API Change When Enrolling in Charters	New API Score When Enrolled in a Charter	Effect of Charters on Achievement Gap
Black	2012	745	0	0	0
Latino	2012	771	-11	760	-14%
White	2012	879	-26	853	
Black	2011	739	0	0	0%
Latino	2011	763	-14	749	-18%
White	2011	873	-34	839	
Black	2010	723	0	0	0%
Latino	2010	752	-18	734	-11%
White	2010	862	-30	832	
Black	2009	717	22	739	-8%
Latino	2009	737	-11	726	-18%
White	2009	861	-33	828	
Black	2008	705	0	0	0%
Latino	2008	721	-14	707	-22%
White	2008	847	-42	805	
*Data is pulled from the California Department of Education API Database					
*0 implies no change in achievement gap because charter school variable was statistically insignificant					

CHAPTER 5: CONCLUSION AND POLICY IMPLICATIONS

Since the inception of charter schools, a plethora of research has been published studying their overall performance. Overall, scholars are divided on this issue, showing that in some cases charters are positively impacting the performance of African American and Latino students while in others they are not (Ladd, 2006, Hoxby, 2009, CREDO 2013, Almond, 2011, Foyer, 2013). Moreover, despite dozens of studies that have been published on this topic, very few reports have been California specific, which leaves a gap in the research.

This thesis has identified that charter schools are not improving the API scores of Latino or African American students compared to their counterparts in traditional schools. However, charters are helping to close the achievement gap between Latinos and whites, primarily due to a significant drop in the API scores of white students who attend charter schools. Charters are reducing the achievement gap but not in the positive way that is often envisioned. Instead, they may do so by significantly reducing the API scores of white students.

Impact of Charters on African American Students

Overall, my findings showed that African American students in charter school performed similarly to African American students in traditional schools. My results also showed that several background variables had a significant effect on the performance of African American students including; parent education (college graduate & graduate school), percent of students who qualify for GATE, percent of students classified as migrant education, and percent of student's eligible for free and reduced lunch. Parent

education including parents who completed college and those who finished graduate school had the most significant effect on African American API scores. The percent of GATE students within a school was also related to an increase in black API scores. Moreover, both the percent of migrant education students, American Indian students and the number of students on free and reduced lunch had the worst effect on African American API.

Impact of Charters on Latino Students

The biggest surprise of the study was the effect charter schools had on Latino students. From 2008-2012, the API scores of Latinos enrolled in charter schools dropped by 10-18 points as compared to their peers in traditional schools. This finding is consistent with previous research, which shows that the performance of Latinos in charters is mixed (Credo, 2009).

On average, the performance of Latino students in charters lags the performance of their peers in traditional schools. This is important considering that the API scores of Latinos in traditional schools has improved by 50 points since 2008 (State Report- Base API, 2014). Latino students are improving in traditional schools while their performance drops when they enroll in charter schools.

Similar to African American students, the percent of parents who completed college, graduate school, and the percent of students who qualified for GATE within a school significantly increased Latino API. The percent of migrant education students, Pacific Islanders and the number of students on free and reduced lunch all significantly decreased Latino API.

Are Charters Helping to Close the Achievement Gap?

Overall, charters are helping to close the achievement gap between Latino and white elementary students. From 2008-2012, the achievement gap decreased between 14 to 22 percent. However, the increase is not due to improved academic performance among Latinos, but a decrease in white API scores. The API scores of Latinos also decreased during the years of the study but by a smaller margin, the difference helped to decrease the achievement gap. However, this is not a positive effect for either of these groups. The academic performance, on average, for both groups declines when they enroll in a charter school. I also did not find conclusive evidence, which showed that charter schools were closing the achievement gap between black and white students.

Policy Implications

As stated in Chapter 1, California leads the nation in both the number of charter schools and charter growth. Most charter schools are located in urban areas and serve historically underperforming students, including African American, Latino and low income students. However, my research shows, on average, elementary Latino students are doing worse in charter schools than their peers in traditional schools. African American students in charters are performing similarly to African students in traditional schools. Therefore, I believe policy makers should be cautious when considering charter expansion.

The creation of additional charter schools has contributed to concerns within both local school district budgets and operations. In a 4-year report authored by John Ericson and Debra Silverman of the U.S. Department of Education, 45 percent of districts

reported that charter schools had a negative impact on their budgets. In some districts, administrators had to make difficult cuts because of declining enrollments such as closing a school or cutting staff. Declining enrollment in traditional schools has decreased per pupil funding which has caused several districts to cut important academic programs that are vital for student success (D'Arcy, 2013).

The operations of local school districts have also been harmed by charter schools. Charter schools often pool students across several grades, which makes it difficult to cut back on expenses such as consolidating classrooms or schools (D'Arcy, 2013). Ericson and Silverman also showed that central office workload increased as a result of charters, where some districts said that they now provide fewer services or have reduced staff or hours.

Despite these findings, I recognize that not all charter schools are created equal and that some schools have implemented policies that have propelled traditionally underperforming students to become high achievers. Schools such as KIPP, RocketShip Academy, and St. Hope Academy in Sacramento are some of the top performing schools in their respective cities and regions. The students attending these schools are outperforming their peers in traditional schools primarily because they have implemented policies that have been shown to increase student performance such as longer school days, establishing a college going culture, and a more effective discipline strategy. Combined, these policies have greatly affected charter schools and their ability to provide a quality education to their students (Tuttle et. al, 2013). However, there have also been criticisms of these high performing charter schools such as KIPP where some researchers

have shown that "despite the claims that 88-90% of the children attending KIPP charters go on to college, their attrition rate for Black secondary students surpasses that of their peer urban districts (Vasquez Heilig et al, 2011)."

Given this research, I suggest districts and the state decrease the number of charter schools they authorize on an annual basis. By decreasing the amount, the fiscal impact charters have on traditional schools should be minimized. However, I recommend certain charter management organizations with track records of success, such as the schools mentioned above, be allowed to continue to grow. This will ensure that students whose neighborhood schools are failing have the option to attend a better school elsewhere. If policy makers decide to authorize a charter not run by a successful charter management organization, the local district or granting entity should require the school to implement policies that have been proven to increase student performance, such as longer school days or an extended academic year.

Suggestions for Future Research

For future research, I suggest using longitudinal student-level data instead of school-level data. This will allow the researcher to gauge student growth while enrolled in charters and individual student level performance. I also suggest disaggregating the data to gauge the effects of charters on both minority male and female students. There are several charters around the nation, such as Urban Prep Academy, that have high test scores, a 100 percent high school graduation and college going rate. Urban Prep Academy is an all-male high school that serves primarily low income African American males on the Southside of Chicago. In addition, I suggest adding a qualitative component

to the study where the researcher interviews administrators, teachers and students from high, middle and low performing charter schools. This will enable the researcher the ability to determine some of the exact reasons why charters are having certain effects on student performance.

Conclusion

Through this thesis, I have presented a brief background on charter schools, an overview of existing research, an explanation on the methodology used in my ordinary least squares regressions, as well the results of the data analysis. My research shows that Latino API scores are lower than their peers in traditional schools and AA students at charters perform similarly to AA students at traditional schools. The regression also showed that charter schools are helping to close the Latino-white and black-white achievement gaps; however, the increase is largely due to a decrease in white API scores. Given past research, policy makers must decide whether or not to continue the expansion of charter schools absent additional evidence that charter schools are outperforming traditional schools.

In conclusion, whether it is charters, traditional schools or another education model, something must be done to address the underperformance of African American and Latino students. Without immediate action, economic and social mobility will continue to be limited to those who live in middle to upper class neighborhoods and have access to good schools that adequately prepare students for their future. .

Appendix A. Regression Tables

Table 8: African American Model 1 (2012)

Dependent Variable	2012 African American API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	13.644	6.045	0.021*
*** implies statistically significant at .10 level**			

Table 9: African American Model 2 (2012)

Dependent Variable	2012 African American		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-1.778	5.008	0.722
High School Graduate	-0.811	0.207	0.000*
Some College	1.185	0.167	0.000*
College Graduate	2.116	0.226	0.000*
Graduate School	0.597	0.228	0.009*
Free or Reduced Lunch	-0.712	0.110	0.000*
GATE	1.208	0.149	0.000*
Migrant Education	-3.146	0.764	0.000*
Reclassified Fluent English Proficient	0.755	0.223	0.001*
Percent of Disabled	-1.053	0.172	0.000*
Percent of African American	-0.208	0.129	0.106
Percent of American Indian	-3.381	1.420	0.017*
Percent of Flipino	-0.958	0.300	0.001*
Percent of Hispanic/Latino	0.732	0.105	0.000*
Percent of Pacific Islander	-1.089	0.999	0.276
Percent of Mixed Race	-2.111	0.487	0.000*
Response/Parent Education	0.396	0.085	0.000*
Enrollment	-0.018	0.006	0.006*
*** implies statistically significant at .10 level**			

Table 10: Latino Model 1 (2012)

Dependent Variable	2012 Latino API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	6.780	3.329	0.043*
*** implies statistically significant at .10 level**			

Table 11: Latino Model 2 (2012)

Dependent Variable	2012 Latino API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-10.720	2.693	0.000*
High School Graduate	-0.195	0.099	0.048*
Some College	0.542	0.084	0.000*
College Graduate	1.038	0.107	0.000*
Graduate School	0.759	0.102	0.000*
Free or Reduced Lunch	-0.812	0.058	0.000*
GATE	0.730	0.085	0.000*
Migrant Education	-1.755	0.189	0.000*
Reclassified Fluent English Proficient	0.866	0.108	0.000*
Percent of Disabled	-1.034	0.089	0.000*
Percent of African American	0.251	0.079	0.001*
Percent of American Indian	-0.854	0.276	0.002*
Percent of Flipino	-0.348	0.175	0.048*
Percent of Hispanic/Latino	0.527	0.051	0.000*
Percent of Pacific Islander	-2.935	0.676	0.000*
Percent of Mixed Race	0.620	0.270	0.022*
Response/Parent Education	0.162	0.042	0.000*
Enrollment	-0.003	0.004	0.367
*** implies statistically significant at .10 level**			

Table 12: White Model 1 (2012)

Dependent Variable	2012 White API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	3.997	0.44	0.021*
*** implies statistically significant at .10 level**			

Table 13: White Model 2 (2012)

Dependent Variable	2012 White API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-26.329	2.863	0.000*
High School Graduate	-0.630	0.116	0.000*
Some College	0.371	0.093	0.000*
College Graduate	0.885	0.107	0.000*
Graduate School	0.925	0.103	0.000*
Free or Reduced Lunch	-0.968	0.062	0.000*
GATE	1.049	0.087	0.000*
Migrant Education	-1.314	0.249	0.000*
Reclassified Fluent English Proficient	0.502	0.128	0.000*
Percent of Disabled	-1.666	0.089	0.000*
Percent of African American	-0.063	0.115	0.584*
Percent of American Indian	-0.127	0.255	0.620*
Percent of Flipino	-0.047	0.195	0.809*
Percent of Hispanic/Latino	0.715	0.052	0.000*
Percent of Pacific Islander	-1.726	0.805	0.032*
Percent of Mixed Race	0.396	0.251	0.116
Response/Parent Education	0.123	0.047	0.010*
Enrollment	-0.019	0.004	0.000*
*** implies statistically significant at .10 level**			

Table 14: African American Model 1 (2011)

Dependent Variable	2011 African American API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	2.440	6.271	0.70
*** implies statistically significant at .10 level**			

Table 15: African American Model 2 (2011)

Dependent Variable	2011 African American API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-7.705	5.414	0.155
High School Graduate	-0.561	0.200	0.005*
Some College	0.795	0.167	0.000*
College Graduate	1.525	0.232	0.000*
Graduate School	0.464	0.236	0.050*
Free or Reduced Lunch	-1.008	0.117	0.000*
GATE	1.449	0.155	0.000*
Migrant Education	-3.695	0.620	0.000*
Reclassified Fluent English Proficient	0.465	0.244	0.057*
Percent of Disabled	-0.678	0.159	0.000*
Percent of African American	-0.095	0.131	0.465
Percent of American Indian	-0.422	0.790	0.593
Percent of Flipino	-0.864	0.309	0.005*
Percent of Hispanic/Latino	0.884	0.107	0.000*
Percent of Pacific Islander	-1.867	0.998	0.062*
Percent of Mixed Race	-2.127	0.504	0.000*
Response/Parent Education	0.505	0.081	0.000*
Enrollment	-0.028	0.007	0.000*
*** implies statistically significant at .10 level**			

Table 16: Latino Model 1 (2011)

Dependent Variable	2011 Latino API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	0.779	3.585	0.83
*** implies statistically significant at .10 level**			

Table 17: Latino Model 2 (2011)

Dependent Variable	2011 Latino API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-14.430	2.941	0.000*
High School Graduate	-0.059	0.096	0.538
Some College	0.351	0.084	0.000*
College Graduate	0.940	0.111	0.000*
Graduate School	0.819	0.107	0.000*
Free or Reduced Lunch	-0.891	0.060	0.000*
GATE	0.817	0.090	0.000*
Migrant Education	-1.772	0.175	0.000*
Reclassified Fluent English Proficient	0.656	0.116	0.000*
Percent of Disabled	-0.795	0.083	0.000*
Percent of African American	0.286	0.082	0.000*
Percent of American Indian	-0.937	0.285	0.001*
Percent of Flipino	-0.340	0.183	0.064*
Percent of Hispanic/Latino	0.611	0.051	0.000*
Percent of Pacific Islander	-3.476	0.686	0.000*
Percent of Mixed Race	0.846	0.270	0.002*
Response/Parent Education	0.090	0.038	0.017*
Enrollment	-0.002	0.004	0.568
*** implies statistically significant at .10 level**			

Table 18: White Model 1 (2011)

Dependent Variable	2011 White API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	-6.962	4.19	0.096*
*** implies statistically significant at .10 level**			

Table 19: White Model 2 (2011)

Dependent Variable	2011 White API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-33.991	2.992	0.000*
High School Graduate	-0.617	0.107	0.000*
Some College	-0.080	0.087	0.355
College Graduate	0.605	0.104	0.000*
Graduate School	0.622	0.101	0.000*
Free or Reduced Lunch	-1.198	0.063	0.000*
GATE	1.237	0.089	0.000*
Migrant Education	-1.475	0.231	0.000*
Reclassified Fluent English Proficient	0.485	0.133	0.000*
Percent of Disabled	-1.483	0.077	0.000*
Percent of African American	0.113	0.113	0.321
Percent of American Indian	-0.220	0.263	0.400
Percent of Flipino	-0.310	0.193	0.108
Percent of Hispanic/Latino	0.737	0.051	0.000*
Percent of Pacific Islander	-1.559	0.801	0.051*
Percent of Mixed Race	-0.253	0.241	0.294
Response/Parent Education	0.203	0.041	0.000
Enrollment	-0.020	0.004	0.000
*** implies statistically significant at .10 level**			

Table 20: African American Model 1 (2010)

Dependent Variable	2010 African American API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	8.066	6.744	0.23
*** implies statistically significant at .10 level**			

Table 21: African American Model 2 (2010)

Dependent Variable	2010 African American		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-0.384	5.742	0.947
High School Graduate	-0.518	0.174	0.003*
Some College	0.5283	0.158	0.001*
College Graduate	1.6121	0.221	0.000*
Graduate School	0.0461	0.215	0.830
Free or Reduced Lunch	-0.878	0.101	0.000*
GATE	1.6623	0.159	0.000*
Migrant Education	-3.017	0.492	0.000*
Reclassified Fluent English Proficient	0.1997	0.252	0.428
Percent of Disabled	-0.875	0.153	0.000*
Percent of African American	-0.454	0.125	0.000*
Percent of American Indian	-3.81	1.291	0.003*
Percent of Flipino	-0.975	0.282	0.001*
Percent of Hispanic/Latino	0.5904	0.103	0.000*
Percent of Pacific Islander	-1.848	0.990	0.062
Percent of Mixed Race	-2.104	0.451	0.000*
Response/Parent Education	0.2318	0.073	0.001*
Enrollment	-0.033	0.007	0.000*
*** implies statistically significant at .10 level**			

Table 22: Latino Model 1 (2010)

Dependent Variable	2010 Latino API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	-1.755	3.819	0.65
*** implies statistically significant at .10 level**			

Table 23: Latino Model 2 (2010)

Dependent Variable	2010 Latino API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-18.266	3.100	0.000*
High School Graduate	-0.278	0.082	0.001*
Some College	0.231	0.080	0.004*
College Graduate	0.852	0.101	0.000*
Graduate School	0.571	0.100	0.000*
Free or Reduced Lunch	-0.810	0.055	0.000*
GATE	1.011	0.090	0.000*
Migrant Education	-1.823	0.148	0.000*
Reclassified Fluent English Proficient	0.558	0.121	0.000*
Percent of Disabled	-0.756	0.081	0.000*
Percent of African American	0.234	0.080	0.004*
Percent of American Indian	-0.996	0.340	0.003*
Percent of Flipino	-0.533	0.182	0.003*
Percent of Hispanic/Latino	0.411	0.050	0.000*
Percent of Pacific Islander	-1.940	0.692	0.005*
Percent of Mixed Race	0.446	0.259	0.085*
Response/Parent Education	0.105	0.035	0.003*
Enrollment	-0.002	0.004	0.629
*** implies statistically significant at .10 level**			

Table 24: White Model 1 (2010)

Dependent Variable	2010 White API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	-4.443	4.543	0.33
*** implies statistically significant at .10 level**			

Table 25: White Model 2 (2010)

Dependent Variable	2010 White API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-30.257	3.243	0.000*
High School Graduate	-0.502	0.094	0.000*
Some College	-0.032	0.084	0.702
College Graduate	0.661	0.097	0.000*
Graduate School	0.839	0.096	0.000*
Free or Reduced Lunch	-1.077	0.056	0.000*
GATE	1.335	0.087	0.000*
Migrant Education	-1.302	0.198	0.000*
Reclassified Fluent English Proficient	0.298	0.141	0.035*
Percent of Disabled	-1.340	0.077	0.000*
Percent of African American	0.209	0.110	0.058*
Percent of American Indian	-0.569	0.235	0.015*
Percent of Flipino	-0.402	0.199	0.043*
Percent of Hispanic/Latino	0.578	0.050	0.000*
Percent of Pacific Islander	-0.169	0.796	0.832
Percent of Mixed Race	-0.086	0.234	0.715
Response/Parent Education	0.124	0.041	0.002*
Enrollment	-0.018	0.004	0.000*
*** implies statistically significant at .10 level**			

Table 26: African American Model 1 (2009)

Dependent Variable	2009 African American API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	35.194	11.200	0.002*
*** implies statistically significant at .10 level**			

Table 27: African American Model 2 (2009)

Dependent Variable	2009 African American API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	22.80131	11.202	0.042*
High School Graduate	0.4353603	0.292	0.137
Some College	1.525508	0.286	0.000*
College Graduate	1.924957	0.454	0.000*
Graduate School	1.664873	0.599	0.006*
Free or Reduced Lunch	-0.3582134	0.194	0.065*
GATE	2.164173	0.353	0.000*
Migrant Education	-1.084605	0.498	0.03*
Reclassified Fluent English Proficient	1.584352	0.507	0.002*
Percent of Disabled	-1.973021	0.579	0.001*
Percent of African American	0.3843199	0.226	0.09*
Percent of American Indian	-3.09446	2.915	0.289
Percent of Flipino	-0.9166549	0.483	0.058*
Percent of Hispanic/Latino	0.311241	0.229	0.175
Percent of Pacific Islander	0.3260571	1.520	0.830
Percent of Mixed Race	-2.12613	1.420	0.135
Response/Parent Education	0.4930951	0.103	0.000*
Enrollment	-0.034	0.013	0.007*
Full Credential	-0.221	0.322	0.494
Emergency Credential	-0.832	0.670	0.215
*** implies statistically significant at .10 level**			

Table 28: Latino Model 1 (2009)

Dependent Variable	2009 Latino API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	0.779	4.669	0.87
*** implies statistically significant at .10 level**			

Table 29: Latino Model 2 (2009)

Dependent Variable	2009 Latino API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-10.622	3.934	0.007*
High School Graduate	-0.006	0.084	0.945
Some College	0.958	0.086	0.000*
College Graduate	1.004	0.112	0.000*
Graduate School	0.595	0.126	0.000*
Free or Reduced Lunch	-0.811	0.061	0.000*
GATE	0.907	0.106	0.000*
Migrant Education	-1.703	0.122	0.000*
Reclassified Fluent English Proficient	0.910	0.127	0.000*
Percent of Disabled	-0.781	0.129	0.000*
Percent of African American	0.233	0.093	0.012*
Percent of American Indian	-1.171	0.433	0.007*
Percent of Flipino	-0.770	0.173	0.000*
Percent of Hispanic/Latino	0.575	0.056	0.000*
Percent of Pacific Islander	-1.250	0.656	0.057*
Percent of Mixed Race	0.819	0.388	0.035*
Response/Parent Education	0.191	0.033	0.000*
Enrollment	-0.016	0.004	0.000*
Full Credential	0.053	0.138	0.701
Emergency Credential	-0.564	0.304	0.064
*** implies statistically significant at .10 level**			

Table 30: White Model 1 (2009)

Dependent Variable	2009 White API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	-19.894	4.698	0.000*
*** implies statistically significant at .10 level**			

Table 31: White Model 2 (2009)

Dependent Variable	2009 White API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-33.391	3.059	0.000*
High School Graduate	-0.449	0.093	0.000*
Some College	-0.470	0.079	0.000*
College Graduate	0.296	0.082	0.000*
Graduate School	0.590	0.082	0.000*
Free or Reduced Lunch	-1.348	0.059	0.000*
GATE	1.096	0.079	0.000*
Migrant Education	-0.583	0.194	0.003*
Reclassified Fluent English Proficient	0.308	0.175	0.079*
Percent of Disabled	-1.093	0.128	0.000*
Percent of African American	0.636	0.133	0.000*
Percent of American Indian	-0.764	0.367	0.037*
Percent of Flipino	-0.436	0.248	0.079*
Percent of Hispanic/Latino	0.742	0.055	0.000*
Percent of Pacific Islander	-1.429	0.833	0.087*
Percent of Mixed Race	-0.353	0.266	0.184
Response/Parent Education	-0.011	0.035	0.745
Enrollment	-0.026	0.004	0.000*
Full Credential	1.339	0.200	0.000*
Emergency Credential	0.816	0.298	0.006*
*** implies statistically significant at .10 level**			

Table 32: African American Model 1 (2008)

Dependent Variable	2008 African American API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	10.396	11.349	0.36
*** implies statistically significant at .10 level**			

Table 33: African American Model 2 (2008)

Dependent Variable	2008 African American API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	16.00905	11.448	0.163
High School Graduate	0.004095	0.219	0.985
Some College	0.75009	0.267	0.005*
College Graduate	1.278958	0.400	0.001*
Graduate School	1.244663	0.313	0.000*
Free or Reduced Lunch	-0.6690249	0.206	0.001*
GATE	1.018603	0.302	0.001*
Migrant Education	-4.047058	1.085	0.000*
Reclassified Fluent English Proficient	2.63401	0.564	0.000*
Percent of Disabled	-0.1009962	0.386	0.794
Percent of African American	0.1321128	0.218	0.545
Percent of American Indian	-6.418587	2.795	0.022*
Percent of Flipino	-1.273027	0.461	0.006*
Percent of Hispanic/Latino	0.2471856	0.221	0.263
Percent of Pacific Islander	-1.087347	1.521	0.475
Percent of Mixed Race	0.2376138	0.107	0.026*
Response/Parent Education	-0.041	0.013	0.002*
Enrollment	0.512	0.354	0.148
Full Credential	-0.333	0.539	0.537
Emergency Credential	-0.832	0.670	0.215
*** implies statistically significant at .10 level**			

Table 34: Latino Model 1 (2008)

Dependent Variable	2008 Latino API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	-6.287	4.980	0.21
*** implies statistically significant at .10 level**			

Table 35: Latino Model 2 (2008)

Dependent Variable	2008 Latino API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-14.392	4.106	0.000*
High School Graduate	0.118	0.078	0.128
Some College	0.935	0.086	0.000*
College Graduate	1.032	0.115	0.000*
Graduate School	0.670	0.123	0.000*
Free or Reduced Lunch	-0.699	0.058	0.000*
GATE	0.908	0.103	0.000*
Migrant Education	-1.652	0.112	0.000*
Reclassified Fluent English Proficient	1.388	0.134	0.000*
Percent of Disabled	-1.211	0.109	0.000*
Percent of African American	0.155	0.093	0.094*
Percent of American Indian	-0.473	0.412	0.250
Percent of Flipino	-0.698	0.167	0.000*
Percent of Hispanic/Latino	0.436	0.055	0.000*
Percent of Pacific Islander	-1.634	0.627	0.009*
Percent of Mixed Race	0.177	0.033	0.000*
Response/Parent Education	-0.015	0.004	0.001*
Enrollment	0.583	0.145	0.000*
Full Credential	0.516	0.211	0.014*
Emergency Credential	-0.564	0.304	0.064
*** implies statistically significant at .10 level**			

Table 36: White Model 1 (2008)

Dependent Variable	2008 White API		
Independent Variable	**Coeff**	**SD**	**P>T**
Charter School (main)	-22.357	4.970	0.000*
*** implies statistically significant at .10 level**			

Table 37: White Model 2 (2008)

Dependent Variable	2008 White API		
Independent Variables	**Coeff**	**SD**	**P>T**
Charter School (Main)	-42.454	3.286	0.000*
High School Graduate	-0.489	0.090	0.000*
Some College	-0.575	0.078	0.000*
College Graduate	0.341	0.082	0.000*
Graduate School	0.698	0.078	0.000*
Free or Reduced Lunch	-1.226	0.060	0.000*
GATE	1.207	0.078	0.000*
Migrant Education	-0.622	0.228	0.006*
Reclassified Fluent English Proficient	0.419	0.181	0.021*
Percent of Disabled	-1.451	0.100	0.000*
Percent of African American	0.588	0.131	0.000*
Percent of American Indian	-0.613	0.344	0.075*
Percent of Flipino	-0.623	0.246	0.011*
Percent of Hispanic/Latino	0.651	0.058	0.000*
Percent of Pacific Islander	-0.766	0.795	0.335
Percent of Mixed Race	0.078	0.038	0.040*
Response/Parent Education	-0.016	0.005	0.000*
Enrollment	1.386	0.193	0.000*
Full Credential	0.362	0.254	0.154
Emergency Credential	0.816	0.298	0.006*
*** implies statistically significant at .10 level**			

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