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2016

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UNIVERSITY OF CALIFORNIA
Los Angeles

From Boom to Bust:
The Effects of the Great Recession on Neighborhoods and Schools

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Education

by
Kfir Mordechay

2016

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ABSTRACT OF THE DISSERTATION

From Boom to Bust: The Impact of The Great Recession on Neighborhoods and Schools

by

Kfir Mordechay

Doctor of Philosophy in Education

University of California, Los Angeles, 2016

Professor Gary A. Orfield, Chair

The cyclical recurrence of economic crises suggests that they are an inevitable and recurrent phenomenon in American society. The most recent economic downturn that struck in late 2007 and lasted through 2009, referred to as “The Great Recession”, is now generally acknowledged to be the most severe economic crisis since the Great Depression in the 1930s. A lot has been written about the dramatic and nearly simultaneous shocks to the labor, stock, and housing markets that undoubtedly affected millions of American households. While this work has been crucial for expanding our understanding of the consequences of economic shocks, we know little of how the economic shock of The Great Recession impacted children in schools. Understanding the ways in which schools

and communities were impacted is crucial to the development of policy responses seeking to stabilize vulnerable neighborhoods and remediating the individual and community-level effects in the event of future economic crises.

Using data from a large urban high school district as a case study, this dissertation analysis considers the effect of the most substantial economic shock in decades on a variety of educational and community outcomes. The study seeks to expand on earlier work by applying a quasi-experimental research design to examine the impact of an exogenous economic downturn on a school district located in San Bernardino County California, an area widely considered at the epicenter of The Great Recession. The findings of this study promise to facilitate our understanding of how recessions impact educational outcomes and the role policy can play to mitigate the consequences.

Data analyzed for the study comes from three sources: (1) Administrative Chaffey Joint Union High School District Records; (2) American Community Survey (ACS) 5-Percent Public Use Micro data; (3) Zillow monthly real-estate data. Maps constructed using Geographic Information Systems (GIS) technology helped depict pre-recession and post-recession changes across San Bernardino County. Both Multi-level and signal level logistic models were developed to estimate the effects of The Great Recession on student subgroups between the periods 2004-2013, controlling for a variety of background variables. Community level findings indicate sharp increases in child poverty, unemployment, and foreclosures *caused* by The Great Recession. At the student level, results indicate statistically large increases in mobility, particularly for middle class blacks. Perhaps counter-intuitively, steep declines in graduation rates in 2008 are followed by a sharp increase beginning in 2009- largely driven by increases from the most disadvantaged groups. The results suggest that the recession created a counter-

cyclical demand for education, but also raises important questions about the effects of district responses to the needs of the most vulnerable students at the height of economic downturns.

Given the results from this dissertation, educators and policy makers may be well served by considering economic cycles when determining the allocation of classroom resources, classroom planning, and cohort dynamics. This is particularly important in the beginning of economic crises, which might adversely impact the most vulnerable students through a variety of pathways. Large scale economic shocks are going to continue to be common feature of the global economic landscape, and these shocks could result in poverty traps, generating effects that harm not just present, but also succeeding generations. In an era of frequent and rapid economic change, it is crucial to understand the associations between large-scale economic change and educational opportunity.

This dissertation of Kfir Mordechay is approved.

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2016

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ACKNOWLEDGMENTS

While I have my own grit to thank for the final pages of this dissertation, I'd be thoughtless if I didn't acknowledge all of the people without whom this would have never been possible.

My parents nag me about needing more grandchildren, but I'm forever in their debt for all they've done to make me who I am – not just the hardware but the software as well.

Thank you to all of the friends who've stuck around through this journey. You know who you are.

UCLA, of course, shelled out some money to support my time there. It may be pennies relative to their massive endowment, but I don't know how I would've survived grad school without their relatively generous graduate stipends and fellowships.

Each member of my committee helped in very different ways, as did a number of other faculty in the GSEIS:

I am especially indebted to Gary Orfield, my advisor, for the freedom to be broad and uninhibited throughout my academic journey as a grad student. It was his seminar in 2009 that opened my eyes to the complexities of urban American.

I am also indebted to Gary's wife and colleague, Dr. Patricia Gándara. I have always profited from Patricia's advice—often delivered, in my case, with the compassionate intensity of a mother rescuing a child from wandering into a busy street.

I wish I'd spent more time with Rashmita Mystry earlier in my grad school career. Her comments were continuously helpful and insightful, and her feedback and encouragement kept me going as my tank was nearing empty.

I'd also like to thank Leo Estrada for helping me kick-start and conceptualize this project early on. If it wasn't for that, I might still be in dissertation limbo today.

While the individuals I have thanked are in no way responsible for the shortcomings of this dissertation, it would have been a far lesser work without them.

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CHAPTER 1: INTRODUCTION

It is understood that illness (both physical and mental), economic dislocations, recessions, and just plain bad luck will always leave some people in need of help. Across the political spectrum it is generally believed that a wealthy society such as our own should provide some degree of security, and that the government ought to play some role to ensure that. It is agreed upon that despite our best efforts to care for ourselves, life at times resembles a lottery of sorts. In an instant, we can fall victim to cancer, a car accident, a recession, involuntary unemployment, or even a natural disaster. In fact, the central logic of insurance is that we are all better off hedging some of the risks of life- of course with the hope that we never have to recover our insurance premiums.

The Great Recession that struck families and communities in December 2007 was not the fault of its victims. They had nothing to do with the banking system, which fell victim to the unregulated and reckless behavior of the mortgage industry, that sold people homes they could not afford to increase commissions, and sold investors worthless securities based on those mortgages before crashing the economy.

Where the unregulated greed was most extreme, the workers and the public institutions that served their families suffered the most. In many areas this became an emergency much worse than having your home flooded or destroyed by an earthquake, yet with little disaster relief. Overnight many peoples' American dreams crumbled as they found themselves without jobs, and with "underwater" mortgages they could not afford. Homes can be rebuilt but many lives, particularly those of children, devastated by this economic crisis will never fully recover.

The central principle motivating this dissertation is that the appearance of exogenous shocks of these sorts are anyone's guess, and that currently federal education policy is largely neutral to economic cycles of expansion and contraction, indifferent to how they might impact children in schools. I argue however, that just as coastal Florida and the Gulf are susceptible to hurricanes, and the Southeastern U.S. is prone to violent tornadoes, there are regions and groups that are particularly vulnerable to economic cycles. Therefore, we should think hard about both short-term assistance to prevent lasting social losses, and about the kind of the long-term educational efforts that must be made to counteract the potential negative effects of these recurrent economic upheavals.

THE AMERICAN DREAM

“Whether you owned a company, swept its floors, or worked anywhere in between, this country offered you a basic bargain – a sense that your hard work would be rewarded with fair wages and benefits, the chance to buy a home, to save for retirement, and, above all, to hand down a better life for your kids.”

President Barack Obama, Knox College in Illinois, July 2013

In a speech delivered at Knox College in Illinois, President Obama’s words openly echo the American Dream. America has for many generations taken pride in being the land of opportunity, where hard work and determination result in a better life, and, above all, a better life for one’s children. For the first three-quarters of the twentieth century, economic growth fueled in large part by technological progress and increasing educational attainments of successive generations of Americans, was the wave that lifted the boats of both the rich and poor. In fact, the logic has become so ubiquitous in our

national identity that 90% of Americans believe that the government should do everything it can to ensure equality of opportunity (Kohut, 2009). According to a 2015 Pew poll, Americans place an especially strong emphasis on the value of hard work with 73% of those polled saying that hard work is very important in order to get ahead in life. This was substantially higher than the global median of 50%.

While the belief in hard work is alive and well, the some recent survey data related to the American Dream shows an increasingly pessimistic outlook about future prospects. One recent CNN poll of young adults (18-34) found that 59% of respondents said the American Dream is unachievable and 63% of American adults believed that most children in the US will not be better off than their parents (Luhby, 2014). The American Dream is entwined with parents' hope that their children's futures are bright, with opportunities to work hard and be upwardly mobile, but increasingly many Americans are finding themselves stuck on the economic ladder, and in some cases even experiencing downward social and economic mobility.

EDUCATION AND THE AMERICAN DREAM

For many generations of Americans, education was the gatekeeper of the American Dream and the springboard to upward mobility (Duncan & Murnane, 2011). Education, more than any other institution is the system's way of making sure that achievement is independently earned, not tied to one's social origin, race, color, or creed (Johnson, 2006). Yet, each year the latest data on student achievement suggests a stubbornly persistent racial, income, and linguistic education gap across the nation's schools (Orfield & Lee, 2005; Orfield, Losen, Wald, & Swanson, 2004; Reardon, 2011).

If we believe that it is possible, or at least desirable to try to fulfill the promise of an American education, then the critical question confronting our nation is: what will it take to create an equitable educational system for *all* students? Throughout this research, I will argue that answering this question will require thinking about education in a less traditional manner. More specifically, it will require thinking beyond what happens inside the four walls of a school. Specifically, it will require thinking about the broader social and economic landscape. This is not to suggest that within school interventions and policies (e.g. adequate resources, de-tracking, teacher experience, etc.) do not matter, they *do*, and should not be underestimated. However, more than a half-century of social science evidence suggests that many of the educational problems across our nation's schools cannot be addressed without also responding to the broader social and economic conditions in communities and neighborhoods in which these schools are embedded. In fact, throughout this dissertation, I argue that it is unrealistic to expect schools alone to focus narrowly on the task of educating children when a broad array of non-academic needs (e.g. health, economic, social) invariably affect their ability to learn. Put more simply, we cannot close the achievement gap in a socio-economic vacuum, and we cannot treat all schools and children the same way when we know that opportunity is distributed in dramatically unequal ways across America. This research seeks to make the case that schools are part of larger ecosystem, inherently affected by cyclical economic, social and demographic changes-that interact to recreate and perpetuate deep inequalities in metropolitan society. If policymakers hope to be successful in reforming our educational system, understanding these interactions are of the utmost importance.

THINKING ABOUT URBAN AMERICA IN THE 21ST CENTURY METROPOLIS

The United States population is considered highly mobile (Ihrke & Faber, 2012). Each year, families move from their place of birth or current residence to live somewhere else either within their city or county, or in another state. In a society where the average family moves every six years, and families with young children move more often, when and where people move has a huge impact on the local demographics and economies of the places where they used to live and where they live now. Geographic mobility is thus responsible for changes in housing markets, which in turn often generate and are affected by large social and educational changes (Orfield & McArdle, 2006).

The story of family mobility in American society is about finding a good place, moving to better neighborhoods and with more desirable schools. This is basic to the American dream and since the Great Depression, the hallmark of US housing policy (Jackson, 1985; Massey & Denton, 1993). Homeownership has often been portrayed as a political right seemingly more popular than voting and symbolically on par with citizenship (Shlay, 2006). Within the US, desires for homeownership have been longstanding. According to a 2013 Gallup poll, 68% of young Americans plan on buying a home in the next ten years (Newport, 2013). The dream, ubiquitous to American culture, dates back to the Great Depression in 1929, where a crippled housing market spurred the federal government to develop initiatives to encourage widespread homeownership (Jackson, 1985). The result was what Kenneth Jackson (1985, p. 203) refers to as “suburban favoritism”, eluding to the explosive growth of virtually all white suburbs as the primary beneficiaries of the FHA and VA funds.

In the years leading to the Great Recession this has changed, as low-income families, namely minorities, became a new target of homeownership policy (Shlay,

2006). Strikingly, between 1993 and 2004, homeownership rates among very low-income households, African Americans, and Hispanics increased by 6.4%, 7.7%, and 8.7 %, respectively (Herbert, Haurin, Rosenthal, & Duda, 2005). By the early part of the 2000s, mortgage lending to these groups exploded. According to data from the Urban Institute in the form of an interactive map, lending to Blacks and Hispanics increased a combined 83% from 2001 to 2006. During this time many suburban communities saw their Black and Latino populations explode, also accompanied by dramatic racial change across suburban school districts (Frankenberg & Orfield, 2012).

The rapid Black and Hispanic suburbanization has many reasons. Many suburban areas were the center of job growth and grew more rapidly than central cities throughout the 1990s and 2000s (Frey, 2012), accelerating minority suburban population growth. Even outer ring suburbs and exurban areas experienced a population boom in the early 2000s, peaking in 2005-2006, before declining by more than half by 2009-2010 at the tail end of what would become dubbed as “The Great Recession” (2007-2009), the most severe economic shock since the Great Depression of the 1930s. Between 2000 and 2007, the years leading up to The Great Recession, the share of jobs within 10 to 35 miles of metropolitan downtown areas increased by nearly 10%, before experiencing the highest level of job loss during the Great Recession (Kneebone, 2013).

The consequences of these social, economic, and demographic changes have been great. Many suburban areas, particularly those in the outer rings that were once the epicenter of population and economic growth, plunged into social and economic peril during the Great Recession. These economic and demographic trends have had

and continue to have major implications for the educational opportunity of students across the nation's largest metropolitan areas, particularly during a time of profound inequality (Piketty, 2014), and an uneven economic recovery (Leamer, 2013) from the most severe global economic crisis since the Great Depression.

The financial crisis that struck in 2008 marked the onset of the worst economic downturn in the United States since the Great Depression. The effects have been felt far and wide. According to official measures from the National Bureau of Economic Research (NBER), the Great Recession began in December 2007 and lasted through June 2009. During this time, California experienced an epic housing collapse, record unemployment; sizable budget cuts to a variety of state services, and downturns across nearly all major sectors of the economy (Bohn & Schiff, 2011). Despite the "official" end of the recession declared in the end of 2009, communities and individuals continue to feel its consequences nearly half a decade later (Shierholz, 2014) in the form of plummeting wealth and home values, long-term unemployment, and stagnant incomes, all of which have led to declines in individual economic well-being (Pfeffer, F. T., Danziger, S., & Schoeni, R. F. 2013). Educationally, even *before* the most recent recession began, California public schools were ill-equipped to meet the learning and social welfare needs of many students (Freelon, Rogers, & Betrand, 2011.). The recession merely accentuated the states deep social and educational challenges.

BACKGROUND AND CONTEXT: STATEMENT OF THE PROBLEM

Economic crises at both the global, national, and even local level are ubiquitous. Empirical evidence from Reinhart and Rogoff's book provides the invaluable insight that over the past 800 years a major economic crisis has happened roughly every 20 years

(Reinhart & Rogoff, 2009). Table 1.1 below displays a historical record of US recessions/banking crises dating back to The War of 1812. These cyclical patterns raise concerns about the human impacts of crises, especially among the more vulnerable populations. During the most recent global financial crisis, many international organizations, from the World Bank to civil society organizations all expressed concern about the resulting “human crisis” (Lundberg & Wuermli, 2012). This research is motivated by understanding how the most recent economic crisis impacted diverse segments of the population- with a primary focus on the most vulnerable families and their children.

This serves to highlight a number of important questions:

RESEARCH QUESTIONS

- What happens to a community, as measured by wealth loss, labor market prospects, and household well-being, in an area at the epicenter of high unemployment and vast housing foreclosures?
- Do exogenous changes to communities relate to changes in schools and educational success within the community?
- How was the impact differentially experienced by specific student subgroups such as poor, Black, Hispanic, English language learners?
- *What policies can best help school districts and communities absorb future economic shocks?*

Figure 1-1. US Recession/Banking Crises 1812-2009

Date	Major Recession (Months)
1812	War-related
1818	1818-1821
1837	1837-1838
1839	None
1857	June 1857-December 1858 (18)
1861	War-related
1873	October 1873-December 1875 (27)
1893	January 1893-June 1884 (17)
1907	May 1907-June 1908 (13)
1914	War-related
1920	January 1920-July 1921 (18)
1929*	Aug 1929-March 1933 (43)
1937	May 1937-June 1938 (43)
1948	November 1948-October 1949 (11)
1953	July 1953-May 1954 (10)
1957	August 1957-April 1958 (8)
1960	April 1960-February 1961 (10)
1969	December 1969-November 1970 (11)
1973	November 1973-March 1975 (16)
1980	January 1980-July 1980 (6)
1981	July 1981- November 1982 (16)
1990	July 1990-March 1991 (8)
2001	March 2001- November 2001 (8)
2007	December 2007-June 2009 (18)

Note: * = The Great Depression

This study will test several related hypotheses. First, I hypothesize that economic shocks adversely impact communities, measured by wealth loss, labor market prospects, and many more variables related to household well-being. Second, I hypothesize that economic shocks negatively affect the most vulnerable youth, impacting educational opportunity. More specifically, I hypothesize that gaps in GPA and test scores widen between high and low SES kids and among the different races, during the economic shock. I do, however, hypothesize that graduation rates increased for the most vulnerable students during the Great Recession.

PURPOSE OF STUDY

The purpose of this study is to examine the impact of the housing market collapse (2007-2009) and to investigate the effects of plausibly exogenous changes on communities, schools and the students they serve. Community changes are addressed by comparing the same community before and after the recession. In addition, this study examines changes in various schooling outcomes for cohorts of students before, during, and after the recession. Finally, given the national rhetoric regarding the importance of education in today's global economy, this project considers the legal and policy options for how best to support children during economic downturns, given the inherent inevitability of business cycles¹ in a capitalist system.

The impacts of economic downturns in general and the Great Recession in particular on adult employment and earnings, income and wealth, physical and mental health, and family structure are well documented (DeNavas-Walt, Proctor, and Smith 2012; Gould Ellen and Dastrup 2012; Black, McKinnish, & Sanders, 2005). These economic changes represent key forces capable of shaping life trajectories for American children. Though many types of economic change can impact children, economic downturns can potentially affect a large range of contexts and settings that children, their parents, and their caregivers experience (Kalil, 2013). Much of the empirical literature on the subject comes from developing countries, mostly Africa, Latin America, and Asia, where macro-economic crises are more common (Ferreira & Schady, 2009). In the United States, a number of studies consider the effects of the Great Depression on high

¹ Understood as the sequence of aggregate economic expansion (booms) and

school enrollment and graduation rates (Black & Sokoloff, 2006; Goldin, 1999), most notably Glen Elder's classic, *Children of the Great Depression*, a non-experimental longitudinal study of a Depression cohort. Studying the impact of the Great Recession is a novel strategy which adds to the literature on the impact of economic shocks on communities and students in at least three ways: (1) We know relatively little about how the greatest economic downturn in almost a century affected neighborhood stratification (Owens and Sampson, 2013); (2) The Great Recession provides a potential *exogenous* shock (i.e. a shock uncorrelated with school or community variables) to family's income and wealth, enabling me to plausibly quantify the impact of changes in wealth/income to school and community-level changes; (3) The recession provides a shock that is *statistically* large, and therefore can shift the underlying income and wealth distributions of households, revealing changes in individual and community-level outcomes, which would be obscure otherwise.

ORGANIZATION OF THE DISSERTATION STUDY

The remainder of this dissertation comprises 10 chapters. Chapter 2 examines prior literature to shed light onto the relationship between economic shocks and school-aged children. I then present a theoretical approach that frames this study, drawing mainly ecological systems theory. Chapter 3 presents a brief overview of the context selected for this research, along with the data, statistical methods, and modeling involved in the study. Chapter 4 and 5 provide a demographic and historical portrait of the Inland Empire, including an overview of the region's rich history at the crossroads of vast migration and suburban growth. This chapter will tell the story of how a small community grew to become the nation's fastest growing region before becoming the

epicenter of a historical housing crisis. Chapters 6-9 present data on how different types of schools and student subgroups at Chaffey Joint Union High School (CJUHS) fared during the Great Recession. Chapter 6 describes changes in graduation rates at CJUHS before, during, and after the Great Recession. Chapter 7 presents data on school mobility during the economic downturn. In the next chapter, I describe trends on student absences, particularly during the economic shock of the Great Recession. Chapter 9 presents data on academic achievement at CJUHS. Chapter 10 will explore the peak of recession using both logistic regression and multi-level modeling, controlling for a variety of student background characteristics. Finally, chapter 11 concludes the study with a discussion of major findings and implications for future research and policy.

CHAPTER 2: THE IMPACT OF ECONOMIC SHOCKS ON CHILDREN AND YOUTH: A REVIEW OF THE LITERATURE

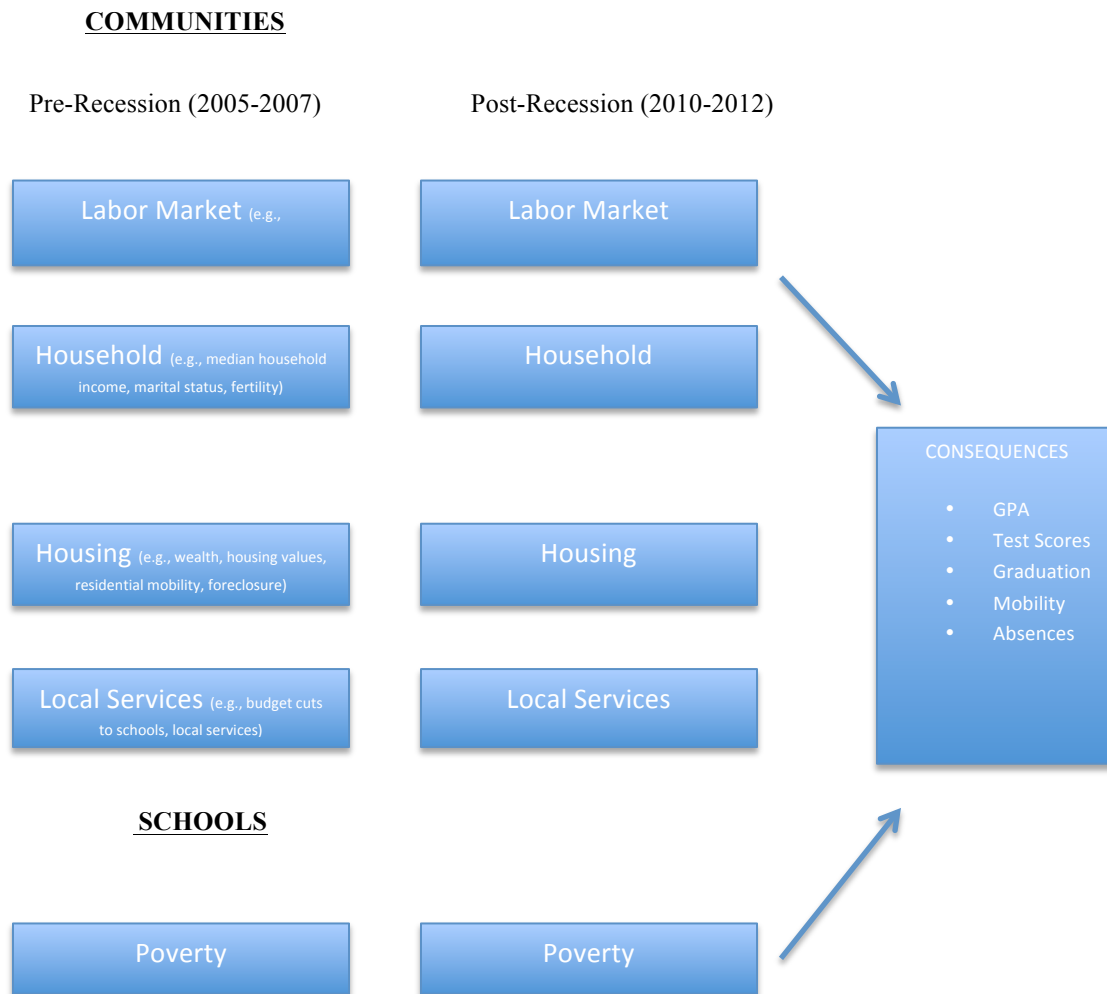
SHOCKS, RECESSIONS, DEPRESSIONS, BUSINESS CYCLES, AND BUSTS

The terms *shock*, *recession*, or *business cycle* are often used interchangeably, referring to the same phenomenon, without paying too much attention to their actual meanings. For the purposes of this research I will be referring to a *shock* as a large-scale social dislocation or disruption (Lundberg & Wuermli, 2012). Shocks can be either positive or negative, and can vary in intensity, depth, and duration. Households can experience negative shocks caused by a myriad of factors, ranging from a currency or banking crisis to the death of a household member, or a natural disaster (Lundberg & Wuermli, 2012). Shocks can be specific to a region, such as the Appalachian coal boom and bust of the 1970s and 1980s, or national and international, like the Great Depression

in the 1930s, or the global recession of 2007-2009. Nonetheless, this study is primarily concerned with *negative* aggregate or systematic economic shocks.

Though there are a great number of pathways in which an economic shock can negatively affect children in households, this study focuses on those dimensions of economic downturns most salient to the Great Recession. Figure 2.1 shows the conceptual model that guides this study. Following this model, this study reviews evidence of the impact of the following five pathways on school-aged children: *parental unemployment*, *residential stability*, *declining household income and wealth*, and *fiscal stress*. This line of reasoning is motivated by what social scientists have identified as key-characteristics that were particularly salient in the Great Recession: (1) An exploding housing “bubble” that led to a collapsed housing industry that spiked unemployment, which in turn led to more foreclosures. (2) The Great Recession forced more people to move locally, most in metropolitan areas with the highest unemployment and highest foreclosures –particularly the South and Western U.S. (Stoll, 2013). (3) The severe loss of wealth caused by the bursting of an 8 trillion dollar housing bubble, and a substantial decline in median household income. (4) Consecutive years of declining tax revenue led to drastic spending cuts not only in schools, but also in health care, higher education, human services, and public safety.

Table 2-1. Conceptual Model



UNEMPLOYMENT

Job loss was an endemic feature of the Great Recession, with by far the most dramatic employment contraction since the Great Depression- and with a starkly uneven distribution by race, with Hispanic and black adult unemployment rates far surpassing those of whites and Asians (Mishel, Bivens, Gould, & Shierholz, 2012). The implications of unemployment differentials may have intergenerational consequences, as the detrimental effects of losing a job may extend to children in the household, altering a

variety of educational outcomes. A spell of unemployment may at least partially result as an income *shock* to the household, potentially leading to a reduction in financial resources or an increase in household stress. This in turn could directly impede children's school performance through a variety of mechanisms.

Recent research on parental job loss and its effect on children has largely focused on outcomes such as educational achievement (test scores) and attainment. Several studies have found that parental job loss increases children's expulsion, grade retention, school dropout, and symptoms of depression and anxiety (Kalil & Ziol-Guest, 2008; McLoyd, Jayaratne, Ceballo, & Borquez, 1994). Children whose parents lose their jobs also have lower grades, more disciplinary problems, are less socially competent, are less likely to attend college, have lower earnings well into adulthood, and are more likely to receive unemployment insurance and social assistance (Coelli, 2005; Rege, Telle, & Votruba, 2008). Using Norwegian administrative data, Mari Rege, Kjetil Telle, and Mark Votruba (2011) focus specifically on the impact of parents' exposure to plant closures on their children's GPA in high school. They find that children's grades are negatively impacted when their fathers experience job loss. In contrast, for mothers plant closure has an insignificant but positive effect on children's school performance (Rege, Telle, & Votruba, 2011). The inconsistent effects of plant closure on child GPA across fathers and mothers appears to be consistent with recent empirical studies documenting that the mental distress experienced by displaced workers is generally more severe for men than women (Kuhn, Lalive, & Zweimüller, 2009; Walters & Moore, 2002). This is a particularly troubling finding for the context of the Great Recession, where men were much more heavily represented in the industries (construction and manufacturing) that

suffered the most during the downturn. In fact, according to economist Mark J. Perry who coined the term “mancession”, there were some periods during the recession in which men suffered up to 80% of the job losses (Perry, 2010).

A similar but perhaps more contextually relevant study examining the impact of community-wide job losses from mass layoffs, suggests sizable effects on children’s math and reading test scores. Ananat, Gassman-Pines, and Gibson-Davis (2011) use county-level data from North Carolina, which experienced plant closings that began well before the 2007-2009 economic recession and link it to reductions in fourth and eighth grade student test scores. Using plant closures as a source of exogenous shock to workers and communities, they find more pronounced effects for eighth graders. They hypothesize that children may be impacted by their friends’ and neighbors’ job loss and the resulting changes to their communities and classrooms, thereby affecting families that do not directly experience employment loss. Another qualitative study finds increases in community-level stress from shutdowns of local firms (Zippay, 1991). Zippay (1991) detailed how displaced steelworkers in Pennsylvania were required to rely on family, friends, and neighbors for economic and social support. If enough people within a neighborhood or community experience a job loss, it is likely that the aggregate level of stress may increase among friends, family, and neighbors, thereby affecting families and individuals that did not directly experience a job loss.

Despite research on the potentially negative individual and community-level effects, there might be a so-called “silver lining” to economic downturns as well (Ananat et al., 2011). In theory, by reducing the number of available jobs, economic shocks could lead to greater school enrollment and completion for older students who

cannot find jobs, thereby increasing educational attainment. In other words, an economic downturn could decrease the opportunity costs of attending school. In a clever study testing this theory, the authors examine the effects of the Appalachian coal boom and bust of the 1970s and 1980s on high school enrollment (Black et al., 2005). Dan A. Black and colleagues (2005) find that downturns lead to decreases in school drop out rates, as people look to improve their future employment prospects by staying in school. In addition, few opportunities in the private sector labor market may increase teacher retention, which has been strongly linked with increases in student achievement (Rockoff, 2004). Other scholars have found similar findings. In a study of high school enrollment during the Great Depression, Goldin (1999) finds that high school enrollment and graduation rates increased significantly as manufacturing jobs for young people became scarce. The significant reduction in jobs in general and specifically manufacturing as part of the National Industrial Recovery Act, prohibiting the hiring of youth in manufacturing jobs, encouraged youth to stay in school (Goldin, 1999). Though these studies do not directly examine effects on children that come directly from their parents' employment status, they raise interesting questions about how families respond to opportunity costs, both in the labor market and in education.

Another study using data from less severe economic conditions finds evidence of a feeble labor market decreasing the opportunity cost of education, leading to higher enrollment and graduation rates. Using cross-sectional data from the Current Population Survey on school enrollment, family income, and educational attainment, Thomas Kane's (1994) study looking at college entry behavior from 1973-1988 of African Americans 18 to 19 years old, finds substantial growth in enrollment of young African Americans

during the 1973–75 recession. On the other hand, data from the 1981–83 recession appears to have had a the opposite impact, resulting in a decline in enrollment rates (Kane, 1994). It is possible that the enrollment declines seen among African Americans in the 1980s was due to increases of direct college costs.

RESIDENTIAL MOBILITY

Residential and school mobility rates in the US are one of the highest compared to other developed nations (Reynolds, Chen, & Herbers, 2009), but measures of mobility are not always consistent, as there is no single source for data on students with high mobility rates. In addition, highly mobile children are frequently omitted from studies and administrative data sets because they are difficult to track (Beatty, 2010). Nevertheless, in one study using nationally representative Early Childhood Longitudinal Study, Kindergarten (ECLS-K) data, the authors suggest a strong relationship between children's residential stability and family SES. The percentage of children living in only one home in the 5 years since birth was 50% higher for those in the top SES quintile than in the bottom quintile. The percentage that lived in 4 or more homes over this period was at least 20% for all SES groups (Burkam & Le, 2001). Since residential moves often result in school moves, these findings suggest relatively high levels of school changes. These indicators may look even worse when updated to reflect the 2007-2009 housing crisis and Great Recession.

The Great Recession forced many vulnerable workers and their families to relocate. People moved the most in metropolitan areas with the highest unemployment and foreclosures rates (Stroll, 2013). In theory, residential mobility may help children and families if they move to better neighborhoods and schools, where the benefits outweigh

the drawbacks of adjusting to a new environment (Scanlon & Devine, 2001). However, Michael Stoll (2013) reports that unlike past decades, when local movers were moving up economically – from an apartment to a house, or from one house to one in a better neighborhood – movers during the Great Recession moved down economically, seeking more affordable housing. Thus far, little research exists exploring the impact of foreclosures on families with children, though according to one estimate in 2008, over 2 million children living in owner-occupied housing were affected by foreclosures due to the subprime crisis (Lovell and Isaacs 2008). One other study of the foreclosure crisis and mobility in Washington D.C. finds that 30 percent of students living in buildings with a foreclosure notice moved, compared to 17 percent of all students (Comey, J., & Grosz, M., 2011). In another study of New York City public schools during the Great Recession, linking students to properties receiving foreclosure notices finds that students affected by foreclosure changed schools more often than they would have otherwise and that the schools they transfer to have academically weaker peers (Been, Ellen, Schwartz, Stiefel, & Weinstein, 2011).

Despite the limited research on the impact of foreclosures on school children, there is a large body of literature that examines residential moves in general, particularly frequent moves (moving three or more times) as a result of economic or housing instability. Frequent household moves may be correlated with negative child development outcomes because such moves are accompanied by frequent changes in schools and are disruptive to children's social capital and peer networks (Astone and McLanahan 1994; National Research Council 2010). Like Astone and colleagues (1994), in an empirical exploration of the effects of housing instability on youth, Haveman,

Wolfe, and Spaulding (1991) find that moving three or more times is strongly correlated with dropping out even after controlling for a variety of family background characteristics. Results from these studies, though not necessarily drawn from families living through the Great Recession, enable us to make plausible inferences about how children's development may unfold in the years following a large, exogenous economic shock. A more recent longitudinal study by Ziol-Guest and Kalil (2013) confirms the pervasive nature of mobility in urban schools, and suggests that moving three or more times, or experiencing any involuntary move between birth and age 15 is significantly correlated with lower levels of educational attainment and poorer labor market prospects in adulthood. For children that do not live with both biological parents, a single residential move is correlated with problems connected to schooling (Tucker, Marx, and Long 1998). Another study shows that moving three or more times in a child's first 5 years is significantly associated with increases in attention and behavioral problems (Ziol-Guest & McKenna, 2014). These effects are more pronounced for poor and ethnic minority children.

To explore the issue further, Reynolds and colleagues conducted a meta-analysis of research published between 1990-2008 that examined the effects of school or residential mobility on academic achievement and attainment (Reynolds et al., 2009). The report assessed the effects of school mobility on achievement and dropout in 16 well-controlled studies (9 of which are classified as having high levels of statistical/methodological controls), which included measures of achievement, and varied substantially in social context, and that included pre-mobility achievement. 13 of the studies analyzed found that mobility from kindergarten to high school was independently

associated with negative outcomes. Further analysis of one of the most robust studies--the Chicago Longitudinal Study--that controlled for both residential moves and various school factors in an urban context suggested that students who move frequently, particularly beyond third grade, experience the most detrimental effects (Reynolds, 2005). The Great Recession forced many vulnerable workers and their families to relocate. Understanding the potential impact should be a priority for leaders and policymakers alike. While all subgroups experiences an increase in mobility rate during the recession, the rates were certainly not equally distributed, with poor and ethnic minorities experiencing higher rates of mobility.

FALLING INCOME

The labor market is the bedrock of income for the vast majority of families. Family incomes are affected by feeble labor markets, not just through job losses, but also through cuts in hours and wages for those who have work. Job loss during the Great Recession meant that family incomes have dropped, with many families slipping into poverty. From 2007-2009, the typical working-age household in the US saw an income decline of over \$2,700. This figure varies dramatically by race and location, with Hispanics, particularly those living in bubble economies having experienced the steepest declines (Mishel et al., 2012). The decline of household income can hurt children in the household through a myriad of pathways, from the amount of money spent on educational activities to the quality of child-care settings.

A child's learning does not just take place inside the four walls of a classroom. Parents supplement children's in-school education by promoting learning through a variety of investments. For school-age children and adolescents, family income is often

used to purchase enriching activities such as soccer or music lessons, after-school tutoring, summer camps, family travel, extra curricular activities, and, ultimately, higher education (Kaushal, Magnuson, & Waldfogel, 2011). Of course, budget constraints are one of the strongest determinants of both the quantity and quality of investments, which helps explain why studies of family expenditure show clear gaps between lower and higher income families in spending on children (Kaushal et al., 2011; Lino & Carlson, 2009).

However, a family's child investment decisions are not driven just by budget constraints, but also by both preference and characteristics of the parents and children (Lareau, 2003). Nevertheless, prior quasi-experimental studies do provide evidence that when economically disadvantaged families receive additional income, they increase their spending on educational related items and activities (Duncan, Huston, & Weisner, 2007). In fact, the gap in investment in child enriching activities has been hypothesized as possibly explaining some of the rising income achievement gap over the past several decades (Reardon, 2011).

WEALTH LOSS

Researchers generally use indicators of SES to gauge the predictive power of social and economic background on a variety of outcomes, which usually constitute a combination of three variables: education, occupation, and income, all of which are easily quantifiable and are often reported (Conley, 1999). By contrast, wealth (net holdings) is difficult to measure and is almost never reported, though according to one estimate from the Economic Policy Institute, the Great Recession erased 8 trillion dollars in housing wealth (Mishel et al., 2012). For most households, the vast majority of wealth is held in

their homes (Hodge, Dawkins, & Reeves, 2007). This is even greater for black and Latino households (Burton, Bonilla-Silva, Ray, Buckelew, & Hordge Freeman, 2010; Hodge et al., 2007; Krivo & Kaufman, 2004), which helps explain why household wealth for these groups plummeted significantly during the most recent housing collapse. According to one estimate of the toll of the Great Recession, Hispanic and black wealth declined by 66% and 53%, while white wealth declined by 16% (Kochar, Fry, & Taylor, 2011).

The power of wealth, and the way it is used to advantage or disadvantage families is an essential mechanism for the perpetuation of intergenerational inequality. Families use wealth in very different ways than they use income. Wealth is storage of a family's financial resources and, when combined with income, frames the opportunity for families to secure advantages for them and their offspring. Some ways in which it is typically used is for human capital development, starting business, buying a home, neighborhood location, interest earning assets, health, travel, comfort, or security from future unexpected crises (Shapiro, 2005). Conversely, lacking wealth often means not only limited choices for households, but the inability to absorb a crisis, which can range anywhere from a health scare in a household, to a job loss.

Though often tacit, wealth gives families the capacity to attain the educational opportunities they want for their children. In her classic book *The American Dream and the Power of Wealth*, Heather B. Johnson identifies two common strategies that wealth-holding families can choose as they view the best schools (Johnson, 2006). Among the 200 families interviewed, families with financial leverage commonly spoke of what Johnson (2006) calls “opting in and buying out” (p. 55-60). That is, “opting in” through buying into the “best school districts” which means buying into exclusive neighborhoods;

or “opting out” and choosing private schools when the neighborhood school is not a desirable option. Therefore, it is not surprising that local public school test scores are often capitalized into the housing market.

FISCAL DECLINE

Across California, the onset of the Great Recession led to unprecedented city and state service budget cuts to wide range of social services. Educationally, teacher positions were cut, classroom sizes grew, and after-school programs were narrowed (Freelon, Bertrand, & Rogers, 2012). Even prior to the Great Recession, California was spending less on each student than the national average. In 2008, California was ranked 43rd out of the 50 states in the nation in terms of educational funding. According to a more recent 2014 ranking, California dropped to number 50 in per pupil spending.

In a 2012 qualitative study of California public schools and the challenges they faced during the Great Recession, researchers reported that principals consistently expressed that budget cuts adversely affected the quality of education. In this same study, teachers reported that they received less professional development and that they have had to cut back on instruction time and narrow the curriculum (Freelan, Bertrand, Rogers, & 2012). Declining tax revenue during the Great Recession led to spending cuts not only in schools, but other necessary services as well. Cuts were made in health care, higher education, human services, and public safety. Though the exact effects of fiscal crises on children schooling outcomes is difficult to quantify, there is reason to believe that spending cuts during and even after the Great Recession adversely impacted schools.

CONTRIBUTION OF THIS STUDY

In spite of the existing research on the educational and development effects generated by either a specific exogenous economic shock or other pathways that may harm children or adolescents during an economic crisis, we know little about the impact of the Great Recession on children's schooling experience (Chakrabarti & Setren, 2012). However, as has been widely documented, the recession has had a significant impact on multiple dimensions of family well-being (Shierholz, 2014). Drawing from prior research, largely conducted during less severe economic conditions or different contexts, economic downturns can have potentially significant negative impacts on children's academic outcomes and experiences through a variety of pathways. However, because the severity of unemployment and wealth loss was greater (by far) during the Great Recession as compared to other downturns, there is reason to believe that vulnerable families and their children were particularly impacted. At this time, the story of the effects of the Great Recession on children's schooling experience remains untold when it should be a top priority for scholars and policy-makers alike, considering that business cycles are ubiquitous in a capitalist economy. This study, using methods discussed in the following chapter, will expand on earlier work by relying on a quasi-experimental design to create exogenous variation in community and children's various schooling outcomes in an area widely considered the epicenter of the housing crash and the subsequent vicious wave of foreclosures —furthering our understanding of the way social, economic, and geographic context continue to shape the educational opportunity. The findings of this study promise to facilitate our understanding of how recessions impact schools and the role policy can play to mitigate the consequences.

Before doing so, however, it is important to consider the theoretical framework for the study.

ECOLOGICAL SYSTEMS THEORY: UNDERSTANDING WHY CONTEXT MATTERS

Ecological Systems Theory also known as *Development in Context Theory*- is widely used by those who research both neighborhoods and family conditions and their effect on child development. Ecological systems theory (Bronfenbrenner, 1979) and the bioecological model (Bronfenbrenner & Morris, 1998) suggest that children are impacted by structures and immediate family in five different but connected nested levels: 1) immediate friends, 2) family and surroundings (the microsystem), 3) the relationships between these immediate surroundings (the mesosystem), 4) the outside experiences of immediate friends and family (the exosystem); the cultural context in which one lives (the macrosystem), 5) and the historical context in which one lives (the chronosystem). Each system influences each child differently and to a different extent depending on both the degree of exposure and context of each.

Students who experience problems in their immediate surroundings (e.g. familial conflict), relationships between these different groups (e.g. a poor relationship between their church and parents), extended social systems (e.g. a parent getting laid off from a job), cultural context (e.g. high rates of unemployment and poverty), and/or historical context (e.g. racial and housing discrimination) would be expected to perform worse in school.

Ecological Systems Theory, while providing a useful heuristic in terms of focusing the researcher's attention on the dynamic and interrelated issues that influence

human learning and development, it is not without limitations. The model for example, does not capture the dynamic relations among the different levels of context or relations across contexts (Lee, 2012). The theoretical foundation for this dissertation study links systems theory with specifically the power of an exogenous economic shock to impact children's schooling outcomes. As noted earlier, research and theory suggests that context matters. Individuals do not exist in a social vacuum. They are connected to a larger dynamic environment that is among many levels of context (e.g., neighborhood, family, macro-economic) or relations across context (e.g., family, peers, networks, etc.). Half a century of social science research illustrates this point (Brooks-Gunn, Duncan, & P. K., 1993; Burdick-Will et al., 2011; Coleman, 1966).

CHAPTER 3: RESEARCH CONTEXT, DATA, AND METHODOLOGY

This section outlines the proposed research methodology for completing this study of the impact of the Great Recession on communities and schools. A quantitative methodological approach will guide the proposed study.

The research design for this study is based on the premise and assumption that changes in communities and schools that occurs with the Great Recession is for the most part exogenous, because it is imposed and not related to performance or governance. The assumption of exogeneity of economic downturns is both intuitive, empirically supported (Noy, 2007) and in line with previous work on economic downturns (Ananat, Gassman-Pines, Gibson-Davis, 2011).

RESEARCH CONTEXT

This study will investigate schooling and community changes resulting from the Great Recession in a large urban high school district in San Bernardino County. Chaffey Joint Union High School District (CJUHSD) in San Bernardino was selected for the following reasons:

First, for the past several decades, San Bernardino and its neighboring areas have emerged as a major center of demographic, racial, and economic changes. While it used to be one of the whitest areas in the Southern California region, it is now one of the most diverse (Table 3-1). As the county's population quadrupled between 1960 and 2010, the Hispanic population grew by a factor of ten, the black population by eight, and the Asian population fifteen fold. The white population peaked in 1990, and since then has been in decline. From 1990 to 2010, the white population decreased by 19% and now is less than one-third of the total (Mordechay, 2014). This is also an area that once led the nation in economic development (Bonacich & De Lara, 2009).

Table 3-1. San Bernardino County Racial/ Ethnic Population Totals 1960-2010

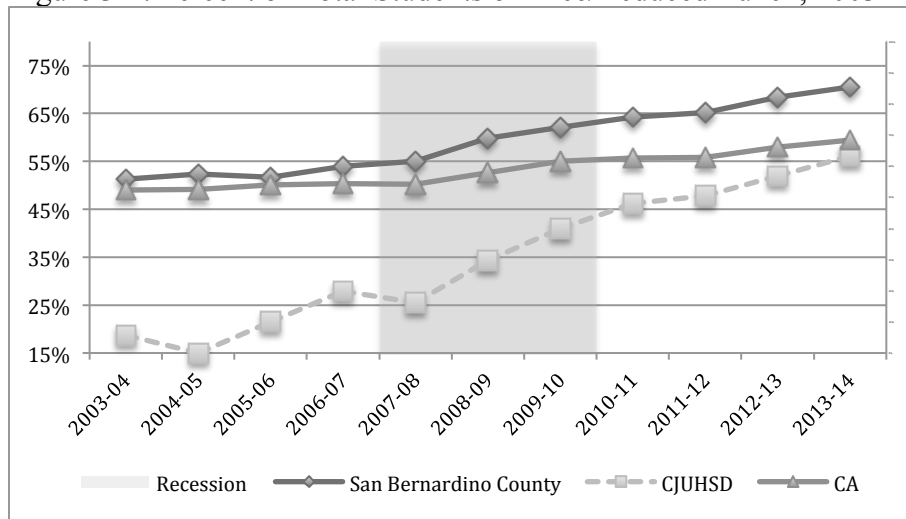
	Total Population	White	Black	Asian	Hispanic
1960	503,591	n/a	n/a	n/a	n/a
1970	682,233	551,926	27,972	8,187	90,055
1980	895,016	654,257	47,436	16,110	169,158
1990	1,418,380	862,375	109,215	55,317	380,126
2000	1,709,434	752,151	152,140	82,053	676,936
2010	2,035,210	700,214	181,862	128,603	1,001,145

Source: US Census Bureau

Second, as mentioned before, San Bernardino is area widely considered the epicenter of the housing crisis. It is part of an area that was often referred to as the foreclosure capital of the nation (Richman, 2012), and was one of the metro areas with the largest increases in city and suburban poverty rates during the Great Recession (Kneebone, 2010).

Third, since the onset of the Great Recession, schools across San Bernardino County have experienced a drastic increase in the percentage of students on free and reduced lunches (FRL)². The countywide change from 54% in 2006-2007 to 65.8% in 2010-2011 is an increase of almost 22%, far larger than its Inland Empire neighbor (Riverside) and also larger than the statewide increase from 50.1% to 55.8%, an increase of 11.3% (Figure 3-1).

Figure 3-1. Percent of Total Students on Free/Reduced Lunch, 2003-2014

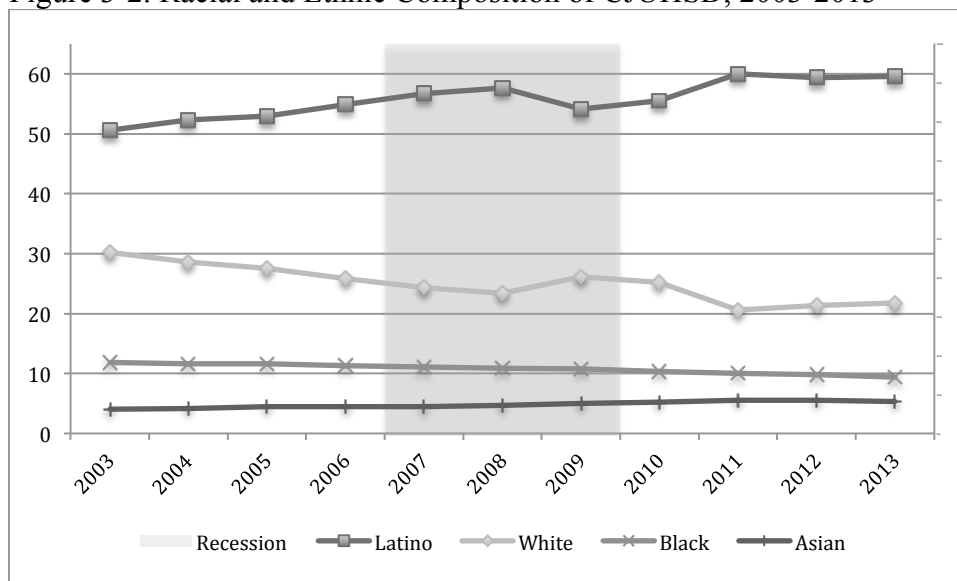


Source: California Department of Education

² FRL data are the only measure of poverty most schools have and it greatly limited as a proxy for low-income students. It is likely that free lunch statistics substantially understate the actual level of student poverty, particularly at the high school level where it is branded as an embarrassment. Nonetheless, it is reasonable to assume that student poverty is even more intense than this statistics suggests. (Orfield & Lee, 2009).

Fourth, Chaffey Joint Union High School (CJUHS) District was selected for investigation because it met several criteria: Enrollment Size (over 25,000 students) - making it one of the largest high school districts in California, race and income variation (ideal for focusing on school-level differences), and the stark increases in the percentage of students of FRL resulting from the Recession. Figure 3-1 above illustrates the dramatic increase of students on FRL, from 15% in 2005 to 56% in 2013. In addition, figure 3-2 below illustrates the racial diversity across the school district (see tables 1A-3A in appendix A for between school diversity).

Figure 3-2. Racial and Ethnic Composition of CJUHS, 2003-2013



Source: CJUHS Administrative Records

I chose to investigate the impact of an economic shock on a high school district because older children just entering adolescence are likely more developmentally vulnerable than younger children in the period of middle childhood (Eccles, Midgley et al. 1993). In addition, families are better able to shield younger children from the effects of job losses as research has illustrated that as youth age, they become more aware of

their families' economic pressures and are more likely called upon to work (Mistry, Benner, Tan, & Kim, 2009).

The project will compare three cohorts of students. The first one entering and completing high school before the housing bust (entering ninth grade in 2003-2004), escaping the recession, with the second cohort entering during the recession (2007-2008), and the third entering and completing high school after the housing bust (entering ninth grade in 2010-2011). It should be noted that in some cases, based on the analysis of time-series, I redefine the years constituting the "Recession-Cohort". Nonetheless, each of the cohorts is from CJUHSD.

DATA SOURCES

Data for this research comes from four sources:

- (1) The American Community Survey (ACS) 5 percent micro-data.
- (2) Zillow Real Estate Data
- (3) The California Department of Education.
- (4) Administrative Chaffey Joint Union High School District Records.

EDUCATION DATA

Education data are drawn from two sources: (1) The California Department of Education, Standardized Testing and Reporting (STAR) Results and (2) Chaffey Joint Union High School District administrative records. I also use end-of-grade test scores from the California Department of Education, however, the results that emerge from exclusive reliance on periodic snapshots such as those provided by STAR-based national report cards are cross-sectional where the population of interest is only measured at a

single point and time, a great limitation. In addition, the report card provides data on the school level, *not* the individual student level, another great limitation. I therefore supplement test score data with administrative longitudinal data which tracks the same students at multiple points in time (e.g. All other data, including *student mobility*, *attendance rates*, *student grades*, *achievement test scores*, and *graduation rates*, come from Chaffey Joint Union High School District administrative records. Using unique student identifying numbers that have been assigned randomly to individual students by the district data center, I am able to match a student's records over time, making it possible to compare trends in students and student cohorts. I have explicitly chosen to include in the cohort sample all students that begin 9th grade in a given year. That is, provided they appeared in 9th grade, I include them in the cohort sample. While this approach certainly does not circumvent selection bias, it is preferred to the approach of only tracking those students in which records show 4 data points (9th, 10th, 11th, 12th). It should be noted that either approach produces an underrepresentation of students that attrite from the sample, particularly in light of the high rates of attrition among black, Hispanic, and low SES students. Students that did not attrite on average had higher grades and their parents had higher educational attainment levels than those students who did not meet the four-data point criteria. Table 3-2 below illustrates the extent of attrition for each of the cohorts central to this analysis.

Table 3-2. Data Sample Breakdown, CJUHSD

Cohort	Total 9th Grade Sample	4pt	3pt	2pt	1pt
Pre-Recession	22963	15881	3302	2194	1586
Recession	24095	17582	2897	1824	1792
Post-Recession	24266	18451	2218	1671	1926

Source: CJUHSD Administrative Records

The definition of cohorts is constructed as follows: For the first cohort of students, I use data from a cohort entering ninth grade in 2003-2004 and ending in 2006-2007 (pre-recession), for the second cohort of students, I use data from an incoming cohort in 2007-2008 through 2010-2011 (recession cohort), and for the third cohort I use data from an incoming cohort in 2010-2011 through 2013-2014 (post-recession). As mentioned above, due to the time-series analysis, my recession cohort years are somewhat flexible. CJUHSD administrative data is a total enumeration of approximately 25,000 students across the district for each year. The total number of observations across all ten years in the data set exceeds 250,000 ($N= 253,769$).

COMMUNITY DATA

Census data from the supplemental American Community Survey (ACS) 5-Percent Public Use Microdata Sample (PUMS) three-year estimate from 2005-2007 (three yr. moving average) and 2010-2012 is used to calculate variables relating to community wellbeing before and after the recession. The ACS is a nationwide survey designed to provide communities with reliable and timely demographic, social, economic, and housing data every year. The survey samples nearly three million households each year or approximately 1-in-40 households on a rolling sample basis- a much smaller sample than the decennial census. As a result, to use the ACS reliably, researchers should combine population or housing data from multiple years to produce reliable numbers for small counties, communities, and other local areas (US Census User Guide, 2008). In other words, I will be reporting this data using either a three or five year moving average.

Variables used from the ACS include: socio-economic status, racial/ethnic background, employment, labor force participation, median income, and child and family poverty for the community in which CJUHSD students live.

I use the U.S. Census Bureau's Geography Division school district boundaries for the production of school district demographic estimates for CJUHSD. The U.S. Census Bureau conducts the Boundary and Annexation Survey (BAS) annually to collect information about selected legally defined geographic areas, which include school district attendance boundaries (US Census). I will link these data to Geography Information Systems (GIS) maps to depict spatial patterns across San Bernardino County.

It is important to note that with each ACS estimate, the Census Bureau reports a Margin of Error (MOE), or measure of the variability of the estimate due to sampling error, which is directly related to sample size. The MOE enables data users to measure the range of uncertainty around each estimate. The larger the MOE, the lower the accuracy of the estimate—and the less confidence one should have that the estimate is close to the “true value”. All +/- the MOE can be calculated with 90 percent confidence by taking the estimate. For example, if the ACS reports an estimate of 100 +/- 20, then there is a 90 percent chance that the value for the total population falls between 80 and 120 (US Census Bureau).

Due to this the ACS design and sampling techniques, estimates in some areas have more sampling error than others. Small group disaggregation's and small geographic areas are particularly prone to sampling errors (US Census Bureau). Therefore, for all community level characteristics, I will only report estimates that are either of *high* or *medium reliability*. That is, high reliability will be based on an

estimate's coefficient variation (CV), which should be between, less than or equal to 12, while medium reliability will have CV's between 12 and 40³. All medium reliability estimates will be indicated with an * symbol. To calculate a CV, I use the following model commonly used by researchers employing ACS data (ESRI, 2010):

$$CV = \frac{(MOE / 1.645)}{ESTIMATE} * 100$$

The CV is expressed as a percent. For example, if you have an estimate of 80 +/- 20, the CV for the estimate is 15.2%, and should be used with caution, since the sampling error represents more than 15% of the estimate. All complex survey sample data have margins of error. The decisions related to the CV noted above improve the researcher's confidence in use of the data.

ZILLOW REAL ESTATE DATA

I use county level monthly price data provided by Zillow to illustrate housing market trends during the boom and bust cycle. It is a monthly time series of zip code level housing data from the Zillow Home Value Index time series, which runs from January 2000 through September 2014. The index seeks to provide an unbiased estimate of the monthly median level home value and foreclosure sales by zip code. The final data set provided by Zillow includes complete time series for all 23,394 zip codes across the US.

ANALYTIC STRATEGY

³ National Research Council, Using the American Community Survey: Benefits and Challenges (Washington, DC: The National Academies Press, 2007).

COMMUNITY

I present a descriptive trend analysis for both CJUHSD and its community. For the community, I will use cross-sectional comparisons of pre- and post-recession changes for CJUHSD geographic attendance zone to changes in California and San Bernardino County, as part of an effort to create a demographic portrait of the community and region before and after the recession. Summary statistics are weighted and tabulated using 2005-2007 (defined as pre-recession) and 2010-2012 (defined as post-recession) ACS 5-Percent Public Use Microdata Sample (PUMS) files according to the following themes: (1) household and population characteristics; (2) race and ethnic characteristics; (3) social/economic characteristics; (4) labor force characteristics.

The descriptive analysis will include separate sets of maps, at two different points in time that will be constructed for the region. Decennial census data from 2000, and ACS data from 2008-2012 will be joined with GIS mapping software to produce maps showing housing and demographic patterns at the census tract level by race and socioeconomic status. The maps highlight the CJUHSD school attendance zone.

In addition, I use Zillow monthly time series zip-code data to show housing market trends from 2000 through September 2014 for the community (using zip codes as a proxy) that comprises CJUHSD. The housing market trend analysis is based on the following variables: (1) Median price of all sold homes; (2) Homes selling for a loss; (3)

Homes foreclosed; (4) Foreclosure resales (%); (5) Unsold REOs (Real Estate Owned⁴).

This analysis will be presented in chapter 4 of this dissertation study.

EDUCATION

First, I conducted data sensitivity analyses for the school district administrative data. Data screening is a significant stage for understanding the descriptive statistics for all variables, missing data information, and statistical features of variables (e.g., linearity, normality, kernel density, and singularity), particularly for this dataset. Not only does the data screening stage help us understand the variables and their most basic features, this process is also crucial to further steps in that it helps us identify potential issues in the data, which can affect the reliability and validity of study results.

PRIMARY METHODS

Descriptive statistics are used as a tool to explore trends across different schools and subgroups, with individual chapters on how schools fared during the recession, as defined by graduation rates, student mobility, academic achievement, and absences. Unpaired t-tests were used to compare different student subgroups before and after the recession. In addition, school clusters were created throughout this analysis to assess the recession's impact on "high-risk", "medium-risk", and "low-risk" schools. These clusters were created based on several school level indicators: Percent of students on free and reduced lunches, percent of student body that is black and Latino, percent of students that are classified as English Learners, and finally, the percent that are classified as

⁴ Property owned by lender.

Special Education. My assumption is that the higher the percentages of each of the indicators mentioned about, the more “at-risk” a school is considered to be. The results and findings from these analyses will be demonstrated in the following chapters. Table 3-3 below presents the three school clusters created.

Table 3-3. “At-Risk” School Clusters

	% FRL	%Blk/Latino	%ELL	%Spec. Edu.
HIGH RISK				
Chaffey High	83	89	21	13
Montclair High	80	88	16	9
Ontario High	80	92	22	11
MID-RISK				
Alta Loma High	46	52	4	11
Colony High	63	80	10	14
LOW-RISK				
Etiwanda High	38	64	2	14
Los Osos High	27	41	2	11
Rancho High	35	55	2	9

Finally, I further explored the impact of the Great Recession by performing both single and multi-level analyses. Using multiple covariates, I conducted a series of multivariate logistic regression models with cluster robust standard errors (more details discussed in chapter 10). In addition, I supplement this model with a multi-level logistic model that I report in the appendix. Furthermore, the outcome variables of interest for the regression models were (1) high school graduation, and (2) student mobility. Along with the descriptive statistics for individual variables, the regression models provided meaningful information by allowing me to investigate relationships between predictor

variables and outcome variables by controlling for other explanatory variables in the model. Student SES is indicated by parent education level reported by parents. The response options ranged from 1 (not a high school graduate) to 5 (graduate degree). The student SES composite variables are constructed as follows: 1) Low SES are students whose parents did not graduate from high school only, 2) Mid low SES are students whose parents have graduated from high school, 3) Mid SES are students whose parents have some college, 4) High SES are students whose parents are college or post college graduates. Table 3-4 below lists the variables included in the regression models

Table 3-4. Summary of primary variables for data analysis

Dependent Variables	Grade Point Average
	English Test Scores
	Math Test Scores
	Graduation
	Transfer Status
	Absenteeism
Individual Control Variables/Covariates	Race/Ethnicity
	Parental Education (SES Proxy)
	Language Status
	Special Ed. Status

In addition, given the nested structure of the data (non-independence of observations), I also consider a multilevel model to decide whether to perform a single-level analysis or a multi-level analysis, I ran a model using a method for dealing with correlated data: the technique of generalized estimating equations (GEEs) and got virtually identical results as the logistic regression with robust standard errors model. Robust standard error estimates are needed to take into account the intra-cluster

correlation where the assumption of independence is violated (Huber, 1967).

Nonetheless, I report results from both models. I discuss the models more in depth in the chapter 10.

CHAPTER 4: FROM SMALL TO SPRAWL: A BRIEF TIMELINE

California's Inland Empire, which encompasses Riverside and San Bernardino Counties on the Los Angeles region's eastern border, is very large, with a population of about 4.3 million. The Riverside-San Bernardino region is the 12th largest Metropolitan area in the nation. Indeed, though dwarfed by neighboring Los Angeles County, if the region were a state, it would be larger than about half the U.S. states.

San Bernardino specifically, is geographically the largest county in the contiguous US, comprising part of the suburban Inland Empire region in Southern California, an area once leading the nation in population growth and economic development (Bonacich & De Lara, 2009). It is an area of incredible racial diversity and has been at the center of dramatic demographic changes over the last two decades where the population has grown by a factor, a rate almost twice that of the rest of California and about 2.5 times that of the rest of the United States (Mordechay, 2014). The key element in the Inland Empire's rapid growth has been affordable housing, spanning everything from single-family homes to multi-family and townhouse developments, including both rental and sale properties. Lower housing prices and rents have attracted a large number of middle and working class families. It is also a region that many urban planners tend to criticize for its sprawling patterns of development that generate external costs (Bluffstone, Braman, Fernandez, Scott, & Lee, 2008). Part of the reason sprawl and its effects are so much at

the forefront is that the region was the epicenter of a mega-housing boom and a subsequent collapse. At the peak of the building boom in 2005, an extraordinary 52% of all new homes constructed in California were built in the Inland Empire (Husing, 2005).

Soon after, the area earned the reputation as one of the “foreclosure capitals of the nation”, where housing overstretch was most exaggerated, and where foreclosure rates above 50 per 1000 households were ubiquitous at the height of crash (Husing, 2013). At its peak in 2010, San Bernardino County had an unemployment rate of over 16%, surpassed only by the Detroit metro area (Mordechay, 2011). In other words, the region had experienced enormous financial and economic peril (Leamer, 2013). More recently though, it has been at the center of an industrial real estate boom, where demand for large warehouse spaces from mega companies such as Amazon.com and BMW are once again spurring rapid growth in the region.

Adding to the complexity of this region are the fast shifting racial demographics, not only of its communities but of the schools as well. Data on the school-age population provides insights into where the region is now and where it is headed. The data confirm the beginning of a transformation into a truly multiethnic minority school-age population into the region’s schools, and beyond in the coming decades. The region’s schools are now among the most racially and linguistically diverse in the country. However, as this project will highlight, individual schools are highly segregated by social class and race. Moreover, issues of racial and income segregation in the schools continue to raise questions about equal access to resources and opportunities.

As policy makers look to shape and plan for the future of this region, this study will seek to inform policy on how to ensure a more equitable future for all of the region’s residents and in particular, the region’s youth. This section is structured as follows. First I

describe the rise of the region from its humble origins at the beginning of the 20th century to the stature of a vast suburban area on the fringe of a global metropolis. I then describe the ever changing and diverse population of the region, with a particular focus on the last 40 years. Next, I briefly describe the region's most recent housing bubble, where housing prices peaked in 2006 before collapsing into a deep recession.

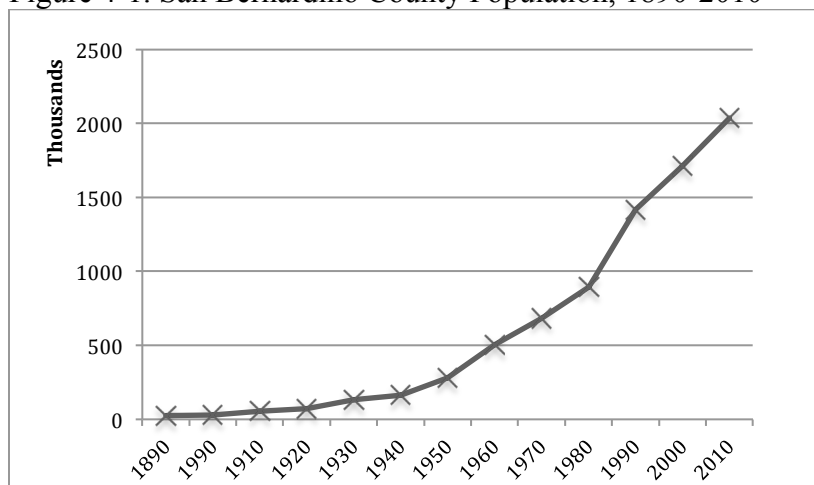
HISTORY

Like most other major urban areas, the San Bernardino region rose from humble origins to achieve the scale and status of a vibrant economic and industrial engine that it is today. In the mid-1800s, San Bernardino County emerged as one of the largest settlements in southern California. It surpassed Pueblo de Los Angeles and San Diego in grain and lumber yields and boasted a burgeoning cattle industry and up and coming vineyards. But as a Mormon commune the colony was constantly under threat, and finally abandoned in 1857 during the Utah war with the United States (Lyman, 1996). The region's decline was short lived, as a new land boom was inspired by the arrival of railroads and the importation of citrus trees in the 1870s. This led to an explosive population growth and the area quickly became a major center for citrus production (Lawton & Weather, 1989). The agricultural boom continued with the arrival of water from the Colorado River and the quick growth of Los Angeles in the early 20th century, with dairy farming becoming another staple industry in area. In 1926, Route 66, the basic connection between Chicago and the West Coast, (now known as Foothill Boulevard and Interstate 215) came through the northern parts of the area, bringing a stream of new migrants to the region, resulting in a nearly doubling of the population nearly doubled from approximately 73,000 to just under 144,000 between 1920 and 1930

(Figure 4-1 below). The region's dry and mild climate, and the nearby presence of mountains, as well as the desert resorts of the Coachella Valley were also a source of appeal (Brown, 1985). In fact, the area is now home to the world famous Coachella Valley Arts and Music Festival.

It wasn't until after World War II when the region transformed from being a key part of the Southern California "Citrus belt", to a hub attracting hordes of realtors and their bulldozers that were keen on destroying acres of agricultural land to build Levittown-type housing tracts (Lawton & Weather, 1989). The precursor to the San Bernardino Freeway (Hwy 10), the Ramona Expressway, was built in 1944, along with further development of the freeway system that facilitated the vast explosion of suburban housing and migration throughout the Inland Empire and Southern California. Its growth was further buttressed by the production of wartime materials, the most famous being the massive Kaiser Steel plant in Fontana, bringing a mass migration of blue-collar workers to the area (Brown, 1985). By the 1950s, the region all but lost its rural charm and was unmistakably well on its way to becoming a vast suburban region on the edge of one the world's largest urban megalopolises.

Figure 4-1. San Bernardino County Population, 1890-2010



Source: US Census Bureau

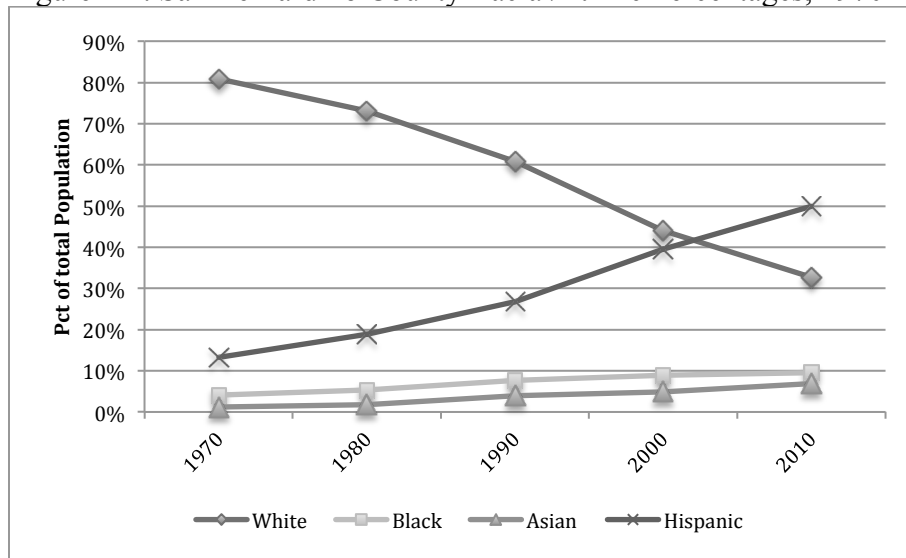
FROM SMALL TO SPRAWL

Sprawling San Bernardino County, part of the vast Inland Empire, has seen tremendous population growth over the last 40 years (See Figures 1B in Appendix B). Average annual population growth in the county in the 1970s was 3%. The annual growth rate jumped to 6% in the 1980s, before dropping back to 2% in the 1990s and remained 2% in the 2000s. Since 2000, San Bernardino County's population has grown by over 21%.

While it used to be one of the whitest counties across Southern California, it is now one of the most diverse. As the county's population grew by a factor of four between 1960 and 2010 (Table 1B and Figure 1B in Appendix B), the Hispanic population multiplied by ten, the black population eight fold, and the Asian population by more than fifteen (Table 1B in Appendix B). The white population peaked in 1990—it once made up over 80% of the county population—and since then has been in decline. From 1990 to 2010, the white population decreased by 19% and now is less than one-third of the total (Figure 4-2). The number of whites is projected to continue to shrink as the older white population continues to age and retire and as other ethnic groups move in, especially Latinos. In fact, between 2000 and 2010, the number of white toddlers (under age 5) in San Bernardino County has declined from 29% of the total to just over 20%, a decrease of close to 8,000 (Mordechay, 2014). While much of the decline in the white population can be explained by birthrates and migration, there is also some qualitative evidence of white flight happening in the region (Pfeiffer, 2012).

Like its Inland Empire neighbor Riverside County, San Bernardino has traditionally offered more affordable housing than its neighboring counties. It has attracted more blacks than other counties, although the numbers are not nearly as astounding as the intraregional Hispanic migration (Mordechay, 2014). Like Riverside County, despite the real estate and labor market declines that have been so pronounced in the area and the severe foreclosure crisis, there is no sign that San Bernardino's population is declining.

Figure 4-2. San Bernardino County Racial/Ethnic Percentages, 1970-2010



Source: U.S. Census Bureau

The Hispanic school-age children have been a plurality in San Bernardino since 1996 and are now a significant majority. There are two white students for every one black school child in San Bernardino County, a uniquely high ratio for Southern California, which is generally far less black than the rest of the nation. San Bernardino County

already has the highest proportion of African Americans in the region and is one of the few counties whose black population is expected to increase over the next 40 years.⁵

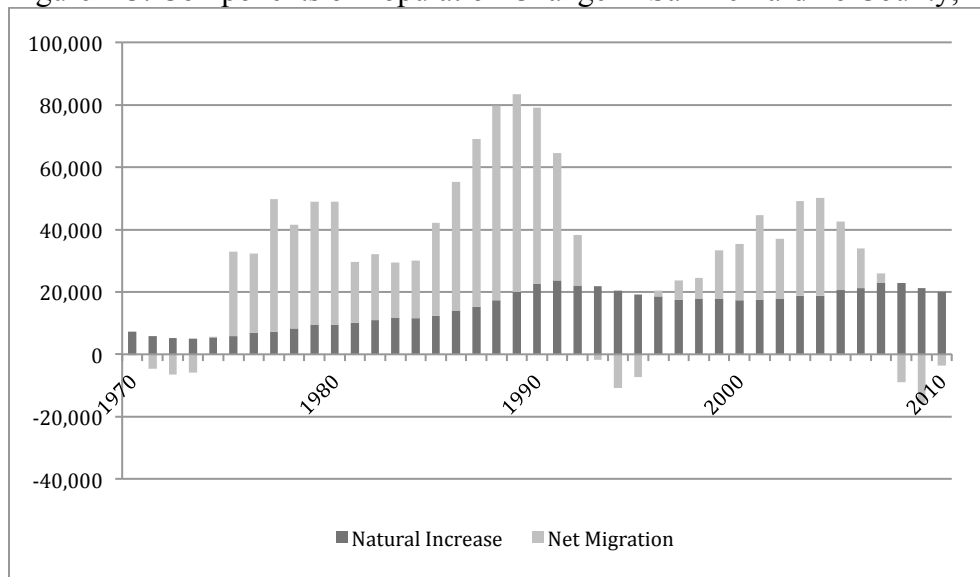
MIGRATION

After many decades of gaining residents primarily through migration, San Bernardino County's growth since the early 1990s has come predominately from natural increases- that is births minus deaths. Since it has provided affordable housing for younger families in the child-bearing years, from 1975 through 2006, San Bernardino County had positive net migration, with more people moving into the area than out. However, between 2007 and 2010, the county lost population through migration, with an estimated loss of nearly 50,000 residents during the Great Recession. Most recently, between 2011 and 2013, the county continued to experience negative net migration, losing just fewer than 18,000 residents (Figure 4-3 below).

Domestic out-migration- that is moving out of the county to another location in the United States has been the driver behind the loss since 2008, while international immigration (moving to the county from a foreign country) has played a role in reducing the net loss (San Bernardino County Community Indicators Reports, 2014). The county added approximately 56,000 residents through natural increase between 2011 and 2013, which when combined with negative net migration, equals a total of nearly 38,000 new residents during this period (Figure 4-3).

⁵ *State of California, Department of Finance, Report P-1 (Race): State and County Total Population Projections, 2010-2060.* Sacramento, California, January 2013. Available at: <http://www.dof.ca.gov/research/demographic/reports/projections/P-1/>

Figure 4-3. Components of Population Change in San Bernardino County, 1970-2010



Source: California Department of Finance

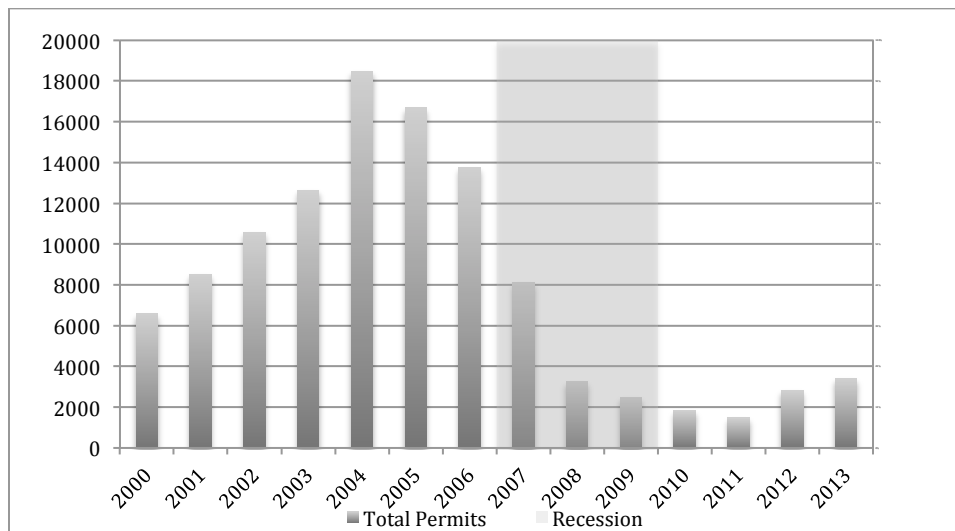
THE BUBBLE YEARS

The story of housing in the Golden State in recent years is one of both dramatic change and fundamental continuity. Change has been most stark in California's home sales and prices, which boomed in the early part of last decade and then plummeted when demand for homes collapsed starting in late 2005, eventually giving way to a vicious wave of foreclosures. The Inland Empire was the burning core of speculative loans because of the availability of cheap land between the more expensive Los Angeles and San Diego Counties. In fact, according to a study by the Federal Reserve, in no other region of the country did subprime loans⁶ account for a bigger proportion of the overall mortgage market (Mayer & Pence, 2008). Both figures 4-4 and 4-5 below illustrated the

⁶ Making loans to people who may have difficulty maintaining the repayment schedule, sometimes reflecting setbacks, such as unemployment, divorce, medical emergencies, low-wages, etc.

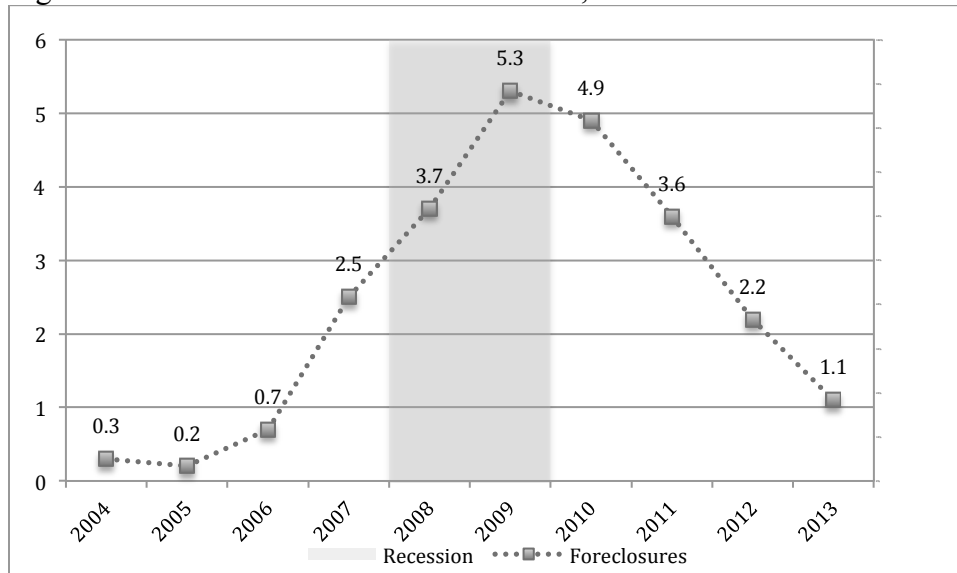
extent to which the region's housing market was impacted by the downturn. Since all home building and remodeling works require advance building permits, housing activity can be monitored by looking at the number of building permits issued within a period of time. The steep decline of 82% between 2006 (13,754) and 2010 (2,493) in homebuilding permits across the county is stark (Figure 4-4). Nonetheless, while the county's housing market seems to have bottomed out in 2011, there are signs that it may be rebounding as the number of construction permits issued is going up. In addition, after a steep decline in home values and foreclosures (Figure 4-4), recent housing data suggests that home prices are once again rising, albeit nowhere near pre-recession levels (See Figure 4B in Appendix B). As can be seen in Figure 4B in Appendix B, median home sales in 2012-2013 increased by close to 9% in 2013 year-on-year across the county. In addition, the countywide rate of foreclosures has declined from a peak of 5.3% of all homes in 2009, to just over 1% in 2013 (Figure 4-5), a positive sign for a region that had one foreclosure for every four mortgages — twice the rate for California as a whole.

Figure 4-4. Total Building Permits Issued in SBC, 2000-2013



Source: Construction Industry Research Board

Figure 4-5. Percent of Homes in Foreclosure, SBC



Source: Core Logic

RISING FROM THE ASHES OF THE RECESSION

After several years of stagnant growth in one of the hardest-hit areas, a recent economic forecast from the Los Angeles County Economic Development Corporation suggests that this region is once again now one of the state's fastest-growing areas with the housing markets projected to continue to see gains through 2015 (Kleinhenz, Ritter-Martinez, Guerra, & Guerra, 2014). In addition, Job growth in the Inland Empire in 2014 outpaced the state and the rest of Southern California for the third year in a row.

CHAPTER 5: CHAFFEY JOINT UNION HIGH SCHOOL DISTRICT- INSIDE A COMMUNITY

Within this vast urban region there are many diverse communities. The locality selected for this analysis constitutes the communities within Chaffey Joint Union High School District's geographic attendance zone. School district attendance zones can be

understood as the common practice of drawing school attendance boundary lines that correspond with proximate neighborhoods and communities. Chaffey Joint Union High School District (CJUHSD) is a 9-12 school district located on the southwestern edge of San Bernardino County- serving the communities of Montclair, Ontario, Rancho Cucamonga, and portions of Fontana, Upland, Chino, and Mount Baldy. It is one of the largest high school districts in California. The District operates eight high schools, one online high school, one continuation high school, one community day school, and one adult education school.

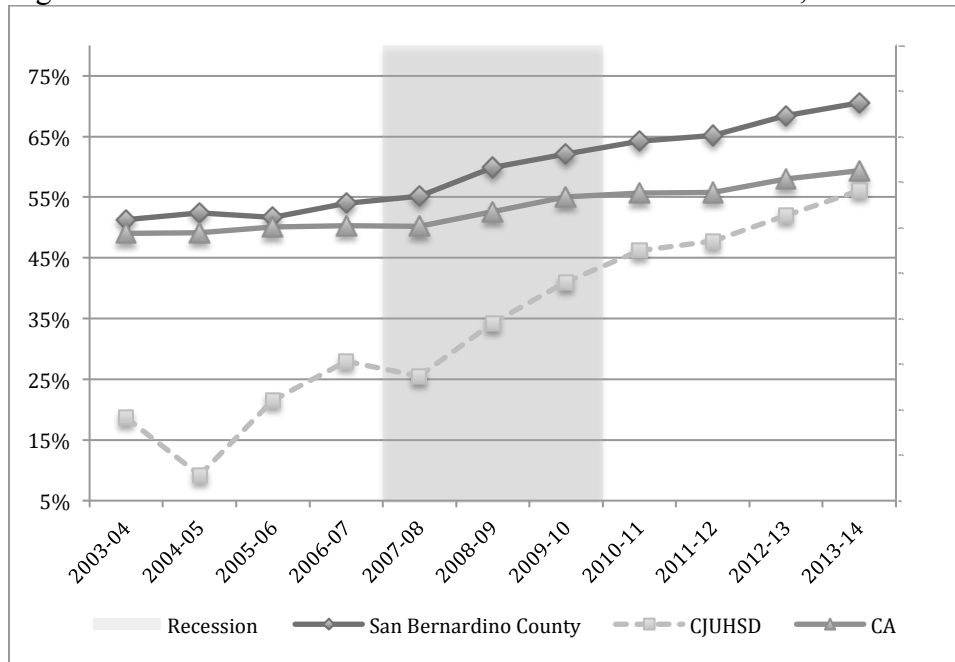
In spite of the more recent optimism about the future prospects of the region, the percentage of poor students across the region's public schools shows no sign of abating, and in fact, appears to be on the rise through the 2013-2014 school year (Figure 5-1 below). Not surprisingly, the onset of the Great Recession led to drastic increases in the percentage of students on free and reduced lunches (FRL)⁷ across the county, and state. Student eligibility for FRL is based on a child's family-income. A child's family income must fall below 130% of the federal poverty guidelines (\$29,965 for a family of four in 2012-2013) to qualify for free meals, or below 185% of the federal poverty guidelines (\$42,643 for a family of four in 2012-2013) to qualify for reduced-cost meals (CA Department of Education).

The countywide change from 54% in 2006-2007 to 71% in 2013-2014 is an increase of almost a third, far larger than the statewide increase from 50.1% to 59%, an

⁷ FRL data are the only measure of poverty most schools have and it greatly limited as a proxy for low-income students. It is likely that free lunch statistics substantially understate the actual level of student poverty, particularly at the high school level where it is branded as an embarrassment. Nonetheless, It is reasonable to assume that student poverty is even more intense than this statistic suggests (Orfield & Lee, 2009).

increase of 17.7% (see Figure 4-6). However, the percentage of students on FRL at CJUHSD has risen even more dramatically than the county. Since 2006-2007, the district number has doubled from 28% to 56%, an increase of 100%. Schools with high numbers of students on free and reduced lunches tend to experience a very wide array of educational and social problems ranging from health and developmental issues, to family problems, to frequent moves and lack of resources at home, and to the often negative influence of poorly prepared peers and teachers with limited experience (Orfield & Lee, 2005).

Figure 5-1. Percent of Total Students on Free/Reduced Lunch, 2003-2014

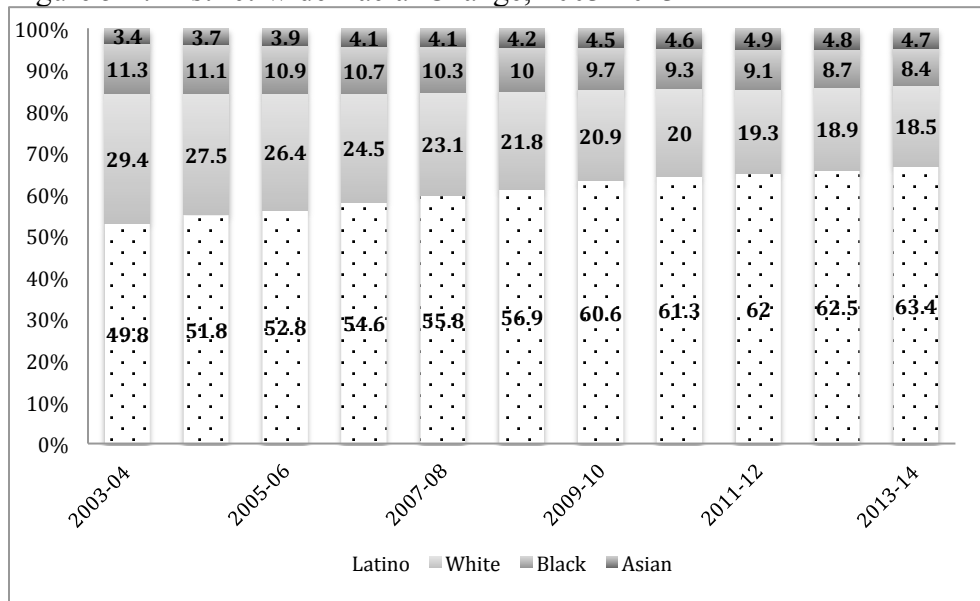


Source: California Department of Education

The district's racial and ethnic demographics reflect those of the county. As can be seen in Figure 5-2 below, the percentage of Latinos has grown substantially. In 2000, the Latino population was less than half the total, and it now constitutes almost two-thirds (63.4%). Meanwhile, although whites are clearly the second largest ethnic group at

CJUHSD, the group's numbers have declined from close to 30% a decade ago to just over 18%. The percentage of blacks has steadily decreased, while the number of Asians has gone up. Although the total share of Latinos is increasing at a fairly rapid rate, the district is nonetheless diverse.

Figure 5-2. District-wide Racial Change, 2003-2013



Source: CJUHSD Administrative Records

COMMUNITY HOUSEHOLDS: BEFORE AND AFTER THE RECESSION

A statistical portrait of the households that lie within the boundaries of CJUHSD reveals dramatic changes resulting from the Great Recession. By linking maps of school attendance boundaries with data from the U.S. Census's supplemental ACS Survey, I am able to analyze household wellbeing *before* and *after* the recession. The U.S. Census Bureau's Geography Division updates school district boundaries every other year as part of the School District Review Program. The program provides boundaries for the production of school district demographic estimates, and also provides school district boundary layers for the Census Bureau's TIGER/Line spatial data products. School

districts are identified as Elementary (primarily serving children in the elementary grades), Secondary (primarily serving children in secondary grades 9th-12th). Moreover, all community level data is defined by CJUHSD's geographic attendance zone and comes from the Census's School District Review Program.

MAPPING THE COMMUNITY

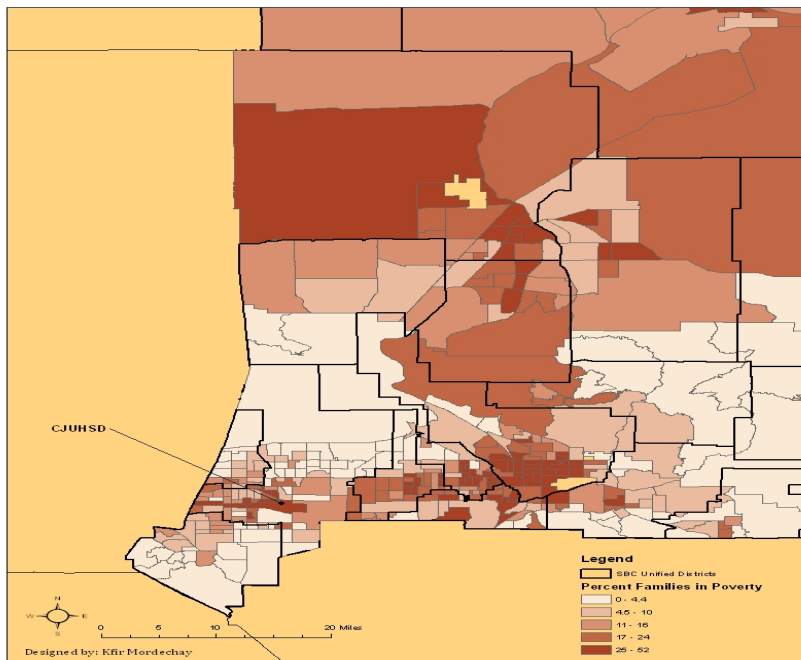
Below are sets of maps constructed using Geographic Information Systems (GIS) technology helping to paint a portrait of racial and poverty patterns of schools and households. Given the research emphasis on boundary lines and the significance of space and place, GIS mapping tools allow for a visual presentation of the data. The maps are overlaid with public neighborhood school districts and the catchment areas they serve. This allows us to view the spatial distribution of demographic patterns and the fundamental salience of boundary lines in the distribution of opportunity.

The map 1 in Figure 5-3 reveals a pattern of household isolation by poverty in the urban core⁸ of the district. Areas shaded in red on that map illustrate the extent of household poverty concentration. Maps 1 Figure 5-3 illustrates patterns that have been long studied by urban sociologists, namely that the highest tier of the income distribution is geographically distant from the urban core (Jargowsky, 2002). While the maps displayed below *do not* reveal a “before and after” portrait of the community and county as a whole, they do reveal a cross-sectional snapshot of the spatial distribution of poverty and the extent that this overlaps with race. Figure 5-4 illustrates that the urban core is also

⁸ Urban cores are defined as areas that have high population densities.

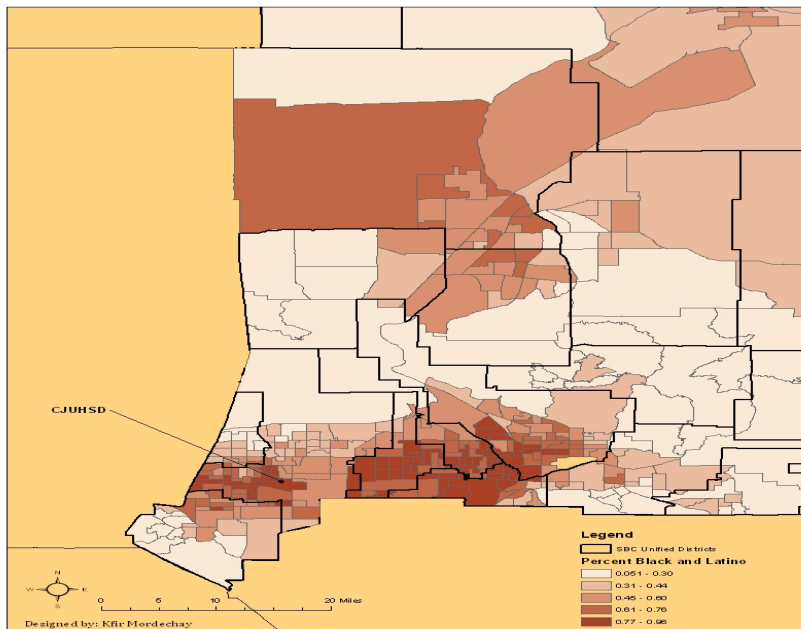
where large shares Latino and black households are most concentrated, while the other races can be found on the periphery. Therefore, it is not surprising that while the CJUHSD is diverse, some of its schools are highly segregated by race and class.

Figure 5-3. Percent of Families in Poverty



Source: American Community Survey, 2008-2012

Figure 5-4. Percent Black and Latino



Source: American Community Survey, 2008-2012

A STATISTICAL SNAPSHOT: BOOM AND BUST

In the descriptive analysis of changes in the school district boundary and socio-demographic characteristics comparing 2005-2007 with 2010-2012 data of communities that comprise the CJUHSD catchment areas, I find declines in median-household income and employment, and increases in poverty (Table 8 below). Community-wide, median-household income decreased from \$66,876 to \$62,956 during this time, leaving incomes around 6% below their level before the downturn, a much steeper decline than the 2% decrease in California (see Table 5-1). Meanwhile, the unemployment rate almost doubled from 5% to just under 10%, also a much starker increase than the increase from 4.4% to 7.7% across the state. These trends are extremely consequential, of course, given the wealth of social science evidence pointing to the adverse effects of parental unemployment and declining incomes on children. In addition, both family and child poverty rates have substantially increased. Family poverty rose 38% compared to the statewide increase of 27%. The child poverty rate increase across the Chaffey community was substantially starker, increasing from 11.7 to 17.6 percent, a change of 50%.

Table 5-1. Pre/Post Recession Changes

	Pre-Recession	Post-Recession		Pre-Recession	Post-Recession
CJUHSD Unemployment	5	9.6	CA Unemployment	4.4	7.7
CJUHSD Family Poverty	7.3	10.1	CA Family Poverty	9.7	12.3
CJUHSD Child Poverty	11.7	17.6	CA Child Poverty	14.2	18.4
Median-Household Income	66876	62956	Median-Household Income	58361	59368

Source: American Community Survey (3 yr. avg).

Among the different races, the Hispanic population has seen the starkest increases in family poverty (Table 3B in Appendix B). Even though poverty has increased for families of all racial and ethnic groups, the share of Hispanic families in poverty

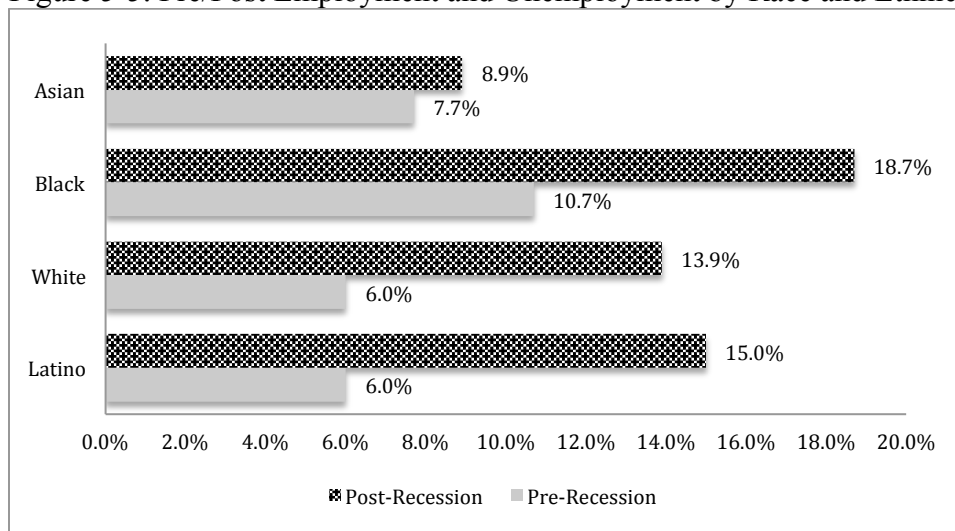
increased from 10.2% to 15.2%. One likely explanation for the steep increases in Hispanic poverty rates is the group's heavy concentration in the construction industry, which at the peak of the housing market boom in 2006, the construction industry employed more than 10% of the Inland Empire's workforce (Mordechay, 2011). The collapse of the construction industry in large part explains why the area had one of the highest unemployment rates in the nation at the height of the Great Recession.

Both White and Asian families saw the steepest dollar losses in median-income. White and Asian incomes decreased by \$4,035 and \$6,438, respectively. Perhaps surprisingly, black and Latino incomes increased on average during the same period (Table 4B in Appendix B).

During the Great Recession employment rates fell sharply—particularly among Latinos. As mentioned earlier, Latino workers lost jobs primarily in construction. Historically, and certainly prior to the recession, Latinos had some of the lowest unemployment levels compared to other racial groups, largely because of the group's historical occupational clustering construction, manufacturing, and low paying service jobs. Figure 5-5 illustrates that the CJUHSD community has largely followed this trend. Prior to the recession, the Latino unemployment rate was at 6%, the same as whites and lower than that of Asians and Blacks. The group's unemployment rate then skyrocketed to 15%. Not only were Latinos overrepresented in industries that lost the most jobs, but they are also underrepresented in sectors that experienced job growth after the recession— namely the education and health services sector (Cárdenas & Kerby, 2012).

The average unemployment rate for blacks prior to the recession was 10.7% compared to 6% for Whites and Hispanics. Historically, Blacks have had persistently higher unemployment rates than the other major racial and ethnic group across the nation. Not surprisingly, blacks had the highest unemployment rate after the recession, at almost 19%. Though no causal claim can be made with these data, other studies have tested the claim that blacks are the last hired during periods of economic growth and first fired during recessions (Freeman, Gordon, Bell, & Hall, 1973). This theory serves as one potential explanation for the stark contrast of unemployed blacks, in spite of the group's exceptionally high levels of education attainment in this particular region (see figure 2B in appendix B)

Figure 5-5. Pre/Post Employment and Unemployment by Race and Ethnicity

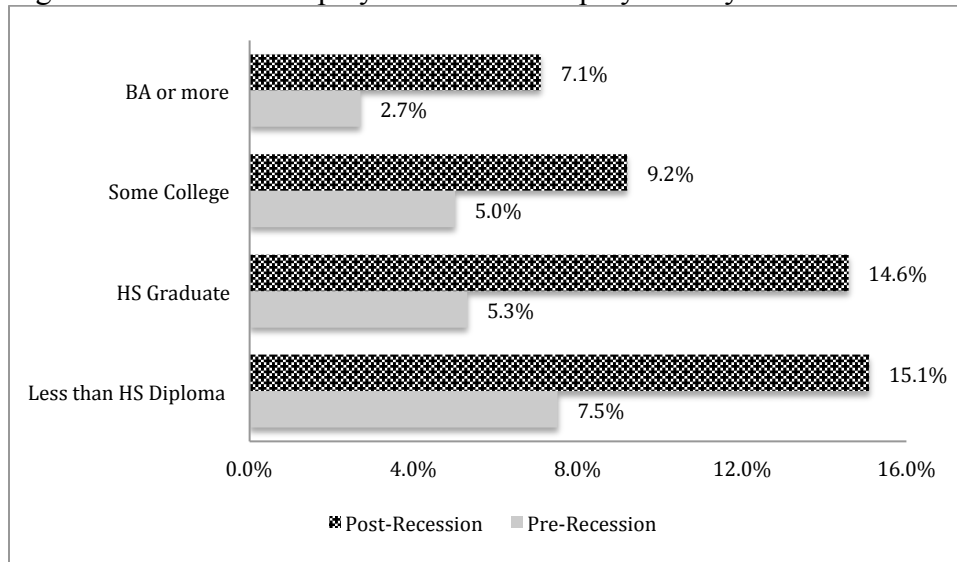


Note: Asian rate indicates medium reliability due to margin of error in estimates

A plethora of social science research has documented the high correlation between educational attainment and employment prospects (Carnevale, 2010). Therefore it is not surprising that while unemployment has increased for all levels of educational attainment, those with the lowest education levels were the hardest hit (Figure 5-6). Across the Chaffey community, the unemployment rate by education levels is shaped like

a pyramid, with those who have college degrees having the lowest unemployment rate. The unemployment rate for college graduates was 2.7% before the recession, increasing to 7.1% after. While this increase is by no means trivial, it is close to the jobless rate of the work force without a high school diploma when the economy is good. Groups without a college education saw an unemployment rate increase to 15%.

Figure 5-6. Pre/Post Employment and Unemployment by Educational Attainment



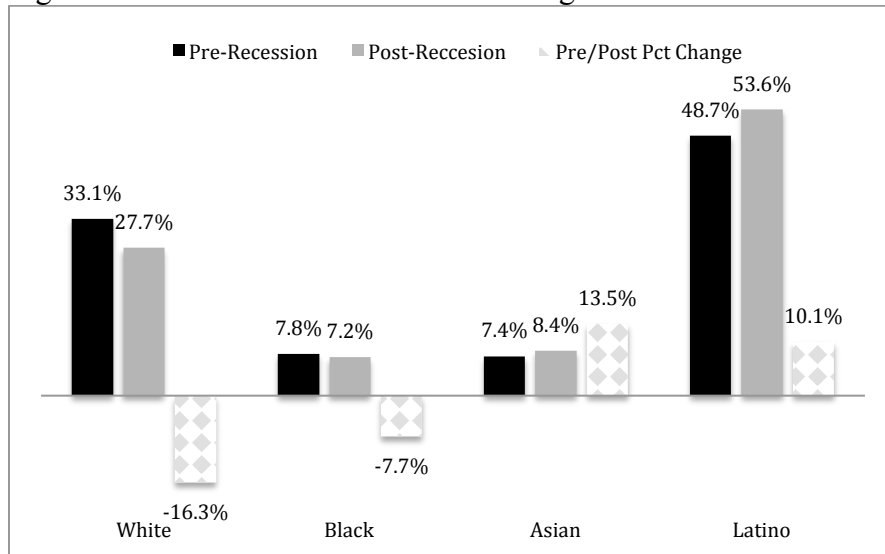
Note: Pre-recession BA rate indicates medium reliability due to margin of error in estimates

RACIAL CHANGE

Not surprisingly, given the racial change across San Bernardino County described earlier, the racial composition of the community has seen stark changes during the recession. While whites constitute a significant portion of the total population, the group's decline continued to follow a several decade trend across the San Bernardino County. The share of whites in the CJUHSD community decreased from almost a third (33.1%) of the total to just over a quarter (27.7%), a decline of over 16%. Meanwhile, as illustrated in Figure 5-7 below, the Asian and Hispanic populations have increased quite substantially. Hispanics now make up well over half of the population, at over 53%,

while the Asian numbers have gone up from 7.4% to 8.4, an increase of 13.5%. As mentioned earlier, San Bernardino County has attracted more blacks than other counties in Southern California, though the group's share of the total population has decreased slightly across the community. Some possible explanations for these changes include: changes in birthrates, increases in Asian immigration, and white flight.

Figure 5-7. Pre/Post Race and Ethnic Changes



Source: The American Community Survey (3 yr. avg)

HOUSING: FROM BOOM TO BUST

Southern California's urban geography exaggerated the worst features of the bubble. Many of Greater Los Angeles's residents surged across to the Inland Empire counties, which doubled in population 1990–2009 (DeLara, 2009). Working and middle class families fled the expensive coastal areas to the rapidly expanding suburban fringes to find jobs and affordable housing, seeking the American Dream, or what others have referred to as, the suburban dream. With this migration came a demand for housing that led to a gigantic wave of new construction, leading to skyrocketing home prices. With banks advancing subprime loans to middle- and working-class families who could otherwise

not afford them, Inland Empire homebuilders were able to generate new demand for their homes in a market that would otherwise have been unaffordable. During this time, black and Latino families were disproportionately more likely to purchase a home with a subprime loan than were whites (Wyly, et al., 2008; Wyly & Ponder, 2011). Moreover, high prices meant robust profits for banks and developers, perpetuating a housing boom cycle. As in the rest of the county, the bubble burst and the housing market collapsed, leading to a vicious wave of foreclosures.

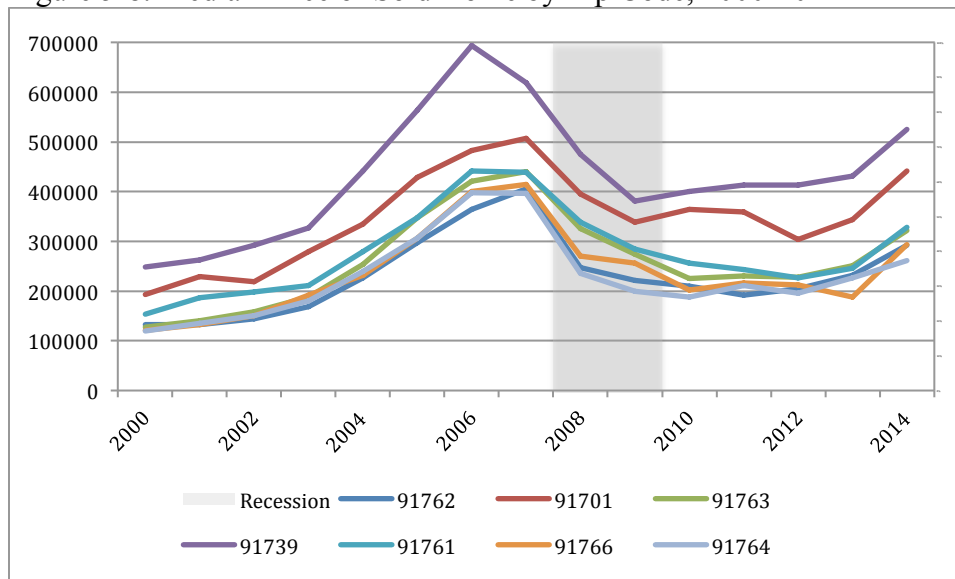
The housing price bubble and its vast collateralization of debt obligations, followed by its deflation in the century's first decade triggered a global financial crisis. Prices rose and fell more in California than in most of the country. More than any other place, California was the source of mass mortgage lending, ballooning home values and subprime operations, with the vast majority of new construction in Southern California during the bubble having taken place in the Inland Empire. When the bubble burst, California's housing market imploded (Said, 2009). It saw by far the largest absolute numbers of foreclosures, with close to 500,000 homes repossessed in 2007–2009 (Said, 2009). Housing overstretch was most exaggerated in the Inland Empire, where foreclosure rates above 50 per 1000 households were common. The region soon gained the reputation as the monument of the subprime crisis and a collapsed housing market.

For most households, the vast majority of wealth is held in their homes (Hodge, Dawkins, & Reeves, 2007). This is even greater for black and Latino households (Burton, Bonilla-Silva, Ray, Buckelew, & Hordge Freeman, 2010; Hodge et al., 2007; Krivo & Kaufman, 2004), which helps explain why household wealth for these groups plummeted significantly during the housing collapse (Kochar, Fry, & Taylor, 2011). Estimates from Zillow's real estate database reveals the extent of the decline in home

values in the CJUHSD community resulting from the crash. The percent of homes valued at less than \$300,000 once made up approximately 15% of the total housing stock across the Chaffey community (see table 7B in Appendix B). After the recession, the total skyrocketed to over 50%. While well over a third (36.6%) of the community's housing stocks was valued at over \$500,000 before the recession, approximately 9% of the total homes were valued at that after the recession (see table 7B in Appendix B). Figure 13 illustrates the extent of the decline across the seven zip codes that comprise the Chaffey community. Even Chaffey's wealthiest communities saw a drastic decline. 91739, Chaffey's wealthiest zip code, saw the median price of sold home decline from close to \$700,000 in 2006, to approximately 380,000 in 2009, a decrease of over 45%.

Chaffey's working class zip codes saw a much steeper decline. For example, zip code 91763 saw a decrease in median prices of home sold from \$440,000 in 2007 to approximately \$200,000 in 2010, a decline of almost 56% (Figure 5-8). As illustrated in figure 13, no zip code was left unscathed by what could only be described as an epic housing collapse. Though each of the seven zip codes has seen an increase since bottoming out in 2012, the housing market as of 2014 is nowhere near the level observed before the crash.

Figure 5-8. Median Price of Sold Home by Zip Code, 2000-2014



Source: Zillow Real Estate

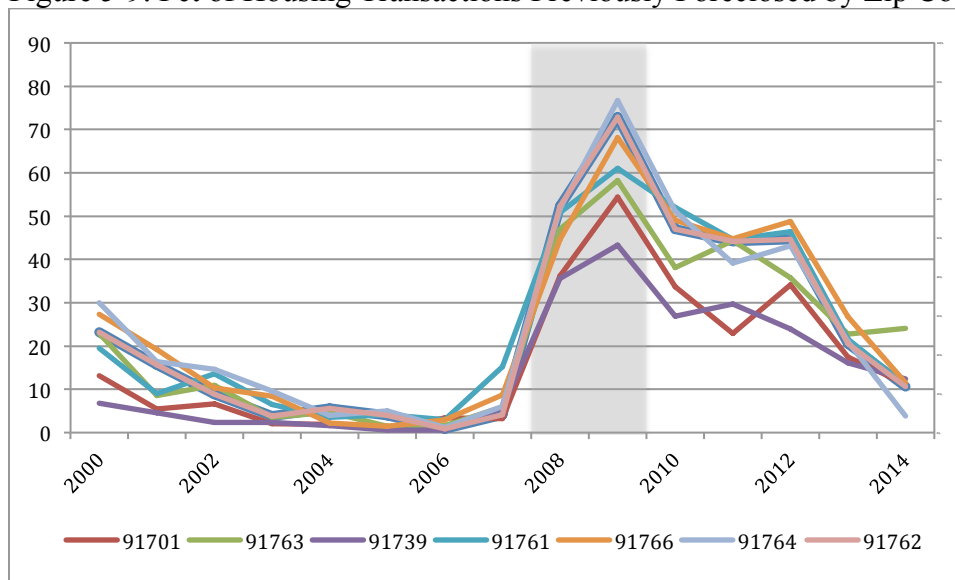
Note: Pricing is nominal and not adjusted for inflation.

Statewide, California saw an uptick in foreclosures beginning in 2004, but the major acceleration was not until 2007. The boom-bust character of the Inland Empire's real estate market made it particularly vulnerable to foreclosure, as households increasingly borrowed more money to purchase homes, finding that during the downturn that they owed more than their homes were worth (Swanstrom, Chapple, & Immergluck, 2009). Not surprisingly, by 2008, at the height of the downturn, the Inland Empire had over 112,000 foreclosure filings, over 8% of all housing units, ranking third in the nation (Swanstrom et al., 2009).

Zillow foreclosure data on the Chaffey community illustrates the extent of the economic shock across all zip codes in the community (see Figure 5-9 and Figure 5B in Appendix B). In 2006, less than 1% of all housing transactions were previously foreclosed, before skyrocketing in 2007, 2008, and 2009. In 2009, 43.3% of all housing transactions were at some point in foreclosure in Chaffey's wealthiest zip code, 91739 (Figure 14). In some of the community's working class zip codes, such as 91764, over

76% of all homes sold at the height of the recession were previously foreclosed. Generally speaking, the higher the percent of housing sales that were previously foreclosed is inversely associated the wealth of the community. In other words, while all zip codes experienced a shock to their local housing market, the shock was more severe in working class zip codes. This relationship also holds constant when looking at the total number of properties by zip code owned by banks (see Figure 6B in Appendix B).

Figure 5-9. Pct of Housing Transactions Previously Foreclosed by Zip Code, 2000-2014



Source: Zillow Real Estate

Many suburban areas hit hard by the foreclosure crisis lacked the large array of housing nonprofits and public sector planning capacity that are often present in central cities. This is particularly troubling considering that during the 2000s decade, major metropolitan suburbs became home to the largest and fastest-growing poor population in the nation (Berube, Kneebone, & Williams, 2013). As a result, suburban areas, particularly those on the outer-rings are grappling with problems that once seemed alien. This is certainly the case in the Inland Empire region, where the poverty rate has doubled over the past decade, these issues are compounded by a shortage of institutions helping

the poor and distances that make it difficult for people to get social services even if they can find them. One recent study of The Inland Empire region suggests that the region has fewer non-profits per capita than surrounding regions and California as a whole (Rogers, Martinez, & Silverman, 2009).

In sum, the rapid economic and demographic growth of this vast region has been met with a spectacular collapse in the local housing market where the shock has been felt far and wide. While the housing market that was beset by staggering rates of foreclosures continues to recover, the scares from the recession are likely to be long lasting with intergenerational consequences.

The following chapter begins the analysis of Chaffey Joint Union High School District (CJUHSD) administrative records, beginning with trends in district-wide graduation rates. This primary motivation behind the chapters that follow is to understand the impact of the largest economic downturn in more than half a century on youth in a regions largest high school district.

CHAPTER 6: GRADUATES IN THE GREAT RECESSION

Graduation rates across CJUHSD have been steadily increasing for at least a decade. But, as table 6-1 makes clear, rates are substantially lower for most minority groups, particularly those that are economically disadvantaged. In addition, the data reveal a strong and multifaceted relationship between the impact of the Great Recession and the exposure of the most vulnerable to cyclical changes in the economy.

EDUCATION AND THE KNOWLEDGE ECONOMY

As our economy continues to be transformed by the digital and information age, the social and economic implications of failing to earn a high school diploma are greater than ever (Orfield, Losen, Wald, & Swanson, 2004). It is no wonder that reducing the number of high school dropouts has become a policy focus in recent years, with numerous programs at the federal, state, and local levels having been established to help reduce the number of high school dropouts. Recognizing that the widespread failure to complete high school has become a national problem, particularly the gap between minority and non-minority students, energy has been put into addressing this problem. Since the federal No Child Left Behind (NCLB) Act of 2001, states have been required to incorporate graduation rates in their accountability systems for schools and districts (Rumberger, 2006).

To claim that there is near universal recognition that completing high school is a key milestone in an individual's schooling and future well being, is not a stretch. Decades of social science research has attempted to understand the underlying causes and consequences behind students' decisions for dropping out (Orfield, 2006). Although the latest data from the U.S. Department of Education suggests that graduation rates are on the rise, minority and economically disadvantaged students remain at risk for dropping out of high school. Many of the nation's public schools remain "dropout factories" as in some schools and communities up to 50% of all entering ninth grade students fail to graduate (Balfanz & Legters, 2004), though recent data show a significant drop in the number of "dropout factories".

Because of their failure to graduate high school, dropouts experience a glut of negative outcomes well into adulthood (Belfield & Levin, 2007). Compared to

high school graduates, dropouts experience higher rates of unemployment; lower life-time earnings; worse health outcomes and higher mortality rates; higher probability of criminal behavior and incarceration; increased dependence on social welfare; and are less likely to participate in civic responsibilities. The negative outcomes from dropouts generate substantial social and economic costs as federal, state, and local governments collect fewer taxes from dropouts (Orfield, 2006). The government also subsidizes higher criminal activity, poorer health, and other forms of public assistance of dropouts. In a report released by the California Dropout Research Project, it was estimated that over their lifetime, one cohort of dropouts in California results in total losses worth over \$46 billion (Rumberger & Lim, 2009).

Addressing the dropout crisis requires a nuanced understanding of why the nation's most vulnerable students slip through the cracks of the educational pipeline. Dropout research can generally be classified under two broad factors that predict whether students drop out or graduate from high school. First, are the factors associated with *individual* characteristics of students, and second, factors associated with the *institutional* characteristics of their schools, families, and communities (Rumberger & Lim, 2009). Although establishing causality in any study between any single factor and the decision to quit school is extremely difficult because of an array of proximal and distal factors related to student's lives, a large number of studies with similar findings suggest a strong association between dropping out and both individual and institutional factors.

INDIVIDUAL CHARACTERISTICS:

Individual factors that often predict whether a student drops out or graduates from high school fall into four areas: 1) educational outcomes, 2) behaviors, 3) attitudes, and

4) background (Rumberger & Lim, 2009). Educational performance outcomes include test scores and grades in high school and academic achievement measures in both middle and elementary school (with grades being a more consistent predictor than test scores); student mobility or transfers during middle and high school; and, being held back one or more grades (Allensworth, 2005; Kurlaender, Reardon, & Jackson, 2008). Behaviors and attitudes include students social (attendance, school activities, etc.) and academic engagement such as class preparation, and absenteeism, the most common indicator of student engagement (Rumberger, 2006).

INSTITUTIONAL CHARACTERISTICS:

Empirical research on dropouts has suggested that numerous structural characteristics of families, schools, and communities are powerful predictors of schools achievement and dropout behavior (Rumberger, 2006). Ever since James Coleman's classic study, structural characteristics of families, such as SES, have been widely recognized as the single most important contributor to success in school (Coleman, 1966). Schools, including school resources, structure, and practices are also widely acknowledged to exert powerful influences on student drop out behavior. In addition, empirical evidence suggests that differences in neighborhood characteristics can help explain the variation in graduation rates among communities disentangled from the influence of families (Sampson, Morenoff, & Gannon-Rowley, 2002; Wilson, 1987). Therefore, it not a surprise that prospective homebuyers pay close attention to property values, as a neighborhood's property value signals a quality of life ranking of the neighborhood (Logan, 1978). Therefore, it can be argued that in a sense, that housing acts as a proxy for "neighborhood effects".

DROPOUT DATA AND THE SEARCH OF CONSISTENCY:

High school graduation rates are incredibly difficult to measure accurately, with different methods producing contrasting and sometimes contradictory results. Data is often plagued with clerical problems and accounting procedures, and students that transfer in and out of programs add to the difficulty of obtaining precise estimates of the dropout rate (although in recent years data reliability has improved). The lack of effective communication and tracking procedures between public and private schools, and within school districts and across districts, leads to misidentification and inaccurate calculations that often plague graduation data (R. W. Rumberger & Lim, 2009). Simply put, both completion and dropout rates can vary dramatically depending on the method and source. One study suggested that the variation in rates arises from three distinct reasons (Kaufman, 2006). 1) Different rates are based on different population, 2) different rates are derived from different methods, 3) rates based on survey methods generally have large sample and non-sampling errors. The difference in rates among the different sources for completion and dropout information has generated confusion rather than illuminating clarity about some basic question. Hence, although The US Department of Education has made recent efforts to urge schools to use a more rigor, uniformity, and transparency in calculating graduation rates (U.S. Department of Education, 2011), caution should be used when interpreting these data. But there are often clear trends within the various measures.

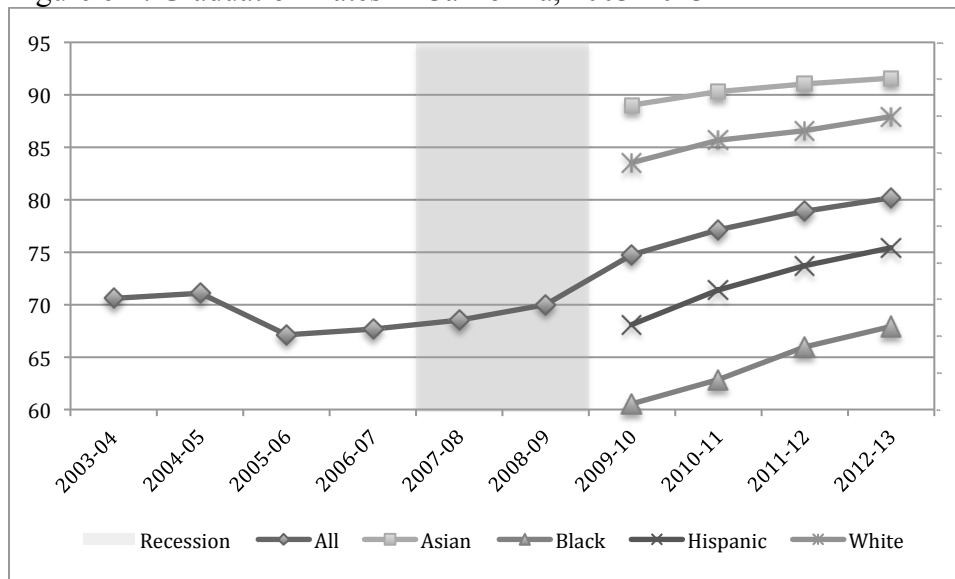
GRADUATION RATES RISING: BLIP OR TREND?

Even with these challenges and various approaches to calculating completion rates, graduation rates across the nation appear to be on the rise (Brounstein & Yettick,

2015). Figure 6.1 below illustrates the ten-year trend in graduation rates across the state. While low-income, Special Education, Limited-English-Proficient, and Black, Hispanic, and Native American students continue to graduate at rates well below the average, graduation rates across California have been going up for all these subgroups groups.

Although graduation rates have slowly increased dating back to the turn of the century, the rates began accelerating around 2008. The statewide graduation rate for all groups in 2008 was 70%, increasing to over 80% in 2013 (see Figure 4.1 below). The upward trend could be because of educational reform efforts, and better teaching. However, the fact that teenagers in the Great Recession were unlikely to get jobs or to keep jobs without a high school diploma may have kept some teenagers in school longer is another plausible explanation why the rates might have gone up. Empirical evidence from other studies suggests an educational opportunity cost at play that might even appear counterintuitive (Ananat, Gassman-Pines, & Gibson-Davis, 2011; Black, Mckinnish, & Sanders, 2005; Elder, 1974). That was in large part a reason why graduation rates went from a minority to a majority experience in the early and mid-20th century, as it became harder and harder for teenagers to get jobs both before and during the Great Depression (Elder, 1974). The logic is that is that by reducing the number of available jobs, economic shocks could lead to greater school enrollment and completion, thereby increasing educational attainment. In other words, an economic downturn could decrease the educational opportunity costs, *causing* graduation rates to go up.

Figure 6-1. Graduation Rates in California, 2003-2013



Note: The graduation rate represents the percentage of first-time 9th graders who earn a diploma within four years. A graduating cohort includes first-time ninth graders plus students that transfer into the cohort, minus students who transfer out, emigrate, or die during the four-year period. Data is based a sample of 420 California school districts with reported cohort graduation data.

Source: California Department of Education.

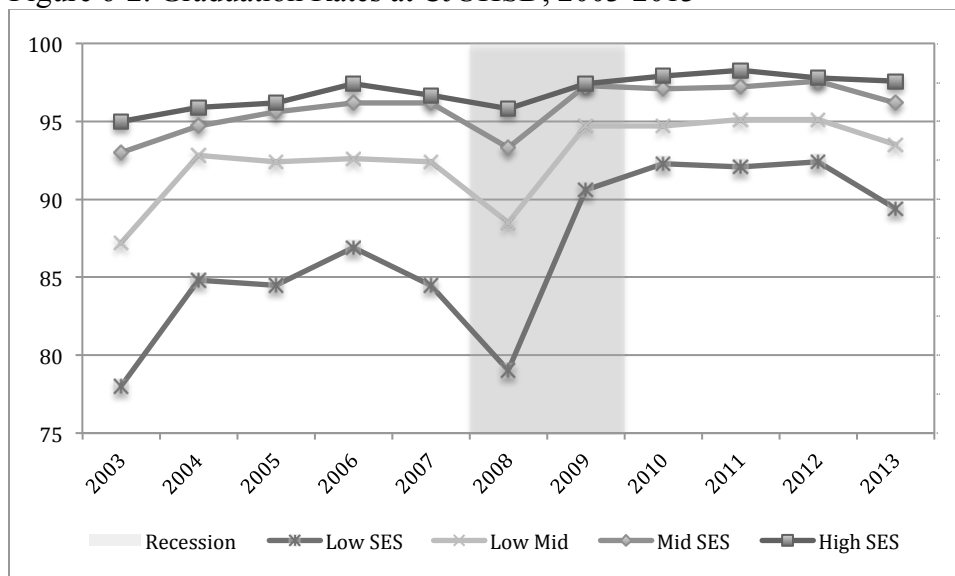
EMPIRICAL FINDINGS AT CJUHSD:

Although measurement has been improving, the lack of accurate data on high school completion makes it difficult to know how many students drop out of the vast majority of schools and districts. Graduation rates often rely on decisions of school principals and staff about how to classify and report students' lack of attendance. Under these circumstances, underreporting is highly likely (Orfield, 2006). To get an exact count, we would have to be able to follow students individually through all the grades, including where they moved, and then find out whether each of them actually received a high school diploma. To do this effectively would require major federal, state, and local efforts. Nonetheless, while CJUHSD's administrative data are longitudinal, many of the students that were assigned ID numbers in ninth grade, attrit from the sample in 10th or 11th grade for unknown reasons, grossly underestimating the officially reported

completion rates. In other words, officially reported dropout rates should be interpreted as the percent of seniors at the CJUHSD that have failed to complete high school.

Graduation rates at Chaffey Joint Union High School District (CJUHS) suggest an interesting relationship between educational opportunity and the broader economy. Figure 6-2 below illustrates how cohorts, disaggregated by SES, responded to the Great Recession. The data clearly shows that lower SES groups experienced an initial shock as the Recession hit in 2008, while the higher SES were generally safe from the initial shock. For the lowest SES group, graduation rates for the senior class declined from 85% in 2007 to 79% in 2008, a dramatic decrease synonymous with the onset of the Great Recession. The low-mid SES group showed a less stark but similar pattern, with the senior graduation rate declining from 92.4% in 2007 to 88.5% in 2008. The data suggests that the 2008 senior class in the higher SES groups were by in large able to absorb the economic shock with minimal disruption.

Figure 6-2. Graduation Rates at CJUHSD, 2003-2013



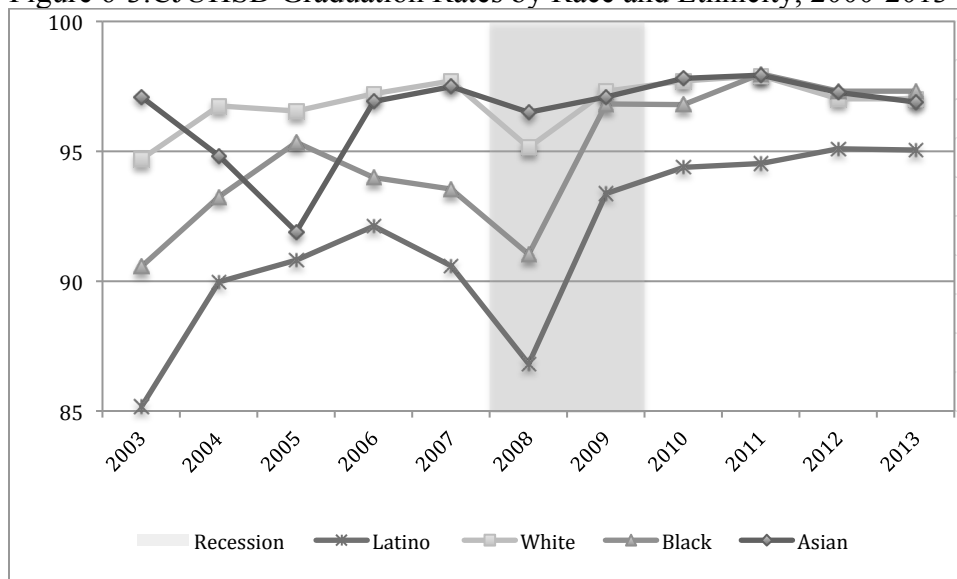
Source: CJUHSD Administrative Records

Interestingly, the graduation rate gaps by SES group appear to be decreasing after 2008, the year in which the gap is widest. The dramatic gaps in 2008 are likely a reflection of household vulnerability to economic downturns. Research suggests that households with low levels of human and financial capital, were disproportionately affected by the Great Recession (Shierholz, 2014). The narrowing of the gaps visible in figure 6-2 above appears to be part of the so-called “silver lining” to economic downturns (Ananat et al., 2011). The logic is that by reducing the number of available jobs, economic shocks such as the Great Recession could lead to greater school enrollment and completion, thereby increasing graduation rates. In other words, an economic downturn could decrease the educational opportunity costs. Several clever studies have tested this theory (Black et al., 2005). The trend of increasing graduation rates appears to be consistent across the nation, where despite the various methods of calculating graduation rates that often produce contradictory results, the data points to graduation rates being on the rise for all groups (Brounstein & Yettick, 2015). Whether or not the narrowing of the gaps is a blip or long-term trend is difficult to know, particularly as the economy continues to recover.

Figure 6-3 below illustrates similar patterns found in other research, namely that whites and Asians consistently outperform blacks and Latinos. Much of this is often attributed to social class, where recent studies purport that class has now become more important to a child’s education than race (Garland, 2013). In addition, recent research on the relationship between family socioeconomic characteristics and academic achievement has suggested that family income has become a more consequential predictor of academic achievement than race (Reardon, 2011). Graduation data from CJUHSD suggests a more nuanced picture, meaning, the graduation gaps by race and ethnicity can’t solely be

explained by SES status. Figure 1B in Appendix B shows the distribution of students by race and SES status, where white and black have very similar SES backgrounds. Yet black graduating seniors experienced a more substantial decline in graduation rates than their white counterparts. From 2007 to 2008, blacks saw a graduation rate decline from approximately 94% to 91%, while whites experienced a decline from 97% to 95%. Asians graduation rates remained stable through the recession while Latinos experience the most notable decline of all racial groups from 91% to 86%.

Figure 6-3.CJUHSD Graduation Rates by Race and Ethnicity, 2000-2013



Source: CJUHSD Administrative Records

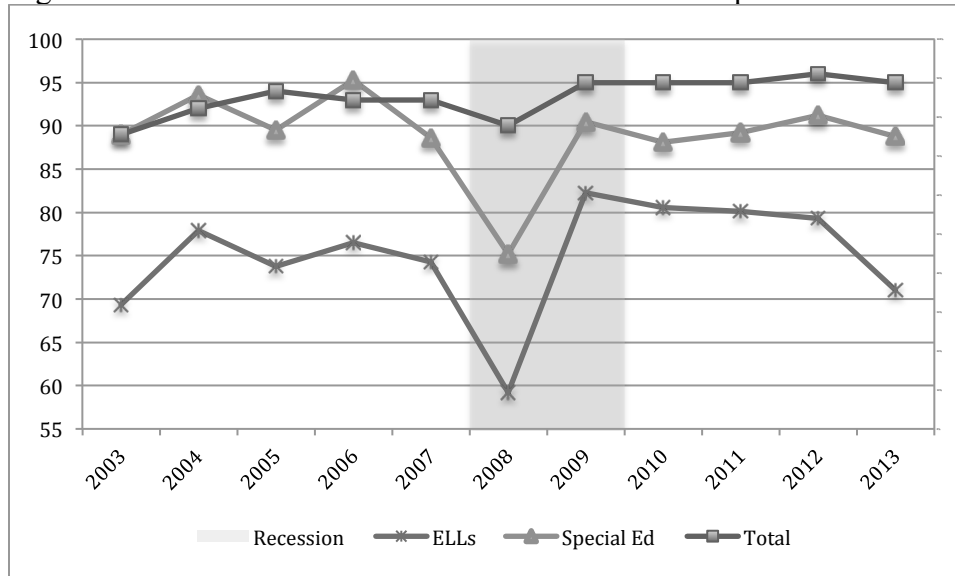
As mentioned earlier, graduation rates vary widely among student groups. Both English Language Learners (ELLs) and Special Education students are two of the most impacted and vulnerable groups. Current officially classified ELL students comprise approximately 11% of students nationally, over 20% in all public school students in California, and approximately 15% of all students at CJUHSD, with many more who were once ELLs and are now classified as proficient. In California, the vast majority (85%) of ELLs are Spanish speakers (California Department of Education, 2014). A

substantial body of research repeatedly shows that ELL students are about twice as likely to drop out as native and fluent English speakers (Callahan, 2013; Gibson, Gandara, & Koyama, 2004). The dropout risk is particularly high among ELLs not only because they are learning English, but because these students are more likely than the general population to be, poor, minority, and born to low SES immigrant parents, each a status group at heightened risk of failing school (Callahan, 2013). Figure 4 below illustrates the extent to which the group is vulnerable to economic shocks. From 2007 to 2008, the graduation rate for senior ELL students decreased dramatically from 74% to 59%, before increasing substantially after 2008.

In addition to ELLs, special education students, who represent 11% of all school-age students nationally, 9% in California, and close to 12% in CJUHSD are traditionally also at high risk for dropping out. Students that receive special education services via an Individualized Education Program (IEP) are a diverse group, with disabilities ranging widely from speech impairments, learning disabilities, mental retardation, socio-emotional disturbances, visual impairments, hearing limitations, and brain trauma (Thurlow & Johnson, 2011). Figure 6-4 illustrates the stark decline in graduation rates for this group. Between 2007 and 2008, the group's graduation rates decreased from almost 89% to 75%. Similar to the other groups that are generally at risk for dropping out, the declines actually began in a year before the one of the Great Recession in 2006. The time period between 2005 and 2006 is largely seen as the beginning of the housing market crash, which might explain the downward trend before the official beginning of the Great Recession. For example, from 2006 to 2008, the graduation rates for Special education students fell from over 95% to approximately 75%, by far the steepest two-year decline

of any other group. The graduation rate change for ELLs during the same two-year period was also stark, falling from 76.5% to just over 59%.

Figure 6-4. Graduation Rates at CJUHSD for ELL and Special Edu. Students



Source: CJUHSD Administrative Records

HIGH-RISK SCHOOLS:

Much of the change in graduation rates is concentrated in schools that I have defined as high risk (see table 6-1 for definitions). A substantial decrease in Latino graduation rates from 2007 to 2008 could found in two of the three high-risk schools (table 6-1A), and not in the middle or low-risk schools. Meanwhile, by 2009, the Latino population's graduation rate in each of the high-risk categories showed a statistically significant increase. These trends suggest a pattern that was discussed earlier in this section, that 2008 was an initial shock for the Latino senior class, but that the senior class in 2009 saw a decrease in the educational opportunity cost potentially causing a surge in the graduation rate. Whether this is a temporal surge for the group is unclear, mainly because of the limited number of data points. Nonetheless, the data do show that Latino

graduation rates decreased slightly by 2012. Similar patterns could be found with whites, Asians, and blacks, however the changes are not statistically significant

Table 6-1. Percent Graduating by Race and Ethnicity, 2007, 2008, 2009, and 2012

Table 6-2. Percent Graduating SES, 2007, 2008, 2009, and 2012

	Latino				White				Black				Asian			
	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012
Chaffey	84.3	81.8	92.6**	88.6**	96.8	93	93.9	94.8*	84.6	59	94.4	95.8	100	83	100	95
Montclair	93.5	87.2**	96.8*	96.3	97.5	90.2	100	95.7	86.9	80.9	100	95.7	100	94.1	100	100
Ontario	88.8	89.56	95.3**	92.3	94.8	91.9	100	91.6	89.2	76.1	96	95.7	100	94.4	93.7	94

	Low SES				Mid Low SES				Mid SES				High SES			
	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012
Chaffey	82.5	74.7*	91.6**	84.5**	85.8	85.1	92.8*	92.1*	94.4	91	95.8	94.8	89	85	92.4	94.8
Montclair	89.4	85.1	96.4**	95.6**	95.8	86.2**	97.5	98	97.5	90.9	98.1	98.9	98.1	91.3	98.7	92.1*
Ontario	85.9	89.6	94**	90.4*	90.1	89.1	97.5*	92.8	93	90	98.1	95.5	94.5	88.6	96.6	95.7

Graduation rates by SES groups exhibit an interesting pattern. The students at Chaffey High, the poorest of the three high-risk schools, experienced a statistically significant decline in senior graduation rates in 2008. The declines were overwhelmingly clustered in the low SES group, who experienced a decline from 82.5% to 74.7% from 2007 to 2008 (see table 6-2). Some of the same declines could be found with the mid-low SES groups across the high-risk schools. Meanwhile, a significant surge in graduation rates was found in each for the schools in 2009 for both the low and mid-low SES groups. The most dramatic increases in each of the schools occurred for the low SES group. At Chaffey, the group's graduation rate increased from 82.5% in 2007 to almost 92% in 2009. At Montclair, the increase was from 89% to 96% during the same period, and at Ontario the group's rate went up from under 86% to 94%. While the dramatic increases seen in 2009 did seem to lose momentum by 2012, the 2012 rates were still significantly higher than in 2007 (see table 6-2).

Perhaps not surprisingly, English Language Learners (ELLs) and Special Education students have seen statistically large changes in their graduation rates. ELLs specially, follow similar trends to other groups that tend to be "at-risk". While the graduation rates appear to decline for this group between 2007 and 2008, only in one school is the difference statistically significant (table 4-3), where the rate plummeted from 89% to 61.7%. In general, this group's graduation rate skyrocketed in 2009 across each of the high-risk schools. This substantial fluctuation suggests that this group's graduation is in large part affected by the economic conditions. Data on Special Education students suggests similar patterns. That is, an initial decrease in 2008

graduation rates with the onset of the recession, before increasing substantially in 2009 and 2012 (see table 6-3).

Table 6-3. Percent Graduating by ELL and Spec. Edu. Status, 2007, 2008, 2009, 2012

	ELL				Special Educ.			
	2007	2008	2009	2012	2007	2008	2009	2012
Chaffey	66.1	57	86.4**	76.1	69.7	56.4	83.3	85.7*
Montclair	89	61.7**	89.8	90.3	83.3	56.7*	93.9	96.9*
Ontario	78.3	77.7	90.6**	71.5	87.2	81.2	97.4*	85.1

MID-RISK SCHOOLS:

Interestingly, much of the changes seen for low and mid-low SES groups at the high-risk schools could not be observed in the mid-risk schools, even for Latino and low SES students. However, Special Education and ELL students did experience substantial changes to their graduation rates. At Alta Loma High School, both groups saw statistically large declines from 2007 to 2008. Data displayed on table 4.4 shows that ELL student's graduation rates plummeted from 2007 to 2008, declining from 99% to 75%. For Special Education students, the rate fell from 96.7% to 83% during the same time period. These groups often experience an array of documented academic struggles, often attending schools with a high concentration of low achievement levels that often lack qualified or experienced teachers. One study found that districts with a higher than average proportion of ELL students have graduation rates about ten points lower than districts with fewer ELLs. A margin about half this size separates districts with high and low numbers of special education students (Swanson, 2004).

Table 6-4. Percent of Graduating by Race and Ethnicity, 2007, 2008, 2009, 2012

	Latino				White				Black				Asian			
	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012
Alta Loma	96.3	95.6	97.6	96.3	98.1	95.1	98.2	95.7	98.8	91.9	100	97.3	100	88.4	100	95.8
Colony	94.9	95.6	93.4	94.8	96.4	97.4	97.2	96	93.3	89	97.1	93.8	N/A	100	88	100

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 6-5. Percent of Graduating by SES Status, 2007, 2008, 2009, 2012

	Low SES				Mid Low SES				Mid SES				High SES			
	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012
Alta Loma	96.8	93.3	93.8	93.3	93.6	93	98.5	96	98.1	94.7	99.3	96.8	97.8	96	98.4	96.7
Colony	87.5	89	88.3	88.4	97.9	96.7	93.6	90.8	95.7	96.7	96.1	96.5	96.3	94.2	96.4	96

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 6-6. Percent Graduating by ELL and Spec. Edu. Status, 2007, 2008, 2009, 2012

	ELLs				Special Edu.			
	2007	2008	2009	2012	2007	2008	2009	2012
Alta Loma	99	75*	81.2	87.5	96.7	83*	94.8	93.3
Colony	92	79.4	75.8	67.6*	88.9	86.3	81.8	83.3

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

LOW-RISK SCHOOLS:

Data from the lowest risk schools reveals stable graduation rates for all groups across each of the selected years. While some fluctuation can be observed in tables 6-7 through 6-9, none of the changes were statistically large. The fact that even ELLs and Special Education students, two groups that consistently have some of the lowest graduation rates, did not see changes to their rates in these schools, suggests that perhaps the low-risk schools served as a buffer against the impact of the downturn. In these schools, students that are part of traditionally vulnerable subgroups do not show statistically large changes in graduation rates during the economic recession.

Table 6-7. Percent Graduating by Race and Ethnicity, 2007, 2008, 2009, and 2012

	Latino				White				Black				Asian			
	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012
Etiwanda	96.9	96.5	98.9	99.1	98.4	96.6	96.3	96.6	95.5	97.8	97.6	97.8	96.4	97.8	100	98.2
Los Osos	97.2	95.3	98.2	97	97.8	96.7	99	98.1	96.6	100	98.1	96.2	96	91.3	98.7	98.1
Rancho	98.5	99	97.5	99.3	99.1	99.1	98.6	98.3	96.9	95.4	99.2	99.3	97.7	97.9	100	100

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 6-8. Percent Graduating by SES Status, 2007, 2008, 2009, and 2012

	Low SES				Mid Low SES				Mid SES				High SES			
	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012	2007	2008	2009	2012
Etiwanda	95.4	91.4	95.8	100	96.2	95.6	97.4	92.1*	97.7	95.8	98.3	98	96.6	99.2	98.3	98.3
Los Osos	92.8	94.4	100	88.24	94.9	91.2	100	96.4	97.8	96.9	97.7	98.3	97.8	98	99.1	98.5
Rancho	95.8	100	94.4	100	97.8	97.3	97.3	98.1	98.7	97.3	99.1	100	98.8	97.6	99.2	98.9

Table 6-9. Percent Graduating by ELL and Spec. Edu. Status, 2007, 2008, 2009, 2012

	ELLs				Special Edu.			
	2007	2008	2009	2012	2007	2008	2009	2012
Etiwanda	72.7	62.5	100	77.8	90.6	90.9	93.9	92.1*
Los Osos	85.7	71.4	77.7	100	90.7	87	98.2	95.9
Rancho	76.9	87.5	100	86.6	95	95.5	97.7	100

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

CONCLUSION:

The evidence thus far indicates that the relationship between economic shocks and high school graduation rates vary quite dramatically by both subgroups and type of school. At least one possible explanation is that schools seem to be protective, mediating the potential impact of the recession. Although decades of social science research has confirmed that the context of schools matters greatly, there is also substantial evidence of schools institutional capacity to make a difference (Whitehurst, Chingos, & Gallaher, 2013). Thus, it is possible that the low-risk schools in particular served as a protective barrier for the most at-risk subgroups. Meanwhile, the high-risk schools, those schools that are most segregated by race, social, class, and language status, cannot offer the same institutional capacity as some of the other schools. A large body of research documents the disadvantages to minority children being taught in segregated classrooms, and the long and short term educational benefits of integration for minority students (Orfield & Lee, 2005; Orfield & Lee, 2009).

It is tempting to read this chapter as evidence for economic shocks increasing graduation rates for the poorest and most underserved children. Certainly this dataset, as

well as past research is consistent with this understanding. However, many of the other patterns in this chapter are not fully consistent with the simple explanation that because of the opportunity cost of choice, economic downturns cause graduation rates to go up. While graduation rates do appear to increase substantially following the onset of the recession, the data described in this chapter also show that for the cohort on track to graduate in 2008, a substantial shock was experienced, particularly for students belonging to the most vulnerable subgroups. Although it is certainly a positive sign that 2008 appears to be the only year that the most severe economic downturn since the Great Depression negatively impacted high school completion rates, addressing the needs of students during the most vulnerable period is of utmost importance.

In sum, the forces at work behind the changing graduation rate are likely complex. However, it appears that education operates counter cyclically, where economic downs positively impact graduation rates. Certainly more research to understand the causes of these trends is necessary. Equally important, however, is research to understand the consequences of these patterns, particularly for cohorts in school in the midst of an economic downturn. Policies that curb the initial shock of economic downturns, especially for disadvantaged students, is not just an educational issue, but one of great social concern. Each student that falls through the educational pipeline without a high school diploma is much more likely to be unemployed, earning less, be incarcerated, and have a failed marriage in adulthood than their high school graduating peers.

The following chapter will investigate patterns of school mobility during the Great Recession as the housing crisis that ensued forced many vulnerable workers and

their families to relocate. People moved in metropolitan areas with the highest unemployment and foreclosures rates (Stroll, 2013), making the examination of school mobility at CJUHSD particularly interesting.

CHAPTER 7: THE FORECLOSURE CRISIS AND SCHOOL MOBILITY

As mentioned in the previous chapter, perhaps no single event in the adolescent life course is more strongly associated with later social and economic success than dropping out of school (Winship & Korenman, 1999). Among the many risk factors for educational failure for American students in secondary schools are frequent residential moves and the school changes that often accompany those geographic relocations (Hanushek, Kain, & Rivkin, 2004; Rumberger & Lim, 2009). Although some of the differences in educational performance between mobile and non-mobile students can be attributed to differences such as race/ethnicity, family SES status, and family structure, all of which consistently strongly predict educational outcomes, a substantial body of research reports significant negative effects of student mobility on a wide range of educational outcomes. Behaviorally, a single transfer between schools for children in second through fifth grade is strongly correlated with a lack of classroom participation and antisocial tendencies at the new school (Gruman, Harachi, Abbott, Catalano, & Fleming, 2008). In terms of instruction time, one study using Metropolitan Nashville Public Schools data found that just one move between the third and eighth grade is associated with the loss of ten instructional days in reading and math the year of the transfer. For economically disadvantaged students, the deficit was even more stark (Grigg, 2012).

Precise estimates of highly mobile children are difficult to come by, as this group of students are frequently omitted from studies and administrative data sets because they are difficult to track (Beatty, 2010). In Theory, residential mobility may help children and families if they move to better neighborhoods and schools, where the benefits outweigh the drawbacks of adjusting to a new environment (Scanlon & Devine, 2001). However, in one study using nationally representative Early Childhood Longitudinal Study, Kindergarten (ECLS-K) data, the authors suggest a strong relationship between children's residential stability and family SES. The percentage of children living in only one home in the 5 years since birth was 50% higher for those in the top SES quintile than in the bottom quintile. The percentage that lived in 4 or more homes over this period was at least 20% for all SES groups (Burkam & Le, 2001). Since residential moves often result in school moves, these findings suggest relatively high levels of school changes.

If tracking these students is difficult, understanding the reasons for their moves is even more challenging. It is likely though, that a significant number of them whose families move because of housing pressure and other economic stresses (Beatty, 2010). Alexandra Beatty (2010) provides a starting point for distinguishing between several types of student mobility. She identifies six types. 1) Residential moves necessitates a school move occurring from job loss, family breakup, domestic violence, eviction, housing foreclosure, or some other disruption. 2) School moves that occur from structural transitions, such as children advancing from elementary to middle school. 3) School changes instigated by parents wanting to seek a better school for their children. 4) School mobility related to school behaviors (e.g. expulsion). 5) Mobility related to special education placement. 6) Mobility caused by natural disasters (e.g. hurricane, earthquake).

MOBILITY UNDERMINING STUDENT ACHIEVEMENT:

There are many pathways in which school level mobility can harm teaching and learning. Some studies have suggested that when a large number of students enter a school during the year, it is difficult to sustain effective instruction (Kerbow, 1996).

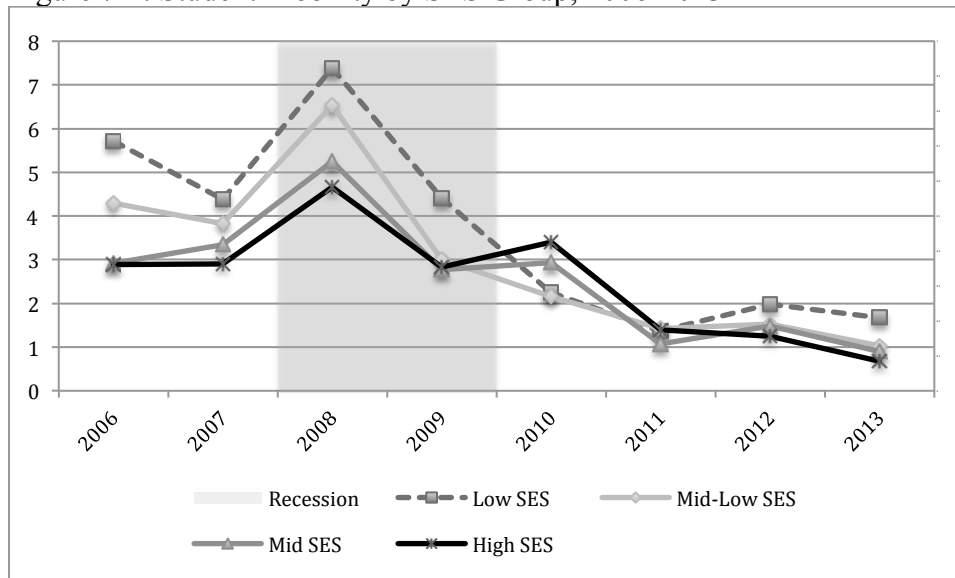
Using a distinctive longitudinal data set from Chaffey Joint Union High School District (CJUHSD), I provide and compare estimates of four types of student mobility. I consider students who had the following end of year status. *1) Left school (truant), 2) moved to Verified Public School in California, 3) moved to verified US School (outside CA), 4) moved to foreign county.*

EMPIRICAL FINDINGS AT CJUHSD:

Data for this analysis were compiled from the CJUHSD administrative files for the academic years 2005-2006 through 2012-2013. The analysis of the data reveals that perhaps not surprisingly, before the Great Recession, low SES students had the highest mobility rates. Figure 7-1 below illustrates that pre-recession trends conformed to what literature suggests, namely that the low SES groups are more vulnerable to residential moves than all other groups. However, the Great Recession brought on statistically significant changes for all SES groups between 2007 and 2008. In 2007, 4.4% of all low SES students left their schools, with the rate skyrocketing to 7.4% in 2008. Students from the mid-low SES group saw an increase from 3.8% to 6.5%. The mid SES group had an increase from 3.8% to 5.3%, while the high SES group of students saw an increase from 2.9% to 4.6% during the same time period. The district-wide data presented in figure 7-1

below suggests that no SES group was immune to the residential shock of the Great Recession.

Figure 7-1. Student Mobility by SES Group, 2006-2013



Note: Statistically significant changes ($p < 0.01$) for all racial and ethnic groups between 2007-2008
Source: CJUHSD Administrative Records

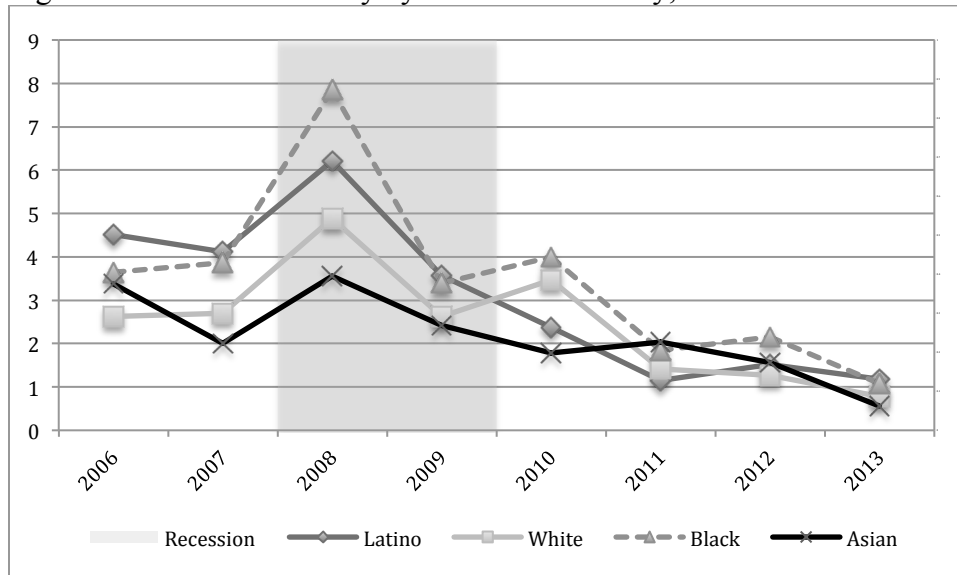
RACE IS DIFFERENT THAN CLASS

Racially, the district-wide mobility rates tell a different story than those of the varying SES groups. If SES status were to predict mobility rates for students at CJUHSD then one would expect Latinos to have the highest rates, followed by whites and blacks, and than Asians⁹. This however, is not supported by the descriptive data. Figure 7-2 below suggests that blacks by far experienced the most substantial shock during the Recession, although the groups SES distribution is similar to that of white students and far less poor than Latinos. Mobility rates for black students increased from 3.9% in 2007 to 7.9% in 2008, an increase of over 100%. The group's particularly high mobility rate is

⁹ See race by SES distribution of data.

most likely because blacks were disproportionately recipients of predatory lending. Mobility rates for Latino students grew from 4.1% to 6.2%, followed by whites that saw an increase from 2.7% to 4.8%. Asian students also saw a substantial increase in mobility from 2007 to 2008, increasing from 2% to 3.5%. Each group's rise in mobility rates between 2007 and 2008 was statistically significant.

Figure 7-2. Student Mobility by Race and Ethnicity, 2006-2013

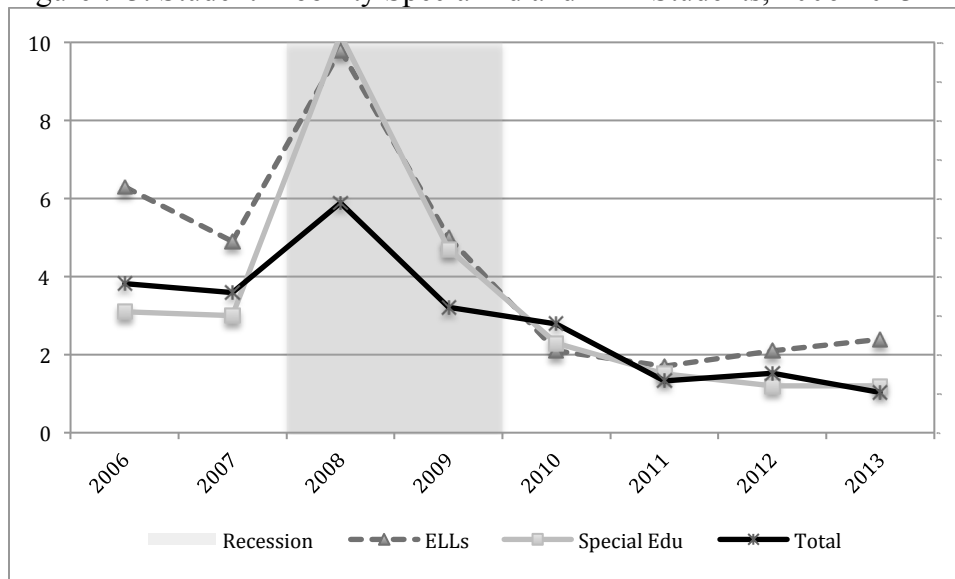


Note: Statistically significant changes ($p < 0.01$) for all racial and ethnic groups between 2007-2008 (Asians at 95%).

Source: CJUHSD Administrative Records

As with other schooling outcomes, both ELLs and Special Education students were CJUHSD's most vulnerable subgroups during the Great Recession- at least in terms of mobility (see figure 7-3 below). Between 2007 and 2008, ELL students saw their mobility rates increase from 4.9% to 9.8%, an increase of 100%. Special Education students saw an even more dramatic rise in mobility rates during the same time period, increasing by over 240%, from 3% to 10.2%. While all subgroups experienced growth in mobility rates during the recession, the rates were certainly not equally distributed.

Figure 7-3. Student Mobility Special Ed and ELL Students, 2006-2013



Note: Statistically significant changes ($p < 0.01$) for all racial and ethnic groups between 2007-2008
Source: CJUHSD Administrative Records

Given that the observed district-wide trends show that student mobility rates spiked in 2008, before falling in 2009, I examine mobility rates across individual schools and subgroups using three data points- 2007, 2008, and 2009. Table 7-1 below summarizes the data for individual schools across CJUHSD. The data reveals that each of the schools experienced notable changes to its student mobility rates between 2007 and 2008, before regressing back toward pre-recession levels in 2009. It appears that each of the three clusters of schools was impacted by the economic downturn, and that no school was left unscathed by the residential disruption of the Great Recession. That is, each of the high, mid, and low risk schools were all exposed to the economic shock, as defined by student mobility. In the following section, I examine the mobility rates for the individual subgroups across of the school clusters, with a particular interest in observing whether residential and school mobility is related to race and socio-economic backgrounds.

Table 7-1. Mobility Rates across CJUHSD Schools, 2007, 2008, and 2009

	2007	2008	2009
High Risk			
Chaffey	3.38	5.31	3.86
Ontario	1.42	3.56	1.29
Montclair	3.75	5.56	2.49
Mid Risk			
Colony	6.18 ¹⁰	6.49	1.89
Alta Loma	2.68	4.41	4.01
Low Risk			
Los Osos	2.27	4.14	3.16
Etiwanda	2.76	5.54	2.02
Rancho	2.22	4.72	1.93

HIGH-RISK SCHOOLS:

Patterns of economic shock resulting in increases in mobility rates can be observed in the three clusters of schools (see pg. 41 for definitions). For the different racial and ethnic groups in the high-risk schools, Latinos and blacks experienced statistically large changes to their mobility rates, suggesting that the changes have been caused by something other than mere random chance. Latinos specifically, saw substantial increases in each of CJUHSD's high-risk schools. At Chaffey, the group's rose from 2.9% in 2007 to 4.8% in 2008. At Montclair and Ontario High, the group's rate increased from 3.1% to 4.2% and from 1.3% to 3.5%, respectively. Though much smaller in numbers, Blacks saw statistically significant increases in two of the three high-risk

¹⁰ 2006 rate is 3.37%.

schools (see table 7-2 below). While whites experienced an uptick as well, the changes were not statistically significant. Asians meanwhile, did not show any changes in mobility rates during the same period.

Table 7-2. Student Mobility Rates at High Risk Schools by Race and Ethnicity, 2007-2008

	Latino			White			Black			Asian		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
Chaffey	2.9	4.8**	3.9	4.1	6.9	1.4*	3.9	10.8*	6.96	3.3	7.8	4.9
	(0.003)	(0.004)	(0.004)	(0.009)	(0.014)	(0.006)	(0.017)	(0.028)	(0.023)	(0.047)	(0.051)	(0.034)
Montclair	3.1	4.2*	2.5	2.0	4.4	2.0	5.7	14.6*	5.3	0	1	2.5
	(0.004)	(0.004)	(0.003)	(0.019)	(0.015)	(0.009)	(0.022)	(0.038)	(0.023)	(0.010)	(0.016)	(0.014)
Ontario	1.3	3.5**	1.4	2.1	*6.3	*0	1.7	2.5	0.8	0	0	1.5
	(0.015)	(0.016)	(0.014)	(0.011)	(0.019)	(0.0)	(0.011)	(0.014)	(0.007)	(0.0)	(0.0)	(0.014)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 7-3. Student Mobility Rates at High Risk Schools by SES Group, 2007-2008

	Low SES			Mid Low SES			Mid SES			High SES		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
Chaffey	3.1	5.6**	4.3	3.3	4.8	2.99	2.5	4.2	3.2	3.2	7.7*	5.1
	(0.005)	(0.006)	(0.005)	(0.006)	(0.007)	(0.005)	(0.005)	(0.008)	(0.006)	(0.009)	(0.014)	(0.011)
Montclair	2.8	3.5	3.1	2.5	5.6**	2.2	3.3	5.3	1.9	4.5	4.5	2.1
	(0.005)	(0.005)	(0.004)	(0.005)	(0.009)	(0.005)	(0.009)	(0.010)	(0.006)	(0.012)	(0.012)	(0.008)
Ontario	0.9	3.7**	1.4	1.5	3.4*	0.8	1.9	3.2	1.7	1.9	3.3	1.2
	(0.002)	(0.005)	(0.003)	(0.004)	(0.007)	(0.003)	(0.006)	(0.008)	(0.006)	(0.008)	(0.011)	(0.006)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Each of the SES group's experienced changes to their mobility rates between 2007 and 2008. Both Chaffey and Montclair High exhibited especially high rates for each of the groups (table 7-3). At Chaffey, both the low and high SES groups saw the most substantial increases in mobility, a pattern that is not apparent in the other high-risk schools. Generally, the low and mid-low SES groups saw the highest increases in each of the schools, suggesting that these groups of students were most vulnerable to the economic shock. Although the low SES groups experienced some of the most substantial increases, at both Chaffey and Montclair, the poorest of the high-risk schools (see pg. 41 for definitions), the group had the lowest mobility rates overall. At least one possible explanation for this is that while foreign-born unskilled workers in low-wage industries that require no formal education were hit hard by the shock (e.g. construction), these workers were more likely to take other unskilled work for lower wages during the downturn. While this group might take menial jobs, the jobs would place them solidly in the middle of the pack back home. In addition, few of the low-skilled workers had much wealth, making the collapse of stock and housing market unimportant for their choices over whether and how much to work (Hanson, 2009). Another factor that keeps immigrant participation in the labor force strong relative to natives is the absence of a social safety net for many of the foreign-born as this group is traditionally much less likely than natives to use Medicaid or the Supplemental Nutrition Assistance Program (Ku & Bruen, 2013). In addition, this group is also traditionally much more likely to be in the rental housing market.

Both Special Education and ELL students saw statistically significant increases in their mobility rates between 2007 and 2008, following a general trend of vulnerability to economic shocks. Among the high-risk schools, Special Education student by far experienced the most substantial rise in mobility rates (see table 7-4). At Chaffey, the group's rate increased from 2.5% to 12.6%, at Montclair, from 3.8% to 12.6%, and at Ontario high the rate rose from 1% to 10% between 2007 and 2008. ELLs exhibited substantial increases as well, though not as stark. Both these groups often experience an array documented academic struggles, often attending schools with a high concentration of low achievement levels, and that often lack qualified or experienced teachers.

Table 7-4. Student Mobility Rates at High Risk Schools by Special Ed/ELL Students, 2007-2008

	Special Edu			ELLs		
	2007	2008	2009	2007	2008	2009
Chaffey	2.5	12.6**	12.4**	3.0	6.4**	6.9
	(0.008)	(0.016)	(0.015)	(0.006)	(0.009)	(0.008)
Montclair	3.8	14.3**	5.6	2.4	6.4**	3.9
	(0.013)	(0.022)	(0.011)	(0.006)	(0.010)	(0.008)
Ontario	1.0	10.0**	1.1	1.1	5.7**	1.0
	(0.005)	(0.016)	(0.004)	(0.003)	(0.008)	(0.004)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

MID-RISK SCHOOLS:

As in the high-risk schools, in the mid-risk schools Latinos and blacks were the racial and ethnic group with the highest mobility rates in 2008, at 3.9% and 8.2%, respectively (see table 7-5). The dramatic increase in mobility rates for black students raises several questions about the group's position in the local housing market. It is likely

that middle class black families were in the most precarious position in the local housing market, disproportionately relying on subprime loans (Molina, 2012). In addition, at Alta Loma High, whites were the only racial group that experienced a statistically significant increase in mobility rates. At Colony High, both blacks and Latinos saw a rise in mobility rates, though none of the changes were statistically large.

Mobility data by SES group does not reveal any particular pattern (see table 7-6). The lowest SES group generally had higher mobility rates than the other SES groups, though not all data points fall in line with this pattern. At Colony High at least, much of the spike in mobility happened between 2006 and 2007 as opposed to 2007 and 2008, making a 2007 to 2008 comparison not very telling of the impact of the downturn. The particularly high mobility rate for low SES students at the mid-risk schools is particularly troubling.

Table 7-5. Student Mobility Rates at Mid Risk Schools by Race and Ethnicity, 2007-2008

	Latino			White			Black			Asian		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
Alta Loma	2.6	3.9	3.4	1.8	3.5*	3.7	4.5	8.2	9	0	1.0	2.9
	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)	(0.005)	(0.014)	(0.018)	(0.019)	(0.010)	(0.017)	(0.016)
Colony	6.3	6.9	2.0**	5	4.9	2.1**	5.4	7.5	1.4**	1	1	0
	(0.007)	(0.007)	(0.003)	(0.012)	(0.011)	(0.007)	(0.011)	(0.014)	(0.006)	(0.014)	(0.016)	(0.0)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 7-6. Student Mobility Rates at Mid Risk Schools SES Group, 2007-2008

	Low SES			Mid-low SES			Mid SES			High SES		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
Alta Loma	2.6	7.3	8.7**	3.2	4.8	3.9	1.9	3.7*	3.1	1.8	3.1	3.9*
	(0.014)	(0.021)	(0.023)	(0.008)	(0.011)	(0.009)	(0.005)	(0.006)	(0.006)	(0.004)	(0.005)	(0.006)
Colony	6.5	8.7	2.1**	4.4	7.7	1.9**	5.6	4.6	2.2*	4.8	4.8	1.3**
	(0.014)	(0.014)	(0.007)	(0.011)	(0.011)	(0.006)	(0.007)	(0.009)	(0.005)	(0.009)	(0.009)	(0.004)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

While Special Education and ELL student's experienced dramatic increases in their mobility rates at the high-risk schools, the increases were not as stark in the mid-risk schools. As can be seen in table 7-7 below, although Alta Loma saw increases in mobility rates for both its Special Education and ELL students, none of the changes between 2007 and 2008 were statistically significant. The rate change at Colony High was slightly more stable than at Alta Loma. This patterns once again raises questions of the institutional capacity of schools. That is, ELL and Special Education students appear to be much more likely to be at risk of moving if they attend high-risk school.

Table 7-7. Student Mobility Rates at Mid Risk Schools by Special Ed and ELL Students, 2007-2008

	Special Edu			ELLs		
	2007	2008	2009	2007	2008	2009
Alta Loma	2.8	5.7	5.9	6.3	10.0	7.6
	(0.010)	(0.013)	(0.013)	(0.036)	(0.041)	(0.029)
Colony	5.6	5.6	4.0	8.5	9.5	4.1**
	(0.015)	(0.014)	(0.010)	(0.018)	(0.018)	(0.011)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

LOW-RISK SCHOOLS:

Changes to mobility rates across the low-risk schools (see pg. 41 for definitions) can be observed for each of the racial and ethnic groups. Perhaps surprisingly, some of the changes observed in table 7-8 across the low-risk schools are starker than the changes seen at the high-risk schools. At Etiwanda High, the poorest of the low-risk schools, each group saw statistically changes between 2007 and 2008 (see table 7-8). Generally speaking, as in the other cluster of schools, Latinos and blacks exhibited the highest

mobility rates in 2008. In two of the three low-risk schools, Latino students experienced statistically large changes to their mobility rates. Blacks experienced substantial changes in each of the three schools, and while generally not as stark, whites also saw large increases in each of the three schools. Perhaps surprisingly, Asians also experienced statistically significant changes in mobility rates at Etiwanda High. This is the only school across CJUHSD where Asian students experienced such stark increase.

Table 7-8. Student Mobility Rates at Low Risk Schools Race and Ethnicity, 2007-2008

	Latino			White			Black			Asian		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
Etiwanda	2.9	6.0**	1.9**	3.0	5.5*	1.9	2.1	5.8**	2.6	0.9	5.8*	0.5
	(0.005)	(0.006)	(0.004)	(0.006)	(0.008)	(0.004)	(0.005)	(0.008)	(0.006)	(0.009)	(0.016)	(0.004)
Los Osos	2.8	3.9	1.9	1.9	4.1**	4.2**	2.6	5.8*	2.2	1.3	1.7	2.5
	(0.006)	(0.006)	(0.005)	(0.003)	(0.005)	(0.005)	(0.008)	(0.012)	(0.007)	(0.007)	(0.007)	(0.008)
Rancho	1.9	5.0**	2.4	1.5	3.1*	1.5	3.2	6.9*	2.7	1.9	3.2	3.4
	(0.004)	(0.007)	(0.007)	(0.004)	(0.005)	(0.003)	(0.005)	(0.011)	(0.007)	(0.010)	(0.013)	(0.011)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 7-9. Student Mobility Rates at Low Risk Schools SES Group, 2007-2008

	Low SES			Mid Low SES			Mid SES			High SES		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
Etiwanda	0.8	8.2*	0.9	3.1	7.3**	1.7	2.4	4.3*	2.3	2.4	5.2**	2.1
	(0.005)	(0.006)	(0.004)	(0.006)	(0.008)	(0.004)	(0.005)	(0.008)	(0.006)	(0.009)	(0.016)	(0.004)
Los Osos	6.8	9.1	3.5	1.8	5.3*	0.3	2.6	4.6*	3.4	1.6	2.8*	3.7
	(0.006)	(0.006)	(0.005)	(0.003)	(0.005)	(0.005)	(0.008)	(0.012)	(0.007)	(0.007)	(0.007)	(0.008)
Rancho	1.8	6.6	3.9	2.1	4.8*	3.3	2.0	4.8*	1.5	1.8	3.8*	1.8
	(0.004)	(0.007)	(0.007)	(0.004)	(0.005)	(0.003)	(0.005)	(0.011)	(0.007)	(0.010)	(0.013)	(0.011)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$

Each of the SES groups experienced dramatic changes to their mobility rates. The small sample size of low SES students makes it hard to know the extent to which this group was affected by the downturn at the low-risk schools. The data for each of the other three groups reveals statistically significant changes for each of the SES groups. That is, none of the SES students in these schools were spared the impact from the downturn, nor is the observable impact due to random chance. Interestingly, the high SES group in this cluster of schools saw a starker increase in mobility rates as a whole than the high SES groups in the low-risk schools. Apart from sample size bias, one possible explanation for this is that students from high SES families in the low-risk schools were more likely to be living in owner-occupied housing. Given the community's severe foreclosure crisis (see chapter 4), it is possible that many of these students were forced to change districts because of this type residential instability.

As in many of the other schools, Special Education and ELL students were impacted greatly by the housing crisis. Table 7-10 below illustrates that both groups experienced stark increases in mobility. Although ELL students make up only 2% of the student body in each of the low-risk schools, their mobility rates in 2008 was 16.9%, 12.8%, and 10.6%. In two of the three low-risk schools, Special Education students experienced statistically large changes to their mobility rates between 2007 and 2008.

Table 7-10. Student Mobility Rates at Low Risk Schools by Special Ed and ELL Students, 2007-2008

	Special Edu			ELLs		
	2007	2008	2009	2007	2008	2009
Etiwanda	2.8	9.3**	2.4	3.2	16.9	1.6
	(0.009)	(0.015)	(0.008)	(0.039)	(0.049)	(0.015)
Los Osos	2.4	5.4	2.1	6.9	12.8	10.5
	(0.009)	(0.013)	(0.008)	(0.034)	(0.062)	(0.041)
Rancho	1.6	7.5**	4.3	3.1	10.6	8.9
	(0.008)	(0.017)	(0.013)	(0.036)	(0.044)	(0.032)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$

CONCLUSION

The economic downturn of 2007-2009 forced many vulnerable workers and their families to relocate. People moved most in metropolitan areas with the highest unemployment and foreclosures rates (Stroll, 2013). Tables 6.1-6.10 present at least two notable findings. First, recession forces do indeed have a statistically significant relationship with both overall student mobility and subpopulation mobility between schools. That is, the Great Recession of 2007 to 2009, represented by a severe employment and foreclosure crisis, is linked to the total student mobility rate increase across each of the schools at CJUHSD.

Secondly, across all the schools and subgroups at CJUHSD, students switched schools either in the middle of the school year or at the end. Though the data cannot determine if the moves were voluntary or forced, often times in the event of a foreclosure or eviction, a family has no option but to move. In each of the constructed clusters of schools, mobility rates went up substantially between 2007 and 2008, suggesting that no

school was left unscathed by the downturn, regardless of SES. A more robust statistical model with controls is needed to determine which student group was most vulnerable to the economic downturn in 2008 (see chapter 9). Nonetheless, upon closer inspection though, Latino and blacks experienced starker increases in mobility than any other racial and ethnic group. Generally, this trend appeared to be the case in each of the three clusters of schools. In some cases, particularly in the low-risk schools, whites also experienced substantial increases.

At least one possible explanation for the exceptionally high rate for Latinos is the group's heavily representation in construction jobs that during the downturn had some of the Inland Empire's highest unemployment rates. Once the industry collapsed, many workers and their families left the region in search for work. In addition, Latino families were more likely to have subprime mortgages than those in other ethnic groups and are also overrepresented in neighborhoods with high foreclosure rates (Gorman & Connell, 2009).

The stark increase in black student mobility rates is likely related to a trend of migration to the South and to other states in search for cheaper housing and more jobs (Mordechay, 2014). The latest data from the Census reveals that San Bernardino County's black population decreased to 174,140. That followed a doubling of the region's black population between 1990 and 2010, when the Inland Empire was a magnet for blacks moving from Los Angeles County in search of more affordable housing. The region's black population rose 43% in the 1990s and almost 25% in the 2000s (U.S. Census). The relatively recent migration of blacks and Latinos in the region coincided with a booming housing market, where homebuyers from these two groups were more

likely to be funneled into unfavorable subprime mortgages (Juan De Lara. 2008, Berkley Planning Journal). In addition, other research on the impact of school mobility find that black children experience significantly higher levels of school-level mobility than other racial and ethnic groups, even in times of general economic prosperity (Raudenbush, Jean, & Art, 2011).

While all of the SES groups experienced a sharp rise in mobility rates, the lowest SES group was generally more vulnerable to the stark changes between 2007 and 2008. However, the high SES students in low-risk school also experienced a dramatic increase in mobility, in some cases even higher rates than the low SES groups. This is likely explained by the fact that high SES families represented the quintessential middle class who could afford to buy a home. Of course, these were precisely the families that were part of the loans the housing developers' subsidiaries offered of the subprime variety. Nonetheless, a more robust analysis that controls for other student characteristics is needed to determine the variation of the impact (see chapter 10).

The educational implications of the foreclosure crisis should be of concern to educational policy makers and scholars alike. Existing research on student mobility explores the relationship between children unexpectedly transferring schools during the academic year and their future academic and life outcomes. One study observed that switching schools once between eighth and twelfth grade is associated with the chance of dropping out of school that is 1.5 times that of a non-mobile student (Rumberger & Larson 1998). Data from CJUHSD reveals that school changes were endemic, particularly for the most vulnerable groups.

The disruption brought by an untimely move detracts from a student's academic and social livelihood. Overall though, there is a wealth of potential future research on the relationship between economic shocks and student mobility. Determining how these factors relate to school changes will expand policy discussions that should include how best to improve vulnerable community's ability to proactively prevent the negative academic consequences of untimely student transfers. Pinpointing why students are transferring might help proactively mitigate related negative academic and social consequences. In addition, researcher should consider designing an experimental intervention to reduce school mobility or ameliorate its effects. A well-designed experiment could go a long way in reducing the uncertainty about the causal effects of mobility, and hence be particularly useful for policy.

POLICY IMPLICATIONS

Conversations regarding the recession's consequences tend to focus on long-term economic challenges and short-term financial burdens for affected communities. The intent of examining student mobility rates is to broaden the conversation on the educational consequences of recessions, and explore the relationship between the 2007 to 2009 Great Recession and student mobility at the high school level in an area that was at the epicenter of a housing crisis. Student mobility, whereby a student transfers schools during the either during the academic calendar year or at the end of the school year, has proven negative educational outcomes for mobile students, particularly students from economically disadvantaged families (Hanushek et al., 2004). In fact, the districts particularly high rates of mobility during the recession may account for the loss of the most vulnerable families from the data set in the later years following the recession.

A policy challenge is to devise schooling approaches that mitigate the academic liabilities due to school turnover. Such things could include specialized transition and remedial programs for entering students and more careful classroom placement of new students. In addition, providing schools with appropriate information, data, and professional development on how best to stabilize school transfers could help assist school educators in making the right choices to help students in transition, particularly the vulnerable groups such as Special Education, ELL, and economically disadvantaged students.

Finally, crafting policies to ameliorate the impact of school mobility must address housing as a central cause, therefore, relying solely on schools to address this challenge will be likely be unsuccessful. Though in theory housing mobility could positively affect children when mobility leads them to high performing schools, evidence suggests that housing mobility triggered by economic distress hinders children's academic achievement (Brennan, 2011). Making more affordable housing available to low and even middle income families can reduce the likelihood that a family will be forced to move as a result of an eviction, foreclosure, rent increase, or other financial challenges that were especially ubiquitous during the Great Recession. Foreclosure, in particular, has been associated with high rates of school mobility (Been, Ellen, Schwartz, Stiefel, 2011), and therefore affordable housing and foreclosure counseling services in times of crisis may be especially favorable in communities with high foreclosure rates such as the Chaffey community. One study found of metro Baltimore showed that students whose families were affected by foreclosure were more likely to attend worse performing schools in the academic year after their move. The same study also found that students

who had scored proficient or advanced on their tests in years prior to their move were less likely to score proficient or advanced on tests subsequent to their move (Kachura, 2012).

Finally, and perhaps most importantly, school officials in neighborhoods and communities that are particularly vulnerable to housing boom and bust cycles and that have large numbers of students should be made more aware of foreclosure trends in the neighborhoods where their students live. This will help educators to create targeted outreach to students and their families, provide social and counseling services to students, and potentially refer families to housing or foreclosure counseling services.

The following chapter of this dissertation will investigate trends in student absences at CJUHSD. It will examine trends of average absences and chronic absences before, during, and after the Recession.

CHAPTER 8- MISSING CLASS IN THE MIDST OF CRISIS

School absences are critical outcomes to assess, as students need to attend school daily to succeed. A substantial body of research on attendance unequivocally suggests that student absences are negatively related to success in schooling- defined by academic achievement, grade promotion, and high school graduation. Students that are frequently absent tend to have lower grades, test scores, and a variety of increased sociological risks well into adulthood (Balfanz & Byrnes, 2012). Academically, truant students receive fewer hours of instruction and may consequently perform more poorly on exams (Connell, Spencer, & Aber, 1994). Psychologically, this group of students has been found to feel a greater sense of alienation from their classmates, teachers, and schools (Finn,

1989; Rothman, 2001). Missing school has also been associated with risky future behaviors, such as smoking, and excessive alcohol and illicit drug use (Hallfors, 2002).

Though most states report absence data, comparing data is difficult as states often collect their data in different ways if at all. For example, statewide estimates for California are unknown as it is one of only four in the nation that does not track attendance statewide (Harris, 2014). However, one 2014 report by the Attorney General on California's elementary school absenteeism crisis upholds that close to 90% of the elementary students with the most severe attendance problems are estimated to be low-income and from disadvantaged racial groups. The report suggests that financial losses to California school districts resulting directly from student absences are estimated to be at over \$1 billion per year in school funding (Harris, 2014).

According to one national study using 2005 data, 19% of fourth-graders and 20% of eighth-graders missed at least 3 days of school in a given month. More specifically, 7% of fourth-graders and 7% of eighth-graders missed at least 5 days of school during the same time period (Kearney, 2008). The researchers also found that absenteeism is for the most part unrelated to gender but more common among American Indians, as well as students with disabilities, low-income students, and students in schools whose populace is largely eligible for free or reduced-price lunches.

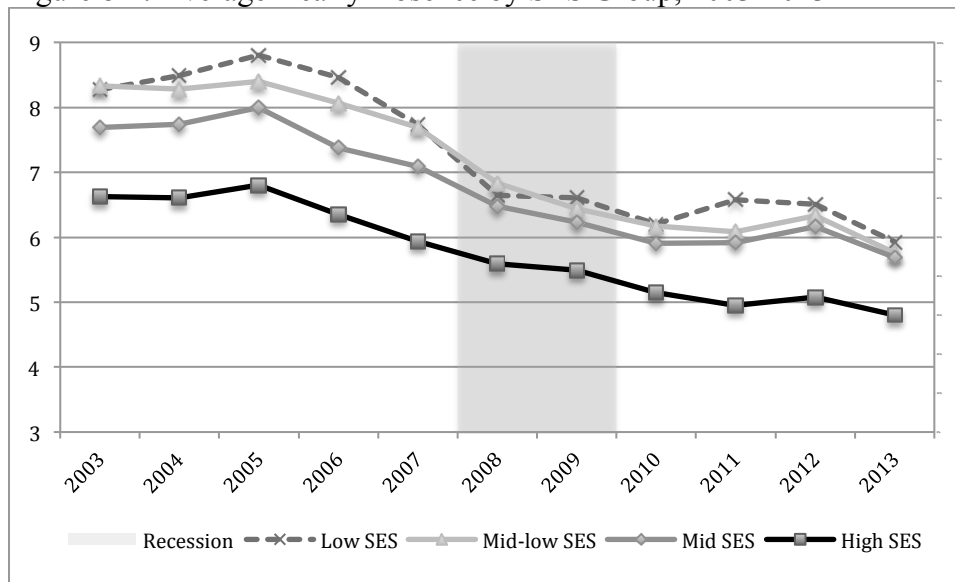
Absenteeism in high school students is more difficult to estimate because many adolescents leave school permanently. However, there have been attempts to pinpoint absenteeism at the high school level (Guare & Cooper, 2003). One study by Guare and Cooper (2003), who surveyed over 200 youth in four high schools across the US found

many students to sometimes (29.1%) or often (9.1%) deliberately and completely miss school. In addition, 54.6% of student's sometimes skipped classes and 13.1% often did so. The researchers also found that rates of absenteeism from school were generally equal across gender but more prevalent among non-English-speaking families, students with poor academic achievement, and high school seniors. Rates of absenteeism vary widely across schools and districts. The daily absenteeism rate for New York City public high schools, for example, has been reported at between 15–30% (Weitzman, Guttmacher, Weinberg, & Kapadia, 2003). These trends are troubling, as each day a student is absent is lost instructional time, which is particularly detrimental for low-income kids that are more dependent than others on school resources.

TRENDS AT CJUHSD

The data from CJUHSD reveals a trend that is apparent across many of the nation's urban schools. That is, low SES students consistently have substantially higher rates of absences than all other SES groups. These students tend to experience an abundance of social issues. However, figure 8-1 below reveals that absences have been on the decline for all SES groups, beginning even before the Great Recession. Each SES group experienced a peak in absenteeism in 2005 before beginning to decline. For the low SES group, the mean absence rate in 2005 was 8.8 days, before decreasing to 6.6 days in the 2008, the height of the Great Recession. As seen in figure 8-1, the other three SES groups exhibited similar declines during the same time period, albeit less stark. In addition, the SES absence gap appears to have been narrowing, particularly since the onset of the economic downturn in 2008.

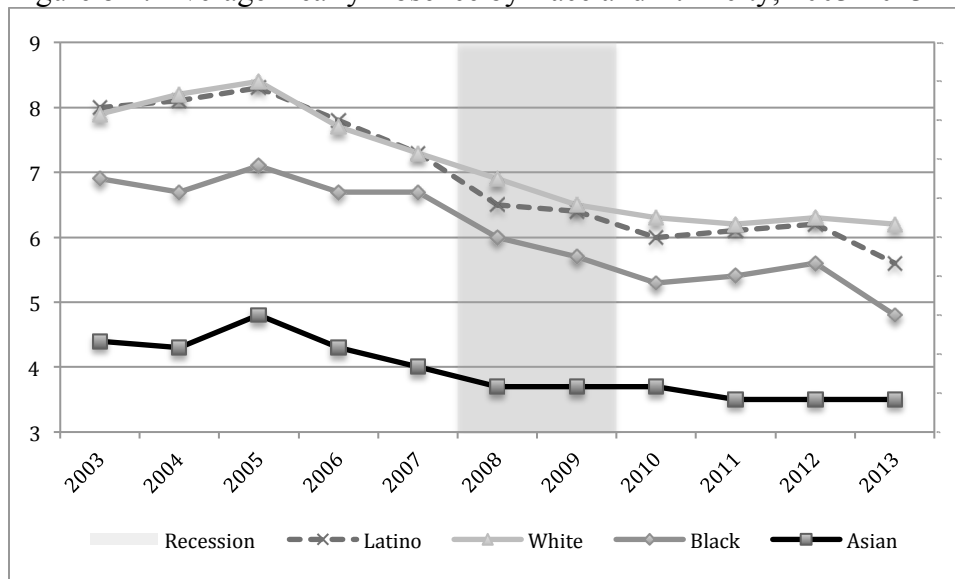
Figure 8-1. Average Yearly Absence by SES Group, 2003-2013



Source: CJUHSD Administrative Records

Racially, whites consistently are reported to have the highest rates of absences across CJUHSD, perhaps a counterintuitive finding. Between 2005 and 2008, the mean absence rate for white students decreases from 8.4 days to 6.9 days. The decline of the rate for whites is followed by Latinos, whom experienced similar decrease between 2005 and 2008, from 8.4% to 6.5%. District-wide, blacks have lower rates than both whites and Latinos. Asian students have substantially lower absence rates than all of the other racial and ethnic groups, a finding that is consistent with many other educational outcomes investigated in this dissertation. As can be seen in Figure 8-2 below, the mean absence trends follows a similar pattern observed for the SES groups. The rates peaked in 2005 for all racial and ethnic groups before beginning to decline. The onset of the economic downturn seems to have accentuated the long-term decline, though it is uncertain if it is the cause.

Figure 8-2. Average Yearly Absence by Race and Ethnicity, 2003-2013



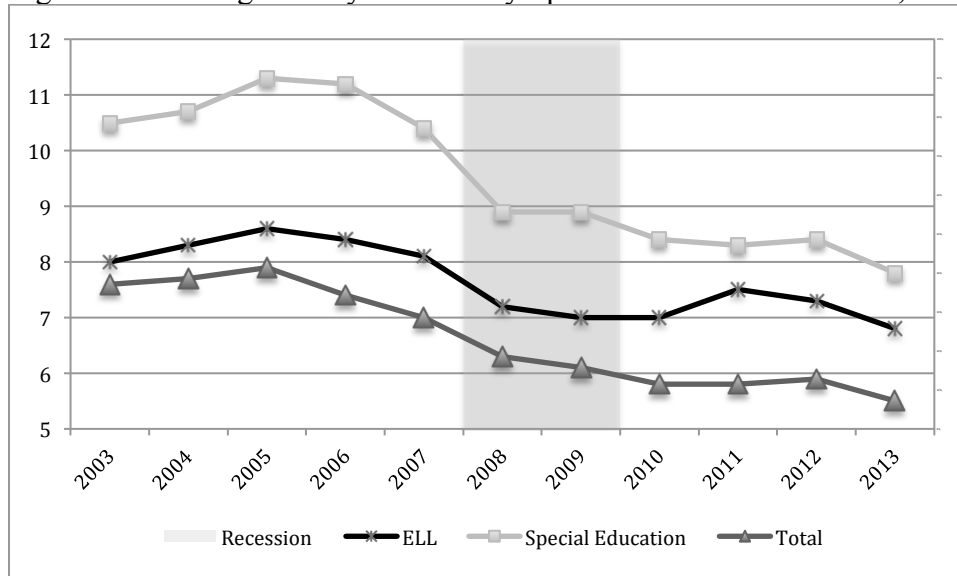
Source: CJUHSD Administrative Records

Both Special Education and ELL students consistently have substantially higher absence rates than *all* other groups (see figure 8-3 below). At the peak in 2005, your average Special Education student at CJUHSD missed 11.3 days of school, before decreasing to 8.9 days in 2008. ELL students saw a decline during same period from 8.6 days to 7.2 days, following similar trends of all the other subgroups.

It is difficult to say whether the economic downturn is the cause for the decline in absences. Thus far, my analysis of time use is largely descriptive in nature and inadequate to draw strong causal connections. A robust statistical model is needed to rule out at least some possible explanations. Nonetheless, my impression from this analysis is that the decline in absences that began in 2006 and 2007 is at least in part because of the economic downturn. Although economists tell us that the Great Recession began in December 2007, the labor market began showing weakness and instability in 2006 (Mordechay, 2014). In addition, it seems plausible that if the opportunity cost of choice

hypothesis plays with regards to high school completion, it must have a similar effect on absence trends.

Figure 8-3. Average Yearly Absence by Special Edu. and ELL Status, 2003-2013



Source: CJUHSD Administrative Records

CHRONIC ABSENTEEISM

Chronic absenteeism is not the same as truancy or average daily attendance.

Robert Balfanz and Vaughan Byrnes (2012) have defined chronic absenteeism as missing 10 percent of a school year for any reason. Research upholds that students that are chronically absent are by far the most at-risk for dropping out of high school. One study by the Georgia State Department of Education found a significant relationship between attendance in the eighth, ninth and tenth grades and graduation rates, controlling for student demographics. It found that moving from missing up to 5 days to missing 6 to 10 days was associated with 7 to 10 percentage-point drop in high school completion rates. Moving from missing 6 to 10 days to missing 11 to 14 days resulted in 12 to 15 percentage point declines in graduation rates. Finally, there was as much as a 50

percentage point difference in the high school completion rates of students who missed 0 to 5 days of school compared to their colleagues who were absent 15 days or more (Barge, 2011). In other words, chronically absent students are significantly more at risk for dropping out and the plethora of sociological ills associated with failing to complete high school.

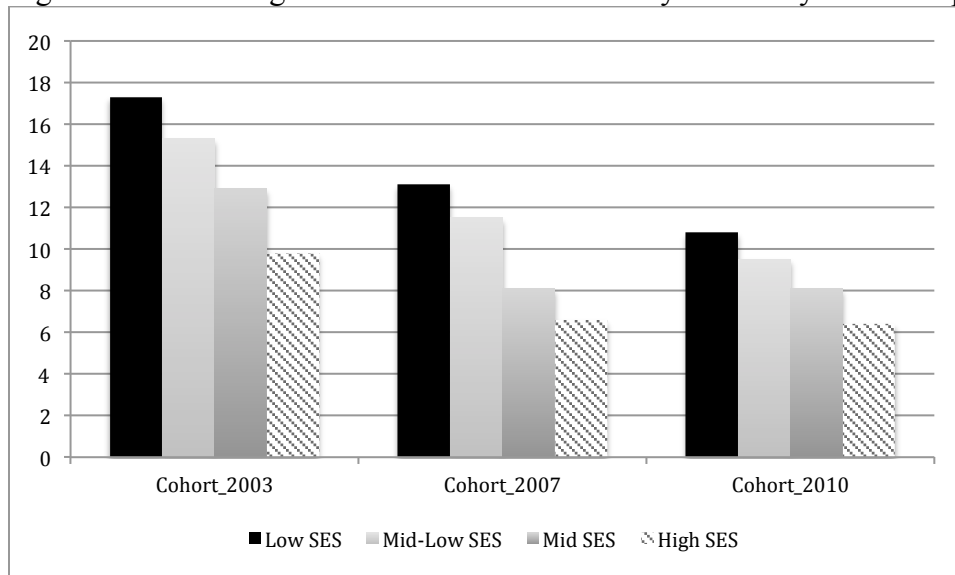
Another more recent study estimates that between 10% to 15% of students across the nation, or approximately between 5 million and 7.5 million, are chronically absent (Balfanz & Byrnes, 2012). Balfanz and Byrnes (2012) argue that policy makers tend to look at absenteeism in the wrong way, requiring districts and states to measure average daily attendance rates, but — with the exception of a few states, not focusing on the relatively small number of students who account for most absences. These are the students that are most at-risk. In addition, they found that some schools report an average of more than 90% daily attendance, masking the fact that 40% of their students are chronically absent.

COHORT ANALYSIS OF CHRONIC ABSENCES AT CJUHSD

The following data presented is longitudinal and is from Chaffey Joint Union High School District (CJUHS). I present mean absence data for three different full cohorts, each representing a pre-recession ($N = 23,028$), recession ($N = 24,095$), and post-recession ($N = 24,281$) data point. That is, a cohort of students that entered CJUHSD as freshman in 2003 (pre-recession), a cohort that entered as freshman in 2007 (recession), and one that entered 9th grade in 2010. A student is tracked as part of a cohort if they have at least one data point between grades 9 through 12.

Across CJUHSD, a substantially higher percentage of low SES students have been chronically absent compared to other SES groups. Figure 8-4 below illustrates that although the percentage of students with chronic absences in each subgroup remains high, it is on the decline for all groups, particularly for the lowest SES groups. Almost 1 in 5 (17.5%) of low SES students in Cohort_2003 had 15 or more absences, an astonishingly high rate. The percentage of low SES students that were chronically absent declined dramatically for Cohort_2007 (see figure 8-4 below), to a rate of 13.1%, and even further for Cohort_2010, to a rate of 10.8%. Similar patterns can be seen with the other SES groups. The high SES group in Cohort_2003 saw a decrease from 9.8% to 6.6% in Cohort_2007, an almost 33% reduction in chronic absences.

Figure 8-4. Percentage of total Students Chronically Absent by SES Group

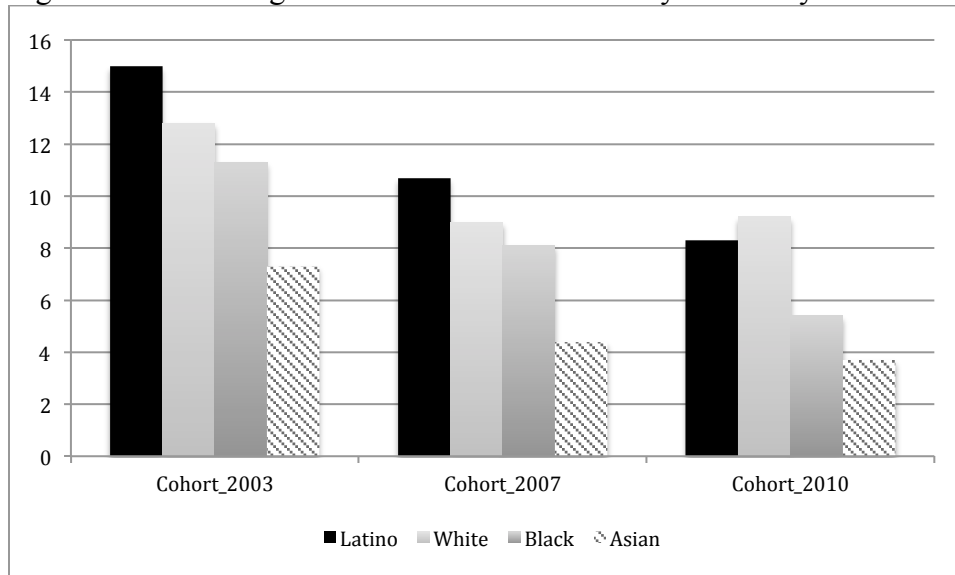


Source: CJUHSD Administrative Records

Cohort data by race and ethnicity generally follows a similar trend to the SES groups. Latino students in two of the cohorts by far have the highest percentage of chronic absences. As illustrated in figure 8-5 below, the Latino numbers are followed by whites, blacks, and then Asians. Perhaps surprisingly, in Cohort_2010, white students had

the highest percentage of chronic absences at 9.2%. Nonetheless, with that as an exception, every group's rate of chronic absences appears to be on the decline. Whether the decline is merely temporal and a result of unique economic conditions is unclear. If so, we would expect to see an uptick in the rates, particularly as the labor market begins to recover.

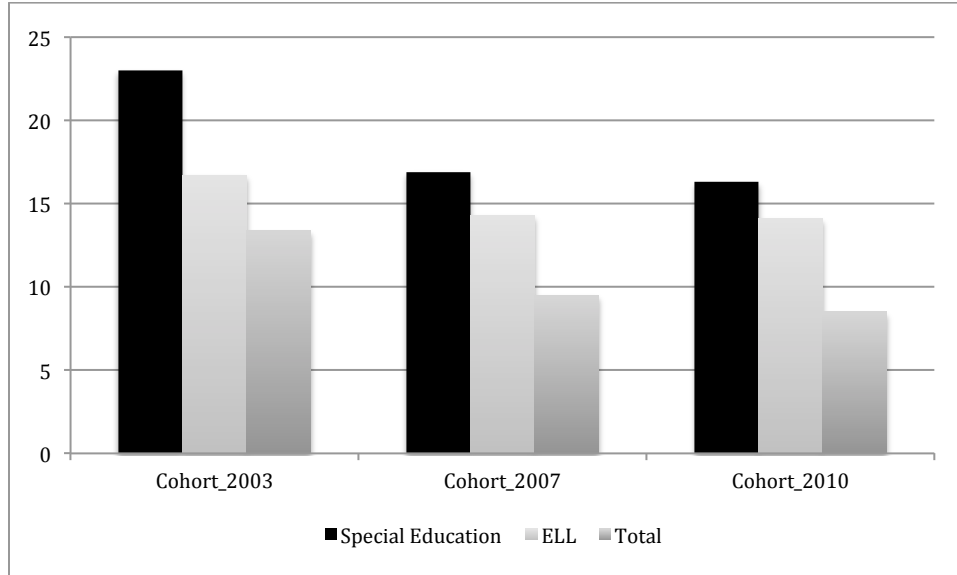
Figure 8-5. Percentage of total Students Chronically Absent by Race and Ethnicity



Source: CJUHSD Administrative Records

As with many other educational outcomes in which Special Education and ELL students routinely perform negatively, these two groups show exceptionally high rates of chronic absences. For Cohort_2003, close to one in four (23%) Special Education students were chronically absent. For ELLs in the same cohort, the rate is approximately one in six. The percent does decline for subsequent cohorts, generally following the trend of the other subgroups. As can be seen in figure 8-6 below, both groups saw a decline in Cohort_2007. The rate for Special Education and ELL students decreased to 16.9% and 14.3% in Cohort_2007, and declined slightly further in Cohort_2010.

Figure 8-6. Percentage of total Students Chronically Absent by Special Edu and ELL Status



Source: CJUHSD Administrative Records

BETWEEN SCHOOL DIFFERENCES:

In this section I examine cohort mean absences for each subgroup between the three different school clusters. I have selected to measure average absences as oppose to percentage of students that are chronically absent mainly due to sample size issues, particularly for the smaller subgroups.

HIGH-RISK SCHOOLS:

All SES groups at the high-risk schools saw statistically large changes between the three different cohorts. As can be seen in table 8-1 below, all of the cohorts in each of the schools experienced a substantial decline in the total average absence rate.

The racial and ethnic cohort distributions seen in table 8-2 reveals that Latinos experience the starkest declines in average absences. In each of the three high-risk

schools, Latinos saw a statistically significant reduction. At Chaffey, the group's rates declined from 9.4% for Cohort_2003 to 7% for Cohort_2010. Similar trends are upheld in the other two. Generally, whites had the highest rate of absence for Cohort_2003, 2007, and 2010, though this group also saw statistically large reductions between cohorts. Although small in numbers, Asians experienced statistically significant changes in two of the three high-risk schools.

Table 8-1. Average Absence Rate at High Risk Schools by SES Group

	Low SES			Mid low SES			Mid SES			High SES		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Chaffey	9.7	7.9**	7.1**	9.7	7.6**	7.5**	9.3	6.8**	7.2**	9.1	6.5**	6.7**
	(0.331)	(0.270)	(0.262)	(0.357)	(0.299)	(0.298)	(0.439)	(0.300)	(0.397)	(0.418)	(0.365)	(0.385)
Montclair	8.4	6.9**	6.1**	7.4	7.3	6.5*	8.2	7.1	6.7*	7.3	6.9	6.6
	(0.248)	(0.240)	(0.213)	(0.250)	(0.285)	(0.270)	(0.407)	(0.360)	(0.424)	(0.393)	(0.578)	(0.490)
Ontario	9.4	8.7	6.5**	9.6	8.1**	6.4**	9.4	6.1**	5.6**	8.1	7.2	5.4**
	(0.478)	(0.277)	(0.247)	(0.370)	(0.404)	(0.297)	(0.647)	(0.366)	(0.357)	(0.660)	0.488)	(0.483)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 8-2. Average Absence Rate at High Risk Schools by Race and Ethnicity

	Latino			White			Black			Asian		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Chaffey	9.4	7.5**	7.0**	10.5	8.1**	9.4*	10.7	**6.1**	7.1*	7.1	6.3	3.1**
	(0.221)	(0.175)	(0.170)	(0.528)	(0.503)	(0.653)	(1.013)	(0.520)	(0.817)	(1.247)	(1.162)	(0.651)
Montclair	8	7.1**	6.2**	8.9	8.0	8.2	7.8	9.4	10.6*	5.2	3.2*	3.4
	(0.170)	(0.173)	(0.151)	(0.595)	(0.573)	(0.581)	(0.614)	(1.031)	(1.206)	(0.510)	(0.442)	(0.843)
Ontario	11.6	8.1**	6.4**	11.0	8.4*	6.8**	9.1	7.1	4.6**	4.9	3.6	4.9
	(0.277)	(0.204)	(0.172)	(0.762)	(0.609)	(0.578)	(1.107)	(0.593)	(0.517)	(1.074)	(0.514)	(0.794)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Special Education students in Cohort_2003 had by far the highest mean absence rate. In two of the three schools, Chaffey and Ontario High did this experience statistically significant reduction in absences. Similar patterns can be observed for ELL students (see table 8-3 below). That is, in each of the schools, with exception to Montclair, did the group experience a substantial decline in average absences.

Table 8-3. Average Absence Rate at High Risk Schools by Special Edu. and ELL Status

	Special Education			ELL		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Chaffey	12.3	9**	10.2*	10.1	8.5**	8.3**
	(0.765)	(0.457)	(0.479)	(0.456)	(0.354)	(0.361)
Montclair	11	12	10.6	7.7	7.4	7.2
	(0.562)	(0.825)	(0.700)	(0.320)	(0.327)	(0.411)
Ontario	14.3	12.5	10.5**	10.8	10.8	8.4**
	(0.813)	(0.740)	(0.660)	(0.510)	(0.453)	(0.448)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

MID-RISK SCHOOLS:

As in the high-risk schools, all SES groups experienced a substantial decline in absences between cohorts. The steepest decline was with the low SES group. At Colony High, the groups average absence rate decreased from 10.9% to 5.2% between Cohort_2003 and 2010. At Alta Loma, the rate reduced from 10.4% to 6.3% for the same group. Each of the three other SES groups saw declines between cohorts as well (see table 8-4).

Racially, the story is similar. There is a general trend of absences going down for all subgroups at CJUHSD. Although each group's average is going down, the racial gaps

in absences do not appear to be narrowing much. The racial trends in absences at the mid-risk schools cannot be solely explained by family SES status. As can be observed in table 8-5 below, whites had the highest rates of absences for the 2010 cohort, even though on average they are not as poor as Latinos. This is certainly counter-intuitive and warrants further investigation.

Table 8-4. Average Absence Rate at Mid Risk Schools by SES Group

	Low SES			Mid low SES			Mid SES			High SES		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Alta Loma	10.4	6.7**	6.3**	8.5	6.9**	6.6**	7.6	6.2**	6.3**	6.4	5.8	4.9**
	(0.873)	(0.817)	(0.567)	(0.356)	(0.334)	(0.383)	(0.260)	(0.209)	(0.238)	(0.264)	(0.214)	(0.224)
Colony	10.9	7.9**	5.2**	9.2	6.1**	5.3**	8.9	5.5**	5.4**	7.6	4.7**	4.6**
	(0.689)	(0.581)	(0.213)	(0.374)	(0.349)	(0.297)	(0.325)	(0.305)	(0.298)	(0.360)	(0.248)	(0.201)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 8-5. Average Absence Rate at Mid Risk Schools by Race and Ethnicity

	Latino			White			Black			Asian		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Alta Loma	7.9	6.2**	6**	7.5	6.4**	6.8*	8.3	5.8*	4.1**	4.5	5.2	2.6*
	(0.256)	(0.194)	(0.221)	(0.233)	(0.229)	(0.257)	(0.528)	(0.396)	(0.323)	(1.012)	(0.622)	(0.322)
Colony	9.3	6.1**	5.3**	9.7	6**	5.2**	8.2	5.9**	4.3**	4.9	2.5*	3.4
	(0.288)	(0.236)	(0.179)	(0.444)	(0.363)	(0.287)	(0.426)	(0.489)	(0.350)	(0.843)	(0.501)	(0.434)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Generally, both Special Education and ELL students saw substantial declines in average absences as well. This trend appears to be consistent with exception to the ELL Cohort at Alta Loma High, where the groups rate decline between the 2003 and 2007 cohort, before going up again in 2010 (see table 8-6 below). In each of the mid-risk schools, Special Education students experience substantial decline in absences between cohorts. In general, both Special Education and ELL students saw the largest reduction in absences compared to all other subgroups.

Table 8-6. Average Absence Rate at Mid Risk Schools by Special Edu and ELL Status

	Special Education			ELL		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Alta Loma	11.6	9.5*	7.6**	8	5.8	8.3
	(0.605)	(0.611)	(0.521)	(0.894)	(0.935)	(1.178)
Colony	12.7	9.1**	7.3**	12.3	7.5**	6.1**
	(0.697)	(0.612)	(0.447)	(0.990)	(0.701)	(0.545)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

LOW RISK SCHOOLS:

Not surprisingly, average absence rates for each subgroup and between cohorts in the mid-risk schools are lower than they are for similar subgroups in the other schools. Still, all SES groups experienced a decline in absences between pre-recession and recession cohort (see table 8-7 below). In two of the three low-risk schools, low SES student saw a decline between cohorts. The other SES groups experienced similar reductions in absences between pre and-post recession cohorts in each of the schools. However, the declines in absences, while statistically significant are less substantial than the reductions at the more at-risk schools.

Racially, all groups but Asians saw substantial declines in absences between cohorts. As observed with the SES groups, while statistically large, the declines were not as steep as those observed in the other school clusters. As illustrated in table 8-8 below, absence rates among Asian students have remained stable between cohorts. At the low-risk schools, it appears that the racial absence gap has narrowed.

Table 8-7. Average Absence Rate at Low Risk Schools by SES Group

	Low SES			Mid low SES			Mid SES			High SES		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Etiwanda	8.8	7.1	6.3*	7.9	7.3	6.6**	6.9	6.2*	6.1**	6.3	5.5**	4.6**
	(0.745)	(0.500)	(0.534)	(0.357)	(0.295)	(0.281)	(0.215)	(0.170)	(0.209)	(0.183)	(0.205)	(0.195)
Los Osos	7.2	6.3	6.6	8.3	6.4**	5.2**	7.9	6.6**	6.5**	6.5	5.1**	5.2**
	(0.843)	(0.651)	(1.044)	(0.460)	(0.323)	(0.301)	(0.233)	(0.205)	(0.188)	(0.209)	(0.140)	(0.157)
Rancho	11.1	8.6	7.6*	8.1	8.7	7.0*	8.1	7.1**	6.2**	6.7	6.0*	5.5**
	(1.223)	(0.904)	(0.926)	(0.330)	(0.406)	(0.375)	(0.268)	(0.206)	(0.200)	(0.226)	0.198)	(0.177)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 8-8. Average Absence Rate at Low Risk Schools by Race and Ethnicity

	Latino			White			Black			Asian		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Etiwanda	7.6	6.9*	6.3**	7.9	6.2**	6.1**	5.7	6.1	4.8**	6.1	4.8	6.1
	(0.246)	(0.195)	(0.186)	(0.245)	(0.244)	(0.292)	(0.226)	(0.245)	(0.223)	(.422)	(.327)	(0.439)
Los Osos	7.2	6	6.2	7.7	6.4**	6.2**	5.6	5	4.9	5	3.5	3.6
	(0.170)	(0.173)	(0.151)	(0.595)	(0.573)	(0.581)	(0.614)	(1.031)	(1.206)	(0.510)	(0.442)	(0.843)
Rancho	8.9	7**	6.4**	7.7	7.2	6.9*	6.4	7.3	5.4*	5	4.5	3.8
	(0.317)	(0.240)	(0.194)	(0.226)	(0.212)	(0.260)	(.283)	(0.345)	(.291)	(.670)	(0.510)	(0.296)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Special Education and ELL students at the low-risk schools have substantially lower absence rates than in the other school clusters. Therefore, it not entirely surprising that the groups rates have not declined much compared to Special Education and ELL students at the other schools. As seen in table 8-9, with exception to Los Osos High where Special Education students saw a significant decline between cohorts, the absence rates remain relatively stable across cohorts. It is unclear why these groups did not see a reduction in absences as was observed with the groups.

Table 8-9. Average Absence Rate at Low Risk Schools by Special Edu and ELL Status

	Special Education			ELL		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Etiwanda	7.6 (0.456)	8.4 (0.417)	7.5 (0.424)	8.9 (1.559)	7 (.738)	8.7 (1.308)
Los Osos	9.5 (0.587)	7.9* (0.524)	7.3** (0.434)	4.1 (0.825)	5.7 (0.752)	1.8 (0.421)
Rancho	9.6 (0.619)	8.9 (0.497)	9.44 (0.556)	5 (0.885)	8.8* (1.421)	5.3 (0.798)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

CONCLUSION

The results from the data show that the Great Recession has had an impact on average student absences as well as chronic absences. The effects appear to differ by family socio-economic status and race. I find the largest declines in absences at the high and mid risk schools and among Latinos and the lowest SES groups. Although I am unable to conclusively describe the mechanisms whereby economic downturns affect absence rates, it is possible that similar mechanisms are at play that explains the rise in graduation rates. That is, although economic downturns lead to community level and

household stress, people often look to education to improve their future job market prospects.

Second, it is also possible that policy changes over the last decade have contributed to a reduction in absences. For example, some states and local school systems have taken steps to create automated systems that look at warning signs, to identify students that are most at risk for chronic absences (Perez-Pena, 2012). In addition, it is also possible that in a community with vast under and unemployment, unemployed parents spend more time with their children than had they been employed, positively affecting children (Levine, 2011). Finally, it is also plausible that my estimates overestimate the decline in absenteeism, as the students that were most vulnerable attrite from the sample (see chapter 3 for sample discussion).

Taken as a whole, the results provide evidence of major gaps in absence and chronic absences between subgroups. My model and analysis of time use is largely descriptive in nature and inadequate to draw causal conclusions. Nonetheless, the consistencies from this analysis uphold that there is a stubborn gap in absences, with Special Education, ELL, Latino, and economically disadvantaged groups being most at risk. Chronic absences is not just unique to the district studied for this research, but these problems are pervasive in urban school systems across the nation (Balfanz & Byrnes, 2012). Therefore, identifying and remedying factors of student absenteeism is crucial, particularly for urban students.

POLICY IMPLICATIONS

Although a reduction in absences, particularly chronic absences, is a possible ‘silver-lining’ of the Great Recession, the problem remains pervasive in urban schools across the country. This should be of concern to policymakers and educators as the evidence could not be clearer. Academic achievement from kindergarten forward, high school graduation, and post-secondary enrollment are all highly sensitive to absenteeism. For traditionally marginalized groups, missing even some school can have negative impact. Chronically missing school at any time, throws students completely off track to academic success.

The good news is that there are a number of high impact actions that can and should be taken immediately. Some states such as Alabama and Virginia have adopted automated systems that look at warning signs predicting chronic absences to identify students the students that need assistance (Perez-Pena, 2012). Other cities and districts have been experimenting with low cost automated wakeup calls from athletes and celebrities that are meant to serve as nudges. One campaign in New York City named "Wake Up! NYC," focusing on students that have been absent more than 10 days a year, has seen some success with this system with increasingly more schools joining the program (Santos, 2011). Wake Up! NYC sends automated calls to students with prerecorded message from the likes of Magic Johnson telling students to “get your education”. This model is promising and should be considered by districts plagued by chronic absences.

Also in New York City, former mayor Michael Bloomberg created an Interagency Task Force on Truancy, Chronic Absenteeism, and School Engagement in 2010 in partnership with the NYC Department of Education. Results from the initial pilot have

been promising: during the 2011-2012 school year, Task Force schools outperformed comparison schools across elementary, middle and high schools in reducing chronic absenteeism. Baltimore can also serve as a useful taskforce model (Balfanz & Byrnes, 2012). In addition, using the task force to make absenteeism a high profile community-wide issue, involving other stakeholders such as local business, community groups, and local churches.

Just as Google and Facebook make use of user data to predict behavior and improve user experience, making use of real-time data on student absenteeism available to schools, teachers, and parents can be a tremendous boon. At least one solution could be to flag students who are chronically absent or on the path to becoming so. This data could be collected relatively easily and therefore once a month, publically report on school level chronic and regular attendance rates. Identifying the most at-risk schools and students will enable the more effective and efficient allocation of resources, enable the examination of attendance patterns across schools and over time (Balfanz & Byrnes, 2012). This data could easily be used to identify both the times of year when extra community attention is required (e.g. bad weather), and schools that are beating the odds, that others we can learn from.

Although at CJUHSD, it appears that absences are on the decline, millions of students across the nation are currently missing far too much school, with multiple detrimental effects. Such policy solutions are only the tip of the iceberg, as many more models exist, ranging from non-profit collaborations, to simple technologies such as text messaging. Policymakers at all levels should interventions that target the most at-risk children and their families.

To summarize, the decade long-trend at CJUHSD appears to be positive, at least in terms of absences. In addition, the disruption of the economic shock of the Great Recession does not appear to have increased absence rates as I expected. It is possible that the same mechanisms that cause graduation rates to increase are at play here.

The following Section will investigate academic achievement across schools and subgroups during the Recession. Better understanding trends in GPA's and test scores will help in our understanding how are most vulnerable students are impacted by economic downturns.

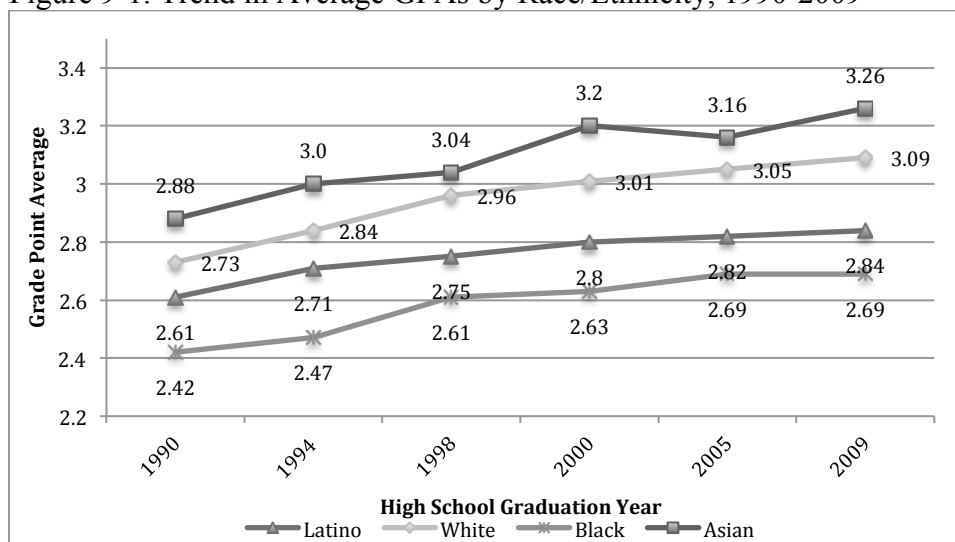
CHAPTER 9- ACADEMIC ACHIEVEMENT IN THE GREAT RECESSION

It has been long known among students and parents that high school grades matter. It is no wonder that a broad body of literature shows that both high school grade point averages (GPAs) and scores on standardized tests such as the SAT or the ACT are generally strong predictors of student success in college for students of all races and socioeconomic groups. Several studies also suggest that high school grades are better predictors of success than standardized test scores (Hoffman, 2002; Zheng, Saunders, Shelley II, & Whalen, 2002). Nonetheless, federally mandated annual testing across schools is increasingly being used as the primary measure of closing the academic achievement gap. Many policy makers and educators have come to believe that the achievement gap can be narrowed by calculating the improvement in students' scores on

standardized tests in reading and mathematics, and then relying heavily on these calculations to evaluate the state of the nation's schools (Rothstein et al., 2010).

In evaluating the relationship between economic downturns and academic achievement, I define academic achievement as measured by Grade Point Average (GPA). Figure 9-1 below illustrates the approximately 20-year trend across the nation. High School grades across the U.S. have increased for all racial and ethnic groups, yet the gaps do not appear to have narrowed. Though the last data point available in Figure 9-1 might not capture the high school cohorts that entered school during the Great Recession, it does capture students that entered high school in 2006. Nonetheless, each racial group saw either stable or an increase in high school grades through 2009. It should be noted however, that researchers have demonstrated the existence of high school grade inflation without a concomitant increase in students' academic achievement. Nonetheless, as display in figure 9-1 below, at least on the national level, the Recession did not appear to impact academic achievement as measured by GPA.

Figure 9-1. Trend in Average GPAs by Race/Ethnicity, 1990-2009



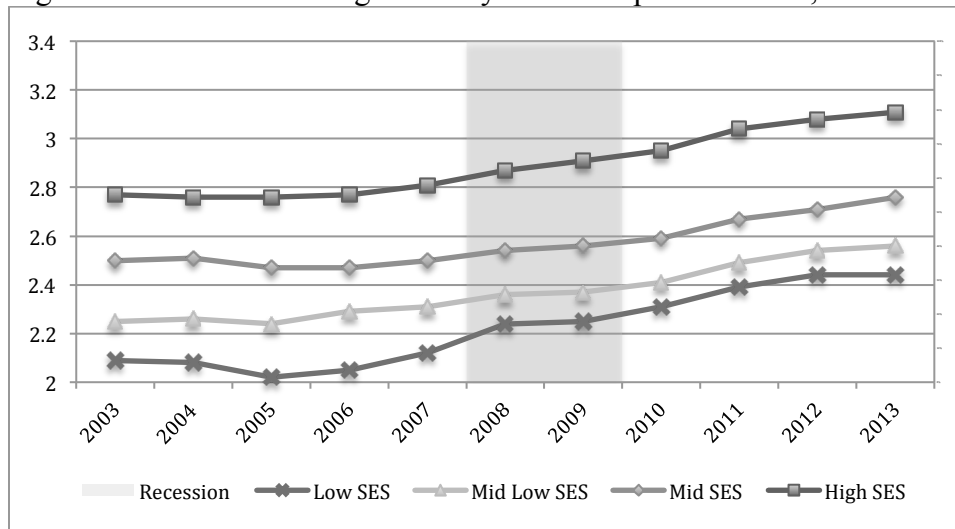
Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, High School Transcript Study (HSTS), various years, 1990–2009

EMPIRICAL FINDINGS FROM CJUHSD

Given that CJUHSD is located at one of the epicenters of the Great Recession, it is hypothesized in this study that the economic downturn is negatively related to academic achievement as measured by GPA, particularly for the most disadvantaged students.

Results from the time series data reveal that GPA Trends at CJUHSD (see figure 9-2 and 9-3 below) are similar to those that can be observed in figure 9-1 above. Namely, that the GPAs for all SES and racial groups have increased since at least 2003, and do not appear to have declined during the Great Recession as hypothesized. As can be observed in figure 9-2 below, each SES group experienced an increase in average GPAs between 2007 and 2010. The lowest SES group saw an average increase from 2.12 to 2.31 between the same time periods, and has since continued to increase. Similar trends can be observed with the high SES group, which saw an increase from 2.81 to 2.95 between 2007 and 2010.

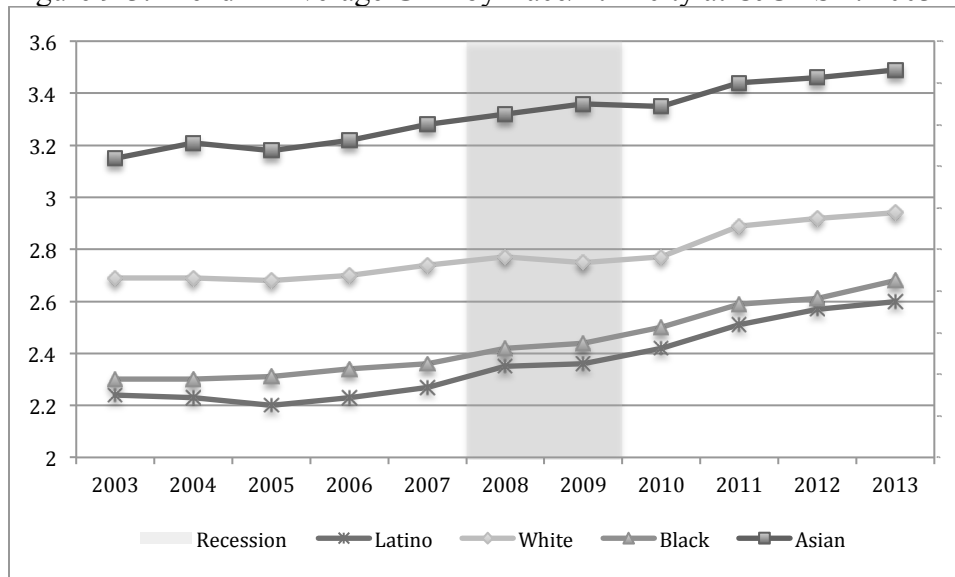
Figure 9-2. Trend in Average GPA by SES Group at CJUHSD, 2003-2013



Source: CJUHSD Administrative Records

Disaggregated by race and ethnicity, the data reveals a similar pattern observed with SES subgroups. Figure 9-3 below suggested that between 2007 and 2010, average GPAs increased from all racial and ethnic groups. Asian students, who by far have the high average GPA, saw an increase from 3.28 to 3.35 between 2007 and 2010. Latinos and blacks, the groups with the lowest average GPAs, saw an increase from 2.27 to 2.42 and 2.36 to 2.5 during the same time period. Each of the groups average GPA appears to be continuing to increase as of 2013.

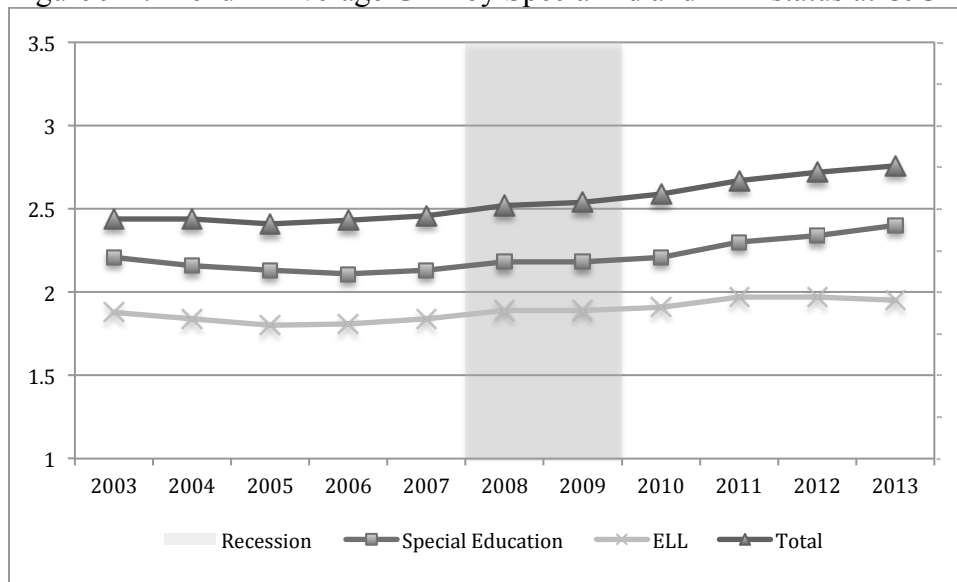
Figure 9-3. Trend in Average GPA by Race/Ethnicity at CJUHSD. 2003-2013



Source: CJUHSD Administrative Records

Average GPA for both Special Education and ELL students is by far the lowest compared to all other subgroups. As can be observed in figure 9-4 below, ELL students have the lowest GPAs. Between 2007 and 2010, this groups average GPA increased from 1.84 to 1.91. Special Education student saw a similar rise during the same period from 2.13 to 2.21. While the increases are a good sign, the GPA rise of the average CJUHSD student was slightly steeper, increasing from 2.46 to 2.59.

Figure 9-4. Trend in Average GPA by Special Ed and ELL status at CJUHSD, 2003-2013



In examining longitudinal cohort data, my hypothesis is once again not confirmed. The analysis of a pre-recession, recession, and post-recession cohort reveals a similar trend that is observed in the time series analysis above. Figures 9-5 through 9-7 shows that across the district, each cohort of students saw an increase in the mean value of GPAs across subgroups. This trend runs counter to my hypothesis, namely that the recession cohort (Cohort_2007) would be more vulnerable the economic shocks, in terms of academic achievement. However, this does not appear to be the case.

Figure 9-5. Average Cohort GPA by SES Group at CJUHSD

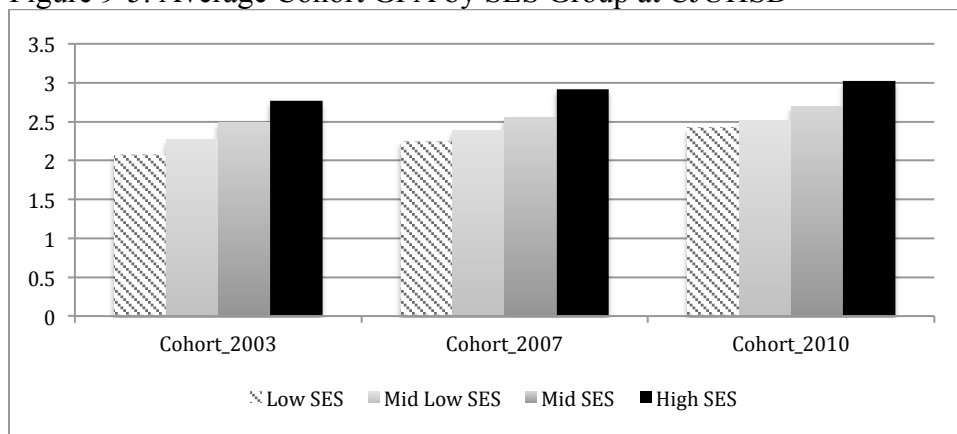
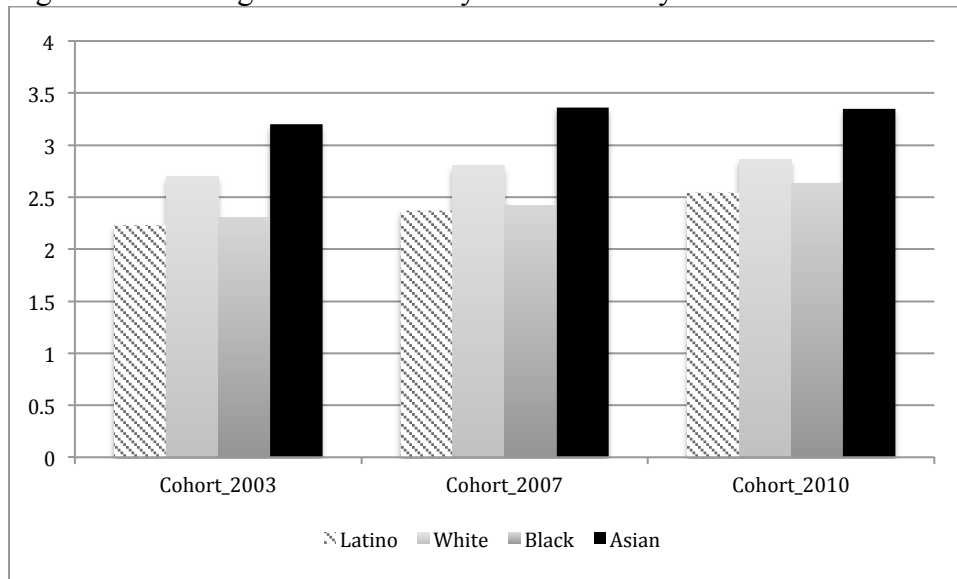
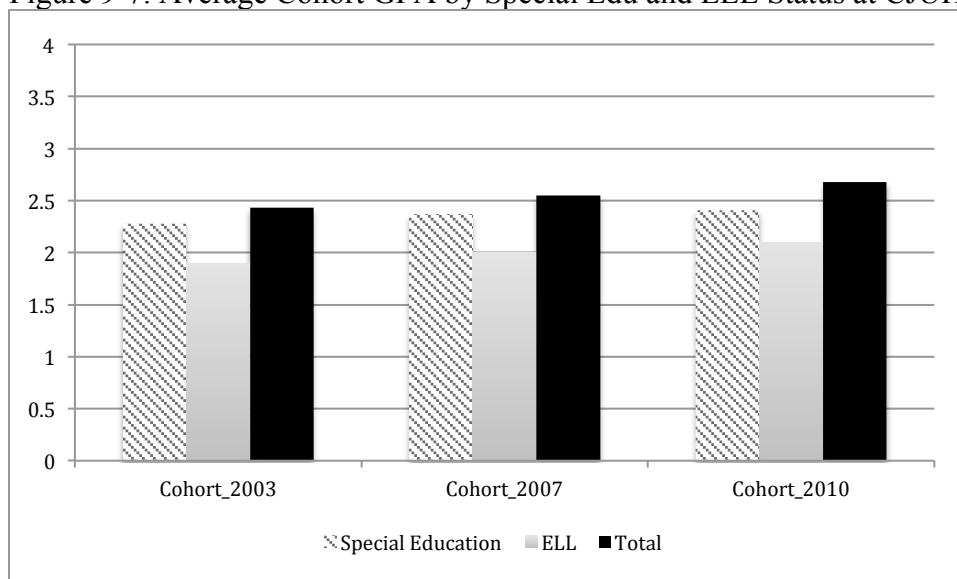


Figure 9-6. Average Cohort GPA by Race/Ethnicity at CJUHSD



Source: CJUHSD Administrative Records

Figure 9-7. Average Cohort GPA by Special Edu and ELL Status at CJUHSD



Source: CJUHSD Administrative Records

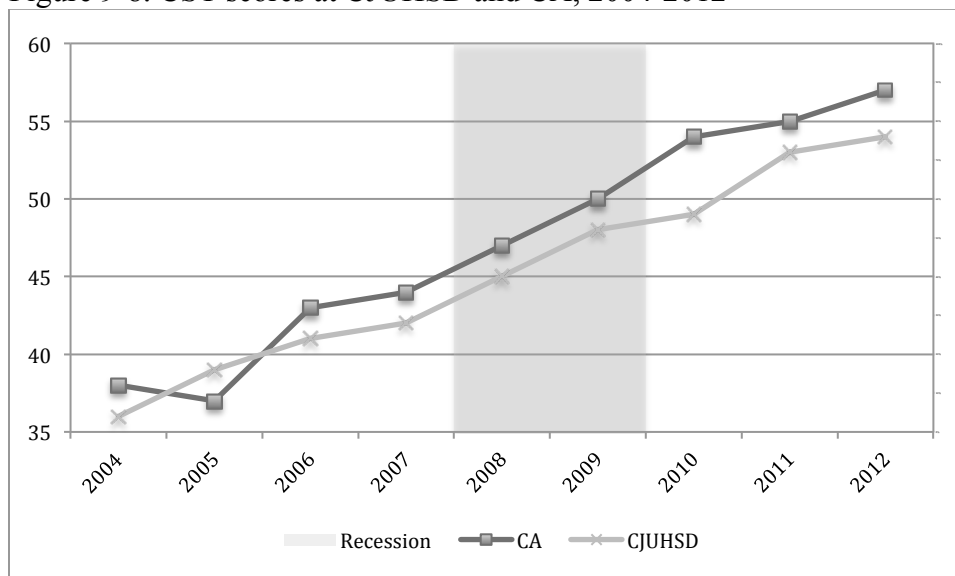
TEST SCORES

Standardized testing has assumed a prominent role in recent years as part of a concentrated effort to improve the quality of nation's education. So much so that millions of dollars have spent on testing as a cost effect tool for stimulating educational reform.

Much of the discussion on academic achievement and the so-called “achievement gap” between subgroups has been the driving force behind testing advocates and many policymakers across the nation. Increasingly, school districts and their students are spending growing amounts of time preparing for these high-stakes tests. Data from CJUHSD as well as many more districts across the nation are showing substantial gains in academic achievement, measured by math and English test scores. The trend at CJUHSD has generally followed the statewide trend (see figure 9-8).

The time-series data for individual subgroups at CJUHSD show similar trends observed across the state and the nation. Figure 1C-3C in appendix C illustrates this trend across CJUHSD where each subgroup has seen significant gains on the California Standard Tests (CST), with exception to English Language Learners. The number of ELL students that scored advanced or proficient on the CST Language Arts test has remained stable over the last decade.

Figure 9-8. CST scores at CJUHSD and CA, 2004-2012



Source: CJUHSD Administrative Records

The validity and value of standardized tests are becoming the source of increasing debate. Some studies have raised questions about whether improvements in test score performance actually signal improvement in learning (Herman & Golan, 1990; Milner, 2013). Other scholars have pointed to standardized tests' "narrowness" of content, their neglect of higher order critical thinking, lack of match with curricula and instruction, and the limited relevance and meaningfulness of their multiple choice formats (Ravitch, 2011). According to these and other researchers, rather than exerting a positive influence on student learning, testing may trivialize the learning and instructional process, create pressure amongst teachers to "narrow the curriculum", and usurp valuable instructional time that could be used for actual learner (Bracey, 1989; Leki, 2001; Ravitch, 2011). Schools serving disadvantaged students are thought to be particularly at risk for such adverse effects.

While state test scores often show improvement, as in the case of CJUHSD, the National Assessment of Educational Progress (NAEP), an assessment administered to districts across the nation spanning four decades tells a somewhat less optimistic story. A recent NAEP report suggests that reading scores for 17 year olds have barely inched up slightly since the 1970s (NAEP, 2012). Therefore, one should use caution in interpreting improvements in GPA and CST scores as signals of rising academic achievement.

The following section of this chapter will briefly investigate academic achievement trends across the three clusters of schools. In each of the schools I will report mean GPAs for the various subgroups across the three cohorts.

HIGH-RISK SCHOOLS

Table 9-1 displays the results of a cluster analysis model estimating how the high-risk schools fared during the recession. What can be inferred from table 9-1 is that all SES subgroups generally experienced an increase in GPA across the three cohorts. The most substantial increases were seen for the low SES group, suggesting that the group's academic achievement, defined by GPA was not only not negatively impacted, but also in fact increased.

In Table 9-2 below, Latinos showed the largest rise in average GPA. The group saw average increases in each of the three high-risk schools, while whites for example, showed an increase in only one of the three schools. The data for black and Asian students is relatively consistent across cohorts. In at least two of the school, both blacks and Asians saw increases to their average GPAs, though the changes were not statistically significant.

Table 9-1. Average GPA at High Risk Schools by SES Group

	Low SES			Mid low SES		Mid SES		High SES				
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Chaffey	2.0	2.3**	2.4**	2.2	2.3	2.5**	2.5	2.4	2.6	2.6	2.7	2.6
	(0.026)	(0.026)	(0.026)	(0.031)	(0.029)	(0.029)	(0.034)	(0.039)	(0.039)	(0.041)	(0.041)	(0.047)
Montclair	2.2	2.4**	2.6**	2.4	2.5	2.6**	2.6	2.6	2.6	2.5	2.7**	2.8**
	(0.051)	(0.058)	(0.050)	(0.027)	(0.032)	(0.028)	(0.043)	(0.042)	(0.036)	(0.051)	(0.058)	(0.050)
Ontario	2.0	2.3**	2.4**	2.1	2.5**	2.5**	2.4	2.7**	2.8**	2.5	2.7	2.8**
	(0.035)	(0.024)	(0.024)	(0.027)	(0.033)	(0.029)	(0.048)	(0.041)	(0.044)	(0.060)	0.048)	(0.058)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 9-2- Average GPA at High Risk Schools by Race and Ethnicity

	Latino			White			Black			Asian		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Chaffey	2.2	2.3**	2.5**	2.6	2.6	2.6	2.2	2.5*	2.3	2.8	3.2	2.8
	(0.019)	(0.017)	(0.017)	(0.039)	(0.047)	(0.053)	(0.063)	(0.830)	(1.028)	(0.175)	(0.153)	(0.170)
Montclair	2.3	2.4**	2.6*	2.6	2.6	2.5	2.4	2.1*	2.5	3.2	3.3	3.4
	(0.017)	(0.018)	(0.017)	(0.054)	(0.051)	(0.058)	(0.056)	(0.079)	(0.804)	(0.083)	(0.077)	(0.875)
Ontario	2.1	2.4**	2.5**	2.4	2.6*	2.7*	2.3	2.5	2.6*	3.3	3.7*	3.4
	(0.021)	(0.018)	(0.017)	(0.052)	(0.058)	(0.066)	(0.068)	(0.066)	(0.072)	(0.133)	(0.090)	(0.123)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Similar patterns were upheld for Special Education and ELL students. While English Language Learners on average have the lowest GPAs, the group did show statistically significant increase between the three cohorts (see table 9-3 below). In two of the three schools, Special Education students saw statistically meaning increases.

Table 9-3. Average GPA at High Risk Schools by Special Edu. and ELL Status

	Special Education			ELL		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Chaffey	2.3	2.7**	2.6**	1.8	2.2**	2.2**
	(0.049)	(0.041)	(0.042)	(0.032)	(0.035)	(0.037)
Montclair	2.1	2.1	2.2	2.1	2.0*	2.0*
	(0.045)	(0.045)	(0.044)	(0.030)	(0.029)	(0.034)
Ontario	2.1	2.2	2.3*	1.7	1.8**	2.0**
	(0.039)	(0.037)	(0.036)	(0.028)	(0.027)	(0.027)

Note: Standard Errors in parentheses

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

MID-RISK SCHOOLS

Cohort data from the mid-risk schools reveals a slightly different pattern than that of the high-risk schools. At Alta Loma High, only the low and high SES students saw increases in average GPAs. However, at Colony High, each SES group with exception to the mid SES group saw statistically significant increases in GPAs.

Racial, all groups saw increases in GPAs, with exception to Asian students who saw a statistically significant decline in average GPA in both schools (see table 9-4 below). At Alta Loma, Asian students saw a GPA decrease of from 3.4 to 2.8 between Cohort 2003 and Cohort 2007. At Colony, the group saw a decrease from 3.3 to 3.0 during the same time period.

Table 9-4. Average GPA at Mid Risk Schools by SES Group

	Low SES			Mid low SES			Mid SES			High SES		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C-2010
Alta Loma	2.2	2.0	2.4*	2.2	2.3	2.3	2.6	2.5	2.6	2.8	2.8	3.0**
	(0.071)	(0.068)	(0.061)	(0.034)	(0.045)	(0.035)	(0.025)	(0.028)	(0.027)	(0.029)	(0.030)	(0.030)
Colony	1.9	1.9	2.2**	2.4	2.3**	2.3	2.4	2.5*	2.6**	2.6	2.8**	2.8**
	(0.055)	(0.045)	(0.049)	(0.043)	(0.037)	(0.047)	(0.028)	(0.034)	(0.040)	(0.037)	(0.041)	(0.034)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 9-5. Average GPA at Mid Risk Schools by Race and Ethnicity

	Latino			White			Black			Asian		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C-2010
Alta Loma	2.4	2.3	2.5**	2.7	2.7	2.7	2.2	2.4**	2.5**	3.4	2.8**	3.2
	(0.025)	(0.027)	(0.027)	(0.023)	(0.028)	(0.027)	(0.046)	(0.057)	(0.055)	(0.100)	(0.094)	(0.076)
Colony	2.3	2.3	2.5**	2.7	2.8*	2.9**	2.3	2.2	2.3	3.3	3.0	2.9**
	(0.028)	(0.026)	(0.025)	(0.040)	(0.049)	(0.054)	(0.038)	(0.040)	(0.056)	(0.093)	(0.122)	(0.105)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Similarly, Special Education and ELL students showed mixed results in the cohort cluster analysis. At Alta Loma, both Special Education and ELL students saw a decline in average GPAs between Cohort 2003 and 2007. For Special Education students the decrease in GPA was statistically significant. At Colony High however, the both groups saw substantial rises in average GPA.

Table 9-6. Average GPA at Mid Risk Schools by Special Edu and ELL Status

	Special Education			ELL		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Alta Loma	2.4	2.0**	2.3	2.0	1.9	2.0
	(0.605)	(0.611)	(0.521)	(0.074)	(0.124)	(0.105)
Colony	2.1	2.1	2.3*	1.8	1.8	2.0*
	(0.046)	(0.052)	(0.047)	(0.067)	(0.053)	(0.065)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

LOW-RISK SCHOOLS

At the low-risk schools, each of the SES groups apart from the low SES group saw a rise in average GPAs between cohorts (see table 9-7 below). As can be observed in table 9-8, in two of the three schools, each of the racial groups saw a statistically significant increase in average grades. At Etiwanda High, the only low-risk school in which this trend was not apparent, Latino students were the only racial group that saw statistically significant increases to their grades.

Table 9-7. Average GPA at Low Risk Schools by SES Group

	Low SES			Mid low SES			Mid SES			High SES		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C-2010
Etiwanda	2.4	2.3	2.3	2.4	2.6**	2.6**	2.6	2.7**	2.8**	3.0	3.2**	3.2**
	(0.070)	(0.069)	(0.062)	(0.033)	(0.034)	(0.031)	(0.023)	(0.023)	(0.024)	(0.024)	(0.027)	(0.029)
Los Osos	2.3	2.3	2.3	2.4	2.5**	2.6**	2.5	2.6*	2.7**	2.8	3.0**	3.0**
	(0.084)	(0.121)	(0.105)	(0.040)	(0.049)	(0.044)	(0.023)	(0.025)	(0.025)	(0.020)	(0.021)	(0.020)
Rancho	2.2	2.3	2.4	2.2	2.4**	2.5**	2.5	2.6**	2.8**	2.8	3.0**	3.1**
	(0.077)	(0.102)	(0.083)	(0.035)	(0.037)	(0.037)	(0.027)	(0.024)	(0.025)	(0.026)	0.023)	(0.021)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Table 9-8. Average GPA at Low Risk Schools by Race and Ethnicity

	Latino			White			Black			Asian		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010	C_2003	C_2007	C-2010
Etiwanda	2.4	2.5**	2.6**	2.7	2.8	2.9	2.4	2.5	2.6	3.2	3.2	3.3
	(0.027)	(0.024)	(0.022)	(0.025)	(0.031)	(0.033)	(0.027)	(0.029)	(0.029)	(0.055)	(0.058)	(0.063)
Los Osos	2.6	2.7*	2.7**	2.8	3.0**	3.0**	2.4	2.7**	2.9**	3.2	3.6**	3.5*
	(0.028)	(0.031)	(0.024)	(0.018)	(0.020)	(0.022)	(0.049)	(0.047)	(0.044)	(0.055)	(0.045)	(0.053)
Rancho	2.3	2.5**	2.7**	2.7	2.8**	2.9**	2.3	2.4	2.8**	3.3	3.6**	3.5**
	(0.027)	(0.029)	(0.022)	(0.027)	(0.022)	(0.027)	(.037)	(0.037)	(0.039)	(0.065)	(0.061)	(0.044)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

Interestingly, average GPAs for English Language Learners showed a decline in each the low-risk schools. This pattern is displayed in table 8-9 below. Special Education students however, did conform to a similar pattern observed for other subgroups, with average GPAs increasing in each of the schools.

Table 9-9. Average GPA at Low Risk Schools by Special Edu and ELL Status

	Special Education			ELL		
	C_2003	C_2007	C_2010	C_2003	C_2007	C_2010
Etiwanda	2.3 (0.038)	2.3 (0.042)	2.4 (0.036)	2.3 (0.115)	2.3 (0.083)	2.1 (0.114)
Los Osos	2.3 (0.040)	2.5** (0.045)	2.6** (0.047)	2.8 (0.134)	2.5 (0.128)	2.5 (0.135)
Rancho	2.3 (0.042)	2.3 (0.043)	2.4 (0.049)	2.5 (0.105)	1.9** (0.100)	2.2* (0.078)

Note: Standard Errors in parentheses.

The symbol * denotes the change from the previous year is statistically significant. ** $p < 0.01$, * $p < 0.05$.

The achievement gap is commonly understood as the difference between the academic performance of poor students and wealthier students and between minority students and their non-minority peers. The achievement gap has consistently been a perennial topic in research and educational policy. Though the gap has persisted through a variety of policies intended to close it, the American public has shown no signs of abandoning the effort, although a large majority of the public continues to loose faith in the nation's educational system. A recent poll found that up to two thirds of the American public believes that the nation's educational system needs a major overhaul (Tyson, 2013).

This chapter was designed to provide information on whether the economic downturn of the Great Recession impacted student academic achievement. The findings from this chapter are as follows:

- GPAs for all SES and racial groups have increased since at least 2003, and do not appear to have declined during the Great Recession as hypothesized.
- Test scores appear to have increases for all subgroups (with exception to ELLs) across the district, a pattern in line with nation and California state trends.

Though these results are potentially promising, one should use caution when interpreting them.

The data presented here do not support conclusions about cause and effect between variables.

CONCLUSION

The data and context of this chapter provides useful information for how high school students from different subgroups fared during the most recent recession. The general trend appears promising, as in many cases the most vulnerable students continued to see increases in academic achievement, a pattern that was apparent before the onset of the Great Recession. This suggests that at CJUHSD the most vulnerable students showed some level of resiliency, even in the midst of community and household level stress.

The analysis of academic achievement data for the different subgroups does reveal that while GPAs have increased across the board, the stubborn gap persists and does not appear to be narrowing. Researchers are finding that the achievement gap is present before children experience any schooling. By the time children are three or four, it is already a full standard deviation (Nelson & Sheridan, 2011). Some of the best evidence for the subtle inequalities comes from what scholars have named the “fetal-origins hypothesis”. In some clever experiments coming from exogenous shocks (e.g. natural disasters, famines, etc.), researchers have looked at what happens to babies who were in the womb during an epidemic or environmental calamity, and comparing them with those born a little earlier or later, finding

academic, economic, and health consequences years later ("Great Expectations," 2015). If we know that fetuses are harmed when their mothers are stressed, researchers should consider studying the effects on unborn babies during several economic downturns. It is possible that the educational spillover effects of an economic shock become apparent only a decade later.

To close the gap in the short run means, at minimum, accelerating the academic growth of individuals in affected groups: which includes ELLs, Special Education, minority students, and those that from economically disadvantaged families. As mentioned before, the achievement gap likely emerges prior to these students entering school. Because they begin schooling with lower skills and cognitive development, interventions must begin early on. The biggest lesson is that governments need to rethink their efforts to promote equality of opportunity, and that these efforts ought to start as close as possible to conception.

Thus far, chapters 4-9 have each investigated a both cohort and cross-sectional trends of a variety of educational outcomes. The next chapter will focus on what happened at CJUHSD in 2008, the peak of the economic crash. It will employ more robust statistical models using available covariates with the hopes of better understanding which subgroups and schools were most vulnerable to the economic crisis.

CHAPTER 10 – THE PEAK EFFECT

This study began by analyzing the impact of the Great Recession on a variety of cohorts. The initial analysis of CJUHSD cohorts did not reveal any negative effects caused by the Great Recession. In fact, Cohort 2003, 2007, and 2010 each showed marked improvement

in academic achievement, attendance, graduation, and mobility, despite experiencing an extraordinary increase in the number of students on free and reduced meals across the district. While much of these findings remain counter intuitive, the analysis of time-series revealed that the impact of the Great Recession was masked by my selection cohorts, particularly that of a “recession cohort” (2007-2010). The time-series data revealed a temporal shock that was brief but intense, particularly in regards to graduation rates and student mobility.

Chapter 5 of this dissertation revealed that although graduation rates increased across the district and the different schools immediately following the Recession, graduating seniors in 2008 were adversely impacted. My selection of a “recession-cohort” (2007-2010) certainly masked what happened to the 2008 senior class. In other words, it was cohort 2005 that appeared to have been most impacted in terms of graduation rates. More specifically, many of those on course to graduate in 2008, did not.

Chapter 6 of this study revealed that in 2008, many students were forced into involuntary school moves. This shock to student mobility was short lived, as mobility rates declined back to pre-recession levels in 2009 and 2010.

Furthermore, at CJUHSD, dramatic declines in graduation rates and a spike in student mobility marked the year 2008. District wide, student mobility increased from 3.6% to 5.9% ($p < .001$.) between 2007 and 2008 before declining back down to 3.2% in 2009. During this same time period, graduation rates went down from 93.6% to 90.3% before increasing to 95.4% in 2009 ($p < .001$.). The stark changes in 2008 were not equally distributed amongst schools and subgroups, as it was the traditionally vulnerable groups that were most impacted, particularly when it came to high school completion. On the other hand, student mobility

between schools and districts revealed a more nuanced picture where the impact appeared to be more widespread.

To further help us understand the sudden uptick in 2008 and the factors associated with mobility and drop out rates I investigate the peak effect in 2008 using logistic models with cluster robust standard errors. This model was selected because the traditional standard error estimates for logistic regression models based on maximum likelihood from independent observations is not proper for data sets with cluster structure (students nested within schools) since observations in the same clusters tend to have similar characteristics and are highly correlated with one another other. Robust standard error estimates are needed to take into account the intra-cluster correlation where the assumption of independence is violated (Huber, 1967). Data clustering structure is common in social, behavioral, and health sciences. Therefore, I use robust standard error estimate for the cluster sampling data in the logistic model to take into account the intra-cluster correlation in data analysis. In addition, I ran another method for dealing with correlated data: the technique of generalized estimating equations (GEEs). The results from this model were virtually identical to the logistic regression model with robust standard errors.

Moreover, the regression model for this analysis will take the form:

$$P = Y = \frac{e^{\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_{1p}}}{1 + e^{\alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_{1p}}}$$

Where

- P is the expected probability that the outcome is present;

- Y is a binary dependent variable (coded 0, 1);
- X_1 through X_p are distinct independent variables;
- and β_0 through β_p are the regression coefficients

For the logistic regression model, I will exponentiate the coefficients β ($= e^\beta$) and interpret them as odds-ratios, or the ratio of two odds. The odds ratio is the ratio of the probability that the event of interest occurs to the probability that it does not. This is often estimated by the ratio of the number of times that the event of interest occurs to the number of times that it does not. It is widely used in medical and social science research (Bland & Altman, 2000). The table summaries of the models will report both the coefficients β and the odds ratio. In addition, the logistic regression models test for interaction effects for all student subgroup variables and year to further address the second question research question. All statistically significant interactions will be reported. Because interpretational difficulties can be difficult with nonlinear models (i.e., logistic regression) in the case of interaction effects, I compute the change in predicted probabilities of graduating for each subgroup by year (Peng, So, Stage, St, & John, 2014) .

The analysis section of this chapter will be divided into *two parts*, each focusing on a different outcome variable and the associated model. Each of the following sections in this will begin by employing descriptive statistics to describe the basic features of the dependent and independent variables. The dependent variables of interest for the models are: 1) *Graduation rate in 2008*, and 2) *student mobility in 2008*. The independent variables for interest are: 1) Race, 2) Socio-economic status, 3) Grade level, 4) Language Status, 5) Special Education Status, 6) Average Student GPA.

Although understanding the impact of the recession on the different schools based on school risk-level is central to my analysis, including individual schools in each of the logistic models caused an estimation problem because of perfect prediction, or in other words, including schools violated the assumption of independence. I therefore have chosen to exclude individual schools as a covariate for each of the models. I account for schools by creating clusters and adjusting the standard errors. Not only is using logistic models with cluster robust standard errors more appropriate, but the schools “risk” clusters created throughout this dissertation analysis (see Chapter 3) are based on variables accounted for in the model. For example, the clusters were created based on several school level indicators including the percent of students on free and reduced lunches, percent of student body that is black and Latino, percent of students that are classified as English Learners, and finally, the percent that are classified as Special Education, are all treated as separate covariates in the model. Therefore, including individual schools on top of these covariates would be an over adjustment.

A limitation of the graduation rate data is that only seniors were assigned a graduation status, therefore excluding students that dropped out as 9th, 10th, or 11th graders. Under these circumstances, underreporting is highly likely. Other literature has suggested an underestimation of dropout rates is common (Orfield, 2006, Rumberger, 2008). Nonetheless, this paper is less concerned with the actual drop out rates, and is more interested in the trends resulting from the economic downturn.

GRADUATION CRISIS AND THE GREAT RECESSION

As discussed in chapter 5 of this study, graduation rates decreased substantially between 2007 and 2008. Table 10-1 describes the frequency distributions of the socio-

demographic variables of interest. Table 10-1 illustrates the subgroup variation in 2008 graduation. Of all racial and ethnic groups, Latinos by far had the lowest graduation rate in 2008 at 86.9%. Blacks that had a 91.1% graduation rate, then whites, and finally Asians follow this. Out of all the subgroups, English Learners by far have lowest 2008 graduation rate at 62.6%. ELLs are followed by Special Education students who have 75.4% graduation rate in 2008 (see table 10-1 below).

Table 10-1. Frequency Distributions of Covariates and Outcome Variables

	Variables	Freq.	Pct.	Cum.
Race	Latino	2,866	54.3	54.3
	White	5,488	26.3	80.6
	Black	2,547	10.9	91.5
	Asian	1,097	5.0	96.5
	Other	809	3.5	100
Socioeconomic Status	Low SES	1,061	20.3	20.3
	Mid Low SES	1,076	20.6	40.9
	Mid SES	1,460	27.9	68.8
	High SES	1,632	31.2	100
Identification Status	Special Needs	601	11.4	11.4
	No Special Needs	4,675	88.6	100
	English Learners	569	10.8	10.8
	Non English Learners	4,707	89.2	100

	Did Not Graduate	Graduation	Total
Latino	345	2,293	2,638
	13.1%	86.9%	100
White	64	1,276	1,340
	4.8%	95.2%	100
Black	49	498	547
	8.9%	91.1%	100
Asian	9	248	257
	3.5%	96.5%	100
Other	12	166	178
	6.7%	93.3%	100
<i>total</i>	479	4,481	4,960
	9.7%	90.3%	100%

	Did Not Graduate	Graduation	Total
English Learner	179	300	479
	37.4%	62.6%	
Special Education	111	341	452
	24.6%	75.4%	

Percentiles	Avg. GPA		
1%	1.0	Obs.	5,276
5%	1.5	Mean	2.65
10%	1.7	Std. Dev.	0.773
25%	2.1		
50%	2.6		
75%	3.2		
90%	3.7		
95%	4		
99%	4.4		

To gain insight into the relationship between the 2008 graduation and Socio-demographic and academic predictors I perform a multivariate logistic regression analysis. For this analysis, the outcome measure was recoded as a dichotomous variable: 0 *for not graduation* and 1 *for graduating*. Grade level was dropped as a predictor variable because all observations are from 12th grade. Separate analysis were carried out to determine whether the interaction effects between all SES variables and race are associated with 2008 graduation, but none were statistically significant. Below is the Model 1 Table 10-2 predicting high school graduation in 2008.

Table 10-2. (Model 1) Logistic Regression with Cluster Robust Standard Errors for Variables Predicting High School Graduation in 2008 (n = 4918), Controlling for Socio-demographic and Academic Variables.

Predictor	<i>B</i>	<i>Robust SE</i>	<i>OR</i>	<i>95% Conf. Interval (OR).</i>
Race/Ethnicity				
White	-.104	.201	.901	[.581, 1.39]
Black	-.384	.240	.681	[.340, 1.36]
Asian	-.254	.284	.775	[.378, 1.59]
Other	-.900	.087	.406	[.266, .620]
Student Identification Status				
English Learners	-1.13***	.069	.321	[.210, .491]
Special Education	-.958***	.103	.383	[.225, .651]
Socioeconomic Status				
Mid Low SES	.492**	.286	1.63	[1.15, 2.32]
Mid SES	.717***	.403	2.04	[1.40, 3.01]
High SES	.980***	.574	2.66	[1.68, 3.93]
Academic				
GPA	2.34***	3.53	11.4	[6.23, 20.9]
Constant	-3.57			
Wald Chi ²	22843.25			
<i>df</i>	10			

Note: OR = Odds Ratio. Latino and Low SES are the reference category. Standard Error is of Odds Ratio and is adjusted for 12 clusters of schools.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Race/ethnicity: Compared with Latinos, all other racial and ethnic groups were more likely to graduate in 2008, though none of the differences are statistically significant in model 1.

Controlling for all predictors in the model, only “other” in the race/ethnicity category were less likely to graduate than Latinos. In other words, for all the other races with exception to “other”, the model could not distinguish any statistically meaningful differences. Because these results are counter-intuitive, I changed the race variables to a binary variable, 0 for non-Latino and 1 for Latino and reran the model, but the patterns were virtually identical as when using race as a categorical variable.

Socioeconomic Status: Not surprisingly, the pattern with SES groups is clear. The higher the

SES group, the more likely the group graduated in 2008 controlling for all predictors in the model. The “Mid SES” and “High SES” groups were 2 and 2.5 times more likely to graduate during the peak of the Recession than the “low SES” groups. The differences among SES groups are significant and likely non-chance.

Student Identification Status: For these analyses, both non-English Learners (ELLs) and non-Special Education students were set as the reference group. There was a statistically large difference between those classified as ELL and Special Education students and those not. In 2008, an ELL student was less than one third (.321) times as likely to graduate controlling for all predictors in the model. Special Education students were .383 times as likely to graduate as non Special Education students. These findings confirm what a long line of research has for several decades, namely that these subgroups are two of the most vulnerable.

Academic Achievement: Academic achievement is by far the strongest predictor in the model. The coefficient for GPA can be interpreted as follows: For every one-unit increase in GPA (e.g. 2.0 to 3.0), the odds likely hood for graduating in 2008 goes up 2.34.

Model Fit: I first consider possible issues of collinearity, which could of potentially inflated the standard errors in model 1, making it harder to obtain precise—and statistically significant—estimates. One way to assess the degree of multicollinearity associated with an independent variable is to calculate its variance inflation factor (VIF). The VIF for independent variable j is $1/(1 - R_j^2)$, where R_j^2 is the squared multiple correlation from a regression of variable j on all other independent variables in the model. In other words, the VIF j is proportional to the variance of variable j explained by the other independent variables in the model. The larger the VIF, the harder it is to distinguish the effect of variable j . In general, the rule of thumb used is

that if VIF values exceed 5 or 10, implying that the estimated regression model has the issue of multicollinearity and that measured estimates are assessed inappropriately (Montgomery et. al., 2001). Collinearity diagnostic of model 1 above in table 1D in appendix D suggests a worrisome level of multicollinearity between independent variables, with GPA having an above 10 VIF level. Because GPA was such a strong predictor of graduation (see table 2D in appendix D for pairwise correlation coefficients) and because issues of collinearity, I reran the model without GPA.

MODEL DROPPING GPA

In dropping GPA from the model, the socio-demographic effects on high school graduation in 2008 appear to point to much clearer pattern. Model 2 table 10-3 below shows that once GPA is dropped from the regression model, race becomes a statistically significant predictor of high school graduation in 2008. In this case, the odds of a Latino student graduating with all predictors in the model held constant, is .471 compared to Asians. Or in other words, a Latino student was half as likely to graduate in 2008. Blacks were less than one third (.301) as likely to graduate than Asians. In model 2, SES status reveals a similar pattern that can be observed in model 1, namely that as SES goes up, the odds ratio of graduating from high school in 2008 increases. In addition, both English Language Learners and Special Education students were significantly much less likely to graduate, a finding also confirmed in model 1 above.

Table 10-3. (Model 2) Logistic Regression with Cluster Robust Standard Errors for Variables Predicting High School Graduation in 2008 (n = 4918), Controlling for Socio-demographics.

Predictor	<i>B</i>	<i>Robust SE</i>	<i>OR</i>	<i>95% Conf. Interval (OR)</i>
Race/Ethnicity				
Latino	-.751*	.178	.471	[.224, .988]
White	-.489	.162	.612	[.364, 1.02]
Black	-1.19***	.107	.301	[.150, .605]
Other	-1.05*	.154	.347	[.145, .831]
Student Identification Status				
English Learners	-1.79***	.069	.166	[.235, .565]
Special Education	-1.00***	.103	.365	[.118, .232]
Socioeconomic Status				
Mid Low SES	.300	.266	1.34	[.916, 1.98]
Mid SES	.696***	.444	2.00	[1.30, 3.09]
High SES	1.15***	.868	3.16	[1.84, 5.41]
Constant	3.93			
Wald Chi ²	301.82			
<i>df</i>	9			

Note: OR = Odds Ratio. Asians and Low SES are the reference category. Standard Error is of Odds Ratio and is adjusted for 12 clusters of schools.

p* < .05. *p* < .01. ****p* < .001.

DISCUSSION

Findings indicate that average GPA is the most related to 2008 high school completion at CJUHSD (Model 1). This is not surprising considering the large body of literature that suggests GPAs unique predictive power on a variety of educational and later life outcomes (citation need). In addition, according to model 1, race by itself does not predict a lot of the variability in graduation rates when controlling for SES. This counter intuitive result suggests that with this particular model and sample, the driving demographic factor appears to be socioeconomic status. However, because of issues of collinearity discussed above, caution should be noted when interpreting results from model 1. Furthermore, findings from model 2 suggest that race is a significant predictor of graduation in 2008. Namely that traditionally vulnerable racial groups, blacks and Latinos were much less likely to graduate than Asians and

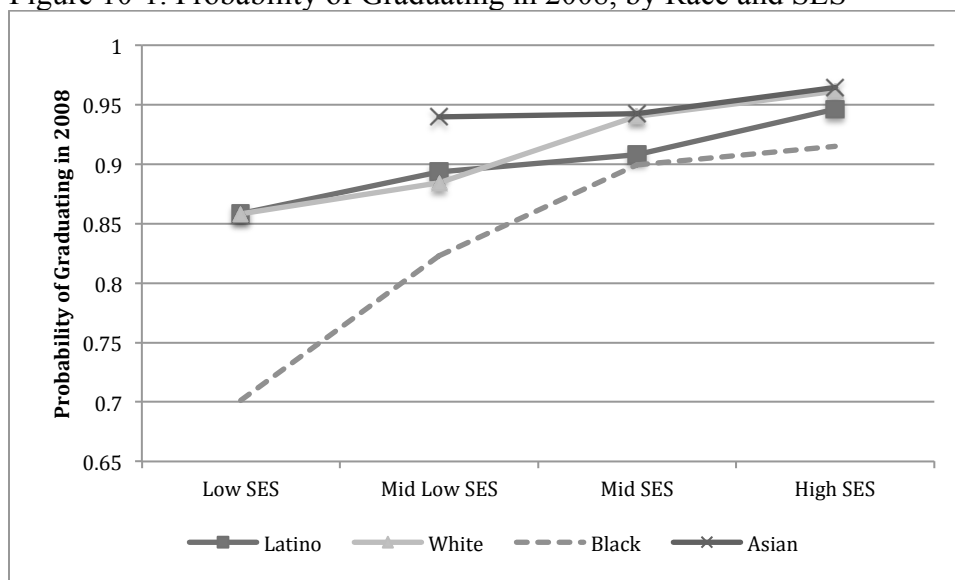
whites, controlling for other predictors in the model. In addition, other traditionally vulnerable groups, particularly those classified as ELL and Special Education students are most vulnerable to dropping out during an economic crisis. This is not surprising considering these groups tend to be most marginalized in urban schools throughout the nation. Socioeconomic status appears to be a significant predictor in both of the models. This generally confirms a large body of research indicated that relationship between SES and academic achievement.

MULTIPLYING INEQUALITIES: THINKING ABOUT RACE AND CLASS

The confounding of race and socioeconomic status is a source of on going vibrant and heated discussion in social science research and the newspaper articles. Simply stated, educational outcomes vary by race and by socioeconomic status. Racial minorities are more likely to have low socioeconomic status compared with Asians or whites for example. This overlap between race and socioeconomic status complicates efforts to determine whether it is, “race and class” or “race or class” that produce gaps in educational achievement. Figure 1 below of the interaction between race and SES status at CJUHSD suggests that the two variables are intimately connected. Based on the logistic regression, figure 10-1, reveals that the predicted probability of graduating for a low SES blacks student is substantially lower than that of any other race in the same SES group. The inequality in educational outcomes experienced by members of multiple social groups, and/or their intersection, at the individual, group and structural level is an area under researched. These findings suggest that while without a doubt social class is a main gateway to educational opportunity, race matters. One recent longitudinal study by Karl Alexander (2014) of low-income high school dropouts in Baltimore revealed that whites from low-income backgrounds earned twice that of blacks from

similar backgrounds (Rosen, 2014). Further understanding the mechanisms in which race and class interact should be an area of future research.

Figure 10-1. Probability of Graduating in 2008, by Race and SES



STUDENT MOBILITY AND THE GREAT RECESSION

School mobility, that is unpromotional school changes, increased substantially in 2008 at the height of the Great Recession. A large body of research has shown that school mobility not only harms the students that change schools, but also the schools and classrooms they attend (Rumberger, 1998). The immense majority of student mobility occurs as a result of families changing residence. As discussed in chapter 6, the stark spike in school changes in 2008 is not entirely surprising. The district (CJUHSd) is geographically located in one of the handful of epicenters often referred to as one of the “foreclosure capitals of the nation”.

It is likely that student mobility was pervasive throughout this region, particularly for the most academically vulnerable students. Or as an Assistant Superintendent at CJUHSd interviewed for this project stated in a conversation about the foreclosure crisis and its impact

on the district, “we saw a lot of people loose homes and move into multiple family homes...not just two but three families to a home”. It should be noted that “official” mobility estimates reported by the district likely gravely underestimate the impact of residential instability on CJUHSD students. Students were only considered mobile if they were verified to have change schools. This will be discussed more in depth towards the end of this section.

The average GPAs in 2008 for mobility students was substantially lower than their non-mobile counterparts (table 10-4). Tables 10-5 and 10-6 below show that the percentage of blacks and Latinos that moved in 2008 was much higher than that of Whites and Asians. Of all subgroups, English Language Learners and Special Education students by far had the highest mobility rates in 2008. This is generally consistent with all other educational outcomes investigated throughout this dissertation.

Table 10-4. Frequency Distribution of Mobility

	Obs.	Mean	Std. Dev.
Moved	1,381	1.97	0.864
Did Not Move	22,099	2.56	0.901

Table 10-5. Frequency Distribution of Mobility by Race

	Moved School	Stayed	Total
Latino	842 6.2%	12,698 93.8%	13,539 100
White	268 4.9%	5,220 95.2%	5,488 100
Black	200 7.9%	2,347 91.1%	2,547 100
Asian	39 3.6%	1,058 96.5%	1,097 100
Other	33 4.1%	776 93.3%	809 100
<i>total</i>	1,381 5.9%	22,099 94.1%	23,480 100%

Table 10-6. Frequency Distribution of Mobility by Student Classification

	Moved Schools	Stayed	Total
English Learner	321 10.4%	2,776 89.6%	3,097
Special Education	253 10.3%	2,193 89.7%	452

To further gain insight into the relationship between student mobility in 2008 and Socio-demographic and academic predictors, I perform a multivariate logistic regression analysis. For this model, the outcome measure was recoded as a dichotomous variable: 0 *did not move schools* and 1 *moved schools*. Separate analyses were carried out to investigate whether the interaction effects between all SES variables and race were associated with 2008 mobility, with one of interactions entering as statistically significant. In addition, collinearity diagnostics appear to show no sign of multicollinearity (see table 3D in appendix D). Below is the refined model predicting school mobility in 2008 (Table 10-7, Model 3).

Table 10-7. (Model 3) Logistic Regression with Cluster Robust Standard Errors for Variables Predicting School Mobility in 2008 (n = 22949), Controlling for Socio-demographic and Academic Variables.

Predictor	B	Robust SE	OR	95% Conf. Interval (OR)
Race/Ethnicity				
White	.143	.121	1.14	[.939, 1.41]
Black	.441***	.209	1.54	[1.20, 2.01]
Asian	.209	.277	1.24	[.792, 1.91]
Other	.132	.299	1.15	[.770, 1.69]
Student Identification Status				
English Learners	.337***	.151	1.41	[1.13, 1.73]
Special Education	.455*	.312	1.53	[1.06, 2.32]
Socioeconomic Status				
Mid Low SES	-.006	.123	.998	[.779, 1.26]
Mid SES	-.116	.111	.902	[.696, 1.13]
High SES	-.056	.144	.948	[.700, 1.27]
Grade				
Nine	-.884*	.188	.429	[.182, 1.01]
Ten	-.546	.277	.579	[.226, 1.48]
Eleven	-.666	.237	.513	[.225, 1.17]
Academic				
GPA	-.686***	.033	.471	[.439, .577]
Constant	-1.18			

Wald Chi ²	11133.62
df	13

Note: OR = Odds Ratio. Latino, Low SES, and grade 12 are the reference categories. Standard Error is of OR and is adjusted for 15 clusters of schools.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Race/Ethnicity: Compared with Latinos, black students were most likely to have moved in 2008, controlling for all variables in the model. Each of the racial and ethnic groups was more likely than Latinos to be mobile in 2008, with blacks being the only group that was statistically significant. The odds ratios and their corresponding 95% confidence intervals from the logistic model are reported in model 3 above. Black students were 1.54 times as likely to move schools in 2008 than Latino students.

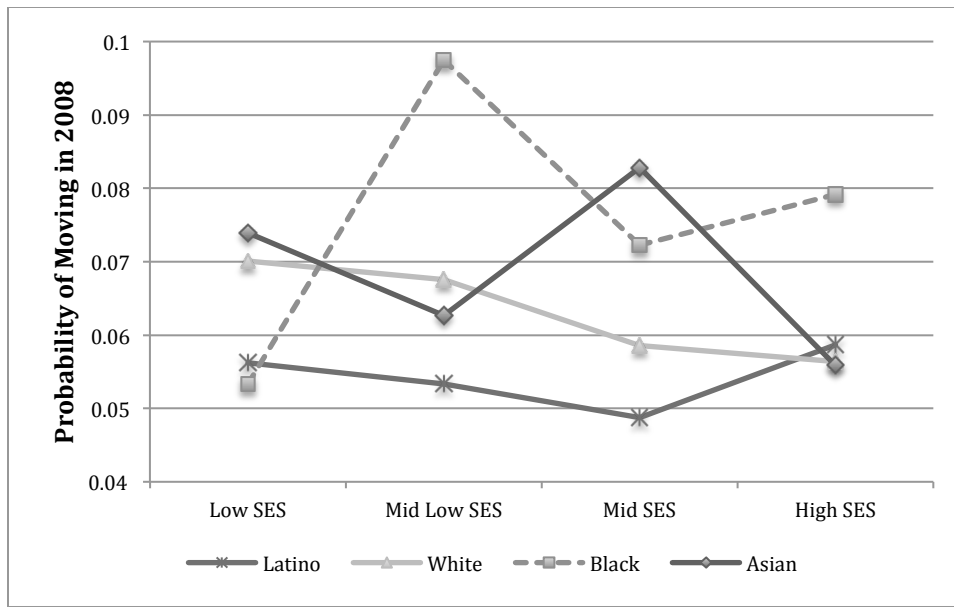
Socio-Economic Status: The model could not distinguish any statistically significant differences between the four SES groups. This is not surprising, as the descriptive analysis of student mobility in chapter 6 suggested that all SES groups faced fairly similar increases in mobility in 2008, although likely for different reasons. In fact, students from the highest SES group were slightly more likely to move in 2008 than other students although the differences were not statistically meaningful. At least one possible explanation is that higher SES families were more likely to experience residential instability from a house loss since they were more likely to own homes.

Student Identification Status: Both ELL and Special Education students were substantially more likely to experience a school change in 2008. Both groups of students were approximately 1.5 as likely to move than other students, both statistically significant. ELL students are often newcomers into the county or children of newcomers, facing an array of educational and social challenges. Special Education students (more later)

Grade level: Freshmen students experienced the lowest rate of school changes in 2008. While seniors in 2008 more likely to experience a school change, only the difference between seniors and freshman was statistically significant. The reasons for this are unclear.

Interaction of Race and Socioeconomic Status: To determine whether school mobility was associated with race by different levels SES, I included an interaction terms in the logistic regression model above (model 3), i.e., interaction of race with socioeconomic status. Figure 10-2 below is a plot indicating the predicted probability of students moving by race and SES. The interaction between race and SES entered as significant with respects to blacks and the mid low SES groups. These students were likely from black families that were on the periphery of the middle-class, many of who were victims to predatory lending schemes during the regions housing boom (Ehrenreich & Muhammad, 2009). This group was significantly more exposed to residential instability than even the poorest black families. Similar results were observed with the multi-level analysis (see Table 5D in Appendix D).

Figure 10-2. Predicted Probability of Moving Schools in 2008 by Race and SES



DISCUSSION

Approximately 13 percent of children under 18 move from one year to the next, and low-income children and adults move even more often (U.S. Census Bureau, Current Population Survey 2010; Cohen and Wardrip 2011). In 2008, CJUHSD experienced a dramatic increase in the number of students that moved. In the words of an Assistant Superintendent working at the district, “the impact was huge and there is no other way to describe it”. For black students, the impact was very different than that of other students, as many of these students and their families left their schools and communities in the middle of the school year, likely causing long-lasting academic and social disruptions.

While the data reveals a clear pattern of mobility during the recession, it fails to capture the spike in doubled-up housing during this time. According to a report from the Pew Research Center, racial and ethnic minorities are more likely to live in multi-generational family arrangements (Fry & Passel, 2014). Not surprisingly, the data shows that English Language

Learners and Special Education students were also much more likely to have been impacted the districts 2008 mobility crisis.

POLICIES AND ORGANIZATIONS WORKING TO MINIMIZE MOBILITY

We already have some effective policies and practices that help reduce children's school mobility and residential mobility for families. The McKinney Vento Homeless Assistance Act is a federal law that ensures immediate enrollment and educational stability for homeless children and youth. McKinney-Vento provides federal funding to states for the purpose of supporting district programs that serve homeless students. In addition the Fostering Connections Act signed into law in 2008 allows homeless and foster care children to attend their same school even when they move out of school attendance boundaries. While these federal interventions are far from enough, they are certainly a step in the right direction.

In addition, there should be outreach efforts to ensure that families are aware of local housing counseling organizations. Housing counselors typically work with prospective homebuyers, homeowners, and even renters to secure safe and affordable housing. These organizations can be either nonprofit organizations or government agencies, working directly with the most vulnerable families. Some organizations focus solely on housing or foreclosure mitigation. For example, the US Department of Housing and Urban Development (HUD) works with certified housing counseling organizations that are eligible to receive federal grant money to council homeowners or renters (Comey, Litschwartz, Pettit, 2012). In addition, collaboration across counties is crucial because students often move across county lines. Effective and efficient data systems are key to making the collaboration possible.

The potential impact of mobility on students' education is significant. Students who move often between schools may experience a range of problems such as lower achievement levels due to discontinuity of curriculum between schools, an array of behavioral problems, difficulty developing peer relationships, and a greater risk of failing to complete high school (Edweek, 2005). Russel Rumberger (2004) offers specific strategies that schools could undertake to help address problems of mobility. The strategies include: facilitating school transitions from income transfer students, creating customized activities and procedures to address the needs of incoming students, counseling for incoming or outgoing students, and more.

CHAPTER 11- STRATEGIES FOR ABSORBING FUTURE SHOCKS

KEY FINDINGS

The community that geographically constitutes Chaffey Joint Union High School District (CJUHSD) was the epicenter of a housing market crash in 2008. As a result, household income plummeted, unemployment doubled from 5% to almost 10%, household poverty spiked, and housing prices collapsed across every zip code within the community. Although no racial and ethnic groups were left unscathed, Black and Latino families were hit particularly hard. Latinos saw an almost tripling in their unemployment rates, while blacks saw an increase from 10% to 18.7%. Groups without a college education also experienced similar changes in unemployment. Many more were working shorter hours or withdrew altogether from the labor market.

The collapse the housing market had no mercy on any group, although the pain was certainly not equally distributed. In 2006, less than 1% of all housing transactions were of foreclosed properties, before skyrocketing in 2007, 2008, and 2009. In 2009, 43.3% of all housing transactions were at some point in foreclosure in Chaffey's wealthiest zip code, 91739. In some of the community's working class zip codes, such as 91764, over 76% of all homes sold at the height of the recession where foreclosed. Generally speaking, the higher the percent of housing sales that were foreclosed was inversely correlated to the wealth of the community. Therefore not surprisingly, household wealth was most lost in the poorest neighborhoods.

Educationally, the picture was slightly more nuanced, and in some ways, counter-intuitive. The economic shock that hit CJUHSD was brief but intense. In the words of one of the district's Assistant Superintendents who has been with the district for 33 years, "the impact of the crash was huge, and there is no other way to describe it". The impact saw multiple families moving into homes together, students and their families leaving the county involuntarily, and the significant growth of the student homeless population. The Assistant Superintendent best captured this as he recalled 2008, "As goes the city as goes our schools...our district became a reflection of the city". In a city and community generally referred to as the nation's foreclosure capital, it is perhaps not surprising that this district was hit particularly hard.

Racially, graduation rates for Blacks and Latinos plummeted in 2008. Though the most vulnerable groups in 2008 appear to have been English Language Learners (ELLs), Special Education students, and students from low SES backgrounds. ELLs saw their graduation rates plummet from 75% in 2007, to 59% in 2008, but far the starkest decline. Put in statistical terms, controlling of a variety of background characteristics the odds of an ELL student

graduating in 2008 was one sixth of non-ELL students. In addition, a high SES student was over 3 times as likely to graduate in 2008 than a low SES student. Racially, the pattern was not much different with Latinos half as likely to graduate as Asians and blacks less than a third as likely to graduate. This was most acute in the districts most disadvantaged schools.

Not all was bad news at CJUHSD, as there appeared to be a “silver lining” at least in terms of graduation rates. As was the case in other economic downturns historically, most notably the Great Depression of the 1930s, beginning in 2009, graduation rates spiked up quite dramatically. This was especially the case for the most economically and racially marginalized groups. The pattern is most likely explained by the macro-economic theory of ‘human capital’ where the value of the best alternative is foregone, in this case, work. In terms of opportunity to stay in school, students likely did not have much of an alternative. This mechanism was not at play in 2008 when graduation rates plummeted, but is likely to have played a role in the increase observed across schools in 2009 and thereafter.

Graduation rates were not the only quantifiable impact of the Great Recession. Student mobility also skyrocketed. Between 2007 and 2008, the rate of student mobility almost doubled from 3.5% to almost 6% across the district. Surprisingly, the increase was equally distributed amongst the different SES groups, with no significant differences between the low and high SES groups. Racially however, the story is not one of equal shock. The increases were particularly dramatic for the district's black student population who saw an increase from 3.8% in 2007 to 7.9% in 2008. In fact, a black student was over 1.5 times as likely to involuntarily leave school in 2008 than a Latino student, controlling for SES status and a variety of other academic and demographic factors. Interestingly, it was not the poor black student population that was most vulnerable to the school moves in 2008, but students from black families that

were on the periphery of the middle-class. It was many of these families that were victims of predatory lending schemes during the regions housing boom.

While 2008 was clearly a time of chaos for both the community and CJUHSD, the schools appear to have showed remarkable resiliency in the midst of the most severe economic downturn in almost 70 years. Student absences declined substantially for all groups, especially those that are most vulnerable. This is a surprising finding, as I would expect such a disruption to negatively impact attendance. In addition, all student groups showed marked improvement in academic achievement, both in terms of test scores and grades. This was another surprising finding considering the level of family and household stress likely induced by the Great Recession. The recession does not appear to have caused the increases, but more so does not appear to have disrupted the upward trend beginning before the recession in 2008. This is certainly a promising finding. This is without a doubt counterintuitive as the district experienced an increase in the number of students on free and reduced lunches from 22% in 2005 to 56% in 2013, the largest increase of any district in San Bernardino County. One would expect this increases would negatively impact academic achievement.

However, it was during this time that the district grew outreach programs to help families and students in need. In the words of the districts Assistant Superintendent, “during this time families looked to us to provide support...during these times of crisis, education plays the most significant role in the community”. For example, it was in 2009 that Eileen’s Hope Closet outreach program was established by the district to provide a place where families in the community could come and receive at-no-cost clothing, toiletries, school supplies, and food that they needed to support their families with the intension of helping the most underprivileged and at-risk students and their families. In fact, the California School Boards

Association for its excellence and as an exemplary program recognized Eileen's Hope Closest in 2010, winning the Golden Bells award.

In addition, the city of Montclair and Ontario worked with CJUHSD during this time to strike college admission deals at a variety of Cal State Universities including a tuition discounts to ensure college access for families at-risk. This initiative was first piloted in 2005 and is now known as the Promise Scholars Initiative making a promise to all students in the district that if they stay in school and graduate, there will be a scholarship and a place for them in college.

While the initial impact of the economic shock was intense, particularly in 2008, the institutional capacity of the schools, including the community partnerships appears to have been effective. According to my interview with the district Assistant Superintendent "it takes incredible leadership to weather such a storm". During this time, the district saw no changes on the administrative level the Assistant Superintendent recalled:

"Stability was a great resource, especially at the leadership level, and this was certainly not the case in other nearby districts who experienced a lot of change at the highest level".

The assistant superintendent's comments appear to suggest that schools matter and that maintaining administrative stability is essential. Many schools across California did not have the resources to weather the storm. The loss of tax revenue forced many schools to cut back on spending, programs, and administrative and teacher personnel.

LIMITATION OF THE DISSERTATION STUDY

Possible Selection Effects?

The results throughout this dissertation study beg an obvious question: were these “positive” changes a result of a selection effect? The answer to this question depends on the outcome variable of interest. For example, is the dramatic increase in senior’s graduating, particularly those from the most vulnerable subgroups, caused or at least largely explained by a selection effect? In other words, did the most at-risk students drop out in 2008, artificially inflating the post-recession numbers? To investigate this I look at the descriptive statistics and sample subgroup distribution of the most “at-risk” groups (Latino, ELL, Low SES) by year and find that the number of students appears to be stable across all years. Therefore, I believe the estimates to be robust. There is some evidence of a declining ELL student population beginning in 2009, which might explain some of the more dramatic increases in completion rates for this subgroup that began in 2009. It could be the most vulnerable ELL students and their families were victims of deportations, which were peaking around this time in California (Johnson & Hill, 2011). In general, ELLs are widely considered to be the most at-risk subgroup in a wide variety of contexts.

However, for the other outcome variables investigated, such as GPA, test scores, absences, etc., sample attrition throughout the data point for CJUHSD administrative data represents a limitation of the study. It is very likely that the observations for which I have 4 years of data are not representative of an entire cohort. Those observations for which I have 3, 2, or 1 data point are not representative of the 4 data point samples. They are not normally distributed and are disproportionately Latino, low SES, and with lower education outcomes than the observations with four years of data. Therefore, the statistical biases inherent in this data set probably go in the direction of the true effects’ being larger than those reported throughout this analysis.

Though this study provided valuable new evidence on the relationship between exogenous economic downturns and the impact on schools, it contained several other limitations. First, even though these data are well suited for disentangling school outcome changes from family characteristics, they do not control for all potential confounders. My access to more useful covariates was limited by what the district gave me access to. Second, any generalizing from these results to other places and times should be done with caution. Third, the evidence I provide of short-term increases in academic achievement does not suggest anything about possible long-term negative effects of the Great Recession. Of course, I cannot rule out potential effects of income shocks that take longer to feed through into education outcomes than I have allowed for in the time-series processes estimated here. Also, test scores and GPA's are only two outcomes about which we might be concerned, and they may not be the most important when considering academic achievement.

The use of three-year moving average data from the ACS is another limitation of this study. It would have been more ideal to compare two five-year moving average ACS data for more estimate precision. Despite this limitation, prior to the availability of the ACS, researchers had to wait 10 years for the availability of comparable data from the Census Long Form. Nonetheless, considering the extremely truncated 2010 Decennial Census form, the ACS data is the most reliable and up-to-date source of the demographic variables of interest in this report. Also, the ACS data does not allow researchers to make causal claims, as it only allows for the tracking of increases and/or decreases of populations in a single point in time.

DIRECTIONS OF FUTURE RESEARCH

Although I believe that the current study makes a significant contribution to the existing literature on the impact of how children fair during economic downturns, the limitations provide a starting off point for future research. Mindful of the limitations of this study, future research should certainly expand the analysis to other metropolitan areas across the country. Regional comparisons should then be formulated on if and how schools and communities recovered from the Recession. For example, did other districts across California, Nevada, and other areas that were particularly impacted by the recession show similar patterns? Or, what patterns can be seen in places such as Texas, which largely avoided the Great Recession? In addition, because the administrative data only allowed me to look at the graduation status of 12th grade seniors, future research should examine the impact of economic shocks on younger students, especially in the 9th and 10th grade. Students in these grades tend to be particularly vulnerable to dropping out of high school.

More qualitative research is needed to understand that more nuanced effects of the economic downturn on schools. Many of the variables used in this study are not necessarily the best indicators of academic success. Further research should be conducted to understand more concretely how and why academic achievement increases during times of economic crises (e.g. high stakes testing, etc.). It is certainly possible that while economic downturns *cause* graduation rates to go up, there are other developmental outcomes that are positively related to economic shocks.

A related point is the turbulence brought about by middle class families falling into and out of poverty, which maybe created a unique set of stresses that impact children development over time. Gaining an understand of what happens to middle-class families who experience temporary downward mobility should be a task for future research.

Another valuable avenue for future research is to disentangle the causal mechanisms of graduations rate fluctuations during economic crises. Also, research is needed to understand the specific role and impact of school leadership during times of crises. It could be possible that schools serve as a protective buffer against economic shocks. If so, it is important to disentangle which school factors can be most protective (e.g. counselors, administration, teachers, after school programs, etc.) during economic downturns. Better understanding these mechanisms could be useful for policymakers and local leaders with limited resources available to schools during fierce budget cuts that are often ubiquitous during economic downturns.

DIRECTIONS FOR FUTURE POLICY

Economic crises have been a recurrent phenomenon both in the developed and developing world. Recent examples of these type of aggregate shocks are abound: the 1994–95 peso crisis in Mexico, the 2001 financial crisis in Argentina, and of course the 2007-2009 global recession. In fact empirical evidence from 66 countries provides the invaluable insight that over the past 800 years a major economic crisis has happened roughly every 20 years (Reinhart & Rogoff, 2009). As was discussed in chapter 4 of the study, such adverse shocks can lead to very sharp increases in family and child poverty at the community and household level. There are a great number of pathways in which an economic shock can negatively impact children raising important implications for public policy.

While schools are a natural focus for policy efforts, factors external to the schools, including economic and social circumstances and dynamics at home, are likely to have important effects on children and their schooling outcomes. Therefore, public policy should be

integrative and creative. Public policies are likely to be more effective if they are based on programs and mechanisms that are in place before a crisis occurs. When safety net programs are not in place prior to the incidence of a crisis (e.g. economic shock) the difficulty of public efforts to help households absorb the shock in the midst of the crisis rises exponentially. During a crisis, constraints multiply due to the severe financial constraints. The following policies are a starting point for a conversation on how to best prepare for future shocks.

1) Better Data Equals Better Decisions

State agencies should design data tracking systems to monitor student mobility patterns across the state. Insights gained from this could inform policy and programmatic support strategies. We can take a page from the medical industry who has recently made efforts to install electronic health records in hospitals and physicians' offices in order to track patients across hospital throughout the country. Medical records are improving outcomes in health care as everything is digitally tracked. In era of tremendous mobility, where the average American family changes residence every six years, efforts and investments should be made to more easily track students.

2) Stable Housing is Key to Positive Educational Outcomes

Educators and policymakers should be alert to social or academic problems resulting from mobility increases, particularly those resulting from foreclosures.

Traditionally though, education policy and housing policy have occupied separate space in the policy arena. But decades research has uncovered the impact of stable housing on the well being of children, including their educational performance. Stable housing helps decrease

student mobility, as residential mobility is one of the main reasons why children change schools.

Housing vouchers, subsidies, emergency rental assistance, and even housing counsel can help stabilize the most at-risk families. For example, section 8 vouchers could be modified to require families with school school-aged children to remain within a certain geographic distance of their child's school, and certainly within the school catchment area. Too often, however, families that have little help or subsidies are limited, and are forced to move—most often to worse neighborhoods with subpar schools for their children. The move itself is disruptive, but compounding that disruption is the quality of the new housing, which can impact learning. Families may also be forced to double up with other families and thus increase overcrowding. We already have evidence that multi-generational living has increased substantially since the Great Recession (Fry & Passel, 2014). At the extreme end, families may find themselves homeless.

3) Private-Community Partners

Building partnership between community resources and schools is an excellent way to coordinate and leverage community resources and expertise. In other words, educating should not just be delegated as solely the purview of school systems, but rather the mission of various community stakeholders with an emphasis on public-private partners. This appeared to be an essential component for what helped CJUHSD absorb the most severe economic downturn since the Great Depression. Partnerships could include local businesses interested in summer work opportunities, community arts and culture programs, civic engagement organizations, churches, and many more. When all groups in a community provide collective support to a

school, a strong infrastructure sustains a supportive environment where youth can thrive and achieve even in the midst of budget cuts across the city and schools.

4) Federal/State Interventions

In times of economic disaster, districts suffer declines in both state and local funding forcing them to make tough decisions if they are to balance their budgets and still meet the needs of their students. The cuts undermine education reform and hinder school districts' ability to deliver high-quality education, with long-term negative consequences for the nation's competitiveness in an increasingly global economy. During the recession, states used emergency fiscal relief from the federal government to makeup for the substantial share of their shortfalls through 2011. After the 2011, much of the stimulus was allowed to expire, even though many districts continued to face very large shortfalls and increases in student poverty. The expiration of most federal aid at the end of the 2011 has led to sharp declines in state education funding in the 2012 fiscal year and continues to remain low.

In California for example, spending per student declined by almost 14% between 2008 and 2014 (Leachman & Mai, 2014). The federal government must take an affirmative stand to stop the bleeding in the midst of the crisis to help the most vulnerable communities. This should include direct stimulus to local and state economies under the most stress.

CONCLUSION

Economic shocks are ubiquitous and likely inevitable- raising concerns about the social and educational impacts of crises, especially among the more vulnerable populations. Currently, federal and state educational policy has made explicit goals for reducing the dropout rate and closing the achievement gaps among traditional advantaged and disadvantaged groups

(US Department of Education, 2010). Schooling related gaps are a commonplace topic on national and state report cards, major research, and newspaper articles (Ho & Reardon, 2012; Vanneman, Hamilton, Baldwin Anderson, & Rahman, 2009). While it is difficult to dispute the need for change in the counties education system, there is little reason to believe that current education policy will be successful as its focus continues to be what happens inside the four walls of a school. This research seeks to shed light onto the relationship between cyclical economic shocks and education, and the importance of creating policies that link education policy with broader social and economic policy.

The central story that emerges from this case study is the remarkable growth of the Inland Empire region, which has been fed by decades of mass migration and the establishment of large families, particularly among immigrant populations. The rapid demographic growth on Los Angeles's eastern fringe lead to a epic housing boom, which would come to a crashing halt in 2007. The meltdown of the region's housing market led to shockwaves across county's school systems, with student poverty rising sharply.

This study provided evidence of the educational consequences of an exogenous economic shock. It revisited the region of the country most impacted, seeking to understand more fully the short and long-term effects of the most recent economic crisis. What can be inferred is that while schools showed a surprisingly high level of resiliency in midst of budget cuts and a community wide shock, they also were also greatly impacted.

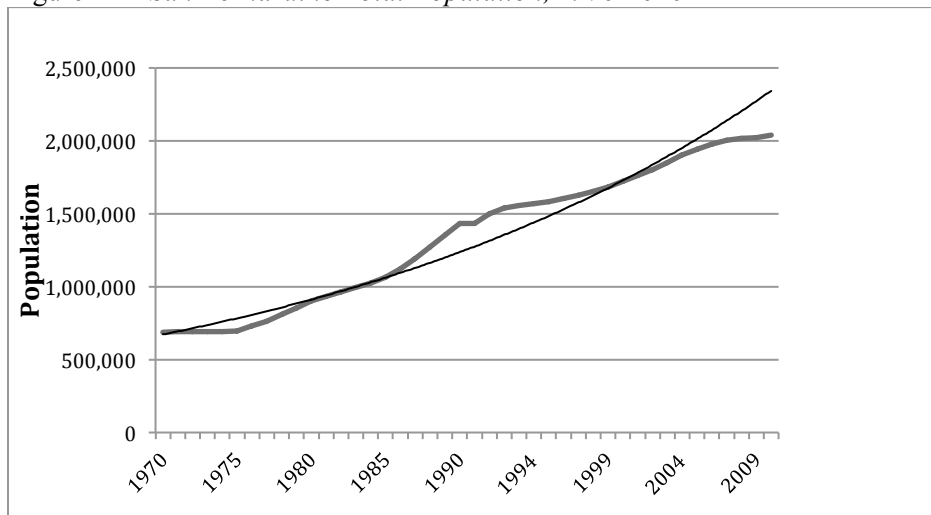
We have known since the Coleman Report was published in 1968 that out-of-school factors have a tremendous impact on student outcomes. Yet, too little attention is paid to the broader social and economic factors that impact student achievement, particularly in a time of

rising economic inequality. Currently, federal education policy is blind to economic cycles of expansion and contraction. Just as coastal Florida and the Gulf are susceptible to hurricanes, and the Southeastern U.S. is prone to violent tornadoes, there are regions and groups that are particularly vulnerable to fluctuations of economic cycles. Though the political obstacles to any such policy discussions are great, the potential benefits to society are even greater.

APPENDIX

APPENDIX A: CHAPTER 4

Figure 1A– *San Bernardino Total Population, 1970-2010*



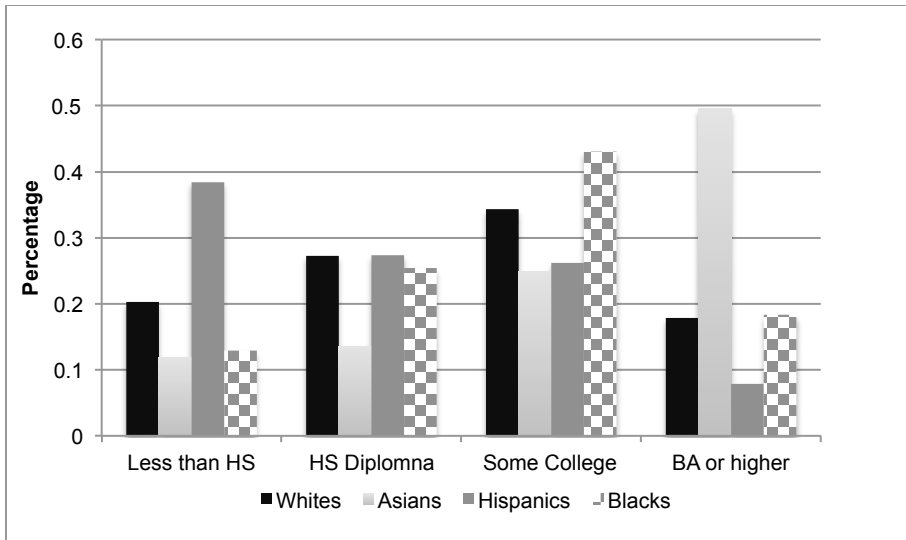
Source: US Census

Table 1A- *San Bernardino County Racial/Ethnic Population Totals, 1960-2010*

	Total Population	White	Black	Asian	Hispanic
1960	503,591	n/a	n/a	n/a	n/a
1970	682,233	551,926	27,972	8,187	90,055
1980	895,016	654,257	47,436	16,110	169,158
1990	1,418,380	862,375	109,215	55,317	380,126
2000	1,709,434	752,151	152,140	82,053	676,936
2010	2,035,210	700,214	181,862	128,603	1,001,145

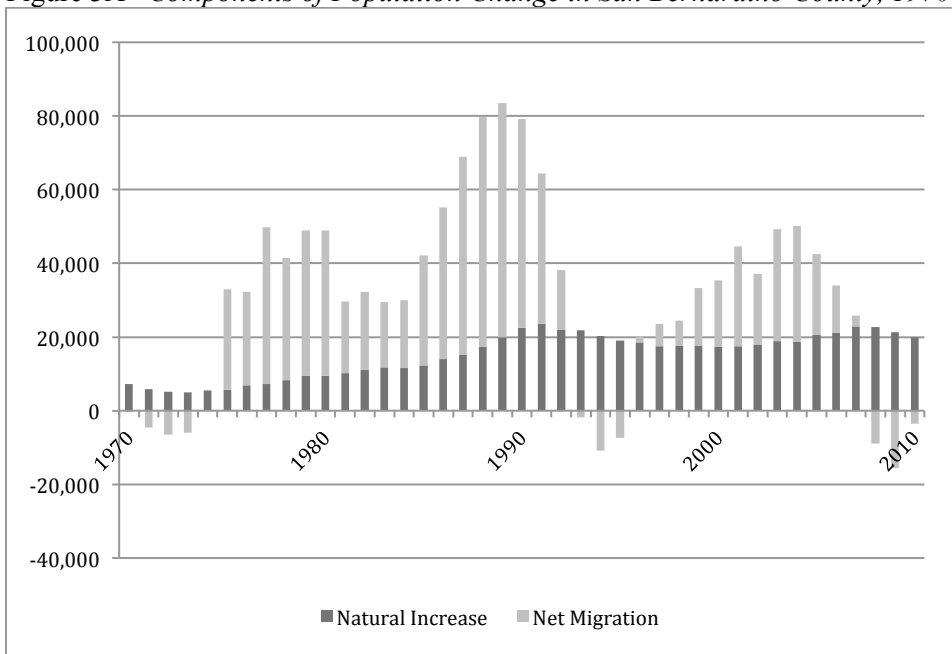
Source: U.S. Census Bureau

Figure 2A - *Education Levels in San Bernardino County, by Race, 2011*



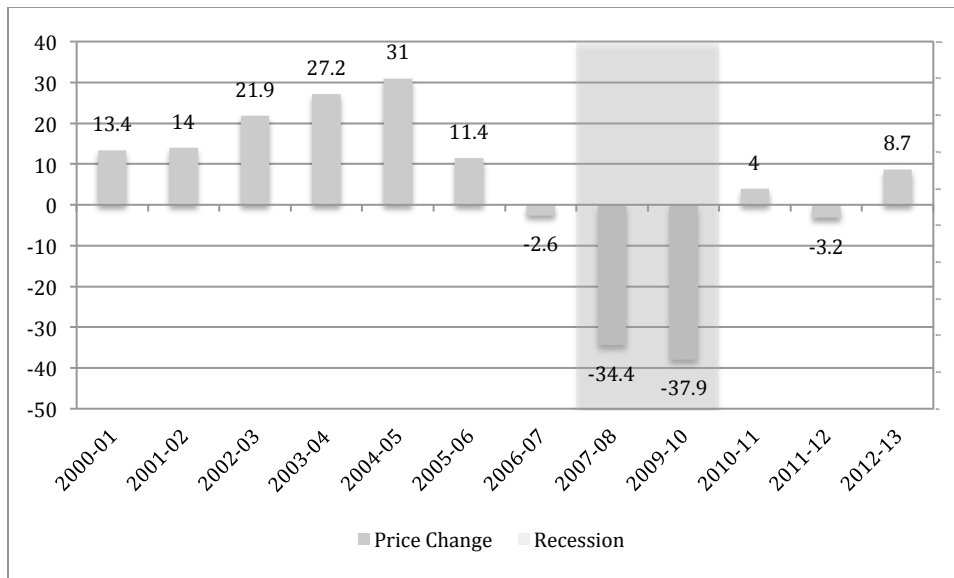
Note: Data is based on author's estimates and is for those age 25 and older.
Source: Census American Community Survey, 2011 (3-year estimates)

Figure 3A- *Components of Population Change in San Bernardino County, 1970-2010*



Source: California Department of Finance

Figure 4A- *Percent Change in Home Values, SBC*



Source: MDA Data Quick, 2013

Table 2A– Pre/Post Recession Changes in CA

California	2005-2007	2010-2012	Pct. Chg.
Civilian Labor Force	63.6	63.6	0%
Employed	59.3	55.9	-6%
Unemployed	4.4	7.7	75%
Median Household Income	58361	59368	2%
Median Family Income	66420	67458	2%
Per Capita Income	28049	28576	2%
Poverty (all families)	9.7	12.3	27%
Poverty families with under 18	14.2	18.4	30%
Poverty (all people)	13	16.4	26%
Poverty under 18	18	22.8	27%
*Poverty under 5	19.2	24.5	28%
Poverty 5-17	17	21.7	28%

Source: American Community Survey (3 yr. avg)

Table 3A- Pre/Post Family Poverty by Race and Ethnicity

Race/Ethnicity	2005-2007	2010-2012	Pre/Post Change
y			

*Black	10.50%	11.0%	0.5%
*White	3.70%	4.6%	0.9%
*Asian	6.90%	9.2%	2.3%
Hispanic	10.20%	15.2%	5.0%

Note: * indicates medium reliability due to margin of error in estimates
Source: American Community Survey

Table 4A- *Pre/Post Median Income by Race and Ethnicity*

Race	2005-2007	2010-2012	Pre/Post Change
White	74,650	70,615	-4035
Black	62,019	66,147	4128
Asian	86,342	79,904	-6438
Hispanic	57,465	57,900	435

Source: American Community Survey

Table 5A- *Pre/Post Employment and Unemployment by Race and Ethnicity*

2005-2007		2010-2012			
Race	Employed	Unemployed	Employed	Unemployed	
White	65.6%	6.0%	59.5%	13.9%	Employment Change: -6.1%
Black	61.5%	10.7%	56.5%	18.7%	Unemployment Change: 8.0%
Asian	61.6%	*7.7%	56.5%	*8.9%	Employment Change: -5.1%
Latino	64.0%	6.0%	58.6%	15.0%	Unemployment Change: 9.0%

Source: American Community Survey

Table 6A- *Pre/Post Employment and Unemployment by Educational Attainment*

2005-2007		2010-2012	

Edu Attain.	Employed	Unemployed	Employed	Unemployed	Employment Change	Unemployment Change
Less than HS	59.7%	7.5%	57.8%	15.1%	-1.9%	7.6%
HS grad	73.6%	5.3%	67.8%	14.6%	-5.7%	9.3%
Some college	76.4%	5.0%	74.5%	9.2%	-1.9%	4.2%
BA or higher	83.4%	*2.7%	81.7%	7.1%	-1.7%	4.4%

Source: American Community Survey

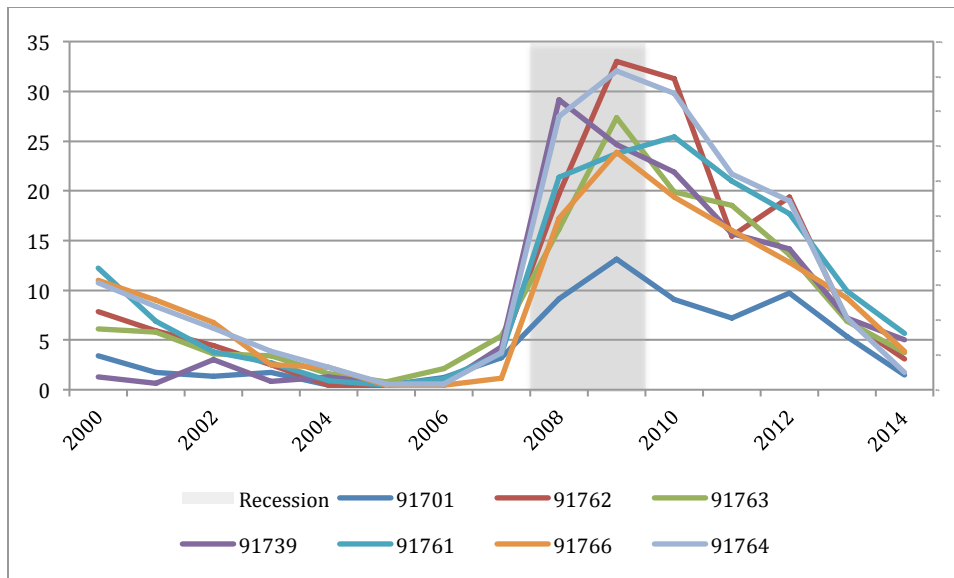
Table 7A- *Pre/Post Home Values*

Home value	2005-2007	2010-2012	Pre/Post Change
Less than \$199,999	7.3%	20.7%	13.4%
\$200,000 to \$299,999	7.9%	32.5%	24.6%
\$300,000 to \$499,999	48.2%	37.5%	-10.7%
\$500,000 to \$999,999	34.2%	8.7%	-25.5%
*\$1,000,000 or more	2.4%	0.6%	-1.8%
Median (dollars)	453,500	290,900	-162,600

Note: Data is self-reported. Researchers have suggested that people tend to over estimate home values by approximately 15%.

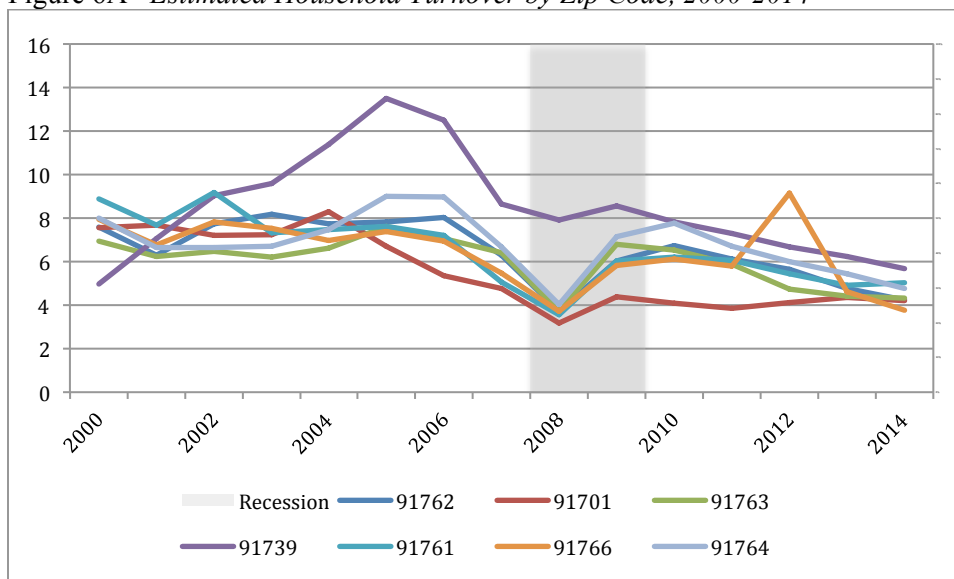
Source: American Community Survey

Figure 5A– *Ratio of Homes Sold as Foreclosures by Zip Code, 2000-2014*



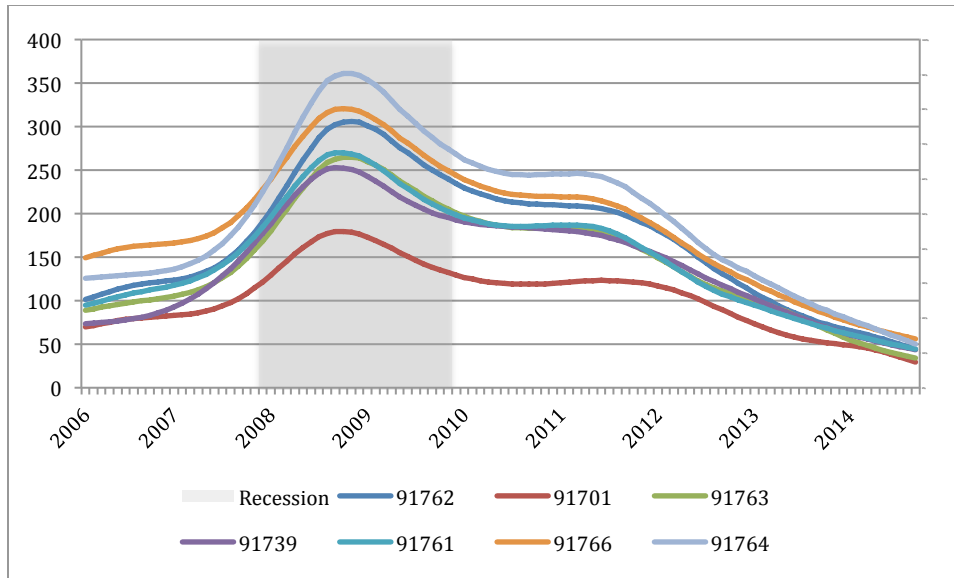
Source: Zillow Real Estate

Figure 6A– *Estimated Household Turnover by Zip Code, 2000-2014*



Source: Zillow Real Estate

Figure 7A – *Number of Properties owned by Lender by Zip Code, 2006-2014*



Source: Zillow Real Estate

Table 4A - Enrollment at Chaffey Union High School District Schools by Race/Ethnicity, 2005-2006

School	% Asian	%Hispanic	% Black	%white	Total
Alta Loma High	2.6%	37.5%	8.5%	46.1%	3,010
Chaffey High	1%	76.4%	4.9%	13.1%	3,407
Colony High	3.1%	51.7%	18.8%	19.1%	2,323
Etiwanda High	5.7%	33.8%	23.6%	27.5%	3,383
Los Osos High	6.4%	24.3%	9.1%	53.7%	3,260
Montclair High	4.1%	80%	5.3%	8.5%	3,101
Ontario High	2.8%	81.7%	4.5%	9%	2,690
Rancho Cucamonga High	5.9%	31.7%	15%	36%	2,747
Valley View High (Continuation)	3.8%	70.7%	5.6%	16.7%	822

Source: CJUHSD Administrative Records

Table 5A - Enrollment across Schools at Chaffey Union High School District by Race/Ethnicity, 2011-2012

School	% Asian	%Hispanic	% Black	%white	Total
Alta Loma High	3.7%	45.7%	7.0%	38.5%	2,748
Chaffey High	1.1%	86.7%	2.7%	7.8%	3,601
Colony High	3.2%	65.1%	15.0%	12.2%	2,220
Etiwanda High	6.1%	46.9%	18.1%	19.0%	3,178
Los Osos High	11.0%	31.7%	10.8%	40.9%	3,250
Montclair High	4.1%	85.3%	2.6%	5.8%	3,262
Ontario High	1.8%	88.7%	3.5%	4.2%	2,839
Rancho Cucamonga High	8.4%	41.9%	14.6%	27.7%	3,245
Valley View High (Continuation)	1.1%	76.8%	8.9%	12.0%	652

Source: CJUHSD Administrative Records

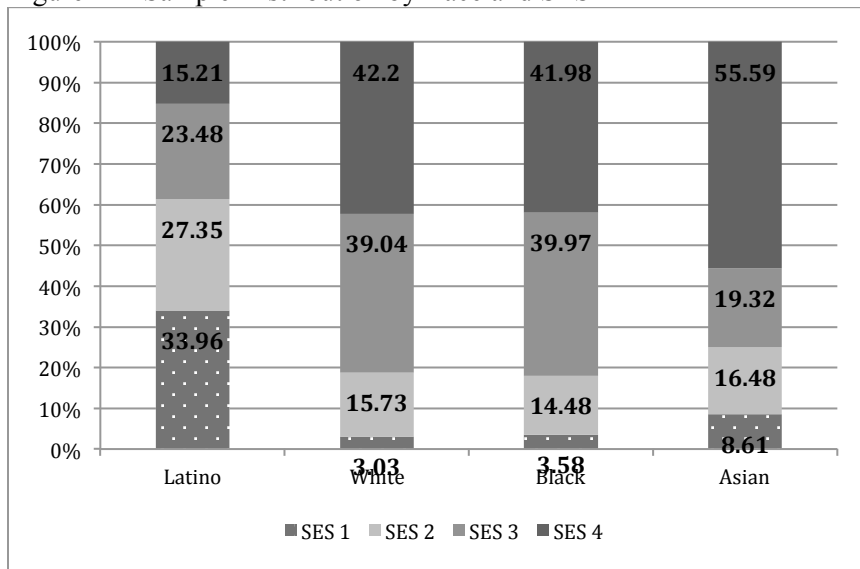
Table 6A - Racial/Ethnic and Enrollment Percentage Change across Schools in CJUHSD, 2005-2006 to 2011-2012

School	Asian	Hispanic	Black	White	Enrollment
Alta Loma High	1.1	8.2	-1.5	-7.6	-10%
Chaffey High	0.1	8.9	-2.2	-5.3	5%
Colony High	0.1	13.4	-3.8	-6.9	-5%
Etiwanda High	0.4	13.1	-5.5	-8.5	-6%
Los Osos High	4.6	7.4	1.7	-12.8	0
Montclair High	0	5.3	-2.7	-2.7	5%
Ontario High	-1	7	-1	-4.8	5%
Rancho Cucamonga High	2.5	10.2	-0.4	-8.3	15%
Valley View High (Continuation)	-2.7	6.1	3.3	-4.7	-26%

Source: CJUHSD Administrative Records

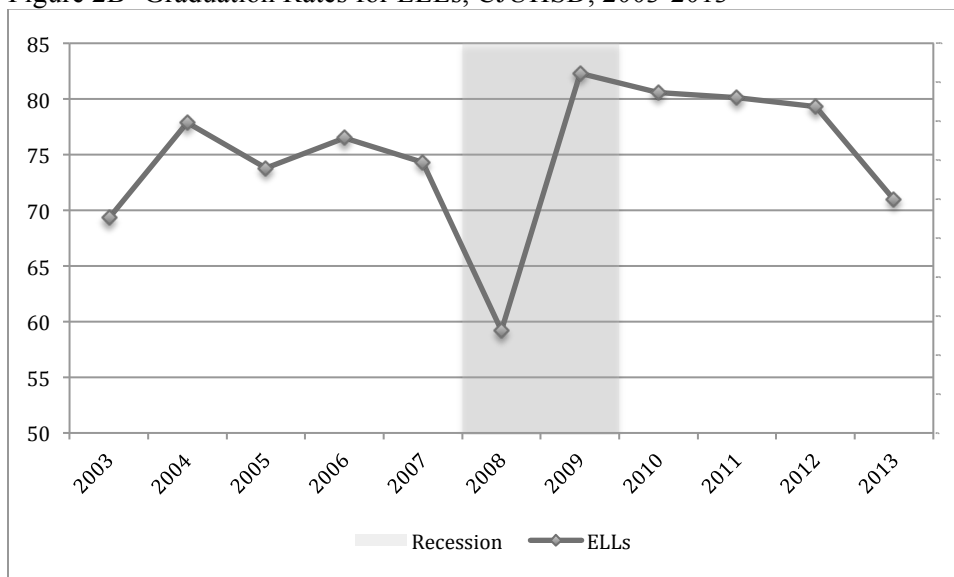
APPENDIX B: CHAPTER 5

Figure 1B- Sample Distribution by Race and SES



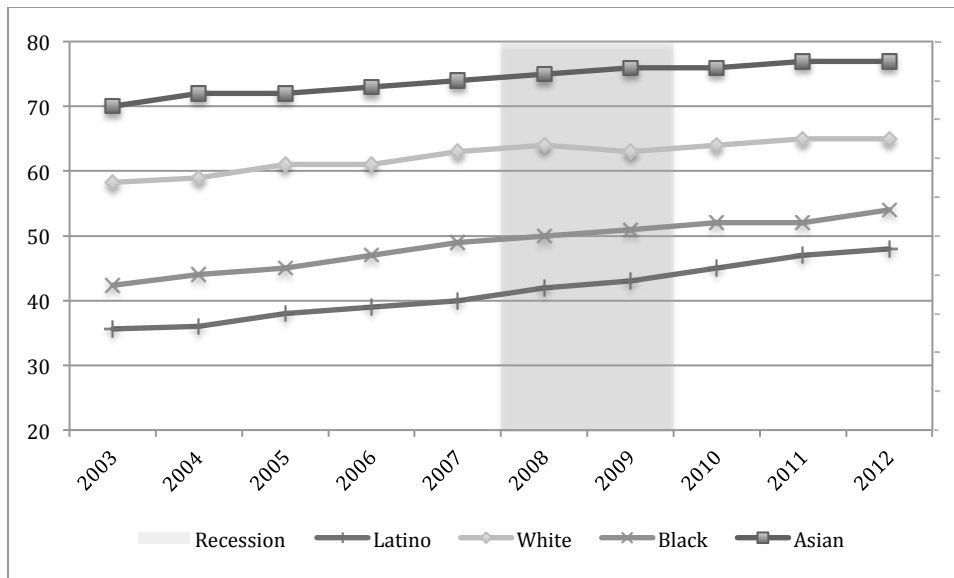
Source: CJUHSD Administrative Records

Figure 2B- Graduation Rates for ELLs, CJUHSD, 2003-2013



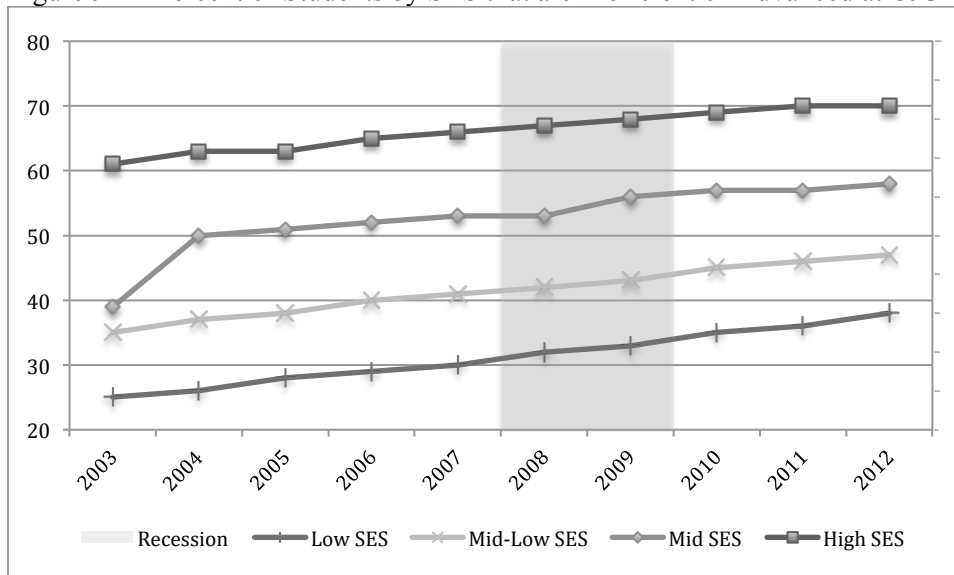
Source: CJUHSD Administrative Records

Figure 8B – Percent of Students by Race/Ethnicity that are Proficient or Advanced at CJUHSD



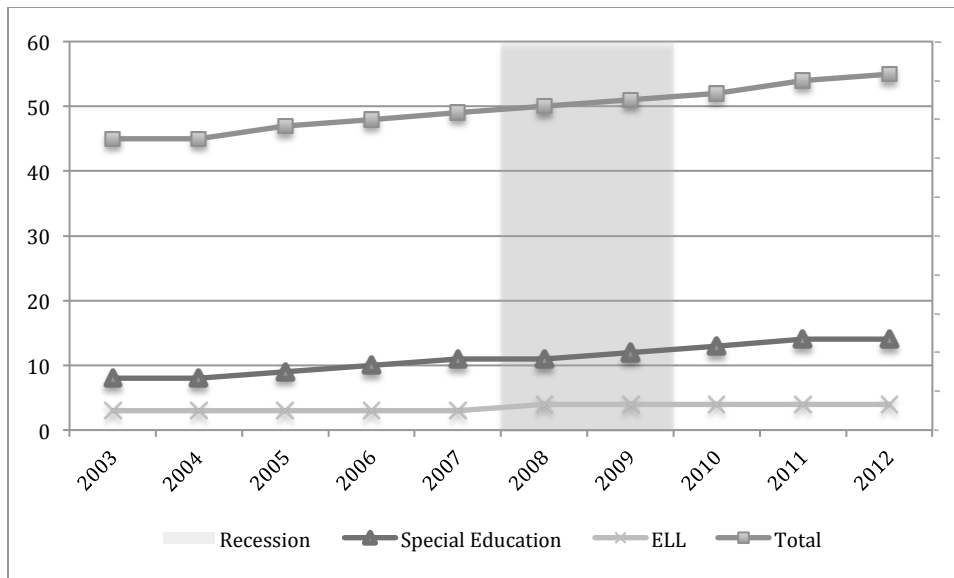
Note: Data is based on Author's calculation of English Language Arts test scores
Source: CJUHSD Administrative Records

Figure 9B – Percent of Students by SES that are Proficient or Advanced at CJUHSD



Note: Data is based on Author's calculation of English Language Arts test scores
Source: CJUHSD Administrative Record

Figure 10B – Percent of Students by Special Edu and ELL that are Proficient or Advanced at CJUHSD



Note: Data is based on Author's calculation of English Language Arts test scores
Source: CJUHSD Administrative Data

APPENDIX D: CHAPTER 9

Table 1D – Collinearity Diagnostics for Model 1

Variable	VIF
Latino	7.10
White	4.54
Black	2.38
Other Race	1.46
ELL	1.31
Spec. Edu.	12.25
Mid Low SES	2.06
Mid SES	2.87
High SES	3.36
GPA	10.07
Mean VIF	4.74

Table 2D – Pairwise Correlation Coefficients (2008 Graduation)

	Race	GPA	SES Group	ELL	Special Edu.	HS Graduate
Race	1.0000					
GPA	0.2084	1.0000				
SES Group	0.3963	0.2626	1.0000			
ELL	-0.2001	-0.2769	-0.3458	1.0000		
Special Educ.	-0.0679	-0.1493	-0.0786	0.1773	1.0000	
HS Graduate	0.0908	0.3778	0.1983	-0.3277	-0.1597	1.0000

Table 3D – Collinearity Diagnostics for Model 3

Variable	VIF
9 th Grade	1.99
10 th Grade	1.92
11 th Grade	1.92
White	1.73
Black	1.33
Asian	1.18
Other Race	1.13
ELL	1.40
Spec. Edu.	8.11
Mid Low SES	1.94
Mid SES	2.63
High SES	2.98
GPA	7.00
Mean VIF	2.71

Table 4D – Pairwise Correlation Coefficients (2008 Mobility)

	Mobility	GPA	Grade	SES Group	Race	ELL	Special Edu.	School
Mobility	1.0000							
GPA	-0.1532	1.0000						
Grade	0.0423	0.0615	1.0000					
SES Group	-0.0448	0.2565	0.0406	1.0000				
Race	-0.0154	0.2165	0.0273	0.3967	1.0000			
ELL	0.0743	-0.2735	-0.0531	-0.3529	-0.2132	1.0000		
Special Edu.	0.0647	-0.1297	0.0133	-0.0548	-0.0444	0.1341	1.0000	
School	0.0390	0.0405	0.0431	0.1746	0.1296	-0.0874	0.0004	1.0000

Table 5D –Results from Multi-Level Logistic Model with Year Predicting

Mobility (n = 182,031), Controlling for Socio-demographic and academic achievement variables.

Mobility	Odds Ratio	Std. Err.	95% C.I.
Year			
2007	0.944	0.048	[.855, 1.04]
2008	1.741***	0.08	[1.59, 1.91]
2009	0.953	0.049	[.861, 1.05]
2010	0.884*	0.048	[.794, .984]
2011	0.452***	0.031	[.394, .518]
2012	0.547***	0.036	[.480, .622]
2013	0.36***	0.027	[.310, .417]
Race			
Latino	0.746	0.059	[.637, .873]
White	0.87	0.071	[.741, 1.02]
Black	1.09	0.095	[.923, 1.29]
Other	0.832	0.094	[.665, 1.03]
SES Group			
SES 2	0.974	0.042	[.895, 1.06]
SES 3	0.988	0.046	[.901, 1.08]
SES 4	1.124	0.055	[1.02, 1.23]
Student Status			
ELLs	1.275	0.054	[1.17, 1.38]
Special Edu.	1.039	0.044	[.954, 1.13]
Academic Achievement			
GPA	0.551	0.009	[.532, .571]
Grade			
9th	2.581	1.86	[.625, 10.6]
10th	3.001	2.17	[.728, 12.3]
11th	2.333	1.68	[.565, 9.63]
12th	3.001	2.38	[.799, 13.6]
Constant	0.0745		
Wald Chi ²	2425.05		

Notes: Asians, SES 1, 2006, and 8th grade are the reference categories.

* $p < .05$. ** $p < .01$. *** $p < .001$.

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