Roach Motel: Research, Policy, and Structural Inequalities of the No Child Left Behind Act in California Public Schools

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Abstract

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Under the No Child Left Behind Act of 2001 (NCLB) schools must meet "adequate yearly progress" goals for students' performance. Schools that fail to meet these goals are identified as "in need of improvement" and are required to undergo a series of increasingly punitive sanctions intended to improve under-performing schools. In California, this process is called Program Improvement (PI). I used publically available data from the California Department of Education to trace the histories of about 6,400 traditional public schools over nearly a decade since NCLB's implementation to determine the extent to which schools encounter the punitive sanctions of PI, to explore the reasons for these outcomes, and to understand how NCLB affects whether schools can show they are adequately educating their students. Several key findings emerged.
First, over time schools have increasingly entered PI. Second, once in PI schools were unlikely to exit, with the chance of improving enough to exit decreasing as schools advanced to more punitive PI stages. Third, schools with different levels of SES and diversity had notably different

probabilities of moving into, through, and out of PI. More advantaged schools experienced better PI outcomes than more disadvantaged schools. Yet despite these differences the overall pattern of PI transition probabilities—wherein schools that entered PI were more likely to advance to higher stages rather than remain in the same stage over time or exit the process entirely—persisted. Fourth, differences in SES, as opposed to differences in diversity, accounted for a larger part of the differences in PI transitions across schools. Fifth, if NCLB had imposed more flexible requirements for schools to have shown progress in students' learning, then schools' PI transition probabilities would have been different. Specifically, if the law had required students to *either* meet performance targets *or* make improvement from year to year California schools would have been be slightly less likely to enter PI, less likely to advance to more punitive stages of PI, and more likely to exit PI from any stage. Moreover, changing the rules would have reduced inequalities in PI transitions between the most advantaged and most disadvantaged schools.

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TIMELINE OF MAJOR EVENTS IN FEDERAL K-12 EDUCATION LAW, 1965-2015

April 11, 1965 – President Johnson signs the Elementary and Secondary Education Act

March 31, 1994 – President Clinton signs the Goals 2000: Educate America Act

October 20, 1994 – President Clinton signs the Improving America's Schools Act

January 8, 2002 –President Bush signs the No Child Left Behind Act of 2001

September 30, 2007 – Scheduled reauthorization of the No Child Left Behind Act

March 13, 2010 – President Obama releases blueprint for revising the No Child Left Behind Act

August 8, 2010 – Obama Administration announces ESEA Flexibility (NCLB waivers)

July 8, 2015 – House of Representatives passes the Student Success Act

July 16, 2015 – Senate passes the Every Child Achieves Act

ABBREVIATIONS

AMO	Annual Measureable Objective
API	Annual Performance Index
AYP	Adequate Yearly Progress
CAHSEE	California High School Exit Examination
CAPA	California Alternate Performance Assessment
CELDT	California English Language Development Test
CMA	California Modified Assessment
CST	California Standards Tests
ECCA	Every Child Achieves Act
ELA	English-language Arts
ESEA	Elementary and Secondary Education Act
IASA	Improving America's Schools Act
IEP	Individualized Education Plan
NCLB	No Child Left Behind
NCTAF	National Commission on Teaching and America's Future
SSA	Student Success Act
TBEC	Texas Business and Education Coalition

CHAPTER 1. INTRODUCTION

This is a study of how public schools in California have fared under the No Child Left Behind Act of 2001 (NCLB). While many of the law's provisions reflect a longstanding federal emphasis on improving the academic performance of disadvantaged students, NCLB adds significant accountability requirements for all schools that receive federal funds. Under the law, schools must meet "adequate yearly progress" goals for students' performance. Schools that fail to meet these goals are identified as "in need of improvement" and are required to undergo a series of increasingly punitive sanctions intended to improve under-performing schools. In California, this process is called Program Improvement (PI).

In this study, I trace the histories of about 6,400 public schools in California over nearly a decade since NCLB's implementation. Its purpose is threefold: to determine the extent to which schools encounter the punitive sanctions of PI, to explore the reasons for these outcomes, and to understand the extent to which NCLB affects whether schools can show they are adequately educating their students.

More generally this study deals with the intersection between education research, public policy, and social inequality. Ideally, the relationship between these realms is reciprocal. Many education researchers hope to influence education policy. This is especially the case now that the law holds scientifically-based research as the new standard by which education policy decisions should be made (No Child Left Behind [NCLB], 2001). In turn, education policy can help reduce social inequalities. In fact, the current incarnation of federal education policy aims not just to reduce inequality but to eradicate it—at least for students' achievement.

But using research effectively to affect policy is complicated. This chapter provides an overview of how research operates within policy-oriented education circles and how policies can affect inequality in educational outcomes.

The Research-Policy Nexus

Over half a century ago, C.P. Snow (1959, 72) observed "a sharp difference in the intellectual and moral temperaments" of those in science and government so that "to be any good … a scientist has to think of one thing, obsessively, for a long time. An administrator has to think of a great many things, widely, in their interconnections, for a short time." Given that researchers and policymakers face different job demands and professional dynamics, it's a marvel that research influences policy at all. On the one hand researchers are steeped in the specific problems of their respective fields, trained with a time-intensive eye for the meticulous minutia of producing "rigorous" research. Indeed, success as a researcher often depends on specialization, independence, and originality. On the other hand policymakers—and their staff—must excel at gathering a large amount of information (e.g., studies, reports, articles) from various sources (think tanks, advocacy groups, independent research entities, peer-reviewed journals among others) and boiling it down to actionable policy, all while maintaining broad-based constituency support. It is no surprise then that policymakers, who typically have no formal training in conducting or identifying good empirical research, may overlook even the best research when it undermines a favored program or its findings prove politically unwieldy.

At least for elected officials, several factors affect whether or to what extent policymakers heed research knowledge as they design policy (see Wong, 2008). Here I note two. First, a pluralist democracy limits the influence of experts. Policymakers not only have to

pay attention to expert knowledge but also consider preferences from organized interests as well as their own, or perhaps their bosses', political ties and philosophical beliefs. Paul Manna and Michael Petrilli (2008, 64) note that policymakers are often "extinguishing the latest fire rather than reflecting on the latest research." While formulating their positions, policymakers with "limited opportunities for deep study … will rely on gut instincts, ideology, riveting anecdotes, opinion polls, or the need to repay favors to colleagues—the proverbial logrolling of the legislative process." Second, conducting high-quality research takes time, and policymakers need information quickly to act within electoral cycles. Education research is especially time-consuming because of the decentralized organization of the education system in the U.S. in which each school district is an independent entity governed by its own elected school board, financed by its own fiscal authority, and managed by its own rules. This structure makes it difficult for researchers to gain access to data since granting such requests means pulling a district's staffing resources away from the more central tasks of what it takes to run a school district. Even if researchers gain district access, data are not typically standardized across or even within districts. Thus, compiling and aligning data takes time before analysis even begins.

Policy is also made by the courts. And like other policymakers, judges may also rely on research to make decisions. Judicial policymaking has its own hurdles when it attempts to incorporate research. Horowitz (1977) argues that the probabilistic nature of social science research can prove problematic for the judicial system. The courts use an adversarial fact-finding process to establish the historical facts of a particular case. But this approach is ill equipped to identify social facts about recurrent patterns of behavior on which one must base policy decisions. According to the rules of procedure, trial court determinations of fact are upheld unless they are "clearly erroneous" (Dunn and West, 2008). Therefore, a judge may draw

on social science evidence to establish as fact what studies are unable to show with certainty. Furthermore, there may be a poor fit between social science evidence and legal questions because no studies are germane to the question at hand. Research can be commissioned, but then it runs into constraints of time, data, and resources—and may thus be of dubious quality or even biased (Dunn and West, 2008, 159). Another sticking point may be how the courts view the legitimacy of research in judicial procedures and how researchers view the efficacy of the courts in determining policy. In a trilogy of cases in the 1990s, for example, the Supreme Court intended to limit the use of "junk science" by requiring trial court judges to determine the reliability of expert testimony before admitting it as evidence.[1]

In sum, because policy results from many competing interests, researchers' influence on policy decisions is limited.

When Research Gains Policy Attention

Despite an arduous path, research can and does affect policy. For many important policy domains social science research has gained the attention of policy makers. Kenneth Clark's (1950) experiment on how prejudice affects children's personality development was cited in a footnote in the Supreme Court's 1954 *Brown v. Board of Education* decision. In the mid-1960s, research on early childhood education by psychologists Edward Zigler, Mamie Clark, Urie Bronfenbrenner and others had profound influence on shaping the Head Start program as part of the War on Poverty (White and Phillips, 2001). In 1966, the research of James Coleman and his

[1] The three cases were Daubert v. Merrell Dow Pharmaceuticals (1993); General Electric Co. v. Joiner (1997); and Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999). The litmus test for whether research passes muster is now known as the Daubert standard. It asks four questions: Could the evidence be empirically tested? Has the method used been subjected to peer review? Does the keep method used have a known error rate? Is the method generally accepted within the relevant scientific community? This standard attempts to unreliable evidence from natural, medical, and social sciences out of the courtroom (Dunn and West, 2008, 159).

colleagues on educational opportunities across the country played a key role in demonstrating how the social sciences could "help policy makers design programs and then evaluate whether programs were having their intended effect" (National Research Council, 2012, 23). And Bernice Neugarten's work on aging and "intergenerational equity" helped shape the Social Security Reform Act of 1983 (Achenbaum, 2001).

Kenneth Wong, a political scientist and former director of Urban Education Policy program at Brown University, argues that such examples suggest several institutional conditions that make it more likely research will be used in policy decisions. First, membership in both the research and policy realms—increasingly common—is advantageous (Wong, 2008, 227). Research centers hire government officials to direct projects, and prominent researchers are recruited to lead policy units. Bernice Neugarten, for example, a psychologist by training, was appointed as a member of the Federal Council on Aging under the Carter Administration (Achenbaum, 2001, 125).

Second, researchers are more effective when they team up (Wong, 2008, 228). Teams of psychologists from different specialties, for example, were either active participants or occasional consultants for the Head Start project (White and Phillips, 2001). The National Research Council (NRC), part of the National Academy of Sciences, also brings groups of researchers together to study various issues and advise the government to make or amend policies based on their findings.[2]

[2] For example, the NRC's Committee on the Use of Social Science Knowledge in Public Policy recently published a report on "how to strengthen the quality and use of social science research and to lay a foundation for the continuous improvement in the conduct of social science research and its applications to public policy" (2012, vii).

Third, one's research is more likely to affect policy decisions when it is sanctioned or funded by government officials (Wong, 2008, 231).[3] For example, the U.S. Department of Health, Education and Welfare commissioned *Equality of Educational Opportunity* (Coleman et al., 1966), more commonly know as The Coleman Report, which has helped shape "the sociology of education, national education policies, and wider public and scholarly opinion regarding the contributions of schools and schooling to equality and productivity in the United States" (Borman and Dowling, 2010).

Lastly, researchers must know how to "sell" their work to the policy community in order to compete with other forces vying for policy attention. All the major think tanks—Brookings Institution, American Enterprise Institute, Heritage Foundation, Cato Institute, Hoover Institute—have invested heavily in public affairs and communications offices in recognition of the fact that making research findings readily accessible and easily understandable is an essential facet of their mission (Wong, 2008, 231; Hess, 2008, 246).

Policy and Inequality

Although the process of turning research into policy is complicated and daunting, once in place policies are expected to and do influence social outcomes. The section outlines how policies have helped shape unequal economic and educational outcomes in recent history.

Economic Inequality

Ample and convincing research shows that the U-shaped trend in economic inequality in the United States since the 1910s is due primarily to policy decisions. In the early part of the

[3] Although some congresspersons have argued that often such research contracts and grants are never completed and many of those that were finished were never read or used (Featherman and Vinovskis, 2001).

century, the post-World War I depression and the Great Depression destroyed many businesses and reduced top capital incomes, which Piketty and Saez (2003) argue never recovered due to progressive taxation. From the late 1920s to 1940, the share of wages to top-earners remained relatively flat. From 1941 to 1945 it decreased dramatically, likely due to the wage controls used during World War II, (Piketty and Saez, 2003). Several researchers persuasively argue that federal tax and transfer policies have moved from being more progressive to more conservative since the middle of the last century, first narrowing and then widening the divide between the haves and have-nots (Fischer et al., 1996; Piketty and Saez, 2003; Garfinkel et al. 2010; Hacker and Pierson, 2010; Grusky et al., 2013; Gilman, 2014). Deregulation of industry (e.g., airlines, trucking, communications) initialized during the Carter administration and actively advanced under Reagan led to declines in unionization and pushed down middle-class wages.[4] Other "invisible policies" (Fischer et al. 1996) that subsidize the middle class—mortgage interest deductions, private insurance through employers, and tax deductions for children and other dependents—simultaneously reduce the difference between the middle and upper classes and increase the gap between the middle class and those who are too poor to pay taxes let alone buy a house. Meanwhile the continuation of corporate welfare in the form of tax breaks and subsidies has helped the wealthy maintain an unprecedented distance above the hoi polloi (Saez and Zucman, 2014, Piketty and Saez 2003).[5]

[4] The decline in unionization and is estimated to account for one third of the growth in inequality between 1973 and 2007 (Western and Rosenfeld, 2011).

[5] The Whirlpool Corporation, for example, spent a mere $1.8 million on lobbyists to secure the renewal of energy tax credits that would give the corporation an estimated $120 million for making high-efficiency appliances (Rowland, 2013).

Inequality in Education

The link between research, policy, and inequality is evident within the realm of education. In this section I illustrate these connections with respect to the racial segregation of schools.

The trend in school desegregation from 1954 to 2000 follows an inverted U-shape. That is, the proportion of black students in white—especially southern—schools rose dramatically from the mid-1960s to the mid-1970s, continued to increase at a slower rate through the late-1980s, and then steadily declined through the 2000s (Reardon and Owens, 2014, 202; Wexler and Collins, 2014, Figure 1). With this trend in mind, I point to two instances wherein research has directly influenced desegregation policy, which in turn affected levels of black-white desegregation and various social outcomes for its intended beneficiaries. The first instance ignited the desegregation effort, while the second quenched its flame.

In 1952, dozens of briefs written by prominent social scientists accompanied *Brown v. Board of Education* to the Supreme Court (Orfield, 1979). During court proceedings, Kenneth Clark's drew on his own and others' research, testifying that the cumulative effects of "discrimination, prejudice, and segregation have definitely detrimental effects on the personality development of the Negro child" (Clark, 1950 and 1960). The Supreme Court, led by Chief Justice Warren, cited Clark's and others' research in their unanimous decision that the "separate but equal" doctrine of *Plessy v. Ferguson* (1896) is "inherently unequal" and "has no place" in public education (*Brown, 1954*). The following year, in *Brown II* (1955) the Court ordered schools to end segregation "with all deliberate speed."

Nonetheless, states were slow to desegregate schools.[6] In a trilogy of cases in the late 60s and early 70s the Court ordered immediate desegregation and approved busing as means to that end.[7] Not until then did segregation levels finally begin a rapid decline. That descent didn't last long. During the late 60s and early 70s four Supreme Court judges, including Chief Justice Warren, resigned, and President Nixon appointed more conservative replacements, revealing the influential role that politics played in shaping Court rulings around school desegregation.[8]

Two decades after *Brown*, desegregation efforts met their first major setback in the case of *Milliken v. Bradley* (1974) wherein Chief Justice Burger delivered a 5-to-4 ruling that Detroit students could not be bused across city-suburb district lines to achieve desegregation, a decision that essentially "guaranteed that desegregation would be limited and temporary in the North" (Orfield and Eaton, 1996, 11).[9] A year later James Coleman and his colleagues (1975) published their research on "white flight" which would be used to keep pushing back desegregation efforts.

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[6] In 1956, nearly every southern member of Congress signed the "Southern Manifesto" denouncing the Brown rulings and pledging to resist desegregation by all legal means. In part, the document reads, "This unwarranted exercise of power by the Court … is destroying the amicable relations between the white and Negro races that have been created through 90 years of patient effort by the good people of both races. It has planted hatred and suspicion where there has been heretofore friendship and understanding" (Thurmond, 1956). Nearly a decade later, only one black student in 50 was attending majority-white schools (Orfield and Frankenberg, 2014).

[7] In *Green v. County School Board of New Kent County* (1968), the Court ordered schools to dismantle segregated systems "root and branch" and that desegregation must be achieved with respect to facilities, staff, faculty, extracurricular activities, and transportation. In a private note to Justice Brennan, Chief Justice Warren wrote: "When this opinion is handed down, the traffic light will have changed from Brown to Green. Amen" (quoted in Tushnet, 1997). In *Alexander v. Holmes County Board of Education* (1969) the Court ordered desegregated school systems be achieved "at once" and "operate now and hereafter only unitary schools." The Court's decision in *Swann v. Charlotte-Mecklenberg Board of Education* (1971) struck down "racially neutral" student assignment plans and approved busing as a way to achieve desegregation.

[8] President Regan, a vocal opponent of desegregation, later appointed one of these Nixon appointees, Justice Rehnquist, a staunch conservative openly hostile to desegregation issues, to Chief Justice. In Rehnquist's first 12 years on the Court he "never voted to uphold a school desegregation plan" (Orfield and Eaton, 1996, 9).

[9] Of *Milliken*, John Minor Wisdom, a Fifth Circuit Court of Appeals Judge at the time, said, "I can safely say … based on the Supreme Court's opinion and the briefs in the *Milliken* case, that social science research appears to have had no effect on the final decision-making process in this case, but may have had a great deal to do with the lower courts' decisions approving interdistrict busing for the Detroit metropolitan area" (Wisdom, 1975, 135).

In a related solo publication, Coleman concluded that "large-city desegregation efforts may in the long run actually increase school segregation by affecting residence patterns" (1975). In other words, as more blacks began attending formerly all-white urban schools via busing, more white families moved to the suburbs. Although his findings were tentative, Coleman's research gained massive media attention, spurred angry scholarly debates, and led Coleman to take personal legal action by filing depositions in pending court cases urging restraint on busing to minimize white flight (Orfield, 1979, 147). More importantly, Coleman's views were widely accepted by members of Congress some of whom cited his work to justify anti-busing legislation (Orfield, 1979, 147).[10] Orfield and Eaton (1996, 314) argue that Coleman's research was partly responsible for effectively shifting policy against desegregation.

To what extent did desegregation policies affect black-white inequality? In their review of the trends and consequences of school segregation, Reardon and Owens (2014) report that desegregation equalized the length of the school year, student-teacher ratios, teacher quality, and per-pupil expenditures for the average black and white student. Compared to blacks in segregated schools blacks in desegregated schools had more years of schooling, higher test scores, lower dropout rates, and were more likely to graduate high school.[11] Beyond school they had higher wages, a lower risk of poverty, a higher chance of having white-collar jobs, reduced criminality and improved health.

Thus, whether shaped by research or politics, desegregation policies of the 1960s and 1970s were associated with positive schooling and labor market outcomes for its intended beneficiaries and ultimately reduced inequality between black and white students.

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[10] For example, then Senators Joseph Biden (D-DE) and Thomas Eagleton (D-MO) repeatedly cited the white flight argument to justify their 1977 antibusing legislation (Orfield, 1979).

[11] These studies also show "no significant effect" on whites' educational attainment, suggesting that desegregation did not harm whites.

Political Origins of No Child Left Behind

The interdependence of research, policy, and inequality in education continues to manifest itself in political and educational settings. The most recent reauthorization of the Elementary and Secondary Education Act (ESEA) of 1965—the No Child Left Behind Act of 2001—is a prime example.[12]

Since its inception in 1965, the ESEA has been the largest source of federal funding for K-12 schooling.[13] It was originally enacted as part of President Johnson's War on Poverty with the object of improving educational equity for students from lower-income families by providing federal funds to school districts serving poor students. The centerpiece of the legislation is its focus on providing financial assistance to low-income students through Title I, Part A. In subsequent reauthorizations of the law this title in particular would be extended, modified, and leveraged.

When the No Child Left Behind Act reauthorized the ESEA it was touted as "fundamental" and "unprecedented" (Gregg, 2001). Such claims obscure that fact that this most recent reauthorization of the ESEA is rooted in previous school-reform efforts at the federal and state levels. Indeed, John Kingdon (1995) referred to the legislative blend of "ingredients drawn from divergent sources in a process that [builds] cumulative momentum over a period of years"

[12] The ESEA, although foundational to NCLB in the sense that current incentives are "layered" upon its original grant structure, was not the first federal law to give money to schools. The National Defense Education Act of 1958 used categorical grants (money intended for specific activities as opposed to unrestricted aid) to expand federal aid in math and science programs while still allowing for local control, an aid-funneling technique that has remained crucial to federal education funding. Furthermore it consolidated various federal education funding initiatives into a single statute and made federal assistance available to every public and private education institution in the nation (Anderson, 2007). Earlier federal laws either funded education indirectly via land grants (e.g., Morrill Act of 1862) or focused on higher education (e.g., Smith-Hughes Act of 1917, Servicemen's Readjustment Act of 1944). See Anderson (Chapter 1, 2007) for more complete history of federal education laws.

[13] Yet compared to state and local inputs the federal government's contribution to education has always been relatively small, only about seven to eight percent of all public school funding in recent years (Peterson and West, 2003, 1).

as "policy primeval soup" (quoted in Rudalevige, 2003, 27). For example, an emphasis on standards has been around since the 1980s when the Reagan administration's publication of *A Nation at Risk: The Imperative for Education Reform* (National Commission on Excellence in Education, 1983) shifted the focus from educational *equity* for disadvantaged students to educational *excellence* for all students. In addition, the flexibility, assessment, and sanctioning components of NCLB have clear antecedents in the Clinton-era debates to reauthorize the ESEA via the Goals 2000: Educate America Act (Goals 2000) and the Improving America's School Act of 1994 (IASA).[14] And George W. Bush introduced the idea of mandatory annual testing on his campaign trail. Thus, NCLB "collected and encompassed proposals advanced in theory and substance for years, accreting Ronald Regan-, George H. W. Bush-, and Bill Clinton-era initiatives into a single bill" (Rudalevige, 2003, 24).

Still No Child Left Behind stands apart from previous education law in that its passing was the result of impressive bipartisanship with the Senate voting 87 to 10 and the House voting 381 to 41 in favor of the bill. This contrasts to earlier education policymaking when majorities in Congress were ideologically aligned with the current president and could push through partisan laws. What is more, this expansion of federal involvement in schools, traditionally a liberal policy position, was advocated by a conservative president and strongly supported by conservative legislators.

Education reform remains no stranger to partisan strategies. Conservatives have tended to favor vouchers for students to attend private schools, block grants for states to increase spending flexibility, and decentralization of school control. Liberals have pushed to increase

[14] Goals 2000 set up national education standards and a process whereby states could receive federal grants if their own standards aligned with national standards. IASA reconfigured the ESEA to require that all students meet the same high standards. Before IASA, states were allowed to hold economically disadvantaged students to different—and less challenging—standards.

spending (especially for disadvantaged students), reduce class size, and avoid test-based accountability. Yet trends in congressional debates since the Cold War clearly show "ideological drift" of both conservatives and liberals toward increasing federal involvement in education policy (Anderson, 2007). That is, a "weakening of the divide" occurred wherein conservatives became less opposed to federal involvement in schools and liberals became more comfortable with accountability requirements (Anderson, 2007, 183-4).[15]

Major Players in the Debate over No Child Left Behind

How did NCLB come to pass—and with such strong bipartisan support? What accounts for such ideological drifts over time? In other words, what are the mechanisms through which partisan ideologies were parlayed into overwhelming bipartisan support for the No Child Left Behind Act? To answer these questions, political scientist Andrew Rudalevige studied various presidential and congressional maneuvers that took place during the development of the Senate and House versions of the NCLB bill. From this endeavor, he distilled four main reasons why NCLB eventually passed.

Executive and Legislative Action

First, New Democrats[16] and many Republicans tentatively forged an alliance based on the shared belief that federal education policy should require real results in exchange for the billions of dollars spent on education since 1965. Senator William Frist [R-TN] echoed then U.S. Secretary of Education Rod Paige's frustration that "after spending $125 billion of Title I money

[15] As Anderson (2007, 27) puts it, "the long-standing agreement that federal involvement in education ought to be limited has been replaced by the presumption by many legislators that past federal investments justify imposing high-stakes accountability requirements on schools."
[16] The term "New Democrats" refers to an ideologically centrist faction within the Democratic Party that emerged after George H. W. Bush became president.

over 25 years, we have virtually nothing to show for it" (Frist, 2001). Senator Kennedy [D-MA] summed up the importance of holding states accountable for federal funding arguing that "investment without accountability is a waste of money, but accountability without investment is a waste of time" (Kennedy, 2001a).

Second, in both the House and the Senate formal committee structures were replaced with bipartisan working groups which increased members' willingness to drop provisions that only one party liked, such as class-size reductions (Democrats) or private-school choice (Republicans).

Third, President Bush's personal involvement in the issue and his willingness to embrace Democrats' positions made it easier for Democrats and Republicans to work together than had been the case. From his early campaign speeches he expressed dedication to tackling what he described as the "soft bigotry of low expectations" (quoted in Mitchell, 2000) in the American education system. As President, Bush took a more moderate view of education policy than most Republicans in Congress. As Margret Spellings, then a close Bush advisor and later his second Secretary of Education put it, before 2000, Republicans' "standard shtick had been to 'abolish the Department of Education,' 'no Federal intervention'—that sort of thing. And that changed with Bush" (quoted in Smith, 2008). Although Democrats didn't control the Senate when Bush entered office, they had the power in the Senate to block any legislation they didn't like. So acting as a "cross-partisan conciliator" Bush personally worked to establish bipartisan support for his NCLB "blueprint" (Rhodes, 2012, 149).[17] This personal touch by the President Bush continued after his election to "keep Democrats from deflecting en masse" (Rhodes, 2012, 150). Republicans weren't necessarily thrilled with Bush's eagerness to keep Democrats at the

[17] Even before his inauguration, Bush invited twenty members of Congress to Austin to discuss education policy. Along with Republican leaders—Boehner, Gregg, Jeffords—New Democrats such as Evan Bayh, Tim Roemer, Zell Miller—were prominently featured as was Democratic Representative George Miller.

negotiating table,[18] but they may have supported him either to avoid a humiliating legislative defeat after a disputed election or because they were pleased with his more conservative stances on other issues, such as taxes (Rhodes, 2012, 152). Regardless, Bush's approach was crucial to reconciling partisan differences. In referring to the "Big Four"—the NCLB bipartisan congressional committee leaders Senators Edward Kennedy (D-MA) and Judd Gregg (R-NH) and Representatives George Miller (D-CA) and John Boehner (R-OH)—one aide noted, "In the 106th Congress, those four people wouldn't have even sat down together" (quoted in Rudalevige, 2003, 42). Bush changed that. He somehow "persuaded some Republicans to accept proposals they had rejected just one session of Congress earlier, and he tacked with Democrats toward a common goal" (Rudalevige, 2003, 24). Conservatives would give up vouchers and block grants; liberals would support annual testing.

Fourth, reframing the conversation using the vocabulary of accountability made it easier to find common ground (Rudalevige, 2003, 43). Since everyone agreed that previous policies had not raised student achievement, an accountability regime of standards and testing had appeal. Under this framework, accountability became an elastic concept enabling Democrats to talk about reforms beyond just increased spending and reassuring Republicans that any new funds would go to a system worth the investment (Rudalevige, 2003, 43). Thus, under NCLB, political leaders found a way to "balance their liberal, pro-spending proposals with a more conservative insistence that stringent requirements accompany the new money" (Peterson and West, 2003, 6).

[18] Jim DeMint [R-SC] lamented that Bush's campaign promise to "leave no child behind" had morphed into "leave no Democrat behind" (quoted in Rhodes, 2012, 151).

Business Leaders

Although Rudalevige's narrative ignores the influence of actors outside Capitol Hill, political scientist, Jesse Rhodes, fills out the picture by focusing on the how non-governmental actors—business leaders and civil rights activists in particular—influenced NCLB's design and enactment. They did it through what he calls "institutionally-bounded entrepreneurship" in which business leaders and civil rights advocates interacted with congressional representatives to produce "bounded, ongoing institutional change" (Rhodes, 2012, 13).[19]

Business leaders from organizations like Business Roundtable, the National Alliance of Business, and the Business Coalition for Education Reform strongly supported rigorous standards, testing, and accountability policies because of their perceived relationship to economic development. In the wake of the "excellence in education" movement, these groups viewed such reforms as catalysts that would improve schools' capacity to produce students with stronger reasoning and analytic skills. These students would become employees who would strengthen the nation's economy. Moreover business lobbies opposed decentralized approaches, which they feared they would produce inefficiencies, and favored federal leadership, which they believed would promote higher standards in all schools (Rhodes, 2012, 19-20).

Long before NCLB was on the table, Louis Gerstner, chairman and CEO of IBM and an important figure in the Business Coalition for Education Reform and Education Roundtable circles, criticized governors at the 1995 Governors Association meeting for their "lack of follow-through on education issues, particularly the need to go from goals to specific standards" under

[19] Hochschild (2003) points out other less-crucial players in this process included state supreme courts which demanded adequate schooling as a way to judge how much financial equalization was appropriate, professional associations that designed standards themselves, and commercial test preparers who created and sold the measures of accountability. Notably such specialists did not include educators who remained largely outside the arena of accountability and reform until late in the process.

Clinton's Goals 2000 and Improving America's Schools Act (Applebome, 1996). This spurred Tommy Thompson, Republican governor of Wisconsin and chairman of the National Governors Association, to organize an "Education Summit" in March of 1996 where more than forty governors and fifty business leaders came together to promote standards-based reforms. The summit renewed members' commitment to federal involvement in education. According to Sandy Boyd, who worked on education issues with the National Association of Manufactures, "there was a definite interest in building a system in which it was possible to pressure the laggard states to adopt comprehensive reforms" (quoted in Rhodes, 2012, 135). However, at that time neither congressional Democrats nor Republicans were receptive to business leaders' efforts to promote standards, testing, and accountability. So "business leaders engaged in what political scientists would call 'softening up'—that is, sustaining a position with a view to shape the agenda when political conditions improved" (Rhodes, 2012, 138).

Meanwhile business leaders were working with then Governor Bush of Texas. Bush was no stranger to the political influence of business leaders. His unofficial education advisor was Alexander "Sandy" Kress, a board member of and paid lobbyist for the Texas Business and Education Coalition (TBEC), an organization which played a central role in constructing Texas's education accountability regime. In fact, Kress was a TBEC founder who chaired the commission that designed the state's system. As Bush's presidential hopes began to solidify, he decided to make education reform a central pillar of his 2000 campaign. Bush hired Kress as his chief education advisor. Kress, in turn, urged Bush to build on Clinton's prior reforms by pressuring states and localities to adopt coordinated standards-based reforms (Rhodes, 2012, 139). At the time, this view lacked support from conservative Republicans. But the Business Coalition for Excellence in Education was thrilled with Bush's January 2001 No Child Left

Behind blueprint which would make federal education funding conditional on states' adoption of a highly specific array of standards, testing, and accountability reforms. More importantly, they promised to lobby intensively for its enactment (Rhodes, 2012, 140).

Civil Rights Advocates

Like business leaders, civil rights advocates also supported increased federal involvement in schooling via standards, testing, and accountability reforms. Organizations like the Citizens' Commission on Civil Rights, The Education Trust, and the Leadership Conference on Civil Rights saw such reforms as civil rights measures that would focus attention on the underachievement of historically disadvantaged students and create political pressure to improve the schools serving these students (Rhodes, 2012, 20-21). Individuals from these organizations had worked closely with legislators during the Clinton administration to pass both the Goals 2000 and the Improving America's Schools Act. When it became clear that states were not complying with federal standards, civil rights advocates were motivated to push their agendas even harder.

After the Republican Revolution of 1994 when Republicans gained 54 seats in the House and eight in the Senate, civil rights advocates tried to revive support for federal standards-based reform with members of Congress. In the mid- to late-1990s civil rights advocates sponsored a series of major research projects aimed at shifting the education policy debate to federal intervention. Some of their reports blamed policymakers for disadvantaged students' low achievement because they failed to enforce standards-based reforms.[20] Other reports sought to

[20] For example, Diane Piche of the Citizens' Commission on Civil Rights directed a study in 1998 which concluded that "there is every reason to expect" that accountability reforms can work and that the Improving America's Schools Act enacted under Clinton had failed largely because many states had not

provide concrete evidence that coordinated standards-based reforms raised student achievement.[21] In April 2000 the Leadership Conference on Civil Rights, an umbrella coalition of civil rights organizations, declared their support for increased accountability measures to accompany standards-based reforms (Leadership Conference on Civil Rights, 2000). Since states were struggling to implement standards-based reforms, Congress embraced the idea of amplifying federal involvement to get schools to improve. Civil rights advocates and their Democratic allies agreed that it was not enough to merely return to the tenets of the Improving America's Schools Act enacted under the Clinton administration. Instead, federal involvement must intensify by promoting standards, testing, and accountability reforms (Rhodes, 2012, 143).

In short, Rhodes argues that shared understandings of standards-based reforms forged by the business leaders and civil rights advocates over the decade before the 2000 presidential election formed the basis for a bipartisan alliance among the Bush administration over education issues. I now turn to the mechanisms business leaders and civil rights advocates used to influence policymakers.

Mechanisms Used to Influence Policymakers

Lobbying

When Congress was debating NCLB, both business leaders and civil rights advocates lobbied for its passage. Civil rights organizations may have had some moral authority with education liberals in the Democratic Party because of their constant advocacy on behalf of

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"heeded the call to renovate and reform the education system" and that the federal government's failed attempts at enforcing implementation had "retarded educational progress" (Piche, 1999).

[21] In 1999, for example, The Education Trust published a report based on a survey of 366 high-poverty schools across the country whose students were meeting high standards. The top-performing schools were "quickest to use state standards to guide their efforts to raise student achievement, as the [IASA] intended" (Barth et al., 1999, 4).

disadvantaged groups (Rhodes, 2012, 151). Likewise, many educationally conservative senators and congresspersons liked such groups because of their consistent focus on accountability for results (Rhodes, 2012, 141). So when civil rights groups came out in support of NCLB, both Democrats and Republicans paid attention. Business leaders organized a "legislative blitz" on behalf of NCLB, which involved their testifying before congressional committees, sending letters to congressional committee members and congressional leadership, visiting congressional staff during policy deliberations, and publishing op-eds favoring the legislation in prominent newspapers like *The New York Times*, *Washington Post*, *Baltimore Sun*, and *USA Today* (Rhodes, 2012, 152).

Using Research

Both business leaders and civil rights advocates sought to persuade legislators by passing on research that supported standards-based reforms. In the throes of NCLB debates, for example, Craig Jerald (2001), an analyst at The Education Trust, published an analysis—supported in part by Business Roundtable—of Texas education reforms that praised Texas's recent changes and proposed them as template for school reform across the country.

Baumgartner and Jones (1993, 83-84) point out that when issues reach the public agenda, political leaders who want to be seen as helping rather than hindering the work of experts, react by doing whatever they can to "support the specialists who convince them that they have the power to solve a major problem." But it is the convincing part that is tricky. This is especially true when research, which is often mired in empirical and scientific jargon, has to be accessible to the legislators who are seldom well versed in that language. This is where so-called "synthesizers" come in handy. Synthesizers are organizations that package research into

"appealing, accessible, actionable, and ideologically persuasive documents with recommendations that policymakers [can] understand, embrace, and then enact" (Manna and Petrilli, 2008). Individuals within such organizations are essentially bilingual—fluent in the languages of both research and policy. Not surprisingly, such people are often more effective at conversing with legislators than are academics because they are able to translate research findings into lay terms.[22]

According to Paul Manna and Michael Petrilli (2008), three main synthesizers successfully packaged scientific research on the NCLB provision requiring highly qualified teachers to be in every classroom: The National Commission on Teaching and America's Future (NCTAF), The Education Trust, and the Thomas B. Fordham Foundation. In the years before NCLB debates, these organizations produced and packaged research specifically designed to convince legislators of the connection between better-qualified teachers and students' improved learning. The NCTAF report, commissioned by two dozen educators, business executives, and civil rights leaders, emphasized the need for high-quality teachers in every classroom in order to boost student learning and meet state standards (NCTAF, 1996).[23] The Education Trust published a report summarizing several large-scale studies—including one study by Bain and Company, a global management consulting firm—each with evidence that well-qualified teachers, especially those who are specifically trained in the subject they teach, can close the gap

[22] One Democratic staff member told Manna and Petrilli, "people on Capitol Hill 'don't connect' very well with academics, and instead they rely on policy think tanks to synthesize and translate important findings into lay terms" (2008, 74).

[23] The report highlighted Linda Darling-Hammond's (1990) research on the importance of formal teacher training (as opposed to alternative routes for teacher certification like Teach For America), Richard Ingersoll's (1995) work using the federal Schools and Staffing Survey to examine the benefits of teachers' qualifications, Ronald Ferguson's (1991) examination of the benefits of investing in higher-quality teachers. This report in particular influenced Senator Kennedy because it cited research and described how to translate the research into policy (Manna and Petrilli, 2008, 77).

between high-and low-performing students (Haycock, 1998).[24] The Fordham Foundation published a 16-page manifesto that cited some of the same research used in the two previous reports by NCTAF and The Education Trust, but used work by labor economists Dale Ballou and Michael Podgursky (1998) to advise policymakers to "widen the entryway" to the teaching profession by deregulating the process and allowing principals to decide which teachers to hire regardless of their certifications (The Fordham Foundation, 1999).[25]

Congressional Testimony

Congressional hearings give members of Congress direct and extended access to researchers and their studies. In preparing for hearings, congresspersons and their staff members often review a lot of published material—including high-quality empirical research—to become informed about complicated topics (Manna and Petrilli, 2008, 71-72). Notably many of the people who authored and sent research to legislators also testified in congressional hearings.[26] In

[24] In the report Eric Hanushek, an economist known for macroanalyses showing that nothing seems to makes a difference for student learning, is quoted as saying "the difference between a good and a bad teacher can be a full level of achievement in a single school year." Haycock also highlights William Sanders' and June Rivers' (1996) "value added" research which showed the large, positive cumulative effects that having three effective teachers in a row could have for low-performing students; work by Dan Goldhaber and Dominic Brewer (1997) on the relationship between teachers' subject-matter degrees and student performance; and a study by John Kain and Kraig Singleton (1996) showing that minority children were more likely to have out-of-field instructors.

[25] The report, ghostwritten in part by Chester Finn, assistant U.S. secretary of education under Reagan and a conservative voice on education policy, criticized NCTAF's earlier recommendation for a new teacher certification requirement, describing it as overly regulatory and "burdensome" (The Fordham Foundation, 1999, 7).

[26] The most frequently appearing witnesses at NCLB hearings were Maris Vinovskis (Professor of History and Public Policy, University of Michigan), Chester Finn (President, The Fordham Foundation), Emily Feistritzer (President and Founder, National Center for Education Information), Eric Hanushek (Senior Fellow, Stanford University Hoover Institution and former Professor of Economics, University of Rochester), Diane Ravitch (Professor of Education, New York University and Senior Fellow, Brookings Institution and the Stanford University Hoover Institution), Kati Haycock (Director, The Education Trust), E.D. Hirsch, Jr., (Professor of English, University of Virginia, and Founder, Core Knowledge Foundation), and Lawrence Sherman (Professor of Criminology, University of Pennsylvania). See Table 3.4 in Manna and Petrilli, 2008.

this setting, being a skilled synthesizer is useful because it is important to communicate with brevity and clarity in congressional hearings. In their analysis of congressional testimonies given throughout NCLB's legislative history, Manna and Petrilli (2008) show that nearly one-fifth of the witnesses were affiliated with the research institutions—universities, research-oriented think tanks (e.g., The Fordham Foundation, The Education Trust)—or professional research firms (e.g., RAND, Mathematica).

The Provisions of No Child Left Behind

Congressional alliances encouraged by the personal involvement of the President and his advisors led to compromise and coalition building between conservatives and liberals. Business leaders, civil rights advocates, and education researchers buttressed these efforts by intense lobbying, the effective use of scientific research, and congressional testimony to help shape and pass NCLB. What resulted from such influence, compromise, and bipartisanship? What do the provisions of NCLB require? Unlike previous reauthorizations of the ESEA (and a testament to the influence of well-placed, high-quality research), the provisions of NCLB dealt with teacher quality in detail. NCLB required states to place a highly qualified teacher, which it defined as a teacher with full certification or licensure, a college degree, and demonstrated competence in subject matter and pedagogy in every classroom by 2005-06, just four years after NCLB was enacted.

Most other provisions dealt with student performance on state-developed, federally-approved standards. The law required states to define standards and develop assessments to measure annually students' progress toward those standards. By the 2005-06 school year, states were to test all students annually in math and reading for grades three through eight as well as

once in high school. By 2007-08, states were to include science assessments once during elementary, middle, and high school. Results of tests—disaggregated by racial and ethnic groups, income levels, disability status, and limited English proficiency—had to be made public. To ensure that "no child was left behind," states were required to develop plans for bringing all students to academic "proficiency"—the lowest level of acceptable performance—by 2014 and to monitor the annual progress of schools in moving all student toward proficiency goals. Although these requirements are consistent with trends in standards-based reforms that predate NCLB, the current law has turned them into a nationwide high-stakes accountability system for all public schools. Accountability in this sense combines standards, tests that measure whether those standards have been reached, and penalties or rewards linked to performance on the tests (Peterson and West, 2003, 25).

Adequate Yearly Progress

Public schools that receive Title I funds—federal money given to states and then distributed to school districts and schools based on the number of enrolled economically disadvantaged students—must prove their effectiveness each year by making "adequate yearly progress" (AYP) toward state-developed academic goals. Schools do this by meeting requirements for participation (how many students take the annual assessments) and proficiency (how many students pass the annual assessments), as well an "additional academic indicator" that each state determines. For schools to meet participation requirements, at least 95 percent of its students must take federally-mandated, state-defined annual assessments. Proficiency requirements are more complex. To ensure that every student is proficient in math and reading by 2014, each state developed annual measurable objectives (AMOs), also known as

"proficiency targets." AMOs must increase over time, but states decide how they increase. In addition to meeting participation and proficiency goals, schools must also meet the so-called "additional academic indicator." For high schools, graduation rate is the additional academic indicator. States choose the additional academic indicator for their elementary and middle schools; typically attendance rates.

Every school's student population as a whole and each of its student subgroups must meet participation and proficiency requirements, which is also known as the "disaggregation requirement." The law defines student subgroups as economically disadvantaged students, students from major racial/ethnic groups, students with disabilities, and students with limited English proficiency. Notably, not all schools have the same number of subgroups. Larger and more demographically diverse schools have more subgroups and so must meet more disaggregation requirements. The extent to which this particular provision fosters inequality in educational outcomes is at the heart of my research questions. I discuss it in more detail below.

Sanctions

Schools that do not make AYP are classified as "in need of improvement" and must undergo a series of escalating steps toward correction and progress. In California this process known is as Program Improvement (PI).[27] If a school fails to make adequate yearly progress for two consecutive years, its district is to notify parents of the school's failing status, develop a plan to improve student performance, provide technical assistance to the school (e.g., analyzing data from state assessments, revising school budgets), offer professional development, and permit the school's students to transfer to a non-failing public school within the same district. A school

[27] NCLB's improvement process and its sanctions apply in all states. Yet not all states refer to this process with the same terminology. In Washington State, for example, this process is known as School Improvement.

district must cover the costs of professional development and transporting its students to another school. A third consecutive year of inadequate performance means the district must use its Title I funds to also provide students from low-income families with "supplemental education services," such as tutoring, remediation, or other academic instruction. For schools that fail to make AYP for four years, districts are additionally required to take "corrective action" such as extending the length of the school day, replacing school staff or requiring the school to introduce a new curriculum and materials. A fifth year of failing means the school must create a plan to restructure it governance. If the school does not make AYP the following year, the restructuring plan must be implemented and the school faces additional interventions such as reopening as a charter school or turning its operations over to the state.

Inequality in No Child Left Behind

Over the past 60 years educational policy has shifted from focusing on "equity" to "excellence" and more recently to "adequacy." Put differently, instead of the ESEA's unambiguous objective to equalize educational opportunities for children by targeting resources to the most needy, NCLB now stresses accountability for meeting educational content standards under the assumption that "all children can learn," regardless of whether they have the same educational resources (Koski and Reich, 2006).

To what extent has this shift in educational policy made us lose sight of ensuring educational equality? On the whole, empirical conclusions suggest that the expected effect of introducing an accountability system is "significantly better growth in achievement" (Hanushek and Raymond, 2002, 31). But NCLB doesn't measure schools' success by increases in

performance. Instead, every school—and each student subgroup within it—must meet state-set annual performance targets, regardless of how much students' performance may have improved.

Requiring each subgroup within a school to meet performance targets may actually foster inequality in education. Of NCLB's disaggregation requirement, William Koski, founder and director of Stanford's Youth and Education Law Project, and political scientist Robert Reich point out that "poor and minority students tend to perform worse on standardized assessments than their wealthier and white peers. Thus, any accountability scheme that doles out … punishments based on levels of student performance will tend to … punish poor and minority schools" (Koski and Reich, 2006, 584). Likewise, economists Thomas Kane and Douglas Staiger (2003, 152-3) argue that "subgroup rules result in fewer resources and more sanctions targeted on diverse schools simply because of their diversity, and [subgroup rules] do not appear to have any impact on the test scores performance of students from minority groups."

A growing body of research supports these arguments by showing how the law itself imposes unequal chances for success on schools of different sizes and demographic compositions. John Novak and Bruce Fuller's (2003) work showed that the number of subgroups in California schools was inversely correlated with the percentage of schools that make adequate yearly progress. This was true net of the percentage of students in the school who come from economically disadvantaged families and the schools' average test scores. Robert Linn (2005) and Linda Darling-Hammond (2007) cite similar findings in other states. Darling-Hammond (2007, 251) explained that NCLB has "created a bizarre situation in which schools that are improving and closing the achievement gap are often declared failing." Yet most reports of this kind were published when NCLB was in its infancy when Kane and Staiger (2003, 161) cautioned, "it remains to be seen how serious these consequences will be in practice."

Now, years—and an enormous amount of data—later, it is possible to assess the long-term ramifications of the law's provisions on schools' abilities to show that they are meeting accountability goals. That is the goal of this dissertation.

Overview of Chapters

In terms of educational equality, is it important whether all schools face the same probabilities of proving they are adequately educating their students. This dissertation extends earlier studies of the effect of NCLB's requirements on the probability that schools will meet accountability goals. I do this by investigating how schools fare under the law over time and under different requirements. In Chapter 2 I investigate the extent to which traditional public schools in California were involved in NCLB's federally-mandated process intended to help them succeed, namely Program Improvement (PI). In doing so I examine the probabilities that schools transitioned into, through, and out of PI over time and the extent to which these transition probabilities changed as schools moved to higher and thus more punitive stages of PI. Since several characteristics of a school such as the racial and economic backgrounds of its students, the education of their parents, the quality of its teachers, its location and its resources affect whether it makes adequate yearly progress or ends up assigned to PI, in Chapter 3 I investigate how much transition probabilities change when I vary the levels of schools' socioeconomic status and diversity, while holding other structural characteristics of schools at their means. And because schools operate within an accountability structure imposed by the law, in Chapter 4 I analyze the extent to which changing what the law requires would change these transition probabilities and affect inequalities in the probabilities of moving into, through, or out of PI for schools with different levels of socioeconomic status and diversity.

CHAPTER 2. TRANSITION PROBABILITIES OF NCLB'S PROGRAM IMPROVEMENT AND ITS LONG-RANGE TRENDS

In this chapter I analyze data for California public schools following the implementation of the No Child Left Behind Act to determine the extent to which schools in California underwent federally mandated sanctions intended to improve under-performing schools. Program Improvement (PI) is California's term for the process a school enters when it fails to make adequate yearly progress (AYP) on annual tests for at least two consecutive years and is therefore determined to be "in need of improvement." As outlined under NCLB, PI has five stages. Schools that repeatedly fail to make AYP move to higher PI stages, each with increasingly punitive sanctions.[28] I calculate the probabilities that schools transitioned into, through, and out of the Program Improvement process—"transitions probabilities"—depending on which if any stage of PI a school was in the previous year. I also predict long-range trends of schools' involvement in PI based on past patterns of these transition probabilities.

California is home to about 10,600 public schools—more than any other state—and 12 of the country's 100 largest schools districts. It is also among the top 10 states in terms of the diversity of its public schools (Chen, 2015). Differing levels of diversity across a large number of schools makes California an ideal state for studying the likelihoods of schools' PI transitions and the extent to which the probabilities of such transitions vary across schools with different levels of diversity.

[28] For details about the stages of Program Improvement see Appendix A. For an overview of the process, see **Table 1.1A** in Appendix A.

Before delving into the particulars of how NCLB was implemented in California, it is important to know which schools must adhere to the law's provisions. Since the Elementary and Secondary Education Act (ESEA) was passed in 1965, federal funds have been distributed to public elementary and secondary schools under Title I, Part A with the goal of increasing educational opportunities of disadvantaged students.[29] Within each state, these "Title I funds" are allocated to school districts based on their numbers of students from financially disadvantaged families. Any school district with at least 500 students, ten of whom are from low-income families, is eligible to receive federal funding under Title I.[30] School districts distribute Title I funds to schools based on their percentage of children from low-income families, which must be at least as high as that of their school districts.[31] Since NCLB's implementation, the percentage of schools receiving Title I funds has increased. During the 2003-04 school year 54 percent of all public schools in the U.S. received Title I funding (Schools and Staffing Survey, 2004). By the 2011-12 school year 69 percent of public schools did (National Center for Education Statistics, 2013).[32] All districts and schools receiving federal Title I funds are held

[29] This includes non-traditional public schools such as charter schools, special schools, alternative schools, etc. While some programs of the ESEA provide services to non-public elementary and secondary school students, no federal funds go directly to private schools (U.S. Department of Education, 2015a).
[30] A qualifying school district does not have to apply for Title I funds as it would for a competitive grant. But it must submit a plan to the state for how to use those funds to improve the academic achievement of disadvantaged students.
[31] If less than 40 percent of a school's students are from low-income families, then the school must use a "targeted assistance" program wherein Title I funds are used specifically to help children who are failing or most at risk of failing, to meet the state's academic standards. Schools with even higher percentages of students from low-income families may operate a "schoolwide" program wherein Title I funds may be combined with other resources and used to help all students. In 2011-12, 57 percent of California schools eligible for Title I funds operated schoolwide Title I programs (National Center for Education Statistics, 2013).
[32] There is considerable variation in the percentage of Title I schools across states. In 2011-12, 25 percent of Maryland's and 94 percent of New York's schools received Title I funds. That year 84 percent of schools in California were eligible for Title I funds (National Center for Education Statistics, 2013).

accountable to federal mandates detailed under NCLB.[33] (For more details about Title I, see Appendix A).

NCLB in California

In order to make AYP in California, schools that receive Title I funds are required to meet or exceed state standards within each of four areas: (1) participation, (2) proficiency, (3) a state-chosen additional academic indicator, and (4) graduation rate.

Participation. NCLB requires that of all the students required to take statewide assessment tests, 95 percent of them must participate.[34] Most students take the California Standards Tests (CSTs) in English-language arts (ELA) and mathematics in grades two through eight.[35] Tenth-graders take the California High School Exit Examination (CAHSEE) for ELA and math.

Proficiency. Under the law, all students must perform at or above the proficient level by 2014.[36] States define how this is achieved by setting annual measureable objectives (AMOs), which act as annual performance targets. **Figure 2.1** shows that from 2001 to 2006, California's AMOs proceeded with only one jump in the required "percent proficient" for the 2004-05 school year (increasing about 10 percent in both ELA and math). Since 2006, AMO targets have

[33] Districts and schools can refuse Title I funds. If they do, they are not required to take federally-mandated actions to improve schools that fail to meet academic standards. But they are still required to participate in annual state assessments and report on their adequate yearly progress, including notifying parents if their child's school is failing to meet state standards and is deemed "in need of improvement." Using publically available data, I cannot determine how often districts or schools refuse Title I funds.
[34] The only exclusion is for students who are absent due to a significant medical emergency.
[35] Since 2008, students with disabilities who have an individualized education plan (IEP) take the California Modified Assessment (CMA) for English-language arts in grades three through seven eight and for math in grades three through seven. Students with severe cognitive disabilities who cannot participate in CSTs even with accommodations or modifications take the California Alternate Performance Assessment (CAPA) in grades two through eight and ten. Although scored on a different scale, the same basic calculation rules used for CSTs apply to CMAs and CAPAs (advanced, proficient, basic, below basic, or far below basic) and are included in AYP results.
[36] Students' tests are scored as: above proficient, proficient, basic, below basic, or far below basic.

increased every year by about 10 percent. This pattern was established to reflect the expectation that the students' largest academic gains are likely to occur in later years (after alignment of instruction with state content standards, after schools and districts have the opportunity to increase administrative capacity, and after a highly-qualified teacher is in every classroom).[37]

Additional academic indicator. California uses the Academic Performance Indicator (API) as their required additional academic indicator. It is a single number, ranging from 200 to 1000, which encapsulates a school or district's performance on assessments tests. For students who take the California Standards Test, APIs are calculated by averaging students' scores on statewide assessments in ELA (grades 2-11), math (grades 2-11), history (grades 8-11), science (grades 5, 8-11), and a writing (grade 10) and converting them to the API scale.[38] **Figure 2.2** shows that, like AMO proficiency targets shown in **Figure 2.1**, API targets proceeded with only one disproportional jump during the first six years (increasing in 2004-05 by 30 points). Since 2006, API targets have increased every year by the same amount, i.e., 30 points.

Graduation rate. In order for high schools to meet the graduation rate requirement, they must either meet the minimum graduation rate, the fixed-growth target, or the variable-growth target. The minimum graduation rate is 90 percent. The fixed-growth target was established in 2011 and is based on the difference between a school's (or district's or subgroup's) graduation rate for the 2011 school year and the 90-percent goal divided by the number of years remaining before 2019 (i.e., eight years). For example, the yearly fixed-growth target for a school that had 70 percent of its students graduate in 2011, would increase by 2.5 percentage points for each of

[37] Other states' AMO trajectories may differ. In Washington State, for example, targets increased once every three years.

[38] Test results are converted into a score on the API scale using statewide performance level weighting factors where Advanced = 1000 points, Proficient = 875 points, Basic = 700 points, Below Basic = 500 points, Far Below Basic = 200 points. For students who take the CAPA, API is based on ELA (grades 2-11), math (grades 2-11), and science tests (grades 5, 8, and 10). For students who take the CMA, API is based on ELA (grades 3-11), math (grades 3-11), and science tests (grades 5, 8, and 10).

the next eight years. The variable-growth target is based on the difference between a school's current graduation rate and the 90-percent goal divided by the number of years remaining until 2019. So, unlike the fixed-growth targets, variable-growth targets change from year to year according to the school's current graduation rate.[39]

Schools as a whole must meet participation and proficiency requirements as well as for each of the eleven student subgroups defined under California law: Black or African American, American Indian or Alaska Native, Asian, Filipino, Hispanic or Latino, Native Hawaiian or Pacific Islander, White, and Multiracial, socioeconomically disadvantaged students,[40] English learners,[41] and students with disabilities.[42] A student group is considered a separate group if there are at least 100 students of that group enrolled on the first day of testing or 50 enrolled students make up at least 15 percent of the eligible testing population (about 335 students). Likewise, to be considered a separate group for proficiency standards, a student subgroup must have at least 100 students with valid scores or 50 students with valid scores who make up at least 15 percent of all students with valid scores. As noted above in the previous chapter and shown in **Table 2.1**, the size and demographic composition of a school determine how many distinct requirements it must meet. Notably, a California school might be subject to 50 separate requirements in order to make AYP.[43]

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[39] All rates are calculated based on a four-year cohort graduation rate formula which divides the number of cohort members who earn a diploma after four years by the number of first-time ninth graders who entered that school four years earlier plus students who transferred in during those fours year and minus any student attrition (i.e., students who transferred, emigrated, dropped out, or died) during school years.
[40] Students of at least one parent who did not receive a high school diploma or students who are eligible for free- or reduced-price lunch program.
[41] Students who are identified as English learners based on results of the California English Language Development Test (CELDT) or students who have been reclassified as fluent English proficient and have not scored at the proficient level or above on state English-language assessments three times after being reclassified.
[42] This includes students who receive special education services and have a valid disability such as a speech or visual impairment, deafness, blindness, autism.
[43] The highest number of requirements among schools examined in this dissertation is 37.

Schools receiving Title I funds that do not meet state-defined AYP for at least two consecutive years are assumed to "need improvement" which subjects them to a federally-approved five-stage "improvement process."[44] In California, Program Improvement (PI) is the formal designation for the process a Title I-funded school enters if it fails to make adequate yearly progress (AYP) for two consecutive years.[45] A Title I school will be placed in PI if it does not make AYP in either English-language arts or mathematics as a school or for any "numerically significant" subgroup, or if it does not make AYP on the same indicator (i.e., Academic Performance Index [API] or high school graduation rate) as a school. A school exits PI only if it makes AYP for two years in a row.

Once in PI, a school that fails to make AYP will "advance" in PI status. The use of the term "advance" in legal and administrative NCLB documentation is counterintuitive. Before going further, it's worthwhile to discuss the euphemistic undertones of the NCLB improvement process. The language of the law—that same language that has become second nature amongst people in "the know," such as state legislators, school administrators, teachers, and researchers—is at best confusing and at worst misleading. When schools fail to meet federal performance requirements, they enter into an "improvement process." Generally a process of improvement means you are getting better, as in physical therapy or learning a musical instrument. The longer you stick with it, the more flexible your joints, the more nimble your fingers. Under NCLB, schools are *not*—by definition and design—improving with lengthier stays in the improvement

[44] In its federally-approved accountability system, each state has defined the sanctions that it will use to hold all districts and schools accountable for student achievement. Therefore, although the sanctions detailed in the NCLB Act do not statutorily apply to schools that do not receive Title I funding, these schools are still subject to state-defined sanctions if they do not make AYP. For more details see the U.S. Department of Education's School Improvement Guide (2006).

[45] In any given year, the majority (over 75 percent) of California schools received some kind of Title I funding, according to annual PI reports published by the California Department of Education (CDE). I verified with a consultant at the California Department of Education that if a school is not included in an annual PI report, it did not receive Title I funds that year.

process. Thus the term “improvement process” is a misnomer. Schools are assigned to the improvement process because they failed to meet standards for two years in a row. Which is reasonable. But schools remain “in improvement” because they fail to improve. Furthermore, “advancement” through this process does not mean a school is making improvements along the way. Schools that “advance” are neither better nor necessarily worse than when they entered. Paradoxically, schools that consistently fail to meet performance goals are said to “advance” through the improvement process.

Understanding PI as a process through which schools don’t improve raises the question of how many schools are involved in this process. **Table 2.2** shows the number of schools in Program Improvement between the 2002-03 and 2013-14 school years. In 2003, the California Department of Education (CDE) reported that 1,200 schools (22 percent) were in PI. By 2009, the number of schools in PI had more than doubled to 2,778 (46 percent). In the 2013 school year, 4,997 (80 percent) of California's schools were in some stage of Program Improvement. Clearly, over the years, more schools have entered PI than have exited. Indeed, steady increases in proficiency targets since the 2006-07 school year (see **Figure 2.1**) make it more difficult for failing schools to make AYP for two consecutive years in order to exit PI. Both the sheer number of schools that have entered this process and its continued increase merit further investigation. In this chapter I examine schools’ involvement with PI by calculating probabilities of schools’ transitions into, through, and out of PI over time. I also predict long-range trends of schools’ involvement in PI based on past patterns of these transition probabilities.

Data

I examined the realities of NCLB with publically available school-level data obtained from the California Department of Education.[46] The Public Schools Database provides an annually updated list of all public schools in California, a county-district-school code;[47] county, district, and school names; and school attributes such as the school type (e.g., special education schools, community day schools, adult education centers, alternative schools, elementary, middle, and high schools), the type of education it offers (e.g., traditional, special, alternative, juvenile rehabilitation, continuing education), its current status (e.g., active, closed),[48] its opening date; and, if applicable, its closing date.

The California Department of Education also makes available schools' PI status. It has published these files annually from 2003-04 to 2011-12, providing nine years of school-level data. PI data are based on schools' AYP outcomes over time. Schools that receive Title I funds are placed in Program Improvement if they did not meet AYP criteria for two consecutive years in the same specific area. Each annual file reports whether a school is in PI at the beginning of that school year and, if applicable, the school's placement in PI (i.e., Stage 1, Stage 2, Stage 3, Stage 4, or Stage 5). I combined these annual files to build a history of each school's involvement with PI since the implementation of NCLB.[49]

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[46] I downloaded data from http://www.cde.ca.gov/ds/ and http://www.cde.ca.gov/ta/. These data are the source of all tables and figures in this dissertation unless otherwise noted.

[47] This 14-digit code is the official, unique identification of a school within California. The first two digits identify the county, the next five digits identify the school district, and the last seven digits identify the school. This code is listed in all CDE data files and is the primary link across those files.

[48] An "active" status means the school is in operation and providing instructional services. "Closed" schools are no longer in operation and no longer provide instructional services.

[49] In my coding scheme, "Stage 0" indicates that a school is not in PI. This either means that the school was not in PI the year before and had successfully avoided entering Program Improvement or that the school was in some stage of PI the year before and had made AYP for two years in a row to exit Program Improvement. Stages 1 to 5 indicate that a school is in some stage of Program Improvement. Being in higher PI stages means incurring more severe sanctions.

Of roughly 10,600 schools in California, I analyzed data for the 6,409 traditional public schools that received Title I funds for one or more years between 2003-04 and 2011-12. Of these schools, 6,092 (95 percent) were actively operating between 2003-04 and 2001-12 and 317 (5 percent) had closed some time after 2003-04. Thus my research population consists of four state-defined school types: 4,550 (71 percent) elementary schools, 948 (15 percent) middle/intermediate/junior high schools, 722 (11 percent) high schools, and 189 (3 percent) combined schools that have all grades from kindergarten through twelfth grade. Each of these 6,409 schools submitted annual data once every year it was in operation for a total of 53,580 observations.[50]

Figure 2.3 shows the percentages of traditional public schools not in PI, those in any one of the five stages of PI, and those that did not receive Title I funds across the nine years of observation.[51] As was true for all public schools in California, over time fewer schools in this sample remained "in good standing" (see solid line) as an increasing number of schools moved into PI (see dashed line). Also note that consistent with a nationwide trend, over time more California schools have become beholden to this federal accountability system by receiving Title

[50] The majority of schools (63.8 percent) had data for in all nine years. Some of the schools with fewer observations were either opened after the 2003-04 school year or closed before the 2011-12 school year. Other schools were missing data in some years because they did not receive Title I funds. Schools that do not receive Title I funds are not subject to federally-mandated Program Improvement regulations regardless of their AYP status. However, these schools still have to test students, make results publically available, and may even be sanctioned under state-approved accountability requirements. In any given year, between 9 and 13 percent of schools that were receiving Title I funds the year before did not receive Title I funds that year. If a school that stops receiving Title I funds for any number of years and then resumes receiving them are evaluated relative to their previous PI status. So, for example, if a school opts out and then back into Title I funding, it does not reenter the improvement process with a clean slate, but starts in the stage it was in before opting out. Unfortunately, available data do not allow me to distinguish between schools that did not receive Title I funds because they were not eligible for them and schools that did not receive funding because they were eligible but refused them.

[51] California began implementing PI status determinations in 1996-97 just two year after Goals 2000 passed and five years before NCLB passed. This is why Figures 2.3 and 2.4 show that some schools were in PI stages before 2003-04, which wouldn't be possible if PI status determinations began when NCLB was implemented.

I funds (see dotted line). **Figure 2.4** goes further and shows the percentages of schools in various stages of PI. Two trends are of note. First, schools entered PI at an increased rate after 2008 just two years after proficiency targets had begun increasing annually by 10 percentage points (see dotted line). Second, unlike other PI stages, across all years schools were entering Stage 5, the final and most punitive stage of PI, in increasing numbers (see solid line).

Analysis

To examine schools' engagement with PI over time, I calculated transition probability matrices.[52] Transition matrices show the probabilities that schools moved into, through, and out of PI in a given year based on what—if any—stage of PI they were in the year before. Thus, compared to the trends shown in **Figures 2.3 and 2.4**, transition probability matrices offer a more detailed picture of schools' involvement with PI over time. Because I examined changes from year to year, my analysis included only instances when I had observations for at least two consecutive years. Over the nine years of observation, there were 47,304 PI status observations that made up 40,613 transitions.

Before proceeding it is helpful to understand just how schools transition through the improvement process. Like a game of chess, there are rules dictating how players can move. Indeed, one can envision the transition matrix for the probabilities of moving between PI stages as a six by six game board upon which schools, like knights or bishops, move according to specific rules. Imagine that rows are the PI stages (0 to 5) from a previous school year and columns are the PI stages in the current school year (0 to 5). Stage 0 indicates that a school is not in PI, and Stage 5 is the highest and most punitive level of PI. According to the rules of PI transition all schools begin in Stage 0 (i.e., not in PI). Each year a school may either stay in the

[52] I calculated probability matrices using the *xttrans2* command in Stata 13.

same stage or move forward one stage. Schools may exit PI from any stage, but can never move back a stage, for example, from Stage 3 to Stage 2. Because these rules mean that some transitions are not possible, some cells in the transition matrix necessarily have probabilities equal to zero.

Transition Probabilities Matrices

PI transition patterns were remarkably similar across elementary, middle, high, and combined schools.[53] **Table 2.3** shows correlations of the 16 non-zero cells for transition matrices by school type, all of which exceeded .96. **Table 2.4** shows correlations of exiting, staying, and advancing in PI by school type. These correlations were calculated from the 16 non-zero probabilities of exiting, staying, and advancing at each stage for each school type and are reported in **Table 2.5**. The probabilities of staying or advancing were correlated above .98 for any school type comparison. Correlations for exiting across school types were lower than other PI transitions. From nearly every PI stage, elementary and high schools had higher probabilities of exiting than middle or combined schools. But **Table 2.5** shows that all probabilities of exiting were .11 or lower regardless of PI stage or school type. Because these high correlations suggest that schools' transition probabilities were fairly stable across school types, I analyzed all school types together.

Table 2.6 shows the transition probabilities for all schools in the sample across all years. Schools that met all AYP requirements and either avoided PI from year to year (i.e., stayed in Stage 0) or exited PI (moved from Stage 3, for example, to Stage 0) made up just over half (56

[53] Transition probability matrices for elementary, middle, high, and combination schools are shown in **Tables 2.1B** through **2.4B** in Appendix B.

percent) of all transitions.[54] The next most likely transition was for schools that had consistently failed to meet AYP requirements over multiple years. Schools that advanced to or remained in Stage 5 from one year to the next made up 14 percent of all transitions. Only slightly less likely was the transition into Stage 1. Schools that failed to make AYP two years in a row and had therefore entered the improvement process made up 11 percent of all transitions.

Once in PI, the probability of advancing to the next stage was higher than either remaining in the same stage (except from the highest stage) or exiting the process. Moreover, the likelihood of advancing to higher stages versus staying in the same stage or exiting the process entirely was higher for schools that are further along in the improvement process. For example, we see from the second row in **Table 2.6** that a school starting in Stage 1 was 3.5 times more likely to advance to Stage 2 (.72) than stay in Stage 1 (.21) and nine times more likely to advance than exit (.08) the improvement process. From the fifth row of **Table 2.6** we see a school that starting the year in Stage 4 was six times more likely to advance to Stage 5 (.82) than stay in Stage 4 (.14) and 20 times more likely to advance to Stage 5 rather than exit (.04). To illustrate the relative magnitudes of these types of transitions, **Figure 2.5** plots the probabilities of three PI outcomes: exiting PI, remaining in the same stage of PI, or advancing to the next stage of PI.

Exiting. The average probability of exiting PI from any stage was .05. Although exit probabilities were small across all stages, the probability of exiting PI from stages 1 and 2 (.08 and .07, respectively) were twice as high as exiting from stages 4 and 5 (.04 and .03). In other words, a school that started the year in Stage 4 was half as likely to exit PI compared to a school

[54] This estimate is pooled across years. Note, however, that the likelihood of avoiding or exiting PI has decreased over time as more schools have entered the PI process. For 2003-04 to 2004-05 the probability was .68. By 2010-11 to 2011-12 that probability had dropped to .32. Refer to **Tables 2.5B** through **2.12B** in for year-to-year transition matrices used to derive these probabilities.

that began the year in Stage 1. So while schools were not very likely to exit PI regardless of what PI stage they were in, schools were more likely to exit PI from earlier stages.

Staying. The average probability of staying in the same PI stage was .42. This is roughly eight times higher than the average probability of exiting. For schools already in PI, this probability decreased slightly as schools advanced in the improvement process (from Stage 1 to Stage 4). This means that at higher stages, fewer schools stayed in the same stage. Because there is no additional improvement stage after Stage 5, the high probability of staying in Stage 5 (.97) could essentially be a ceiling effect.[55]

Advancing. The average probability of advancing in PI was .64. This is roughly one-third higher than the average probability of staying in the same PI stage and over 12 times as high as the average probability of exiting. Notably, the probability of advancing jumped dramatically depending on whether a school started the previous year in PI (.72) or not (.14). And from Stage 1 forward, the probability of advancing to the next PI stage increased at each PI stage. Thus, although many schools did not enter PI, those that did were highly likely to advance to higher stages and be exposed to the sanctions associated with higher stages.

Predicting Long-Range Trends

What can these transition probabilities tell about the future of schools' placement in Program Improvement? In the analysis above, the transition probabilities of entering, advancing and exiting PI are a Markov chain process where a schools' PI stage in one year depends only the stage of PI the school was in the previous year. Or, put differently, the next stage depends only

[55] However the fact that schools are unlikely to exit from Stage 5 could also be the result of a sanctioning structure that doesn't encourage schools to improve, at least enough to exit. I discuss this further in Chapter 4.

on the present stage and not on any preceding stages. In this section I analyze transition probabilities using Markov chains as described by Greenwell et al. (2003).

Let *P* represent the transition probability matrix in **Table 2.6** where p_{ij} is the probability of transitioning from stage *i* to *j*. For example, p_{01} represents the probability of moving from Stage 0 (i.e., not in PI) to Stage 1 in the improvement process and is equal to 0.14.

P^n gives the probabilities of a transition from one state to another in *n* repetitions of an experiment (Greenwell et al., 2003, 3). So squaring *P* gives the probabilities of moving from stage *i* to stage *j* after two years. Cubing *P* gives probabilities for the year following that, and so forth. Extending this logic to pre-multiply P^n by a vector of "initial" probabilities gives the distribution of schools across PI stages in *n* years where X_0 is the initial distribution at year 0 (Greenwell et al., 2003, 5). Put more formally, if a Markov chain has an initial probability vector $X_0 = [i_1 i_2 i_3 \ldots i_n]$ and transition matrix P^n, the probability vector after *n* number of years is $X_0 * P^n$.

I used an initial probability vector of [.34 .18 .10 .09 .04 .25]. These are simply the proportions of schools in each of the PI stages in 2011-12 where the first element is the proportion of schools not in PI, the second element is the proportion of schools in Stage 1 of PI, and so forth. Using the equation above**,** I computed the distribution of schools across stages of PI for the next 25 years (shown in **Table 2.7)**. Two things are of note. First, over time schools would experience one of two modal outcomes: moving to Stage 5 (.72) or avoiding Program Improvement (.18). Thus, over time the distribution of PI transitions approximates two absorbing states wherein either schools would remain in good standing and avoid PI or schools would enter PI with little possibility of leaving. Second, in roughly 20 years nearly three-quarters of all

schools will be in the most punitive stage of Program Improvement with little chance of exiting.[56]

Conclusion

In 1981 Black Flag aired a TV commercial to promote their Roach Motel cockroach trap. The 30-second spot depicted a middle-aged couple frustrated by a roach problem in their kitchen. As the woman swats a roach with a dishtowel and exclaims her disgust, the man reassures her by announcing his decision to send all the roaches to a motel: "Black Flag Roach Motel—roaches check in, but they don't check out!" This catchy tagline reflects how schools interact with Program Improvement process under NCLB. Over time an increasing number of schools have entered PI, not because they were attracted by what it offers, but because they could not avoid it. Moreover, when probabilities are averaged across PI stages, schools that enter PI are more likely to advance to higher stages (.64) than remain in the same stage over time (.42) or exit the process entirely (.05). Bottom line: once a school gets into the improvement process it—like a roach that checks into the Roach Motel—is unlikely to get out.

The transition probabilities reported in this chapter were averaged across all schools. But one must consider the fact that these schools differ from each other in terms of the students they serve, the teachers they employ, and the resources they use. In the next chapter I examine whether and how much transition probabilities vary because of several school- and district-level factors which affect whether schools make AYP from year to year or end up assigned to PI.

[56] If a different initial probability vector is used the long-range trend is the same. It just takes longer to get there. If, for example, the initial probabilities are the proportions of schools in each PI stage in 2003-04 [.77 .13 .04 .00 .00], then it takes roughly 29 years to reach the same final distribution.

TABLES AND FIGURES

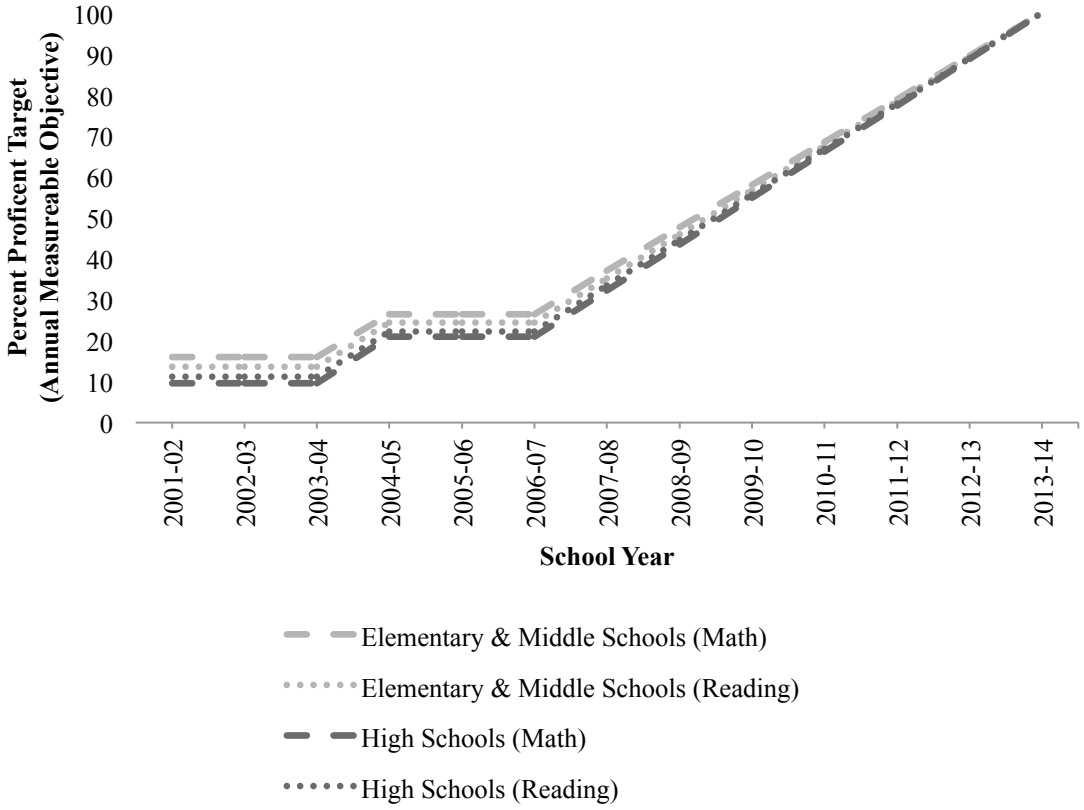

Figure 2.1. California's Annual Measurable Objectives (AMOs), or Proficiency Targets, for Math and Reading, by School Type for 2001-02 to 2013-14

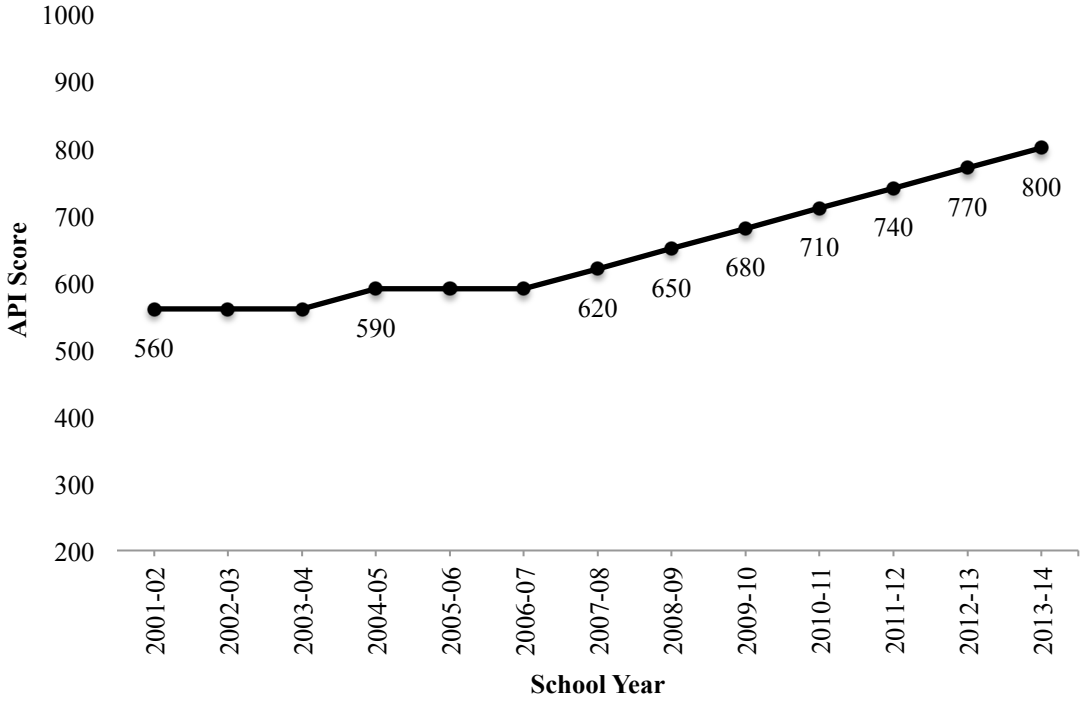

Figure 2.2. California's Annual Performance Index (API) Targets, 2001-02 to 2013-2014

Table 2.1. Requirements to Meet Adequate Yearly Progress by Schools' Student Body Compositions

	Mathematics		Reading		Other Academic Indicator	Total Require-ments
	95 Percent Participation	Percent Proficient	95 Percent Participation	Percent Proficient		
Homogenous population						5
All Students	✓	✓	✓	✓	✓	
Two racial groups						13
All Students	✓	✓	✓	✓	✓	
Racial/Ethnic Sub-Group 1	✓	✓	✓	✓		
Racial/Ethnic Sub-Group 2	✓	✓	✓	✓		
Diverse student population						37
All Students	✓	✓	✓	✓	✓	
Racial/Ethnic Sub-Group 1	✓	✓	✓	✓		
Racial/Ethnic Sub-Group 2	✓	✓	✓	✓		
Racial/Ethnic Sub-Group 3	✓	✓	✓	✓		
Racial/Ethnic Sub-Group 4	✓	✓	✓	✓		
Racial/Ethnic Sub-Group 5	✓	✓	✓	✓		
Economic Disadvantage	✓	✓	✓	✓		
English Learners	✓	✓	✓	✓		
Students with Disabilities	✓	✓	✓	✓		

Table adapted from Marion et al. (2002) and Linn (2005).

Table 2.2. Number of All California Schools in Program Improvement (PI), by Year

Year	In PI	Percent	No. of Schools
2003-04	1200	21.9	5467
2004-05	1600	28.0	5714
2005-06	1746	29.5	5915
2006-07	2216	36.6	6061
2007-08	2185	36.0	6064
2008-09	2262	37.6	6017
2009-10	2778	46.1	6020
2010-11	3169	51.6	6142
2011-12	3890	63.0	6174
2012-13	4402	70.9	6209
2013-14	4997	80.6	6202

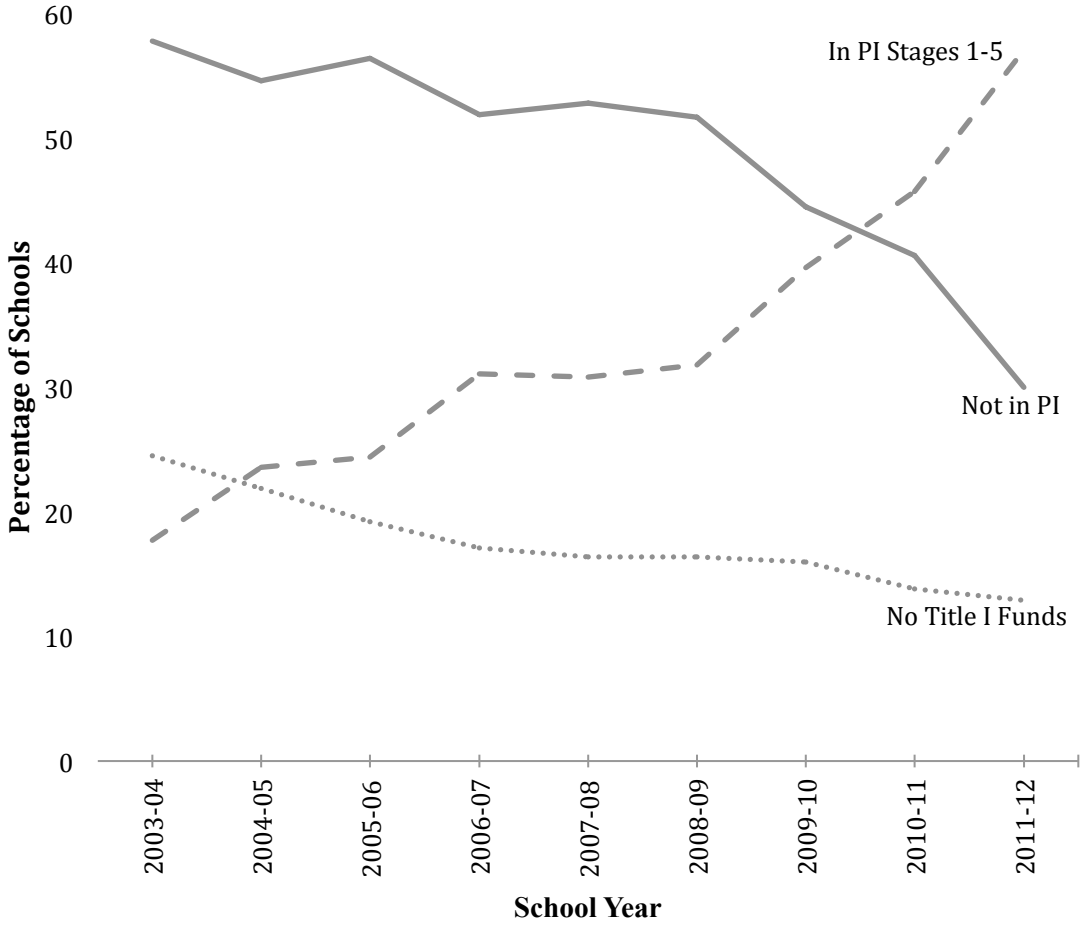

Figure 2.3. Program Improvement Status of Traditional Public Schools in California and Title I Status

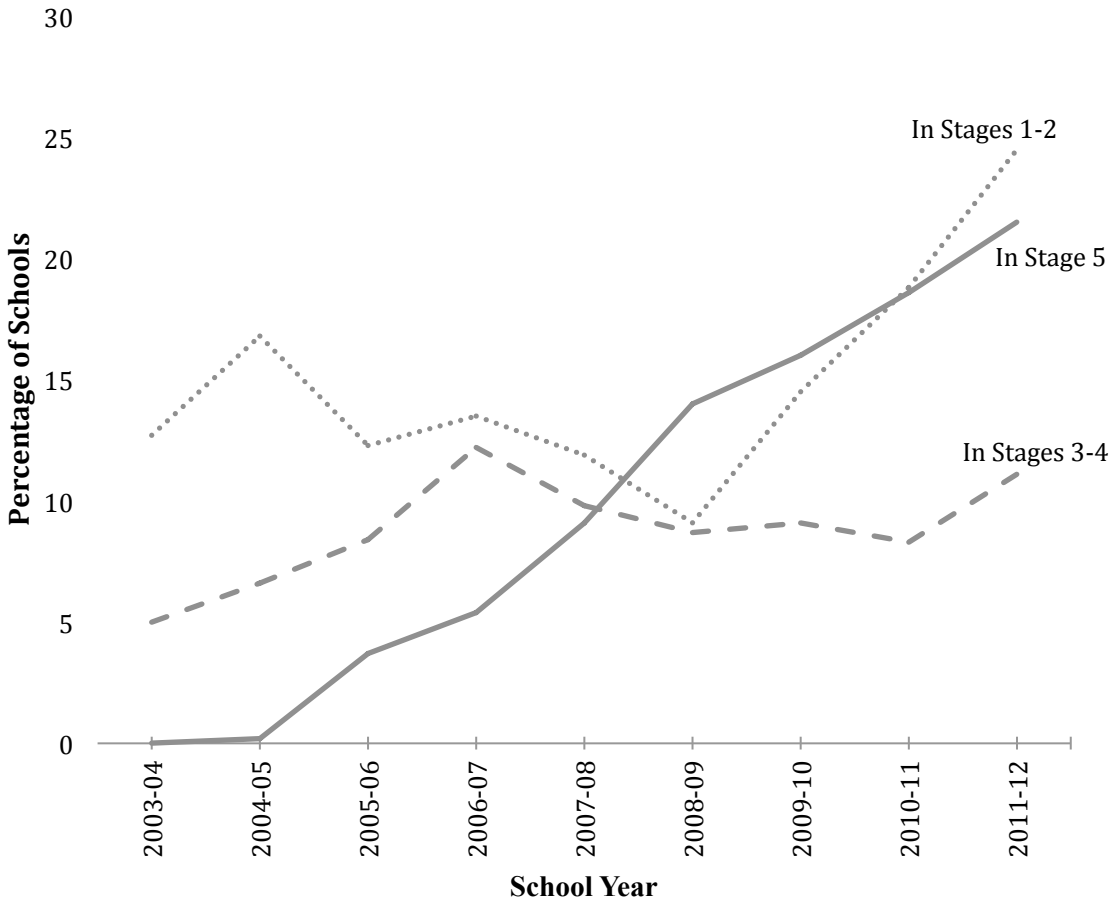

Figure 2.4. Percentages of Traditional Public Schools in Various Stages of Program Improvement

Table 2.3. Correlations of 16 Non-Zero Cells in Transition Probability Matrices for School Types

	Elementary	Middle	High	Combined
Elementary	1	-	-	-
Middle	.97	1	-	-
High	.99	.98	1	-
Combined	.97	.99	.98	1

Table 2.4. Correlations of 16 Non-Zero Cells of Trichotomous PI Transitions for School Types

	Stay				Advance				Exit			
	E	M	H	C	E	M	H	C	E	M	H	C
Elementary (E)	1	-	-	-	1	-	-	-	1	-	-	-
Middle (M)	.99	1	-	-	.99	1	-	-	.87	1	-	-
High (H)	.99	.99	1	-	.98	.99	1	-	.86	.75	1	-
Combined (C)	.99	.99	.99	1	.99	.99	.99	1	.50	.80	.56	1

Table 2.5. Probabilities of Exiting, Staying, and Advancing in PI, by School Type

Elementary Schools

Stage	Stay	Advance	Exit
0	.87	.13	-
1	.23	.69	.08
2	.20	.72	.08
3	.20	.74	.06
4	.18	.76	.06
5	.96	-	.04

Middle Schools

Stage	Stay	Advance	Exit
0	.76	.24	-
1	.12	.84	.04
2	.11	.86	.03
3	.09	.90	.02
4	.05	.94	.01
5	.99	-	.01

High Schools

Stage	Stay	Advance	Exit
0	.84	.16	-
1	.19	.72	.09
2	.19	.70	.11
3	.18	.72	.09
4	.09	.88	.04
5	.99	-	.01

Combined Schools

Stage	Stay	Advance	Exit
0	.74	.26	-
1	.13	.81	.06
2	.09	.89	.02
3	.13	.82	.05
4	.05	.95	.00
5	.98	-	.02

Table 2.6. Program Improvement Transition Probabilities, All Schools and Years

		Current School Year						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Previous Year	Not in PI	.86	.14					25,376
	Stage 1	.08	.21	.72				3,913
	Stage 2	.07		.18	.75			2,924
	Stage 3	.05			.17	.78		2,384
	Stage 4	.04				.14	.82	1,873
	Stage 5	.03					.97	4,143
	Total	.56	.11	.08	.06	.05	.14	1.00
	No. of Obs.	22,615	4,376	3,342	2,589	2,116	5,575	40,613

Note: The category “Not in PI” includes schools that have never entered PI and those that have exited the improvement process from stages 1 through 5.

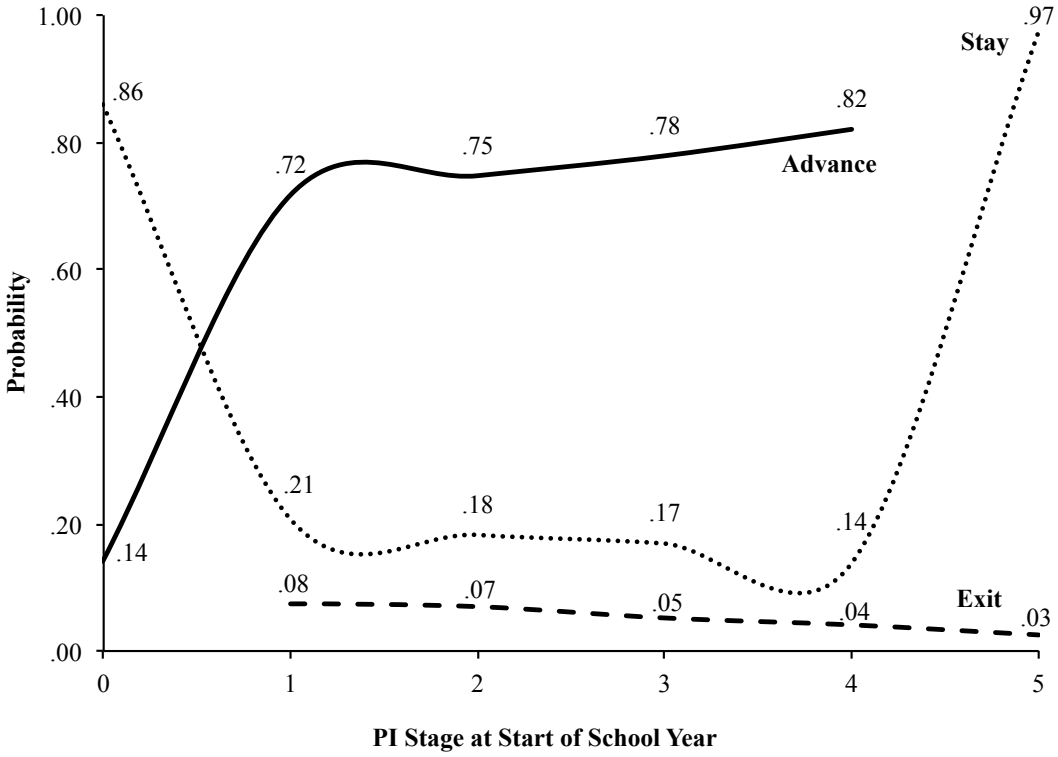

Figure 2.5. Probabilities of Exiting PI, Staying in the Same PI Stage, and Advancing to the Next PI Stage for All Years and School Types

Table 2.7. Predicted Distribution of Schools Across Stages of Program Improvement over the Next 25 Years Based on Markov Chain Modeling

After Year n	Not in/ Exited PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
0	.34	.18	.11	.09	.04	.25
1	.33	.09	.15	.10	.08	.28
2	.31	.06	.09	.13	.09	.33
3	.30	.06	.06	.09	.11	.39
4	.28	.05	.05	.06	.08	.48
5	.27	.05	.05	.05	.06	.53
6	.26	.05	.05	.04	.05	.57
7	.25	.05	.04	.04	.04	.59
8	.24	.04	.04	.04	.04	.61
9	.23	.04	.04	.04	.04	.63
10	.22	.04	.04	.04	.03	.64
15	.20	.04	.03	.03	.03	.69
20	.19	.03	.03	.03	.03	.71
21	.18	.03	.03	.03	.02	.71
22	.18	.03	.03	.03	.02	.71
23	.18	.03	.03	.03	.02	.72
24	.18	.03	.03	.03	.02	.72
25	.18	.03	.03	.03	.02	.72

CHAPTER 3. THE EFFECTS OF SCHOOLS' STRUCTURAL CHARACTERISTICS ON PROGRAM IMPROVEMENT TRANSITION PROBABILITIES

In the previous chapter I showed that the transition probabilities of California's schools moving into, through, and out of Program Improvement (PI) differ depending on which stage of improvement—if any—a school was in the previous year. This chapter investigates how much the structural characteristics of schools affect their transition probabilities.

To begin one must acknowledge that the requirements of NCLB center around students' performance on standardized tests. That is, most students must perform at or above a certain "proficiency" level in order for their school to escape punitive sanctions. And students' performance is itself influenced by myriad factors not the least of which are the ascribed and achieved characteristics of students and their teachers. The characteristics of the schools students attend have also been found to influence their achievement. The next section briefly reviews empirical evidence on the relationships between student test scores and student-, teacher-, and school-level characteristics.

Literature Review

Students

Race, gender, and class are among the most frequently studied predictors of students' success. They are also known to have consistently significant effects—both substantively and statistically—on students' outcomes. Race matters. Compared to their white counterparts, African American and non-white Hispanic students tend to have lower test scores (for reviews see Solorzano, 2008 and Grodsky et al., 2008). Both these minorities' scores have improved

over time, as have those of whites, thereby maintaining the substantial gap between groups in both math and reading (Berends and Penaloza, 2010; Hemphill and Vanneman, 2011). Gender matters. Boys tend to score more highly on tests and do better in math, but girls have better grades and excel in reading (for review see Buchmann et al., 2008). Class matters. Students of lower socioeconomic status (SES), measured by parental education or family income, typically score lower on tests than their more advantaged peers (for review see Sirin, 2005).

The characteristics of the student body as a whole also influence students' success. The average socioeconomic status of students in a school positively affects students' test scores over and above what we would expect from individual student backgrounds (Perry and McConney, 2010). Students of all races enjoy long-term benefits from diverse school settings in terms of interracial relationships, networking for jobs, attitudes toward other races, and overall social development (see Clayton, 2014). But the effect of being in a diverse school has a murkier relationship with a shorter-term outcome like student performance. Some evidence suggests that net of various measures of school quality, black students in integrated schools score higher than blacks in segregated schools, while the same levels of black-white segregation have little effect on white students' scores (Borman et al., 2004; Harris, 2006). In contrast, other evidence shows that whites in diverse schools score lower than whites in more homogenously white schools, while black and Hispanic students are unaffected by the racial diversity of their surroundings (Clayton, 2014). With respect to the study at hand, it is crucial to remember that diverse schools exist within a structure of accountability dictated by the law. So not only does the composition of a school's student body affect its average tests scores, but because of the NCLB disaggregation requirement, diverse schools themselves—regardless of their specific student

compositions—are less likely to make NCLB targets even when they have similar overall average test scores (Novak and Fuller, 2003; Linn, 2005).

Teachers

One rarely talks about student performance without referencing teachers who are perhaps the most proximate influence on a student's learning. Indeed the commonly understood importance of a teacher's role in a student's learning process is written into the law. Under NCLB, all teachers of core academic subjects[57] must be "highly qualified" meaning they must hold at least a bachelor's degree, be licensed by the state, and demonstrate competency in the subject they teach. Yet evidence for how teachers' characteristics (at least the most frequently studied: education, certification and experience) affect students' achievement is mixed. Students of teachers with master's degrees do not necessarily perform higher than students of teachers without master's degrees (for review see Hanushek, 2006a). But students of teachers with a master's degree in the same subject they teach score higher on tests than students whose teachers have out-of-subject master's degrees (for review see Wayne and Youngs, 2003). Teachers' certification appears to operate in a similar fashion. That is, students with teachers who are certified in the subject they teach outperform students whose teachers are not certified or are certified out of field (Goldhaber and Brewer, 2000).[58] Studies of teachers' experience show a

[57] In California, the core academic subjects are math, biological science, chemistry, geosciences, physics, history, government, economics, geography, foreign languages, drama, visual arts, music, and English-language arts.

[58] Unfortunately, fine-tuning empirical analyses to capture this more nuanced relationship between a teacher's education or certification and their students' learning is difficult since it requires data about the type of master's degree each teacher holds and whether teachers instruct classes in their field of expertise. Such data are not typically made publically available.

more positive, but still tenuous, relationship with student achievement (for reviews see Hanushek, 2006a; Wayne and Youngs, 2003).[59]

When considering how students' and teachers' characteristics may influence students' achievement, it is important to remember that students and teachers engage in schooling together. The mix—or "mismatch"—of students' and teachers' characteristics can also influence students' outcomes, including test scores (McGrady and Reynolds, 2013). For example, in the Tennessee Project STAR class-size experiment, black and white students in classrooms with same-race teachers had higher gains in math and reading test scores, relative to black and white students with different-race teachers (Dee, 2004). Unfortunately, data about racial mismatch of students and their teachers are difficult to obtain at the individual level.

Schools

Other characteristics of schools that exist beyond or around the students and teachers (school size, geographic location, resources) can influence how well schools perform. Evidence from the past two decades suggests that smaller schools have higher levels of student achievement (for a review see Leithwood and Jantzi, 2009). Urban schools tend to serve lower-income, nonwhite, English-learning students and employ less-qualified teachers (Lankford et al., 2002). Not surprisingly, this match of high-need students with low-quality teachers is associated with underperformance in urban schools. Lastly, some researchers have found that schools' with more resources (typically measured in terms of money, rather than other school amenities) have higher levels of school-level performance (Greenwald et al., 1996). However, other researchers

[59] Another, arguably more accurate, way to measure teacher quality is to calculate value-added measures since they are direct measures of student learning. However the data necessary obtain such measures (i.e., year-to-year student test scores that can be linked to individual teachers) are not collected or maintained by many school districts. Furthermore, this type of measure places a heavy burden on test scores to accurately capture the extent of a student's learning.

have found that differences in resources explain very little of the achievement differences across schools (Perez and Socias, 2008). Even in the face of opposing evidence, we may at least say that this does not mean that money *never* matters. Some schools are clearly able to effectively use the resources they have to increase students' learning. This also does not mean that resources *cannot* matter. If organized differently, especially if incentives were changed, increasing school resources could lead to higher student achievement (Hanushek, 2006b).

Research Questions

At the heart of NCLB is students' performance. Students as a whole and by each subgroup must perform at or above proficient levels in order for their school to make adequate yearly progress (AYP). Schools that make AYP avoid PI and its sanctions. Since student-, teacher-, and school-level characteristics influence student performance, it may be that the transition probabilities of moving between PI stages are affected by these factors as well. Or, put differently, perhaps the structural characteristics of schools contribute to the variation in these transition probabilities. For example, if the schools that are getting stuck in the improvement process are those schools which are already more likely to fail due to the composition of their students, the quality of their teachers, or a lack of resources, then controlling for these characteristics should change the likelihood that such schools will transition to higher PI stages. In other words, do the PI transition probabilities reported in Chapter 2 (**Figure 2.5**) change when certain covariates are held at different values? And, if so, which covariate has the biggest effect on such changes?

In the analysis below I focus on the effects that SES and diversity have on schools' PI transition probabilities. The importance of students' SES has not escaped policymakers. Since

1965 federal K-12 education law's primary goal has been to raise achievement levels of low-income students, who have typically scored lower on tests than their more advantaged peers, by offering federal funds to schools that serve these students. And since 2001 a school's diversity has become consequential to its ability to show that it is adequate educating its students because it must meet performance targets for each of its student subgroups. Below I explore whether and how much varying the levels of schools' SES and diversity influences the probabilities of PI outcomes. Since students from high-SES backgrounds tend to score higher on tests, I expect schools with higher percentages of such students to have better PI outcomes (i.e., be less likely to enter or advance in PI and more likely to exit) than schools with higher percentages of low-SES students. Conversely, given NCLB's disaggregation requirement for students' subgroup performance, I expect that schools with more diverse student bodies be more likely to experience worse PI outcomes (i.e., be more likely to enter or advance in PI and less likely to exit) than schools with more homogenous student bodies.

Data: Structural Characteristics of Schools

I analyze the same schools as in Chapter 2: 6,409 schools that had 47,304 PI status observations over nine years. As can be seen in Tables **3.1** through **3.5**, nearly every structural school characteristic was missing some values, although the covariate with the most missing data was missing less than two percent of all its values. To ensure that my sample is consistent with the previous chapter, I estimated values for covariates with any missing or extreme values using multiple imputations.[60]

[60] All covariates had some missing values, but only five had any extreme values that fell outside a possible or reasonable range: schools with percentages of English language learners above 100 (n=36), percentages of students eligible for free or reduced-price lunch above 100 (n=589), percentages of students with disabilities above 100 (n=1), more than one computer per student (n=1059), or a student-

To capture school diversity I include the number of AYP requirements a school must meet in a given year. Recall that schools must meet participation and proficiency requirements for each content area (ELA and math) and by each "numerically significant" subgroup in a school.[61] Subgroups include up to eight ethnic/racial categories, socio-economically disadvantaged students, English learners, and students with disabilities. The more subgroups in a school the more requirements that school must meet to make AYP. Thus, a school's number of AYP requirements is positively related to the diversity of its students. **Table 3.1** shows summary statistics for AYP requirements.

Because measuring school diversity with the number of AYP requirements can be identical for schools with different compositions, I also include school-aggregated measures of their student body compositions. I include the percentage of students by sex and race/ethnicity, the percentage of students who are eligible for free or reduced-price meals, the percentage of English learners (ELs), and the percentage of students with disabilities. **Table 3.2** shows summary statistics for these student characteristics.

Teachers' attributes include the percentage of teachers by sex and race/ethnicity, the percentage of teachers who have at least a master's degree, and the average number of years of teaching experience. **Table 3.3** shows summary statistics for teachers' attributes, aggregated to the school-level.

The California Department of Education categorizes parents' education as the percentage of students' parents with no high school degree, a high school degree, some college, a college graduate, or some graduate school. **Table 3.4** shows summary statistics for parents' education.

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teacher ratio above 50 (n=28). I replaced these extreme values with imputed values using the *mi impute* command in Stata 13 (StataCorp, 2013).

[61] To be "numerically significant" a subgroup must have 100 students or 50 students who make up at least 15 percent of all students (about 335 students).

In models below I include the percentage of parents with at least some college as another covariate that helps measure students' socio-economic status.

To capture how school and district characteristics may influence PI outcomes I include schools' total student enrollment, urban-centric locales (i.e., urban, rural, town, or suburb), average student-teacher ratios, and district sizes (i.e., the number of schools in the district). To quantify the degree of racial "mismatch" between students and teachers I calculated the average absolute difference between percentages of students and teachers by racial groups.[62] Lastly, I include two measures of school resources: the number of computers per student in a school and districts' total cost of education per average daily attendance.[63] **Table 3.5** shows summary statistics for these school- and district-level characteristics.

I am not interested in the individual effects for many of schools' structural characteristics. I include them in models to help tease out the effects of SES and diversity on schools' PI transitions net the influence of other covariates.

Method

To estimate the probabilities that from year to year schools either (1) *stay* in the same PI stage, (2) *advance* to a more punitive stage, or (3) *exit* PI from any stage, I fit multinomial logit models of the form

[62] I first calculated the absolute difference between the percentage of students and teachers by each race including "other" (e.g., if 20 percent of the students in a school are black and 5 percent of the teachers are black then the absolute difference for the race category black is 15 percent). I then averaged these differences by dividing their sums by the total number of racial groups (i.e., eight including "other").

[63] Districts use average daily attendance (ADA) as a proxy for its number of students. ADA is calculated by dividing the total number of days of student attendance by the number of days of school taught during the same period. For example, a student who attended all 180 days of school would have an ADA of 1.0 (180/180=1). A student who missed 10 days would have an ADA of .94 (170/180). Students' ADAs are multiplied by a district's per-pupil "revenue limit" and averaged across all students to calculate district funding. If, for example, a districts' per-pupil revenue limit is $8,000, then a student with perfect attendance would generate $8,000 for the district. A student with .94 ADA would generate $7,520 in revenue for the district. For more details see Weston, 2010.

$$\ln \Omega_{m|b}(X) = ln \frac{\Pr(y=m|x)}{\Pr\,(y=b|x)} = x\beta_{m|b}$$

for $m = 1$ to J where m is the outcome of interest (advance or exit), b is the base or reference category of staying in the same stage, x is a matrix of covariates for schools' previous PI stage and structural characteristics, and β is a vector of regression coefficients. To reflect the fact that some transitions are not possible under the law (i.e., advancing more than one stage in a given year or moving back a stage except to exit) I estimated models for three subsamples of adjoining PI stages (i.e., Not in PI and Stage 1, Stage 2 and Stage 3, Stage 4 and Stage 5).[64]

Regression Results

Tables 3.6 through **3.8** show relative risk ratios and robust standard errors from multinomial logit models for each of the three PI stage subsamples.[65] Several structural characteristics of schools affected the probabilities of their PI transitions, especially in earlier PI stages. For example, **Table 3.6** shows that for schools either not in PI (Stage 0) or in Stage 1, several of structural characteristics had statistically significant effects on their chances of their advancing through the process. However, many of these effects were substantively small. Every additional increase in either the percentage of black, Hispanic, Pacific Islander, or multiracial students in a school corresponded to a one to four percent increase in probability of its advancing

[64] In a single model that predicts staying, advancing, or exiting PI from all stages, coefficients and probabilities are estimated for transitions that are not possible under the law nor reflected in the data (e.g., moving from Not in PI to Stage 3 or from Stage 4 to Stage 1), and the probabilities for all possible transitions are incorrect, i.e., they do not match observed transition probabilities. By dividing the sample into three subsamples of paired adjoining stages I obtain probabilities only for the transitions that are actually possible.

[65] Note that I am not analyzing a sample, but the population of traditional public schools in California that received Title I funds for one or more years between 2003-04 and 2011-12. Thus, the relative risk ratios are parameters and need not be accompanied by tests of statistical significance in order to infer their actual effects on PI outcomes. Even so, tests of statistical significance are useful to the extent that my findings may be generalized beyond this population to other types of schools, or other states, or other years.

to the next PI stage (versus staying in the same PI stage). In contrast, an additional percentage of Asian students in a school decreased its probability of advancing by one percent. A few covariates have larger effects. Compared to urban schools, suburban schools were 13 percent less likely to advance in PI (versus stay in the same stage), while schools located in towns were 34 percent more likely to do so. And for every additional computer per student a school's chances of advancing were nearly cut in half while their chances of exiting more than doubled.

Tables 3.6 though **3.8** show that, as expected, more diverse schools' are more likely to advance in PI from any stage. For example, **Table 3.6** shows that schools either not in PI or in Stage 1 having AYP requirements in the second quartile were 13 percent more likely to advance to the next PI stage than stay in the same stage compared to schools with AYP requirements in the first quartile. Whereas schools having AYP requirements in the fourth quartile were 94 percent more likely to advance to the next PI stage compared to that same referent group.

Measures of SES also influenced PI transitions, but not always as expected. For example, **Tables 3.6** and **3.7** show that for schools either not in PI or in stages 1 though 3, having higher percentages of students eligible free and reduced-price meals affected PI transitions as expected. That is, such schools were between 42 and 99 percent more likely to advance in PI versus stay in the same stage. Yet **Table 3.8** shows that for schools in stages 4 or 5 of PI, those with higher percentages of such students were between 85 and 89 percent less likely to advance to the next PI stage than stay in the same stage. Likewise, **Tables 3.6** through **3.8** show that across PI stages schools with higher percentages of parents with some college experience were between 22 and 79 percent less likely to advance to the next PI stage than stay in the same stage. However, these tables also show that schools having percentages of parents with some college

experience in the third or fourth quartiles were between 13 and 53 percent less likely to exit PI rather than stay in the same stage.

These mixed results are likely due to having included other covariates in my models that were highly correlated with measures of SES. The percentage of students eligible for free or reduced-price lunches, for example, shared correlations of .67 and .63 with the percentage of Hispanic students and the percentage of English learners, respectively. Similarly, the percentage of parents with some college shared correlations of -.71 and -.67 with the percentage of Hispanic students and the percentage of English learners, respectively. **Table 3.1C** in Appendix C shows Pearson correlations for schools' structural characteristics.

Predicted Probabilities of Program Improvement Transitions

In this section I investigate how much the predicted probabilities for PI transitions change when two covariates—SES and diversity—are held at different values. I measured schools' SES with the percentage of students eligible for free or reduced-price meals (FRPM) and the percentage of parents with at least some college education (PEDSC). I measured schools' diversity with their number of AYP requirements.

Each equation in a multinomial logit model can be solved to compute the probabilities for each outcome: [66]

$$\Pr(y = m|x) = \frac{\exp\,(x\beta_{m|b})}{\Sigma_{j=1}^{J}\exp\,(x\beta_{j|b})}$$

I calculated predicted probabilities for four types of schools with different quartile indicator combinations for measures of SES and diversity (i.e., $FRPM_{Q4}$, $PEDSC_{Q1}$, AYP_{Q4};

[66] I used Stata 13 to estimate regression models with *mlogit* and calculated predicted probabilities with SPost13's *mtable* command (Long and Freese, 2014).

$FRPM_{Q3}$, $PEDSC_{Q2}$, AYP_{Q3}; $FRPM_{Q2}$, $PEDSC_{Q3}$, AYP_{Q2}; $FRPM_{Q1}$, $PEDSC_{Q4}$, AYP_{Q1}). Schools having percentages of students with free or reduced-price meals in the fourth quartile, percentages of parents with some college education in the first quartile, and numbers of AYP requirements in the fourth quartile are the lowest-SES, most-diverse schools (i.e., most disadvantaged). Likewise, moving to the other end of the spectrum, schools having percentages of students with free or reduced-price meals in the first quartile, percentages of parents with some college education in the fourth quartile, and numbers of AYP requirements in the first quartile are the highest-SES, least-diverse schools (i.e., most advantaged).[67]

Changes in Predicted Probabilities for Different Levels of SES and Diversity

Table 3.9 reports predicted probabilities of staying, advancing, and exiting from each PI stage for four types of schools with different levels of SES and diversity, while holding other covariates at their means. As expected, more advantaged schools (i.e., higher SES and lower diversity) experienced better PI outcomes than more disadvantaged schools (i.e., lower SES and higher diversity). Put another way, advantaged schools were less likely to enter PI in the first place, and once in PI, they were less likely to advance to higher stages and more likely to exit from any stage than were more disadvantaged schools.

Entering. The lowest-SES, most-diverse schools were 3.7 times more likely to enter PI (.26/.07) than were the highest-SES, least-diverse schools. Even the difference in probabilities of entering PI between schools with more similar levels of SES and diversity is striking. For example, compared to slightly less diverse schools with slightly higher SES, the lowest-SES,

[67] Schools with percentages of students with free or reduced-price meals in the third quartile, percentages of parents with some college education in the second quartile, and AYP requirements in the third quartile are "lower-SES, more-diverse" schools. Schools with percentages of students with free or reduced-price meals in the second quartile, percentages of parents with some college education in the third quartile, and AYP requirements in the second quartile are "higher-SES, less-diverse" schools.

most-diverse schools were still 1.7 times more likely to enter PI (.26/.15). Likewise, lower-SES, more-diverse schools were 1.5 times more likely to enter PI than were higher-SES, less-diverse schools (.15/10).

Advancing. In general, more advantaged schools were less likely to advance in PI from any stage. When averaged across all PI stages, the probability of advancing was .52 for the highest-SES, least-diverse schools and .74 for the lowest-SES, least-diverse schools. The only exception was for Stage 4 where the probabilities of advancing to Stage 5 are nearly equal across school types (ranging from .83 to .89). Regardless of different levels of SES and diversity, once schools entered PI their chances of advancing to the next stage increased with each PI stage. Starting in Stage 1, the predicted probability of advancing to the next stage was greater than the sum of the predicted probabilities of staying in the same stage and that of exiting. Only in Stage 1 for the highest-SES, least-diverse schools were the predicted probabilities of advancing and staying nearly equal.[68]

Exiting. For all schools, the chances of exiting PI from any stage were relatively low. Even in schools with higher than the median SES and lower than the median diversity, the largest probability of exit was .11. Still, on average, probabilities of exit were higher for schools with higher levels of SES and lower levels of diversity. For example, when probabilities of exiting were averaged across all PI stages the lowest-SES, most-diverse schools were about 40 percent less likely to exit PI than the highest-SES, least-diverse schools (.04/.06).

[68] Note that the predicted probabilities of staying in Stage 5 are much higher than the other stages because of a ceiling effect. There is no higher PI stage. If there were, we might assume that the probabilities of advancing and staying would continue to diverge. But, as the process is currently structured, once in Stage 5, a school either stays put or gets out. It is clear which of these outcomes is most likely.

Relative Effects of SES and Diversity on PI Transitions

Which structural characteristic of schools matters most for PI transitions, SES or diversity? Thus far I have shown how PI transition probabilities change as schools' SES and diversity move along a continuum of advantage. That is, I have varied the levels of SES and diversity in opposite directions to capture the extent of schools' advantage (higher SES, lower diversity) or disadvantage (lower SES, higher diversity). But in order to understand which of these characteristics is driving changes in PI transitions we must look at schools that are both advantaged as measured by one characteristic and disadvantaged as measured by the other characteristic.

To do this I predicted probabilities of staying, advancing, and exiting from each PI stage for two additional types of schools: those with the lowest SES and least diversity (i.e., $FRPM_{Q4}$, $PEDSC_{Q1}$, AYP_{Q1}) and those with the highest SES and most diversity (i.e., $FRPM_{Q1}$, $PEDSC_{Q4}$, AYP_{Q4}), while holding all other structural characteristics of schools at their means. The middle two panels of **Table 3.10** show the predicted probabilities for these two types of schools. The first and last panels of **Table 3.10** are reprinted from **Table 3.9** to facilitate comparisons across schools having the most extreme quartile values of SES and diversity. They show the predicted probabilities for schools with the lowest SES and most diversity (i.e., $FRPM_{Q4}$, $PEDSC_{Q1}$, AYP_{Q4}) as well as for schools with the highest SES and least diversity (i.e., $FRPM_{Q1}$, $PEDSC_{Q4}$, AYP_{Q1}).

To gauge the relative effects of SES and diversity on the three types of transition probabilities, I calculated absolute differences in predicted probabilities for each type of PI transition while holding levels of one covariate constant and varying levels of the other covariate. When varying the levels of either SES or diversity—and holding the other

characteristic constant—larger absolute differences in predicted probabilities indicate a larger relative influence of the characteristic being varied on schools' transition probabilities. The first panel in **Table 3.11** shows the absolute differences in probabilities of staying, advancing, and exiting between the least and most diverse schools while holding SES at its lowest level. The second panel shows absolute differences in PI transitions between the least and most diverse schools while holding SES at its highest level. The third panel shows absolute differences in PI transitions between the lowest and highest SES schools while holding diversity at its lowest level. The fourth panel shows absolute differences in PI transitions between the lowest and highest SES schools while holding diversity at its highest level.

Staying. The probabilities of staying in the same PI stage were more affected by changes in SES than by changes in diversity. Averaging absolute differences in the probabilities of staying across PI stages revealed larger differences when comparing schools with different levels of SES and the same levels of diversity than when comparing schools with different levels of diversity and the same levels of SES. Amongst the lowest-SES schools the average absolute difference in the probabilities of staying between the least- and most-diverse schools was .06 (ranging from .01 to.11). Amongst the highest-SES schools that difference was also .06 (ranging from .01 to .13). In contrast, amongst the least-diverse schools the average absolute difference in the probabilities of staying between the lowest- and highest-SES schools was .11 (ranging from .07 to .19). Among the most-diverse schools that difference was .10 (ranging from .04 to .15). Thus, the average absolute differences in the probabilities of staying were 43 percent (1-(.12/.21)) larger when holding diversity constant and varying SES than when holding SES constant and varying diversity.

Advancing. Like the probabilities of staying in the same PI stage, probabilities of advancing to the next PI stage were more affected by changes in SES than by changes in diversity. Averaging absolute differences in the probabilities of advancing across PI stages revealed larger differences when comparing schools with different levels of SES and the same levels of diversity than when comparing schools with different levels of diversity and the same levels of SES. Amongst the lowest-SES schools the average absolute difference in the probabilities of advancing between the least- and most-diverse schools was .10 (ranging from .08 to.13). Amongst the highest-SES schools that difference was also .10 (ranging from .05 to .16). In contrast, amongst the least-diverse schools the average absolute difference in the probabilities of advancing between the lowest- and highest-SES schools was .14 (ranging from .08 to .19). Amongst the most-diverse schools that difference was .13 (ranging from .05 to .16). Thus, the average absolute differences in the probabilities of advancing were 26 percent (1-(.20/.27)) larger when holding diversity constant and varying SES than when holding SES constant and varying diversity.

Exiting. Unlike the probabilities of staying and advancing, probabilities for exiting PI were more affected by changes in diversity than by changes in SES. Averaging absolute differences in the probabilities of exiting across PI stages revealed larger differences when comparing schools with different levels of diversity and the same levels of SES than when comparing schools with different levels of SES and the same levels of diversity. Amongst the lowest-SES schools the average absolute difference in the probabilities of exiting between the least- and most-diverse schools was .03 (ranging from .01 to .04). Amongst the highest-SES schools that difference was also .03 (ranging from 0 to .05). In contrast, amongst the least-diverse schools the average absolute difference in the probabilities of exiting between the lowest-

and highest-SES schools was .01 (ranging from 0 to .03). Amongst the most-diverse schools that difference was also .01 (ranging from 0 to .02). Thus, the average absolute differences in the probabilities of exiting were about three times (.06/.02) larger when holding SES constant and varying diversity than when holding diversity constant and varying SES. The relatively large size of this ratio is tempered by the fact that across school types, absolute differences in the probabilities of exit are much smaller than the absolute differences in the probabilities of staying or advancing.

Comparing absolute differences between schools with different levels of SES and diversity showed that the levels of each characteristic influenced the probabilities of schools' PI transitions. Yet differences in SES, as opposed to differences in diversity, account for a larger part of the differences in PI transitions across schools. Thus, a school's SES influences its PI outcomes more than does its diversity.

Persistence of the PI Transition Pattern

Figure 3.1 plots the probabilities from **Tables 3.9** and **3.10** to show that even with notable differences in the predicted probabilities of transitions, the general pattern of PI transitions observed in Chapter 2 (see **Figure 2.5**) persists, despite varying the levels of SES and diversity.

Conclusion

Despite the fact that varying the levels of SES and diversity produced notable changes in the probabilities of PI transitions, the overall pattern of PI transition probabilities persists. Regardless of their levels of SES or diversity, schools that enter PI are more likely to advance to

higher stages rather than remain in the same stage over time or exit the process entirely. Thus, there is something beyond the structural characteristics of schools, something in the law itself that affects the likelihood of transitioning to, through, and out of Program Improvement. Since schools operate within an accountability system imposed by the law, in the next chapter I examine to what extent changing NCLB's requirements changes schools' PI transition probabilities and to what extent such changes can reduce inequalities in PI transition across schools with varying levels of SES and diversity.

TABLES AND FIGURES

Table 3.1. Summary Statistics for the Number of NCLB-defined Student Subgroups in California's Traditional Public Schools

	No. of Obs.	Mean	SD	Minimum	Maximum
No. of Student Subgroups (AYP Requirements)	47241	17.9	5.2	2	37

Table 3.2. Summary Statistics for Characteristics of Students in California's Traditional Public Schools

	No. of Obs.	Mean	SD	Minimum	Maximum
Female (%)	47222	48.6	3.5	0	100
Am. Ind./Alaska Nat. (%)	47222	1.3	4.8	0	100
Asian (%)	47222	5.8	10.6	0	100
Black (%)	47222	7.7	12.3	0	100
Filipino (%)	47222	1.9	4.0	0	81.2
Hispanic (%)	47222	56.6	28.6	0	100
Pacific Islander (%)	47222	0.6	1.2	0	100
White (%)	47222	23.4	25.0	0	100
Other Race(s) (%)	47222	2.5	5.4	0	100
English Learners (%)	46677	32.8	21.6	0	100
Free or Reduced Meals (%)	46877	67.5	23.2	0	100
Students w/ Disabilities (%)	42407	7.4	3.9	0	92.9

Table 3.3. Summary Statistics for Attributes of Teachers in California's Traditional Public Schools

	No. of Obs.	Mean	SD	Minimum	Maximum
Female (%)	47199	78.0	15.4	0	100
Am. Ind./Alaska Nat. (%)	47199	0.6	2.6	0	100
Asian (%)	47199	4.8	7.4	0	100
Black (%)	47199	4.7	9.8	0	100
Filipino (%)	47199	1.3	2.7	0	57.1
Hispanic (%)	47199	19.3	18.6	0	100
Pac. Islander (%)	47199	0.3	1.1	0	33.3
White (%)	47199	66.6	24.1	0	100
Other Race(s) (%)	47304	2.2	8.4	0	100
MA Degree+ (%)	47199	36.2	19.0	0	100
Average Yrs Experience	47199	13.1	3.7	0	41

Table 3.4. Summary Statistics for Education of Parents whose Children Attend California's Traditional Public Schools

	No. of Obs.	Mean	SD	Minimum	Maximum
No High School (%)	46745	26.4	18.4	0	100
High School Graduate (%)	46745	28.8	11.5	0	100
Some College (%)	46745	23.1	11.2	0	100
College Graduate (%)	46745	13.7	10.3	0	100
Graduate School (%)	46745	6.8	9.1	0	100

Table 3.5. Summary Statistics for School- and District-level Characteristics for California's Traditional Public Schools

School-level	No. of Obs.	Mean	SD	Minimum	Maximum
Enrolled Students	47224	693	546	0	5423
Average Students per Teachers (#)	47113	18.5	3.4	0.7	50
Average S-T Racial Mismatch (%)	47137	12.4	4.6	0	25
In a City (0=No, 1=Yes)	47304	0.4	0.5	0	1
In a Suburb (0=No, 1=Yes)	47304	0.3	0.5	0	1
In a Town (0=No, 1=Yes)	47304	0.1	0.3	0	1
In a Rural Area (0=No, 1=Yes)	47304	0.2	0.3	0	1
Computers per Student (#)	46218	0.2	0.2	0	1
District-level					
Schools in District	47304	115.8	246.8	1	785
Cost Average Daily Attendance ($)	46787	8,460	2,220	4,806	72,610

Table 3.6. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 0 and 1* with Covariates for Structural School Characteristics

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 1 Last Year	15.78	.637	***	1.3E+09	7.5E+07	***
AYP Requirements (#)						
Quartile 2	1.132	.070	*	1.071	0.221	
Quartile 3	1.390	.083	***	0.897	0.182	
Quartile 4	1.942	.120	***	1.007	0.221	
Female students (%)	0.999	.005		0.994	0.016	
Am. Indian/Alaska Native students (%)	1.010	.005		0.878	0.045	**
Asian students (%)	0.993	.002	***	0.987	0.007	
Black students (%)	1.017	.002	***	0.985	0.007	*
Filipino students (%)	0.999	.004		0.993	0.011	
Hispanic students (%)	1.015	.002	***	0.991	0.005	
Pacific Islander students (%)	1.043	.011	***	1.044	0.038	
Other Race(s) students (%)	1.017	.004	***	0.993	0.010	
English Language Learner students (%)	1.002	.001		0.998	0.005	
Students w/ Free/Reduced-Price Meals (%)						
Quartile 2	1.421	.090	***	1.193	0.279	
Quartile 3	1.810	.133	***	1.678	0.425	*
Quartile 4	1.994	.166	***	1.600	0.437	
Students with Disabilities (%)	1.060	.006	***	1.003	0.017	
Teachers with MA Degree or Higher (%)	0.996	.001	***	0.995	0.003	
Average Teacher Experience	1.007	.005		0.978	0.017	
Student-Teacher Racial Mismatch (%)	0.988	.005	**	1.009	0.015	
Parents with Some College (%)						
Quartile 2	0.758	.037	***	1.136	0.179	
Quartile 3	0.749	.043	***	1.042	0.207	
Quartile 4	0.785	.060	**	0.870	0.245	
Enrollment (per 100 students)	1.044	.004	***	1.019	0.015	
School is in a Suburb	0.871	.033	***	0.888	0.116	
School is in a Town	1.344	.084	***	0.957	0.206	
School is in a Rural Area	1.015	.066		0.820	0.173	
Students per Teacher (#)	1.073	.007	***	1.024	0.020	
Computers per Student (#)	0.514	.066	***	2.081	0.760	*
Schools in District (per 100 schools)	0.970	.007	***	0.952	0.030	
Cost per Average Daily Attendance ($1000)	1.042	.009	***	1.017	0.023	
Constant	0.005	.002	***	4.1E-10	4.4E-10	***

Observations=29289, Schools=5724; *p<.05, **p<.01, ***p<.001

Table 3.7. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 2 and 3* with Covariates for Structural School Characteristics

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 3 Last Year	1.024	0.069		0.807	0.079	*
AYP Requirements (#)						
Quartile 2	0.983	0.126		0.853	0.167	
Quartile 3	1.551	0.204	**	0.892	0.174	
Quartile 4	1.555	0.224	**	0.603	0.130	*
Female students (%)	0.998	0.012		0.985	0.015	
Am. Indian/Alaska Native students (%)	1.001	0.009		0.995	0.012	
Asian students (%)	0.999	0.005		0.986	0.007	
Black students (%)	1.013	0.005	**	1.000	0.005	
Filipino students (%)	0.989	0.010		0.983	0.016	
Hispanic students (%)	1.008	0.004	*	0.989	0.005	*
Pacific Islander students (%)	1.045	0.036		0.982	0.050	
Other Race(s) students (%)	1.030	0.010	**	0.995	0.014	
English Language Learner students (%)	0.999	0.003		1.003	0.004	
Students w/ Free/Reduced-Price Meals (%)						
Quartile 2	1.811	0.311	**	0.845	0.186	
Quartile 3	1.717	0.308	**	0.682	0.157	
Quartile 4	1.869	0.354	**	0.762	0.184	
Students with Disabilities (%)	1.058	0.012	***	0.993	0.015	
Teachers with MA Degree or Higher (%)	0.997	0.002		1.004	0.003	
Average Teacher Experience	0.981	0.011		0.971	0.016	
Student-Teacher Racial Mismatch (%)	1.001	0.009		0.995	0.014	
Parents with Some College (%)						
Quartile 2	0.766	0.071	**	1.151	0.161	
Quartile 3	0.720	0.096	*	0.846	0.163	
Quartile 4	0.754	0.160		0.543	0.170	*
Enrollment (per 100 students)	1.037	0.010	***	1.039	0.012	**
School is in a Suburb	0.944	0.077		0.969	0.113	
School is in a Town	1.007	0.120		1.101	0.176	
School is in a Rural Area	0.969	0.134		0.970	0.167	
Students per Teacher (#)	1.041	0.016	**	0.969	0.018	
Computers per Student (#)	0.839	0.205		1.750	0.589	
Schools in District (per 100 schools)	0.973	0.018		0.969	0.018	
Cost per Average Daily Attendance ($1000)	1.126	0.049	**	0.961	0.053	
Constant	0.169	0.141	*	6.519	7.075	

Observations=5308, Schools=2706; *p<.05, **p<.01, ***p<.001

Table 3.8. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 4 and 5* with Covariates for Structural School Characteristics

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 5 Last Year	3.4E-11	7.9E-12	***	0.097	0.015	***
AYP Requirements (#)						
Quartile 2	1.326	0.293		1.387	0.400	
Quartile 3	1.963	0.459	**	1.534	0.468	
Quartile 4	2.073	0.595	*	1.598	0.592	
Female students (%)	1.012	0.026		1.014	0.032	
Am. Indian/Alaska Native students (%)	0.985	0.013		1.004	0.014	
Asian students (%)	0.997	0.012		0.964	0.020	
Black students (%)	1.006	0.009		1.006	0.010	
Filipino students (%)	1.075	0.054		0.965	0.043	
Hispanic students (%)	1.004	0.008		1.001	0.011	
Pacific Islander students (%)	1.018	0.057		1.054	0.048	
Other Race(s) students (%)	1.007	0.013		1.001	0.016	
English Language Learner students (%)	0.992	0.005		1.001	0.006	
Students w/ Free/Reduced-Price Meals (%)						
Quartile 2	0.148	0.110	*	0.425	0.249	
Quartile 3	0.129	0.098	**	0.447	0.249	
Quartile 4	0.112	0.086	**	0.449	0.253	
Students with Disabilities (%)	1.031	0.021		0.962	0.021	
Teachers with MA Degree or Higher (%)	0.989	0.004	**	1.002	0.004	
Average Teacher Experience	1.004	0.021		0.967	0.024	
Student-Teacher Racial Mismatch (%)	0.994	0.016		0.994	0.018	
Parents with Some College (%)						
Quartile 2	0.725	0.124		0.908	0.167	
Quartile 3	0.658	0.176		0.635	0.230	
Quartile 4	0.209	0.111	**	0.474	0.281	
Enrollment (per 100 students)	1.052	0.026	*	0.927	0.035	*
School is in a Suburb	0.839	0.136		0.772	0.137	
School is in a Town	0.787	0.193		0.711	0.200	
School is in a Rural Area	0.694	0.179		0.904	0.255	
Students per Teacher (#)	1.009	0.024		0.984	0.024	
Computers per Student (#)	0.607	0.237		0.959	0.403	
Schools in District (per 100 schools)	0.999	0.037		0.972	0.035	
Cost per Average Daily Attendance ($1000)	1.043	0.071		0.996	0.073	
Constant	12.285	22.070		1.242	2.515	

Observations=6016, Schools=1661; *p<.05, **p<.01, ***p<.001

Table 3.9. Predicted Probabilities of Trichotomous PI Transitions for Schools with Different Levels of SES and Diversity from Most Disadvantaged to Most Advantaged

PI Stage in Previous Year	*Most Disadvantaged* *Lowest SES, Most Diverse*			*More Disadvantaged* *Lower SES, More Diverse*			*More Advantaged* *Higher SES, Less Diverse*			*Most Advantaged* *Highest SES, Least Diverse*		
	Stay	Advance	Exit	Stay	Advance	Exit	Stay	Advance	Exit	Stay	Advance	Exit
Not in/Exited PI	.74	.26		.85	.15		.90	.10		.93	.07	
Stage 1	.15	.80	.06	.24	.66	.10	.33	.56	.11	.43	.48	.09
Stage 2	.12	.85	.03	.16	.78	.07	.22	.69	.08	.32	.58	.10
Stage 3	.12	.86	.03	.16	.79	.05	.22	.71	.07	.32	.60	.08
Stage 4	.09	.89	.03	.11	.86	.03	.15	.83	.02	.10	.88	.02
Stage 5	.97		.03	.98		.02	.99		.01	.98		.02

Table 3.10. Predicted Probabilities of Trichotomous PI Transitions for Schools with Extreme Quartile Values of SES and Diversity

PI Stage in Previous Year	*Lowest SES Most Diverse*			*Lowest SES Least Diverse*			*Highest SES Most Diverse*			*Highest SES Least Diverse*		
	Stay	Advance	Exit	Stay	Advance	Exit	Stay	Advance	Exit	Stay	Advance	Exit
Not in/Exited PI	.74	.26		.85	.15		.88	.12		.93	.07	
Stage 1	.15	.80	.06	.24	.67	.09	.30	.64	.06	.43	.48	.09
Stage 2	.12	.85	.03	.17	.76	.08	.25	.70	.05	.32	.58	.10
Stage 3	.12	.86	.03	.17	.77	.06	.25	.72	.04	.32	.60	.08
Stage 4	.09	.89	.03	.17	.80	.03	.05	.93	.02	.10	.88	.02
Stage 5	.97		.03	.98		.02	.97		.03	.98		.02

Table 3.11. Absolute Differences in Transition Probabilities by Levels of Schools' SES and Diversity

PI Stage in Previous Year	*Lowest-SES Schools* Least vs. Most Diverse			*Highest-SES Schools* Least vs. Most Diverse			*Least-Diverse Schools* Lowest vs. Highest SES			*Most-Diverse Schools* Lowest vs. Highest SES		
	Stay	Advance	Exit	Stay	Advance	Exit	Stay	Advance	Exit	Stay	Advance	Exit
Not in/Exited PI	.11	.11		.05	.05		.09	.09		.14	.14	
Stage 1	.09	.13	.04	.13	.16	.03	.19	.19	.00	.15	.16	.01
Stage 2	.05	.09	.04	.07	.12	.05	.15	.18	.03	.13	.14	.02
Stage 3	.05	.08	.04	.07	.12	.05	.15	.18	.02	.13	.14	.01
Stage 4	.08	.08	.01	.05	.05	.00	.07	.08	.01	.04	.05	.01
Stage 5	.01		.01	.01		.01	.00		.00	.00		.00

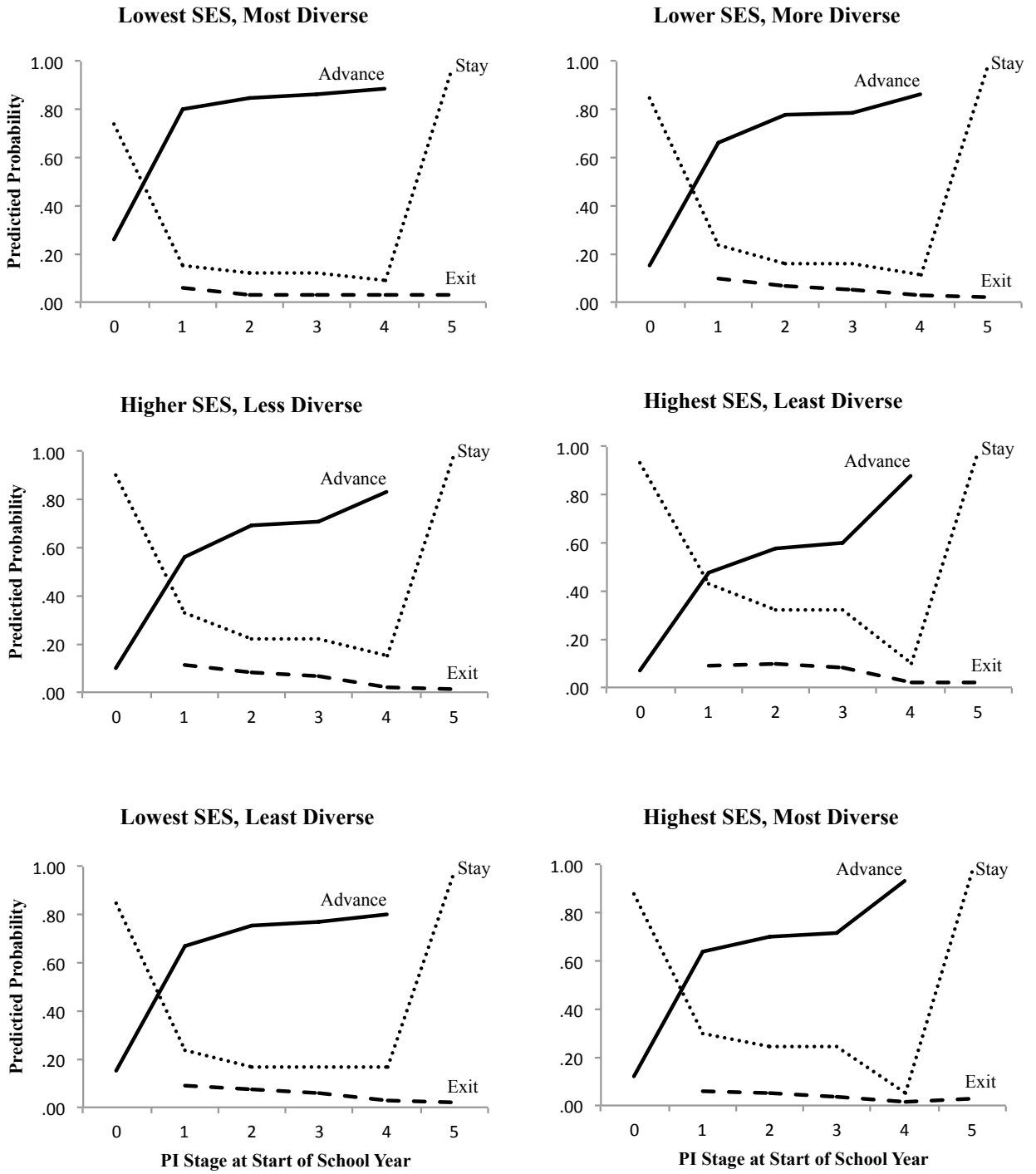

Figure 3.1. Predicted Probabilities of Trichotomous PI Transitions for Schools with Different Levels of SES and Diversity

CHAPTER 4. HOW CHANGING THE LAW AFFECTS TRANSITION PROBABILITIES AND INEQUALITIES ACROSS SCHOOL TYPES

In the previous chapter, I showed that schools' structural characteristics affect their probabilities of moving into, through, and out of Program Improvement (PI), California's term for the process a school enters when it fails to make adequate yearly progress (AYP) on annual tests for at least two consecutive years and is determined to be "in need of improvement." Yet even across schools with different levels of influential structural characteristics, such as SES and diversity, the overall pattern of PI transition probabilities persists. In this chapter I look beyond schools' structural characteristics to the constraints imposed by the law's requirements. I examine the extent to which changing NCLB's requirements would change schools' PI transition probabilities and how much such changes would reduce inequalities in PI transition across schools with varying levels of SES and diversity. I also predict long-range trends of schools' involvement in PI based on transition probabilities under different rules.

First let's take a step back. Recall that NCLB requires every student be proficient in English-language arts and math by the 2014 school year. Schools show their annual progress toward this goal by meeting proficiency goals for the entire school and for each separate student subgroup (see Chapter 2 for more details). These goals have proven increasingly difficult to meet as annual targets have risen. And, as of 2014, every student was supposed to have been—but is not—performing at a proficient level.

Even before this deadline for students' universal proficiency in math and reading, education reformers were skeptical of this goal. Diane Ravitch, former Assistant Secretary of Education under George H.W. Bush, and a staunch supporter of implementing NCLB, later came out in opposition to the law, specifically calling the 100-percent-proficiency mandate "absurd" (Ravitch and Chubb, 2009). Even John Chubb, Senior Executive Vice President of EdisonLearning, who has taken a less critical view of this "important" and "democratic" goal admitted that "universal proficiency in practice may mean 90 to 95 percent proficient, a high number but not an unattainable one" (Ravitch and Chubb, 2009). Kati Haycock, president of The Education Trust, summarized this growing sentiment before the Senate's Health, Education, Labor, and Pensions Committee, testifying that "many educators and others have decried the 100-percent-of-kids-proficient-by-2014 goal as unrealistic and 'not based on real data'" (Haycock, 2013).

Data on AYP outcomes for schools across the country confirmed that states' annual proficiency targets, ultimately culminating in 100 percent proficiency in math and reading by 2014, were increasingly unreachable. In December 2011, the Center for Education Policy, an independent nonprofit organization, reported that in 2005-06 29 percent of the nation's schools did not make AYP. By 2010-11, this had increased to 48 percent (Usher, 2011).[69]

In August of 2011 U.S. Secretary of Education, Arne Duncan, announced that states could apply for waivers requesting "flexibility" for some of the specific requirements of NCLB. Currently, 43 states, the District of Columbia and Puerto Rico operate under NCLB waivers,

[69] In California, 34 percent of schools did not make AYP in 2005. In 2010, 66 percent did not. In any given year, the percentages of schools meeting AYP varied widely across states. In 2010-11, for example, 11 percent of schools in Wisconsin and 89 percent of schools in Florida did not make AYP.

which are intended to help schools avoid NCLB's sanctions.[70] Under the Elementary and Secondary Education Act Flexibility guidelines—more commonly known as NCLB waivers—the one-size-fits-all rule of 100 percent proficiency has become more malleable. Instead, the waivers allow schools to halve the gap between current proficiency rates and 100 percent within six years, reach 100 percent proficiency by 2020, or achieve another "equally ambitious" goal. Nearly half of all states with waivers opted to "cut the gap in half" (Hall, 2013). Of those states that chose to implement "equally ambitious" goals, many have identified their top 10 percent of schools in terms of performance on state tests and set goals that all schools—and all groups—will get to that level within six years (Hall, 2013).[71] In fact, many states' NCLB waivers allow their schools to sidestep original proficiency targets altogether in favor of using year-to-year increases (or decreases) in students' test performance to make AYP determinations in a given year.[72] Thus, the law has shifted its demands from requiring students to hit targets to ensuring that students show improvement.

[70] Two other states, Wyoming and Iowa, have submitted waiver plans that are currently under review (U.S. Department of Education, 2015b). In 2012, California did not request a state waiver. Instead, the California Office to Reform Education (CORE) received a one-year waiver, called the School Quality Improvement System, for eight of California's largest districts. This request was renewed by CORE districts for 2014 and is currently under review for another extension. In May of this year, California was given a one-year waiver from using student scores on state assessments in making AYP determinations.

[71] Only Arizona has opted to meet 100 proficiency by 2020; Louisiana chose to retain 100 proficiency by 2014.

[72] NCLB's "safe harbor" provision could be considered a precursor to states' use of year-to-year changes in performance under NCLB waivers. Safe harbor allows schools that miss proficiency targets to make AYP in a given year if, compared to the previous year, they reduced by 10 percent the number students in all failing subgroups. The difference between the safe harbor provision and year-to-year changes in performance to make AYP under state waivers is that the details of the latter may vary across states, presumably offering each state a more attainable means of making AYP. In California's CORE districts, for example, schools are identified as "high-progress" based, in part, on whether their lowest performing subgroup improved by at least 5 percentage points between 2011 and 2013.

Research Questions

It is too early to tell whether a focus on student progress will help more schools make AYP and avoid the punitive sanctions of Program Improvement. But it is possible to determine whether and how much past transition probabilities would have changed had NCLB had slightly different AYP requirements. Since making AYP depends partly on schools' demographic compositions, the structure of the law ensures inequality across schools in both the number of mandatory requirements they face and therefore the likelihood of meeting those requirements. This raises two questions. To what extent would changing the AYP requirements of the No Child Left Behind Act affect the transition probabilities of schools moving into, through, and out of PI? And furthermore, to what extent would inequalities in PI outcomes across school types be affected by such a change in the law? I answer these questions in the analysis below by calculating the transition probabilities of moving into, through, and out of Program Improvement when AYP requirements are based on students' improvement from year to year on California's standardized tests.

Data

I use annual AYP data published by the California Department of Education (CDE).[73] These files include the number of AYP requirements a school must meet to make AYP as well as the number of requirements each school actually met. They also include the percentages of students who scored at or above proficiency levels for each AYP indicator and for each student subgroup as well as a dichotomous measure indicating whether each particular requirement was "met" or "not met" by the whole school or by each student subgroup.

[73] Find downloadable AYP files at http://www.cde.ca.gov/ta/ac/ay/aypdatafiles.asp

In order to ensure a valid comparison of outcomes under different AYP rules, I include only the schools for which I could replicate annual PI stages using publically available AYP data while following NCLB's rules governing movements to, through, and out of Program Improvement.[74] This yields an analytic sample comprised of 43,455 PI status observations that make up 37,515 transitions.[75] Despite a drop in the number of schools, PI transition probabilities for this reduced sample are nearly identical to those for all of California's traditional public schools as reported in **Table 2.6** of Chapter 2, differing by no more than .01. **Table 4.1** shows transitions probabilities for schools in the reduced sample across all nine years of observation. **Table 4.2** shows differences in transition probabilities between **Table 2.6** and **Table 4.1**.

Recalculating AYP Outcomes

For this analysis I am mainly interested in whether students' improvement on state tests from year to year affects their schools' PI outcomes. So although making AYP in California under NCLB requires that 95 percent of students overall and in each subgroup participate in the testing, that the school as a whole performs at or above Academic Performance Indicator (API)

[74] Rules governing AYP and PI status determinations are detailed in annual AYP Information Guides published by the California Department of Education. For example, see California Department of Education, 2011.

[75] I couldn't replicate the PI stages reported by the CDE for 926 observations. Because these observations are scattered across years for different schools, dropping just the nonreplicable cases would invalidate annual PI transitions. Therefore I dropped all of a school's observations if I couldn't match every one of its annual PI stages. Many such cases did not follow AYP rules. Cabrillo Elementary in Fremont Unified School District, for example, was assigned to Stage 1 of PI in 2011-12 even though it made AYP the year before. Fruitvalle Elementary in Oakland School District, on the other hand, missed the same AYP indictors two years in a row, but wasn't assigned to Stage 1 until the following year when it had, by then, missed the same indicator for three consecutive years. Longwood Elementary in Hayward Unified School District exited PI after making AYP for only a single year. Needless to say why I can't replicate PI stages for some schools remains unclear. Whether these anomalies are due to data-entry errors or special circumstances not reflected in the available data, I drop 500 schools (eight percent of all schools) because of such inconsistencies.

targets, and that high schools meet graduation goals, I focus only on the effect of changing the requirements for meeting proficiency.

Recall that proficiency goals, or "targets," are encapsulated in Annual Measurable Objectives (AMOs), which apply to the whole student body and to each student subgroup (see **Figure 2.1** for California's proficiency targets by year). NCLB requires that if a school or any of its student subgroups do not meet AMOs on the same indicator (e.g., math for English-language learners) for two consecutive years it is assigned to PI. Every additional year a school misses a proficiency target on the same indicator, it descends into an increasingly punitive improvement system. A school exits PI if it makes AYP for two years in a row.

The question I now turn to is what happens to schools' PI outcomes when proficiency requirements are based on improvement in students' test scores? The CDE publishes the percentages of students who score at the proficient level each year. I subtract the previous year's percentage from the current year's to calculate a simple improvement score. Then I re-calculate whether schools made AYP under what I call an *improvement rule*. Specifically, instead of requiring schools to meet proficiency targets, I require that schools must increase the percentage of students who pass content area exams (math and reading) from year to year as a school and for all subgroups. In this case, passing means scoring at or above a "proficient" level (see Chapter 2 for details on how test are scored). Improvement is measured down to a tenth of a percent. Under this rule a school that failed to hit the proficiency target on a given indicator, e.g., reading for white students, would still make AYP if white students improved on their reading tests by at least one-tenth of one percent from last year. I use these re-calculated AYP outcomes to re-calculate PI outcomes based on these new criteria.

Transition Probabilities under Different Rules

Improvement Rule

Under the improvement rule, 16 percent (34,556) of all reading proficiency observations and nine percent (19,395) of all math proficiency observations would have switched from not making AYP to making AYP.[76] **Table 4.3** shows the projected transition probabilities for all schools across all years under this proficiency improvement rule. Settling for any progress, instead of requiring schools to meet NCLB's target benchmarks, would have helped more schools exit PI. For example, compared to probabilities under NCLB, schools under this improvement rule would be about 1.3 times more likely to exit PI from Stage 2 (.09/.07), Stage 3 (.07/.05) or Stage 4 (.05/.04) and over three times as likely to exit from Stage 5 (.06/.02).[77] And once in PI schools would be between 2 percent (1-(.71/.72) from Stage 1) and 11 percent (1-.(74/.83) from Stage 4) less likely to advance to higher PI stages. However there is a notable drawback to this improvement rule: schools would have been 1.6 (.23/.14) times more likely to enter PI in the first place than under NCLB rules. Moreover, under the improvement rule, many already high-performing schools would have failed to make AYP.

So despite that fact that several schools would have been able to make AYP under the improvement rule, but which had not done so under NCLB's system, focusing on improvement alone would penalize high-performing schools that did not increase their test scores each year. For example, in 2010-11 Guadalupe Elementary School in San Francisco met all its AYP targets, but failed to increase the percentage of Asian students who passed the math test (dropping 1.3

[76] **Tables 4.1D** and **4.2D** show the number of observations with changes in making AYP between NCLB rules and this improvement rule by student subgroups for reading and math respectively.
[77] Schools are about as likely to exit from Stage 1 under NCLB or proficiency improvement rules.

percent from 92.6 percent passing in 2009-10).[78] Under the improvement rule high-performing schools would not only have failed to make AYP in a given year, but some would have entered Program Improvement.

Target-Improvement Rule

How much might we expect students in a high-performing school to improve on tests if we assume that 100 percent student proficiency in untenable? Is it reasonable to assume that performance may plateau as it nears that goal, making it more difficult for students to improve annually? If so, then perhaps benchmarks are useful to the extent they capture a minimum level of acceptable performance. With this in mind, I address the limitation of the improvement rule by re-calculating whether schools made AYP under what I call a *target-improvement* rule. This rule would require that schools *either* meet the proficiency targets as outlined under NCLB *or* that schools improve on the proficiency targets they missed the previous year.

Table 4.4 shows the projected transition probabilities for all school across all years under a proficiency target-improvement rule. Comparing these probabilities to those under NCLB requirements reported in **Table 4.1**, shows that under the target-improvement rule schools would be 23 percent (1-(.11/.14)) less likely to enter PI. Once in PI, schools would be between 12 percent (1-(.63./72) from Stage 1) and 23 percent (1-(.60/.78) from Stage 3) less likely to advance to higher stages and between 1.7 (.12/.07 from Stage 1) and 4.8 (.09/.02 from Stage 5) times more likely to exit the process, a difference which tends to increase with higher PI stages.

These findings suggest that a target-improvement rule would help lower-performing schools (that are trapped in PI under NCLB) avoid or exit PI if they could make progress on

[78] Across all years, there were 15,929 cases (37 percent) where a school met all AYP targets in a year, but failed to make AYP under the improvement rule because its level of proficiency dropped in one or more indicators.

proficiency standards each year. And compared to NCLB's benchmarks or a simple improvement standard, a target-improvement rule is fairer in that it would reward higher-performing schools for meeting certain benchmarks and lower-performing schools for making progress. In general it would yield better PI outcomes in that schools would be less likely to enter PI or to advance to higher stages once in PI, and be more likely to exit the process from all stages.

Transition Probabilities for Different Schools

In this section I examine whether and how much schools' levels of SES and diversity affect their PI transition probabilities under NCLB and target-improvement rules. To ensure that any differences between transition probabilities under either regime are due to a change in the rules of making AYP, not to a change in the sample, I re-estimated multinomial logit models for schools' trichotomous PI outcomes (i.e., stay, advance, exit) under NCLB rules using quartile indictors for both SES and diversity, while holding all other structural characteristics of schools at their means.[79] As in Chapter 3, I measured schools' SES with their percentage of students eligible for free or reduced-price meals (FRPM) and their percentage of parents with at least some college education (PEDSC). I measured schools' diversity with their number of AYP requirements.

Using regression estimates, I then calculated predicted probabilities of (1) staying in the same PI stage, (2) advancing to a more punitive PI stage, or (3) exiting PI from any stage for two types of schools with very different SES and diversity quartile values (i.e., $FRPM_{Q4,}$ $PEDSC_{Q1}$,

[79] Regression results for are shown in **Tables 3.3D** through **3.5D** in Appendix D.

AYP_{Q4} and $FRPM_{Q1,}$ $PEDSC_{Q4}$, AYP_{Q1}).[80] As in Chapter 3, I consider schools having percentages of students eligible for free or reduced-price meals in the fourth quartile, percentages of parents with some college education in the first quartile, and AYP requirements in the fourth quartile the lowest-SES, most-diverse schools (or most disadvantaged). Schools having percentages of students eligible for free or reduced-price meals in the first quartile, percentages of parents with some college education in the fourth quartile, and AYP requirements in the first quartile are the highest-SES, least-diverse schools (or most advantaged). **Table 4.5** reports predicted probabilities of staying, advancing, and exiting from each PI stage under NCLB rules for schools with different levels of SES and diversity, while holding all other covariates at their means.

Next I re-estimated multinomial logit models for schools' re-calculated PI outcomes under the target-improvement rule.[81] I then calculated predicted probabilities of trichotomous PI transitions for the two types of schools with different levels of SES and diversity. **Table 4.6** reports predicted probabilities of staying, advancing, and exiting from each PI stage under a target-improvement rule for two types of schools with different levels of SES and diversity, while holding all other covariates at their means.

Comparing PI transitions probabilities between **Tables 4.5** and **4.6** shows that schools with the same levels of SES and diversity, would be less likely to enter PI, less likely to advance to more punitive stages from any stage, and more likely to exit—especially from higher stages of PI—under a target-improvement rule than under NCLB rules. For example, the average of the five probabilities of advancing in PI under NCLB for most disadvantaged schools was .74. That

[80] As in Chapter 3, I used Stata 13 to estimate regression models with *mlogit* and calculated predicted probabilities with SPost13's *mtable* command (Long and Freese, 2014).
[81] I used the same structural characteristics of schools and their quartile combinations to measure SES and diversity as I did for models estimated under NCLB rules. Regression results are shown in **Tables 3.6D** through **3.8D** in Appendix D.

average dropped to .62 for the same schools under target-improvement. And the average of the five probabilities of exiting PI for the most disadvantaged schools was .03 under NCLB but .08 under target-improvement. For the most advantaged schools, the average probabilities of exiting PI were .07 for under NCLB and .17 under target-improvement.

Inequality in Transition Probabilities

At its heart NCLB aims to reduce inequality in educational outcomes between students' of different racial, ethnicity, and economic backgrounds. Indeed this has been the intent of federal K-12 education law since 1965 when President Johnson passed the Elementary and Secondary Education Act as part of his War on Poverty. There is good evidence that NCLB has succeeded in doing just that (see West, 2015). What is not clear is how much NCLB's accountability provisions affect inequalities in PI transitions between schools with different representations of disadvantaged students, especially when compared to schools' outcomes under a different structure of accountability. So, in this section I ask, how do NCLB and target-improvement rules affect inequalities in PI transition probabilities between schools with different levels of SES and diversity? I answer this question in two ways. First I calculated differences in the predicted probabilities of schools' PI transitions based on their re-calculated PI outcomes under NCLB and target-improvement rules. Second I calculated Markov chains to predict long-range trends of schools' involvement in PI based on past patterns of transition probabilities under NCLB and target-improvement rules.

Differences in Transition Probabilities

I calculated differences in the probabilities reported in **Tables 4.5** and **4.6** for each type of PI transition (i.e., stay, advance, exit) between school type (i.e., most advantaged or most disadvantaged), but within rule type (i.e., NCLB or target-improvement) to ascertain the extent to which changing the rules of how schools make AYP would have affected PI transitions between school types. Under NCLB or target-improvement, smaller differences reflect less inequality between schools with different levels of SES and diversity.

Table 4.7 shows differences in PI transition probabilities between the most advantaged (highest-SES, least diverse) and most disadvantaged (lowest-SES, most-diverse) schools under NCLB and target-improvement rules. I also plotted these differences in **Figure 4.1.** I refer to them for remainder of this section. Before comparing inequalities in transitions under different rules, note that consistent with findings above, within each rule the most advantaged schools are less likely to enter PI, less likely advance to the next stage once in PI, and more likely to exit PI from any stage.

Entering. Schools would be less likely to enter PI under a target-improvement rule than under NCLB. The difference in the probabilities of entering PI between the most advantaged and disadvantaged schools under NCLB was -.18 (.07-.25). Under a target-improvement rule this difference was -.13 (.05-.19).

Staying. In every PI stage the differences in the probabilities of staying in the same PI stage were smaller under target-improvement than under NCLB. When averaged across all PI stages the difference in staying in the same PI stage between the most advantaged and most disadvantaged schools was .17 under NCLB and .10 under target-improvement.

Advancing. In nearly every PI stage the differences in the probabilities of advancing to the next PI stage were smaller under target-improvement. The only exception was in Stage 1 where the difference is -.31 (.49-.79) under NCLB and -.34 (.39-.73) under target-improvement. When averaged across all PI stages the difference in staying in the same PI stage between the most advantaged and most disadvantaged schools was -.26 under NCLB and -.23 under target-improvement.

Exiting. In every PI stage the differences in exiting PI are smaller under NCLB than under target-improvement. Averaged across all PI stages the difference in exiting PI is .04 under NCLB and .09 under target-improvement. However, it is important to note that the probabilities of exiting PI from any stage are notably higher under target-improvement (see **Tables 4.5** and **4.6**). So although more of both the most advantaged and most disadvantaged schools would exit PI under a target-improvement rule, inequalities in probabilities of exiting PI between these two types of schools would be greater under that rule.

Predicting Long-Range Trends to Assess Inequality

Another way to assess inequality is to predict the long-range trends in PI outcomes under both NCLB and target-improvement rules. In this way, PI transition probabilities can us about schools' future placement in PI under each regime.

The transition probabilities of entering, advancing and exiting PI are a Markov chain process where a schools' PI stage in one year depends only the stage of PI the school was in the previous year. Or, put differently, the next stage depends only on the present stage and not on any preceding stages. As in Chapter 2, I analyze transition probabilities using Markov chains as described by Greenwell et al. (2003).

Let P_{NCLB} represent the transition probability matrix in **Table 4.1** where p_{ij} is the probability of transition from stage *i* to *j* under NCLB rules. Let P_{TI} represent the transition probability matrix in **Table 4.4** where p_{ij} is the probability of transition from stage *i* to *j* under a target-improvement rule.

P^n gives the probabilities of a transition from one state to another in *n* repetitions of an experiment (Greenwell et al., 2003, 3). So, squaring both P_{NCLB} and P_{TI} gives the probabilities of moving from stage *i* to stage *j* after two years under NCLB and target-improvement rules, respectively. Cubing P_{NCLB} and P_{TI} gives the probabilities for each rule type for the year following that, and so forth.

Extending this logic to pre-multiply both P_{NCLB} and P_{TI} by a vector of "initial" probabilities gives the distribution of schools across PI stages in *n* years by rule type where X_0 is the initial distribution at year 0 (Greenwell et al., 2003, 5). Put more formally, if a Markov chain has an initial probability vector $X_0 = [i_1 i_2 i_3 \dots i_n]$ and transition matrix P^n, the probability vector after *n* number of years is $X_0 * P^n$.

I used the initial probability vector X_{NCLB} = [.33 .17 .10 .09 .04 .26] to predict the long-range trends in PI outcomes under NCLB. These are simply the proportions of schools in each of the PI stages in 2011-12 under NCLB rules where the first element is the proportion of schools not in PI, the second element is the proportion of schools in Stage 1 of PI, and so forth. Similarly, I used an initial probability vector X_{TI} = [.51 .21 .10 .06 .03 .10] to predict the long-range trends in PI outcomes under a target-improvement rule. These are the proportions of schools in each of the PI stages in 2011-12 under target-improvement. My final results hold regardless of my choice of initial vectors.

Using **Equation 2.1**, I computed the distributions of schools across stages of PI for the next 30 years under both NCLB and target-improvement rules. **Table 4.8** shows this distribution under NCLB rules. **Table 4.9** shows it under target-improvement. Two things are of note. First, over time schools would experience one of two modal outcomes under either rule, approximating two absorbing states: moving to Stage 5 or not being in PI. Second, the difference in the distribution of these outcomes between rule types is striking. Under NCLB, three-quarters of schools would be in the most punitive stage of PI in 20 years. Over that same time period just over one-quarter of schools would be in that stage under target-improvement.

Conclusion

The point of this chapter was to explore whether and how much the structure of NCLB affects the likelihood that various schools will incur sanctions. I found that changing the rules of making AYP affected the probability of schools' transitions into, through, and out of PI. Allowing schools to make AYP via *either* meeting benchmarks (as is currently the case under NCLB) *or* by increasing their test scores from year to year (currently the case under several state waivers) means that schools are less likely to enter the process of Program Improvement, less likely to advance to higher and more punitive stages once in PI, and more likely to exit PI from any stage.

Changing the rules also changed the amount of inequality in transition probabilities between the most disadvantaged (lowest-SES, most-diverse) and most advantaged (highest-SES, least-diverse) schools. Whether inequalities increased or decreased depended on the type of PI transition. Changing the rules clearly would have reduced inequality for the probabilities of staying in the same PI stage and advancing to the next stage. And while inequality in the

probability of exiting PI between schools with different levels of SES and diversity was larger under target-improvement, more schools of either type would have exited PI under this rule compared to NCLB.

Predicting long-range trends of schools' involvement in PI based on past patterns of transition probabilities under different rules also revealed inequalities. In 20 years nearly three times as many schools would be in most punitive stage of PI under NCLB than under a target-improvement rule with little chance of exiting.

Thus, while the accountability provisions of NCLB were intended to and have reduced inequalities in the educational outcomes of its students, the very structure of the law fosters inequality among the schools these students attend.

TABLES AND FIGURES

Table 4.1. Program Improvement Transition Probabilities under NCLB, All Schools and Years

Previous Year \ Current School Year	Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Not in PI	.86	.14					23,104
Stage 1	.07	.21	.72				3,634
Stage 2	.07		.18	.75			2,745
Stage 3	.05			.17	.78		2,239
Stage 4	.04				.13	.83	1,770
Stage 5	.02					.98	4,023
Total	.55	.11	.08	.07	.05	.14	
No. of Obs.	20,527	4,014	3,114	2,444	1,992	5,424	37,515

Table 4.2. Differences in Program Improvement Transition Probabilities for Full Sample and Reduced Sample

Previous Year \ Current School Year	Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Not in PI	.00	.00					2,272
Stage 1	.01	.00	.00				279
Stage 2	.00		.00	.00			179
Stage 3	.00			.00	.00		145
Stage 4	.00				.01	-.01	103
Stage 5	.01					-.01	120
Total	.01	.00	.00	-.01	.00	.00	
No. of Obs.	2,088	362	228	145	124	151	3,098

Table 4.3. Program Improvement Transition Probabilities under Improvement Rule, All Schools and Years

		Current School Year						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Previous Year	Not in PI	.77	.23					18,831
	Stage 1	.07	.22	.71				5,381
	Stage 2	.09		.24	.67			4,508
	Stage 3	.07			.22	.71		3,451
	Stage 4	.05				.21	.74	2,206
	Stage 5	.06					.94	3,138
	Total	.42	.15	.13	.10	.08	.12	
	No. of Obs.	15,842	5,544	4,864	3,780	2,904	4,581	37,515

Table 4.4. Program Improvement Transition Probabilities under Target-Improvement Rule, All Schools and Years

		Current School Year						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Previous Year	Not in PI	.89	.11					27,321
	Stage 1	.12	.25	.63				3,222
	Stage 2	.18		.22	.61			2,151
	Stage 3	.17			.23	.60		1,636
	Stage 4	.11				.23	.66	1,098
	Stage 5	.09					.91	2,087
	Total	.69	.10	.07	.05	.03	.07	
	No. of Obs.	25,696	3,761	2,502	1,688	1,234	2,634	37,515

Table 4.5. Predicted Probabilities of Trichotomous PI Transitions for Schools with Different Levels of SES and Diversity under NCLB Rules

PI Stage in Previous Year	*Most Disadvantaged Lowest SES Most Diverse*			*Most Advantaged Highest SES Least Diverse*		
	Stay	Advance	Exit	Stay	Advance	Exit
Not in/Exited PI	.75	.25		.93	.07	
Stage 1	.15	.79	.06	.44	.49	.07
Stage 2	.10	.87	.03	.29	.59	.12
Stage 3	.10	.88	.03	.30	.61	.09
Stage 4	.09	.90	.01	.23	.73	.04
Stage 5	.99		.01	.99		.01

Table 4.6. Predicted Probabilities of Trichotomous PI Transitions for Schools with Different Levels of SES and Diversity under Target-Improvement Rule

PI Stage in Previous Year	*Most Disadvantaged Lowest SES Most Diverse*			*Most Advantaged Highest SES Least Diverse*		
	Stay	Advance	Exit	Stay	Advance	Exit
Not in/Exited PI	.81	.19		.95	.05	
Stage 1	.20	.73	.08	.43	.39	.18
Stage 2	.17	.72	.11	.30	.49	.21
Stage 3	.20	.69	.11	.35	.45	.20
Stage 4	.18	.79	.04	.22	.66	.12
Stage 5	.95		.05	.88		.12

Table 4.7. Differences in PI Transition Probabilities between Most Advantaged and Most Disadvantaged Schools for NCLB and Target-Improvement Rules

PI Stage in Previous Year	*NCLB*			*Target-Improvement*		
	Stay	Advance	Exit	Stay	Advance	Exit
Not in/Exited PI	.18	-.18		.13	-.13	
Stage 1	.29	-.31	.02	.23	-.34	.10
Stage 2	.19	-.28	.09	.13	-.24	.10
Stage 3	.20	-.27	.07	.15	-.24	.09
Stage 4	.14	-.17	.02	.04	-.12	.08
Stage 5	.00		.00	-.07		.07

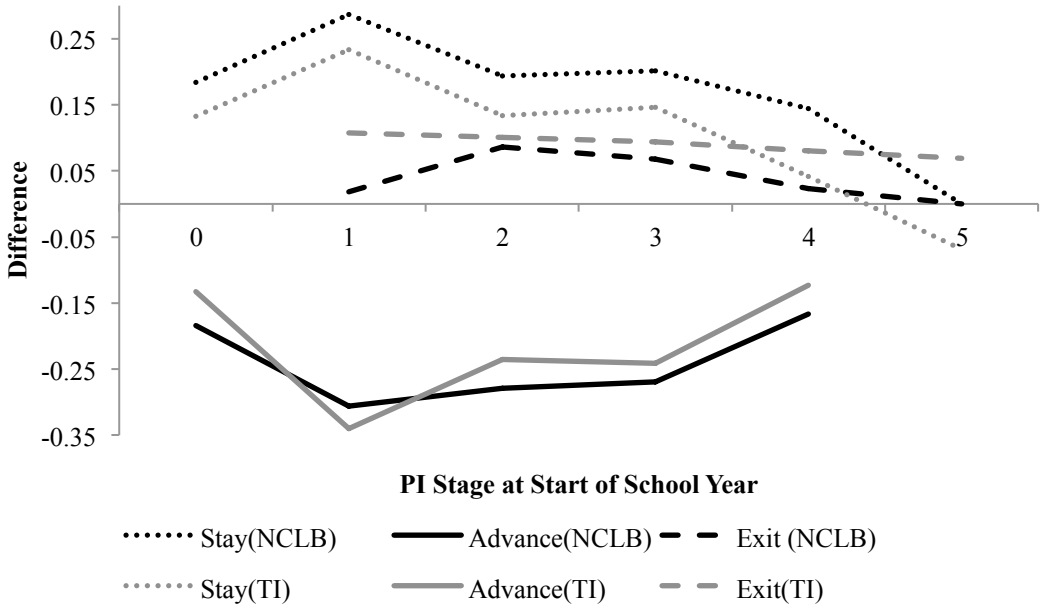

Figure 4.1. Differences in PI Transition Probabilities between the Most Advantaged and Most Disadvantaged Schools for NCLB and Target-Improvement (TI) Rules

Table 4.8. Predicted Distribution of Schools Across Stages of Program Improvement over the Next 30 Years under NCLB Rules

After Year n	Not in/ Exited PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	.31	.08	.14	.09	.08	.29
2	.30	.06	.08	.12	.08	.35
3	.28	.05	.06	.08	.11	.41
4	.26	.05	.05	.06	.08	.49
5	.25	.05	.05	.05	.06	.55
6	.23	.04	.04	.04	.04	.58
7	.22	.04	.04	.04	.04	.61
8	.21	.04	.04	.04	.04	.63
9	.20	.04	.04	.03	.03	.65
10	.19	.04	.03	.03	.03	.67
15	.16	.03	.03	.03	.02	.72
20	.15	.03	.02	.02	.02	.75
21	.14	.03	.02	.02	.02	.76
22	.14	.03	.02	.02	.02	.76
23	.14	.03	.02	.02	.02	.76
24	.14	.03	.02	.02	.02	.76
25	.14	.02	.02	.02	.02	.77
26	.14	.02	.02	.02	.02	.77
27	.14	.02	.02	.02	.02	.77
28	.13	.02	.02	.02	.02	.77
29	.13	.02	.02	.02	.02	.77
30	.13	.02	.02	.02	.02	.77

Table 4.9. Predicted Distribution of Schools Across Stages of Program Improvement over the Next 30 Years under Target-Improvement Rule

After Year n	Not in/ Exited PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	.52	.11	.15	.07	.04	.11
2	.53	.08	.10	.11	.05	.13
3	.54	.08	.07	.09	.08	.16
4	.54	.08	.07	.07	.07	.19
5	.53	.08	.06	.05	.06	.22
6	.53	.08	.06	.05	.05	.24
7	.53	.08	.06	.05	.04	.25
8	.53	.08	.06	.05	.04	.26
9	.52	.08	.06	.05	.04	.26
10	.52	.08	.06	.05	.04	.26
15	.52	.07	.06	.05	.04	.27
20	.51	.07	.06	.05	.04	.28
21	.51	.07	.06	.05	.04	.28
22	.51	.07	.06	.05	.04	.28
23	.51	.07	.06	.05	.04	.28
24	.51	.07	.06	.05	.04	.28
25	.51	.07	.06	.05	.04	.28
26	.51	.07	.06	.05	.04	.28
27	.51	.07	.06	.05	.04	.28
28	.51	.07	.06	.05	.04	.28
29	.51	.07	.06	.05	.04	.28
30	.51	.07	.06	.05	.04	.28

CHAPTER 5. CONCLUSION

In his essay, "No Child Behind? Sociology Ignored!," sociologist David Karen suggests that when considering students' schooling outcomes, instead of focusing on individuals' attributes researchers "should think about the larger social contexts wherein individuals move through organizations to positions of different rewards and privilege. In other words, *our* unique contribution as *sociologists* is in demonstrating how social structure affects these outcomes" (2005, 167). In this dissertation I have taken up this suggestion by examining how current federal K-12 education law has affected schools' chances of meeting adequate yearly progress (AYP) requirements, thereby avoiding punitive sanctions. I have done this by investigating the extent to which traditional public schools in California[82] experienced federally mandated sanctions set forth by the No Child Left Behind Act of 2001 (NCLB) whose object was to improve under-performing schools through a process know as Program Improvement (PI).[83]

As I discussed in Chapter 2, calling PI an "improvement process" is a misnomer. Although schools are reasonably assigned to this process because they failed to meet standards, they remain "in improvement" because they fail to improve. Thus, paradoxically, schools that consistently fail to meet performance goals are said to "advance" through this improvement process. Moreover, schools that advance through the stages of PI must undergo a series of escalating steps toward correction and progress. If a school fails to make AYP for two consecutive years, it is assigned to Stage 1 of PI. Its district must notify parents of the school's failing status, develop a plan to improve student performance, provide technical assistance to the

[82] The California Department of Education categorizes schools by the type of education provided to its students. By examining only "traditional" schools I exclude several school types such as community day, continuation, juvenile court, and special education schools.

[83] Other states are subject to the same federal improvement process, although not all states refer it using the same terminology. In Washington State, for example this process is called School Improvement.

school, offer professional development, and permit the school's students to transfer to a non-failing public school within the same district. These steps seem relatively trivial compared to the sanctions imposed on schools in higher PI stages. By Stage 5 of PI (its highest stage) schools face an overhaul of their structure (e.g., adopting new curricula, extending the length of the school day) and governance (e.g., replacing school staff), as well as additional interventions such as reopening as a charter school or turning its operations over to the state. (For more details on the sanctions associated with each stage of PI see Appendix A.)

Overview of Empirical Findings

In Chapter 2 I calculated the year-to-year probabilities of California schools having transitioned into, through, and out of PI between the 2003-04 and 2010-11 school years. Two key findings emerged. First, over this period schools have entered PI in increasing numbers. Second, once in PI schools were unlikely to exit, with the chance of improving enough to exit decreasing as schools advanced to more punitive PI stages.

In Chapter 3, I investigated the extent to which schools' structural characteristics affected their PI transition probabilities. Three key findings emerged. First, varying the levels of SES and diversity produced notable changes in the probabilities of PI transitions. More advantaged schools (with higher SES and lower diversity) experienced better PI outcomes than more disadvantaged schools (with lower SES and higher diversity). Second, despite these differences the overall pattern of PI transition probabilities reported in Chapter 2 persisted. Regardless of their levels of SES or diversity, schools that enter PI were more likely to advance to higher stages than to remain in the same stage over time or exit the process entirely. Third, differences in SES, as opposed to differences in diversity, account for a larger part of the differences in PI

transitions across schools. Thus, a school's SES (as measured by the percentage of its students who are eligible for free or reduced-price lunches and the percentage of parents with some college education) influences its PI outcomes more than does its diversity (as measured by its number of AYP requirements).

In Chapter 4 I showed that if NCLB had imposed more flexible requirements for schools to have shown progress in students' learning, then schools' transition probabilities into, through, and out of PI would have been different. Specifically, if the law had required students to *either* meet performance targets *or* make improvement from year to year California schools would have been be slightly less likely to enter PI, less likely to advance to more punitive stages of PI, and more likely to exit PI from any stage. Moreover, changing the rules would have reduced inequality (as measured by differences in PI transition probabilities) between the most advantaged and most disadvantaged schools in the probabilities of staying in the same PI stage and advancing to the next stage. And while inequality in the probability of exiting PI between schools with different levels of SES and diversity was larger under target-improvement, more schools of either type would have exited PI under this rule compared to NCLB.

I now turn to the ways in which policymakers', activists', and the public's views of NCLB have changed since NCLB was passed and how my research findings are consistent with these views.

Views of NCLB Then and Now

During the spring of 2001, Congress voted to reauthorize the Elementary and Secondary Education Act of 1965 (ESEA), giving it a new name: the No Child Left Behind Act. President George W. Bush signed the act into law on January 8, 2002 declaring "a new era, a new time in

public education in our country. As of this hour, America's schools will be on a new path of reform, and a new path of results" (White House Press Release, 2002). Passing with overwhelming bipartisan congressional support, NCLB was hailed as "a landmark event … a history-making event … [that] … break[s] new ground" (Owens, 2001). This bipartisan effort was driven by the "Big Four:" Representative George Miller (D-CA), Representative John Boehner (R-OH), Senator Edward Kennedy (D-MA), and Senator Judd Gregg (R-NH). Representative Miller praised the new law for comprising "fundamental, unprecedented reforms" (quoted in Rudalevige, 2003, 24). Representative Boehner called it his "proudest accomplishment" in two decades of congressional service (2001). Senator Gregg revered it as an "exceptional piece of legislation, which will have a very significant, if not dramatic, impact on our Nation's future in education" (2001). And for Senator Kennedy, it reflected a "defining issue about the future of our Nation and about the future of democracy, the future of liberty, and the future of the United States in leading the free world" (2001b).

Major players outside of Congress echoed such excitement over the new law. Upon its signing Rod Paige, then U.S. Secretary of Education, remarked, "Today, with the stroke of his pen, President Bush changed the culture of education in America and kept his promise to leave no child behind" (quoted in Henry, 2004). Harold McGraw III, chairman of the textbook publishing company McGraw-Hill said, "It's a great day for education, because we now have substantial alignment among all the key constituents—the public, the education community, business and political leaders—that results matter" (quoted in Metcalf, 2002).

Indeed, the public did seem pleased with certain elements of the law. According to a 2001 public opinion survey by Educational Testing Service (ETS) found that 48 percent of respondents agreed that both increased spending and more accountability were needed to

improve the quality of public education, 76 percent of respondents supported annual math and reading testing in grades three through eight, and 44 percent favored the option to "take over and restructure the school with new administrators" for schools that were found to "consistently fall short of expected standards" (Hart and Teeter, 2001).

It didn't take long for opinions about NCLB to change. Just three years after its implementation school boards, administrators, and analysts were already questioning many of the law's provisions (Linn et al., 2005). In January of 2005 President Bush, arguably the law's biggest defender, conceded "we've made great strides. … We've made important progress, but …there is still more work to be done" (2005). Presumably that work was supposed to be done by September 2007 when NCLB was originally scheduled for reauthorization. But revamping federal education policy took a legislative back seat to concerns over the economy, healthcare, and the Iraq and Afghanistan wars.

In the years leading up to its scheduled reauthorization, there were several proposals to rewrite NCLB.[84] They went nowhere. In July 2007, Senators Judd Gregg and Richard Burr (R-NC) "respond[ed] to the legitimate concerns … from parents, teachers and principals around the country" by proposing Senate Bill 1775, the first comprehensive reauthorization of NCLB (Russo, 2007). That same month Representative George Miller, then chairman of the House Education and Workforce Committee, announced that he intended to move a bill "making serious changes" to NCLB out of his committee to the House floor by that September (quoted in Tarr, 2014, 483). But NCLB's reauthorization date came and went with no committee action

[84] In 2005 Sen. Chris Dodd (D-CT) sponsored S 724 that would have allowed indicators other than test scores to measure adequate yearly progress; Rep. Rosa Delauro (D-CT) sponsored HR 1506 to revise certain requirements to adequate yearly progress, academic assessment and school improvement, school choice and supplemental services options, and teacher qualifications; Rep. Jeb Bradley (R-NH) sponsored HR 1722 to amend AYP provisions for assessing students with disabilities and refugee students; and Rep. Mike Honda (D-CA) sponsored HR 551 to amend the provision of NCLB that allows military recruiters access to student directory information. All proposals were rejected via a lack of committee action.

taken on either bill.

By this time even some ardent supporters of the law had begun to see its flaws. In an op-ed, Senator Kennedy wrote that some "aspects of the law have not been satisfactory, and some have been failures. These must be changed" (2008). By 2010, Diane Ravitch, Assistant Secretary of Education under Bush and an early advocate of NCLB, had become a vocal opponent, commenting to an interviewer at the Economic Policy Institute that the law contains strong punitive measures that have left "public education in great peril" (quoted in Orr, 2010).[85]

The public agreed. Polls conducted by Phi Delta Kappa/Gallup since the early 2000s show that as people became more familiar with NCLB, they have also become more disillusioned with it. In 2003, three-quarters of respondents felt like they didn't know enough about NCLB to form an opinion about it. By 2009, only 14 percent of respondents said they were "not familiar at all" with the law. In 2003, 18 percent of respondents said they favored the law. By 2009, 30 percent of people "somewhat familiar" with NCLB and 50 percent of people who were "very familiar" with NCLB thought it had made public education worse (Newport, 2009). Two years later only 27 percent of people with an opinion about NCLB wanted to "keep [it] basically as is," while 53 percent of people preferred to "keep it, with major revisions" and 21 percent would "eliminate [the] law" (Jones, 2011).

On March 13, 2010, nearly three years after NCLB had officially expired, the White House released its blueprint for revising the law, but Congress never acted upon it. In response to Congress's inaction, the Obama administration decided to allow states to circumvent some of NCLB's requirements as long as they followed federally-approved state-wide accountability systems that fostered goals similar to NCLB, such as improving all students' educational

[85] Five years earlier Ravitch had written, "We should thank President George W. Bush and Congress for passing the No Child Left Behind Act. ... All this attention and focus is paying off for younger students, who are reading and solving mathematics problems better than their parents' generation" (2005).

outcomes by closing achievement gaps and improving the quality of their teachers (White House, Issue Fact Sheet). So in August of 2011, while denouncing NCLB as a "slow-motion train wreck," U.S. Secretary of Education, Arne Duncan, announced that states could apply for waivers requesting flexibility for some of the specific requirements of NCLB, such as the requirement that 100 percent of students be proficient in math and reading by 2014 (Dillon, 2011). Signaling their frustration over NCLB's untenable proficiency requirements, nearly every state has applied for a NCLB waiver. Despite pressure from states and the Obama administration, NCLB's reauthorization continued to languish in Congress. In 2011 and 2012, the House considered several bills that attempted to fix NCLB in a piecemeal fashion, but none of these bills made it out of the House Committee on Education and the Workforce for a floor vote.[86]

The fact that by 2015 43 states now have waivers from the original mandates of NCLB suggests that the federal bureaucracy charged with enforcing NCLB recognized that in 2001 Congress had passed a well-intentioned, but ultimately dysfunctional law. As Arne Duncan put it in his testimony to the Senate Committee on Health, Education, Labor, and Pensions (HELP),

> NCLB's goals were the right ones – holding all students to the same, challenging standards; closing achievement gaps; and providing transparency and accountability for the proficiency and graduation rates of all students. But the closer we have gotten to 2014, the more NCLB has changed from an instrument of reform into a barrier to reform (2013).

[86] In 2011 Representative John Kline (R-MN) sponsored HR 2445 State and Local Funding Flexibility Act, which would have offered states and school districts more flexibility in how they spent federal dollars including allowing them to move Title I funds earmarked for disadvantaged children to programs they believed would boost student performance. That same year Representative Duncan Hunter (D-CA) sponsored HR 1891 Setting New Priorities in Education Spending Act, which would have ended programs that Republicans deemed inefficient or ineffective. In 2012 Representative Kline sponsored two more bills. HR 3989 Student Success Act would have allowed states to develop their own accountability standards and stop federal interventions for low-performing schools and HR 3990 Encouraging Innovation and Effective Teachers Act would have required states to implement teacher evaluation systems based partly on student test scores.

My research strongly supports the belief that NCLB has impeded schools' abilities to show that are not failing to educate their students, at least in California.[87] First, schools in California have entered PI at an increasing rate. The annual transition probabilities I calculated for moving into, through, and out of Program Improvement between 2003 and 2011 showed that over time schools were increasingly likely to be assigned to PI. For the 2004-05 school year the probability of entering PI was .12. By the 2011-12 school year that probability had increased to .35.

Second, once in Program Improvement schools were unlikely to get out, especially from higher PI stages. Averaging transition probabilities across all PI stages I found that schools in PI were more likely to advance to higher stages (77 percent) than remain in the same stage over time (17 percent) or exit the process entirely (6 percent). In any given stage, the probabilities of advancing to the next PI stage versus staying in the same stage or exiting PI were increasingly higher for schools that began the year in more punitive PI stages (see **Figure 2.5** in Chapter 2).

Third, analyzing PI transition probabilities as a Markov chain process showed a roughly bimodal distribution of schools across PI stages predicting that over the long run only about 18 percent of schools would be able to avoid PI, while 72 percent would end up in its most punitive stage, approximating two absorbing states.[88]

Fourth, transition probabilities differ noticeably across schools with different

[87] Although my findings are limited to California, its struggles to meet NCLB mandates are not anomalous. A report published by the Center on Education Policy that analyzed state-level AYP outcomes between 2006 and 2011 showed that in nearly every state increasingly smaller percentages of schools made AYP each year (Usher, 2011).

[88] These predictions showed that as soon as 2020 53 percent of schools would be in Stage 5 of PI facing sanctions that could have enormous ramifications for their schools' structure and governance since such schools would, for example, be required to use new curricula, lengthen their school day, and replace their staff.

levels of SES and diversity. More homogenous schools with higher SES had better PI outcomes. Put another way, such schools are less likely to enter PI, and to advance to higher stages once in PI and more likely to exit from any stage. For example, for the lowest-SES, most-diverse schools the probability of entering PI was .26 whereas this probability was .07 for the highest-SES, least-diverse schools. When averaged across all PI stages the probability of advancing was .73 for the most disadvantaged schools and .52 for the most advantaged schools. The average probabilities of exiting from any of the five PI stages were .04 and .07 for the most disadvantaged and most advantaged schools, respectively.

Fifth, the overall pattern of transition probabilities—wherein schools that enter PI are more likely to advance to higher stages rather than remain in the same stage over time or exit the process entirely—persists despite different levels of SES and diversity across schools, while holding all other structural characteristics at their means.

Thus, whether characterized as "a barrier to reform," an "absorbing state," or a "Roach Motel," it is clear NCLB has created a punitive system that many schools have entered, but few will ever escape.

Debates over NCLB's Reauthorization

Now, 14 years after it was signed into law and eight years after it failed to be reauthorized, NCLB—and waivers from it—remain in force. But not for long, it seems. In January, Secretary of Education Arne Duncan called for a repeal of a "tired, prescriptive" law (2015). Duncan further criticized the law saying it "created dozens of ways for schools to fail and very few ways to help them succeed or to reward success" (quoted in Rich and Lewin,

2015). Since Duncan's call to revamp NCLB, Congress has moved quickly to craft replacements for it. Throughout the spring of 2015, two bills to reauthorize NCLB were simultaneously underway in both chambers of Congress. On July 8, 2015, Republicans—but no Democrats—in the House passed the Student Success Act (SSA), sponsored by Representative John Kline (R-MN), by a small margin of 218 to 213. The following week on July 16, 2015, the Senate passed the Every Child Achieves Act (ECAA), co-sponsored by Senators Lamar Alexander (R-TN) and Patty Murray (D-WA), with strong bipartisan support (81 to 17). While these acts differ substantively, both would retain requirements for annual assessments, but eliminate the use of adequate yearly progress (AYP) whose increasing annual proficiency targets have become more difficult for schools to meet thus relegating many schools to PI. And unlike the federally-mandated sanctions attached to schools "in need of improvement" under NCLB, both the SSA and ECCA would allow states to decide what they do with students' test results. Thus, each bill would reduce federal oversight of public K-12 education and offers states autonomy in establishing their own accountability systems. Nothing is final yet. At the time I am writing this (August 2015), members of House and Senate must still meet in conference to decide on a final bill before sending it to the White House for approval.

The Research-Policy Nexus Revisited

In Chapter 1 I discussed several mechanisms through which past policies—particularly NCLB—became laws. In 2015, as in 2001, Congress seems poised to redesign federal K-12 education policy. While many of the individual actors differ in 2015, many of the same organizations are back at the policy table using the same tools they did 14 years ago—letters, congressional testimony, and scholarly research. In this section I discuss how business leaders

and civil rights advocates are again employing such tactics to persuade Congress to draft a law that includes accountability provisions that they believe would benefit all students. (While I limit this discussion to the topic of accountability, these are not the only provisions being debated with respect to recent NCLB reauthorization bills.[89]) I also discuss how my own research findings could inform such policymaking pursuits.

As in 2001, business leaders still strongly support annual testing, public reporting disaggregated by student subgroups and accountability provisions because each one is perceived relationship to economic development. As John Engler, president of Business Roundtable, put it in a letter to Senators Alexander and Murray, "Today's students are tomorrow's leaders, technical experts and valuable employees" (2015). Civil rights organizations view these particular elements of NCLB as useful measures that have successfully focused attention on the underachievement of historically disadvantaged students and created political pressure to improve the schools serving these students (see Haycock, 2015). Since both the SSA and the ECCA require states to identify struggling schools, but neither bill requires states to intervene in schools that fail to meet the state-set goals, both businesses and civil rights groups are particularly concerned that any upcoming reauthorization will allow states to swing too far away from principles of accountability established under NCLB (see Engler, 2015; Leadership Conference on Civil and Human Rights, 2015; National Council of La Raza, 2015; NAACP Legal Defense Fund, 2015). Kati Haycock, president of The Education Trust, a research-based civil rights group, explains,

> [I]f we have learned anything from experience with past iterations of federal law, it is that many —if not most—states will do the absolute minimum required by that law. So, if federal law allows states—when they decide which schools need attention and action—to turn a blind eye to schools that are not making progress

[89] For example, in addition to one hearing devoted to testing and accountability, in January and February of 2015 the Senate HELP committee held hearings on how to better support teachers and school leaders and how to better meet the needs of students through the use of innovative practices.

> toward college- and career-ready graduation for some or all groups of children, then most states will do exactly that (2015).

In response to the Senate bill's omission of some form of intervention in failing schools, a coalition of businesses and civil right groups sent a joint letter to the Senate HELP Committee lobbying senators to ensure that a new law will require annual assessments, public reporting of test results by student subgroups, and "accountability systems that expect faster improvement for the groups of children who have lagged behind, and prompt action when any group of students underperforms" (Engler et al., 2015).[90] In a separate letter to senators, Sherrilyn Ifill, president of the NAACP Legal Defense and Education Fund, echoed these sentiments, warning that the current version of ECCA "fundamentally … disarms the federal government's ability to hold states accountable to ensure the provision of quality educational opportunities for all students—undermining the very intent of ESEA, and all attendant bills promoting federal enforcement of equal educational opportunity" (2015, 2).

Congress is faced with more than impassioned pleas to retain ESEA's original intent of helping schools better serve disadvantaged students. Some individuals are using high-quality scholarly research to bolster their arguments for including strong accountability measures in the new law as a way of fulfilling ESEA's purpose. In his testimony before the Senate HELP Committee early this year, Wade Henderson (2015), President and CEO of The Leadership Conference on Civil and Human Rights, cited research conducted by The Education Trust (2015) showing that achievement among black, Latino, and low-income students has improved in the wake of NCLB's federal requirements for annual testing, full public reporting, and accountability

[90] The coalition includes the Leadership Conference on Civil and Human Rights, The Education Trust, National Council of La Raza, Business Roundtable, National Center for Learning Disabilities, Council of Parent Attorneys and Advocates, Democrats for Education Reform, and the U.S. Chamber of Commerce.

for the results of every group of children.[91] In the same Senate hearing, Dr. Martin R. West, an associate professor in the Harvard Graduate School of Education, cited several high-quality scientific studies as evidence that accountability systems boost student achievement (see Carnoy and Loeb, 2002; Hanushek and Raymond, 2005; Wong, Cook and Steiner, 2009). In one such study, based on a nation-wide sample of students' scores on the National Assessment of Educational Progress, economists Thomas Dee and Brian Jacob (2011) found that "accountability systems brought about by NCLB generated large and broad gains in the math achievement of fourth graders," gains which were larger for black, Hispanic, and low-income students relative to whites (442). In reference to these studies and others, West concluded in his congressional testimony that "the best available evidence indicates that NCLB has generated improvements in student learning … among the nation's lowest-performing students—precisely those on whom the law was focused" (2015, 4).

Such evidence is consistent with my finding that an increasing number of California schools have gotten stuck in Program Improvement. Although more schools have failed to make performance benchmarks under NCLB and so entered PI, they have increased their levels of performance since NCLB's implementation. For example, between 2004 and 2012 the percentage of all students who made math proficiency targets increased by 17 percentage points (from 42 to 59 percent). Moreover, disadvantaged student subgroups improved more over this time period than their white counterparts. White students' improvement in meeting math proficiency targets was equal to the average improvement for all students (17 percentage points).

[91] As have other civil rights advocates, Henderson urged senators to craft a law requiring states to enforce "remedies … be implemented in any school where the school as a whole, or any subgroup of students, have not met the annual achievement and graduation targets or where achievement gaps persist" (2015, 6).

But improvements for black, Filipino, Hispanic, Pacific Islander, low-income, English-learning, and disabled students were all above that average (ranging from 19 to 21 percentage points).

Because NCLB's accountability provisions have been linked to better performance by disadvantaged students (see Ushomirsky et al., 2004 and 2015; Hall and Shouten, 2005; Neal and Schanzenburg, 2007; Kober, Chudowsky, and Chudowsky, 2008), business leaders and civil rights advocates argue that accountability is a necessary element of the future law. However, they agree with many educators and members of congress that basing accountability on whether schools meet proficiency targets on standardized tests, as dictated by AYP requirements under NCLB, is deeply flawed and must be changed (see, for example, Business Roundtable, 2013). Indeed, any aspect of the law that requires all students to be proficient in any subject but makes it harder for schools serving more diverse student bodies to do so is problematic in terms of ensuring educational equity (see Kim and Sunderman, 2005). Furthermore, as my own research on California schools shows, more diverse schools that also had lower-SES students were less likely than their more demographically homogenous and higher-SES counterparts to make AYP over consecutive years and thus more likely to become entangled in NCLB's punitive improvement process with little chance of escape.

In a recent post on Congress's blog, *The Hill*, economists Dan Goldhaber and Morgan Polikoff (2015) suggest that one way around the problems that AYP requirements pose to schools "is to use *growth* in student achievement as the primary test-based measure of student performance, not rates of student proficiency." Currently most states' NCLB waivers attempt to do just that by measuring whether students improve instead of whether they meet performance targets, thereby officially side-stepping AYP requirements.[92] If a state's NCLB wavier plan

[92] Growth in student achievement, as used in current value-added methods, isn't the same as annual increases in percent of students who pass tests. The former measures how the same students perform over

reflects how it would go about building its own accountability system, then we might expect states to use students' annual achievement gains as one measure of school performance.

My research supports the idea of basing accountability systems on students' progress. Measuring students' improvement rather than their ability, or inability, to meet performance targets is a fairer and more reasonable way of measuring school performance over time. Yet I caution that such an approach may be too simplistic. Indeed, my findings in Chapter 4 suggest that relying on students' improvement alone to measure school performance actually *worked against* high-performing schools that may have had trouble increasing their already-high passing rates. For example, if California schools were required to have made any improvement in their math and reading performance rather than having to meet performance targets in those subjects, even more schools would have ultimately been assigned to PI than were under NCLB's original rules. Specifically, schools would have been 1.6 times more likely to enter PI under an improvement rule—a probability of .23—compared to NCLB's rules of meeting performance targets—a probability of .14.

To avoid punishing high-achieving schools, a better solution is to incorporate both performance targets and students' improvement into measures of school performance. Indeed, my findings reported in Chapter 4 showed that compared to using NCLB's performance targets or an improvement rule, incorporating both targets and improvement (what I have called a target-improvement rule) in identifying failing schools would have meant that slightly fewer California schools would have entered PI (11 percent versus 14 percent, or roughly 253 schools between 2003-04 and 2011-12). In addition, schools already in PI would have been between 12 and 23

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time (e.g., fourth graders in 2010 and fifth graders in 2011) while the latter measures how different students perform at the same point in their schooling (fourth graders in 2010 and fourth graders in 2011). Yet compared to AYP measures, the intent of both these approaches focuses on progress over time rather than meeting targets at a given point in time.

percent less likely to advance to more punitive stages and between 1.6 to 4.8 times more likely to exit PI from any stage.

My findings also indicate that having an accountability system that takes into account both absolute performance levels and improvements in performance would reduce inequalities in the probabilities of moving into and through PI for schools with very different levels of SES and diversity. For example, under NCLB the difference in the probabilities of entering PI between the most advantaged and disadvantaged schools was .18. Under a target-improvement rule this difference dropped to .13. Likewise, when averaged across all PI stages the difference in staying in the same PI stage between the most advantaged and most disadvantaged schools was .26 under NCLB and .23 under target-improvement. Only when comparing probabilities of exiting PI were the most advantaged and disadvantaged schools more equal under NCLB (a difference of .04) than under target-improvement (a difference of .09). However, it is important to note that the probabilities of exiting PI from any stage are notably higher under target-improvement (see **Tables 4.5** and **4.6**). So although more of both the most advantaged and most disadvantaged schools would exit PI under a target-improvement rule, inequalities in probabilities of exiting PI between these two types of schools would be greater under that rule.

When using long-term predictions to assess inequality in PI outcomes under different accountability regimes, I found that under NCLB rules more than half of schools would be in the highest stage of PI in just five years, facing dramatic changes to their schools' structures and governances. After that same time, less than a quarter of schools would be in that most punitive stage of PI under a target-improvement rule.

Of course, the particulars of my analysis on changing the requirements of NCLB may be of little predictive value since they are based on calculating students' improvement within the

structure of NCLB's AYP requirements and PI sanctions. And there is every indication that this structure won't exist in the next version of ESEA. Still, in general, my finding that schools are more likely to prove successful within a structure that rewards *either* meeting targets *or* making progress toward those targets may prove useful for states should they be required under a new law to build their own accountability systems that identify struggling schools.

Paradoxically, despite general discontentment with NCLB and its one-size-fits-all approach to improving schools, states are better positioned to craft their own accountability systems largely because of the NCLB mandates. For over a decade NCLB has required schools to collect and publish an unprecedented amount of data on schooling outcomes, data that were virtually non-existent before NCLB's implementation. For example, before NCLB the achievement gaps between student subgroups revealed by annual assessments were easily ignored—and even invisible. With their current data systems, states are now better prepared than they were in 2001 to design more refined and innovative accountability regimes than the one dictated under NCLB.

The volume of data NCLB produced has allowed researchers to conduct high-quality research on various aspects of NCLB. Some research has identified aspects of the law that should be retained, for example, annual assessments to measure student achievement and public reporting by student subgroup to reveal achievement gaps. And other research, as well as my own, has revealed which aspects should be eliminated, such as tying punitive sanctions to schools' student compositions and their ability to meet arbitrary performance targets. If a new law emerges from the current debates over NCLB, it is likely to be the partly the result of scholarly research having ultimately reached policymakers, just as was the case in 2001. Thus the reciprocal relationship between research, public policy, and inequality continues.

The Future of NCLB

What will the nation's future federal K-12 education policy look like? As in 2001, the result—whatever is it—will likely depend partly on who is at the policymaking table. Some of the same non-congressional actors and organizations that influenced the design of NCLB are also involved this time around. Most—but not all—of them are operating with the same motivations and using the same tools to influence policy as in 2001. Yet many of the key political players who helped create NCLB are gone. Bush's presidency ended in 2009, the same year that Senator Kennedy died. Senator Gregg retired from Congress in 2010. Representative Miller retired in early 2015. Representative John Boehner, the only original author of NCLB still serving in Congress, has been relatively quiet regarding the current reauthorization bills.

That President George W. Bush, his staffers, and all four congressional actors crucial to NCLB's enactment are not involved in drafting the new legislation illustrates one potential problem when policymakers elicit input as they reauthorize, amend or end government policy—the individuals making decisions are not the same. This is especially likely to be the case when a lot of time passes between events, as is often the case in the public policy setting. On the one hand, this change in actors could mean a complete reversal of policy. This was certainly the case with school desegregation policy in that the judges who dismantled busing were not the same as the judges who ordered it. But in the case of NCLB's reauthorization a *volte*-face is unlikely. Due to mounting frustrations voiced by nearly all invested parties, including the voting public, a new law will likely dramatically reduce the federal role in education by eliminating federal mandates used to determine whether schools are adequately educating their students and punishing them when they fail to do so. But given the influence that business leaders, civil rights advocates, and researchers had over Congress during NCLB's design, their involvement in the

policymaking process this time around, and the congressional desire for bipartisan support, a new law will likely retain key accountability elements requiring states to administer annual assessments, publically report results by student subgroups, and ensure that states take action when schools are found not to meet state-set standards. Only time will tell whether the law will include punitive and ineffective sanctions. Given the current momentum in Congress to overhaul NCLB, we may not have to wait long to find out.

BIBLIOGRAPHY

Achenbaum, W. Andrew. 2001. "Policy, Aging, and the Graying of Society." Pp. 119-136 in *Social Science and Policy-Making*, edited by David L. Featherman and Maris A. Vinovskis. Ann Arbor, Michigan: University of Michigan Press.

Alexander v. Holmes County Board of Education, 396 U.S. 19 (1969).

Anderson, Lee. 2007. *Congress and the Classroom: From the Cold Ward to No Child Left Behind*. University Park, PA: Pennsylvania State University Press.

Applebome, Peter. 1996. "Business Leaders and Governors Gather to Map Route to Elusive New Era of Education." *New York Times*, March 26. Retrieved June 2, 2015 (http://www.nytimes.com/1996/03/26/us/governors-business-leaders-gather-map-route-elusive-new-era-education.html).

Ballou, Dale and Michael Podgursky. 1998. "The Case Against Teacher Certification." *The Public Interest* 132(Summer):17-29.

Barth, Patte, Kati Kaycock, Hilda Jackson, Karen Mora, Pablo Ruiz, Stephanie Robinson, and Amy Wilkins. 1999. "Dispelling the Myth: High Poverty Schools Exceeding Expectations." Washington D.C.: The Education Trust.

Baumgartner, Frank and Bryan Jones. 1993. *Agendas and Instability in American Politics*. Chicago, IL: University of Chicago Press.

Berends, Mark and Roberto Penaloza. 2010. "Increasing Racial Isolation and Test Scores Gaps in Mathematics: A 30-year Perspective." *Teachers College Record* 112(2):978-1007.

Boehner, John. "Conference Report on H.R. 1, No Child Left Behind Act of 2001." *Congressional Record* 147(173):H10104. December 13, 2001. Washington D.C.: U.S. Government Publishing Office. Retrieved August 2, 2015 (http://www.gpo.gov/fdsys/pkg/CREC-2001-12-13/html/CREC-2001-12-13-pt2-PgH10082-2.htm).

Borman, Kathryn, Tamela McNulty Eitle, Deanna Michael, David Eitle, Reginald Lee, Larry Johnson, Deirdre Cobb-Roberts, Sheman Dorn and Barbara Shircliffe. 2004. "Accountability in a Postdesegregation Era: The Continuing Significance of Racial Segregation in Florida's Schools." *American Educational Research Journal* 41(3):605-631.

Borman, Geoffery and Maritza Dowling. 2010. "Schools and Inequality: A Multilevel Analysis of Coleman's Equality of Educational Opportunity Data." *Teachers College Record* 112(5):1201-1246.

Brown v. Board of Education, 347 U.S. 483 (1954). Retrieved June 14, 2015 (http://caselaw.lp.findlaw.com/scripts/getcase.pl?court=USandvol=347andinvol=483).

Brown v. Board of Education II, 349 U.S. 294 (1955). Retrieved June 14, 2015 (http://caselaw.lp.findlaw.com/scripts/getcase.pl?court=USandvol=349andinvol=294).

Buchmann, Claudia, Thomas DiPrete, and Anne McDaniel. 2008. "Gender Inequalities in Education." *Annual Review of Sociology* 34:319-37.

Bush, George W. "Remarks at a Swearing-In Ceremony for Margaret Spellings as Secretary of Education." *Public Papers of the Presidents of the United States: George W. Bush*, Book I:111-112. January 31, 2005. Washington, D.C.: U.S. Government Publishing Office. Retrieved July 7, 2015 (http://www.gpo.gov/fdsys/pkg/PPP-2005-book1/pdf/PPP-2005-book1-doc-pg111.pdf).

Business Roundtable. "Principles for Reauthorization of the Elementary and Secondary Education Act." July 2013. Washington, D.C. Retrieved July 21, 2015 (http://businessroundtable.org/sites/default/files/Business_Leaders_Release_Principles_for_Reauthorizing_ESEA.pdf).

California Department of Education. "2011 Adequate Yearly Progress Report: Information Guide." August, 2011. Sacramento, CA. Retrieved September 20, 2013 (http://www.cde.ca.gov/ta/ac/ay/).

Carnoy, Martin and Suzanna Loeb. 2002. "Does External Accountability Affect Student Outcomes? A Cross-state Analysis." *Educational Evaluation and Policy Analysis* 24(4):305–331.

Chen, Grace. 2015. "Public School Review Diversity Report: Which States Have the Most Diverse Public Schools." *Public School Review,* March 30. Retrieved August 3, 2015 (http://www.publicschoolreview.com/blog/public-school-review-diversity-report-which-states-have-the-most-diverse-public-schools).

Clark, Kenneth B. 1950. "Effect of Prejudice and Discrimination on Personality Development: Confidential Draft for the Use of the Technical Committee on Fact Finding."

Clark, Kenneth B. 1960. "The Desegregation Cases: Criticism of the Social Scientist's Role." *Villanova Law Review* 5(2):224-240.

Clayton, Jennifer. 2010. "Changing Diversity in U.S. Schools: The Impact on Elementary Student Performance and Achievement." *Education and Urban Society* 43(6):671-695.

Coleman, James. 1975. "Racial Segregation in the Schools: New Research with New Policy Implications." *The Phi Delta Kappan* 57(2):75-78.

Coleman, James, Ernest Q. Campbell, Carol J. Hobson, James McPartland, Alexander M. Mood, Frederic D. Weinfeld, and Robert L. York. 1966. *Equality of Educational Opportunity*. Washington D.C.: U.S. Department of Health, Education, and Welfare.

Coleman, James, Sara Kelly, and John Moore. 1975. *Trends in School Segregation, 1968-1973*. Washington, D.C.: Urban Institute.

Darling-Hammond, Linda, 1990. "Teaching and Knowledge: Policy Issues Posed by Alternate Certification for Teachers." *Peabody Journal of Education* 67(3):123-54.

Darling-Hammond, Linda. 2007. Race, Inequality and Educational Accountability: The Irony of No Child Left Behind." *Race, Ethnicity, and Education* 10(3):245-60.

Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579 (1993).

Dee, Thomas. 2004. "Teachers, Race, and Student Achievement in a Randomized Experiment." *The Review of Economics and Statistics* 86(1):195-210.

Dee, Thomas and Brian Jacob. 2011. The Impact of No Child Left Behind on Student Achievement. *Journal of Policy Analysis and Management* 30(3):418–446.

Dillon, Sam. 2011. "Overriding a Key Education Law." *New York Times*. August 8. Retrieved July 06, 2015 (http://www.nytimes.com/2011/08/08/education/08educ.html?_r=1).

Duncan, Arne. "No Child Left Behind: Early Lessons from State Flexibility Waivers." Congressional Testimony before Senate Committee on Health, Education, Labor, and Pensions. February 7, 2013. Washington, D.C.: U.S. Government Publishing Office. Retrieved August 5, 2015 (http://www.gpo.gov/fdsys/pkg/CHRG-113shrg78922/html/CHRG-113shrg78922.htm).

Duncan, Arne. "U.S. Education Secretary Arne Duncan Calls for Strong Education Law the Protects All Students, Ensures High-Quality Preschool, Supports Bold State and Local Innovation." Washington, D.C.: U.S. Department of Education. January 12, 2015. Retrieved August 6, 2015 (http://www.ed.gov/news/press-releases/us-education-secretary-arne-duncan-calls-strong-education-law-protects-all-students-ensures-high-quality-preschool-supports-bold-state-and-local-innovation).

Dunn, Joshua and Martin West. 2008. "Calculated Justice: Education Research and the Courts." Pp. 155-176 in *When Research Matters: How Scholarship Influences Educational Policy*, edited by Frederick M. Hess. Cambridge, MA: Harvard Education Press.

The Education Trust. "Measured Progress: Achievement Rises and Gaps Narrow, But Too Slowly." October, 2004. Washington, D.C. Retrieved July 20, 2015 (http://edtrust.org/resource/measured-progress-2/).

The Education Trust. "Trends in Achievement and Attainment Since We've Had Annual Testing, Transparency, and Serious Accountability for All Groups of Students." March 12, 2015. Washington, D.C. Retrieved July 20, 2015 (http://edtrust.org/resource/trends-in-achievement-and-attainment-since-weve-had-annual-testing-transparency-and-serious-accountability-for-all-groups-of-students/).

Engler, John. "Senate Letter on ESEA Reauthorization." July 16, 2015. Washington, D.C.: Business Roundtable. Retrieved July 20, 2015 (http://businessroundtable.org/resources/senate-letter-esea-reauthorization).

Engler, John, Kati Haycock, Wade Henderson, R. Bruce Josten, Denise Marshall, Janet Murguia, James Wendorf, and Joe Williams. "ESEA Core Coalition Letter." February 2, 2015. Washington, D.C.: The Education Trust. Retrieved July 20, 2015 (http://edtrust.org/press_release/congress-keep-the-backbone-of-esea-strong/).

Featherman, David and Maris Vinovskis. 2001. “In Search of Relevance to Social Reform and Policy-Making.” Pp. 1-15 in *Social Science and Policy-Making*, edited by David L. Featherman and Maris A. Vinovskis. Ann Arbor, Michigan: University of Michigan Press.

Ferguson, Ronald. 1991. “Paying for Public Education: New Evidence on How and Why Money Matters,” *Harvard Journal on Legislation* 28(Summer):465-98.

Fischer, Claude, Michael Hout, Martin Sanchez Jankowski, Samuel R. Lucas, Ann Swindler, and Kim Voss. 1996. *Inequality By Design: Cracking the Myth of the Bell Curve*. Princeton, NY: Princeton University Press.

The Fordham Foundation. “The Teachers We Need and How to Get More of Them: A Manifesto.” April 20, 1999. Washington, D.C. Retrieved May 17, 2015 (http://edexcellence.net/publications/teachersweneed.html).

Frist, William. “Education.” *Congressional Record* 147(54):S3935. April 26, 2001. Washington D.C.: U.S. Government Publishing Office. Retrieved August 16, 2015 (http://www.gpo.gov/fdsys/pkg/CREC-2001-04-26/html/CREC-2001-04-26-pt1-PgS3934-3.htm).

Garfinkel, Irwin, Lee Rainwater, and Timothy M. Smeeding. 2010. “A Re-examination of Welfare States and Inequality in Rich Nations: How In-kind Transfers and Indirect Taxes Change the Story.” *Journal of Policy Analysis and Management* 25(4):897-919.

General Electric Co. v. Joiner, 522 U.S. 136 (1997).

Gilman, Michelle. 2014. “A Court for the One Percent: How the Supreme Court Contributes to Economic Inequality. *Utah Law Review* 2014(3):*389-463.*

Goals 2000: Educate America Act, P.L. 103-227 (1994).

Goldhaber, Dan and Dominic Brewer. 1997. “Evaluating the Effect of Teacher Degree Level on Educational Performance.” Pp. 197-2010 in *Developments in School Finance 1996*, edited by W. Fowler. Washington, DC: National Center for Education Statistics.

Goldhaber, Dan and Dominic Brewer. 2000. “Does Teacher Certification Matter? High School Teacher Certification Status and Student Achievement.” *Educational Evaluation and Policy Analysis* 22(2):129-145.

Goldhaber, Dan and Morgan Polikoff. 2015. “History and Logic to the Rescue in Reauthorizing No Child Left Behind.” *The Hill,* March 23. Retrieved July 28, 2015 (http://thehill.com/blogs/congress-blog/education/236457-history-and-logic-to-the-rescue-in-reauthorizing-no-child-left).

Green v. County School Board of New Kent County, 391 U.S. 430 (1968).

Greenwald, Rob, Larry Hedges, and Richard Laine. 1996. “The Effect of School Resources on Student Achievement.” *Review of Educational Research* 66(3):361-396.

Greenwell, Raymond, Nathan Ritchey, and Margaret Lial. 2003. "Markov Chains." In *Calculus with Applications for the Life Sciences.* Boston, MA: Addison Wesley. Retrieved May 03, 2015 (http://www.aw-bc.com/greenwell/markov.pdf).

Gregg, Judd. "No Child Left Behind Act of 2001—Conference Report." *Congressional Record*, 147(175):S13326. December 17, 2001. Washington D.C.: U.S. Government Publishing Office. Retrieved August 01, 2015 (http://www.gpo.gov/fdsys/pkg/CREC-2001-12-17/html/CREC-2001-12-17-pt1-PgS13322-3.htm).

Grodsky, Eric, John Robert Warren, and Erika Felts. 2008. "Testing and Social Stratification in American Education." *Annual Review of Sociology* 34:385-404.

Grusky, David B., Doug McAdam, Rob Reich, and Debra Satz. 2013. "Occupy the Future." Pp. 3-9 in *Occupy the Future*, edited by David Grusky, Doug McAdam, Rob Reich, and Debra Satz. Cambridge, MA: Boston Review.

Hacker, Jacob and Paul Pierson. 2010. "Winner-Take-All Politics: Public Policy, Political Organization, and the Precipitous Rise of Top Incomes in the United States." *Politics and Society* 38(2):152-204.

Hall, Daria. 2013. "A Step Forward or a Step Back? State Accountability in the Waiver Era." Washington, D.C.: The Education Trust. Retrieved July 14, 2015 (http://edtrust.org/resource/a-step-forward-or-a-step-back-state-accountability-in-the-waiver-era/).

Hall, Daria and Fredreka Schouten. 2005. "Stalled in Secondary: A Look at Student Achievement Since the No Child Left Behind Act." Washington, D.C.: The Education Trust. Retrieved July 14, 2015 (http://edtrust.org/resource/stalled-in-secondary/).

Hanushek, Eric. 2006a. "Teacher Quality." Pp. 1051-1078 in *Handbook of Economics and Education, Volume 2*, edited by Eric Hanushek and Finis Welch. Burlington, MA: Elsevier B.V.

Hanushek, Eric. 2006b. "School Resources." Pp. 865-908 in *Handbook of Economics and Education, Volume 2*, edited by Eric Hanushek and Finis Welch. Burlington, MA: Elsevier B.V.

Hanushek, Eric and Margaret Raymond. 2002. "Improving Educational Quality: How Best to Evaluate our Schools." Paper prepared for *Education in the 21st Century: Meeting the Challenges of a Changing World*. Boston MA: Federal Reserve Bank of Boston.

Hanushek, Eric and Margaret Raymond. 2005. Does School Accountability Lead to Improved Student Performance? *Journal of Policy Analysis and Management* 24(2):297–327.

Harris, Douglas. 2006. "Lost Learning, Forgotten Promises: A National Analysis of School Racial Segregation, Student Achievement, and 'Controlled Choice' Programs." Washington, D.C.: Center for American Progress.

Hart, Peter and Robert Teeter. 2001. "A Measured Response: Americans Speak on Education Reform." Princeton, NJ: Educational Testing Service. Retrieved July 14, 2015 (https://www.ets.org/Media/Education_Topics/pdf/2001_executive_report.pdf).

Haycock, Kati. 1998. “Good Teaching Matters: How Well-Qualified Teachers Can Close the Gap.” *Thinking K-12* 3(2):1-15. Washington D.C.: The Education Trust.

Haycock, Kati. “Testimony to the U.S. Senate Committee on Health, Education, Labor, and Pensions.” February 7, 2013. Washington, D.C.: The Education Trust. Retrieved June 20, 2015 (http://edtrust.org/press_release/testimony-to-the-u-s-senate-committee-on-health-education-labor-and-pensions/).

Haycock, Kati. “Statement from The Education Trust on the Every Child Achieves Act.” April 7, 2015. Washington D.C.: The Education Trust. Retrieved June 20, 2015 (http://edtrust.org/press_release/statement-from-the-education-trust-on-the-every-child-achieves-act/).

Hemphill, Cadelle and Alan Vannerman. 2011. “Achievement Gaps: How Hispanic and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational Progress.” Washington D.C.: National Center for Education Statistics. Retrieved July 12, 2015 (https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011459).

Henderson, Wade. “Statement of Wade Henderson, President and CEO The Leadership Conference on Civil and Human Rights Hearing on Reauthorization of the Elementary and Secondary Education Act.” January 21, 2015. Washington D.C.: U.S. Senate Committee on Health, Education, Labor, and Pensions. Retrieved June 20, 2015 (http://www.help.senate.gov/imo/media/doc/Henderson6.pdf).

Henry, Melanie. 2004. “No Child Left Behind? Educational Malpractice Litigation for the 21st Century.” *California Law Review* 92(4)1117-1171.

Hess, Frederick M. 2008. “Conclusion: Education Research and Public Policy.” Pp. 239-256 in *When Research Matters: How Scholarship Influences Educational Policy*, edited by Frederick M. Hess. Cambridge, MA: Harvard University Press.

Hochschild, Jennifer. 2003. “Rethinking Accountability Politics.” Pp. 107-123 in *No Child Left Behind? The Politics and Practice of School Accountability*, edited by Paul Peterson and Martin West. Washington D.C.: Brookings Institution Press.

Horowitz, Donald L. 1977. *The Courts and Social Policy*. Washington, D.C.: Brookings Institution Press.

Ifill, Sherrilyn. “Every Child Achieves Act Falls Short of Civil Rights Commitment of Original ESEA.” July 15, 2015. Washington, D.C.: NAACP Legal Defense and Educational Fund. Retrieved August 4, 2015 (http://www.naacpldf.org/press-release/every-child-achieves-act-falls-short-civil-rights-commitment-original-esea).

Improving America’s Schools Act of 1994, P.L. 103-382 (1994).

Ingersoll, Richard M. 1995. “Schools and Staffing Survey: Teacher Supply, Teacher Qualifications, and Teacher Turnover, 1990-1991.” Washington, D.C.: U.S. Department of Education, National Center for Education Statistics.

Jerald, Craig D. 2001. “Real Results, Remaining Challenges: The Story of Texas Education Reform.” Washington D.C.: Business Roundtable and The Education Trust.

Jones, Jeffery. 2011. “Americans Lean Toward Revising No Child Left Behind: One in Six Believe Law Should Be Eliminated.” *The Gallup Poll*, February 7. Retrieved August 1, 2015 (http://www.gallup.com/poll/145952/Americans-Lean-Toward-Revising-No-Child-Left-Behind.aspx?utm_source).

Kain John F. and Kraig Singleton. 1996. “Equality of Educational Opportunity Revisited.” *New England Economic Review* May/June:87-112.

Kane, Thomas and Douglas Staiger. 2003. “Unintended Consequences of Racial Subgroup Rules.” Pp. 152-176 in *No Child Left Behind?: The Politics and Practice of School Accountability*, edited by Paul E. Peterson and Martin R. West. Washington D.C.: Brookings Institution Press.

Karen, David. 2005. “No Child Left Behind: Sociology Ignored!” *Sociology of Education* 78 (2):165-169.

Kennedy, Edward. 2001a. “The Elementary and Secondary Education Act.” *Congressional Record*, 147(52):S3818. April 24, 2001. Washington D.C.: U.S. Government Publishing Office. Retrieved July 29, 2015 (http://www.gpo.gov/fdsys/pkg/CREC-2001-04-24/html/CREC-2001-04-24-pt1-PgS3817.htm).

Kennedy, Edward. 2001b. “No Child Left Behind Act of 2001—Conference Report.” *Congressional Record*, 147(176):S13419. December 18, 2001. Washington D.C.: U.S. Government Publishing Office. Retrieved July 29, 2015 (http://www.gpo.gov/fdsys/pkg/CREC-2001-12-18/html/CREC-2001-12-18-pt1-PgS13365-8.htm)/

Kennedy, Edward. 2008. “How to Fix ‘No Child.’” *Washington Post*, January 7. Retrieved July 29, 2015 (http://www.washingtonpost.com/wp-dyn/content/article/2008/01/06/AR2008010601828.html).

Kim, James and Gail Sunderman. 2005. “Measuring Academic Proficiency Under the No Child Left Behind Act: Implications for Education Equity.” *Educational Researcher* 34(8):3-13.

Kingdon, John. 1995. *Agendas, Alternatives, and Public Policies, 2nd Edition*. New York, NY: Longman.

Kober, Nancy, Naomi Chudowsky, and Victor Chudowsky. 2008. “Has Student Achievement Increased Since 2002? State Test Scores Trends Through 2006-07.” Washington D.C.: Center on Education Policy.

Koski, William and Rob Reich. 2006. "When 'Adequate' Isn't: The Retreat From Equity in Educational Law and Policy and Why it Matters." *Emory Law Journal* 56(3):545-617.

Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999).

Lankford, Hamilton, Susanna Loeb, and James Wyckoff. 2002. "Teacher Sorting and the Plight of Urban Schools: A Descriptive Analysis." *Educational Evaluation and Policy Analysis* 24(1):37-62.

Leadership Conference on Civil and Human Rights. "Accountability." April 2000. Washington, D.C. Retrieved July 28, 2015 (http://web.archive.org/web/20010423202837/http://www.civilrights.org/policy_and_legislation/pl_issues/education/accountability.html).

Leadership Conference on Civil and Human Rights. "Keep the Promise of ESEA: Oppose the Every Child Achieves Act, S.1177." July 16, 2015. Washington, D.C. Retrieved July 28, 2015 (http://www.civilrights.org/advocacy/letters/2015/keep-the-promise-of-esea.html?referrer=https://www.google.com/).

Leithwood, Kenneth and Doris Jantzi. 2009. "A Review of Empirical Evidence About School Size Effects: A Policy Perspective." *Review of Educational Research* 79(1):464-490.

Linn, Robert L. 2005. "Conflicting Demands of No Child Left Behind and State Systems: Mixed Messages about School Performance." *Educational Policy Analysis Archives* 13(33):1-20.

Linn, Robert, Kati Haycock, Ross Wiener, and John Chubb. 2005. "Do We Need to Repair the Monument? Debating the Future of No Child Left Behind." *Education Next* 4(2):9-19.

Long, Scott and Jeremy Freese. 2014. *Regression Models for Categorical Dependent Variables Using Stata, 3rd edition*. Stata Press. College Station, Texas.

Manna, Paul and Michael Petrilli. 2008. "Double Standard? 'Scientifically-Based Research' and the No Child Left Behind Act" Pp. 63-88 in *When Research Matters: How Scholarship Influences Educational Policy*, edited by Frederick M. Hess. Cambridge, MA: Harvard Education Press.

McGrady, Patrick and John Reynolds. 2013. Racial Mismatch in the Classroom: Beyond Black-White Differences. *Sociology of Education* 86(1):3-17.

Metcalf, Stephen. 2002. "Reading Between the Lines: The New Education Law is a Victory for Bush—and for his Corporate Allies." *The Nation*, January 10. Retrieved July 14, 2015 (http://www.thenation.com/article/reading-between-lines/).

Milliken v. Bradley, 418 U.S. 717 (1974).

Mitchell, Alison. 2000. "The 2000 Campaign: The Texas Governor; Response Polite as Bush Courts the N.A.A.C.P." *New York Times*, July 11. Retrieved July 14, 2015 (http://www.nytimes.com/2000/07/11/us/the-2000-campaign-the-texas-governor-response-polite-as-bush-courts-the-naacp.html

Morrill Act of 1862. P.L. 37-108 (1862).

NAACP Legal Defense Fund. "LDF Letter to Senators Emphasizing Federal Role in Ensuring Equal Educational Opportunity." July 8, 2015. New York, NY. Retrieved July 28, 2015 (http://www.naacpldf.org/document/ldf-letter-senators-emphasizing-federal-role-ensuring-equal-educational-opportunity).

National Center for Education Statistics. 2013. "Table 3. Number of Operating Public Elementary and Secondary Schools, by School Type, Charter, Magnet, Title I, and State or Jurisdiction: School Year 2011-12." Retrieved August 3, 2015 (https://nces.ed.gov/pubs2013/2013441/tables/table_03.asp).

National Commission on Excellence in Education. 1983. *A Nation at Risk. The Imperative for Education Reform.* Washington D.C.: U.S. Government Printing Office.

National Commission on Teaching and America's Future. 1996. *What Matters Most: Teaching for America's Future.* New York, NY.

National Council of La Raza. "NCLR Applauds Bipartisan Effort On Education Bill; Remains Concerned About Accountability." April 17, 2015. Washington, D.C. Retrieved July 28, 2015 (http://www.nclr.org/index.php/about_us/news/news_releases/nclr_applauds_bipartisan_effort_on_education_bill_remains_concerned_about_accountability/).

National Defense Education Act of 1958, P.L. 85-864 (1958).

National Research Council. 2012. *Using Science as Evidence in Public Policy.* Committee on the Use of Social Science Knowledge in Public Policy, edited by Kenneth. Prewitt, Thomas Schwandt, and Miron Straf. Washington, DC: The National Academies Press.

Neal, Derek and Diane Schanzanbech. 2007. "Left Behind by Design: Proficiency Counts and Test-Based Accountability. *National Bureau of Economic Research* Working Paper 13293.

Newport, Frank. 2009. "Americans Doubt Effectiveness of 'No Child Left Behind.'" *The Gallup Poll,* August, 19. Retrieved July 28, 2015 (http://www.gallup.com/poll/122375/Americans-Doubt-Effectiveness-No-Child-Left-Behind.aspx?utm_source).

No Child Left Behind Act of 2001, P.L. 107-110 (2002).

Novak, John R. and Bruce Fuller. 2003. "Penalizing Diverse Schools? Similar Test Scores, But Different Students, Bring Federal Sanctions." December. Berkeley, CA: Policy Analysis for California Education.

Orfield, Gary. 1979. “Research, Politics, and the Antibusing Debate.” *Law and Contemporary Problems* 42(4):141-173

Orfield, Gary and Susan Eaton. 1996. *Dismantling Desegregation: The Quiet Reversal of Brown v. Board of Education*. New York, NY: New York Press.

Orfield, Gary and Erica Frankenberg. 2014. “Brown at 60: Great Progress, a Long Retreat and an Uncertain Future.” Los Angeles, CA: The Civil Rights Project.

Orr, Andrea. 2010. “What Went Wrong with No Child Left Behind?” *Commentary on Education*, March 18. Washington D.C.: Economic Policy Institute. Retrieved July 28, 2015 (http://www.epi.org/publication/what_went_wrong_with_no_child_left_behind/).

Owens, Representative Major R. “H.R. 1, No Child Left Behind Act, A Good Beginning Which Requires Added Resources to Assure an Educated Populace.” *Congressional Record*, 147(172):H9764. Washington, D.C.: U.S. Government Publishing Office. December 12, 2001. Retrieved August 30, 2015 (http://www.gpo.gov/fdsys/pkg/CREC-2001-12-12/html/CREC-2001-12-12-pt1-PgH9764.htm).

Perez, Maria and Miguel Socias. 2008. “Highly Successful Schools: What Do They Do Differently and at What Cost?” *Education and Finance Policy* 3(1):109-129.

Perry, Laura and Andrew McConney. 2010. “Does the SES of the School Matter? An Examination of Socioeconomic Status and Student Achievement Using PISA 2003.” *Teachers College Record* 112(4):1137-1162.

Peterson, Paul E. and Martin R. West. 2003. “The Politics and Practice of Accountability.” Pp. 1-20 in *No Child Left Behind?: The Politics and Practice of Accountability*, edited by Paul E. Peterson and Martin R. West. Washington D.C.: Brookings Institution Press.

Piche, Dianne. 1999. “Title I in Midstream: The Fight To Improve Schools for Poor Kids.” Washington D.C.: Citizens Commission on Civil Rights.

Piketty, Thomas and Emmanuel Saez. 2003. “Income Inequality in the United States, 1913-1998.” *The Quarterly Journal of Economics* 118(1):1-39.

Plessy v. Ferguson, 163 U.S. 537 (1896).

Ravitch, Diane. 2005. “Good News in Education.” *Hoover Daily Report*, August 10. Retrieved July 18, 2015 (http://www.hoover.org/research/good-news-us-education).

Ravitch, Diane and John Chubb. 2009. “The Future of No Child Left Behind.” *Education Next* 9(3):49-56.

Reardon, Sean and Ann Owens. 2014. “60 Years After *Brown:* Trends and Consequences of School Segregation.” *Annual Review of Sociology* 40:199–218.

Rhodes, Jesse. 2012. *An Education in Politics: The Origins and Evolution of No Child Left Behind*. Ithaca, NY: Cornell University Press

Rich, Motoko and Tamar Lewin. 2015. “No Child Left Behind Law Faces Its Own Reckoning.” *New York Times*. March 20. Retrieved July 28, 2015 (http://www.nytimes.com/2015/03/22/us/politics/schools-wait-to-see-what-becomes-of-no-child-left-behind-law.html?_r=0).

Rowland, Christopher. 2013. “Tax Lobbyists Help Businesses Reap Windfalls While Congress Fights Over Ways to Cut Spending and the Deficit, Generous Breaks for Corporations Pass with Little Notice.” *The Boston Globe*, March 17. Retrieved June 23, 2015 (http://www.bostonglobe.com/news/politics/2013/03/16/corporations-record-huge-returns-from-tax-lobbying-gridlock-congress-stalls-reform/omgZvDPa37DNlSqi0G95YK/story.html).

Rudalevige, Andrew. 2003. “No Child Left Behind: Forging a Congressional Compromise.” Pp. 23-54 in *No Child Left Behind? The Politics and Practice of School Accountability*, edited by Paul E. Peterson and Martin R. West. Washinton D.C.: Brookings Institution Press.

Russo, Alexander. 2007. “Burr and Gregg Deliver The First Volley.” *Education Week* July 12. Retrieved June 30, 2015 (http://blogs.edweek.org/edweek/thisweekineducation/2007/07/burr_gregg_deliver_the_first_v.html).

Saez, Emmanuel and Gabriel Zucman. 2014. “Wealth Inequality in the United States since 1913: Evidence from Capitalized Income Tax Data.” NBER Working Paper 20625. Cambridge, MA: National Bureau of Economic Research.

Sanders, William and June Rivers. 1996. “Cumulative and Residual Effects of Teachers on Future Students Academic Achievement.” Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center.

Schools and Staffing Survey. 2004. “Table 4. Participation in Title I and the National School Lunch Program, by school type and selected school characteristics: 2003–04.” Retrieved August 3, 2015 (http://nces.ed.gov/surveys/sass/tables/sass_2004_04.asp#f1).

Servicmen’s Readjustment Act of 1944 (G.I. Bill), P.L. 78-346 (1944).

Sirin, Selcuk. 2005. “Socioeconomic Status and Academic Achievement: A Meta-Analytic Review of Research.” *Review of Educational Research* 75(3):417-53.

Smith-Hughes National Vocational Education Act of 1917, P.L. 347 (1917)

Smith, Evan. 2008. Margaret Spellings on No Child Left Behind. *Texas Monthly*, May.

Snow, C.P. 1959. *The Two Cultures and the Scientific Revolution*. New York, NY: Cambridge University Press.

Solorzano, Ronald. 2008. "High Stake Testing: Issues, Implications, and Remedies for English Language Learners." *Review of Educational Research* 78(2):260-329.

StataCorp. 2013. *Stata Multiple-Imputation Reference Manual: Release 13*. College Station, TX: StataCorp LP.

Stecher, Brian, Georges Vernez, and Paul Steinburg. 2010. "Reauthorizing No Child Left Behind: Facts and Recommendations." Santa Monica, CA: RAND Corporation. Retrieved Augsust 30, 2015 (http://www.rand.org/pubs/monographs/MG977).

Swann et al. v. Charlotte-Mecklenburg Board of Education, 402 U.S. 1 (1971)

Tarr, Dave, 2014. *Congress and the Nation 2009-2012*. Thousands Oaks, CA: Congressional Quarterly Press.

Thurmond, Strom. "Southern Manifesto." *Congressional Record*, 102(4):4459-4460. March 12, 1956. Washington, D.C.: U.S. Government Publishing Office.

Tushnet, Mark. 1997. *Making Constitutional Law: Thurgood Marshall and the Supreme Court, 1961-1991*. Oxford University Press.

U.S. Department of Education. 2006. "School Improvement Guide: Non-Regulatory Guidance." Washington, D.C. Retrieved May 6, 2015 (http://www2.ed.gov/policy/elsec/guid/schoolimprovementguid.pdf).

U.S. Department of Education. 2015a. "ONPE General Issues Frequently Asked Questions Related to Nonpublic Schools." Washington, D.C.: Office of Innovation and Improvement. Retrieved August 2, 2015 (http://www2.ed.gov/about/offices/list/oii/nonpublic/faqgeneral.html?src=preview).

U.S. Department of Education. 2015b. "ESEA Flexibility." Washington, D.C. Retrieved July 3, 2015 (http://www2.ed.gov/policy/elsec/guid/esea-flexibility/index.html).

Usher, Alexandra. 2011. "AYP Results for 2010-11." Washington, D.C.: Center on Education Policy.

Wayne, Andrew and Peter Youngs. 2003. "Teacher Characteristics and Student Achievement Gains: A Review." *Review of Educational Research* 73(1):89-122.

West, Martin. "Full Committee Hearing: Fixing No Child Left Behind: Testing and Accountability." January 21, 2015. Washington D.C.: U.S. Senate Committee on Health, Education, Labor, and Pensions. Retrieved July 18, 2015 (http://www.help.senate.gov/hearings/fixing-no-child-left-behind-testing-and-accountability).

Western, Bruce and Jake Rosenfeld. 2011. “Unions, Norms, and the Rise in U.S. Wage Inequality.” *American Sociological Review* 76(4):513–537.

Weston, Margaret. 2010. “Funding California Schools: The Revenue Limit System.” San Francisco, CA: Public Policy Institute of California.

Wexler, Evan and Robert Collins. 2014. “The Return of School Segregation in Eights Charts.” *Frontline*, July 15. Retrieved May 1, 2015 (http://www.pbs.org/wgbh/pages/frontline/education/separate-and-unequal/the-return-of-school-segregation-in-eight-charts/).

The White House Issue Fact Sheet. “Reforming No Child Left Behind.” Washington, D.C. Retrieved August 1, 2015 (https://www.whitehouse.gov/issues/education/k-12/reforming-no-child-left-behind).

The White House Press Release. “President Signs Landmark No Child Left Behind Education Bill.” January 8, 2002. Washington, D.C. Retrieved July 28, 2015 (http://georgewbush-whitehouse.archives.gov/news/releases/2002/01/20020108-1.html).

White, Sheldon and Deborah Phillips. 2001. “Designing Head Start: Roles Played by Developmental Psychologists.” Pp. 83-118 in *Social Science and Policy-Making*, edited by David L. Featherman and Maris A. Vinovskis. Ann Arbor, Michigan: University of Michigan Press.

Wisdom, John Minor. 1975. “Random Remarks on the Role of Social Sciences in the Judicial Decision-Making Process in School Desegregation Cases.” *Law and Contemporary Problems* 39(1):143-149.

Wong, Kenneth K. 2008. “Considering the Politics in the Research Policymaking Nexus” Pp. 219-238 in *When Research Matters: How Scholarship Influences Educational Policy*, edited by Frederick M. Hess. Cambridge, MA: Harvard University Press.

Wong, Manyee, Thomas Cook, and Peter Steiner. 2009. “No Child Left Behind: An Interim Evaluation of its Effects on Learning Using Two Interrupted Time Series Each with Its Own Non-Equivalent Comparison Series.” *Institute for Policy Research* Working Paper 09-11. Evanston, IL: Northwestern University Press.

APPENDIX A

Details of Program Improvement Stages

Stage 1: School Improvement Status, Phase 1. Schools in this category have not made AYP for two consecutive years. At the start of the school year, the schools that receive Title I funds must *notify the parents* of all enrolled students that their child's school has been "identified for improvement". This notification should include: (1) the reasons for the school being so identified (e.g., insufficient participation/graduation rates, one or more subgroup did not meet proficiency standards), (2) information about how parents can become involved in addressing the academic issues that led to the school being identified for improvement, (3) information about the opportunity to transfer their child to another school that is not identified for school improvement and is in the same district (a.k.a., the public school choice provision) and (4) information about other non-failing schools in the district to help parents decide what school is best for their child.[93]

Within three months of being identified for improvement, the school must also develop or revise its two-year school improvement plan. The law allows states, districts, and schools some autonomy in constructing the specifics of their improvement plans. However, in developing or revising a plan, the school must consult with parents, school staff, the district, and outside experts. The plan should be focused on the school's instructional program and must (1) use

[93] At a minimum, the district must inform parents about the academic achievement level of students at the school or schools to which their child may transfer, but it may also choose to include other information, such as a description of special academic programs, facilities, before-or-after school programs, the professional qualifications of teachers in the core academic subjects, or parent involvement opportunities. The district must also explain to parents that it will provide their child with transportation to the schools that the district identifies as options, subject to certain cost limitations.

scientifically-based research to strengthen the core academic subjects (i.e., math and reading) and address the academic issues that led the school to be identified for improvement, (2) adopt polices and practices that will ensure that all groups of students will meet proficiency standards in core subjects, (3) establish measurable goals for continuous and substantial progress for all student groups, (4) specify the responsibilities for the school and the district under the plan, (5) include strategies to promote parental involvement, (6) promote high quality professional development,[94] and (7) incorporate a teacher mentoring program. A school in this stage of the improvement process is entitled to technical assistance from the district. Technical assistance is "practical advice offered by an expert source that addresses specific areas for improvement" (School Improvement Guide, Dept. of Ed., 2009).[95] As with the school improvement plan, technical assistance must focus on the improving the school's instructional program and it must address the issues that led the school to be identified for improvement. Specifically, the district is required to help the school in three ways. First, the district must teach school staff how to use data from the state assessment system to develop solutions to instructional problems, implementing parental involvement and professional development, and carrying out the school improvement plan. Second, the district must help the school choose effective instructional strategies and methods and ensure that the school staff receives high-quality professional development relevant to their implementation. And third, the district must help the school

[94] At least 10 percent the funds made available to the school for each fiscal year that the school is in improvement status must be used for the purpose of providing the school's teachers and principal high-quality professional development. This could mean directing teachers to resources to improve their teaching skills (e.g., http://www.insidemathematics.org), organizing workshops that directly relate to teachers' curricula and subjects, letting teachers work with more experience teachers and university faculty, or otherwise partnering with professional development providers (e.g., Early Reading First).

[95] The district is not required to provide the technical assistance directly, although it may. Other acceptable technical assistance providers include the state education agency; an institution of higher education; a private, not-for-profit or for-profit organization; an educational service agency; or another entity with experience in helping schools improve academic achievement.

analyze and revise its budget to fund activities most likely to increase student achievement and help it exit Program Improvement.

Stage 2: School Improvement Status, Phase 2. In this stage, schools must continue all interventions from Stage 1. In addition, the district must also provide supplemental educational services to low-achieving students in these schools who are considered low-income (i.e., qualify for free or reduced-price lunch).

Supplemental educational services (SES) are additional academic instruction designed to increase the academic achievement of students in schools in the NCLB improvement process. These services, which are offered in addition to instruction provided during the school day, may include academic assistance such as tutoring, remediation, and other supplemental academic enrichment services that are consistent with the content and instruction used by the district and are aligned with the State's academic content and achievement standards.[96] Such services are to be state-approved, of high quality, research-based, and designed to improve the students' academic achievement. Districts must spend "an amount equal to" 20 percent of its Title I funds on both SES and transporting students who choose to attend another school in the district, unless a lesser amount is needed to meet demand for choice-related transportation and to satisfy all requests for SES.[97]

Stage 3: Corrective Action Status. At this point in the school improvement process, federal law requires districts to take a more direct role in addressing the academic struggles in a

[96] An SES provider may be any public or private (non-profit or for-profit) entity that meets the State's approval criteria. Public schools (including charter schools), private schools, school districts, educational service agencies, institutions of higher education, faith-based organizations, community-based organizations, business groups, and individuals are among the types of entities that may apply to the state for approval to provide SES.

[97] The phrase "an amount equal to" means that the money used for choice-related transportation and SES need not be from Title I funds, per se. Any district funds that equal 20 percent of its Title I allocation may be used.

persistently low-achieving school by engaging in "corrective action." Corrective action is "a significant intervention in a school that is designed to remedy the school's persistent inability to make adequate progress toward all students becoming proficient in reading and mathematics" (School Improvement Guide, Dept. of Ed., 2009).

Districts take corrective action via one or more of the following options: (1) implement a new curriculum rooted in scientifically-based research and provide appropriate professional development to support its implementation, (2) extend the length of the school year or school day, (3) replace the school staff who are deemed relevant to the school not making adequate progress, (4) significantly decrease management authority at the school, (5) restructure the internal organization of the school, or (6) appoint one or more outside experts to advise the school how to revise the improvement plan it created while in school improvement status and how to address the specific issues underlying the school's continued inability to make AYP .

In addition to taking corrective action, the district must continue all interventions from the previous two improvement stages. For example, it must continue to offer public school choice to all students and supplemental educational services to eligible students.

Stage 4: Restructuring Status, Phase 1. In this stage, schools are required to plan for school restructuring. When a school is in restructuring status, the district must take intensive and far-reaching action to completely revamp the operation and governance of that school. The district has one year to prepare a restructuring plan with an implementation timeline for schools in this stage. The plan must be implemented the following year if the school does not make AYP again and enters Stage 5. The restructuring plan needs to include at least one of the following actions: (1) replacing school staff—which may include the school principal—who are relevant to the school's inability to meet standards, (2) entering into a contract with an entity with a

demonstrated record of effectiveness, to operate the school, (3) reopening as a charter school, or (4) implementing other restructuring activities. As in previous improvement stages, the district must provide technical assistance that emphasizes the importance of improving instruction by using strategies grounded in scientifically-based research so that all students achieve proficiency in the core academic subjects of reading and mathematics and the importance of analyzing and applying data in decision-making. The district must also continue to offer public school choice and supplemental educational services and follow the school district's course of corrective action.

Stage 5: Restructuring Status, Phase 2. In this stage, schools are required to implement school restructuring as defined in the school's restructuring plan prepared in Stage 4. The school must provide documentation of having taken at least one of the actions outlined in its restructuring plan. As before, school districts must continue to offer all interventions from previous improvement stages.

Details of Title I

Title I, Part A of the Elementary and Secondary Education Act is the oldest and largest federal K-12 education program. Annually, it awards over $14 billion to public schools systems across the country. Its purpose is to "ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments" (Title I, Part A of Elementary and Secondary Education Act of 1965).

When originally enacted in 1965, the title was committed to closing the achievement gap between low-income students and other students. The policy was rewritten in 1994 to improve

fundamental goals of helping at-risk students. With the implementation of No Child Left Behind, Title I schools must make adequate yearly progress on state testing and focus on best teaching practices in order to continue receiving funds.

Currently these funds are allocated to school districts based on the number of children aged 5 to 17 who live in (1) families with incomes below the poverty level, (2) families with incomes above the poverty level who receive local assistance through Part A of Title IV of the Social Security Act (i.e., Temporary Aid to Needy Families), or (3) institutions for neglected and delinquent children administered by local governments; or foster homes in which the foster parents receive payments from a state or county for the children's support.

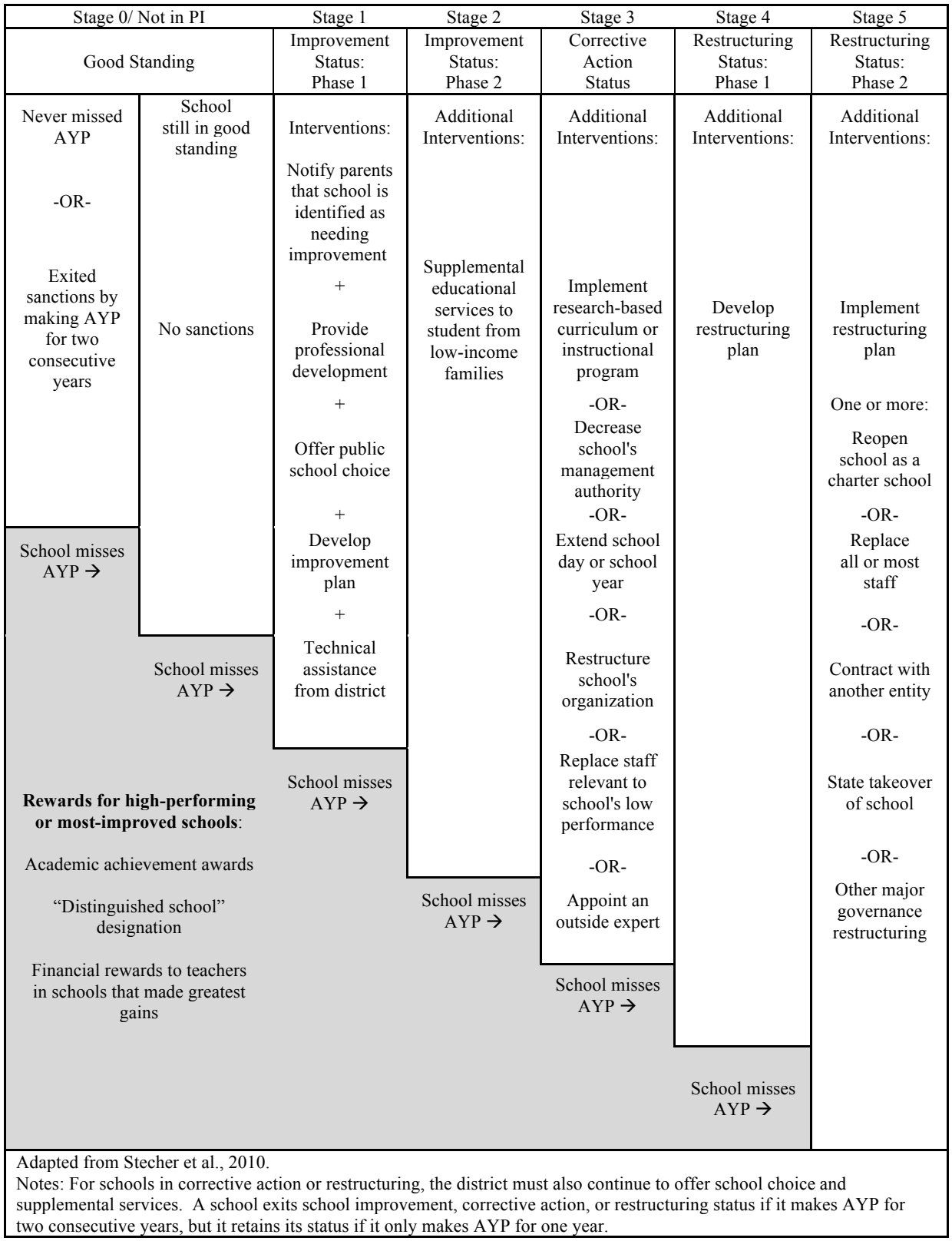
Depending on a district's eligibility count, it qualifies for one of four types of Title I grants: Basic, Concentration, Targeted, or Education Finance Incentive. *Basic* grants are the primary vehicle for Title I funding and are awarded to districts with at least ten "eligible" children who represent at least two percent of its student population. *Concentration* grants help districts with especially large populations of disadvantaged children and are awarded to districts with at least 6,500 eligible children who make up at least 15 percent of its student population. Under both the Basic and Concentration Grant formulas, once a school district exceeds the threshold percentage of children required to receive funding, they receive the same amount of money per child regardless of how many children they serve. *Targeted* grants are different. Rather than providing the same amount of Title I funding per child, they provide more money per child as a district's poverty rate increases, so that higher-poverty school districts get more money per child than lower-poverty schools. Lastly, *Education Finance Incentive Grants* are based on federal calculations of an "equity factor" (the average per-student deviation in state spending from the mean) that measures how evenly funding is distributed across school districts

within a state. This type of Title I funding is designed to reward states that distribute federal money more equally than other states. Once federal funds are allocated to states, the formula provides more money to high-poverty districts in states that are less equitable in their distribution of federal funds.

In fiscal year 2014, 6.4 billion dollars (45 percent of all Title I funding) were distributed through Basic Grants. An additional 1.4 billion dollars (9 percent) were distributed through Concentration Grants. Another 3.3 billion dollars (23 percent) were distributed through Targeted Grants. And 3.3 billion dollars (23 percent) were distributed via Education Finance Incentive Grants.

Districts distribute Title I funds to schools who use those funds largely as they wish, often supporting extra instruction in reading and math, special preschool, after-school and summer programs, curriculum improvement, instructional activities, counseling, parental involvement, and staff training and improvement.

Table 1.1A. Overview of NCLB's Program Improvement



Adapted from Stecher et al., 2010.
Notes: For schools in corrective action or restructuring, the district must also continue to offer school choice and supplemental services. A school exits school improvement, corrective action, or restructuring status if it makes AYP for two consecutive years, but it retains its status if it only makes AYP for one year.

APPENDIX B

Table 2.1B. Program Improvement Transition Probabilities, Elementary Schools

Previous Year	Current School Year: Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Not in PI	.87	.13					20,500
Stage 1	.08	.23	.69				2,811
Stage 2	.08		.20	.72			2,006
Stage 3	.06			.20	.74		1,556
Stage 4	.06				.18	.76	1,223
Stage 5	.04					.96	2,260
Total	.61	.11	.08	.06	.05	.10	1.00
No. of Obs.	18,549	3,228	2,345	1,749	1,377	3,108	30,356

Table 2.2B. Program Improvement Transition Probabilities, Middle Schools

Previous Year	Current School Year: Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Not in PI	.76	.24					1,986
Stage 1	.04	.12	.84				599
Stage 2	.03		.11	.86			543
Stage 3	.02			.09	.90		538
Stage 4	.01				.05	.94	455
Stage 5	.01					.99	1,391
Total	.29	.10	.10	.09	.09	.33	1.00
No. of Obs.	1,582	542	563	512	506	1,807	5,512

Table 2.3B. Program Improvement Transition Probabilities, High Schools

		Current School Year						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Previous Year	Not in PI	.84	.16					2,444
	Stage 1	.09	.19	.72				395
	Stage 2	.11		.19	.70			284
	Stage 3	.09			.18	.72		207
	Stage 4	.04				.09	.88	136
	Stage 5	.01					.99	338
	Total	.56	.12	.09	.06	.04	.12	1.00
	No. of Obs.	2,140	474	339	236	162	453	3,804

Table 2.4B. Program Improvement Transition Probabilities, Combined Schools

		Current School Year						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Previous Year	Not in PI	.74	.26					446
	Stage 1	.06	.13	.81				108
	Stage 2	.02		.09	.89			91
	Stage 3	.05			.13	.82		83
	Stage 4	.00				.05	.95	59
	Stage 5	.02					.98	154
	Total	.37	.14	.10	.10	.08	.22	1.00
	No. of Obs.	344	132	95	92	71	207	941

Table 2.5B. Program Improvement Transition Probabilities, 2003-04 to 2004-05

2003-04	2004-05: Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Not in PI	.88	.12					3606
Stage 1	.05	.26	.69				605
Stage 2	.14		.33	.53			204
Stage 3	.00			.20	.80		310
Stage 4	.00				.09	.91	11
Stage 5	.00					.00	0
Total	.68	.13	.10	.04	.05	.00	
No. of Obs.	3229	595	482	171	249	10	4736

Table 2.6B. Program Improvement Transition Probabilities, 2004-05 to 2005-06

2004-05	2005-06: Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Not in PI	.94	.06					3432
Stage 1	.11	.15	.74				588
Stage 2	.09		.13	.78			476
Stage 3	.15			.10	.75		168
Stage 4	.00				.08	.92	248
Stage 5	.00					1.0	10
Total	.68	.06	.10	.08	.03	.05	
No. of Obs.	3364	287	498	389	147	237	4922

Table 2.7B. Program Improvement Transition Probabilities, 2005-06 to 2006-07

2005-06	2006-07: Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Not in PI	.85	.15					3540
Stage 1	.18	.19	.63				281
Stage 2	.07		.18	.75			497
Stage 3	.03			.20	.77		391
Stage 4	.07				.19	.74	148
Stage 5	.00					1.0	235
Total	.61	.12	.05	.09	.06	.07	
No. of Obs.	3105	595	266	454	328	344	5092

Table 2.8B. Program Improvement Transition Probabilities, 2006-07 to 2007-08

2006-07	2007-08: Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
Not in PI	.94	.06					3218
Stage 1	.06	.33	.62				576
Stage 2	.22		.15	.63			260
Stage 3	.07			.16	.77		444
Stage 4	.07				.15	.78	318
Stage 5	.04					.96	339
Total	.62	.07	.08	.05	.08	.11	
No. of Obs.	3197	365	394	235	390	574	5155

Table 2.9B. Program Improvement Transition Probabilities, 2007-08 to 2008-09

		2008-09						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
2007-08	Not in PI	.93	.07					3223
	Stage 1	.15	.11	.74				349
	Stage 2	.02		.18	.81			381
	Stage 3	.08			.11	.81		229
	Stage 4	.03				.10	.88	380
	Stage 5	.01					.99	559
	Total	.61	.05	.06	.07	.04	.17	
	No. of Obs.	3105	254	324	331	223	884	5121

Table 2.10B. Program Improvement Transition Probabilities, 2008-09 to 2009-10

		2009-10						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
2008-09	Not in PI	.81	.19					3144
	Stage 1	.07	.23	.70				246
	Stage 2	.07		.27	.66			314
	Stage 3	.03			.25	.71		320
	Stage 4	.05				.24	.71	214
	Stage 5	.01					.99	857
	Total	.51	.13	.05	.06	.05	.20	
	No. of Obs.	2622	648	258	290	278	999	5095

Table 2.11B. Program Improvement Transition Probabilities, 2009-10 to 2010-11

		2010-11						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
2009-10	Not in PI	.80	.20					2736
	Stage 1	.02	.16	.82				641
	Stage 2	.05		.10	.85			258
	Stage 3	.06			.09	.84		284
	Stage 4	.06				.13	.81	278
	Stage 5	.05					.95	996
	Total	.44	.12	.11	.05	.05	.23	
	No. of Obs.	2310	639	553	246	277	1168	5193

Table 2.12B. Program Improvement Transition Probabilities, 2010-11 to 2011-12

		2011-12						
		Not in PI	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	No. of Obs.
2010-11	Not in PI	.65	.35					2476
	Stage 1	.05	.21	.75				627
	Stage 2	.01		.18	.82			534
	Stage 3	.03			.17	.80		238
	Stage 4	.03				.12	.84	276
	Stage 5	.02					.98	1147
	Total	.32	.19	.11	.09	.04	.26	
	No. of Obs.	1682	993	567	473	224	1359	5298

APPENDIX C

Table 3.1C. Pearson's Correlation Coefficients for Schools' Structural Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) AYP Requirements (#)	1											
(2) Female students (%)	-.01	1										
(3) Am. Indian/Alaska Native students (%)	-.23	-.02	1									
(4) Asian students (%)	.19	-.02	-.07	1								
(5) Black students (%)	.10	.03	-.08	-.02	1							
(6) Filipino students (%)	.21	-.03	-.06	.17	.04	1						
(7) Hispanic students (%)	.21	.03	-.25	-.29	-.20	-.11	1					
(8) Pacific Islander students (%)	.10	.00	-.04	.09	.18	.25	-.12	1				
(9) Other Race(s) students (%)	-.10	.00	.00	.02	-.02	.01	-.32	.00	1			
(10) English Language Learner students (%)	.18	-.02	-.21	.01	-.15	-.03	.74	-.03	-.20	1		
(11) Students w/ Free/Reduced-Price Meals (%)	.16	.00	-.01	-.16	.12	-.12	.67	-.03	-.22	.63	1	
(12) Students w/ Disabilities (%)	.22	-.15	.02	.00	-.01	.02	-.08	.02	.04	-.07	.01	1
(13) Teachers w/ MA Degree or Higher (%)	.12	.02	-.12	.00	.01	.08	.11	.00	.00	.01	-.05	.06
(14) Average Teacher Experience	.00	-.05	.04	.05	-.21	.01	-.18	-.04	.04	-.15	-.16	.14
(15) Student-Teacher Racial Mismatch (%)	.30	.00	-.07	.06	.13	.13	.47	.12	-.01	.39	.41	.01
(16) Parents w/ Some College (%)	-.13	.00	.06	.14	.01	.15	-.71	.05	.24	-.67	-.76	.07
(17) Enrollment (#)	.44	.03	-.14	.03	-.01	.07	.21	-.01	-.12	.01	.01	-.19
(18) School is in a City	.18	.02	-.12	.14	.23	.13	.16	.09	-.08	.20	.21	-.01
(19) School is in a Suburb	.14	-.01	-.11	.04	-.03	.02	.05	.03	.03	.00	-.10	.05
(20) School is in a Town	-.05	.01	.04	-.11	-.14	-.09	-.02	-.08	.01	-.04	.00	-.02
(21) School is in a Rural Area	-.38	-.01	.28	-.15	-.17	-.13	-.26	-.09	.07	-.25	-.15	-.04
(22) Students per Teacher (#)	.35	.07	-.18	.05	-.03	.04	.20	-.04	-.09	.05	.02	-.10
(23) Computers per Student (#)	-.20	-.02	.10	-.03	-.02	-.03	-.07	.00	.01	-.04	-.01	.03
(24) Schools in District (#)	.05	.01	-.08	-.07	.19	.02	.24	-.06	-.13	.15	.24	.01
(25) Cost per Average Daily Attendance ($1K)	-.29	.00	.22	-.07	.07	-.07	-.10	-.01	.05	-.08	.07	.01

Table 3.1C (continued). Pearson's Correlation Coefficients for Schools' Structural Characteristics

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
(13) Teachers w/ MA Degree or Higher (%)	1												
(14) Average Teacher Experience	.13	1											
(15) Student-Teacher Racial Mismatch (%)	.05	-.16	1										
(16) Parents w/ Some College (%)	.05	.19	-.41	1									
(17) Enrollment (#)	.15	-.04	.11	-.12	1								
(18) School is in a City	.06	-.10	.17	-.17	.13	1							
(19) School is in a Suburb	.17	.02	.05	.07	.09	-.60	1						
(20) School is in a Town	-.15	.08	-.10	.02	-.05	-.27	-.22	1					
(21) School is in a Rural Area	-.18	.06	-.22	.13	-.23	-.35	-.30	-.13	1				
(22) Students per Teacher (#)	.11	.02	.14	-.05	.36	.00	.14	.00	-.19	1			
(23) Computers per Student (#)	.01	.00	-.06	.00	-.14	-.01	-.07	-.03	.13	-.25	1		
(24) Schools in District (#)	.03	-.13	.00	-.18	.17	.36	-.16	-.14	-.18	-.06	.05	1	
(25) Cost per Average Daily Attendance ($1K)	-.01	.02	-.10	-.01	-.13	.04	-.17	-.05	.21	-.37	.20	.18	1

APPENDIX D

Table 4.1D Changes to Making AYP in *Reading* between NCLB and Improvement Rules, by Subgroups

		Made AYP via Improvement Rule		
School-wide		No	Yes	
Made AYP via No Child Left Behind	No	7,304	7,400	14,704
	Yes	7,277	31,227	38,504
	Total	14,581	38,627	53,208
African American		No	Yes	
	No	1,745	1,060	2,805
	Yes	608	3,542	4,150
	Total	2,353	4,602	6,955
American Indian		No	Yes	
	No	28	16	44
	Yes	4	44	48
	Total	32	60	92
Asian		No	Yes	
	No	423	136	559
	Yes	1,180	3,661	4,841
	Total	1,603	3,797	5,400
Filipino		No	Yes	
	No	45	1	46
	Yes	238	699	937
	Total	283	700	983
Hispanic		No	Yes	
	No	7,740	7,742	15,482
	Yes	3,660	22,800	26,460
	Total	11,400	30,542	41,942
Pacific Islander		No	Yes	
	No	4	0	4
	Yes	0	9	9
	Total	4	9	13
White		No	Yes	
	No	1,307	182	1,489
	Yes	5,520	15,563	21,083
	Total	6,827	15,745	22,572

Table 4.1D (continued). Changes to Making AYP in *Reading* between NCLB and Improvement Rules, by Subgroups

Made AYP via No Child Left Behind	Made AYP via Improvement Rule		
Multiracial	No	Yes	
No	2	0	2
Yes	2	16	18
Total	4	16	20
Socio-economic Disadvantage			
No	8,056	8,288	16,344
Yes	4,311	24,775	29,086
Total	12,367	33,063	45,430
English-language Learners			
No	9,571	8,508	18,079
Yes	1,972	16,410	18,382
Total	11,543	24,918	36,461
Disabled			
No	1,768	1,223	2,991
Yes	246	1,727	1,973
Total	2,014	2,950	4,964

Table 4.2D Changes to Making AYP in *Math* between NCLB and Improvement Rules, by Subgroups

		Made AYP via Improvement Rule		
School-wide		No	Yes	
Made AYP via No Child Left Behind	No	7,424	4,241	11,665
	Yes	9,210	32,390	41,600
	Total	16,634	36,631	53,265
African American				
	No	1,945	1,009	2,954
	Yes	616	3,384	4,000
	Total	2,561	4,393	6,954
American Indian				
	No	25	12	37
	Yes	8	47	55
	Total	33	59	92
Asian				
	No	220	36	256
	Yes	1,572	3,588	5,160
	Total	1,792	3,624	5,416
Filipino				
	No	48	4	52
	Yes	268	657	925
	Total	316	661	977
Hispanic				
	No	7,454	4,210	11,664
	Yes	5,735	24,620	30,355
	Total	13,189	28,830	42,019
Pacific Islander				
	No	6	0	6
	Yes	0	7	7
	Total	6	7	13
White				
	No	1,587	278	1,865
	Yes	5,936	14,766	20,702
	Total	7,523	15,044	22,567

Table 4.2D (continued). Changes to Making AYP in *Math* between NCLB and Improvement Rules, by Subgroups

Made AYP via No Child Left Behind	Made AYP via Improvement Rule		
Multiracial	No	Yes	
No	3	0	3
Yes	2	15	17
Total	5	15	20
Socio-economic Disadvantage			
No	7,820	4,614	12,434
Yes	6,353	26,737	33,090
Total	14,173	31,351	45,524
English-language Learners			
No	7,451	3,920	11,371
Yes	4,622	20,502	25,124
Total	12,073	24,422	36,495
Disabled			
No	1,707	1,071	2,778
Yes	393	1,870	2,263
Total	2,100	2,941	5,041

Table 4.3D. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 0 and 1* with Covariates for Structural School Characteristics using Recalculated AYP Sample under NCLB

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 0 Last Year	0.065	0.003	***	9.7E-10	7.8E-11	***
AYP Requirements (#)						
Quartile 2	1.159	0.070	*	0.898	0.187	
Quartile 3	1.430	0.083	***	0.710	0.148	
Quartile 4	1.882	0.115	***	0.921	0.206	
Female students (%)	0.999	0.005		0.988	0.018	
Am. Indian/Alaska Native students (%)	1.009	0.005		0.878	0.045	*
Asian students (%)	0.991	0.002	***	0.979	0.008	**
Black students (%)	1.018	0.002	***	0.984	0.007	*
Filipino students (%)	0.998	0.005		0.991	0.012	
Hispanic students (%)	1.014	0.002	***	0.988	0.006	*
Pacific Islander students (%)	1.046	0.011	***	1.050	0.045	
Other Race(s) students (%)	1.015	0.004	***	0.988	0.011	
English Language Learner students (%)	1.003	0.001	*	1.005	0.005	
Students w/ Free/Reduced-Price Meals (%)						
Quartile 2	1.449	0.088	***	1.347	0.291	
Quartile 3	1.744	0.124	***	1.745	0.413	*
Quartile 4	1.996	0.161	***	1.398	0.374	
Students with Disabilities (%)	1.068	0.005	***	1.009	0.018	
Teachers with MA Degree or Higher (%)	0.996	0.001	***	0.996	0.003	
Average Teacher Experience	1.005	0.005		0.988	0.018	
Student-Teacher Racial Mismatch (%)	0.986	0.005	**	1.008	0.017	
Parents with Some College (%)						
Quartile 2	0.784	0.040	***	1.031	0.180	
Quartile 3	0.784	0.046	***	1.065	0.226	
Quartile 4	0.772	0.059	**	0.878	0.245	
Enrollment (per 100 students)	1.048	0.005	***	1.012	0.017	
School is in a Suburb	0.887	0.036	**	0.958	0.135	
School is in a Town	1.343	0.091	***	0.967	0.219	
School is in a Rural Area	0.998	0.069		0.827	0.188	
Students per Teacher (#)	1.074	0.007	***	1.024	0.021	
Computers per Student (#)	0.525	0.071	***	1.765	0.707	
Schools in District (per 100 schools)	0.969	0.008	***	0.978	0.032	
Cost per Average Daily Attendance ($1000)	1.036	0.009	***	1.016	0.022	
Constant	0.084	0.029	***	0.751	0.853	

Observations=26519, Schools=5267; *p<.05, **p<.01, ***p<.001

Table 4.4D. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 2 and 3* with Covariates for Structural School Characteristics using Recalculated AYP Sample under NCLB

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 3 Last Year	1.010	0.070		0.780	0.082	*
AYP Requirements (#)						
Quartile 2	1.530	0.184	***	1.453	0.297	
Quartile 3	1.847	0.231	***	1.110	0.220	
Quartile 4	2.184	0.300	***	1.042	0.232	
Female students (%)	1.000	0.012		0.990	0.016	
Am. Indian/Alaska Native students (%)	1.002	0.011		1.002	0.012	
Asian students (%)	1.001	0.005		0.985	0.009	
Black students (%)	1.011	0.005	*	1.004	0.006	
Filipino students (%)	0.987	0.010		0.973	0.018	
Hispanic students (%)	1.006	0.004		0.991	0.005	
Pacific Islander students (%)	1.047	0.039		0.957	0.050	
Other Race(s) students (%)	1.025	0.010	**	0.995	0.014	
English Language Learner students (%)	0.998	0.003		1.002	0.004	
Students w/ Free/Reduced-Price Meals (%)						
Quartile 2	1.654	0.253	**	0.788	0.169	
Quartile 3	1.533	0.250	**	0.693	0.161	
Quartile 4	1.751	0.312	**	0.658	0.163	
Students with Disabilities (%)	1.053	0.012	***	0.983	0.016	
Teachers with MA Degree or Higher (%)	0.997	0.002		1.005	0.003	
Average Teacher Experience	0.981	0.012		0.976	0.017	
Student-Teacher Racial Mismatch (%)	1.005	0.010		0.993	0.014	
Parents with Some College (%)						
Quartile 2	0.715	0.070	**	1.129	0.183	
Quartile 3	0.716	0.097	*	0.936	0.200	
Quartile 4	0.691	0.139		0.685	0.223	
Enrollment (per 100 students)	1.049	0.012	***	1.023	0.016	
School is in a Suburb	0.966	0.081		0.915	0.117	
School is in a Town	1.062	0.134		1.160	0.198	
School is in a Rural Area	1.053	0.153		1.036	0.187	
Students per Teacher (#)	1.032	0.016	*	0.966	0.018	
Computers per Student (#)	1.016	0.261		1.932	0.706	
Schools in District (per 100 schools)	0.967	0.019		0.963	0.032	
Cost per Average Daily Attendance ($1000)	1.155	0.054	**	0.956	0.058	
Constant	0.137	0.120	*	3.836	4.412	

Observations=4981, Schools=2546; *p<.05, **p<.01, ***p<.001

Table 4.5D. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 4 and 5* with Covariates for Structural School Characteristics using Recalculated AYP Sample under NCLB

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 5 Last Year	3.0E-11	6.2E-12	***	0.083	0.015	***
AYP Requirements (#)						
Quartile 2	0.919	0.216		0.662	0.194	
Quartile 3	1.292	0.332		0.796	0.241	
Quartile 4	1.378	0.405		0.481	0.184	
Female students (%)	1.013	0.026		1.036	0.029	
Am. Indian/Alaska Native students (%)	0.983	0.013		1.001	0.015	
Asian students (%)	0.997	0.012		0.968	0.019	
Black students (%)	1.008	0.009		1.006	0.010	
Filipino students (%)	1.068	0.052		0.983	0.047	
Hispanic students (%)	1.004	0.008		0.991	0.012	
Pacific Islander students (%)	1.051	0.066		1.041	0.052	
Other Race(s) students (%)	1.003	0.013		0.983	0.017	
English Language Learner students (%)	0.994	0.005		1.010	0.007	
Students w/ Free/Reduced-Price Meals (%)						
Quartile 2	0.466	0.279		0.319	0.180	*
Quartile 3	0.337	0.212		0.360	0.193	
Quartile 4	0.304	0.196		0.279	0.152	*
Students with Disabilities (%)	1.040	0.022		0.966	0.024	
Teachers with MA Degree or Higher (%)	0.990	0.004	*	1.007	0.005	
Average Teacher Experience	1.001	0.022		0.981	0.029	
Student-Teacher Racial Mismatch (%)	0.980	0.018		0.971	0.021	
Parents with Some College (%)						
Quartile 2	0.754	0.139		1.001	0.220	
Quartile 3	0.679	0.197		0.603	0.241	
Quartile 4	0.191	0.095	**	0.227	0.173	
Enrollment (per 100 students)	1.062	0.026	*	0.919	0.041	
School is in a Suburb	0.795	0.132		0.797	0.162	
School is in a Town	1.137	0.317		0.907	0.304	
School is in a Rural Area	0.774	0.204		1.065	0.343	
Students per Teacher (#)	1.030	0.027		1.020	0.026	
Computers per Student (#)	0.545	0.215		0.995	0.454	
Schools in District (per 100 schools)	0.987	0.037		0.984	0.043	
Cost per Average Daily Attendance ($1000)	1.052	0.074		0.972	0.086	
Constant	3.743	6.664		0.905	1.939	

Observations=5781, Schools=1579; *p<.05, **p<.01, ***p<.001

Table 4.6D. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 0 and 1* with Covariates for Structural School Characteristics using Recalculated AYP Sample under Target-Improvement

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 0 Last Year	0.062	0.003	***	1.4E-10	8.3E-12	***
AYP Requirements (#)						
Quartile 2	1.067	0.066		0.940	0.165	
Quartile 3	1.367	0.082	***	0.700	0.129	
Quartile 4	1.807	0.113	***	0.809	0.164	
Female students (%)	0.995	0.006		0.986	0.013	
Am. Indian/Alaska Native students (%)	1.008	0.005		0.946	0.034	
Asian students (%)	0.991	0.003	**	0.992	0.007	
Black students (%)	1.019	0.002	***	0.999	0.006	
Filipino students (%)	0.997	0.005		0.992	0.012	
Hispanic students (%)	1.010	0.002	***	1.001	0.005	
Pacific Islander students (%)	1.049	0.013	***	1.009	0.047	
Other Race(s) students (%)	1.012	0.004	**	1.003	0.009	
English Language Learner students (%)	0.999	0.001		1.006	0.004	
Students w/ Free/Reduced-Price Meals (%)						
Quartile 2	1.399	0.093	***	1.076	0.216	
Quartile 3	1.663	0.127	***	1.229	0.273	
Quartile 4	1.721	0.147	***	1.001	0.243	
Students with Disabilities (%)	1.049	0.006	***	1.031	0.015	*
Teachers with MA Degree or Higher (%)	0.995	0.001	***	0.994	0.003	*
Average Teacher Experience	0.989	0.005	*	0.998	0.015	
Student-Teacher Racial Mismatch (%)	0.997	0.005		0.987	0.013	
Parents with Some College (%)						
Quartile 2	0.854	0.043	*	1.061	0.149	
Quartile 3	0.790	0.048	***	0.893	0.169	
Quartile 4	0.758	0.061	**	0.897	0.232	
Enrollment (per 100 students)	1.042	0.005	***	1.011	0.014	
School is in a Suburb	0.839	0.035	***	1.198	0.141	
School is in a Town	1.261	0.082	***	1.048	0.208	
School is in a Rural Area	1.038	0.072		0.826	0.164	
Students per Teacher (#)	1.059	0.007	***	1.006	0.017	
Computers per Student (#)	0.709	0.095	*	2.229	0.735	*
Schools in District (per 100 schools)	0.966	0.008	***	0.972	0.025	
Cost per Average Daily Attendance ($1000)	0.994	0.009		1.016	0.020	
Constant	0.268	0.096	***	0.598	0.552	

Observations=30322, Schools=5397; *p<.05, **p<.01, ***p<.001

Table 4.7D. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 2 and 3* with Covariates for Structural School Characteristics using Recalculated AYP Sample under Target-Improvement

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 3 Last Year	0.820	0.059	***	0.849	0.068	***
AYP Requirements (#)						
Quartile 2	1.236	0.179		1.021	0.158	
Quartile 3	1.547	0.219	**	0.834	0.131	
Quartile 4	1.702	0.259	***	0.667	0.118	*
Female students (%)	0.991	0.016		0.995	0.014	
Am. Indian/Alaska Native students (%)	1.010	0.010		0.991	0.013	
Asian students (%)	0.998	0.006		0.992	0.007	
Black students (%)	1.014	0.005	**	0.998	0.005	
Filipino students (%)	0.993	0.011		1.002	0.011	
Hispanic students (%)	1.002	0.004		1.003	0.004	
Pacific Islander students (%)	1.040	0.033		0.892	0.039	**
Other Race(s) students (%)	1.009	0.009		1.011	0.009	
English Language Learner students (%)	0.999	0.003		1.006	0.003	
Students w/ Free/Reduced-Price Meals (%)						
Quartile 2	1.373	0.233		0.962	0.200	
Quartile 3	1.330	0.241		0.935	0.201	
Quartile 4	1.386	0.271		1.073	0.238	
Students with Disabilities (%)	1.024	0.012	*	0.988	0.013	
Teachers with MA Degree or Higher (%)	0.997	0.002		1.000	0.003	
Average Teacher Experience	0.976	0.012	*	1.000	0.013	
Student-Teacher Racial Mismatch (%)	1.025	0.011	*	0.984	0.011	
Parents with Some College (%)						
Quartile 2	0.800	0.082	*	1.001	0.118	
Quartile 3	0.827	0.117		1.060	0.181	
Quartile 4	0.885	0.205		0.763	0.221	
Enrollment (per 100 students)	1.039	0.010	***	1.014	0.011	
School is in a Suburb	0.941	0.083		0.962	0.090	
School is in a Town	1.071	0.133		0.863	0.125	
School is in a Rural Area	1.113	0.160		0.730	0.114	*
Students per Teacher (#)	0.983	0.014		0.967	0.016	*
Computers per Student (#)	0.945	0.272		1.425	0.441	
Schools in District (per 100 schools)	1.002	0.020		0.953	0.022	*
Cost per Average Daily Attendance ($1000)	0.934	0.036		1.023	0.043	
Constant	3.292	3.033		1.634	1.420	

Observations=3785, Schools=1935; *p<.05, **p<.01, ***p<.001

Table 4.8D. Relative Risk Ratios and Robust Standard Errors from Multinomial Logit Models Predicting Trichotomous PI Transitions for a *Subsample of PI Stages 4 and 5* with Covariates for Structural School Characteristics using Recalculated AYP Sample under Target-Improvement

Outcome (Referent=Stay)	Advance			Exit		
	RRR	SE		RRR	SE	
In PI Stage 5 Last Year	2.3E-10	3.5E-11	***	0.254	0.031	***
AYP Requirements (#)						
Quartile 2	0.880	0.249		0.851	0.209	
Quartile 3	0.869	0.243		0.813	0.197	
Quartile 4	1.162	0.363		0.671	0.187	
Female students (%)	0.992	0.025		0.996	0.021	
Am. Indian/Alaska Native students (%)	1.014	0.015		1.025	0.014	
Asian students (%)	1.003	0.013		0.998	0.014	
Black students (%)	1.016	0.010		1.001	0.009	
Filipino students (%)	1.017	0.025		0.975	0.034	
Hispanic students (%)	1.000	0.008		1.011	0.008	
Pacific Islander students (%)	1.103	0.077		1.032	0.048	
Other Race(s) students (%)	1.009	0.017		1.010	0.014	
English Language Learner students (%)	0.997	0.006		1.021	0.005	***
Students w/Free/Reduced-Price Meals (%)						
Quartile 2	0.682	0.305		0.670	0.232	
Quartile 3	0.697	0.328		0.476	0.169	*
Quartile 4	0.684	0.332		0.459	0.168	*
Students with Disabilities (%)	1.017	0.022		0.974	0.017	
Teachers with MA Degree or Higher (%)	0.997	0.004		0.999	0.004	
Average Teacher Experience	0.999	0.024		0.995	0.022	
Student-Teacher Racial Mismatch (%)	0.975	0.021		0.997	0.016	
Parents with Some College (%)						
Quartile 2	0.783	0.145		1.329	0.212	
Quartile 3	0.614	0.162		0.849	0.227	
Quartile 4	0.540	0.252		0.764	0.375	
Enrollment (per 100 students)	1.027	0.017		0.928	0.018	***
School is in a Suburb	0.822	0.134		0.904	0.129	
School is in a Town	0.916	0.224		0.677	0.159	
School is in a Rural Area	1.183	0.348		0.747	0.185	
Students per Teacher (#)	0.999	0.027		0.998	0.020	
Computers per Student (#)	1.318	0.591		0.789	0.303	
Schools in District (per 100 schools)	1.105	0.046	*	1.014	0.035	
Cost per Average Daily Attendance ($1000)	0.826	0.061	*	0.971	0.063	
Constant	32.003	54.941	*	0.814	1.265	

Observations=3174, Schools=887; *p<.05, **p<.01, ***p<.001

VITA

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