Double Jeopardy

How Third-Grade Reading Skills and Poverty Influence High School Graduation

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The Annie E. Casey Foundation

Acknowledgements

This report updates a 2011 research brief with new data on graduation rates for students living in concentrated poverty. The research that forms the basis of this report was supported by the Annie E. Casey Foundation and by the Center for Demographic Analysis, University at Albany, State University of New York (NICHD, R24 HD044943). The author also appreciates support provided by the Foundation for Child Development, the collaboration of Nancy A. Denton, research assistance provided by Jeff Napierala and Ruby Wang, and assistance provided by staff of the National Longitudinal Survey of Youth. The author alone is responsible for the content and any error of fact or interpretation.

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Contents

Double Jeopardy Overview: How Third-Grade Reading Skills and Poverty Influence High School Graduation

Educators and researchers have long recognized the importance of mastering reading by the end of third grade. Students who fail to reach this critical milestone often falter in the later grades and drop out before earning a high school diploma. Now, researchers have confirmed this link in the first national study to calculate high school graduation rates for children at different reading skill levels and with different poverty rates. Results of a longitudinal study of nearly 4,000 students find that those who do not read proficiently by third grade are four times more likely to leave school without a diploma than proficient readers. For the worst readers, those who could not master even the basic skills by third grade, the rate is nearly six times greater. While these struggling readers account for about a third of the students, they represent more than three-fifths of those who eventually drop out or fail to graduate on time. What's more, the study shows that poverty has a powerful influence on graduation rates. The combined effect of reading poorly and living in poverty puts these children in double jeopardy.

The study relies on a unique national database of 3,975 students born between 1979 and 1989. The children's parents were surveyed every two years to determine the family's economic status and other factors, while the children's reading progress was tracked using the Peabody Individual Achievement Test (PIAT) Reading Recognition subtest. The database reports whether students have finished high school by age 19, but does not indicate whether they actually dropped out.

For purposes of this study, the researchers divided the children into three reading groups that correspond roughly to the skill levels used in the National Assessment of Educational Progress (NAEP): proficient, basic and below basic. The children were also divided by family income and the poverty levels in the neighborhoods where they lived.

The findings include:

- About 16 percent of children who are not reading proficiently by the end of third grade do not graduate from high school on time, a rate four times greater than that for proficient readers.
- For children who were poor for at least a year and were not reading proficiently, the proportion failing to graduate rose to 26 percent.
- For children who were poor, lived in neighborhoods of concentrated poverty and not reading proficiently, the proportion jumped to 35 percent.

- Overall, 22 percent of children who lived in poverty do not graduate from high school, compared to 6 percent of those who have never been poor. The figure rises to 32 percent for students spending more than half of their childhood in poverty.

- Even among poor children who were proficient readers in third grade, 11 percent still did not finish high school. That compares to 9 percent of subpar third-grade readers who have never been poor.

- About 31 percent of poor African-American students and 33 percent of poor Hispanic students who did not hit the third-grade proficiency mark failed to graduate. These rates are greater than those for White students with poor reading skills. But the racial and ethnic graduation gaps disappear when students master reading by the end of third grade and are not living in poverty.

Background

More than three decades ago, research began to suggest that children with low third-grade reading test scores were less likely to graduate from high school than children with higher reading scores.[1] Third grade is an important pivot point in a child's education, the time when students shift from learning to read and begin reading to learn. Interventions for struggling readers after third grade are seldom as effective as those in the early years.[2] Recognizing the importance of early reading skills, the No Child Left Behind Act has, from the outset, required states to test reading skills annually for all students beginning in third grade, and to report these results for children by poverty status and race-ethnicity, as well as for English Language Learners and for children with disabilities.[3] This Act asserted "President Bush's unequivocal commitment to ensuring that every child can read by the end of third-grade."[4] More recently, in March 2010, the Obama Administration released its blueprint for revising the Act, known as the Elementary and Secondary Education Act, calling for "Putting Reading First" by significantly increasing the federal investment in scientifically based early reading instruction.[5] President Obama has also called for restoring the United States to its position as number one in percentage of college graduates. (It is now tied for 9th.) Accomplishing that goal will mean ensuring that millions more students graduate from high school.[6]

Meanwhile, the National Assessment of Educational Progress (NAEP), also known as the "The Nation's Report Card," showed in 2011 that only 34 percent of fourth graders read at a "proficient" level, while the remaining students do not, and instead read at the "basic" level (33 percent), or below the basic level (33 percent).[7] According to the NAEP, "Fourth grade students performing at the Proficient level should be able to integrate and interpret texts and apply their understanding of the text to draw conclusions and make evaluations."[8] Thus, two-thirds of students did not finish third grade with these essential reading skills. This report presents the first-ever analysis of high school graduation rates separately for children with reading test scores that correspond roughly to the proficiency levels set by NAEP, with additional results for children reading below the proficient level, at either the basic level or below basic on reading tests.

Findings

One in Six Children Who Are Not Reading Proficiently in Third Grade Fail to Graduate from High School On Time, Four Times the Rate for Children with Proficient Third-Grade Reading Skills

Overall, the research analysis shows that 88 percent of children graduate from high school by age 19, while the remaining 12 percent do not. This is similar to the 90 percent "status completion" rate recorded by the National Center for Education Statistics. Other analyses that measure how many students in a particular high school or school district graduate with their class tend to reflect lower graduation rates.[9] Because the students in this database are spread across the country, its not possible to assess the school-wide measure. That said, the analysis offers rich detail on how family and neighborhood poverty influence their academic success. It finds that graduation rates vary enormously for children with different reading skills in third grade. Among proficient readers, only 4 percent fail to graduate, compared to 16 percent of those who are not reading well in third grade. Among those not proficient in reading, 9 percent of those with basic reading skills fail to graduate, and this rises to 23 percent of those who don't reach the basic level (Figure 1a and 1b).

As a result, children with the lowest reading scores account for a third of students but for more than three-fifths (63 percent) of all children who do not graduate from high school (Figure 2). Third-grade reading matters.

Figure 1a: Children Not Graduating from High School by Age 19

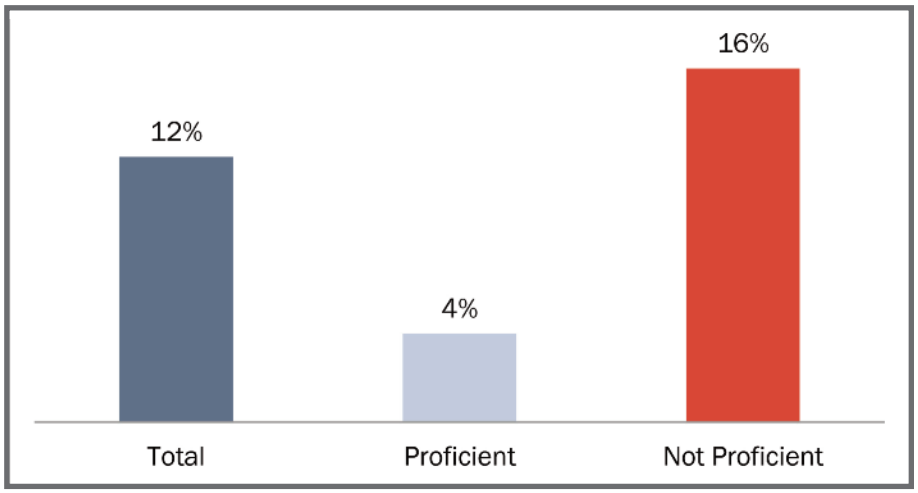


Figure 1b: Further Analysis of Children Not Proficient Who Did Not Graduate from High School By Age 19

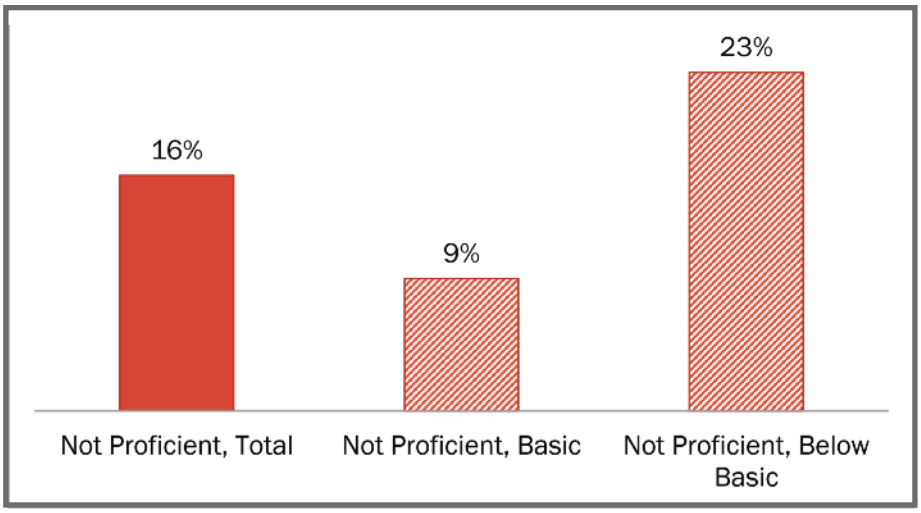
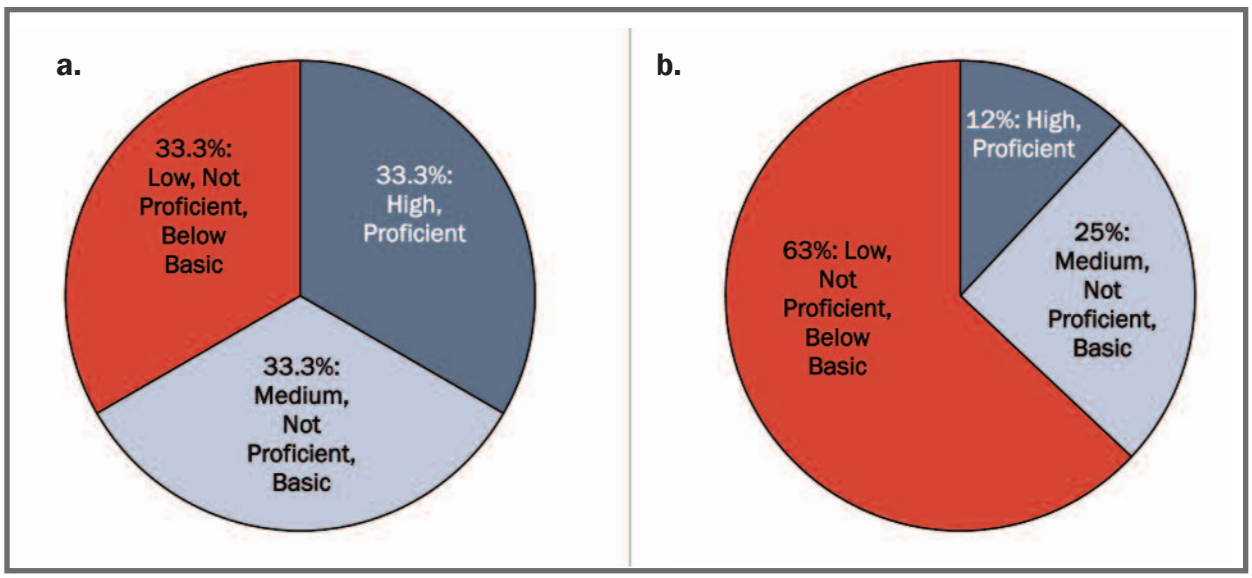


Figure 2, a: Third-Grade Reading Test Scores, All Children
b: Children Not Graduating High School by Third-Grade Reading Test Scores, All Children



Children Who Have Lived in Poverty and Are Not Reading Proficiently in Third Grade Are About Three Times More Likely to Dropout or Fail to Graduate From High School Than Those Who Have Never Been Poor

Children whose families live in poverty often lack resources for decent housing, food, clothing, and books, and they often do not have access to high-quality child care and early education or to health care. They also are more likely to live in neighborhoods with low-performing schools. Consequently, children in poor families tend to develop weaker academic skills and to achieve less academic success. Many arrive at kindergarten without the language or social skills they need for learning. They miss school frequently because of health or family concerns. They slip behind in the summer with little access to stimulating educational programs or even regular meals.

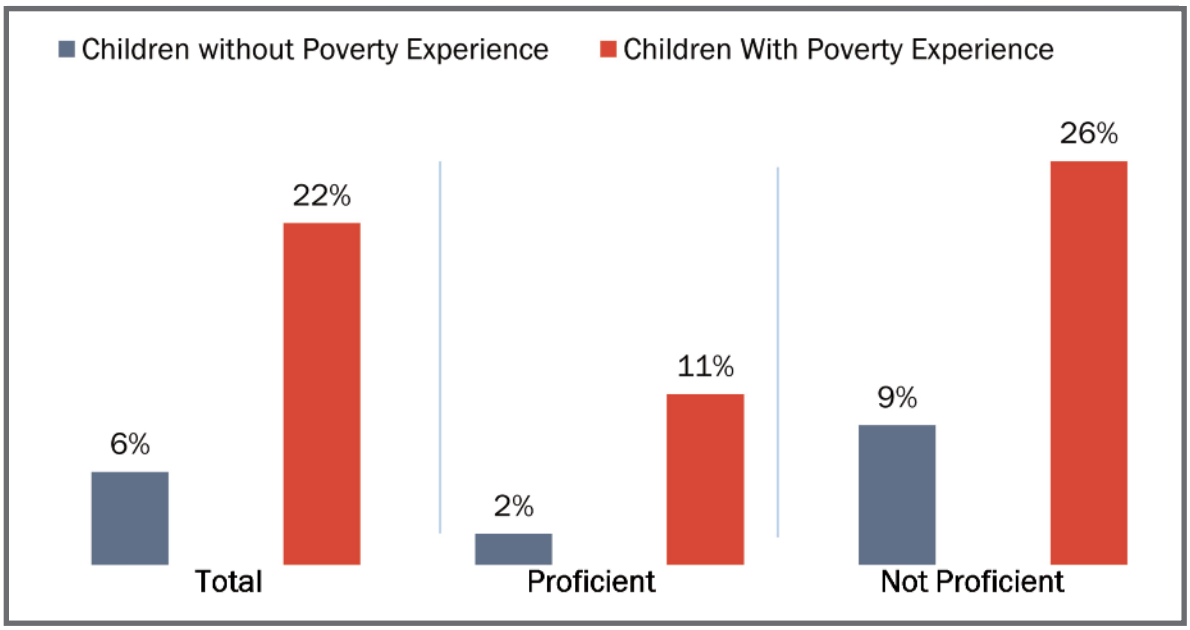
Consequently, the children in poor families are in double jeopardy: They are more likely to have low reading test scores and, at any reading-skill level, they are less likely to graduate from high school.

Using eligibility for the National School Lunch Program to classify children as living in low-income families, results of the NAEP show that nationwide 55 percent of fourth graders in moderate- and high-income families have reading skills below the proficient mark. This jumps to 83 percent for children in low-income families.[10] Results calculated for this study show that children whose families have incomes below the federal poverty threshold are less likely to finish high school, especially if they have low third-grade reading scores. (The federal poverty threshold in 2010 was $22,162 for a family of four with two children.)[11]

For the database used in this study, known as the National Longitudinal Survey of Youth 1979, or NLSY79, children and mothers are interviewed biennially in even-numbered years. Thus, poverty status is measured for each sample child in five of the years between the second and 11th grades (see Appendix I for additional information). Children are characterized in this report as having experience with poverty if, in at least one of these five years, they lived in a family with an income below the federal poverty threshold, and as spending more than half of their childhood in poverty if they lived in poor families for more than half of these years.

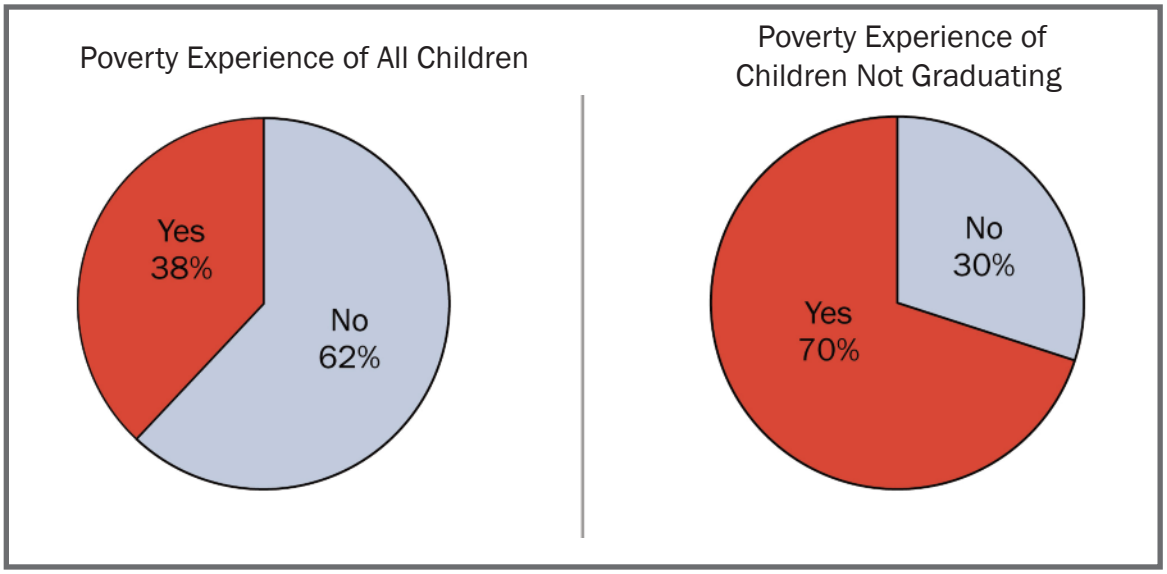
Overall, 22 percent of children with some family poverty experience do not graduate from high school, a figure about three times greater than the 6 percent rate for children with no family poverty experience (Figure 3). This rises to 32 percent for children spending more than half of the survey period in poverty.

Figure 3: Children Not Graduating from High School by Age 19, by Poverty Experience and Reading Proficiency



Among children with two risk factors—poverty and reading skills below the proficient mark—26 percent do not graduate from high school, compared to 9 percent with these subpar reading scores who have never experienced poverty. The graduation rates improve when poor children are reading at a proficient level in third grade. Even so, 11 percent of the top readers who spent at least one year in poverty failed to graduate on time, compared to 2 percent of those who have never been poor. Overall, children who spend a year or more in poverty account for 38 percent of all children, but they account for seven-tenths (70 percent) of all children who do not graduate from high school. Poverty matters (Figure 4).

Figure 4: Poverty Experience of Children Not Graduating from High School

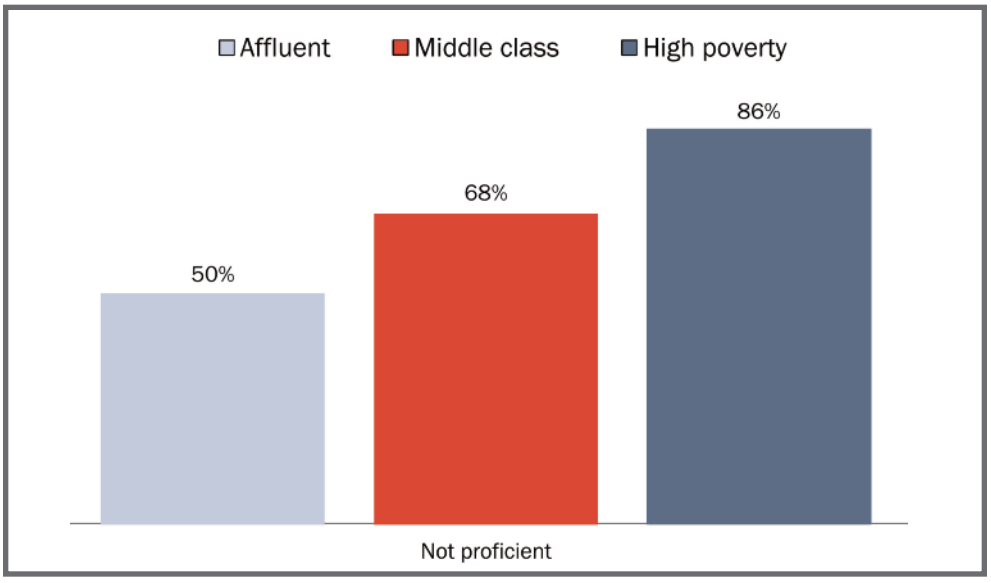


Living in a High-Poverty Neighborhood Exacerbates the Ill Effects of Poor Reading Skills and Family Poverty: More Than a Third of Students with All Three Risk Factors Fail to Finish High School

Neighborhoods matter: Undesirable ones can reinforce the negative consequences of poverty for children, while communities with greater resources can help to ameliorate these consequences. For example, if a poor family rents the cheapest apartment or house in an affluent neighborhood, the children can attend school with higher achieving classmates, better teachers, and a greater variety of school programs, all factors associated with greater academic success. Other neighborhood amenities—good police patrols, lower crimes rates, regular garbage pickup, and good transportation services—also contribute to the family's well-being. The situation is reversed for children living in neighborhoods with high concentrations of poverty and limited services.

Children are classified in this report as living in a high-poverty neighborhood if, during one or more interviews, they lived in a place where the official federal poverty rate was greater than 30 percent, reflecting the definition used in other recent studies.[12] Even if children have lived in a high-poverty neighborhood for a limited time, recent research found that negative effects on verbal ability can linger after the child leaves that setting.[13] At the other extreme, children are classified in this report as living in an affluent neighborhood if, during one or more interviews, they lived in a community where more than 45 percent of families had relatively high incomes (see Appendix I for additional information). Research found more than a decade ago that young children ages 3 to 6 living in neighborhoods with a concentration of affluent families experience better cognitive outcomes.[14]

Figure 5: Children Not Reading Proficiently by Neighborhood Type



Among children in this study, 18 percent are classified as having lived in a high-poverty neighborhood, and 14 percent are classified as living in an affluent neighborhood. The remaining 68 percent are designated as having lived only in middle-class neighborhoods. Among children who have lived in an affluent neighborhood, half do not read proficiently by third grade, but this figure jumps to 68 percent for children who have lived only in middle-class settings and to 86 percent for those who have lived in a high-poverty neighborhood (Figure 5).

Not all children in poor neighborhoods are necessarily poor. But 70 percent have experienced family poverty, and they are even less likely to graduate from high school. Among children who experience all three risk factors—not reading proficiently at the end of third grade, having lived in a high-poverty neighborhood, and experiencing family poverty—the proportion failing to graduate is 35 percent. This demonstrates the compounding effect of the three risk factors (Figure 6).

Their chances for graduating improve when children live in better neighborhoods. About 20 percent of poor children not reading proficiently in affluent neighborhoods and 23 percent in middle-class places do not finish high school, compared to the 35 percent rate in concentrated poverty. Nonetheless, the low-income children in all neighborhoods are less likely to graduate than their peers (Figure 7).

Figure 6: Likelihood of Not Graduating from High School Based on Risk Factors

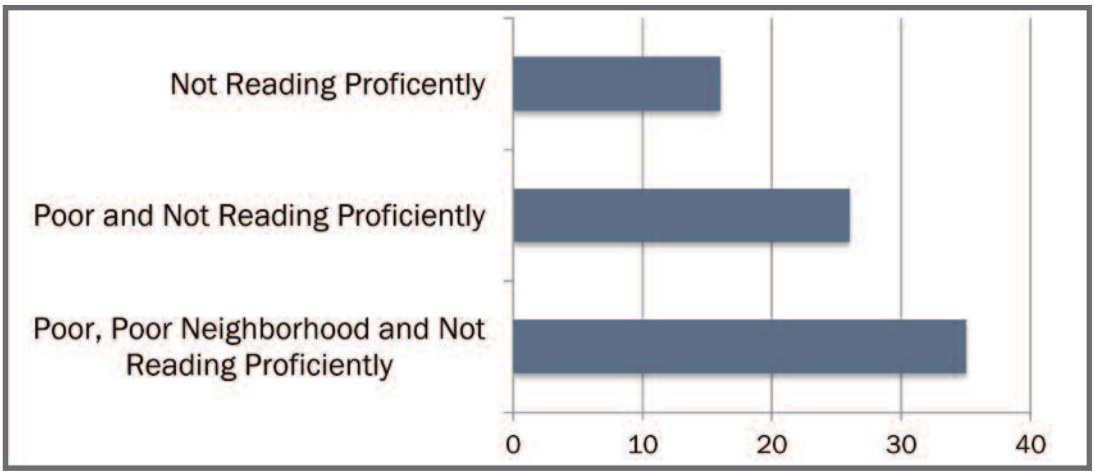
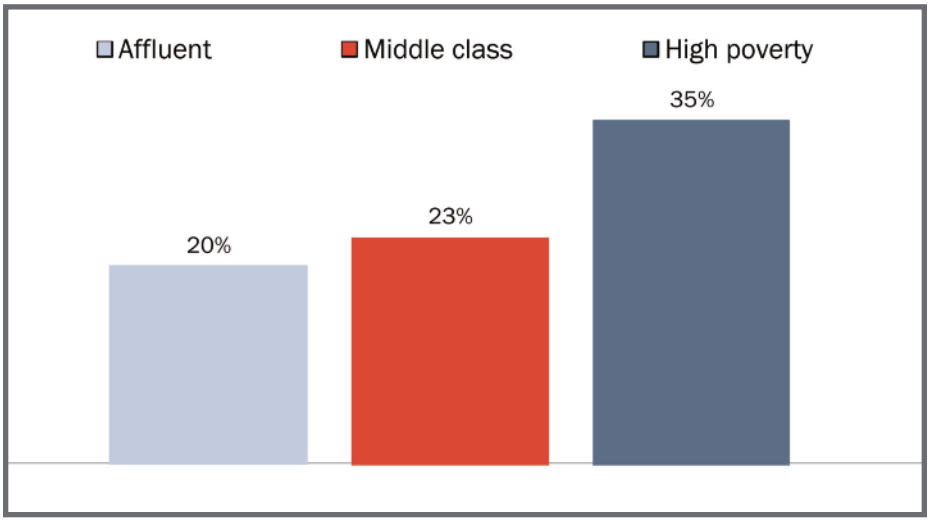


Figure 7: Poor Children Who Do Not Read Proficiently and Do Not Graduate from High School by Neighborhood Type



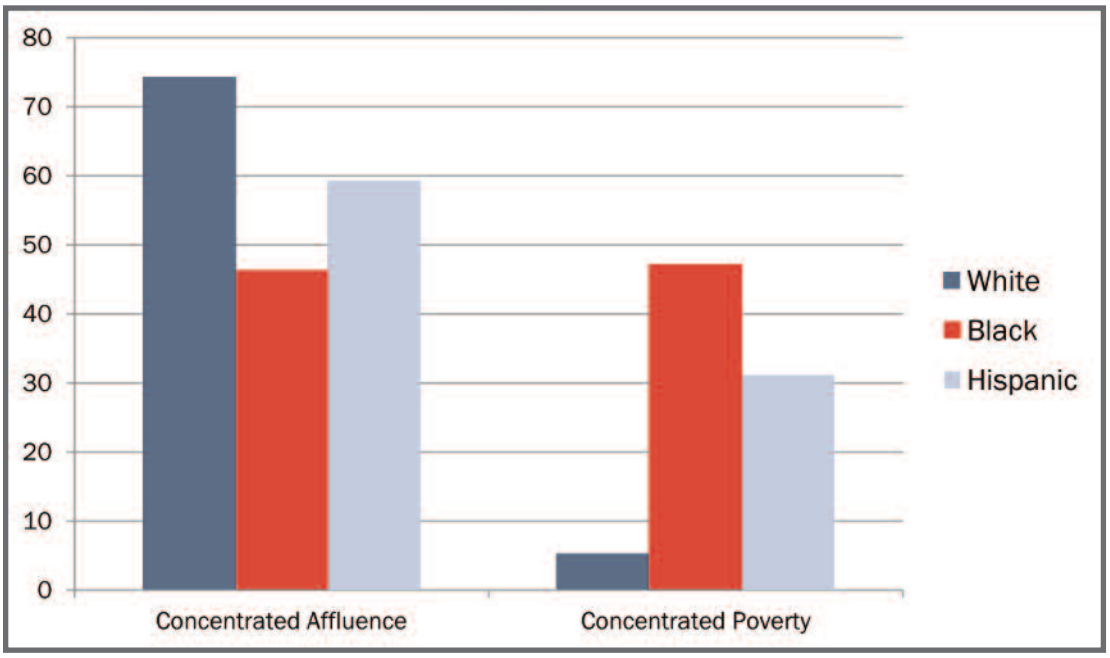
Among children who are not proficient readers in third grade, 7 percent of those from affluent neighborhoods fail to graduate from high school on time, compared to 27 percent of those who have lived in a high-poverty neighborhood. In middle-class neighborhoods, the proportion was 15 percent.

Even among proficient readers, neighborhood experience matters: Only 2 to 4 percent of good readers who have lived in affluent or middle-class neighborhoods do not graduate, compared to 14 percent of those from high-poverty communities.

Because of the limited sample size, it is not possible to conduct a full analysis of all risk factors for Black and Hispanic students. However, setting family poverty experience aside, the proportion of Black and Hispanic children failing to graduate is 22 to 28 percent respectively if they are not proficient third-grade readers and have never lived in an affluent neighborhood. The figures hold true whether the students lived in middle-class or poor neighborhoods (Figure 8). For White children who are not reading proficiently in third grade, the proportion failing to graduate rises from 5 percent in affluent neighborhoods, to 13 percent in middle-class settings and 28 percent for those in concentrated poverty.

Overall, 18 percent of children in this study have lived in a high-poverty neighborhood, but the numbers are skewed along racial and ethnic lines. About 5 percent of White children have lived in such communities, compared to 31 percent of Hispanic children and 47 percent of African Americans. At the other extreme, only 8 percent of Black children and 11 percent of Hispanic students have lived in an affluent neighborhood, compared to 21 percent of White children. The vast majority of White children (74 percent) have lived only in middle-class neighborhoods, but this falls to 59 percent for Hispanic children and less than one-half (46 percent) for Black children.

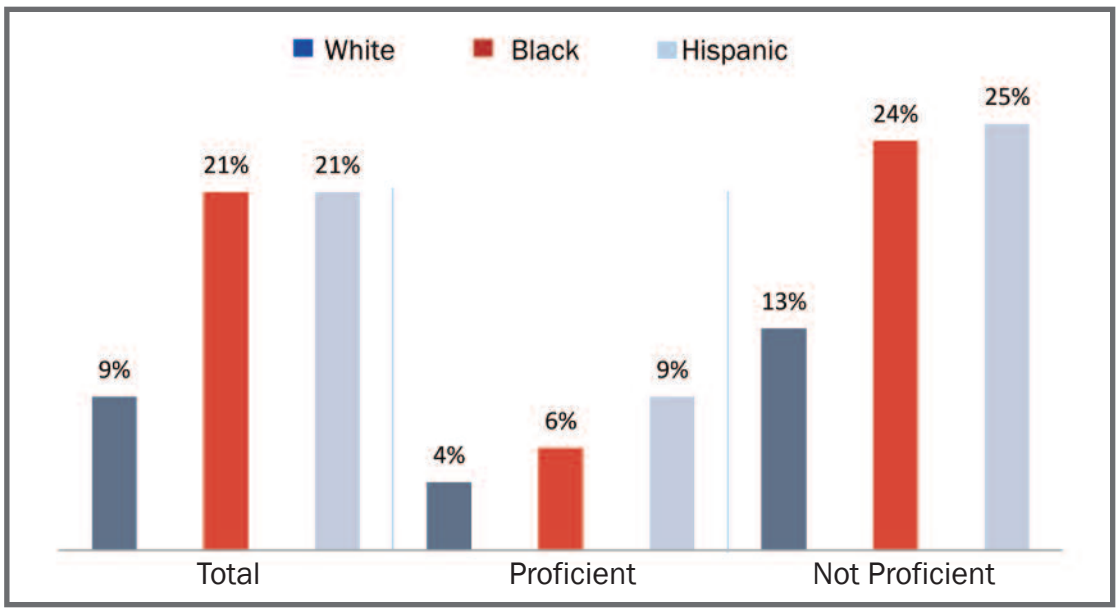
Figure 8: Percentage of Children by Race and Ethnicity Who Have Lived in Neighborhoods of Concentrated Affluence or Poverty



Black and Hispanic Children Who Are Not Reading Proficiently in Third Grade Are About Twice as Likely as Similar White Children Not to Graduate from High School

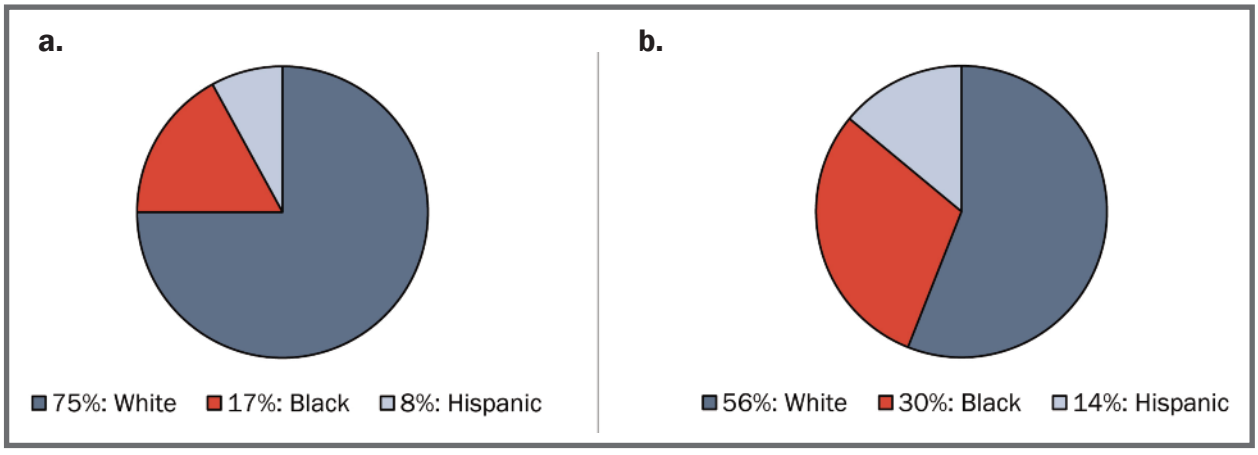
As the analysis shows, Black and Hispanic children are not only more likely to live in poverty, they also are more likely to live in neighborhoods with concentrated poverty and low-performing schools. NAEP results released in 2011 show that only 44 percent of White students read at the proficient level in fourth grade, and this falls to 17 percent for Black students and 18 percent for Hispanics.[15] The NLSY79 database provides racial and ethnic background for students, allowing for a breakdown of test scores on that basis. The study shows that about a quarter of Black and Hispanic students in the survey who are not reading proficiently in third grade do not graduate from high school, compared to 13 percent of other students. (Because there are few Asian families in the longitudinal survey they are combined in a single category largely composed of White students.) Thus, Black and Hispanic students who have not mastered reading in third grade are 11 to 12 percentage points less likely to graduate from high school than White students with similar reading skills. Only about 4 percent of White students who read well in third grade fail to graduate from high school, compared to 6 percent of Black students and 9 percent of Hispanics, differences that are not statistically significant (Figure 9). So the graduation rate gap closes when children reach proficiency in third grade.

Figure 9: Children Not Graduating by Race-Ethnicity



Among those who spend at least a year in poverty and do not read proficiently, the drop-out rates rise to 22 percent for White students and to 31 and 33 percent for Black and Hispanic students, respectively (Appendix II Table). Among those who read well and live in poverty a year or more, about 10 to 14 percent of White, Black, and Hispanic students do not graduate from high school; and if they both read well and do not experience poverty, only 2 to 5 percent do not graduate. Although Black and Hispanic students are more likely to be poor readers by third grade and more likely not to graduate from high school, a majority (56 percent) of students in this survey who failed to graduate are White, while 30 percent are Black, and 14 percent are Hispanic (Figure 10).

Figure 10, a: All Children by Race-Ethnicity
b: Children Not Graduating from High School by Race-Ethnicity



Policy and Program Strategies

The findings in this report point toward several distinct arenas where new policies and programs could foster children's school success. The first is schools, which have the immediate responsibility for teaching children to read. Second is the family, because poverty and limits on available resources in the home can undermine children's capacity and opportunities to learn. Third is federal, state, and local policy, which can profoundly influence the organization and focus of schools and the extent to which children and families live in poverty. Across these arenas, educators and policymakers must work to close the gaping racial and ethnic disparities in reading scores, family poverty, and neighborhood experiences. These findings point to the role that public policy could play in reducing these historic disparities that have affected educational outcomes.

High-quality early education is a cost-effective investment for improving both early and later school success, particularly for students in low-income families and for Black and Hispanic children.[16] Unfortunately, studies show the effects of good PreK programs can "fade out." But research also shows that gains for students are sustained if high-quality PreK is linked with the elementary grades, to create a common structure and coherent sets of academic and social goals.[17] The integrated PreK-3rd approach to education, if fully developed and effectively implemented, involves six components: (1) aligned curriculum, standards, and assessment from PreK through third grade; (2) consistent instructional approaches and learning environments; (3) availability of PreK for all children ages 3 and 4, as well as full-day kindergarten for older children; (4) classroom teachers who possess at least a bachelor's degree and are certified to teach grades PreK-3rd; (5) small class sizes; and (6) partnership between the school and families.[18] A recent study of an integrated PreK-3rd approach implemented in Chicago found improved educational outcomes leading to a long-term societal return of $8.24 for every $1 invested in the first four to six years of school, including the PreK years.[19]

Of course, both in the early years and later childhood, chronic school absence is associated with lower educational attainments.[20] This is particularly true for low-income children who are more likely to be chronically absent and more likely to lose out on the intensive literacy instruction in the early grades. The negative impact of school absences on literacy learning is 75 percent greater for low-income children than for their more affluent peers.[21] Schools must address this problem, as well as providing effective instruction whenever students are present in the classroom. Similarly, research spanning 100 years has shown that students lose ground during summer, particularly low-income students. They lose an average of more than two months in reading achievement over the summer, slowing their progress toward third-grade reading proficiency.[22] It is also, therefore, important for schools and communities to develop opportunities for summer learning that are aligned with instruction that occurs during the regular school year.

In families, parents are the first teachers, preparing their children to read simply by talking and reading to them frequently. They can also be the first to spot health and developmental problems that may lead to reading difficulties. But parents do not always know what to look for or how to help their children, and access to health care is essential. Poverty is strongly associated with lack of health insurance coverage. For example, 10 percent of people in families with incomes of $50,000 or more are not covered by health insurance, but this jumps to 19 percent for those with family incomes between $25,000 and $49,999, and to 29 percent for those with family incomes below $25,000.[23] Children in poor families also are more likely than their peers to have parents with limited education, because lower education is associated with earning lower incomes.[24] These findings suggest that policies and programs which would increase access to health insurance for children and to improved education for parents, particularly in low-income families, could play an important role in fostering children's educational success.

Schools and parents cannot, by themselves, bring about these changes. Federal, state, and local governments will be essential in the development and funding of efforts to expand PreK, to develop integrated PreK-3rd initiatives, to reduce chronic absenteeism, to expand summer learning opportunities, to assure that schools provide high-quality instruction, and to provide access to health insurance and to effective opportunities for parents to increase their educational levels and human capital. The links between parent education, family income and children's educational success further suggest the potential value in pursuing two-generation strategies, which seek to improve results for children by focusing simultaneously on school policies and programs, and on strengthening families through increased parental education and improved employment opportunities that reduce family poverty, as well as increased health insurance coverage for all family members.

Such poverty reduction strategies could help close the racial and ethnic disparities in high school graduation, since Black and Hispanic children and families are especially likely to experience poverty and to read poorly. Among White children, for example, 31 percent have been poor, but this jumps to 49 percent for Hispanic children and 63 percent for Black children . Similarly, the proportion who experience family poverty and are not reading proficient climbs from 22 percent for White children, to 41 percent for Hispanic children and 53 percent for Black children.

Effective policies that lift families out of poverty and increase reading skills would, at the same time, also reduce local poverty rates and the number of high-poverty neighborhoods. Such policies could also be transformative in middle-class neighborhoods, where, in the present study, 64 percent of all children with family poverty experience live. In short, these results point especially to the need for policies that invest in education, health and the economic security of families, particularly for Black and Hispanic families, in both high-poverty and middle-class neighborhoods across the United States.

Future Analyses Will Provide a Deeper Understanding

This brief presents the results from the first phases of research into the factors that keep students from finishing high school. Beyond that, the next phase of this research will systematically assess the living conditions of children to identify family, school and neighborhood resources that can foster resilience among children – resources that can make it possible for at-risk children to achieve third-grade reading success, and resources that can make it possible for children with limited third-grade reading skills to catch up so that they can graduate from high school on time. This research will focus especially on the impact of increased mother's education and family income, of access to health insurance and high-quality schools, and of neighborhood problems. I plan to expand the research to understand the role of specific family processes that link family, school and neighborhood resources to third-grade reading success and to high school graduation.

Appendix I

Technical Notes

The results for on-time high school graduation (by age 19) presented in this report are calculated from the National Longitudinal Survey of Youth 1979 (NLSY79) and the associated data for children of mothers in the sample. The NLSY79 is the only data source capable of providing such estimates, because it is the only nationally representative study that has assessed student reading in third grade, and then subsequently has followed the same children into their young adult years.

More specifically, this study calculates high school graduation rates for children born between 1979 and 1989 to mothers who were in the age range of 22 to 32 years. The mothers in the sample were originally selected to be nationally representative of all women born in the years 1957 to 1964, and who were residents in the United States in 1978. They were first interviewed at ages 14 to 22 in 1979.[25] Insofar as the baby-boom generation was born in the years 1946 to 1964, the high school graduation rates reported here are for children who are old enough (age 19 or more) to have graduated from high school on time, and who have mothers born in the last half of the baby boom.

The NLSY79 was conducted by the Bureau of Labor Statistics in the U.S. Department of Labor. The sample size for analyses in this report was 3,975 children. Reading assessments were conducted as early as 1986, and data used in this report were collected as recently as 2008. Reading skill is measured in this study using the Peabody Individual Achievement Test (PIAT) Reading Recognition subtest. This survey interviews children and their mothers biennially in even-numbered years. For half the sample, data were collected for children as of third, fifth, seventh, ninth and eleventh grades. For the other half of the sample, data were collected for children as of the second, fourth, sixth, eighth and tenth grades.

For reading test scores, results were used for third grade if available, otherwise test scores were calculated as the average of second-grade and fourth-grade scores if both were available, otherwise the second-grade assessment was used if available. This study calculates the proportion of years a child experiences family poverty as the number of "interview years" the child lived in a poor family divided by the number of interview years available for the child between second grade and eleventh grade.

This study calculates high school graduation rates for children in the top, middle and bottom thirds of the PIAT reading score distribution. These subpopulations were selected to correspond roughly to children classified in NAEP as reading at a proficient, basic or below basic level. In the years between 1992 and 2009, the proportion scoring at or above proficient on NAEP was in the narrow range of 29 to 33 percent, while the remaining 67 to 71 percent scored below proficient at either the basic or below basic level. The proportion scoring in the middle (basic) category was 18 to 26 percent in the years up to 2000, and in the higher range of 26 to 34 percent through 2009, while the proportion with test scores in the lowest (below basic) category was 38

to 41 percent up to 2000, and in the range of 33 to 27 percent in the years that followed.[26] In this report, as in most other studies of neighborhood effects, U.S. Census tracts are the geographic units designated as neighborhoods. Information on the location of the child's specific neighborhood was obtained from a restricted access version of the NLSY79 database and merged with neighborhood income information obtained from the 1980, 1990 and 2000 Censuses. Linear interpolation and extrapolation were used for data points that occurred between and after the Censuses.

Children were classified as having lived in a high-poverty neighborhood if, during at least one interview year, they lived in a neighborhood where the percent of families with incomes below the official federal threshold was more than 30 percent. Conversely, they were classified as having lived in an affluent neighborhood if, during at least one interview year, they lived in a neighborhood where more than 45 percent were classified as affluent. Affluence was defined as having a family income greater than $75,000 in 2000, with values for other years obtained by adjusting for inflation using the CPI-U-RS.[27]

These cut points were chosen because they capture the effects of income concentration at both ends of the spectrum, while providing for reasonable sample sizes for all three neighborhood groups—14 percent of children lived in affluent neighborhoods and 18 percent lived in high-poverty neighborhoods. Children who lived in neither of the extremes (and the 1.8 percent who reported living in both at different times) were classified as middle-class.

Appendix II, Table 1

Percent Failing to Graduate from High School by Age 19, for Children by Third-Grade Reading Test Scores, by Race-Ethnicity, and by Poverty Experience

			Reading Scores Below Proficiency		
	All Children	Proficient	Total	Basic	Below Basic
Total	12	4	16	9	23
White	9	4	13	7	19
Black	21	6	24	15	30
Hispanic	21	9	25	12	33
	Have Not Experienced Poverty				
Total	6	2	9	5	14
White	5	2	7	4	12
Black	10	3	12	6	18
Hispanic	12	5	15	5	24
	Have Experienced Poverty				
Total	22	11	26	18	31
White	19	11	22	15	27
Black	28	10	31	22	35
Hispanic	30	14	33	20	40

Appendix II, Table 2

Percent of Children Failing to Graduate from High School by Age 19 by Neighborhood Type and Third Grade Reading Score, by Race-Ethnicity, and by Poverty Experience								
	All Children		Concentrated Affluence		Middle-Class		Concentrated Poverty	
	Proficient	Not Proficient	Proficient	Not Proficient	Proficient	Not Proficient	Proficient	Not Proficient
All Children	4	16	2	7	4	15	14	27
White	4	13	2	5	4	13	**	28*
Black	6	24	**	18*	7	22	11	27
Hispanic	9	25	**	8*	5	27	**	28
Have Not Experienced Poverty	2	9	1	3	2	10	3	10
Have Experienced Poverty	11	26	7	20*	10	23	19	35

* Sample size is less than 100
** Sample size is less than 50

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