



The Widening Academic Achievement Gap between the Rich and the Poor

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Almost fifty years ago, in 1966, the Coleman Report famously highlighted the relationship between family socioeconomic status and student achievement.² Family socioeconomic characteristics continue to be among the strongest predictors of student achievement, but while there is a considerable body of research that seeks to tease apart this relationship, the causes and mechanisms of this relationship have been the subject of considerable disagreement and debate.

Much of the scholarly research on the socioeconomic achievement gradient has focused largely on trying to understand the mechanisms through which factors like income, parental educational attainment, family structure, neighborhood conditions, school quality, as well as parental preferences, investments, and choices lead to dif-

ferences in children's academic and educational success. Still, we know little about the trends in socioeconomic achievement gaps over a lengthy period of time.

The question posed in this article is whether and how the relationship between family socioeconomic characteristics and academic achievement has changed during the last fifty years, with a particular focus on rising income inequality. As the income gap between high- and low-income families has widened, has the achievement gap between children in high- and low-income families also widened? The answer, in brief, is yes. The achievement gap between children from high- and low-income families is roughly 40 percent larger among children born in 2001 than among those born twenty-five years earlier.

Trends in Socioeconomic Status–Achievement Gradients

To begin with, consider the difference in achievement between children from high- and low- income families. One way to measure this difference is to compare the average math and reading skills³ of children from families with incomes at the 90th percentile of the family income distribution (about \$160,000 in 2008) to those in families with incomes at the 10th percentile of the family income distribution (about \$17,500 in 2008),⁴ hereafter referred to as the “90/10 income achievement gap.”

Figures 1 and 2 present the estimated 90/10 income achievement gap for cohorts of students born from the mid-1940s through 2001.⁵ These estimates are derived from thirteen nationally representative studies available that include family income as well as reading and/or math scores for school-age children.

Although the tests used are not exactly comparable across all the studies included, both figures show a clear trend of increasing income achievement gaps across cohorts born over a nearly sixty-year period. The estimated income achievement gaps among children born in 2001 are roughly 75 percent larger than the estimated gaps among children born in the early 1940s. The gap appears to have grown among cohorts born in the 1940s and early 1950s, stabilized for cohorts born from the 1950s through the mid-1970s, and then grown steadily since the mid-1970s. Although the trend in achievement gaps prior to 1970 is somewhat unclear, the trend from the mid-1970s to 2001 appears relatively clear—statistical models in-

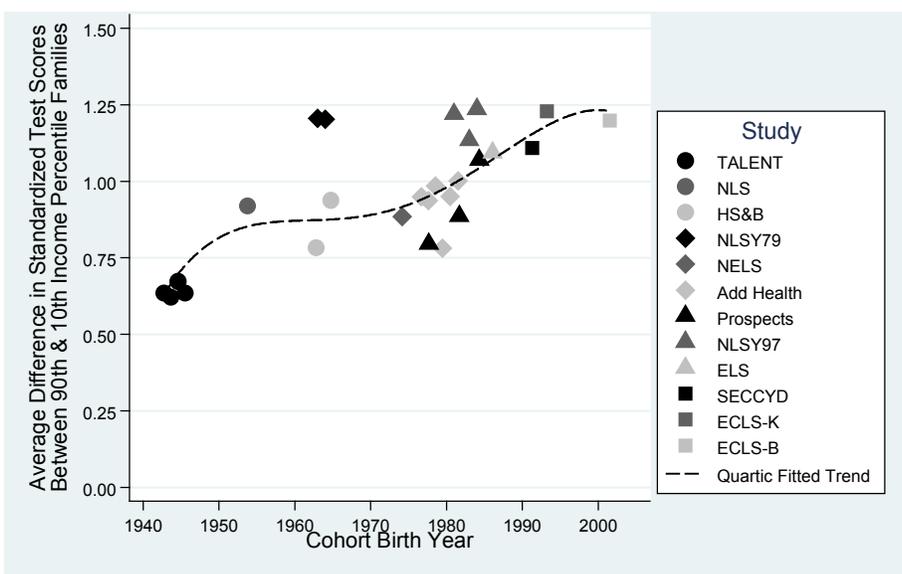
dicating that the income achievement gap has grown by roughly 40 to 50 percent within twenty-five years, a very sizable increase.

One important question is whether the trend in the income achievement gap is driven by the changing racial and ethnic composition of the U.S. population. In separate analyses,⁶ I find that the income achievement gap grew within the white, black, and Hispanic student populations separately, as well as within the population as a whole. For whites and Hispanics, the income achievement gap appears relatively stable through the mid-1970s and begins to grow rapidly thereafter; for blacks, the gap appears to grow steadily from the 1940s through 2001.

How Large Are These Gaps?

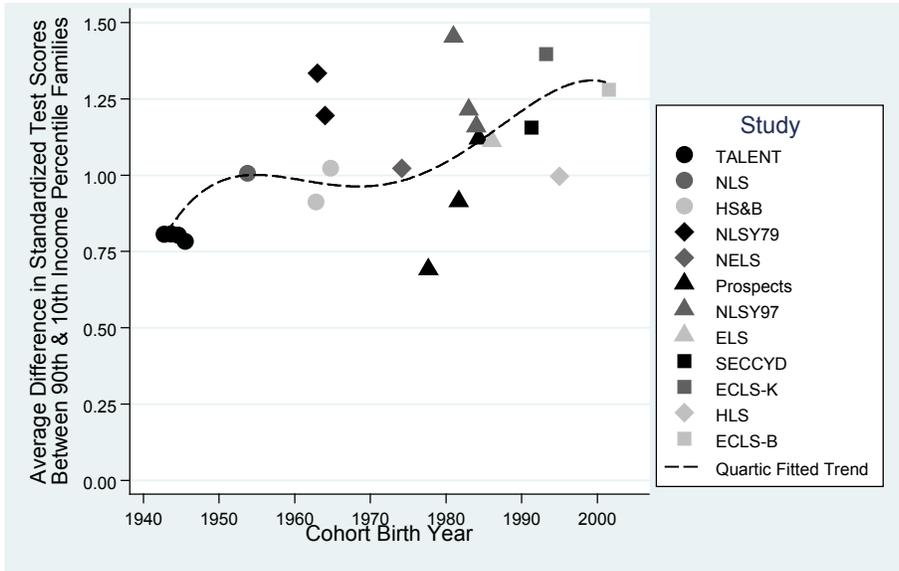
Figures 1 and 2 report income gaps in standard-deviation units. Although this is a metric familiar to researchers and one that is useful for comparing the size of gaps across studies using different tests, it may not be immediately obvious how large these gaps are in real terms. One way to get a sense of the size of the gaps is to compare them to the amount that an average student learns during the course of a year. Data from the National Assessment of Educational Progress (NAEP) indicate that the average student gains 1.2 to 1.5 standard deviations in math and reading between fourth and eighth grade and between 0.6 and 0.7 standard deviations in math and reading between eighth and twelfth grade.⁷ Thus, a gap of 1 standard deviation is substantively very large, corresponding to roughly 3 to 6 years of learning in middle or high school.

Figure 1. Trend in 90/10 Income Gap in Reading, 1940–2001 Cohorts



Source: Author’s compilation based on data from Project Talent (Flanagan et al. n.d.); NLS, HS&B, NELS, ELS, ECLS-K, ECLS-B (U.S. Department of Education, Center for Education Statistics 1999, 2000, 2001, 2004, 2009, 2010); Prospects (U.S. Department of Education 1995); NLSY79, NLSY97 (U.S. Bureau of Labor Statistics 1980, 1999); SECCYD (National Institute of Child Health and Human Development 2010); and Add Health (Harris 2009). Note: See note 3 and online appendix for further details.

Figure 2. Trends in 90/10 Income Gap in Math, 1940–2001 Cohorts

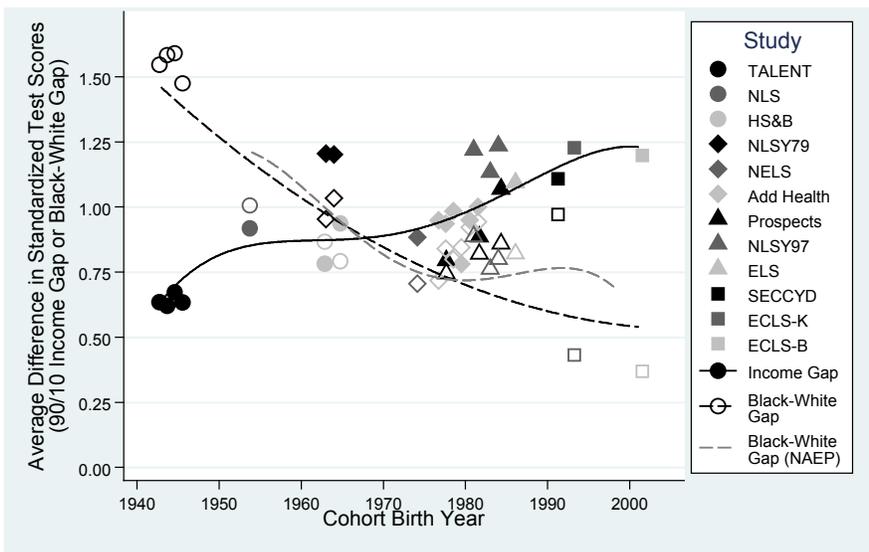


Source: Author's compilation based on data from Project Talent (Flanagan et al. n.d.); NLS, HS&B, NELS, ELS, ECLS-K, HLS, ECLS-B (U.S. Department of Education, Center for Education Statistics 1999, 2000, 2001, 2004, 2009, 2010); Prospects (U.S. Department of Education 1995); NLSY79, NLSY97 (U.S. Bureau of Labor Statistics 1980, 1999); and SECCYD (National Institute of Child Health and Human Development 2010).
Note: See note 3 and online appendix for further details.

Another way of getting a sense of how large these gaps are (and how meaningful their trend is) is to compare the income achievement gaps to contemporaneous black-white achievement gaps. The black-white achievement gap narrowed substantially among cohorts born from the mid-1950s through the mid-1970s—by roughly one-half a standard deviation—according to NAEP data.⁸

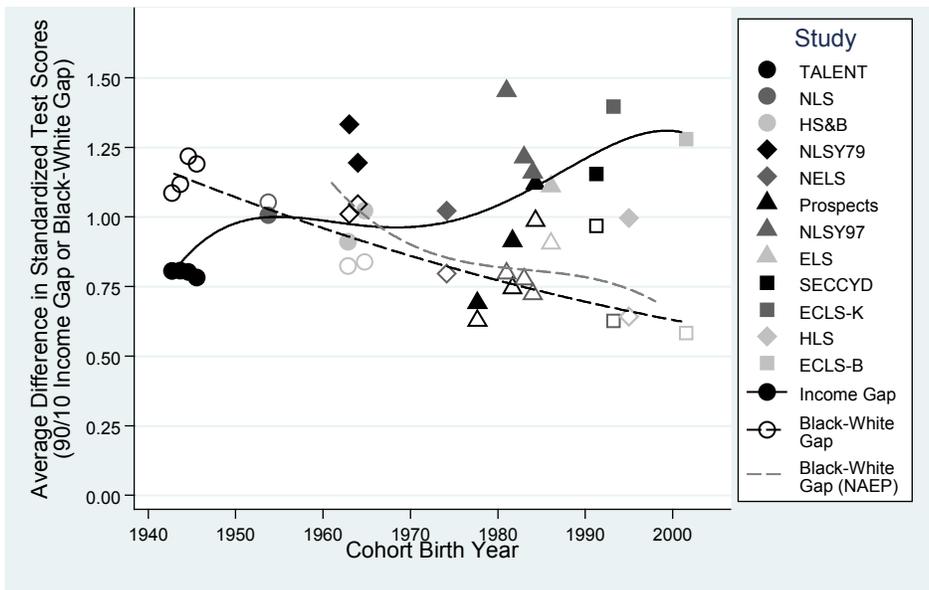
Figures 3 and 4 display both the 90/10 income gaps (as shown in Figures 1 and 2) and the black-white achievement gaps as estimated from the same samples.⁹ In each figure the solid line indicates the estimated trend in the 90/10 income achievement gap. For comparison, the estimated black-white achievement gap from each study is displayed in the figure (the hollow circles), along with a

Figure 3. Trends in Income and Black-White Gaps in Reading, 1943–2001 Cohorts



Source: Author's compilation based on data from Project Talent (Flanagan et al. n.d.); NLS, NAEP, HS&B, NELS, ELS, ECLS-K, ECLS-B (U.S. Department of Education, Center for Education Statistics n.d., 1999, 2000, 2001, 2004, 2005, 2009, 2010); Prospects (U.S. Department of Education 1995); NLSY79, NLSY97 (U.S. Bureau of Labor Statistics 1980, 1999); SECCYD (National Institute of Child Health and Human Development 2010); and Add Health (Harris 2009).
Note: Solid symbols represent 90/10 income achievement gaps; hollow symbols denote black-white achievement gaps. See online appendix section 5.A5 for further details.

Figure 4. Trends in Income and Black-White Gaps in Math, 1943–2001 Cohorts



Source: Author's compilation based on data from Project Talent (Flanagan et al. n.d.); NLS, NAEP, HS&B, NELS, ELS, ECLS-K, HLS, ECLS-B (U.S. Department of Education, Center for Education Statistics n.d., 1999, 2000, 2001, 2004, 2005, 2009, 2010); Prospects (U.S. Department of Education 1995); NLSY79, NLSY97 (U.S. Bureau of Labor Statistics 1980, 1999); and SECCYD (National Institute of Child Health and Human Development 2010).
Note: Solid symbols represent 90/10 income achievement gaps; hollow symbols denote black-white achievement gaps. See online appendix section 5.A5 for further details.

dark dashed line describing the trend in the black-white achievement gap during the same time period. For comparison, a third trend line is included in the figure—the estimated trend in black-white gaps as estimated from NAEP data.

The striking feature of Figures 3 and 4, however, is not so much the well-known trends in the black-white gaps but the difference between the trends in the income gaps and the black-white gaps. For cohorts born in the 1940s to the 1960s, the black-white achievement gap was substantially larger than the 90/10 income achievement gap, particularly in reading. For cohorts born in the 1970s and later, however, the opposite is true. Among children born in the last two decades (those cohorts currently in school), the 90/10 income gap at kindergarten entry was two to three times larger than the black-white gap at the same time.

Why Has the Income Achievement Gap Grown?

The evidence thus far indicates that the relationship between a family's position in the income distribution and their children's academic achievement has grown substantially stronger during the last half-century. I suggest four possible broad explanations for this trend.

1. Rising Income Inequality

After decades of decline, income inequality in the United States has grown substantially in the last four decades and as of 2007 was at a level similar to the levels in 1925 to 1940, when U.S. income inequality was at its twentieth-century peak.¹⁰

Figure 5 shows income inequality trends over time, with changes in the 90/10 family income ratio (the ratio of the family income of the child at the 90th percentile of the family income distribution to that of the child at the 10th percentile), the 90/50 family income ratio, and the 50/10 family income ratio among school-age children from 1967 to 2010.¹¹ What is particularly striking is that the 90/10 family income ratio grew rapidly from 1967 to the early 1990s, more than doubling in twenty-five years, declined modestly during the 1990s and rose sharply over the past decade.

But how might income inequality relate to achievement? In a separate analysis, I investigate whether the children of the rich score higher than the children of the poor because the income difference between the rich and poor is so much larger than it used to be, or because the relationship between achievement and dollars of income has grown stronger.¹² In other words, does a dollar buy more achievement than it did before, or do the rich just have more dollars than they did before? These analyses, although not conclusive, suggest that the growth of the income achievement gap is not explained solely by rising income inequality. Rather, the association of achievement with family income has grown stronger over time, particularly among families in the upper half of the income distribution. Thus, it is not only rising income inequality per se that has caused the income achievement gap; rather, a dollar of income (or factors correlated with income) appears to buy more academic achievement than it did several decades ago.

Figure 5. Income Inequality Trends, 1967–2010, All Families with School-Age Children Weighted by Number of School-Age Children



Source: Author's calculations, based on U.S. Bureau of the Census (King et al. 2010).
Note: Each line shows the trends in the ratio of household incomes at two percentiles of the income distribution. All trends are divided by their value in 1967 in order to put the trends on a common scale.

2. Differential Investments in Children's Cognitive Development

The evidence showing that the returns to income have grown, at least among higher-income families, suggests that families may be changing how they invest in their children's cognitive development. If so, this may explain some of the rising income achievement gap. Sociologists and historians have argued that parents, particularly those in the middle class, have become increasingly focused on children's cognitive development during the last fifty years. Researcher Julia Wrigley, for example, examined the types of parenting advice published in popular magazines between 1900 and 1985 and found that articles published in the early part of the century were largely written by medical doctors and focused overwhelmingly on medical and nutritional advice.¹³ A focus on the intellectual development of children became much more prominent beginning in 1960s. Although some of this shift was driven by the era's interest in social inequality and the need for compensatory preschool education for poor children, Wrigley argues that children's cognitive development quickly became a concern of middle-class parents as well, as these parents increasingly saw education as essential for later economic success.

Another factor that may contribute to parents' increasing focus on their children's cognitive development is the rise of test-based accountability systems in education. Although some forms of standardized testing, including IQ tests and the SAT, have been prevalent for much of the twentieth century, standardized achievement testing has become much more common with the rise of the account-

ability movement. The combination of the increasing importance of educational success in determining earnings and the increasing importance of test scores in defining educational success may have caused parents to focus more on their children's cognitive development, with higher income parents more able to invest resources in their children's education than their lower income counterparts.

3. Changes in the Relationships among Family Income, Family Socioeconomic Characteristics, and Children's Achievement

Another possible explanation for the rising income achievement gap is that high-income families not only have more income than low-income families, but also have access to a range of other family and social resources. On average, families with higher incomes tend to be those in which the parent(s) are highly educated. This has long been true, though the link between parental educational attainment and family income has grown stronger in recent decades, as the wage returns to educational attainment have increased since 1979.¹⁴ Because highly educated parents are more able and more likely than less-educated parents to provide resources and opportunities for their children to develop cognitive and academic skills in both the preschool years and the school-age years, children of parents with college degrees may have higher academic achievement, on average, than children of parents with lower levels of education, all else being equal.

This argument suggests two possible explanations for the rising income achievement gap. First, the trend may result from an increase in the correlation between paren-

tal educational attainment and family income—which would mean that high- and low-income families are increasingly differentiated by education levels, leading to larger differences in children’s achievement. Second, the trend may derive from an increase in the achievement returns to parental education, net of income. This would mean that children of highly educated parents benefit more from their parents’ educational attainment than they did in the past.

Another possible reason for increasing correlation between parental education and income is the increasing polarization of families. Sara McLanahan argues that trends since 1960 in family structure and composition have led to an increasingly polarized distribution of family contexts for children—mothers with low levels of education are increasingly likely to be young, unemployed, and single or divorced; mothers with high levels of education are, conversely, increasingly likely to be older, employed, and married.¹⁵ As a result, the correlation of parental education and income among families with children is likely to increase with time.

4. Increased Segregation by Income

A final possible explanation for the rising income achievement gap is the pattern of increasing income segregation during the last forty years. Several recent studies have found that residential segregation by income increased from 1970 to 2009, partly as a result of rising income inequality and likely partly as a result of low-income housing policy.¹⁶ In particular, rising income inequality has led to the increasing segregation of high-income families from middle- and low-income families;

high-income families increasingly live spatially far from the middle class. Because residential patterns are closely linked to school-attendance patterns, the rise of residential income segregation has likely led to a concurrent rise in school segregation by income, though there is little empirical evidence on this.¹⁷ Because the growth in income segregation has been largely a result of increasing segregation of the affluent, this might explain the pattern of the rising association between income and achievement among higher-income families. However, there is little evidence to answer the question of whether rising income segregation has played a role in the increasing income achievement gap.

Conclusion

The forces at work behind the rising income achievement gap are likely complex and interconnected. Certainly more research to understand the causes of these trends is necessary. Equally important, however, is research to understand the consequences of these patterns. At the same time that family income has become more predictive of children’s academic achievement, so have educational attainment and cognitive skills become more predictive of adults’ earnings. The combination of these trends creates a feedback mechanism that may decrease intergenerational mobility. As the children of the rich do better in school, and those who do better in school are more likely to become rich, we risk producing an even more unequal and economically polarized society.

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Endnotes

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The Widening Academic Achievement Gap between the Rich and the Poor

1. This article is a condensed and updated version of: Reardon, Sean F. "The Widening Academic Achievement Gap Between the Rich and the Poor: New Evidence and Possible Explanations." In *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*, edited by Greg J. Duncan and Richard Murnane. © 2011 Russell Sage Foundation, 112 East 64th Street, New York, NY 10065. Reprinted with Permission. <https://www.russellsage.org/publications/whither-opportunity> Online appendix is available at: http://www.russellsage.org/duncan_murnane_online_appendix.pdf
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3. I use data from 19 nationally representative studies, including studies conducted by the National Center for Education Statistics (NCES), the Long-Term Trend and Main National Assessment of Educational Progress (NAEP) studies, U.S. components of international studies, and other studies with information on both family background and standardized-test scores. Although these studies vary in a number of ways, each of them provides data on the math or reading skills, or both, of nationally representative samples of students, together with some data on students' family socioeconomic characteristics, such as family income, parental education, and parental occupation. Although the specific tests of reading and math skills used differ among the studies, they are similar enough to allow broad conclusions about the rough magnitude of achievement gaps.

4. My calculations, based on 2009 Current Population Survey data. See online appendix section 5.A3 (see Note 1).
5. Figures 1 and 2 display estimated 90/10 income achievement gaps from all available nationally representative studies that include reading- or math-achievement test scores for school-age children and family income. For most of the longitudinal studies (HS&B, NELS, Prospects, ELS, and ECLS-K), only estimates from the initial wave of the study are included. ECLS-B estimates come from wave 4, when children were five years old and tested on school readiness; SECCYD come from wave 5, when children were in third grade and were first administered a broad academic achievement test. The quartic fitted regression line is weighted by the inverse of the sampling variance of each estimate. Included studies are Project Talent, NLS, HS&B, NLSY79, NELS, Add Health (reading only), Prospects, NLSY97, ELS, SECCYD, ECLS-K, HLS, and ECLS-B. Family income is student-reported in Project Talent, NLS, and HS&B. See online appendix for details on computation of 90/10 gaps (see Note 1).
6. See online appendix 5.A4 (see Note 1).
7. My calculations, based on Main NAEP math and reading scores. See National Center for Education Statistics website, available at: <http://nces.ed.gov/nation-reportcard/naepdata/dataset.aspx> (accessed March 7, 2011).
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9. Figures 3 and 4 show estimated 90/10 income gaps (solid symbols) and estimated black-white gaps (hollow symbols) based on the thirteen studies with family income data. The estimated trends in the income and black-white gaps are fitted lines (quartic for income gaps, quadratic for black-white gaps), weighted by the inverse of the sampling variance of each estimate. The estimated black-white gap trend from NAEP is a fitted line (quartic for reading, cubic for math) through all available NAEP-LTT and Main NAEP black-white gap estimates. The NAEP trend is adjusted for the age of the NAEP samples and the difference between Main and LTT NAEP (the line is the predicted trend for thirteen-year-old students in NAEP-LTT). See appendix section 5.A5 for details (see Note 1).
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Looking Back and Moving Forward: Changes in the Affordable Multifamily Mortgage Industry

1. Kaiser, M. & Vine, G. (2000). Affordable Multifamily Mortgage Risk: One Lending Consortium's 10 Year History. *Community Investments*, May 2000. <http://www.frbsf.org/publications/community/investments/cra00-1/May-CINewsAffordable.pdf>
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6. According to the Marcus & Millichap Apartment Research Market Reports, 3rd quarter 2012.

CDFI Industry Analysis: Summary Report

1. This article is an excerpt from the report "CDFI Industry Analysis: Summary Report," funded by the CDFI Fund, under Contract TPD-CDF-10-C-0003, Task Order 0002 and 0003. The curriculum and opinions expressed in these documents are those of the authors, who are solely responsible for the content, and do not reflect the opinions of the CDFI Fund or any other person, entity, or organization. The full report can be accessed at <http://www.cdfifund.gov/docs/CBI/2012/Carsey%20Report%20PR%20042512.pdf> or <http://www.carseyinstitute.unh.edu/publications/Report-Swack-CDFI-Industry-Analysis.pdf>
2. Although 282 CDFI Loan Funds were sampled, the outstanding question is: are the CDFI Loan Funds examined (as a result of their applying for 2010 funding to the CDFI Fund) different than those that did not apply? If one assumes that they are no different, then the results presented are representative of all CDFI Loan Funds, within the confidence levels and error margins discussed below. If, in fact, they are different, then the results may be representative of all CDFI Loan Funds. For CDFI Banks, CDFI Holding Companies and CDFI Credit Unions, a census was performed; in other words the data represents all of these CDFI institutions.
3. Median loans and lease value.
4. In this table, each year's number is averaged, so there is one number per organization. The median number is taken. The N Value for number is taken. The N Value for all CDFI loan funds is 282.
5. Leverage ratio= total notes payable/net assets.
6. Margin ratio = loan yield ratio minus charge-off ratio – combined interest and operating expense ratio.
7. This number is the average of each year's median deployment ratio.
8. This number is the average of each year's median charge-off ratio.
9. For a full discussion of this issue see: Tansley, C., Swack, M., Tansley, M., & Stein, V. (2010). Capital Markets, CDFIs and Organizational Credit Risk. The Carsey Institute. Available at http://www.carseyinstitute.unh.edu/docs/Swack_CapitalMarkets.pdf.