

NBI 2010-19: The Impact of Family Economic Conditions on Student Educational Achievement

Not only is there an immense amount of evidence linking the economic conditions of families to the lack of student educational achievement, but science is beginning to unravel both the complexity and causes of poverty's relationships to low student achievement. The path from poverty to lower achievement involves the students' lack of resources as well as his or her social health, physical health, mental health, and cognitive impairments. The mechanisms causing this relationship include simple lack of resources plus lack of positive social and cultural exposure, environmental hazards, hormonal reactions to long-term psychological stress, and poor parenting practices resulting from the cross-generational cycle of poverty.

Adding to the complexity is the evidence that the negative effects of long-term poverty are made worse by school segregation and extreme inequities in wealth.

While the negative impact of poverty on achievement is true throughout the world, the situation in the United States is of increasing concern as the number of children in poverty grows larger, as schools become increasingly segregated, and as the gap between rich and poor grows and accelerates.

The Size of the Problem

According to the U.S. Census Bureau¹, the percentage of 5 to 17 year old children living in families in poverty increased from 15.3% in 2002 to 18.2% of all children in 2009. Every U.S. county is affected by poverty in schools, with child poverty rates ranging from 2% to 64%. Nearly 17% of all counties face high concentrations of poverty with between 40% and 64% of their children living in poverty. According to the Department of Education², there were 21.5 million children eligible for the free and reduced price lunch program sponsored by the Department of Agriculture.

As demonstrated in documents for the U.S. Census Bureau [Appendix A], the percentage of children in poverty increased by 19% between 2002 and 2009, and this increase affected every state and nearly every county in the country. By 2009, every county had at least 2.2% of its population below the poverty line. This is happening at the same time that the gap between the richest and poorest Americans is widening rapidly. As pointed out by Nobel laureate economist Joseph Stiglitz,

It's no use pretending that what has obviously happened has not in fact happened. The upper 1 percent of Americans are now taking in nearly a quarter of the nation's income every year. In terms of wealth rather than income, the top 1 percent control 40 percent. Their lot in life has improved considerably. Twenty-five years ago, the corresponding figures were 12 percent and 33 percent.

2010 New Business Item 19:

Utilizing existing resources, the NEA shall use available data and research to determine the correlation of family economic conditions and their impact on student educational achievement. This study shall compile pertinent data and research that truly reflect the economic conditions of American families and educational attainment of their students.

The results, theories and conclusions will then be made available to NEA members and others through existing means.

As shown in Figure 1, every income group below the top 20% has a smaller share of national income than at any time since 1979. The graphic also shows that the poorest among us have lost the largest proportion of national income while those in the very top income groups, the top 1% and above, have taken a much larger share of national income in the last three decades.

Almost five decades ago, the Coleman Report³ pointed to poverty as the primary factor leading to low academic achievement. Since then, reanalysis of the Coleman data provides a broader view by showing that academic deficiencies are the shared responsibility of families, communities, and schools.⁴

At the same time, a wealth of new data and analysis has been assembled that sheds light on many ways that economic conditions and the related issue of racial segregation in schools affect student achievement.

The remainder of this study will:

- Suggest a graphical model that attempts to show many of the paths by which economic conditions can negatively affect student achievement;
- Describe some of the recent studies by world-class academics that support this model;
- Discuss the impact of the model on educators; and
- Discuss the impact of the model on the U.S.

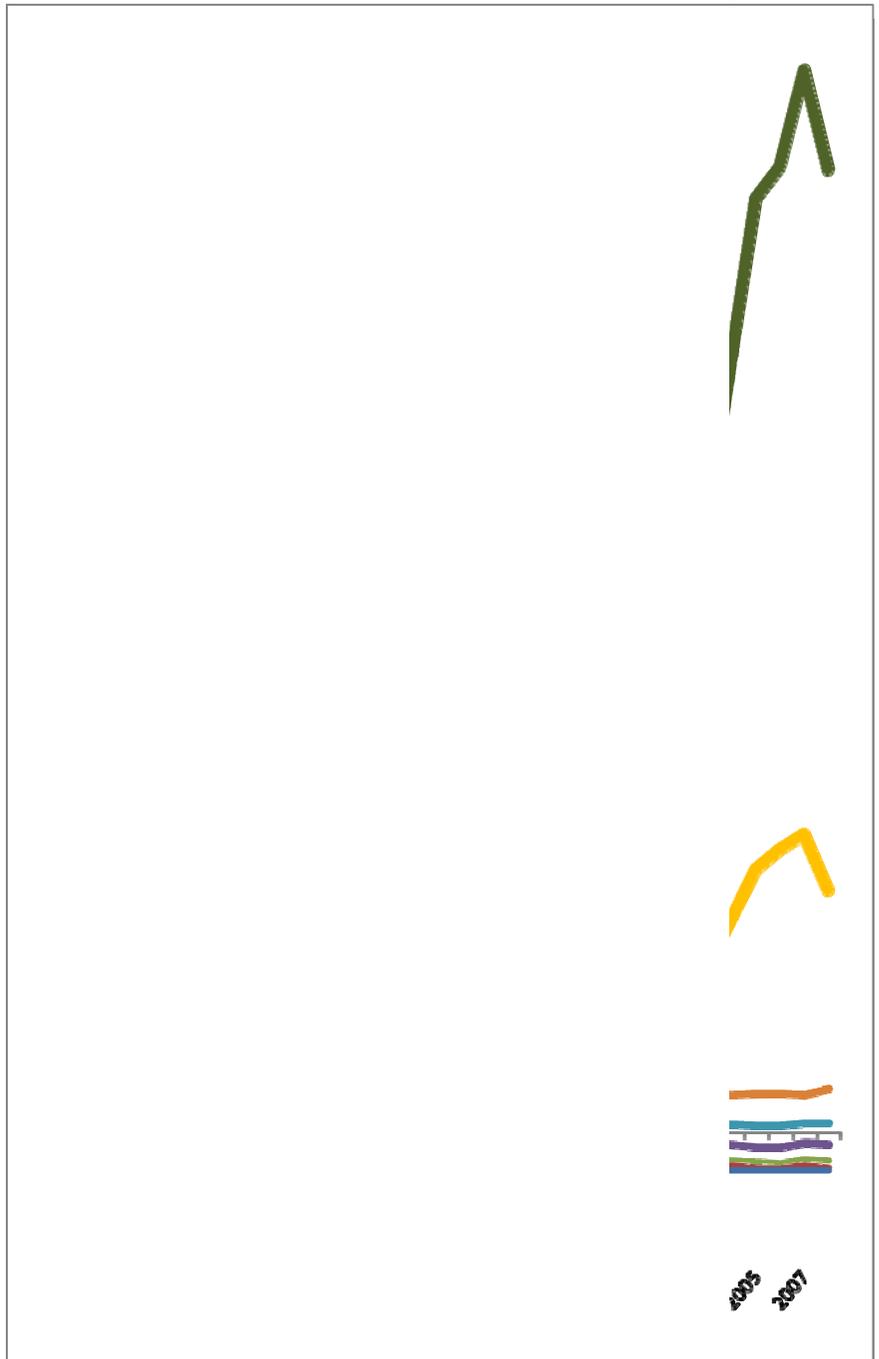


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A Model of How Negative Family Economic Conditions Impact Student Performance

Figure 2 represents potential mechanisms or paths that recent academic research about poverty suggests play an important role in reducing academic achievement.

In its simplest form the model says that:

1. Demographic studies reveal an increasing number of children in poverty combined with increasingly segregated schools, and increasing inequities in income and wealth;
2. These factors combine to produce a broad range of childhood injuries;
3. These various injuries may result in social, physical, cognitive, emotional, and behavioral impairments;
4. The impairments manifest themselves in the classroom as poor attendance, lack of energy, lack of motivation, poor concentration, behavior problems, and poor study habits; and
5. The sum of these behaviors results in poor academic performance.

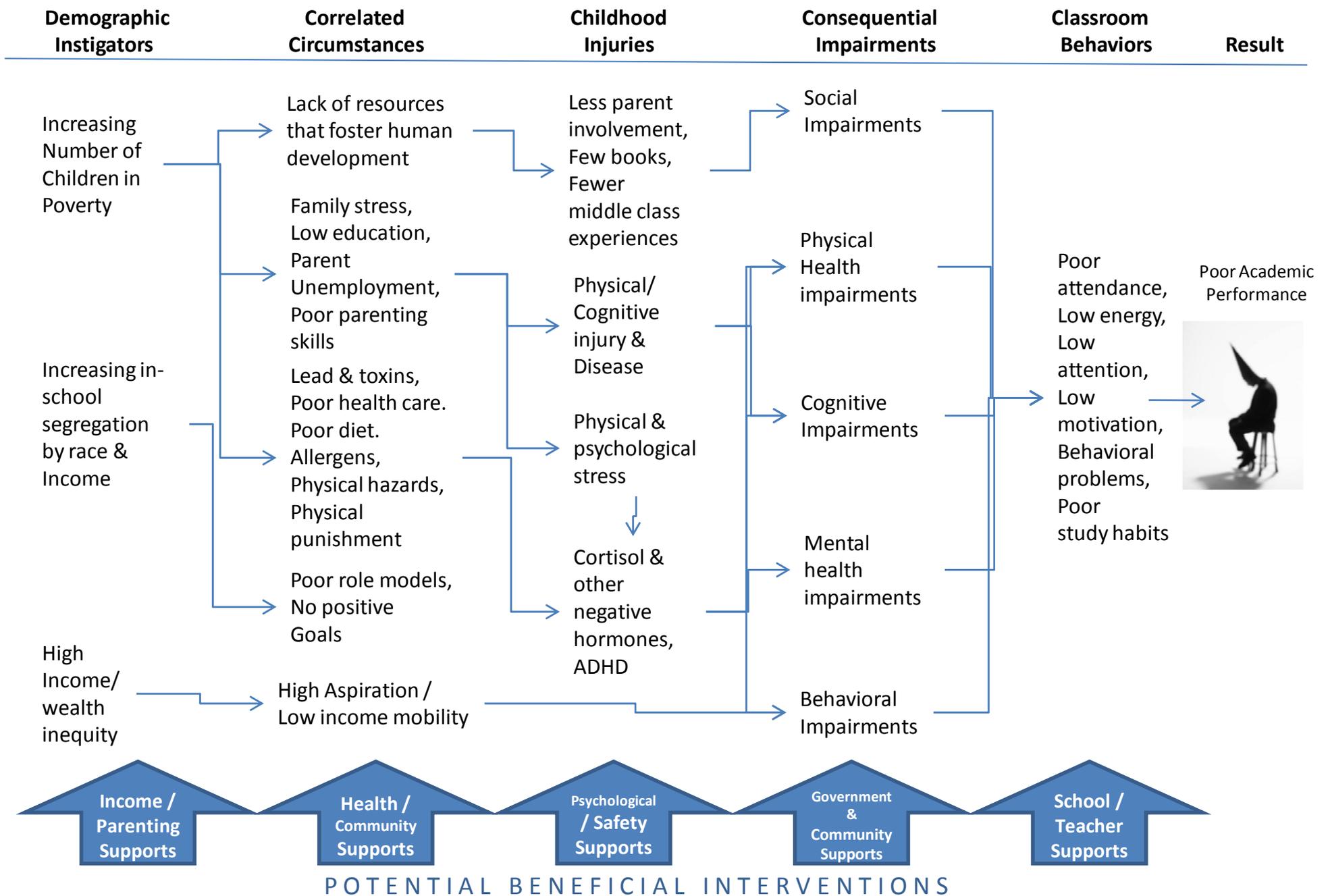
It should be noted however that this poor performance might be lessened through family, community, government, and school interventions. It should also be noted that, in some very rigorous large-scale studies ^{5,6,7}, it has been demonstrated that any single point of intervention, such as incentives to teachers to improve test scores, cannot compensate for an underlying cascade of events that result in poor academic performance.

Fortunately, there are known family, community, school, and government interventions that have the potential to mitigate the set of negative effects due to poverty.

The model shown in Figure 2 is conceptual, and the numerous chains of causation implied in the diagram have not been demonstrated within comprehensive experiments or through comprehensive statistical analysis. The amount of data required to conduct such a study is well beyond the scope of anything that done to date. However, most of the individual arrows in the diagram have been demonstrated in rigorous studies referenced below.

Figure 2: Paths from Poverty to Poor Academic Performance

POVERTY'S TIES TO POOR ACADEMIC PERFORMANCE



Examining the Evidence for the Relationships within the Model

While it is not possible within the scope of this paper to examine all of the implied causation within the model, we will examine evidence for some of them.

1. Lack of resources impedes human development

As noted by David Berliner in his recent research, "the most powerful policy for improving our nations' school achievement is a reduction in family and youth poverty⁸" Berliner further points out that, for every one hour in school, children spend five hours with their families and in their communities.

It turns out that this time outside of school is critical, and especially so for the poorest among us. Turkheimer *et. al.*⁹ conducted a large study of twins in the U.S. and found that, among the poorest children, it is overwhelmingly their shared life in poverty that accounts for their lower than average IQs while only a very small amount is due to genetics. Among the most economically advantaged, it is the reverse, *i.e.*, most of the variation in IQ among twins is accounted for by genetic differences.

So, what is it about living in poverty that results in poor performance in academic settings? The answer, in part, is obvious. These factors include lack of quality parenting by parents who may be working multiple jobs and who have never learned the basics of good parenting. Also, we know that a lack of books and reading at home relates to poor academic performance. Finally, if the community where children live is homogenously poor, then there is little opportunity to experience the benefits available to better-off children in terms of hope for the future and positive material rewards for behaviors valued by middle-class society. Of course, these factors are made that much worse when the schools attended by poor children are populated only with other poor and minority students like themselves.

According to Feudtner *et. al.*, there are many other mundane ways that poverty causes poor health in children. These include poor maternal conditions, unsafe housing, limited social engagement, maternal depression, cigarette smoking, and a sedentary life style. This list could be further extended to include single-parent families and other every day realities of people living in extreme poverty.

2. High levels of prolonged family stress

It is well documented that stress leads to the excess production of cortisol and other steroids that have negative effects on short-term memory among children.

According to a 2009 article in the American Medical Association's *Archives of Pediatrics and Adolescent Medicine*¹⁰,

New evidence accumulated during the past several decades has refined our understanding, showing not only the association between an individual child's absolute or relative exposure to poverty and a greater risk of myriad diseases and conditions but also a similar association between ill health and the degree of nonuniform distribution of income across an entire population or society. . .

Similarly, Evans *et. al.* in an article in the Proceedings of the National Academies of Sciences,¹¹ notes that:

A large, robust literature demonstrates a pervasive income/achievement gap. Family income is a strong and consistent predictor of multiple indices of achievement, including standardized test scores, grades in school, and educational attainment. Family income matters to children's cognitive development, with more enduring economic hardship particularly harmful. The income/achievement gap is already present by kindergarten and accelerates over time. The longer the duration of childhood exposure to poverty, the worse achievement levels become.

Evans *et al.* found that,

the greater the proportion of a child's life growing up in poverty, the higher the degree of cumulative wear and tear on the body during his or her early lifetime [as measured by physiological tests]. . .[and] to working memory in young adulthood. . .

The longer the period of childhood poverty, the higher the levels of allostatic load [a physiological measure of stress] during childhood, and the greater the reductions in young adults' subsequent working memory.

In conclusion, Evans *et.al.* state,

The income/achievement gap is an important societal problem. Childhood poverty is a well-established risk factor for cognitive competency as well as for physical morbidity throughout the life course. We show that these 2 outcomes of childhood poverty are interrelated. The prospective association between the duration of childhood poverty and adult working memory appears to be explained in part by elevated chronic stress during childhood.

3. Environmental factors

A child living in poverty faces many more environmental dangers than do most other children. Not only is violence of all kinds more prevalent in poor neighborhoods, but there is less adult supervision than in middle-class families. These conditions lead to significant dangers such as accidental ingestion of toxins, physical assault, and slower response to mishaps.

One example frequently cited is the exposure of children in poverty to lead from water flowing through lead plumbing and to old lead-based paints.

About one in twenty American children have significant lead toxicity in their blood. Symptoms of lead toxicity can include anemia, learning disabilities due to changes in the nervous system, behavioral problems, reduced IQ, and delayed puberty in girls.¹² Lead exposure is frequently linked to lead in old plumbing and in old paint. It is reported to be more common in the housing of people in poverty.

Impact on Educators

Considering all of the ways poverty results in reduced physical and mental health, lower cognitive functioning, and an increased number of behavior problems, it is not surprising that students at schools in high-poverty areas are frequently reported to have poor attendance, low motivation and energy, behavioral problems, poor study habits, and resulting low academic achievement.

Of course, many good educators deal successfully with such issues, but others tend to burn out in the difficult environment of underperforming schools.¹³ As Sass et. al. point out, getting and maintaining high-quality teachers in high-poverty schools is not as simple as transferring them there. He notes that there is a tendency in high-poverty schools for teachers not to grow and enhance their skills over time. Recruiting good teachers and continuously improving their skills over time may require a broad range of incentives that should include improved working conditions. For example, class size and funding for high-poverty schools is not much different on average from those in other schools. However, it seems clear that high-poverty schools require more funding than other schools and/or more external supports for children in extreme poverty as depicted in Figure 2. As pointed out in a 2011 reanalysis of the data from the Tennessee STAR study¹⁴, shows that smaller class sizes in early grades not only result in higher test scores, but also increases the likelihood of college attendance and other positive life outcomes. Not only would smaller class sizes benefit children in high-poverty schools, but they may also provide an incentive for teachers work and improve their skills at such schools.

The biggest issue pointed out in the model shown in Figure 2 is that no matter how much funding and effort is put into high-poverty schools, the large portion of these children's lives spent at home and in the community makes it unlikely that within school interventions alone can overcome all of the negative aspects of living in high-poverty families and communities.

Even when interventions meant to benefit high-poverty communities include efforts to improve schools, success is not assured. Bryk et. al. report on a large study of Chicago education reforms that examined the impact of a comprehensive school reform model and finally conclude as follows.

Our findings about schooling in truly disadvantaged communities offer a sobering antidote to a heady political rhetoric arguing that all schools can be improved. Our evidence suggests a need to temper this enthusiasm with a realistic appraisal of the extraordinary problems confronted by some schools. To be sure, this comment should not be read as an excuse to let some places off the hook. But it does require us to recognize that few reform efforts to date have adequately acknowledged the full scope of problems that must be confronted.

Perhaps if our society better understood the pervasiveness of the many relationships of poverty to childhood academic failures and the future of our society, we could look for solutions that are more comprehensive than those tried in Chicago and other places. Perhaps then, the frequent attacks on our “failing schools” and our “underperforming” educators would be muted by an understanding of the broader plight faced by educators working with children living in extreme poverty within the United States.

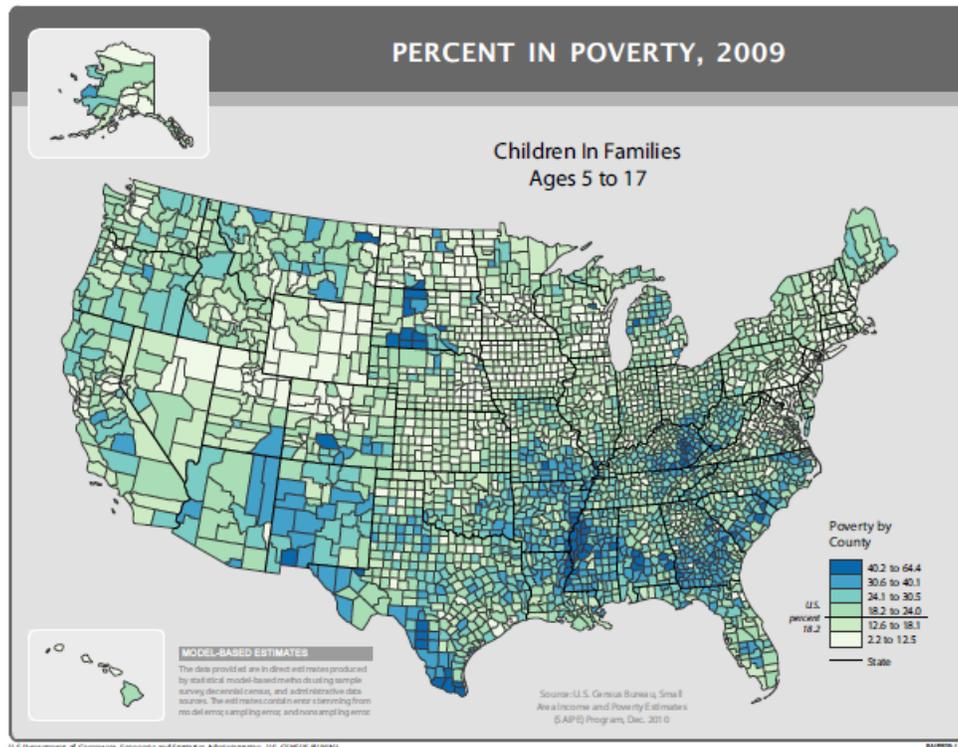
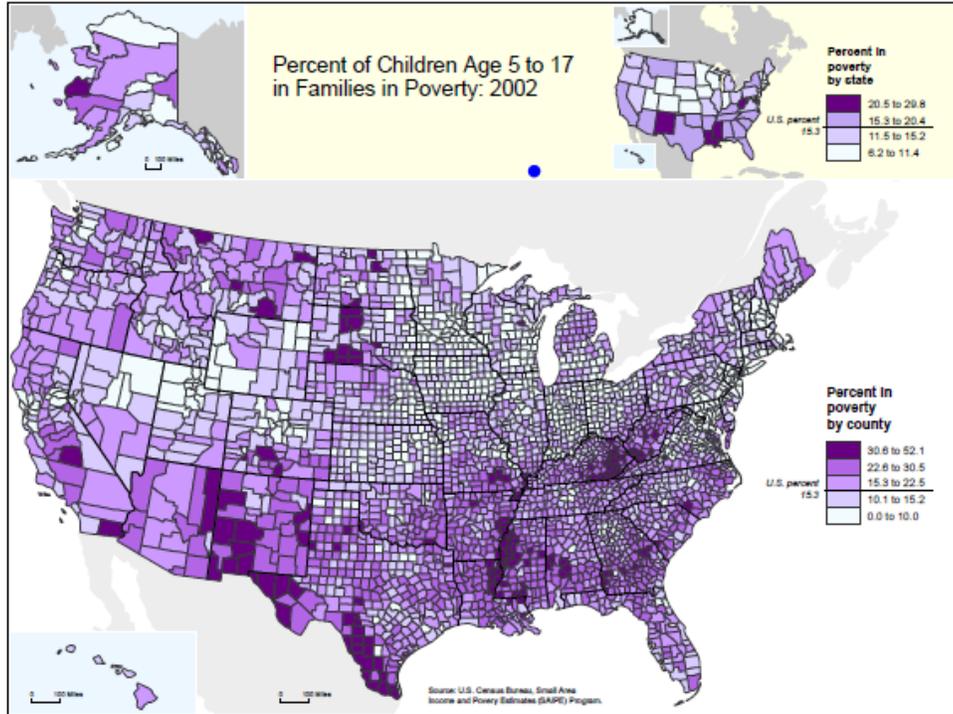
Impact on the American Dream

The American dream is that everyone in America has the opportunity to succeed. However, it is clear that not everyone has an equal opportunity to succeed. The cost to the United States of allowing so many to fall off the train to success is very high in many ways.

As one example, according to the *Chronicle of Higher Education*,¹⁵ the amount spent by states on prisons increased by 127% between 1987 and 2007 while the amount spent on higher education only increased by 21%. Such relative statistics, however, represent a very small part of the economic long-term cost to society of an America divided by increasing extremes in wealth and income. It would appear that the inability to address the problems of poverty and its correlation with a lack of academic achievement is reinforcing the income disparities in the United States.

APPENDIX: Levels of School-Age Children in Poverty by U.S. County in 2002 and 2009

In 2002, the average percentage of school-age children below the poverty line was 15.3% and seven years later it was 18.2%. In addition, by 2009, every U.S. county had a poverty rate of at least 2.2%



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