

**The Impact of Food Insecurity on the
Development of Young
Low-Income Black and Latino Children**

**Protecting the Health and Nutrition of
Young Children of Color:
The Impact of Nutrition Assistance and
Income Support Programs**

**Research Findings from the Children's Sentinel
Nutrition Assessment Program (C-SNAP)**

**Prepared for the Joint Center for Political and
Economic Studies Health Policy Institute**



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May 2006

EXECUTIVE SUMMARY

The link between food insecurity and the physical health of children has been well documented; however, a gap remains in the research on the impact of food insecurity on young children. Analyses of the effects of food insecurity on the development of infants and toddlers have not been published to date, while only a few studies have specifically focused on food insecurity among young black and Latino children. This report links food insecurity and child development, with a specific focus on black and Latino children under the age of three who are living in low-income households.

Food insecurity refers to a household's uncertain or limited access to enough food for all household members to lead an active and healthy life. It is deeply rooted in poverty and usually occurs as a result of constrained financial resources. Black and Latino children experience disproportionately higher rates of poverty compared with children of other racial/ethnic groups, which in turn places them at an increased risk for both food insecurity and developmental impairments.

Poverty has been shown to negatively affect child development through a range of complex pathways, including a lack of resources for learning in the home environment. Child development refers to the ways in which children acquire skills in a range of domains, including memory, cognition, language, gross and fine motor, social interaction and behavior, and perception. The first three years of life constitute a rapid phase of brain development, so young children under the age of three are the most vulnerable to biological, environmental, and socioeconomic threats to optimal development. In recent years, there has been much concern about the pronounced achievement gap that exists between black and white children, and between Latino and white children, in the United States. Whether poverty impedes the development of young children via food insecurity has not been previously evaluated, however.

This study was conducted by pediatric clinicians and public health specialists of the Children's Sentinel Nutrition Assessment Program (C-SNAP). C-SNAP collects data on a sentinel sample of children under age three who attend urban emergency departments or clinics that serve large numbers of low-income families. Black and Latino children represent over 80 percent of the total sample. The children included in this particular analysis either had no health insurance or received public insurance. In order to assess developmental concerns, C-SNAP utilized the Parent's Evaluation of Development Status (PEDS), a parent report screening instrument used to detect developmental concerns about children from birth to eight years of age.

The analysis reveals that food insecurity is linked to developmental risk, which is a continuum of risks with developmental delay at one end and learning and other developmental disabilities at the other. Young children of color who live in low-income, food-insecure households are more likely to be at developmental risk than their counterparts living in low-income but food-secure households. In addition, the effects of food insecurity are not always visible. Even after taking into account a child's low birthweight or current underweight status, food insecurity is still associated with developmental concerns.

This report has several important implications. First, food insecurity increases the odds that children will develop difficulties in important functional areas, such as cognition, language, motor skills, behavior, learning, and socio-emotional development. These difficulties may, in turn, jeopardize the ability of young children of color to later succeed in school—a finding that has great significance given the achievement gap that exists between black and white students and between Latino and white students. Second, the developmental effects of food insecurity during the first few years of life may persist well into adulthood. As a result, such effects may significantly decrease the future economic opportunities of low-income black and Latino individuals who experience food insecurity during early childhood, thereby perpetuating the cycle of poverty. Lastly, this report has implications for policymaking. Federal anti-poverty programs that mitigate the impact of food insecurity could play an important role in decreasing the achievement gap, as well as ensuring the future economic well-being and productivity of low-income black and Latino children in the United States.

INTRODUCTION & BACKGROUND

The link between food insecurity and the physical health of young children has been well documented.¹ Yet, while a few studies have addressed the impact of food insecurity on the educational attainment and behavioral problems of school-age children, studies assessing the effects of food insecurity on the development of infants and toddlers have not been published to date. In addition, analyses specifically focusing on food insecurity among young black and Latino children remain scarce. This is the first report to investigate the effects of food insecurity on the development of young low-income black and Latino children in the United States.

FOOD INSECURITY IN BLACK AND LATINO HOUSEHOLDS

Food insecurity refers to a household's uncertain or limited access to enough food for all household members to lead a healthy and active life due to constrained resources. In 2004, 12 percent of all U.S. households (13.5 million households) were food insecure at some point during the year.²

Food insecurity is deeply rooted in poverty. As a result, low-income households experience considerably higher rates of food insecurity than higher-income households. For example, in 2004, food insecurity was more than five times more prevalent in lower-income households (under 185 percent of the Federal Poverty Level) than in higher-income households (over 185 percent of the FPL).³ According to the U.S. Department of Health and Human Services, the 2004 FPL for a family of four was \$18,850.⁴ Between 2004 and 2005, the national poverty rate increased from 12.7 percent to 13.1 percent.⁵

In the United States, blacks and Latinos face profound social inequalities arising from disproportionately high rates of poverty and low income compared with their white counterparts. In 2004, 24.7 percent of blacks and 21.9 percent of Latinos lived below 100 percent of the FPL, compared with 8.6 percent of whites. Similarly, blacks had the lowest median household income (\$30,134) and Latinos had the second lowest (\$34,241), while whites had the highest

	Poverty Rate (100% Below Federal Poverty Level)	Median Household Income
Black	24.70%	\$30,134
Latino	21.90%	\$34,241
White	8.60%	\$48,977
National	12.70%	\$44,389

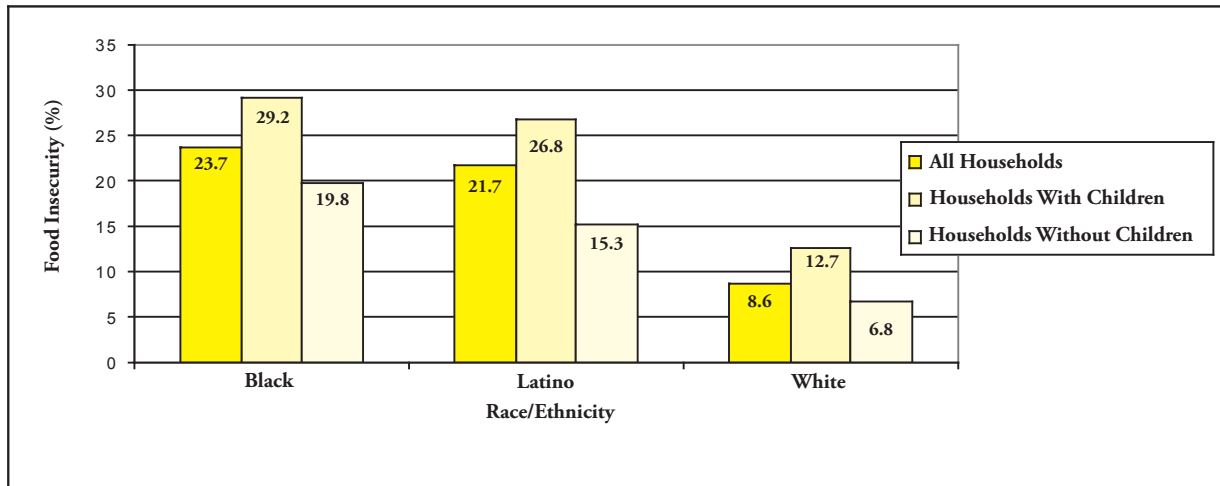
Source: DeNavas-Walt, Proctor, and Lee 2005.

median household income (\$48,977).⁶ As might be expected, pronounced racial and ethnic disparities therefore also exist among rates of food insecurity. In 2004, 23.7 percent of black households and 21.7 percent of Latino households were food insecure, as opposed to 8.6 percent of white households.⁷

FOOD INSECURITY IN BLACK AND LATINO HOUSEHOLDS WITH CHILDREN

All households with children are at a significantly higher risk for poverty and food insecurity than households of the same race/ethnicity without children. In 2004, households with children under the age of 18 reported roughly twice the rate of food insecurity as households without any children (17.6 percent vs. 8.9 percent).⁸ Black and Latino

Figure 1. Food Insecurity in All U.S. Households vs. Households With and Without Children, by Race/Ethnicity, 2004.



Source: Nord, Andrews, and Carlson 2005.

households with children face particularly high rates of food insecurity. In 2004, 29.2 percent of black households with children under age 18 and 26.8 percent of Latino households with children under age 18 reported experiencing food insecurity at some point in time, compared with 12.7 percent of white households with children under age 18.⁹ Underlying these disparities are disproportionately elevated rates of poverty among U.S. households with children and even higher rates among black and Latino households with children.¹⁰ In 2004, 33.6 percent of black households with children and 28.9 percent of Latino households with children lived below 100 percent of the FPL, as opposed to 10.5 percent of white households with children.¹¹

FEDERAL PUBLIC ASSISTANCE PROGRAMS: PROTECTING YOUNG LOW-INCOME BLACK AND LATINO CHILDREN FROM POVERTY AND FOOD INSECURITY

A number of federal public assistance programs mitigate the effects of poverty and food insecurity on low-income households by providing either cash assistance or in-kind benefits.¹² These policies play an important role in promoting the health and well-being of young low-income children by improving their access to basic necessities, such as food, housing, education, and health care.¹³ Nutrition assistance programs such as the Food Stamp Program and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provide low-income households with increased resources for food.¹⁴ Temporary Assistance for Needy Families (TANF) is the nation’s primary income support program and provides low-income families with minimal income to meet their basic needs. The Low-Income Home Energy Assistance Program (LIHEAP) and Subsidized Housing provide support for other survival expenses, such as heating, cooling, and housing costs.

The companion report to this study, entitled *Protecting the Health and Nutrition of Young Children of Color: The Impact of Nutrition Assistance and Income Support Programs*, reveals that federal assistance programs decrease food insecurity and improve the health outcomes of low-income black and Latino children less than three years of age. More specifically, TANF, WIC, Subsidized Housing, the Food Stamp program, and LIHEAP mitigate the effects of food insecurity on the health and growth of low-income black children. Also, low-income Latino children whose families receive TANF, WIC, Subsidized Housing, or food stamps are more likely to be food secure than low-income Latino children whose families do not receive these benefits.

DEVELOPMENT OF YOUNG LOW-INCOME BLACK AND LATINO CHILDREN

Over the years, the factors that affect children’s cognitive, social, and emotional development have been well documented. Recently, more researchers have focused on poverty and the pathways through which it affects

child development and functioning. McLoyd found that, despite prominent racial and ethnic disparities in child development, the economic context in which low-income black and Latino children live is a more important factor in determining their developmental outcomes than their race/ethnicity.¹⁵

Poverty and Development

Recent studies show that poverty, particularly long-term poverty, substantially affects young children's development through a range of complex mediators.¹⁶ Much of the scientific literature focuses on family-level characteristics such as the quality of the home environment.¹⁷ For instance, Brooks-Gunn and others have noted that low-income children are more likely to live in a home environment that lacks the experiences and resources necessary for learning and intellectual stimulation, which in turn negatively affects their cognitive development.¹⁸ Furthermore, McLoyd and her colleagues have shown that, by causing psychological distress, economic hardship can negatively affect parents' interaction with their children, thereby increasing the risk of poor child developmental outcomes.¹⁹ While the home environment appears to play a significant role in the relationship between poverty and child development, it is also important to consider the broader socioeconomic context. For instance, exposure to violence, poor housing conditions, and a lack of access to health care have all been associated with impaired cognitive, behavioral, and social development and competence in children.

Child development refers to the ways in which children acquire skills in a range of domains, including memory, cognition, language, gross and fine motor, social interaction and behavior, and perception.

Food Insecurity and Development

In light of these findings, this report investigates the link between food insecurity and the development of young low-income black and Latino children. The analyses presented specifically pertain to children under the age of three, the time at which the brain is undergoing some of its most rapid development and has the highest nutrient needs.²⁰ Indeed, according to developmental psychologist Piaget, infancy and early childhood are times during which children experience unique transformations in their motor activity, memory skills, mobility, language ability, and knowledge of the world.²¹ Thus, as might be expected, the developmental effects of poverty during early childhood appear to be the most severe and persistent.²²

ASSESSING THE IMPACT OF FOOD INSECURITY ON THE DEVELOPMENT OF LOW-INCOME BLACK AND LATINO CHILDREN

THE CHILDREN'S SENTINEL NUTRITION ASSESSMENT PROGRAM (C-SNAP)

The Children's Sentinel Nutrition Assessment Program (C-SNAP) is a national network of pediatric clinicians and public health specialists whose mission is to intervene on behalf of individual children, conduct research, and provide evidence to policymakers to combat child hunger and promote children's health. Since 1998, C-SNAP has administered household surveys to the caregivers of children under the age of three seeking care in emergency departments (ED) and acute care clinics in C-SNAP medical centers. The survey asks detailed questions about household demographics, child health, parent health, and public assistance program participation. It also includes the United States Department of Agriculture (USDA) U.S. Food Security Scale to assess household and child food insecurity. C-SNAP has sites in major cities throughout the United States, including Baltimore, Boston, Little Rock, Los Angeles, Minneapolis, Philadelphia, and Washington, DC.

The total C-SNAP sample currently includes over 20,000 children, the vast majority of whom are vulnerable to poverty and poor health. While black and Latino children historically have been underrepresented in most national datasets, they represent over 80 percent of the total C-SNAP sample (61 percent black and 20 percent Latino). In July 2004, C-SNAP initiated the assessment of developmental outcomes among children ages 4-36 months. Table 2 provides an overview of the differing characteristics between black and Latino children in this sample (July 2004 to June 2005).

While established risk factors for developmental difficulties are prevalent in both black and Latino samples, some selected caregiver and child risk factors are found significantly more often in one group than in the other, as indicated by Table 2. For example, black children are more likely to have a history of low birthweight, while Latino children are more likely to live with a caregiver who did not complete high school. Participation in federal safety net programs also differs significantly between the two groups, with black families showing higher participation rates for all programs except WIC.

THE PARENTS' EVALUATION OF DEVELOPMENTAL STATUS (PEDS)

In order to assess the impact of food insecurity on the development of young low-income black and Latino children, C-SNAP utilized the Parents' Evaluation of Developmental Status (PEDS).²³ PEDS is a parent report screening instrument used to detect developmental concerns about children from birth to eight years of age. Parents (or caregivers) answer ten questions on whether they have concerns about their child in the following areas of development: cognition, expressive and receptive language, fine and gross motor, behavior, socio-emotional development, self-help, and learning. All responses are recorded and scored based on the child's age, as well as the presence or absence of significant age-related concerns identified by the screening instrument.²⁴ For this report, the analyses are based on the total number of significant developmental concerns reported.

C-SNAP STUDY SITES

- *Boston Medical Center, Boston, MA (coordinating site)*
- *Hennepin County Medical Center, Minneapolis, MN*
- *Mary's Center for Children, Washington, DC*
- *University of Arkansas for Medical Sciences, Little Rock, AR*
- *University of Maryland Medical Center, Baltimore, MD*
- *St. Christopher's Hospital for Children, Philadelphia, PA*
- *Harbor-UCLA Medical Center, Los Angeles, CA*

Table 2. Significant Differences in C-SNAP Sample Characteristics between Black and Latino Children Ages 4- 36 Months, July 2004-June 2005.

	Black	Latino	P-value
	N=1311	N=485	
Site:			
Baltimore	40%	<1%	
Boston	30%	36%	
Little Rock	17%	4%	<.0001
Minneapolis	10%	48%	
Caregiver Characteristics:			
U.S. Born	82%	32%	<.0001
Married	19%	40%	<.0001
Employed	48%	34%	<.0001
Education:			
Some High School	27%	49%	
High School Graduate	44%	36%	<.0001
College Graduate	29%	15%	
Mean Mother Age	26.1 yrs	26.4 yrs	0.04
Child Characteristics:			
Mean Child Age	16.0 mos.	15.1 mos.	0.07
Low Birthweight	17%	11%	0.002
Child Insurance			
Public	98%	96%	
None	2%	4%	0.09
Receives:			
Food Stamps	49%	32%	<.0001
TANF	31%	25%	<.0001
WIC	78%	86%	0.0002
Housing Subsidy	38%	20%	<.0001
LIHEAP	18%	7%	<.0001
Note: Sample restricted to black and Latino children, private insurance excluded.			

- **TANF: Temporary Assistance for Needy Families**
- **WIC: Special Supplemental Nutrition Program for Women, Infants, and Children**
- **LIHEAP: Low-Income Home Energy Assistance Program**

PEDS is a standardized instrument that has demonstrated validity, reliability, and accuracy and meets the American Academy of Pediatrics standards for developmental screening. It also has proven to be largely unaffected by socio-demographic factors, geographic location, parental education/employment status, and parent/child gender.²⁵

C-SNAP FINDINGS

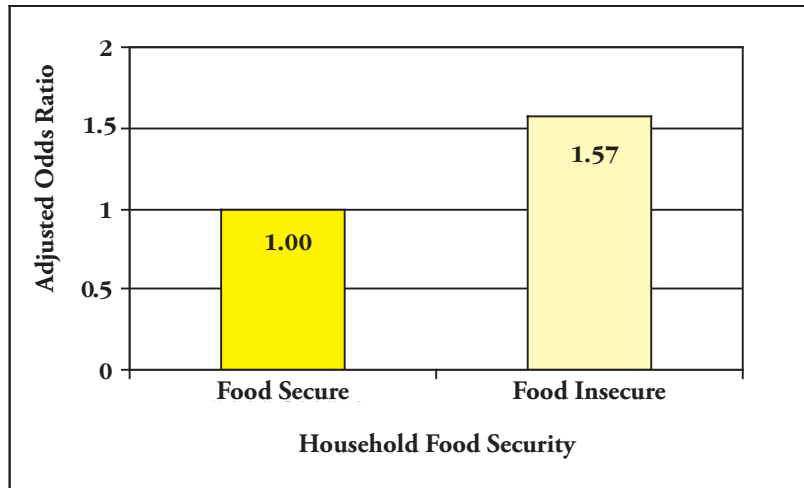
In this report, the term “developmental risk” is used to mean a continuum of risk, with developmental delay at one end and learning and other developmental disabilities at the other. PEDS is designed to identify a range of potential problems on this continuum.

Food Insecurity Linked to Developmental Risk

After controlling for potentially confounding child and caregiver variables, C-SNAP found that food insecurity is a powerful predictor of overall developmental risk among low-income black and Latino children under the age of three.

- ❑ Black children who live in low-income, food-insecure households experience 57 percent higher odds of their parents identifying significant developmental concerns than black children living in low-income but food-secure households.

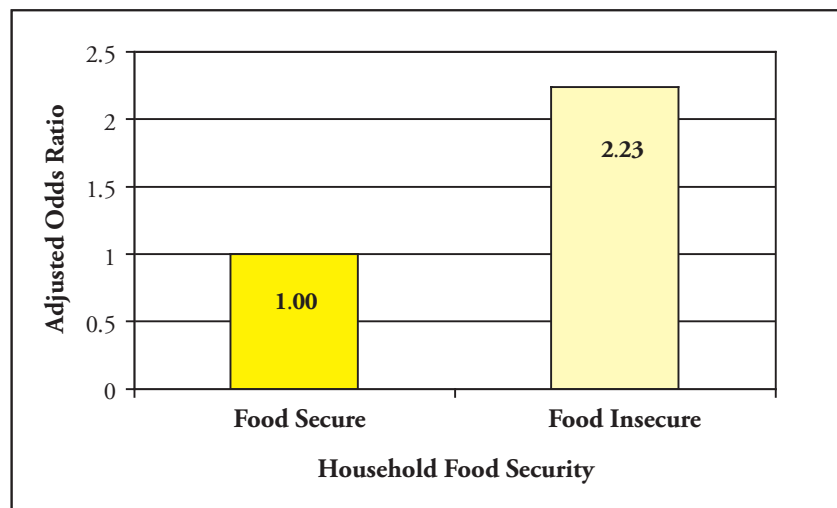
Figure 2. Significant Developmental Concerns Identified by Parents of Black Children in Food-Insecure Households.



Source: Original C-SNAP PEDS data, July 2004-June 2005. (See Appendix for control variables.)

An Odds Ratio of 1.00 indicates no developmental concerns.

Figure 3. Significant Developmental Concerns Identified by Parents of Latino Children in Food-Insecure Households.



Source: Original C-SNAP PEDS data, July 2004-June 2005. (See Appendix for control variables.)

- ❑ Latino children who live in low-income, food-insecure households experience more than twice the odds of their parents identifying significant developmental concerns than Latino children living in low-income but food-secure households.

Food Insecurity Linked to Developmental Risk Even With No Visible Signs

The impact of food insecurity on children is not necessarily visible to parents, healthcare providers, or policymakers. Food insecurity may have clinically meaningful effects on the development of low-income black and Latino children even if there are no physically discernable signs.

- ❑ Even after taking into account a child's low birthweight, C-SNAP analyses show that young black and Latino children living in low-income, food-insecure households face developmental risk.
- ❑ Even if they are not currently underweight, children may still be vulnerable to the impact of food insecurity on their development.

LIMITATIONS

This study has several important limitations. First, C-SNAP interviews are only conducted in English, Spanish, and Somali (Minneapolis only). In addition, Asians and Native Americans were not included in this report because the sample size was too small to yield interpretable results. Thus, while C-SNAP recognizes that the term “children of color” encompasses more than just black and Latino children, it did not examine the effects of food insecurity on the development of other infants and toddlers of color. Second, while the cross-sectional study design can demonstrate associations, it does not allow us to establish causation. Third, although potentially confounding effects of many relevant factors were statistically controlled in the analyses, other unmeasured confounders may have influenced the outcomes. Exclusion of the most severely ill or injured cases from the emergency department sub-sample may have biased the results. Fourth, while the Parents' Evaluation of Developmental Status instrument has been shown to be reliable and valid, its assessment of a child's development is limited by its reliance on parent/caregiver reports in response to ten specific questions. As a result, it is not as detailed and conclusive as an assessment conducted by a skilled clinical evaluator or an ongoing discussion between a clinician and a parent about developmental issues over time. Lastly, the population studied is not a nationally representative sample. Instead, it is a sentinel sample of families with children younger than three years of age receiving care at an emergency department or clinic that serves low-income populations in five United States cities. National survey data that would permit valid national estimates of the effects of food insecurity on the development of all young American children are not currently collected by any federal agency.

CONCLUSION

This report sheds light on an issue that no research study to date has investigated: the link between food insecurity and the development of young low-income black and Latino children in the United States. Young children of color who live in low-income, food-insecure households face higher odds of developmental delay than their counterparts living in low-income but food-secure households. Children whose development may be affected by food insecurity do not necessarily show signs of underweight, which often makes the problem less obvious to parents, healthcare providers, and policymakers.

In recent decades, the pronounced achievement gap that exists between black and white children, and between Latino and white children, has been the cause of much concern. In addition, there is increasing evidence that this achievement gap emerges at a very young age. Indeed, early childhood developmental impairments, such as those shown to be associated with food insecurity in this study, can significantly jeopardize a child's readiness for school and future educational attainment.²⁶ In the long term, low-income black and Latino individuals who experience economic hardship during their first few years of life can face restricted employment opportunities and decreased economic productivity as adults, rendering them vulnerable to a life-long cycle of poverty.²⁷

As shown in the companion report, *Protecting the Health and Nutrition of Young Children of Color: The Impact of Nutrition Assistance and Income Support Programs*, public assistance programs that are adequately funded can play a significant role in decreasing food insecurity among vulnerable infants and toddlers. In light of increasing poverty and food insecurity rates, federal anti-poverty programs that decrease the risk of food insecurity or attenuate its health impacts can play an important role in decreasing the risk of developmental delay faced by black and Latino children living in low-income households. In turn, national safety net programs may be pivotal to narrowing the achievement gap, as well as ensuring the well-being, school readiness, and future economic productivity of low-income children of color in the United States.

ABOUT THE AUTHORS

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- ❑ Zhaoyan Yang, MS

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APPENDIX
PEDS Data Tables

1. BLACK CHILDREN (JULY 2004 – JUNE 2005)

Private Insurance Excluded
N=1,320

Table 1. Unadjusted PEDS, by Food Security.				
	Total Sample N=1,320	Food Secure N=1,071	Food Insecure N=249	P-Value
PEDS: Significant Concerns	14%	13%	18%	P=.04

Table 2. Adjusted PEDS: Control for Site, Gender, Age of Child, Mother U.S.-Born, Maternal Education, Age of Mother, Low Birthweight, Z-Weight/Age (Predictor=Food Security).				
Outcomes	Food Secure	Food Insecure	95% CI	P-Value
PEDS: Significant Concerns	1.00	1.57	(1.03, 2.40)	P=.04

2. LATINO CHILDREN (JULY 2004 – JUNE 2005)

Private Insurance Excluded
N=487

Table 1. Unadjusted PEDS, by Food Security.				
	Total Sample N=487	Food Secure N=307	Food Insecure N=179	P-Value
PEDS: Significant Concerns	12%	11%	13%	p=.38

Table 2. Adjusted PEDS: Control for Gender, Age of Child, Mother U.S.-Born, Maternal Education, Age of Mother, Low Birthweight, Z-Weight/Age (Predictor=Food Security).				
Outcomes	Food Secure	Food Insecure	95% CI	P-Value
PEDS: Significant Concerns	1.00	2.23	(1.09, 4.54)	P=.03

ENDNOTES

- ¹ See www.c-snap.org.
- ² M. Nord, M. Andrews, and S. Carlson, *Household Food Security in the United States, 2004/ERR11*, Economic Research Service, U.S. Department of Agriculture (October 2005), www.ers.usda.gov/Publications/err11 (accessed November 1, 2005); Childstats.gov, *America's Children: Key National Indicators of Well-Being, 2005*, <http://childstats.gov/americaschildren/pdf/ac2005/econ.pdf> (accessed September 16, 2005); Children's Sentinel Nutrition Assessment Program, *The Impact of Welfare Sanctions on the Health of Infants and Toddlers* (July 2002), <http://dcc2.bumc.bu.edu/CsnapPublic/Reports.htm> (accessed October 13, 2005); Children's Sentinel Nutrition Assessment Program, *The Safety Net in Action: Protecting the Health and Nutrition of Young American Children* (July 2004), <http://dcc2.bumc.bu.edu/CsnapPublic/Reports.htm> (accessed October 13, 2005).
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- ⁴ U.S. Department of Health and Human Services, "2004 HHS Poverty Guidelines," *Federal Register* 69(30): 7336-7338, <http://aspe.hhs.gov/poverty/04poverty.shtml> (accessed December 5, 2005).
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- ⁶ DeNavas-Walt, Proctor, and Lee 2005.
- ⁷ Nord, Andrews, and Carlson 2005.
- ⁸ Nord, Andrews, and Carlson 2005.
- ⁹ Nord, Andrews, and Carlson 2005.
- ¹⁰ U.S. Census Bureau, *Annual Demographic Survey March Supplement 2005, Age and Sex of All People, Family Members and Unrelated Individuals by Family Structure, Age, and Sex, Iterated by Income-to-Poverty Ratio and Race: 2004, Below 100% of Poverty – All Races*, http://pubdb3.census.gov/macro/032004/pov/new01_100_01.htm (accessed March 17, 2006).
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- ¹³ Devaney, Ellwood, and Love 1997; A. C. Huston, "Reforms and Child Development," *Children and Welfare Reform* 12(1):59-77, <http://www.futureofchildren.org> (accessed December 5, 2005).
- ¹⁴ Devaney, Ellwood, and Love 1997.
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**PROTECTING THE HEALTH AND NUTRITION OF
YOUNG CHILDREN OF COLOR:
THE IMPACT OF NUTRITION ASSISTANCE AND
INCOME SUPPORT PROGRAMS**

Research Findings from the Children's Sentinel Nutrition Assessment Program (C-SNAP)

**Prepared for the Joint Center for Political and Economic Studies
Health Policy Institute**

May 2006

EXECUTIVE SUMMARY

Children of color, especially black and Hispanic children, are disproportionately vulnerable to poverty, poor health, and food insecurity compared with white children. The consequences of these disparities for young children of color are profound. Economic deprivation and poor health and nutrition in early life jeopardize their future success in school and the workplace.

This report shows that safety net programs mitigate the effects of poverty on young black and Hispanic children's health and physical development. It reveals that the safety net programs that make a difference include TANF (Temporary Assistance for Needy Families), the Food Stamp Program, WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children), Subsidized Housing, and LIHEAP (the Low-Income Home Energy Assistance Program). Legislative and policy choices determine access to and funding for these programs.

Since 1998, the Children's Sentinel Nutrition Assessment Program (C-SNAP) has been collecting data on a sentinel sample of children younger than three years of age attending inner-city emergency departments or clinics. C-SNAP data show that the following programs have positive outcomes for black children's food security, health status, and overall growth: TANF, the Food Stamp Program, WIC, Subsidized Housing, and LIHEAP. There are serious implications for young black children's nutrition, health, and growth when their families do not receive the benefits for which they qualify. C-SNAP data also demonstrate that Hispanic children's food security, overall growth, weight, and height benefit from family receipt of TANF, food stamps, WIC, and Subsidized Housing. Young Hispanic children's health, growth, and nutrition are jeopardized when their families do not receive the benefits for which they are potentially eligible.

Increases in food insecurity and poverty levels in 2004 place all poor children, a disproportionate number of whom are children of color, in increasing need of programs that protect their health and growth in early childhood. Although evidence presented here suggests that safety net programs are "good medicine" for children's health, these programs are currently targeted for drastic reductions in funding—reductions that will disproportionately endanger poor children of color. A dispassionate reading of the medical evidence suggests that these programs should be expanded to cover impoverished American children of all races and ethnicities to provide a firm foundation for their future success as healthy citizens and productive participants in tomorrow's workforce.

INTRODUCTION & BACKGROUND

Non-Hispanic black and Hispanic¹ children now comprise 35 percent of the total population of children in the United States.² Children of color are disproportionately vulnerable to poverty, poor health, and food insecurity (limited or uncertain access to enough nutritious food³) compared with white children. The consequences of these disparities for young children of color are profound. Economic deprivation and poor health in early life jeopardize their future success in school and the workplace.⁴

RACIAL AND ETHNIC DISPARITIES IN POVERTY RATES

In 2004, 37 million Americans lived in poverty. Among children, children of color in the United States are more likely to live in poverty than white children, as shown by the U.S. Census poverty data for 2004 in the table below. Among families with related children in the United States, more than one in three (38 percent) black children under the age of five live below 100 percent of the Federal Poverty Level (FPL), and more than one in five (21 percent) black children under the age of five live in extreme poverty, or below 50 percent of the FPL. For Hispanic children under the age of five, the corresponding rates are 31 percent below 100 percent of the FPL and 11 percent below 50 percent of the FPL. For white children under the age of five, the percent in poverty is lower: 12 percent live under 100 percent of the FPL and seven percent live under 50 percent of the FPL.⁵

Table 1. U.S. Census Data: 2004 Poverty Rates Among People in Families with Related Children		
Children Under Age 5 Below 100% FPL		
	Number	Percent
Black	1.15 million	38%
Hispanic	1.35 million	31%
Non-Hispanic White	1.35 million	12%
Children Under Age 5 Below 50% FPL		
	Number	Percent
Black	636,000	21%
Hispanic	475,000	11%
Non-Hispanic White	1.15 million	7%
<i>Source: U.S. Census Bureau 2005, http://pubdb3.census.gov/macro/032004/pov/new03_100_01.htm</i>		

The 2004 FPL for a family of four was \$18,850.

RACIAL AND ETHNIC DISPARITIES IN CHILD HEALTH STATUS

Of particular concern to pediatricians across the United States are the well-documented child health disparities among American children of differing race/ethnicities. The government's 2004 National Health Disparities Report describes racial disparities in child disease prevalence for conditions such as asthma and overweight.⁶ Other researchers have documented similar disparities in the prevalence of childhood diabetes, preterm birth, low birthweight, infant death, and children's mental health problems.⁷ Disparities have also been found in access to health insurance and health services, and quality of care.⁸ A report from the Disparities Project of the Boston Public Health Commission notes the growing body of evidence

demonstrating that genetic factors, personal behaviors, or lower income do not adequately explain health disparities; social and environmental factors play a major role in these disparities.⁹ Of these social and environmental factors, lack of access to adequate food for an active and healthy life (food insecurity) and to income maintenance, housing, and energy assistance are the focus of this report, since these are all remediable by legislative and policy choices.

RACIAL AND ETHNIC DISPARITIES IN RATES OF FOOD INSECURITY

Pronounced racial and ethnic disparities also exist in the national rates of food insecurity. While all households with children are at significantly higher risk for food insecurity than households without children, black and Hispanic households with children are disproportionately vulnerable to food insecurity. From 2003 to 2004, the number of food-insecure Americans increased by nearly one million people. In 2004, the overall rate of food insecurity among children under age 18 was 19 percent (13.87 million children, almost 600,000 more than in 2003). Among black households with children, 31 percent reported food insecurity. Similarly, among Hispanic households with children, 30 percent reported food insecurity. Among non-Hispanic white households with children, however, 13 percent reported food insecurity. These rates are very similar to the poverty rates cited previously.¹⁰ The table below shows the 2004 prevalence of food insecurity in all households, as well as households with children.¹¹

Food insecurity is the government’s technical term to describe uncertain or limited access to enough nutritious food for all household members due to insufficient resources for food.

FOOD INSECURITY IS A HEALTH ISSUE

Food insecurity poses a serious threat to children’s health and development, especially for the youngest children who are in a uniquely vulnerable period of rapid growth and development. Since black and Hispanic children are at a higher risk than whites for living in food-insecure households, they are also at a greater risk for the long-term adverse consequences associated with food insecurity and malnutrition. Food insecurity among young children is linked with poor health and increased risk of hospitalizations,¹² as well as nutrient deficiencies,¹³ learning and developmental deficits,¹⁴ and emotional and behavioral problems.¹⁵

Table 2. USDA Data: 2004 Prevalence of Food Insecurity, by Selected Household Characteristics

	Total Food Insecure	
	<i>Number</i>	<i>Percent</i>
All Households	13.49 million	11.9%
All Black Households	3.21 million	23.7%
All Hispanic Households	2.61 million	21.7%
All White Households	7.01 million	8.6%
All children <18	13.87 million	19.0%
Children <18 in Black Households	3.39 million	31.2%
Children <18 in Hispanic Households	3.85 million	29.6%
Children <18 in White Households	5.81 million	13.0%

Source: Nord, Andrews, and Carlson 2005.

PROTECTING YOUNG CHILDREN OF COLOR FROM POVERTY, POOR HEALTH, AND FOOD INSECURITY: PUBLIC ASSISTANCE PROGRAMS IN THE UNITED STATES

Several federal assistance programs exist in the United States to buffer low-income families from extreme poverty and hunger. Nutrition assistance programs such as the Food Stamp Program and WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children) provide direct support for the family food budget. TANF (Temporary Assistance for Needy Families) is the nation’s primary income support program that provides impoverished families with minimal income to cover their basic needs. Other assistance programs such as LIHEAP (the Low-Income Home Energy Assistance Program) and Subsidized Housing provide support for specific expenses in order to cover survival needs such as heating, cooling, and housing. Despite claims that these programs harm poor children by contributing to overweight,¹⁶ there has been no evidence that this assertion is actually true.¹⁷

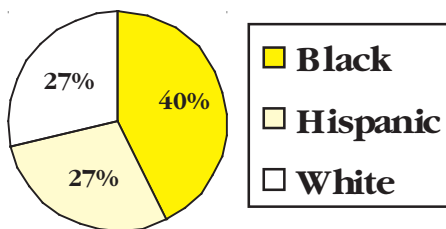
Since black and Hispanic families are disproportionately poor compared with white families, they constitute a substantial proportion of the participants in these means-tested assistance programs. For example, in 2003, over half of the nearly five million households with children who received Food Stamps were either black or Hispanic.¹⁸ Similarly, in 2002, over half of the WIC recipients were either black or Hispanic.¹⁹ The majority of TANF recipient children are children of color. In 2002, black children were the largest single group of TANF recipients, comprising 40 percent of the recipient children. Approximately 27 percent of TANF recipient children were Hispanic and 27 percent were white.²⁰ Many impoverished Hispanic families are not eligible for TANF and Food Stamps, or even if they are eligible, they do not access these programs because of immigration concerns.²¹

The charts below show food stamp and WIC program participation data from the United States Department of Agriculture (USDA) and the TANF participation data from the Department of Health and Human Services (DHHS). Although black and Hispanic children together comprise just over one-third of the total population of young children in the United States,²² due to their disproportionately high poverty rates, they make up more than half of the assistance program participants.

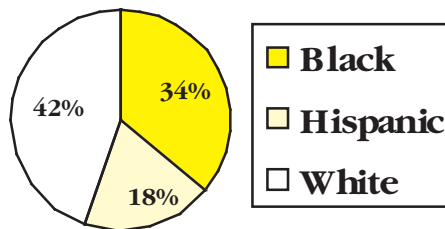
ASSESSING THE IMPACT OF ASSISTANCE PROGRAMS ON YOUNG CHILDREN OF COLOR: THE CHILDREN’S SENTINEL NUTRITION ASSESSMENT PROGRAM

Although many black and Hispanic families participate in federal assistance programs, the programs’ impact on young children of color in particular has not yet been examined. The Children’s Sentinel Nutrition Assessment Program (C-SNAP) is uniquely positioned to assess the links between public assistance program

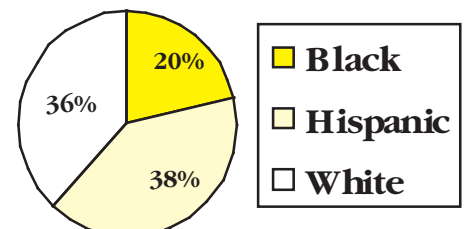
TANF Participation by Race/Ethnicity, 2002



Food Stamp Participation by Race/Ethnicity, 2003



WIC Participation by Race/Ethnicity, 2002



Note: Percents do not sum to 100 because other ethnicities are not shown.

participation and health, growth, and food security outcomes among young children of color. Established in 1998, C-SNAP is a multi-site child health research network that collects data on young children 0-3 years old who are seen in urban medical centers around the country. The C-SNAP caregiver survey instrument includes information on food security (using the 18-item U.S. Household Food Security Scale), household demographics, assistance program participation, child health status, child hospitalization history, and maternal depression. In addition, children are weighed and measured at the time of the caregiver interview. C-SNAP has published findings on the impact of public assistance programs on all young children, but until now has not assessed the data stratified by race/ethnicity.²³

C-SNAP collects data from a sentinel sample of children younger than three years of age who attend inner-city emergency departments or clinics. Sentinel samples are used worldwide to identify “key health events that may serve as an early warning or represent the tip of an iceberg” of problems afflicting hard-to-reach populations.²⁴ Furthermore, as Garza and de Onis state: “The marked vulnerability of the health of infants and young children also makes assessments of child growth a ‘sentinel’ indicator in evaluations of the health and socioeconomic development of communities in which they live.”²⁵

The total C-SNAP sample, currently over 20,000 children, is a vulnerable population: 85 percent receive public insurance, 32 percent of the caregivers are immigrants, and 14 percent of the children were born with low birthweight. While minority children are underrepresented in most national datasets, black and Hispanic children comprise over 80 percent of the C-SNAP sample (59 percent are black and 22 percent are Hispanic). The table on the following page shows C-SNAP sample characteristics and unadjusted outcomes by race/ethnicity.

- C-SNAP STUDY SITES***
EMERGENCY DEPARTMENTS OR
ACUTE CARE CLINICS IN URBAN
MEDICAL CENTERS
- ***Boston Medical Center,
Boston, MA (coordinating site)***
 - ***Hennepin County Medical
Center, Minneapolis, MN***
 - ***Mary’s Center for Children,
Washington, DC***
 - ***University of Arkansas for
Medical Sciences, Little Rock, AR***
 - ***University of Maryland
Medical Center, Baltimore, MD***
 - ***St. Christopher’s Hospital
for Children, Philadelphia, PA***
 - ***Harbor-UCLA Medical Center,
Los Angeles, CA***

Table 3. C-SNAP Sample Characteristics by Race/Ethnicity: August 1998 – December 2004
Sample Restricted to Black, Hispanic, White

	Black N=9,582	Hispanic N=5,615	White N=3,090	P-value
Site *				
Baltimore	17%	<1%	5%	
Boston	38%	24%	17%	
Little Rock	20%	2%	60%	<.0001
Los Angeles	2%	26%	3%	
Minneapolis	23%	36%	14%	
Washington, DC	<1%	12%	<1%	
Mother U.S.-Born	76%	22%	94%	<.0001
Caregiver Married	29%	59%	60%	<.0001
Caregiver Employed	48%	32%	50%	<.0001
Caregiver Education				
Some High School	28%	57%	21%	
High School Graduate	41%	29%	37%	<.0001
Any College	31%	14%	42%	
Mother Age	26.6 yrs	26.6 yrs	27.6 yrs	<.0001
Child Age	12.5 mos	11.6 mos	13.6 mos	<.0001
Child Breastfed	47%	75%	45%	<.0001
Low Birthweight	15%	10%	13%	<.0001
Child Insurance				
Public	85%	78%	62%	
None	6%	17%	9%	<.0001
Private	9%	5%	30%	
Program Participation				
Food Stamps	45%	21%	26%	
TANF	33%	18%	13%	
WIC	80%	86%	59%	<.0001
Housing	35%	13%	9%	
LIHEAP	15%	6%	8%	
TANF Sanction **	24%	30%	22%	.001
Food Stamp Sanction **	6%	9%	8%	.02
* <i>Boston, Little Rock, and Minneapolis have been collecting data continuously since 1998. Due to funding constraints, Baltimore collected data from 1998-2001 and 2004-present, and Los Angeles and Washington, DC, collected data from 1998-2001. The Philadelphia site did not begin collecting data until January 2005; data from that site are not included in this analysis.</i>				
** <i>See box below.</i>				

WHY ARE TANF OR FOOD STAMP BENEFITS REDUCED OR SANCTIONED (TERMINATED)?

Due to the 1996 welfare reform legislation, states can mandate or permit work requirements, living arrangements or school/training for minor parents, time limits, family cap policies, and eligibility limits for immigrant families, among other requirements. Common reasons for sanctions include missed appointments for recertification and review of eligibility, inability to meet work requirements, and failure to promptly re-pay overpayments due to a changed household situation. All of these can occur due to lack of dependable, affordable childcare and lack of information.

THE IMPACT OF PUBLIC ASSISTANCE PROGRAMS ON YOUNG CHILDREN OF COLOR: IMPORTANT FOR BLACK AND HISPANIC CHILDREN'S HEALTH

To assess the associations between assistance program participation and the health, growth, and food security of young children of color, C-SNAP looked at each racial/ethnic group separately and examined the data from five federal assistance programs: TANF, the Food Stamp Program, WIC, Subsidized Housing, and LIHEAP. Due to the relatively small sample size of white children in the C-SNAP study compared with the sample of black and Hispanic children, the results below are shown only for blacks and Hispanics. The outcomes for the white sample were usually in the same direction as the black and Hispanic children (see box below), but the sub-sample size was often not large enough to reach statistical significance. Consequently, if the same analyses were repeated with a larger group of impoverished white children, similar results *and* statistical significance would be expected.

Only statistically significant results are presented in the following summary. Data tables are presented in the Appendix. All odds ratios were adjusted for potential confounders.

WHAT DOES STATISTICAL SIGNIFICANCE MEAN?

“Statistical significance” means that data from two groups have been analyzed and the outcomes (results) for each group have been found to be different enough that they can be attributed to chance in less than five percent of cases.

When results are not statistically significant or “do not reach statistical significance,” this means that the data do not definitively tell us that chance can be confidently ruled out as the reason for the results.

Sometimes, however, results are not significant but are “in the same direction” as the statistically significant results. This means that the outcomes were showing the same kinds of results but perhaps did not have a large enough group of people (sample size) to reach criteria for statistical significance.

LESS THAN OR EQUAL TO TWO STANDARD DEVIATIONS BELOW THE MEAN FOR WEIGHT OR HEIGHT:

This standard is a way of identifying the children whose weight or height falls into approximately the lowest three percent of weight or height measurements compared with the national average. A child who is less than two standard deviations below the mean for weight or height would be considered malnourished, according to the World Health Organization’s international guidelines.

Z-SCORE:

This standardized measure is a way to compare an individual child with the national average weight or height for a child of the same age and gender. A negative z-score value indicates that the child weighs or measures less than the expected average.

BLACK CHILDREN

The following programs have positive outcomes for black children's food security, health status, and overall growth: TANF, the Food Stamp Program, WIC, Subsidized Housing, and LIHEAP. There are serious implications for young black children's food security, health, and growth when their families do not receive the benefits for which they qualify, as shown by the following results.

TANF (Temporary Assistance for Needy Families) Linked to Improved Food Security

Compared with black infants and toddlers whose family benefit was *not* reduced in the past year:

- Black infants and toddlers whose family benefit was *reduced* were *56 percent more likely to be food insecure*.
- Black infants and toddlers whose family benefit was *sanctioned* were *78 percent more likely to be food insecure*.

Food Stamps Linked to Improved Food Security and Child Health Status

Compared with black infants and toddlers whose family benefit was *not* reduced in the past year:

- Black infants and toddlers whose family benefit was *reduced* were *33 percent more likely to be food insecure*.
- Black infants and toddlers whose family benefit was *sanctioned* were *84 percent more likely to be food insecure*.
- Black infants and toddlers whose family benefit was *reduced* were *38 percent more likely to be reported as being in fair or poor health*.

Receipt of food stamps is not associated with overweight in young black children.²⁶

WIC Linked to Improved Overall Growth and Healthy Weight and Height for Child's Age

Compared with black infants who received WIC, those who were potentially eligible but *did not* receive WIC were:

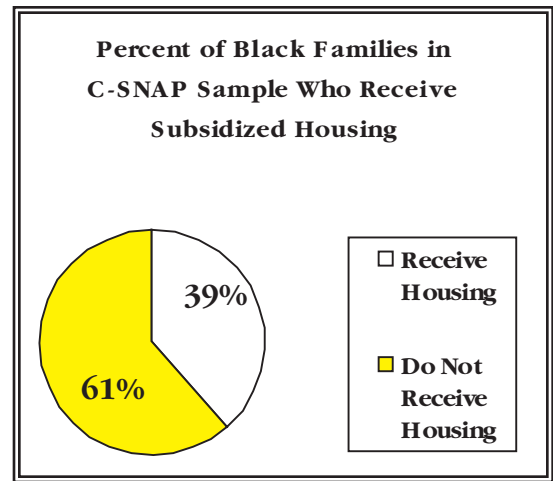
- Fifty-six percent more likely to be at nutritional risk for growth problems.
- More than twice as likely to be underweight (as measured by being less than or equal to two standard deviations below the mean for weight-for-age).
- More likely to be shorter in height (as measured by height-for-age z-score).

Receipt of WIC was not associated with overweight in young black children.²⁷

Subsidized Housing Linked to Healthier Weight and Height for Child's Age

Compared with black infants and toddlers in families who received a housing subsidy, those in potentially eligible families who *did not* receive a housing subsidy were:

- ❑ Thirty-three percent more likely to be underweight (as measured by being less than or equal to two standard deviations below the mean for weight-for-age).
- ❑ More likely to be shorter in height (as measured by height-for-age z-score).

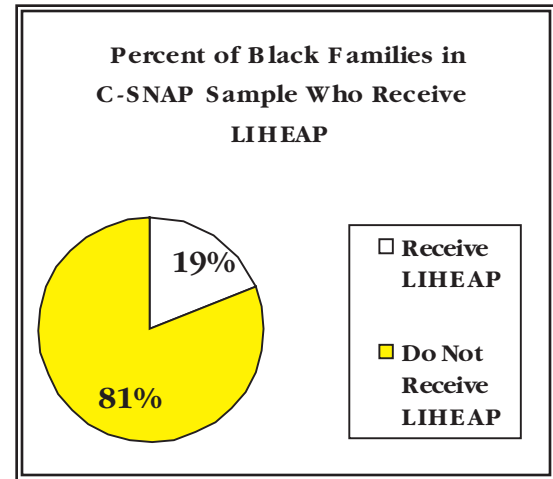


As with the Food Stamp Program and WIC, receipt of housing subsidies was not associated with overweight in young black children.²⁸

LIHEAP Linked to Fewer Growth Problems and Healthier Weight for Child's Age

Compared with black infants and toddlers in families who received fuel assistance, those who were in potentially eligible families but *did not* receive fuel assistance were:

- ❑ Twenty-nine percent more likely to be at nutritional risk for growth problems (less than the 5th percentile for weight-for-age, or less than the 10th percentile for weight-for-height).
- ❑ More likely to have a lower weight (as measured by weight-for-age z-score).



Again, receipt of LIHEAP was not associated with overweight in young black children.²⁹

HISPANIC CHILDREN

The following programs have positive outcomes for Hispanic children's food security, overall growth, weight, and height: TANF, the Food Stamp Program, WIC, and Subsidized Housing. The associations between receipt of LIHEAP and Hispanic children's health and growth did not reach statistical significance due to the small sub-sample of Hispanic LIHEAP recipients. This limited program participation reflects the fact that a substantial proportion of the Hispanic children in this sample lived in California, where few families of any ethnicity access LIHEAP. Similar to the findings for black children, there are serious implications for young Hispanic children's health, growth, and food security when their families do not receive the benefits for which they qualify, as shown by the following results.

TANF (Temporary Assistance for Needy Families) Linked to Improved Food Security

Compared with Hispanic infants and toddlers whose family benefit was *not* reduced in the past year:

- Hispanic infants and toddlers whose family benefit was *reduced* were *more than twice as likely to be food insecure*.
- Hispanic infants and toddlers whose family benefit was *sanctioned* were *63 percent more likely to be food insecure*.

Food Stamps Linked to Improved Food Security

Compared with Hispanic infants and toddlers whose family benefit was *not* reduced in the past year:

- Hispanic infants and toddlers whose family benefit was *sanctioned* were *more than twice as likely to be food insecure*.

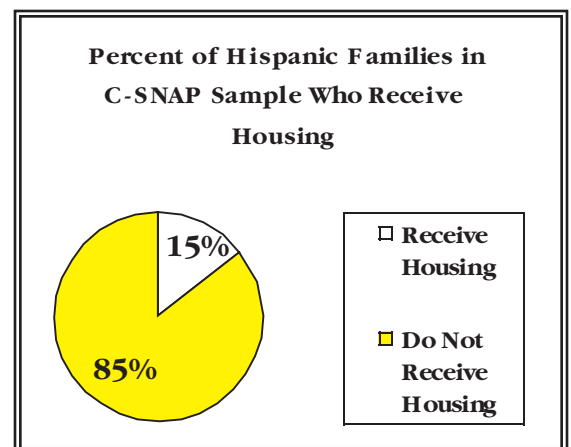
Receipt of food stamps was not associated with overweight in young Hispanic children.³⁰

WIC Linked to Healthy Weight and Height for Child's Age

Compared with Hispanic infants who received WIC, those who were potentially eligible but *did not* receive WIC were:

- More likely to have a lower weight and be shorter in height (as measured, respectively, by weight-for-age and height-for-age z-scores).

Receipt of WIC was not associated with overweight in young Hispanic children.³¹



Subsidized Housing Linked to Healthier Height for Child's Age

Compared with Hispanic infants and toddlers in families who received a housing subsidy, those who were potentially eligible but *did not* receive a housing subsidy were:

- Ninety-nine percent more likely to be short in height (less than or equal to two standard deviations below the mean for height-for-age).

Again, receipt of subsidized housing was not associated with overweight in young Hispanic children.³²

LIMITATIONS

There are several important limitations of this study. First, C-SNAP did not examine the effects of the safety net programs on the health and growth of infants and toddlers of other groups of color. C-SNAP does not

have interviewers who are able to conduct the interview in languages other than English, Spanish, or Somali (Minneapolis only). Groups other than blacks and Hispanics were not included because the sample size of other groups in the study is too small to yield interpretable results. Second, the cross-sectional study design can demonstrate associations but not causation. Third, although potentially confounding effects of many relevant factors were statistically controlled in the analyses, other unmeasured confounders may have influenced the outcomes. Exclusion of the most severely ill or injured cases from the emergency department subsample may have biased the results. Lastly, the population studied is not a nationally representative sample, but rather a sentinel sample of families with children younger than three years, who were brought for care at an emergency department or clinic serving low-income populations in five United States cities. National survey data that would permit valid national estimates of the impacts of program participation on the health and growth of all young American children are not currently collected by any federal agency.

CONCLUSION

Contrary to the popular perception that public income maintenance, nutrition support, and housing and energy assistance are of little benefit (or indeed actively harmful) to children of color, these findings suggest that participation in these programs has a measurable positive impact on indicators of health and growth in early childhood, which give children the foundation necessary for successful participation in future learning and in the workforce. In contrast, sanctioning families' TANF and food stamp benefits seriously endangers the health and food security of black and Hispanic infants and toddlers at this critical period in their growth and development. Moreover, given the increase in food insecurity and poverty levels in 2004, the current proposed cuts to safety net programs would create a serious child health crisis for all poor children, and, in particular, for children of color. Safety net programs are a wise social investment and should be expanded to cover children of all races and ethnicities who are in need. Furthermore, the impact of safety net programs on children's health, growth, and learning should be monitored in all nationally representative surveys, such as the National Health and Nutrition Examination Survey (NHANES).

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APPENDIX
Safety Net Program Data Tables

Only statistically significant results are presented below. Control variables for each analysis were selected if they met the formal statistical criteria for confounding—correlated at p less than .05 with both the predictor and the outcome.

TANF

The sample was restricted to families who reported TANF receipt within the past year.

Logistic regression results are controlled for: study site; mother U.S.-born; caregiver employment; child in day care; child low birthweight; receipt of housing subsidy; child insurance status; and receipt of SSI.

Household Food Insecurity

Black:

Outcomes	TANF Benefits Sanctioned n=819	TANF Benefits Reduced n=325	TANF Benefits “Not Decreased” n=2,217	P Values
Household Food Insecurity	1.78 (1.45, 2.20) p<.0001	1.56 (1.65, 2.09) p=.003	1.00	P < .0001

Hispanic:

Outcomes	TANF Benefits Sanctioned n=327	TANF Benefits Reduced n=87	TANF Benefits “Not Decreased” n=687	P Values
Household Food Insecurity	1.63 (1.19, 2.24) p=.002	2.17 (1.29, 1.76) p=.003	1.00	P < 0.0007

THE FOOD STAMP PROGRAM

The sample was restricted to families who reported food stamp receipt within the past year.

Logistic regression results are controlled for: study site; mother U.S.-born; caregiver marital status; caregiver employment; child in day care; receipt of WIC; receipt of housing subsidy; child insurance status; and receipt of SSI.

Household Food Insecurity

Black:

Outcomes	FSP Benefits Sanctioned n=298	FSP Benefits Reduced n=806	FSP Benefits “Not Decreased” n=3,396	P Values
Household Food Insecurity	1.84 (1.40, 2.42) p<.0001	1.33 (1.09, 1.62) p=.004	1.00	P < .0001

Hispanic:

Outcomes	FSP Benefits Sanctioned n=121	FSP Benefits Reduced n=243	FSP Benefits “Not Decreased” n=957	P Values
Household Food Insecurity	2.10 (1.36, 3.27) p=.0009	1.15 (0.84, 1.59) p=.38	1.00	P = .004

Child’s Health Status Fair/Poor

Black:

Outcomes	FSP Benefits Sanctioned n=298	FSP Benefits Reduced n=806	FSP Benefits “Not Decreased” n=3,396	P Values
Child’s Health Status Fair/Poor	1.13 (0.76, 1.67) p=.55	1.38 (1.07, 1.77) p=.01	1.00	P = .04

THE WIC PROGRAM

The sample was restricted to children less than 12 months old and excluded families who do not receive WIC because of “no perceived need.”

Logistic regression results are controlled for: mother U.S.-born; receipt of TANF; receipt of housing subsidy; child low birthweight; child insurance status; caregiver employment; duration of breastfeeding; and age of child.

Anthropometrics

At Nutritional Risk for Growth Problems

Black:

Outcomes	No WIC (n=382)	Receive WIC (n=4,798)	P Value
At Nutritional Risk for Growth Problems	1.56 (1.16, 2.10)	1.00	P = 0.003

≤ 2 Standard Deviations for Weight-for-Age

Black:

Outcomes	No WIC (n=382)	Receive WIC (n=4,798)	P Value
≤2SD Wt/Age	2.11 (1.35, 3.94)	1.00	P = 0.001

Weight-for-Age

Hispanic:

Outcomes	No WIC (n=262)	Receive WIC (n=3,007)	P Value
Mean Z-Wt/Age	Z = -0.066	Z = 0.136	P=.02

Height-for-Age

Black:

Outcomes	No WIC (n=382)	Receive WIC (n=4,798)	P Value
Mean Z-Ht/Age	Z = -0.396	Z = 0.100	P=.0001

Hispanic:

Outcomes	No WIC (n=262)	Receive WIC (n=3,007)	P Value
Mean Z-Ht/Age	Z = -0.311	Z = 0.062	P<.0001

LESS THAN OR EQUAL TO TWO STANDARD DEVIATIONS BELOW THE MEAN FOR WEIGHT OR HEIGHT:

This standard is a way of identifying the children whose weight or height falls into approximately the lowest three percent of weight or height measurements compared with the national average. A child who is less than two standard deviations below the mean for weight or height would be considered malnourished, according to the World Health Organization’s international guidelines.

Z-SCORE:

This standardized measure is a way to compare an individual child with the national average weight or height for a child of the same age and gender. A negative z-score value indicates that the child weighs or measures less than the expected average.

SUBSIDIZED HOUSING

The sample was restricted to low-income families defined as renters who also participate in at least one means-tested program.

Logistic regression results are controlled for: mother U.S.-born; receipt of TANF; receipt of WIC; and food insecurity.

Anthropometrics

≤2 Standard Deviations for Weight-for-Age

Black:

Outcomes	No Subsidy (n=4,977)	Receive Subsidy (n=3,116)	P Value
≤2SD Wt/Age	1.33 (1.09, 1.63)	1.00	P = 0.006

≤2 Standard Deviations for Height-for-Age

Hispanic:

Outcomes	No Subsidy (n=4,256)	Receive Subsidy (n=720)	P Value
≤2SD Ht/Age	1.99 (1.11, 3.58)	1.00	P = 0.02

Height-for-Age

Black:

Outcomes	No Subsidy (n=4,977)	Receive Subsidy (n=3,116)	P Value
Mean Z-Ht/Age	Z = -0.005	Z = 0.134	P<.0001

LIHEAP

The sample was restricted to a low-income sample defined as renters who participate in at least one means-tested program, excluding those with private insurance.

Logistic regression results are controlled for: mother U.S.-born; year of interview; food insecurity; receipt of either TANF or food stamps; receipt of WIC; receipt of housing subsidy; caregiver marital status; and caregiver employment.

At Nutritional Risk for Growth Problems

Black:

Outcomes	Do Not Receive Fuel Assistance (n=3,313)	Receive Fuel Assistance (n=778)	P Values
At Nutritional Risk for Growth Problems	1.29 (1.00, 1.66)	1.00	P = 0.05

Weight-for-Age

Black:

Outcomes	Do Not Receive Fuel Assistance (n=3,313)	Receive Fuel Assistance (n=778)	P Values
Mean Z-Wt/Age	Z = -0.051	Z = 0.061	P=.04

ENDNOTES

- ¹ In this report, the words “black,” “Hispanic,” and “white” are used; however, the authors recognize and respect that many people prefer to identify as African American or Latino. “Non-Hispanic black,” “Hispanic,” and “Non-Hispanic white” are the terms that the U.S. Census and USDA/Food and Nutrition Service use. Thus, to maintain consistency with the data presented in this report, abbreviated versions of these words have been chosen. See Latin Society: Silent Voices – Latino vs. Hispanic, <http://www.latinosociety.com/hispanicvslatino.html> (accessed October 28, 2005).
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