Policy Affects Poverty: The CEO Poverty Measure, 2005-2009

A Working Paper by the
NYC Center for Economic Opportunity

March 2011

Center for Economic Opportunity

Michael R. Bloomberg
Mayor

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PREFACE AND ACKNOWLEDGMENTS

In 2006 New York City Mayor Michael R. Bloomberg convened a Commission on Economic Opportunity, directing it to craft innovative approaches to poverty reduction in the City. The Commission members needed indicators that would inform them how the ideas they were considering would affect low-income New Yorkers. They soon learned what social scientists have known for decades: the official poverty measure provides little useful information. The Commissioners concluded that, in addition to launching new programs, the City needed to develop a new measure of poverty. Mayor Bloomberg embraced the suggestion, and the development of an alternative measure of poverty became a project of the New York City Center for Economic Opportunity (CEO), the organization he created to implement the Commission's recommendations.

There has been no shortage of proposals for improving the way America counts its poor. The most influential of these was developed, at the request of Congress, by the National Academy of Sciences (NAS). Although the NAS's proposal was issued in 1995, neither the Federal nor any other branch of government had adopted this approach until 2008, when CEO issued its first working paper on poverty in New York City, entitled The CEO Poverty Measure. The study presented here continues CEO's effort to apply the NAS methodology to the realities of New York City. It updates last year's working paper (The CEO Poverty Measure, 2005-2008) with data for 2009 and incorporates further improvements in our methodology.

We are not alone in this work. CEO not only aspires to develop a more informative way to measure poverty locally, we want to encourage others to follow suit. To date, NAS-style state-level poverty measures have been developed for New York, Connecticut, Minnesota, and Wisconsin, as well as for the city of Philadelphia and its metropolitan area. In March of 2010, further progress was made when the Obama Administration announced that the U.S. Census Bureau would issue a Supplemental Poverty Measure in the Fall of this year. The new Federal measure will also be based on the NAS recommendations.

These projects have been enormously helpful to us. We now benefit from the wisdom of George Falco and Jihyun Shin at the New York State Office of Temporary and Disability Assistance; Mark Stern of the University of Pennsylvania; Linda Giannarelli, Laura

Wheaton, and Sheila Zedlewski at the Urban Institute; and Julia Isaacs, Joanna Marks, and Timothy Smeeding, authors of the University of Wisconsin Institute for Research on Poverty's report.

We have also benefited from opportunities to present our work to other scholars and policy practitioners. The Brookings Institution Center on Children and Families has hosted a number of meetings, some at CEO's request, where many of the nation's leading poverty experts not only shared their work but also offered us advice for improving our measure. We wish to recognize the generosity of Ron Haskins, the Brookings Institution Center's Co-Director, as well as the wisdom of all those who have attended these events. CEO has also participated in a number of conferences, including annual meetings of the Association for Public Policy and Management, the National Association for Welfare Research and Statistics, the American Statistical Association, and the Association of Public Data Users. In the course of these opportunities we have amassed a considerable debt. In addition to those mentioned above, we wish to acknowledge Jessica Banthin, Richard Bavier, David Betson, Rebecca Blank, Gary Burtless, Constance Citro, Sharon O'Donnell, Irv Garfinkel, Thesia Garner, Mark Greenberg, Amy O'Hara, Nathan Hutto, John Iceland, David Johnson, Trudi Renwick, Isabelle Sawhill, Karl Scholz, Arloc Sherman, Kathleen Short, Sharon Stern, Jane Waldfogel, and James Ziliak.

Closer to home, Vicky Virgin, Demographic Analyst at the Population Division of the New York City Department of City Planning, has made important contributions throughout the project. She deserves special thanks, as does Dr. Joseph Salvo, the Population Division's Director. Gayatri Koolwal, formerly at CEO but now at the World Bank, has continued to assist our efforts. Angelina Lopez made important contributions during an all-too-brief internship with us during the summer of 2010.

Many other colleagues in New York City government have shared their expertise in recent years. These include Caitlyn Brazill, (now at New York University's Furman Center); John Grathwol and Deborah Brosen at the New York City Office of Management and Budget; Anneil Basnandan, Roy Holder, Hildy Dworkin, Juliah Lindsey, Iris Reyes, Angela Sheehan, Harold Wenglinsky, and Rebecca Widom of the Human Resources Administration; Laurie Kilpatrick, Department of Finance; Roeland Kim, Department of Housing Preservation and Development; Anne Marie Flatley and Celeste Glenn of the New

York City Housing Authority; Eric Kober, Department of Planning; and Kristin Misner, Office of the Deputy Mayor for Health and Human Services.

Staff at other government agencies that also assisted us include Tanette Nguyen-McCarty, Office of Tax Policy Analysis, New York State Department of Taxation and Finance; Jane Berrie, New York State Division of Housing and Community Renewal; Dave Dlugolecki, New York State Office of Temporary and Disability Assistance; Dean Plueger, U.S. Internal Revenue Service; Edward Welniak and Jessica Semega of the U.S. Bureau of the Census; and Didem Bernard, U.S. Department of Health and Human Services' Agency for Healthcare Research and Quality.

This report was authored by Christine D'Onofrio, John Krampner, Daniel Scheer, and Todd Seidel, along with myself. Our work would not have been possible without the leadership of Veronica White, CEO's Executive Director, and Linda Gibbs, New York City Deputy Mayor for Health and Human Services. They provided the exceptional guidance and support we have needed to do this work.

Mark Levitan, Ph.D.
Director of Poverty Research
On behalf of the New York City Center for Economic Opportunity

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EXECUTIVE SUMMARY

In December 2007, the United States economy began to contract. This downturn has come to be known as the Great Recession, for in many respects it has been the deepest since the Great Depression of the 1930s. For the nation, the recession's effect on the official poverty rate has followed a well-worn path; the economic downturn led to a sharp rise in this measure of poverty. In New York City, the recession came later and was less severe. As a result, the official poverty rate for the City has been more stable, exhibiting no statistically significant rise from 2007.

This is a straightforward story about how the recession affected poverty in 2008 and 2009. But if understanding the impact of public policy is a goal in measuring poverty, it is far too simple. During recessions, government has a variety of tools it can use to offset contracting private sector economic activity. It can increase public sector spending by, for example, expanding infrastructure construction. It can counter the decline in family income by increasing the scope or generosity of transfer payments and lowering taxes. In 2008 and 2009, the most important initiatives that directly bolstered family incomes came from Unemployment Insurance, Food Stamps, and new or expanded tax rebate and credit programs. Of the three, only Unemployment Insurance is counted by the official poverty measure.

Shortcomings such as these have frustrated social scientists and policymakers for decades. They prompted New York City Mayor Michael R. Bloomberg to direct the Center for Economic Opportunity (CEO) to develop an alternative measure of poverty. There has been no shortage of proposals for improving the way we count the poor. The most influential of these was developed, at the request of Congress, by the National Academy of Sciences (NAS).[1] This working paper, the third that CEO has issued, applies the NAS methodology to the realities of New York City.[2]

The NAS and CEO poverty measures share one important similarity with the current, official poverty measure: they are income adequacy approaches. Each defines a level of

[1] Citro, Constance F. and Robert T. Michael (eds). *Measuring Poverty: A New Approach*, Washington, DC: National Academy Press, 1995.
[2] Our prior reports are available at: www.nyc.gov/ceo.

income, often referred to as the poverty line, which separates the poor from the non-poor. Each measure defines which among the resources available to families should be counted as income. If a family's resources fall below the line, its members are categorized as poor. Where the NAS-based measures differ from the official one is in how they draw the poverty line and what they count as income.

The Official Poverty Measure

The official measure's poverty threshold was developed in the early 1960s and was based on the cost of the U.S. Department of Agriculture's Economy Food Plan, a diet designed for "temporary or emergency use when funds are low." Because the survey data available at the time indicated that families typically spend a third of their income on food, the cost of the plan was multiplied by three to account for other needs. Since the threshold's 1963 base year, it has been updated annually by the change in the Consumer Price Index.[3]

Nearly a half-century later, this poverty line has little justification. The threshold no longer represents contemporary spending patterns; food now accounts for less than one-seventh of family expenditures. The official threshold also ignores differences in the cost of living across the nation, an issue of obvious importance to measuring poverty in New York City. A final shortcoming of the threshold is that it is frozen in time. Since it only rises with the cost of living, it assumes that a standard of living that defined poverty in the mid-1960s remains appropriate, despite advances in the nation's standard of living since that time.

The official measure's definition of the resources that are applied against the threshold is pre-tax cash. This includes wages, salaries, and earnings from self-employment; income from interest, dividends, and rents; and some of what families receive from public programs, *if* they take the form of cash. Thus, payments from Unemployment Insurance, for example, are included in the official resource measure.

But over time, an increasing share of what government does to support low-income families has taken the form of tax credits (such as the Earned Income Tax Credit) and the cash equivalent value of in-kind benefits (such as Food Stamps). If policymakers or the public wants to know how these programs affect poverty, the official measure cannot provide an answer.

[3] Fischer, Gordon M. "The Development and History of the Poverty Thresholds." Social Security Bulletin Vol. 55 No. 4. Winter 1992.

The National Academy of Sciences' Alternative

NAS-based methods take a considerably different approach to both the threshold and resource sides of the poverty measure. The poverty threshold reflects the need for clothing, shelter, and utilities, as well as food. It is established by choosing a point in the distribution of "reference" families' expenditures for these items, plus a small multiplier to account for miscellaneous expenses such as personal care, household supplies, and non-work-related transportation.[4] The threshold is updated each year by the change in the level of this spending, which connects the threshold to the growth in living standards. In further contrast to the official measure, the NAS-style poverty line is also adjusted to reflect geographical differences in living costs.

The NAS-based income measure is designed to account for the flow of resources that a family can use to meet the needs that are represented in the threshold. This creates a much more inclusive measure than pre-tax cash. The tax system and the cash equivalent value of in-kind benefits for food and housing are important additions to family resources. But families also have non-discretionary spending needs that reduce the income available to secure the necessities represented in the threshold. These include the cost of commuting to work, childcare, and medical care that must be paid for out of pocket. This spending is accounted for as deductions from income.

CEO's Adoption of the NAS Method

The NAS provided a conceptual framework; CEO has adapted it to the realities of New York City. For the poverty line, we employ the nationwide thresholds that have been calculated from the U.S. Bureau of Labor Statistics' Consumer Expenditure Survey and have been used by the Census Bureau for its research on NAS-style poverty measures.[5] In 2009, the NAS threshold for a two-adult, two-child family equaled $24,522.[6] We then adjusted the threshold to account for the relatively high cost of living in New York City, using the ratio of the New York City to nationwide Fair Market Rent for a two-bedroom

[4] The NAS reference families are those composed of two adults and two children. The threshold for this family is then scaled for families of different sizes and compositions. See Appendix B.
[5] The Census Bureau's work is available at: http://www.census.gov/hhes/povmeas/index.html.
[6] Several versions of the NAS threshold are available at: http://www.census.gov/hhes/povmeas/data/nas/web_tab5_povertythres2009.xls. We use the Consumer Expenditure Survey-updated threshold that excludes medical care and mortgage principal payments. This threshold is based on the midpoint of the ranges the NAS proposed for the threshold (80.5 percent of the median) and the multiplier (1.2).

apartment.[7] In 2009, our New York City poverty line for this family came to $29,477. (The official threshold for the corresponding two-adult, two-child family in 2009 was $21,756.) We refer to this New York City-specific threshold as the CEO poverty threshold.

To measure the resources available to a family to meet the needs represented by the threshold, our poverty measure employs the Public Use Micro Sample from the Census Bureau's American Community Survey (ACS) as its principal data set. The advantages of this survey for local poverty measurement are obvious. The ACS is designed to provide measures of socioeconomic conditions on an annual basis in states and larger localities. It offers a robust sample for New York City and contains essential information about household composition, family relationships, and cash income from a variety of sources.

But, as noted earlier, the NAS-recommended poverty measure greatly expands the scope of resources that must be measured in order to determine whether or not a family is poor. Unfortunately, the ACS provides only some of the information needed to estimate the additional resources required by the NAS measure. CEO has developed a variety of models that estimate the effect of taxation, nutritional and housing assistance, work-related expenses, and medical out-of-pocket expenditures on total family resources and poverty status. We refer to our estimate of family resources as "CEO Income."

This Report

The focus of this year's CEO working paper is on poverty in New York City from 2007 to 2009. Its findings provide a more complete account of how poverty rates have changed than the story told by the official measure. Job loss and declines in earned income play a role in year-to-year changes in the CEO poverty measure, of course. But their effect on the poverty rate takes place within the broader scope of our measure. To a larger degree than in the official one, the CEO measure captures the effect of income support programs that offset the impact of downturns in the business cycle. What does a more complete measure reveal about the recent trend in New York City poverty rates?

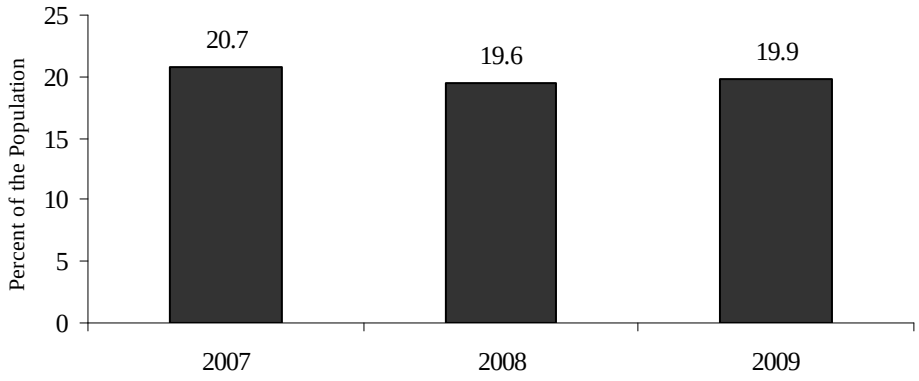
[7] Details of the calculation are provided in Appendix B.

Key Findings

- The CEO poverty rate was 20.7 percent in 2007; it declined to 19.6 percent in 2008, and stood at 19.9 percent in 2009, statistically unchanged from the prior year.[8] (See Figure ES One.)

Figure ES One

The CEO Poverty Rate, 2007-2009



Source: American Community Survey Public Use Micro Sample as augmented by CEO.

- The 1.1 percentage point fall in the poverty rate from 2007 to 2008 was created by a sharp spike in CEO income of 9.6 percent at the 20th percentile (the point in the CEO income distribution that is most likely to influence the poverty rate) that outpaced the 6.5 percent rise in the CEO poverty threshold.
- The stability of the CEO poverty rate from 2008 to 2009 is due to a downtick in the CEO threshold of 0.5 percent, which offset the 1.2 percent decline in CEO income at the 20th percentile. (See Table ES One.)

[8] Percentage point differences in poverty rates have been evaluated for statistical significance at the 90 percent level of confidence. The text notes only those differences or changes in poverty rates that meet this standard. See Appendix H.

Table ES One

CEO Income at the 20th Percentile in Adjusted Dollars

Year			Percentage Change	
2007	2008	2009	2007-2008	2008-2009
27,349	29,969	29,601	9.6%	-1.2%

CEO Threshold, Two-Adult, Two-Child Family

Year			Percentage Change	
2007	2008	2009	2007-2008	2008-2009
$27,813	$29,634	$29,477	6.5%	-0.5%

CEO Poverty Rates, Percent of the Population

Year			Percentage Point Change	
2007	2008	2009	2007-2008	2008-2009
20.7	19.6	19.9	**-1.1**	0.3

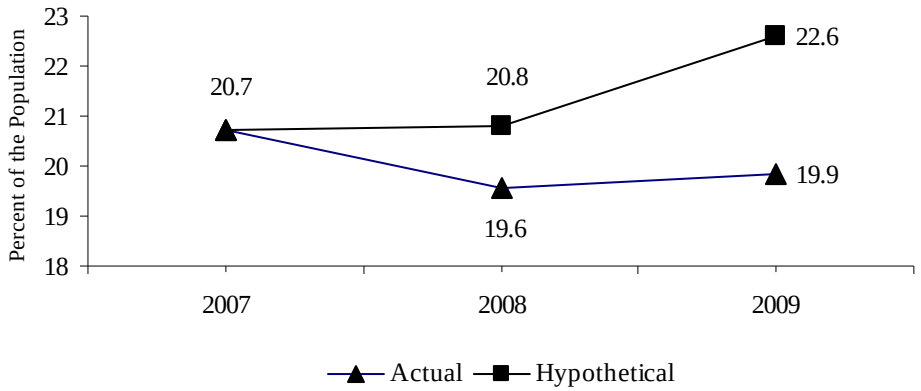
Sources: U.S. Bureau of the Census, Department of Housing and Urban Development and American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: Differences are taken from unrounded numbers.
Differences in bold are statistically significant.
Income is stated in family size and composition-adjusted dollars.

- The 2007 to 2008 and 2008 to 2009 changes in the Citywide CEO poverty rate reflect local economic conditions, and Federal, State, and City public policy.
    - The sharp rise in CEO income from 2007 to 2008 occurred because of the difference between the timing of the onset of the downturn in New York City and the Federal government's response to the national recession. New Yorkers benefited from tax initiatives such as the Recovery Rebate even though the City economy was continuing to expand through much of 2008. We estimate that were it not for Federal tax policy initiatives, the CEO poverty rate would have been 20.8 percent instead of 19.6 percent in 2008, virtually unchanged from the prior year.
    - Policy continued to play an important role in 2009 as the recession took a toll on the City. At the Federal level, the American Recovery and Reinvestment Act of 2009 created new and expanded existing tax programs that benefit low-income families. The 2009 Recovery Act also increased Food Stamp benefit levels. In large part due to local policy choices, the Food Stamp caseload expanded dramatically. These initiatives kept the CEO poverty rate

from rising. We estimate that in the absence of these initiatives, the 2009 poverty rate would have been 22.6 percent, a 3.0 percentage point rise from 2008. (Figure ES Two displays the divergent paths of our estimates of actual and "had-it-not-been-for" or hypothetical poverty rates.)

Figure ES Two

Actual & Hypothetical CEO Poverty Rates



Source: American Community Survey Public Use Micro Sample as augmented by CEO.

- The significant differences between CEO's estimates of actual and hypothetical poverty rates are indicators of the extent to which public policy succeeded in softening the recession's blow. But this level of success was not universal. We find that the poverty rate rose for a key group of City residents, New Yorkers living in single-parent families, from 31.4 percent in 2008 to 34.6 percent in 2009. The 3.2 percentage point climb occurred because employment declines were particularly severe among heads of single-parent families. The effect of job losses was compounded by the loss of income from employment-conditioned tax credits, such as the Earned Income Tax Credit.

Implications

There is an overarching message in this year's CEO report on poverty in New York City: policy affects poverty. To a large degree, economic stimulus programs and policy initiatives aimed at bolstering family income succeeded in preventing a rise in poverty in New York City. This insight depends on having a poverty measure that includes far more than pre-tax

cash as family income. This is a strong argument for adopting a similar poverty measure nationally. Our principal finding should also inform the ongoing debate about the capacity of public policies to address poverty. Not every anti-poverty program meets its goals and deserves to be protected, but calls for across-the-board cutbacks to programs that help low-income families cannot be justified by the assertion that when it comes to poverty, "nothing works."

The rise in poverty among persons living in single-parent families is notable for two reasons. First, a disproportionate share of the City's poor live in these families. In 2009, persons living in single-parent families were 28.7 percent of New York's poor, although they accounted for only 16.5 percent of the total City population. Second, for at least a generation, single-parent families have been at the center of the debates and policy initiatives concerning American poverty.

An important policy goal in this context has been to make employment the path out of poverty. Policymakers have recognized that the wage rates offered by the jobs many single parents could obtain would not lift them out of poverty. They have expanded programs that "make work pay" in order to keep single-parent families out of the ranks of the working poor. What, however, happens when the economy contracts and work is hard to find? Single-parent families are typically one-earner families. Joblessness not only means lost wage income; in the absence of a second worker, it also triggers the loss of work-conditioned benefits. An obvious priority is quickly reconnecting single parents to employment. If the demand side of the labor market remains weak, this may require an expansion of subsidized employment programs. Recently a number of states made good use of the TANF Emergency Fund for just this purpose.[9] Within a policy context that emphasizes work-plus-benefits, prolonged periods of joblessness will continue to consign many single parents and their children to poverty.

[9] See LaDonna Pavetti, Liz Schott, and Elizabeth Lower-Basch. *Creating Subsidized Employment Opportunities for Low-Income Parents: The Legacy of the TANF Emergency Fund*. Center on Budget and Policy Priorities and Center for Law and Social Policy. February 16, 2011. Available at: http://www.clasp.org/admin/site/publications/files/ Subsidized-Employment-Paper-Final.pdf.

I. INTRODUCTION

The inadequacies of the official U.S. poverty measure have been obvious to social scientists and policymakers for decades. And there have been no shortage of proposals for improving it. The most influential of these was developed, at the request of Congress, by the National Academy of Sciences.[10] Although the Academy's proposal was issued in 1995, neither the Federal nor any other branch of government had been willing to adopt an improved measure for counting the poor – at least not until 2008. In August of that year, the Center for Economic Opportunity (CEO) issued its initial report on poverty in New York City. This study continues CEO's effort to apply the NAS methodology to the realities of New York City.

Our ambition in this project has not only been to develop a more informative way to measure poverty locally, but also to encourage others to follow suit. To date, NAS-style state-level poverty measures have been developed for New York, Connecticut, Minnesota, and Wisconsin.[11] In March of 2010, further progress was made when the Obama Administration announced that the U.S. Census Bureau would issue a Supplemental Poverty Measure (SPM) in the Fall of this year.[12] This new measure will also be based on the NAS recommendations.[13]

The NAS proposal, the new SPM, and CEO's poverty measure all share one important similarity with the current, official poverty measure: they are income adequacy approaches. Each establishes a level of income, often referred to as the poverty line, which separates the poor from the non-poor. Each measure defines which among the resources available to families should be counted as income. If a family's resources fall below the line, its

[10] Citro, Constance F. and Robert T. Michael (eds). *Measuring Poverty: A New Approach*, Washington, DC: National Academy Press, 1995.
[11] These have been developed by the New York State Office of Temporary and Disability Assistance, the Urban Institute, and the University of Wisconsin's Institute for Research on Poverty. Much of this work is available at: http://www.irp.wisc.edu/research/povmeas/regional.htm.
[12] http://www.commerce.gov/news/press-releases/2010/03/02/census-bureau-develop-supplemental-poverty-measure.
[13] The broad outlines of the Supplemental Poverty Measure are described in *Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure.* Available at: http://www.census.gov/hhes/www/poverty/SPM_TWGObservations.pdf.

members are categorized as poor. Where the NAS-based measures differ from the official one is in how they draw the poverty line and what they count as income.

CEO, SPM, and NAS

The CEO and Federal Supplementary Poverty Measures (SPM) are both based on recommendations by the National Academy of Sciences in its 1995 report. This working paper details how CEO adapted the NAS recommendations to measure poverty in New York City, but we refrain from comparing our approach to the SPM as several important aspects of the Federal measure have yet to be finalized. The research agendas for the Federal agencies with responsibility for this work, the Bureaus of Labor Statistics and Census, are being guided by a document entitled *Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure*. The poverty measure envisioned by the Working Group will differ in several important ways from the approach recommended by the Academy, implemented in earlier research reports by Census and Bureau of Labor Statistics staff and adapted by CEO. As the SPM takes more definite shape, we plan to issue a paper detailing how the new Federal measure differs from CEO's. The paper will also address whether and where CEO should revise its approach in light of the SPM. As noted below, we have already incorporated two suggestions made by the Working Group for this report. First, we employ a five-year moving average of rent data to adjust the CEO threshold. Second, we include foster children who are living in private households in the population whose poverty status can be determined.

1.1 The Official Poverty Measure

The official measure's poverty threshold was developed in the early 1960s and was based on the cost of the U.S. Department of Agriculture's Economy Food Plan, a diet designed for "temporary or emergency use when funds are low." Because the survey data available at the time indicated that families typically spent a third of their income on food, the cost of the plan was simply multiplied by three to account for other needs. Since the threshold's 1963 base year, it has been updated annually by the change in the Consumer Price Index.[14]

Nearly a half-century later, this poverty line has little justification. The threshold does not represent contemporary spending patterns; food now accounts for less than one-seventh of family expenditures and housing is the largest item in the typical family's budget. The official threshold also ignores differences in the cost of living across the nation, an issue of obvious importance to measuring poverty in New York City. A final shortcoming of the threshold is that it is frozen in time. Since it only rises with the cost of living, it assumes that

[14] Fischer, Gordon M. "The Development and History of the Poverty Thresholds." Social Security Bulletin Vol. 55 No. 4. Winter 1992.

a standard of living that defined poverty in the mid-1960s remains appropriate, despite advances in the nation's standard of living since that time.

The official measure's definition of the resources that are compared against the threshold is pre-tax cash. This includes wages, salaries, and earnings from self-employment; income from interest, dividends, and rents; and some of what families receive from public programs, *if* they take the form of cash. Thus, payments from Unemployment Insurance, Social Security, Supplemental Security Income, and Public Assistance are included in the official resource measure.

Given the data available and the policies in place at the time, this was not an unreasonable definition. But in recent years, an increasing share of what government does to support low-income families takes the form of tax credits (such as the Earned Income Tax Credit) and the cash equivalent value of in-kind benefits (such as Food Stamps). If policymakers or the public want to know how these programs affect poverty, the official measure cannot provide an answer.

1.2 The National Academy of Sciences' Alternative

NAS-based methods take a considerably different approach to both the threshold and resource sides of the poverty measure. The poverty threshold reflects the need for clothing, shelter, and utilities, as well as food. It is established by choosing a point in the distribution of "reference" families' expenditures for these items, plus a small multiplier (ranging from 1.15 to 1.25) to account for miscellaneous expenses such as personal care, household supplies, and non-work-related transportation.[15] The threshold is updated each year by the change in the level of this spending, which connects the threshold to the growth in living standards. In further contrast to the official measure, the NAS-style poverty line is also adjusted to reflect differences in housing costs by geography.

The NAS-based income measure is designed to account for the flow of resources that a family can use to meet the needs represented in the threshold. This creates a much more inclusive measure than pre-tax cash. The tax system and the cash equivalent value of in-kind benefits for food and housing are important additions to family resources. But families also have non-discretionary spending needs that reduce the income available to meet their other

[15] The NAS reference families are those composed of two adults and two children. The threshold for this family is then scaled for families of different sizes and compositions. See Appendix B.

needs. These include the cost of commuting to work, childcare, and medical care that must be paid for out of pocket. This spending is accounted for as deductions from income.

1.3 CEO's Adoption of the NAS Method

The 1995 NAS report provided a conceptual framework. While some of its proposals were quite specific, other recommendations went no further than suggesting a direction for future research or calling on others to settle various issues. One important decision the NAS Panel felt it should not make was where precisely to draw the poverty line. The Panel merely proposed a range (spanning 78 percent to 83 percent of median expenditures) in the belief that, given the inherently political nature of the issue, the determination should be left up to policymakers.[16]

The first task CEO faced, therefore, was making choices among the options. In this work, we were guided by the NAS report, subsequent research conducted (primarily) by staff at the U.S. Census Bureau and the Bureau of Labor Statistics, and local conditions (particularly the unique character of the City's housing market). On a practical level, our choices also reflected the decision to use the Census Bureau's American Community Survey as our principal data set.

For the poverty line, we rely on the nationwide thresholds that have been calculated from the U.S. Bureau of Labor Statistics' Consumer Expenditure Survey and have been used by the Census Bureau for its own research on NAS-style poverty measures.[17] In 2009, the NAS threshold for a two-adult, two-child family equaled $24,522.[18] We then adjust the threshold to account for the relatively high cost of living in New York City, using the ratio of the New York City to nationwide Fair Market Rent for a two-bedroom apartment.[19] In 2009, our poverty line for this family comes to $29,477. The official threshold for the corresponding two-adult, two-child family in 2009 is $21,756. We refer to this New York City-specific threshold as the CEO poverty threshold.

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[16] Citro and Michael, page 106.
[17] The Census Bureau's work is available at: http://www.census.gov/hhes/povmeas/index.html.
[18] Several versions of the NAS threshold are available at: http://www.census.gov/hhes /povmeas /data/nas/web_tab5_povertythres2009.xls. We use the Consumer Expenditure Survey-updated threshold that excludes medical care and mortgage principal payments. This threshold is based on the midpoint of the ranges the NAS proposed for the threshold (80.5 percent of the median) and the multiplier (1.2). Readers should bear in mind that these thresholds differ from those envisioned for the new SPM.
[19] Details of the calculation are provided in Appendix B.

To measure the resources available to a family to meet the needs represented by the threshold, our poverty measure employs the Public Use Micro Sample from the Census Bureau's American Community Survey (ACS) as its principal data set. The advantages of this survey for local poverty measurement are obvious. The ACS is designed to provide measures of socioeconomic conditions on an annual basis in states and larger localities. It offers a robust sample for New York City (roughly 25,000 households) and contains essential information about household composition, family relationships, and cash income from a variety of sources.

But, as noted earlier, the NAS-recommended poverty measure greatly expands the scope of resources that must be measured in order to determine whether or not a family is poor. Unfortunately, the ACS provides only some of the information needed to estimate the additional resources required by the NAS measure. CEO has developed a variety of models that estimate the effect of taxation, nutritional and housing assistance, work-related expenses, and medical out-of-pocket expenditures on total family resources and poverty status. We reference the resulting data set as the "American Community Survey Public Use Micro Sample as augmented by CEO," and we refer to our estimate of family resources as "CEO Income."

Below we offer a brief description of how these non-pre-tax cash income items are estimated. More details can be found in the report's appendices.

Taxation: CEO has developed a tax model that creates tax filing units within the ACS households, computes their adjusted gross income, taxable income, tax liability, and net income taxes after non-refundable and refundable credits are applied. The model takes into account Federal, State, and City income tax programs, including all the credits that are designed to aid low-income filers. The model also includes the effect of the Federal payroll tax for Social Security and Medicare (FICA).

Nutritional Assistance: We estimate the effect of the two largest means-tested nutritional assistance programs, Food Stamps and the Free and Reduced Price School Lunch program.[20] We count one dollar of Food Stamp benefit as one dollar added to family income. To estimate Food Stamp benefit levels, we make use of New York City Human Resources Administration Food Stamp records by statistically matching Food Stamp cases in the administrative data to "Food Stamp Units" we construct in the ACS data.

[20] The Food Stamp program was recently renamed the Supplemental Nutritional Assistance Program (SNAP). Since the program is more widely recognized by its former name, we continue to use it.

Data from the City's Department of Education indicate near-universal participation by eligible children in the Free and Reduced Price School Lunch programs. We identify these children in the ACS and follow the Census Bureau's method for valuing the addition from the program to family income by the cost of the subsidy.

Housing Adjustment: The high cost of housing makes New York City an expensive place to live. The CEO poverty threshold, we noted above, is adjusted to reflect that reality. But some New Yorkers do not need to spend as much to secure adequate housing as the threshold implies. Many of the City's low-income families live in public housing or receive a housing subsidy such as a Section 8 housing voucher. A large proportion of New York's renters live in rent-regulated apartments. Some homeowners have paid off their mortgages and own their homes free and clear. We make an upward adjustment to these families' incomes to reflect this advantage.

The ACS does not provide data on housing program participation, however. To determine which households in the ACS are likely to be participants in rental subsidies or regulation, we match households in the Census Bureau's New York City Housing and Vacancy Survey with household-level records in the ACS. Then, for the appropriate households, CEO calculates the difference between the shelter and utilities portion of a family's poverty threshold and what the family actually spends on these items. Reasoning that this difference represents resources that are available to meet other needs, we add it to the family's income.

Work-Related Expenses: Workers must travel to and from their jobs and we treat the cost of that travel as a non-discretionary expense. We estimate the number of trips a worker will make per week based on their usual weekly hours. We then calculate the cost per trip using information in the ACS about their mode of transportation, along with administrative data such as subway fares. Annual commuting costs are computed by multiplying the weekly cost by the number of weeks worked over the past 12 months.

Families with working parents must often pay for the care of their young children. Like the cost of commuting, the CEO poverty measure treats childcare expenses as a non-discretionary reduction in income. Because the American Community Survey provides no information on childcare spending, we have created an imputation model that matches the weekly childcare expenditures reported in the Census Bureau's Survey of Income and Program Participation to working families with children in the ACS data set. Childcare costs

are only counted if they are incurred in a week in which the parents (or parent) are at work. They are capped by the earned income of the lowest earning parent.

Medical Out-of-Pocket Expenditures (MOOP): The cost of medical care is also treated as a non-discretionary expense that limits the ability of families to attain the standard of living represented by the poverty threshold. MOOP includes health insurance premiums, co-pays, and deductibles, as well as the cost of medical services that are not covered by insurance. In a manner similar to that for childcare, we use an imputation model to match MOOP expenditures by families in the Agency for Healthcare Research and Quality's Medical Expenditure Panel Survey to families in the ACS sample.

Figure One summarizes how the official and CEO poverty measures differ in how they establish a threshold and account for family resources.

Figure One

COMPARISON OF POVERTY MEASURES

	OFFICIAL POVERTY MEASURE	**CEO ADAPTATION OF NATIONAL ACADEMY OF SCIENCES' RECOMMENDATIONS**
THRESHOLD	Established at three times the cost of the "Economy Food Plan."	Equal to roughly 80% of median family expenditures on food, clothing, shelter, and utilities, plus "a little more" for misc. items.
	Adjusted annually by the change in the Consumer Price Index.	Adjusted annually by the change at the median for expenditures on the items in the threshold.
	No geographic adjustment.	Adjusted geographically using differences in housing costs.
RESOURCES	**Pre-Tax Cash Income**	**CEO Income**
	Includes wages and salaries; income from interest, dividends, rents, and self-employment; and transfer payments from programs such as Social Security, Unemployment Insurance, and Public Assistance.	Begins with pre-tax cash, then:
		Includes effect of Income and Payroll Taxes.
		Includes value of near-cash benefits such as Food Stamps.
		Makes adjustment for housing status.
		Subtracts work-related expenses such as childcare and transportation costs.
		Subtracts medical out-of-pocket expenses.

1.4 The Effect of Additional Resources and Expenses on the CEO Poverty Rate

Table One measures the effect that these additions and subtractions have on the CEO poverty rate in 2009. The table's first row, in Panel A under the heading Poverty Rate by Income Concept, reports the poverty rate using the full measure of CEO Income. The following rows indicate what the poverty rate would be if one of the non-cash income

categories had not been included in the measure. For example, the row labeled CEO Income without Taxes shows what the poverty rate would be had the effect of the tax system been omitted from the income measure. The subsequent rows reflect similar calculations for nutritional assistance, the housing adjustment, work-related expenses, and medical expenditures. When a category is one that increases income, its omission leads to a higher poverty rate. Thus, the CEO Poverty Rate without Taxes is 21.9 percent rather than 19.9 percent, indicating that tax programs reduced the poverty rate by 2.0 percentage points. When the category is one that reduces income, its exclusion from the poverty measure leads to a lower poverty rate. For example, when work-related expenses are not accounted for, the poverty rate falls to 18.0 percent, 1.9 percentage points below the full CEO income poverty rate.

The marginal effects of these additional resources and expenses are reported in Panel B of Table One, labeled Effect of Change in Income Concept. Among the items that increase resources and lower the poverty rate, the housing adjustment is by far the most important, lifting 6.0 percent of the City population out of poverty. Medical out-of-pocket expenditures are the resource-reducing item with the largest effect, bringing 3.1 percent of the population into the ranks of the poor.

Table One

The Effect of Additional Resources & Expenses On the CEO Poverty Rate, 2009

A. Poverty Rate by Income Concept	Percent
Total CEO Income	19.9
CEO Income without Taxes	21.9
CEO Income without Nutritional Assistance	22.5
CEO Income without Housing Adjustment	25.9
CEO Income without Work-Related Expenses	18.0
CEO Income without Medical Expenditures	16.8

B. Effect of Change in Income Concept	Percentage Point Change
Taxation	-2.0
Nutritional Assistance	-2.6
Housing Status Adjustment	-6.0
Work-Related Expenses	1.9
Medical Expenditures	3.1

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

1.5 Revisions to Earlier Estimates

Over the past year, CEO has continued to improve our resource estimates. We have also incorporated several of the suggestions made by the Interagency Technical Working Group (ITWG) for the Federal SPM. These and other changes affect our poverty rate estimates, including the 2005 through 2008 poverty rates that were reported in our earlier working papers. These revisions are detailed in this report's appendices, but can be summarized as follows:

Use of Corrected American Community Survey and Housing and Vacancy Survey Data Sets. Over the past 12 months, the Census Bureau released corrected Public Use Micro Sample files for the 2008, 2006, and 2005 ACS. In addition, the Bureau reissued a corrected Public Use Micro Sample file for the 2008 New York City Housing and Vacancy Survey.

Geographic Adjustment. In the spirit of a recommendation by the ITWG, the thresholds in this report are geographically adjusted using a five-year moving average of the Department of Housing and Urban Development's Fair Market Rents (FMR). In prior work, CEO used one year of FMR data to adjust the thresholds. The five-year moving average dampens the year-to-year fluctuations in the poverty threshold.

Foster Children. Following another recommendation by the ITWG, we include foster children living in private households in the population whose poverty status can be determined. Since this adds no more than 11,000 persons to a population of 8.2 million, the effect of this change is negligible.

Housing Status Adjustment. We have refined our technique for determining housing status and measuring housing out-of-pocket expenditures. A consistent finding in our earlier work is that, of all the non-cash elements in the CEO measure of family resources, the housing adjustment has the largest impact on the poverty rate. This motivated us to reexamine our methods and led to a considerable improvement in our estimate. Of all the changes we have made to our measure, this refinement has the largest quantitative impact on poverty rate estimates and is the prime reason why the rates reported in this study are lower than those reported in earlier CEO work.

Childcare. We have improved our method for imputing childcare expenditures by working families with children. In this report, we have adopted a predicted mean match technique for assigning childcare expenditures to working families with children. This

improvement lowers the proportion of families estimated to have out-of-pocket childcare expenditures. It made little difference in the estimated expenses of the families that do pay for childcare.

Medical Out-of-Pocket Spending (MOOP). We also adopted a predicted mean match technique for assigning MOOP expenditures to families. The method improves our ability to capture the wide and highly skewed distribution of MOOP spending across families. This change, however, has little effect on the Citywide poverty rate.

1.6 Comparing Poverty Rates

As noted above, the CEO poverty threshold for a two-adult, two-child family in 2009 was $29,477. The official poverty line for the equivalent family was $21,756 in that year. Obviously, if this were the only change CEO had made to the poverty measure, it would lead to a poverty rate above the official measure. But CEO also uses a far different measure of income to compare against the poverty threshold. Although our measure includes subtractions as well as additions to resources, CEO income is higher than pre-tax cash income at the lower rungs of the income ladder. At the 20th percentile, for example, CEO income was $29,601 in 2009 (see Table Two).[21] The corresponding figure for pre-tax cash was only $24,087. Thus, if a more complete account of resources had been the only change we had made to the poverty measure, the CEO poverty rate would fall below the official measure. Table Two illustrates that the effect of the higher CEO threshold (35.5 percent above the official) outweighs the effect of CEO's more complete definition of resources (which is 22.9 percent higher, at the 20th percentile, than the official resource measure). In 2009, the CEO poverty rate stood at 19.9 percent while the official rate was 17.3 percent, a 2.6 percentage point difference.[22]

[21] In Table Two and throughout the working paper, we report income in family size and composition-adjusted dollars. This makes the income measures directly comparable to the two-adult, two-child reference family poverty threshold.

[22] The official poverty rates in Table Two, as well as those reported in Chapter Two, are calculated using the CEO poverty universe and unit of analysis. See Appendix A.

Table Two
Comparing Thresholds, Income, & Poverty Rates, 2009

	Official	CEO	Difference
Threshold, Two-Adult, Two-Child Family	$21,756	$29,477	35.5%
Income at the 20th Percentile	$24,087	$29,601	22.9%
Poverty Rate, Percent of the Population	17.3	19.9	2.6

Sources: U.S. Bureau of the Census and American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: The official poverty rate is based on the CEO poverty universe and unit of analysis. Income is stated in family size and composition-adjusted dollars.

1.7 Key Findings in This Report

The focus of this report is on the change in the CEO poverty rate, particularly since the onset at the end of 2007 of what has become known as the "Great Recession." Our principal findings are:

- Despite the severity of the national recession, the CEO poverty rate did not rise. Rather, it fell from 20.7 percent in 2007 to 19.6 percent in 2008. In 2009 it stood at 19.9 percent, statistically unchanged from the prior year.
- The decline from 2007 to 2008 and the stability of the CEO poverty rate from 2008 to 2009 reflect:
    - The timing and relative mildness of the recession in New York City.
    - Tax programs that were part of the Federal economic stimulus agenda, including the 2008 Economic Recovery Rebate, and the expansion of existing and creation of new tax credit programs in the 2009 American Recovery and Reinvestment Act.
    - The surge in Food Stamp participation that began at the end of 2007 and accelerated in 2009, along with the increase in Food Stamp benefit levels in 2009.
- We estimate that were it not for Federal tax policy initiatives such as the Economic Recovery Rebate, the CEO poverty rate in 2008 would have been 20.8 percent instead of 19.6 percent, statistically unchanged from the prior year.
- Policy continued to play an important role in 2009 as the recession took hold on the City. At the Federal level the American Recovery and Reinvestment Act created new and expanded existing tax programs that benefit low-income families. The 2009 Recovery Act also increased Food Stamp benefit levels. In large part due to local

policy choices, the Food Stamp caseload expanded dramatically. We estimate that, in the absence of these initiatives, the 2009 poverty rate would have been 22.6 percent, a 3.0 percentage point rise from 2008.

- Despite the stability of the poverty rate from 2008 to 2009, Citywide, poverty did rise for a key group of New Yorkers: those living in single-parent families. The poverty rate for these City residents rose from 31.4 percent in 2008 to 34.6 percent in 2009. The 3.2 percentage point climb occurred because employment declines were particularly severe among heads of single-parent families. The effect of job losses was then compounded by the loss of income from employment-conditioned tax credits, such as the Earned Income Tax Credit.

The remainder of this working paper proceeds as follows: The next chapter provides an overview of trends in the official and CEO poverty rates for New York City by tracing how changes in the threshold and resource sides of the two poverty measures determined changes in their poverty rates. Chapter Three offers a detailed investigation of the role that policy played in preventing a rise in the CEO poverty rate. In Chapter Four, we examine poverty rates across the City by demographic characteristic, work experience, family and living arrangements, and borough. Chapter Five explores the reasons why the poverty rate rose for New Yorkers living in single-parent families. The report's final chapter offers some observations about the patterns we see in the data. In addition, a set of appendices provides more detail about how our poverty estimates are created.

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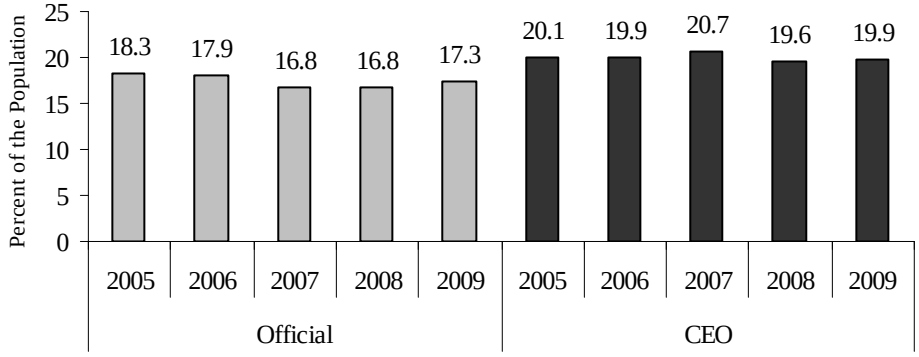
II. POVERTY IN NEW YORK CITY, 2005-2009

The Introduction noted that the CEO poverty rate exceeded the official rate in 2009. Indeed, it does so in each of the years for which we have comparable data. The focus in this chapter is not on the different levels of poverty measured by the two approaches, but in what they say about change over time. The official and CEO poverty rates have taken different paths in the time span covered by this report. From 2005 to 2007, when both the national and City economies were expanding, the official poverty rate in New York fell by 1.5 percentage points. Over this same period, the CEO poverty rate remained statistically unchanged. The U.S. economy entered the Great Recession in December of 2007. Although the economic contraction led to a sharp rise in the official poverty rate for the nation, this measure of poverty for the City was unchanged from 2007 to 2008. By contrast, the CEO poverty rate *fell* by 1.1 percentage points from 2007 to 2008. Both measures of poverty in New York City were statistically unchanged from 2008 to 2009. Figure Two provides both the official and CEO poverty rates for New York City from 2005 to 2009.

Figure Two

Official & CEO NYC Poverty Rates



Source: American Community Survey Public Use Micro Sample as augmented by CEO.

This chapter begins with the official measure. For the nation, it has followed a well-worn path, rising as the economy contracted. For the City, this poverty rate has remained stable. The difference between the two reflects the timing and relative severity of the

recession. Attention then turns to the CEO measure. NAS-style poverty rates are influenced by economic conditions, but the much more inclusive measure of resources they employ complicates a straightforward connection between declines in employment and increases in poverty. We find that policy initiatives, in particular the use of the tax system to stimulate the recession-burdened economy, played a central role in preventing a rise in poverty in New York City.

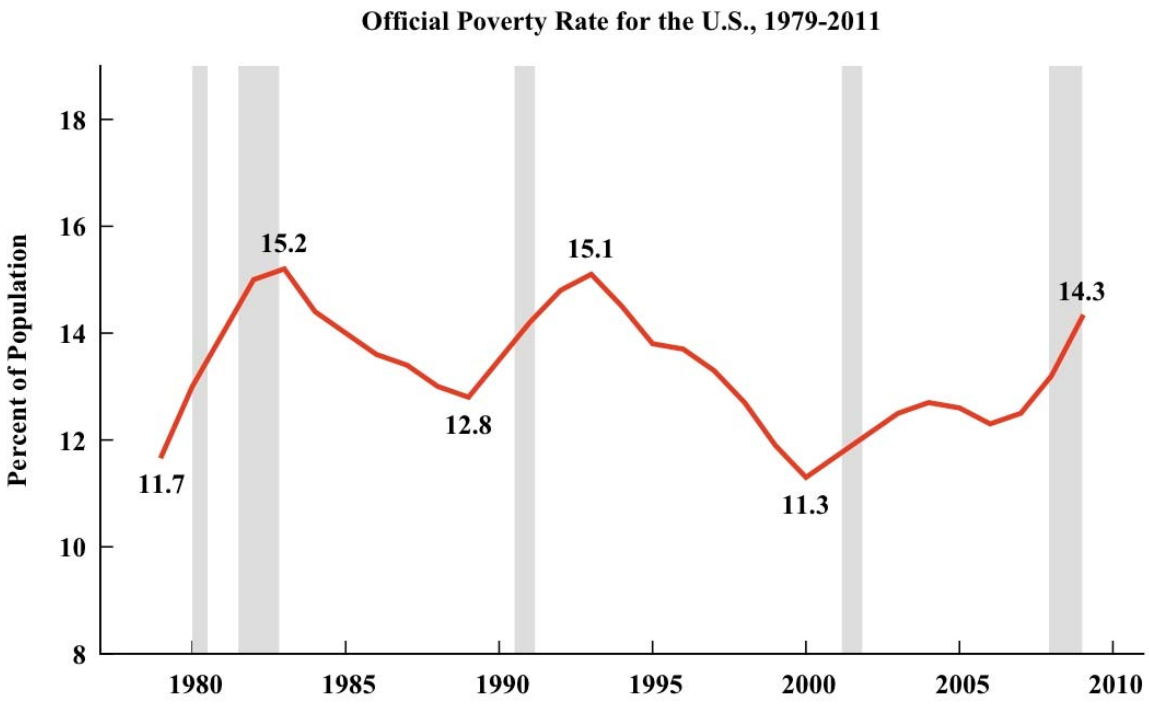
2.1 The Official Poverty Rate

Year-to-year changes in the official poverty rate are dominated by the ebb and flow of the business cycle. During recessions, employment and earnings fall. Although the declines in earned income are cushioned by increases in transfer payments such as Unemployment Insurance, they are never fully offset. Thus, total income as measured by pre-tax cash declines for a considerable share of the population and the poverty rate climbs. When economic growth returns, incomes rise and poverty rates fall.

Figure Three plots the storyline for the nation from 1979 through 2009. Its shaded areas denote recessionary periods as dated by the National Bureau for Economic Research. During this period, the official U.S. poverty rate has climbed in every recession and, after a lag, has fallen in every economic expansion. This cyclical pattern stayed true to form in the recession that began in December 2007. From 2007 to 2008, the official U.S. poverty rate rose from 12.5 percent to 13.2 percent. It increased by another 1.1 percentage points from 2008 to 2009, and now stands at 14.3 percent.[23]

[23] These poverty rates are based on the Current Population Survey. See: http://www.census.gov/prod/2010pubs/p60-238.pdf. Poverty rates using the same methodology based on the American Community Survey were 13.0 percent in 2007, 13.2 percent in 2008, and 14.3 percent in 2009. See: http://www.census.gov/prod/2010pubs/acsbr09-1.pdf.

Figure Three



Sources: U.S. Bureau of the Census and National Bureau for Economic Research.
Note: Shaded areas represent periods of economic recession.

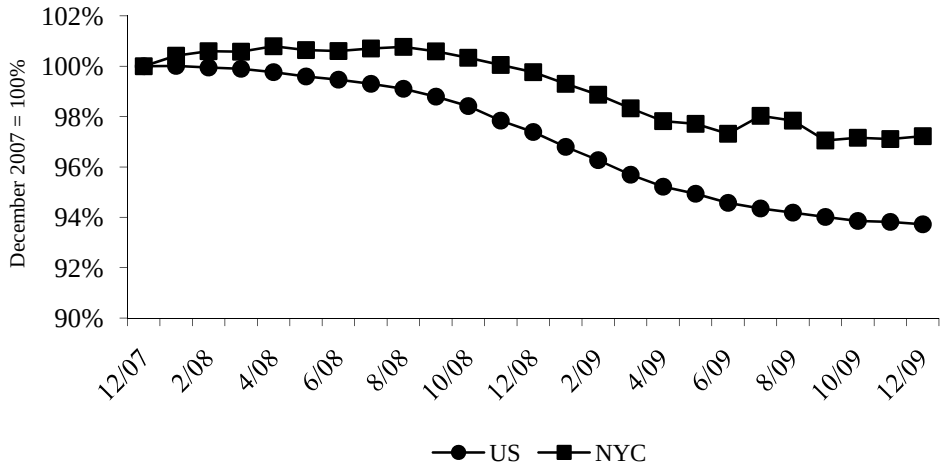
Reliable annual data for poverty rates in New York City only became available in 2005 with the full implementation of the Census Bureau's American Community Survey (ACS). As depicted in Figure Two, from 2005 to 2007, when both the national and City economy were expanding, the official poverty rate in New York fell by 1.5 percentage points, from 18.3 percent to 16.8 percent. However, the onset of the national recession did not affect the official poverty rate in New York City; it held steady. In continued contrast to the national trend, New York's official poverty rate did not undergo a statistically significant rise from 2008 to 2009.

The different trajectories of the U.S. and New York City official poverty rates reflect differences in the timing and severity of the recession. New York has fared better than the nation. This is illustrated in Figure Four, which depicts the trend in the most reliable monthly indicator of the strength of the labor market: the number of workers on employers' payrolls. Payroll employment for the nation and the City is expressed as a percent of its value in December of 2007. Although employment across the nation began contracting from that date, employment in New York City did not begin to fall until the third quarter of 2008. Over the course of the recession's first year, from December of 2007 to December of 2008,

payroll employment fell by 2.2 percent nationally but by only 0.2 percent in New York City. Over the period spanning December 2008 to December 2009, payroll employment declined by another 3.8 percent in the U.S. but by a more modest 2.5 percent in the City.

Figure Four

Trend in U.S. & New York City Payroll Employment
December 2007-December 2009



Sources: US Bureau of Labor Statistics, Current Employment Survey and NYC Office of Management and Budget.
Note: Trend is computed from seasonally-adjusted data.

Employment data from the ACS, provided in Table Three, are consistent with the employer-based statistics. Panel A reports the employment/population ratio, the share of the City population that was employed when surveyed. Because poverty is an annual measure, it is also important to know how steadily people were working over the course of a year. Panel B gives the distribution of the population by the number of weeks worked in the prior 12 months. In 2007, 69.3 percent of the City's working age population was employed and 54.8 percent of this population was employed for at least 50 weeks. Both these indicators rose in 2008, to 70.8 percent and 59.8 percent respectively. From 2008 to 2009, however, the employment/population ratio declined to 68.2 percent, and the share of the population with at least 50 weeks of work dropped to 58.3 percent.

Table Three

Employment Data from the ACS

(Numbers are Percent of the Population)

A. Employment Status at Time of Survey	2007	2008	2009
Employment/Population Ratio	69.3	70.8	68.2
B. Distribution of the Population, by Weeks Worked in the Prior 12 Months			
At Least 50	54.8	59.8	58.3
Some Weeks, but Less than 50	21.7	16.7	17.1
No Weeks Worked	23.5	23.5	24.6
Total	100.0	100.0	100.0

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Note: Population is persons 18 through 64 years of age.

The 2007 to 2008 and 2008 to 2009 employment changes are reflected in measures of earnings, which include income from wages, salaries, and self-employment.[24] Because earnings are measured on an annual basis, they are subject to changes in weeks worked per year as well as hourly or weekly wage rates. Table Four provides earned income measured at the portion of the distribution where it is near the poverty threshold. At the 30th percentile, earnings rose by 4.3 percent from 2007 to 2008, and then fell by 4.8 percent from 2008 to 2009.

Table Four

Annual Earned Income in Adjusted Dollars

	Year			Percentage Change	
Percentile	2007	2008	2009	2007-2008	2008-2009
20th	$11,189	$12,323	$11,128	10.1%	-9.7%
25th	$18,369	$18,701	$17,945	1.8%	-4.0%
30th	$24,403	$25,460	$24,226	4.3%	-4.8%
35th	$30,162	$31,815	$30,506	5.5%	-4.1%

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Note: Income is stated in family size and composition-adjusted dollars. Persons with no earnings are included.

[24] As in Table Two, this data is stated in family size and composition-adjusted dollars.

Changes in pre-tax cash income, the resource used in the official poverty measure, echo earned income's pattern. The income data are reported in Table Five at the 15th and 20th percentiles of the distribution, rungs in the income ladder that straddle the official threshold. (We focus on these because changes in poverty rates will be most sensitive to changes in income for those who are just above or just below the poverty threshold.) From 2007 to 2008, pre-tax income rose by 3.2 percent and 3.4 percent at the 15th and 20th percentiles, respectively. From 2008 to 2009, this definition of income edged down by 0.8 percent at the 15th percentile and contracted by 3.2 percent at the 20th percentile.

Changes in income tell a story about movements in poverty rates when they are compared against changes in the poverty threshold. Poverty rates will fall when the growth in income outpaces increases in the poverty threshold. And rates will rise when income growth lags behind an upward movement in the poverty line. Thus, the official poverty rate fell from 2005 to 2007 because the rate of growth in income (11.9 percent and 13.8 percent at the 15th and 20th percentiles, respectively) was roughly double that of the change in the threshold, which equaled 6.2 percent. The percentage change in the threshold from 2007 to 2008 (3.8 percent) was so similar to the change in income (of 3.2 percent and 3.4 percent at the 15th and 20th percentiles, respectively) that the poverty rate was unmoved. From 2008 to 2009, the official poverty threshold edged down by 0.4 percent, reflecting a rare, annual average decline in prices at the consumer level.[25] This was just enough to offset the effect of the declines in income (0.8 percent and 3.2 percent). This kept the official poverty rate from experiencing a statistically significant rise. Had the official threshold remained at its 2008 level, the corresponding 2009 poverty rate would have stood at 17.5 percent, 0.8 percentage points, rather than 0.6 percentage points, higher than 2008. The 0.8 percentage point increase would have been large enough to be judged as statistically meaningful.

[25] This was the first annual average decline in the Consumer Price Index since 1955.

Table Five

Official Income, Thresholds, & Poverty Rates

Pre-Tax Income in Adjusted Dollars

	Year					Percentage Change		
Percentile	2005	2006	2007	2008	2009	2005-2007	2007-2008	2008-2009
15th	$16,933	$17,970	$18,954	$19,556	$19,409	11.9%	3.2%	-0.8%
20th	$21,154	$22,339	$24,083	$24,896	$24,087	13.8%	3.4%	-3.2%

Official Threshold, Two-Adult, Two-Child Family

	Year					Percentage Change		
2005	2006	2007	2008	2009	2005-2007	2007-2008	2008-2009
$19,806	$20,444	$21,027	$21,834	$21,756	6.2%	3.8%	-0.4%

Official Poverty Rates, Percent of the Population [1]

	Year					Percentage Point Change		
2005	2006	2007	2008	2009	2005-2007	2007-2008	2008-2009
18.3	17.9	16.8	16.8	17.3	**-1.5**	0	0.6

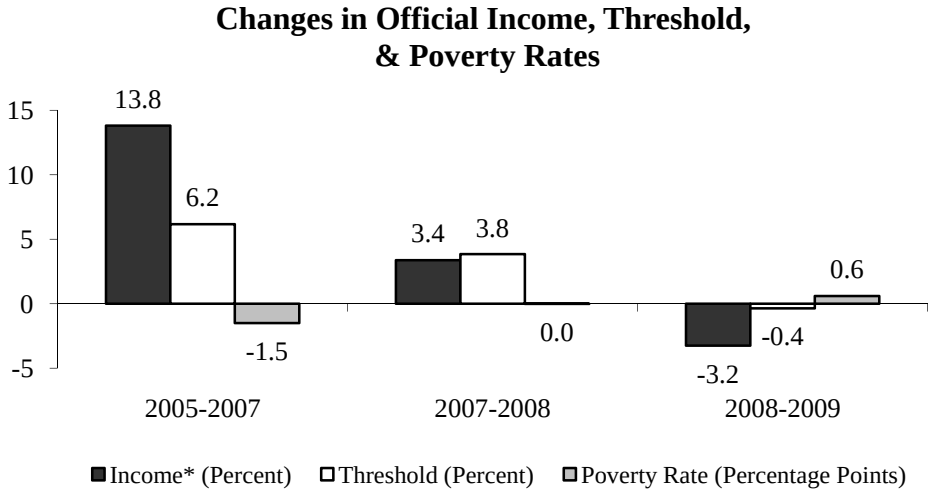
Source: American Community Survey Public Use Micro Sample as augmented by CEO.

Notes: Income is stated in family size and composition-adjusted dollars. Differences are taken from unrounded numbers. Differences in bold are statistically significant.

[1] Official rate is based on CEO poverty universe and unit of analysis.

The 2005 to 2007, 2007 to 2008, and 2008 to 2009 changes are summarized in Figure Five. As in Table Four, changes in the poverty thresholds and pre-tax cash income (at the 20th percentile) are expressed as percentage changes. The changes in the poverty rates are measured in percentage points.

Figure Five



Source: American Community Survey Public Use Micro Sample as augmented by CEO.
* Incomes at the 20th Percentile.

2.2 The CEO Poverty Rate

Cyclical changes in employment, earnings, and income also affect the CEO poverty rate, but their impact is not nearly as straightforward as that for the official measure. The added complexity is created by the way the CEO threshold is adjusted over time and by CEO's more inclusive definition of income. As described in the Introduction, NAS-style poverty thresholds are adjusted by changes in expenditures using a three-year moving average estimated from the U.S. Bureau of Labor Statistics Consumer Expenditure Survey. This establishes a link between the definition of poverty and the long-term rise in living standards. During economic expansions, incomes tend to grow more rapidly than the rate of inflation. Families have more to spend and this can fuel increases in expenditure-based thresholds that outpace increases in the inflation-adjusted official threshold. Depending on what is happening on the income side of the measure, this would slow a fall in the CEO poverty rate relative to the official one. When the economy contracts, however, the NAS definition of income can more fully account for policy responses that offset a decline in earnings. Depending on what is happening on the threshold side of the measure, this would slow a rise in the CEO poverty rate during economic contractions. In all, CEO poverty rates should be more stable than official rates over the course of the business cycle. Although we have only five years of data, the "early returns" suggest that something along these lines is just what has happened.

We tell this tale with the same set of comparisons used above, noting how changes on the resource and threshold sides of the poverty measure determine the movement of the CEO poverty rate. Table Six provides CEO income at the 20th and 25th percentiles, thresholds, and poverty rates for 2005 through 2009. Unlike the official poverty rate, the CEO poverty rate did not decline from 2005 to 2007, even though CEO income grew at a similar rate to that – as reported in Table Five – for pre-tax cash income (12.3 percent for the former and 13.8 percent for the latter, at their respective 20th percentiles). The growth in CEO income was matched by the 13.9 percent increase in the CEO threshold, holding the poverty rate steady. The CEO poverty rate continued to diverge from the official rate in the next year. The poverty rate fell by 1.1 percentage points, as a 6.5 percent rise in the CEO threshold was more than matched by a spike of 9.6 percent in CEO income at the 20th percentile. The CEO poverty rate was statistically unchanged from 2008 to 2009, despite a decline in CEO income (of 1.2 percent at the 20th percentile), because the CEO threshold did not continue its rapid rise; rather, it fell by 0.5 percent.[26]

[26] The stability of the CEO poverty rate did not require a fall in the threshold. If the CEO threshold had held its 2008 value, the 2009 poverty rate would have been 20.0 percent rather than 19.9 percent. The difference between the 2008 and 2009 poverty rates would still not have grown large enough to be statistically meaningful.

Table Six

CEO Income, Thresholds, & Poverty Rates

CEO Income in Adjusted Dollars

	Year					Percentage Change		
Percentile	2005	2006	2007	2008	2009	2005-2007	2007-2008	2008-2009
20th	$24,345	$25,854	$27,349	$29,969	$29,601	12.3%	9.6%	-1.2%
25th	$27,481	$28,650	$30,361	$33,045	$32,870	10.5%	8.8%	-0.5%

CEO Threshold, Two-Adult, Two-Child Family

Year					Percentage Change		
2005	2006	2007	2008	2009	2005-2007	2007-2008	2008-2009
$24,419	$25,781	$27,813	$29,634	$29,477	13.9%	6.5%	-0.5%

CEO Poverty Rates, Percent of the Population

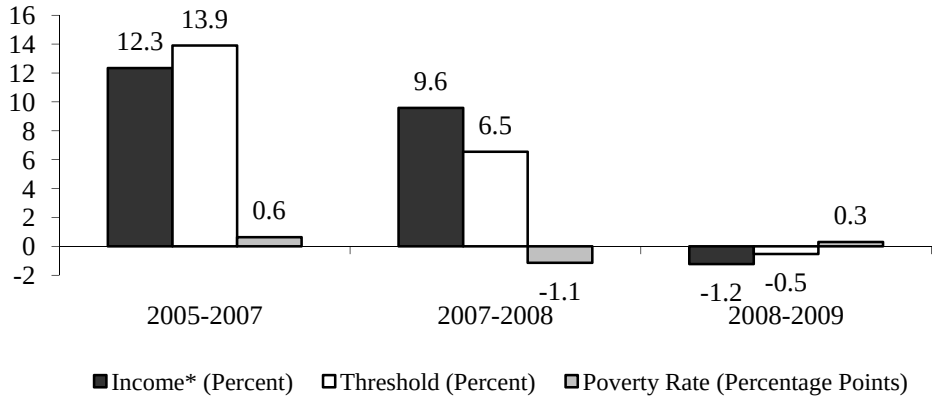
Year					Percentage Point Change		
2005	2006	2007	2008	2009	2005-2007	2007-2008	2008-2009
20.1	19.9	20.7	19.6	19.9	0.6	**-1.1**	0.3

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: Differences are taken from unrounded numbers. Differences in bold are statistically significant. Income is stated in family size and composition-adjusted dollars.

The 2005 to 2007, 2007 to 2008, and 2008 to 2009 changes are summarized in Figure Six. As in Table Six, changes in the poverty thresholds and CEO income (at the 20th percentile) are expressed as percentage changes. The changes in the poverty rates are measured in percentage points.

Figure Six

Changes in CEO Income, Threshold, & Poverty Rates



Source: American Community Survey Public Use Micro Sample as augmented by CEO.

* Incomes at the 20th Percentile.

2.3 The Depth of Poverty

The poverty rate is a one-number summary measure. It simply tells us what fraction of the population lives below the poverty threshold. Because it is based on a binary classification – people are either poor or not poor – the rate makes no distinction between the poor who live far below the poverty line and those who live just under it. By the same token, the poverty rate does not indicate whether a relatively large share of the non-poor lives just above the line or far beyond it. These can be important distinctions. The distance between people just below and those just above the poverty line may only be a few dollars, while the distance between the poorest of the poor and those just below the poverty threshold can be $20,000 or more.

To explore this issue, we classify people by detailed percentages of the poverty threshold. This approach gives us an understanding not only of how extensive poverty is, but also its depth. The poor are those whose income falls below 100 percent of the poverty line. But we can make further distinctions by classifying people as living below 50 percent of the poverty threshold, 50 percent through 74 percent of the threshold, and so on. We refer to these categories as degrees of poverty.

Table Seven compares the distribution of the population by percentages of the poverty threshold under the CEO and official poverty measures for 2009. For both measures we classify the population as living below 50 percent, 50 percent through 74 percent, 75 percent

through 99 percent, 100 percent through 124 percent, and 125 percent through 149 percent of the poverty line. Because the two measures' thresholds differ, the table indicates the corresponding values of the reference family's poverty threshold that define each interval.

The table indicates that although a larger share of the population lives below 100 percent of the CEO poverty threshold, a smaller share of the population under the CEO measure is living below 50 percent of the poverty threshold than the official measure (4.9 percent against 7.3 percent). This difference is particularly striking given the higher CEO threshold. At the 50 percent level it equals $14,739, while 50 percent of the official threshold is only $10,878. The relatively smaller proportion of the population that is living in "extreme" poverty implies, of course, that a larger share of the City population, using the CEO measure, lies between 50 percent through 99 percent of the poverty threshold than is the case with the official measure. The table shows that under the CEO measure, 5.4 percent and 9.6 percent of the population was in the 50 percent through 74 percent and 75 percent through 99 percent intervals, respectively. The corresponding shares under the official measure were 4.4 percent and 5.6 percent.

In addition to classifying a larger share of the poor as close to 100 percent of the poverty line, the CEO measure also places a larger share of the non-poor near poverty. The "near poor" – people who are in the 100 percent through 124 percent and 125 through 149 percent of the poverty threshold groups – are 11.4 percent and 10.9 percent, respectively, of the City population with the CEO measure. These two categories each contain only 5.0 percent of the population under the official measure.

Table Seven
Distribution of the Population,
By Degrees of Poverty, 2009

A. CEO Poverty Measure

Percent of Poverty Threshold	Reference Family Threshold Range	Percent of Population
Less than 50	Less than $14,739	4.9
50-74	$14,739 - $22,108	5.4
75-99	$22,108 - $29,477	9.6
100-124	$29,477 - $36,846	11.4
125-149	$36,846 - $43,921	10.9
Total Poor and Near-Poor		42.1

B. Official Poverty Measure

Percent of Poverty Threshold	Reference Family Threshold Range	Percent of Population
Less than 50	Less than $10,878	7.3
50-74	$10,878 - $16,317	4.4
75-99	$16,317 - $21,756	5.6
100-124	$21,756 - $27,195	5.0
125-149	$27,195 - $32,416	5.0
Total Poor and Near-Poor		27.4

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

A key finding in the previous section of this chapter is that the CEO poverty rate did not rise from 2008 to 2009. Table Eight answers the question of whether the apparent stability of the poverty rate calculated at 100 percent of the poverty line masks an increase in either extreme or near poverty. It does not. None of the percentage point changes in the shares of the population by detailed percentages of the poverty threshold from 2008 to 2009 are statistically significant.

Table Eight

Distribution of the Population by Degrees of Poverty

(Numbers are Percent of the Population)

Percent of Poverty Threshold	Year 2005	2006	2007	2008	2009	Change* 2008-2009
Less than 50	5.4	4.9	4.9	5.2	4.9	-0.2
50-74	5.7	5.5	6.3	5.5	5.4	-0.1
75-99	9.0	9.6	9.5	8.9	9.6	0.6
100-124	10.1	11.5	11.3	11.4	11.4	0.0
125-149	10.9	10.1	11.0	11.1	10.9	-0.2
Total Poor and Near-Poor	41.1	41.6	43.0	42.0	42.1	0.0

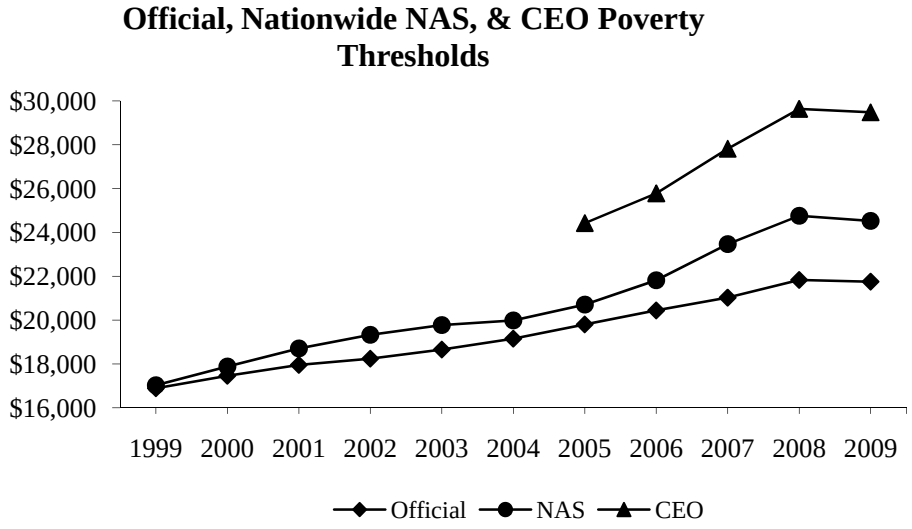
Source: American Community Survey Public Use Micro Sample as augmented by CEO.
*Change is measured in percentage points from unrounded numbers.

The last five years have, to a large degree, fit the expected pattern of change described at the beginning of the chapter. This, however, begs more questions: Why did the CEO threshold rise so rapidly from 2005 through 2008 and then fall from 2008 through 2009? Which of the non-pre-tax cash elements of the CEO income measure complicated the connection between changes in employment and earned income and the totality of resources available to families to meet their needs?

2.4 The CEO Threshold

Our expectation that, particularly during periods of economic expansion, expenditure-based thresholds would grow more rapidly than price-indexed thresholds was more than fulfilled in recent years. From 2000 to 2005, the official poverty threshold rose by 13.4 percent. Over the same period, the nationwide NAS threshold increased by 15.8 percent. From 2005 to 2008, the differences in growth rates widened dramatically. The official poverty threshold rose by 10.2 percent from 2005 to 2008. The nationwide NAS threshold grew by 19.5 percent over the four-year period. The CEO threshold, which is tied to the nationwide NAS threshold, jumped by 21.4 percent from 2005 to 2008. The somewhat more rapid increase in the CEO threshold is due to the rise in the ratio of U.S. to New York City Fair Market Rents. The relatively slow growth rate in the official threshold in this period reflects the modest rate of inflation in the U.S. as gauged by the Consumer Price Index. Figure Seven traces the official and nationwide poverty thresholds from 1999 to 2009 and provides the CEO threshold for 2005 to 2009.

Figure Seven



Sources: US Bureau of the Census, US Department of Housing and Urban Development, and American Community Survey Public Use Micro Sample as augmented by CEO.

Two factors contributed to the spike in the national-level threshold. One is a run-up in spending for shelter associated with the recent housing boom, along with a rapid rise in energy prices that affected expenditures for utilities such as home heating oil, electricity, and natural gas. The three-year moving average for mean expenditures for shelter among four-person families in the Consumer Expenditure Survey rose by 19.2 percent from 2005 to 2008. In addition, these families' mean expenditures for "utilities, fuels, and public services" increased by 18.3 percent.[27] (The "fuels and utilities" item within the Consumer Price Index rose by 22.9 percent from 2005 to 2008.[28]) Across the U.S., the rise in housing-related expenditures was largely driven by homebuyers. Although New York is primarily a city of renters, local shelter expenditures exhibited a similar increase. The New York City Housing and Vacancy Survey indicates that median gross rents (rent plus utilities) for market rate apartments rose by 20.4 percent from 2005 to 2008.[29]

A second, one-time factor that contributed to the rise in the NAS threshold, particularly from 2007 to 2008, was a change in the Consumer Expenditure Survey questionnaire and data processing methods. Beginning with the second quarter of 2007, a question about "food away from home" was reworded. It no longer asks about usual *monthly* spending. Instead, it inquires about usual *weekly* spending. In addition, the survey processing methodology was

[27] CEO calculation from Consumer Expenditure Survey data available at: www.bls.gov/cex/#data.
[28] CEO calculation from Consumer Price Index data available at: www.bls.gov/cpi/home.htm.
[29] CEO calculation from the 2005 and 2008 New York City Housing and Vacancy Survey.

adjusted to allow for interest-only mortgages. Both these changes would be expected to yield higher estimates of expenditures for the shelter and food components of the threshold than the prior methods.[30]

By 2007, however, the rapid rate of growth in consumer expenditures had become unsustainable and "overleveraged" households began to pull back. Personal consumption expenditures accounted for 94.1 percent of disposable personal income in that year. They fell to 90.6 percent of disposable income in 2009.[31] The three-year moving average for each of the categories of spending in the NAS threshold – shelter, utilities, food, and clothing – by four-person families declined from 2008 to 2009.[32] The nationwide NAS threshold declined from $24,755 to $24,522, or 0.9 percent, and the CEO threshold edged down by 0.5 percent.

2.5 CEO Income

The income data reported in Tables Five and Six indicate that CEO and pre-tax cash income, at the 20th percentile, grew at similar rates from 2005 to 2007. But the percentage increase in CEO income from 2007 to 2008 was more than double that of pre-tax cash income. Both income measures record a fall from 2008 to 2009, although at the 20th percentile the decline in CEO income is more modest than the decline in pre-tax cash. Some components of income other than pre-tax cash increased CEO income from 2007 to 2008 and mitigated its decline from 2008 to 2009.

The other income sources are readily identified in Table Nine, which offers a perspective on the poverty rate that is similar to Table One in the Introduction. Poverty rates are reported using the full CEO income measure. This is followed by poverty rates calculated by omitting one of the non-pre-tax cash elements of CEO income. The effect of omitting each element, reported in the table's Panel B, is a measure of the percent of the City population that is moved into or out of poverty by the inclusion of the item in the CEO definition of income. The table provides this information for 2007, 2008, and 2009, and allows us to look at change over time. From this perspective, the eye-catching differences in the marginal effects of the individual income elements are those for taxation and nutritional assistance. Tax programs brought only 0.5 percent of the population out of poverty in 2007, but this effect leapt to 1.9 percentage points in 2008 and 2.0 percentage points in 2009. The

[30] Garner, Thesia I. *Poverty Thresholds: Alternatives/Choices*. Brookings/Census Bureau Conference on Improved Poverty Measurement. Available at: http://www.bls.gov/pir/spm/spm_pp_thres_altern09.pdf.
[31] CEO calculation from the Bureau of Economic Analysis. National Income and Product Accounts. Table 2.1.
[32] CEO calculation from Consumer Expenditure Survey data available at: www.bls.gov/cex/#data.

increase for nutritional assistance is less dramatic, growing from 2.1 percent in 2007 to 2.5 percent in 2008, and 2.7 percent in 2009. But in each of these years, the nutritional assistance effect is somewhat larger than the tax effect.[33] We leave it to Chapter Three to explain why these program areas expanded their importance and how their growth prevented a rise in the CEO poverty rate.

Table Nine
Effect of Additional Resources on the CEO Poverty Rate, 2007-2009
(Numbers are Percent of the Population)

A. Poverty Rate by Income Concept	2007	2008	2009
Total CEO Income	20.7	19.6	19.9
CEO Income without Taxes	21.2	21.4	21.9
CEO Income without Nutritional Assistance	22.8	22.1	22.5
CEO Income without Housing Adjustment	26.9	26.0	25.9
CEO Income without Work-Related Expenses	18.9	17.8	18.0
CEO Income without Medical Expenditures	16.7	16.4	16.8
B. Effect of Change in Income Concept			
Taxation	-0.5	-1.9	-2.0
Nutritional Assistance	-2.1	-2.5	-2.7
Housing Status Adjustment	-6.2	-6.4	-6.0
Work-Related Expenses	1.8	1.8	1.8
Medical Expenditures	4.0	3.2	3.1

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

[33] The marginal effect for medical out-of-pocket expenditures drops markedly from 2007 to 2008. This may be a result of a change in the ACS questionnaire. See Appendix G for more discussion.

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III. POLICY AFFECTS POVERTY

There is little mystery as to why tax policy and nutritional assistance programs have become more effective in reducing poverty. In 2008 and 2009, the Federal government responded to the recession through a wide variety of programs designed to stimulate the economy. Stimulus programs can alleviate poverty by encouraging job growth. They can also address poverty by directly bolstering incomes. However, with the exception of the Emergency Unemployment Insurance (UI) Program, which extended the number of weeks UI participants could receive benefits, and a 2009 increase in UI benefit levels, none of the other Federal efforts that directly increased the ability of families to purchase goods and services are counted by the official measure of poverty.

In 2008, the Federal government undertook three tax program initiatives that lifted after-tax incomes:

- Economic Recovery Tax Rebate, which provided up to $1,200 for married couple filers and $500 for single filers. Most filers of a 2007 tax return received a rebate.[34]
- Additional Standard Deduction for Real Estate Taxes, which allowed filers to increase their standard deduction by the amount they pay in state and local property taxes by up to $1,000 for married couples and $500 for singles.
- Extension of the Additional Child Tax Credit to lower income families by reducing the minimum income threshold for eligibility.

In 2009, the American Recovery and Reinvestment Act:

- Continued the Standard Deduction for Real Estate Taxes and further expanded the Additional Child Tax Credit. (The Economic Recovery Tax Rebate was not renewed.)
- Created the Making Work Pay Credit, a refundable credit of up to $800 per worker designed to offset payroll taxes.
- Provided an Economic Recovery Payment, a one-time $250 benefit to recipients of Social Security, Supplemental Security Income, Railroad Retirement benefits, and veteran's disability compensation.

[34] The CEO tax model assumes that all Recovery Rebate payments were received in 2008. Some filers did not claim this credit until 2009, but we cannot identify who they would be.

- Expanded the Earned Income Tax Credit by adding a third tier of benefits for families with three or more children. The Recovery Act also increased the maximum income at which married couples remained eligible for the credit.
- Made college tuition tax credits partly refundable.

In addition to these tax initiatives and the expansion of the UI program, the other important policy to bolster incomes during the recession came from the Food Stamp program. This was a local as well as Federal response. In New York City, the Food Stamp caseload began expanding in late 2007, and growth in the Food Stamp rolls accelerated in 2009. Some of the increase reflects local policy choices, in particular an aggressive outreach effort toward eligible families who are not on Public Assistance. Some of it also came from the "demand side," as the number of Food Stamp applications would be expected to grow of its own accord as the economy weakened. The policy change on the Federal level was the increase in benefit levels by 13.5 percent, which became effective in April 2009 as part of the Recovery Act.

3.1 Measuring the Effect of Tax Programs

The impact of the 2008 and 2009 tax programs on incomes is most readily apparent if we focus on the City's nearly 690,000 income tax filers with dependents whose Federal adjusted gross income (AGI) is less than $40,000. Table Ten's Panel A provides the mean values per filer for income tax liability before credits; Federal, State, and City credits that are applied against liabilities; FICA (payroll taxes for Social Security and Medicare); and the net effect of tax programs on income. The net tax effect is always negative because tax credits outweigh tax liabilities for these filers. A negative tax is a positive contribution to after-tax income and is counted as an addition to CEO income. Panel B in the table provides mean values for the most important programs that were either expanded or created in response to the recession.[35] These include the EITC for New York State and City, as well as the Federal Credit, because the former are a fixed percentage (30 percent for the State and 5 percent for the City) of the Federal Credit.[36]

From 2007 to 2008, the net tax effect rose by $992 from $2,405 to $3,397. The change was driven by a $941 increase in the mean value of Federal tax credits from $2,509 to

[35] The means per filer in Panel A includes zero values for filers that did not have a particular liability, credit, or tax. In Panel B, the means are only for filers receiving each credit or payment.
[36] The tax estimates are derived from CEO's tax model for the ACS. See Appendix C.

$3,450. The Economic Recovery Rebate, with a mean value of $838, is responsible for most of this change. From 2008 to 2009, the mean net tax effect rose by only $75 to $3,472. The Economic Recovery Rebate was a 2008-only payment and the programs that replaced it – the Making Work Pay Credit and the Recovery Payment – offset some, but not all, of its loss. The remaining shortfall was more than made up for by the increase in the EITCs from 2008 to 2009: from $2,035 to $2,372 for the Federal Credit; from $582 to $682 for the State Credit; and from $102 to $119 for the City Credit.

How would this group of tax filers have fared in the absence of the anti-recessionary tax programs? We answer the question by constructing estimates of tax liabilities and credits based on 2007 tax program rules. The hypothetical tax estimates build in the normal, annual changes in tax code, such as the increase in the tax brackets, but exclude the other 2008 and 2009 program changes.

In 2008, the mean net tax effect on income would have been $2,546 rather than $3,397, a difference of $851, virtually all of it due to the $854 difference between the actual ($3,450) and hypothetical ($2,597) estimates for Federal Credits. This difference is due to the absence of the Economic Recovery Rebate in the hypothetical estimate. In 2009, the difference between the actual ($3,472) and hypothetical ($1,982) net tax effects is even larger: $1,490. Almost all of the difference is accounted for by the Federal Credits, which would have come to $2,254 instead of $3,534. The gap between the actual and hypothetical estimates for Federal Credits is largely due to the expansion of the EITC (accounting for $652) and the creation of the Making Work Pay Credit (accounting for $434).

Table Ten

Estimates of Actual & Hypothetical Tax Program Effects on Income Filers with Dependents & Federal AGI Less than $40,000

(Numbers are Means)

	Actual			Hypothetical		Changes: Actual		Changes: Actual vs Hypothetical	
A. Summary	2007	2008	2009	2008	2009	2007-2008	2008-2009	2008-2008*	2009-2009*
Pre-Credit Liability	$1,315	$1,301	$1,302	$1,305	$1,305	-$14	$1	-$4	-$3
Federal Credits	$2,509	$3,450	$3,534	$2,597	$2,254	$941	$84	$853	$1,280
State Credits	$960	$1,007	$1,097	$1,004	$899	$47	$91	$3	$198
City Credits	$347	$350	$264	$350	$230	$3	-$86	$0	$34
FICA	$1,304	$1,312	$1,371	$1,312	$1,368	$8	$59	$0	$4
Net Tax Effect	-$2,405	-$3,397	-$3,472	-$2,546	-$1,982	$992	$75	-$851	-$1,490
B. Selected Credits, Deductions, & Payments									
Federal EITC	$1,948	$2,035	$2,372	$2,035	$1,720	$87	$337	N.A.	$652
State EITC	$556	$582	$682	$582	$492	$27	$100	N.A.	$191
City EITC	$97	$102	$119	$102	$86	$4	$17	N.A.	$33
Real Estate Standard Deduction	N.A.	$77	$86	$0	$0	$77	$9	$77	$86
Recovery Rebate	N.A.	$838	N.A.	$0	$0	$838	N.A	$838	N.A.
Making Work Pay	N.A.	N.A.	$434	$0	$0	N.A.	$434	N.A.	$434
Economic Recovery Payment	N.A.	N.A.	$17	$0	$0	N.A.	N.A.	N.A.	-$17

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
*Hypothetical estimate
Note: N.A.= not applicable.

3.2 Measuring the Effect of Food Stamps

Table Eleven provides the number of Food Stamp cases, median benefit, and aggregate value of benefits in 2007, 2008, and 2009 as estimated by CEO's methodology.[37] From 2007 to 2008, the Food Stamp caseload grew by 10.7 percent and rose another 13.2 percent from 2008 to 2009. Median benefits per case increased a modest 3.4 percent from 2007 to 2008, but, reflecting the 13.5 percent increase that became effective in April 2009, jumped up by 10.7 percent from 2008 to 2009. The aggregate value of Food Stamp benefits, the sum of benefits to City residents, rose by 11.2 percent from 2007 to 2008 and leapt by 38.8 percent from 2008 to 2009.

To measure how changes in policy affected these increases, we constructed hypothetical estimates that measure what would have happened to Food Stamp participation and benefit levels had there been no change in policy. For the 2008 hypothetical we assumed that the

[37] The method by which CEO models Food Stamp benefits is detailed in Appendix D.

growth in Food Stamp cases would follow its 2005 to 2008 rate of growth.[38] For the 2009 hypothetical we continued to apply the 2005 to 2008 growth rate and limited the increase in the benefit to the normal annual adjustment that is made in October of each year. In October of 2008, this came to 1.5 percent.[39]

For the 2007 to 2008 changes, the "what if" estimates suggest a rather modest policy-driven effect. Instead of increases of 10.7 percent, 3.4 percent, and 11.2 percent, there would have been increases of 9.3 percent, 3.2 percent, and 9.1 percent for the number of cases, median benefit, and aggregate benefits, respectively. There are much larger differences between the actual and hypothetical scenarios for the 2008 to 2009 changes. Rather than increases of 13.2 percent, 10.7 percent, and 38.8 percent, there would have been gains of merely 6.7 percent, 2.1 percent, and 8.6 percent in cases, median benefits, and aggregate benefits, respectively.

Table Eleven

Actual & Hypothetical Estimates, Food Stamp Cases and Benefits, 2007-2009

	Actual			Hypothetical	
	2007	2008	2009	2008	2009
Food Stamp Cases	698,675	773,634	875,458	763,892	815,384
Median Benefit	$1,696	$1,754	$1,942	$1,750	$1,787
Aggregate Value (in Thousands)	$1,240,477	$1,379,449	$1,915,239	$1,352,872	$1,469,580

Percentage Change

	Actual		Hypothetical	
	2007-2008	2008-2009	2007-2008*	2008-2009*
Food Stamp Cases	10.7%	13.2%	9.3%	6.7%
Median Benefit	3.4%	10.7%	3.2%	2.1%
Aggregate Value	11.2%	38.8%	9.1%	8.6%

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
* Change using hypothetical values for 2008 and 2009.

[38] The hypothetical growth rate was created by calculating the geometric mean of the annual growth rates for 2005 to 2008. This method assumes that all the above-recent-trend increases in the caseload are the result of policy decisions.

[39] Maximum Food Stamp benefit levels are derived from the USDA "Thrifty Food Plan." This food budget is calculated using a market basket of prices for food items, based on the CPI food price index. Between 2008 and 2009, the CPI food price index increased modestly, resulting in this small increase in the Food Stamp benefit level.

3.3 Policy Effects on Incomes

We gauge the impact of changes in tax policy and the Food Stamp program on total CEO income by incorporating the hypothetical estimates into the income measure. Table Twelve restates the estimates of CEO income provided in Table Nine, along with income estimates based on the hypothetical estimates for taxation and Food Stamps. The difference between the estimates of actual ($29,969) and hypothetical ($29,112) incomes for 2008 at the 20th percentile is $857. Instead of a rise of 9.6 percent from 2007, CEO income at the 20th percentile would have grown by 6.4 percent to 2008. The difference between the estimated actual ($29,601) and hypothetical ($27,695) incomes in 2009 is larger: $1,906 at the 20th percentile. Rather than a 1.2 percent decline in income at this rung of the income ladder, there would have been a 7.6 percent plunge, had it not been for the lift from new tax initiatives and the larger role of the Food Stamp program.

Table Twelve
Actual & Hypothetical Estimates of CEO Income
At Selected Percentiles

	Actual			Hypothetical	
Percentile	2007	2008	2009	2008	2009
10th	$19,883	$21,545	$21,791	$20,949	$19,806
15th	$23,872	$26,264	$26,074	$25,503	$23,978
20th	$27,349	$29,969	$29,601	$29,112	$27,695
25th	$30,361	$33,045	$32,870	$32,155	$30,996
30th	$33,373	$36,407	$35,991	$35,306	$34,112
35th	$36,530	$39,573	$39,155	$38,374	$37,575

	Percentage Change			
Percentile	2007-2008	2007-2008*	2008-2009	2008-2009*
10th	8.4%	5.4%	1.1%	-8.1%
15th	10.0%	6.8%	-0.7%	-8.7%
20th	9.6%	6.4%	-1.2%	-7.6%
25th	8.8%	5.9%	-0.5%	-6.2%
30th	9.1%	5.8%	-1.1%	-6.3%
35th	8.3%	5.0%	-1.1%	-5.0%

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: Income is stated in family size and composition-adjusted dollars.
* Change using hypothetical values for 2008 and 2009.

3.4 From Incomes to Poverty Rates

Table Thirteen completes the story by reporting poverty rates based on the hypothetical estimates of income. The table restates the poverty rates for 2007, 2008, and 2009, and the effects of taxation and nutritional assistance programs on the poverty rate that were provided in Table Three. In addition, it provides poverty rates and marginal effect measures based on the hypothetical income estimates. The table indicates that, had it not been for the new tax programs and increased participation in the Food Stamp program, the poverty rate would not have declined from 2007 to 2008. The 2008 CEO poverty rate would have been 20.8 percent, essentially unchanged from 2007. The difference between the actual and hypothetical poverty rates is driven by the tax effect. Without the policy changes, taxation would have created a 0.7 percentage point decline in the poverty rate instead of a 1.9 percentage point fall. There is no difference between the actual and hypothetical effects for nutritional assistance.

Changes in tax policies and the Food Stamp program kept the CEO poverty rate from climbing to 22.6 percent in 2009 as other forms of income were falling for many New York City families. Without policy changes, taxation would not have reduced poverty at all; its marginal effect would have been to raise the poverty rate by 0.1 percentage points, rather than reduce it by 2.0 percentage points. Nutritional assistance programs would have lowered the poverty rate by 2.1 percent instead of 2.7 percent.

Table Thirteen

Actual & Hypothetical Estimates of the CEO Poverty Rate, 2007-2009

(Numbers are Percent of Population)

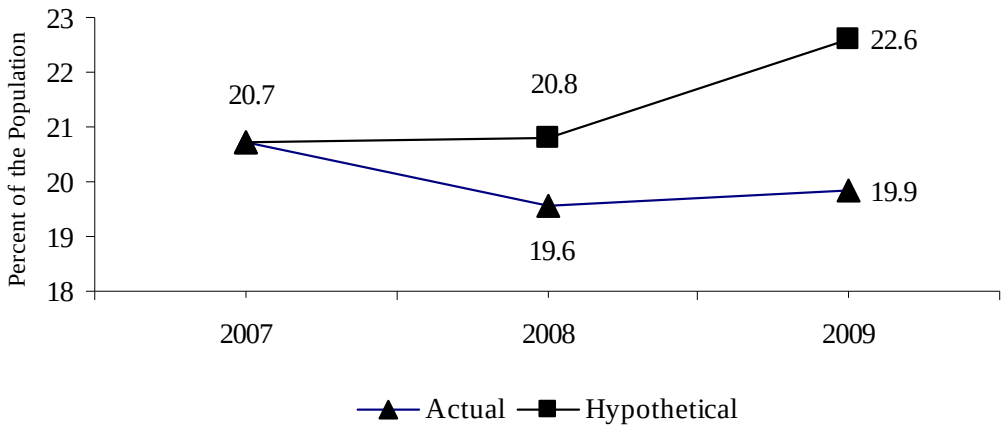
	Actual			Hypothetical	
A. Poverty Rate by Income Concept	2007	2008	2009	2008	2009
Total CEO Income	20.7	19.6	19.9	20.8	22.6
CEO Income without Taxes	21.2	21.4	21.9	21.5	22.5
CEO Income without Nutritional Assistance	22.8	22.1	22.5	23.3	24.7
B. Effect of Change in Income Concept					
Taxation	-0.5	-1.9	-2.0	-0.7	0.1
Nutritional Assistance	-2.1	-2.5	-2.7	-2.5	-2.1

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

Figure Eight illustrates the strikingly different paths taken by the actual and the hypothetical CEO poverty rates from 2007 to 2009. Simply put: programs initiated to combat the economic contraction prevented a sharp rise in the New York City poverty rate. Policy affected poverty.[40]

Figure Eight

Actual & Hypothetical CEO Poverty Rates



Source: American Community Survey Public Use Micro Sample as augmented by CEO

[40] CEO's findings for New York City are similar to findings by the Center for Budget and Policy Priorities for the nation. See, Sherman, Arloc. *Despite Deep Recession and High Unemployment, Government Efforts – Including the Recovery Act – Prevented Poverty from Rising in 2009, New Census Data Show.* Center on Budget and Policy Priorities. January 5, 2011. Available at: http://www.cbpp.org/files/1-5-11pov.pdf.

IV. CEO POVERTY RATES IN DEMOGRAPHIC DETAIL

Tables Fourteen, Fifteen, and Sixteen report poverty rates by individual demographic characteristic; family composition and work experience; and Borough, respectively. Each table provides poverty rates for 2005 through 2009 and – because the last two years are the focus of this report – the percentage point change in these poverty rates from 2007 to 2008 and 2008 to 2009. When these changes are statistically significant they are identified by bold type. The differences in poverty rates between groups (children compared to 18 through 64-year-old adults, for example) that are noted in the text have also been evaluated for their significance. The final column in each table provides the reader with context by reporting each sub-group's share of the City population in 2009.

4.1 Poverty Rates by Demographic Characteristic of the Individual

Changes in poverty rates among demographic groups, in the instances where they are statistically significant, are consistent with the movement in the Citywide poverty rate. All the changes from 2007 to 2008 are negative. There is only one statistically meaningful rise in the poverty rate from 2008 to 2009: that for working-age adults who have a high school degree (but no higher) level of educational attainment.

Poverty Rates by Gender: Females are more likely to be poor than males. In 2009, for example, the poverty rate for female New Yorkers was 20.9 percent, while it stood at 18.7 percent for males. The poverty rates for females declined by 1.6 percentage points from 2007 to 2008. Neither the male nor female poverty rate saw a statistically significant change from 2008 to 2009.

Poverty Rates by Age: Working-age adults, 18 through 64-years-old, have considerably lower poverty rates than children under 18 and New Yorkers 65 and older. In 2009, the poverty rate for working-age adults was 17.8 percent, compared to a 23.8 percent rate for children and a poverty rate of 23.6 percent for the elderly. (The differences between the poverty rates for the elderly and children are too small to be statistically significant.) The poverty rate for children and working-age adults fell by 2.7 percentage points and 0.9

percentage points, respectively, from 2007 to 2008. None of the age groups experienced a statistically meaningful change in their poverty rate from 2008 to 2009.

Poverty Rates for Children by Presence of Parent: Children in one-parent families are nearly three times as likely to be in poverty as children in two-parent families (40.4 percent compared to 15.7 percent in 2009). From 2008 to 2009, the poverty rate for children living with two parents declined by 2.8 percentage points. There was no statistically significant change in the poverty rate for either group of children from 2008 to 2009.

Poverty Rates by Race/Ethnicity: There is a striking disparity between the poverty rates for Non-Hispanic Whites and the other major race/ethnic groups in New York City. In 2009, the poverty rate for Non-Hispanic Blacks (21.1 percent) was 1.6 times the Non-Hispanic White poverty rate (13.5 percent). The Asian and Hispanic poverty rates (at 24.7 percent and 24.8 percent, respectively) were nearly twice the rate for Non-Hispanic Whites. Although the differences are smaller than they are for Non-Hispanic Whites, Non-Hispanic Blacks are also less likely to be poor than Asians and Hispanics. The Non-Hispanic White poverty rate fell by 2.1 percentage points from 2007 to 2008. None of the race/ethnic groups experienced a statistically significant increase in poverty from 2008 to 2009.[41]

Poverty Rates by Nativity/Citizenship: The poverty rates for native-born (18.5 percent in 2009) and naturalized citizens (18.8 percent in that year) are virtually identical. These rates are well below the poverty rate for non-citizens, which stood at 26.1 percent in 2009. The poverty rate for citizens by birth declined by 1.4 percentage points from 2007 to 2008. No nativity/citizenship group experienced a statistically meaningful change in its poverty rate from 2008 to 2009**.**

Poverty Rates for Persons 18 through 64 by Educational Attainment: The likelihood that someone will be poor falls dramatically as his or her level of education rises. In 2009, three in 10 New Yorkers (30.4 percent) who lack a high school degree were poor, while less than one in 13 (7.5 percent) of City residents who have a Bachelors degree or higher live in poverty. The only group that experienced a statistically significant change in

[41] Race/Ethnic groups are constructed as follows: First individuals are categorized by Hispanic ethnicity into Non-Hispanic and Hispanic ethnic groups. Non-Hispanic individuals are then categorized by race. We use three racial categories, White, Black, and Asian. Each only includes persons who identify themselves as members of one race group. This sorting of the population excludes roughly 2 percent of the City population that is Non-Hispanic and multi-racial or Non-Hispanic and a member of some other race, such as Native American.

its poverty rate was holders of a high school degree. From 2007 to 2008 the poverty rate for this group fell by 1.8 percentage points; but this progress was erased by an identical increase from 2008 to 2009.

Poverty Rates for Persons 18 through 64 by Work Experience: To measure poverty by work experience over the past 12 months, we create three categories of working-age adults: 1) "Full-Time, Year-Round," which includes those who reported their usual weekly hours as 35 or more and who worked at least 50 weeks in the last year; 2) "Some Work," which includes those who worked part-time and/or part-year; and 3) "No Work," composed of individuals who did not work at all over the year.

The disparities in poverty rates across these categories are dramatic; persons in the No Work group are nearly six times as likely to be poor as are those who have had steady work over the prior 12 months (37.2 percent compared to 6.6 percent). The poverty rate for full-time, year-round workers edged down by 0.6 percentage points from 2007 to 2008.[42] There were no statistically meaningful changes in poverty rates by work experience from 2008 to 2009.

[42] This estimate should be treated with caution, however; a change in the wording and format of the 2008 ACS questionnaire affects the comparability of that year's data with prior years.

Table Fourteen

CEO Poverty Rates for Persons, By Demographic Characteristic

(Numbers are Percent of the Population)

	Year					Percentage Point Change		Group Share
	2005	2006	2007	2008	2009	2007-2008	2008-2009	2009 Pop.
Total New York City	20.1	19.9	20.7	19.6	19.9	**-1.1**	0.3	100.0
Gender								
Males	18.8	18.6	19.0	18.4	18.7	-0.6	0.3	47.7
Females	21.2	21.2	22.2	20.6	20.9	**-1.6**	0.3	52.3
Age Group								
Under 18	24.4	24.6	25.9	23.2	23.8	**-2.7**	0.6	22.9
18 through 64	17.6	17.5	18.2	17.3	17.8	**-0.9**	0.4	65.3
65 & up	24.5	23.7	24.1	24.5	23.6	0.4	-0.9	11.8
Children (under 18), by Presence of Parent								
One Parent	38.3	38.2	39.3	37.4	40.4	-1.9	3.1	32.9
Two Parents	16.6	17.3	18.9	16.0	15.7	**-2.8**	-0.3	67.1
Race/Ethnicity								
Non-Hispanic White	14.3	14.0	15.3	13.2	13.5	**-2.1**	0.3	35.2
Non-Hispanic Black	20.3	21.2	21.0	21.0	21.1	0.1	0.1	22.8
Non-Hispanic Asian	23.8	24.6	26.1	24.4	24.7	-1.7	0.3	12.0
Hispanic, Any Race	25.4	24.4	25.4	24.4	24.8	-1.0	0.4	27.7
Other Race/Ethnic Group	20.6	19.4	17.4	18.8	20.6	1.5	1.7	2.2
Nativity/Citizenship								
Citizen by Birth	18.9	18.7	19.6	18.2	18.5	**-1.4**	0.3	64.0
Naturalized Citizen	18.4	18.2	19.5	19.3	18.8	-0.3	-0.5	18.5
Not a Citizen	26.0	26.2	25.9	24.8	26.1	-1.1	1.3	17.5
Working Age Adults (18 through 64), by Educational Attainment								
Less than High School	32.6	30.4	31.2	30.6	30.4	-0.6	-0.2	18.8
High School Degree	19.8	21.1	21.7	19.9	21.7	**-1.8**	**1.8**	24.9
Some College	13.4	13.2	15.3	14.2	14.9	-1.1	0.6	21.1
Bachelors Degree or Higher	6.9	7.1	7.7	7.7	7.5	0.0	-0.2	35.2
Working Age Adults (18 through 64), by Work Experience in Past 12 Months[1]								
Full-Time, Year-Round	5.9	6.6	7.2	6.7	6.6	**-0.6**	0.0	55.6
Some Work	19.9	20.3	21.6	23.0	22.1	1.4	-1.0	21.9
No Work	37.9	36.7	38.0	37.3	37.2	-0.7	0.0	22.5

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: Differences are taken from unrounded numbers. Differences in bold are statistically significant. Shares may not sum to 100 percent due to rounding.
[1]A change in the 2008 ACS questionnaire regarding work experience affects the comparability of 2008 estimates with those for prior years. See text for definition of work experience categories.

4.2 Poverty Rates by Family Characteristic

Table Fifteen provides poverty rates for persons based on the characteristics of the family in which they live. As described in Appendix A, "Family," from the perspective of the CEO poverty measure, is a broader concept than that used by the official poverty measure (persons who live together and are related by blood, marriage, or adoption). The CEO "Family" definition is the "Poverty Unit," persons who live together and share resources and living costs. This includes all related persons, but also extends to unmarried partners, their children, and other persons who we believe to be economically dependent on other members of the household even if they are not kin. (See Appendix A for more details.)

Panel A in Table Fifteen categorizes people as living in families headed by a husband-wife/unmarried partner or in a single-head family. A third category is unrelated individuals. Each family-type category includes everyone that is a member of the family. If a husband and wife have two children and two in-laws living with them, for example, then all six family members would be characterized as living in a husband-wife/unmarried partner family. Single heads are "householders" who do not have a spouse or unmarried partner, but are living in families, for instance a single mother with her children.[43] Within each of these family types we distinguish between those that do or do not include children under 18. Because they have been a particular focus of public policy, we provide the poverty rates for members of single-mother families separately.[44]

Not everyone is in a family or poverty unit with others. Unrelated individuals are people that do not have family members in their household. This would include persons that live alone (the typical case) and some persons living with others, such as roommates or boarders, who we treat as economically independent from the people they live with. Unrelated individuals are one-person poverty units.

Table Fifteen is organized in a similar fashion to Table Fourteen, reporting poverty rates, the change in the poverty rate, and the group share of the population. The population shares of the five main categories in each of the table's panels sum to 100 percent. As in Table Fourteen, all the statistically meaningful changes in the poverty rate from 2007 to 2008 are

[43] The householder is typically the person in whose name the dwelling is owned or rented.
[44] Single-mother families account for 90 percent of families with children under 18 that are headed by a single adult.

declines. Poverty rates exhibit more stability from 2008 to 2009 with one important exception: people living in families with children headed by a single parent.

Husband-Wife/Unmarried Partner: Among all the family-type groups in Panel A, persons living in husband-wife/unmarried partner families without children have the lowest poverty rates (12.6 percent in 2009). The poverty rate for those living with children was 14.0 percent in that year. The latter category experienced a 2.3 percentage point fall in its poverty rate from 2007 to 2008.

Single Head: Members of families with a single head have higher poverty rates than their counterparts in the husband-wife/unmarried partner family category. In 2009, for example, the poverty rate for persons living in a single-head family with children was well more than twice as high as the poverty rate for persons living in a husband-wife/unmarried partner family with children (34.6 percent versus 14.0 percent). Within the single-head group, there is a large disparity in poverty rates between members of single-head families with and without children (34.6 percent for the former and 17.2 percent for the latter in 2009). The poverty rates for persons in this group are also higher than those for unrelated individuals, making them the poorest category among the family types in Panel A.[45] Persons in single-parent families with children experienced a 2.8 percentage point decline in their poverty rate from 2007 to 2008. But this was erased by a 3.2 percentage point rise to 34.6 percent in 2009. In the next chapter we explain why this group suffered a unique rise.

Unrelated Individuals: Over one in four of the City's unrelated individuals were poor from 2005 through 2009. The group's poverty rate is the second highest of those reported in Panel A. Unrelated individuals did not experience a change in their poverty rate from either 2007 to 2008 or 2008 to 2009.

Panel B in Table Fifteen groups individuals by the work experience of the families in which they reside. The categories were created by summing the number of hours worked in the prior 12 months by persons 18 and older for each family. Families with over 3,500 hours of work are labeled as having the equivalent of "Two Full-Time, Year-Round Workers." Families with 2,341 through 3,499 hours are labeled "One Full-Time, Year-Round and One Part-Time Worker." Families with at least 1,750 through 2,340 hours are identified as "One Full-Time, Year-Round Worker." Families with at least one hour of

[45] As the table indicates, this is particularly true for persons living in families where the parent is female.

work, but less than 1,750 hours, are called "Less than One Full-Time, Year-Round Worker." And finally, there are families that have "No Work."

Work Experience of Family: Poverty rates are steeply graduated by levels of work activity, ranging from 3.9 percent for persons in families with the equivalent of two full-time, year-round workers to 54.0 percent for persons in families with no work in 2009. But even a considerable level of work does not always spare people from poverty. Consider the one-fourth of the City's population that lives in a family with the equivalent of one full-time, year-round worker; in 2009, nearly one-sixth of persons in this category (16.3 percent) were living in poverty.

Poverty rates were stable within the work experience groups with the exception of a 2.1 percentage point fall from 2007 to 2008 in the poverty rate for persons in families with the equivalent of two full-time, year-round workers. (Here we reiterate our caution that a change in the 2008 ACS questionnaire affects the comparability of data for that year with estimates for prior years.)

Table Fifteen

CEO Poverty Rates for Persons Living in Various Family Types

(Numbers are Percent of the Population)

	Year					Percentage Point Change		
A. Family Composition	2005	2006	2007	2008	2009	2007-2008	2008-2009	Group Share of 2009 Pop.
Husband Wife/Unmarried Partner[1]								
No Children under 18	11.7	11.9	12.2	12.2	12.6	0.0	0.5	33.8
With Children under 18	15.3	15.8	17.0	14.6	14.0	**-2.3**	-0.6	20.9
Single Head of Family								
No Children under 18	16.9	16.7	16.0	16.5	17.2	0.5	0.7	11.1
With Children under 18	33.4	32.1	34.2	31.4	34.6	**-2.8**	**3.2**	16.5
Single Mother Family	35.6	33.9	36.2	33.0	36.0	**-3.2**	**2.9**	14.6
Unrelated Individuals	27.1	26.4	26.6	27.5	27.4	0.9	0.0	17.7
B. Work Experience of the Family[2]								
Two Full-Time, Year-Round Workers	3.8	4.4	5.9	3.8	3.9	**-2.1**	0.1	33.9
One Full-Time, Year-Round, One Part-Time Worker	11.6	14.4	12.7	12.3	11.9	-0.5	-0.4	15.7
One Full-Time, Year-Round Worker	13.7	14.4	16.7	16.9	16.3	0.2	-0.5	24.4
Less than One Full-Time, Year-Round Worker	41.4	41.4	42.9	44.6	42.4	1.7	-2.2	11.5
No Work	53.9	52.8	52.6	53.5	54.0	0.9	0.5	14.4

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

Notes: Differences are taken from unrounded numbers. Differences in bold are statistically significant. Shares may not sum to 100 percent due to rounding error.

[1] In the CEO measure, unmarried partners are treated as spouses. See text for explanation.

[2] A change in the 2008 ACS questionnaire regarding work experience affects the comparability of 2008 estimates with those for prior years. See text for explanation of work experience categories.

4.3 Poverty Rates by Borough

The Bronx and Brooklyn are the poorest among the City's boroughs. In 2009, the poverty rate in the Bronx was 24.4 percent; in Brooklyn it was 23.4 percent. Queens is the next poorest borough (17.9 percent), followed by Manhattan (15.1 percent). Staten Island is the least poor borough; its poverty rate stood at 13.7 percent in 2009. The only statistically meaningful year-to-year change reported in Table Sixteen is the 1.8 percentage point decline in the poverty rate for Brooklyn from 2007 to 2008.

Table Sixteen

CEO Poverty Rates by Borough
(Numbers are Percent of the Population)

	Year					Percentage Point Change	
	2005	2006	2007	2008	2009	2007-2008	2008-2009
Bronx	25.3	24.0	24.0	24.6	24.4	0.7	-0.2
Brooklyn	23.4	23.6	24.7	22.9	23.4	**-1.8**	0.5
Manhattan	16.8	16.1	16.4	15.2	15.1	-1.2	-0.1
Queens	17.3	17.8	18.9	17.6	17.9	-1.3	0.3
Staten Island	12.0	12.0	13.1	11.3	13.7	-1.8	2.4

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: Differences are taken from unrounded numbers. Differences in bold are statistically significant.

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V. POVERTY AMONG PERSONS LIVING IN SINGLE-PARENT FAMILIES

The citywide poverty rate was stable between 2008 and 2009. Moreover, as Table Fifteen indicated, it was also unchanged across family types – with one exception. The poverty rate for persons living in single-parent families with children rose from 31.4 percent in 2008 to 34.6 percent in 2009. The unique rise in the poverty rate for this group is notable on two counts. First, a disproportionate share of the City's poor live in these families. In 2009, persons living in single-parent families were 28.7 percent of New York's poor although they accounted for 16.5 percent of the total City population. Second, for at least a generation, single-parent families have been at the center of the debates and policy initiatives concerning American poverty.

To shed light on the increase in the poverty rate for persons living in single-parent families, we compare them to persons living in two-parent families, a group that did not experience an increase in poverty from 2008 to 2009.[46] Perhaps the most important difference between the two family types is that heads of single-parent families suffered a sharper decline in employment than did the heads of two-parent families. As Table Seventeen indicates, the employment/population ratio for single parents tumbled by 4.9 percentage points from 70.9 percent in 2008 to 66.0 percent in 2009. Heads of two-parent families also saw a decline in their employment rates, but only by 2.8 percentage points.

Employment/population ratios describe a person's employment status at the time they are sampled by the ACS. Another employment indicator, especially important for an annual measure such as poverty, is how many weeks an individual worked in the prior twelve months. Again, single-parent family heads appear to have had an especially hard time in the labor market. The share of single-parent family heads who worked at least 50 weeks in the prior 12 months declined from 61.4 percent in 2008 to 57.4 percent in 2009, a 4.0 percentage point fall. Over the same period, the decline for heads of two-parent families was only 1.0 percentage point. Most of the decline in full-year work by single-parent family heads is echoed in a rise in the share of this group with no weeks worked at all, by 3.4

[46] Here we remind readers that family type is based on the CEO unit of analysis, which treats unmarried partners as if they were spouses. Two-parent families are not necessarily married couple families.

percentage points. The increase in this category for the heads of two-parent families was only 0.9 percentage points.

Table Seventeen
Employment Indicators for Single- & Two-Parent Family Heads
(Percent of the Population)

	Year		Percentage Point Change
	2008	2009	
A. Employment/Population Ratio			
Single-Parent	70.9	66.0	-4.9
Two-Parent	82.2	79.5	-2.8
B. Weeks Worked in Prior 12 Months			
50 to 52 Weeks			
Single-Parent	61.4	57.4	-4.0
Two-Parent	71.1	70.1	-1.0
No Weeks Worked			
Single-Parent	23.8	27.2	3.4
Two-Parent	14.5	15.4	0.9
Some but less than 50 Weeks			
Single-Parent	14.9	15.5	0.6
Two-Parent	14.5	14.6	0.1

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: Differences are taken from unrounded numbers.

The relatively large declines in employment were not the only disparity between one- and two-parent families. Table Eighteen is constructed in much the same way as Table Six in Chapter Two. Earnings per family are stated in family size and composition-adjusted dollars. It indicates that, among families that had earned income in 2008 and 2009, earnings declines were more severe among persons in single-parent families than in two-parent families in the bottom quartile of the distribution.[47] At the 20th percentile, for example, earnings fell by 5.9 percent for persons in single-parent families compared to a 3.3 percent decline for persons in two-parent families. This pattern holds, by and large, when we broaden our focus to total CEO income and include all families with children, regardless of the presence of earned income. With the exception of the 10th percentile, declines in CEO income for one-parent families exceed those of two-parent families throughout the bottom

[47] The bottom quartile is defined as the level of earnings that separates the lower 25 percent of the distribution from the upper 75 percent.

quartile. For example, CEO income fell by 2.3 percent at the 20th percentile for single-parent families, while it edged up by 0.4 percent for two-parent families at the corresponding percentile.

Table Eighteen
Change in Income from 2008 to 2009, Families with Children

A. Earned Income (If in Family with Earnings)

	One-Parent Families			Two-Parent Families		
Percentile	2008	2009	Percentage Change	2008	2009	Percentage Change
10th	$8,215	$7,480	-8.9%	$17,414	$17,335	-0.5%
15th	$11,611	$10,489	-9.7%	$23,423	$22,368	-4.5%
20th	$14,488	$13,626	-5.9%	$27,904	$26,986	-3.3%
25th	$17,355	$16,150	-6.9%	$32,912	$31,380	-4.7%

B. CEO Income (All Families)

	One-Parent Families			Two-Parent Families		
Percentile	2008	2009	Percentage Change	2008	2009	Percentage Change
10th	$16,471	$17,321	5.2%	$26,036	$26,121	0.3%
15th	$20,467	$20,525	0.3%	$29,936	$30,276	1.1%
20th	$23,837	$23,295	-2.3%	$32,880	$33,006	0.4%
25th	$26,629	$25,481	-4.3%	$36,046	$35,644	-1.1%

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Note: Earned Income and CEO Income are stated in family size and composition-adjusted dollars.

In Chapter Three we explored how the Food Stamp program and new tax initiatives prevented a rise in the CEO poverty rate for the City as a whole. Why didn't these have a similar effect for persons living in single-parent families? We estimate that, Citywide, the number of Food Stamp cases grew by 13.2 percent (over 100,000 cases) from 2008 to 2009. Although there are many more Food Stamp cases composed of single-parent families than two-parent families, the growth rate in Food Stamp cases was much more rapid for two-parent families than single-parent families, 28.5 percent compared to 6.7 percent. Increases in median benefit levels are not so dissimilar, but again, the growth rate for two-parent families, 27.6 percent, outpaced that of single-parent families, 19.4 percent. (The large increase in the median benefit for both family types reflects not only the legislated rise in the maximum benefit but the increased number of months per year that families were receiving

Food Stamp benefits in 2009 compared to the prior year. This seems particularly true for two-parent families.)

Table Nineteen
Food Stamp Cases & Benefits, 2008 & 2009

A. Food Stamp Caseload, Families with Children

One-Parent			Two-Parent		
2008	2009	Percentage Change	2008	2009	Percentage Change
148,997	158,964	6.7%	78,828	101,318	28.5%

B. Median Annual Food Stamp Benefit, Families with Children

One-Parent			Two-Parent		
2008	2009	Percentage Change	2008	2009	Percentage Change
$3,001	$3,582	19.4%	$4,030	$5,141	27.6%

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

5.1 Tax Policy Effects

As detailed in Chapter Two, new and expanded tax credits were introduced as a form of fiscal stimulus following the onset of the current recession. Citywide, this led to an increase in the tax system's contribution to total CEO income. However when we compare the effect of taxation on single and married-parent families, the effects are strikingly different; from 2008 to 2009, the net tax effect grew larger for married parent filers, but declined for single-parent filers.[48] The principal reason for this disparity is that employment declines hit heads of single-parent families particularly hard, just as the ability of families to benefit from the stimulus tax credits became more conditioned on having earned income.

In 2008, tax filers received the Economic Recovery Rebate if they had filed a tax return in 2007. Work was not a condition of eligibility. The 2009 American Recovery and Reinvestment Act did not continue the Rebate. Some of this loss was compensated for by the Economic Recovery Payment, but this was targeted to the elderly and the disabled. The

[48] Readers should note the change in terminology when we turn to tax policy. Unmarried partners cannot file tax returns as if they were married. Unmarried filers with children are Head of Household filers. Married filers with children are Married, Filing Joint tax filers. Each is subject to different tax rates and credits. See Appendix C for further details.

other important initiatives in the 2009 Recovery Act, the expanded EITC and the new Making Work Pay Credit, however, only benefited filers with earned income.

Changes in the EITC in 2009 expanded tax relief for married-couple and larger families with children. The maximum level of income that married filers can earn and still receive a credit was raised. A new tier of benefits was created for families with three or more children. The first of these, of course, did nothing to benefit single parents. The additional tier for more children disproportionately benefited low-income married filers because more of them have three or more children (28.9 percent) than do low-income single-parent filers (15.4 percent).

The effect of the simultaneous loss of employment and changes in Federal EITC rates is provided in Table Twenty. The number of married-parent filers receiving the Credit grew by nearly 19,000 from 2008 to 2009. Over the same period, the number of single-parent filers receiving the Credit fell by 15,000. The mean of the combined values of the Federal, State, and City EITCs for eligible married-parent filers increased by $965 from 2008 to 2009. Eligible single-parent filers saw their mean benefit rise by only $261.

Table Twenty

Earned Income Credit Recipients & Mean Values, Filers with Children, by Filer Type, 2008 & 2009

A. Received Earned Income Credit

Filer Type	2008	2009	Difference
Married	163,147	181,766	18,619
Single	413,131	398,227	-14,904

B. Mean Credit per Filer

Filer Type	2008	2009	Difference
Married	$3,714	$4,678	$965
Single	$3,082	$3,344	$261

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Note: Total Earned Income Credit - Combined Federal, State and City.

Table Twenty-One provides the same categories of tax information displayed in Table Ten in Chapter Three, broken out to show the differences between single-parent and married-parent families. The net tax effect for both categories is negative, indicating that

tax credit programs create a system of negative taxation for filers with children and less than $40,000 in Adjusted Gross Income. However, the generosity of this system took different directions for single-parent and married-parent filers from 2008 to 2009.

The mean net tax effect on income for single-parent filers declined by $137. For these parents, Federal and City Credits became less generous. The reduction, by a mean of $74, in City Credits is due to the 50 percent cut in the State-funded State School Tax Reduction Credit (STAR), intended to reduce local taxes. The change at the Federal level is due to the loss of the Economic Recovery Rebate, which averaged $833 per filer in 2008. The 2009 Making Work Pay ($371 average per filer) and Economic Recovery Payment ($250 average per filer) did not fully offset this loss. Federal, State, and City EITC benefits were higher, but this only helped those with earned income.[49] The decline in EITC claimers and the conditioning of stimulus credits on earned income reduced the ability of tax programs to lift people living in single-parent families above the poverty line.

Over the same period, the net tax effect on income for married-parent filers rose by $467. The difference between the married-parent and single-parent filers was created by the larger increase in the value of their EITCs ($714 for the Federal, $216 for the State, and $36 for the City), along with the increased number of married-parent EITC recipients. This contributed to an increase in the value of their Federal and State tax Credits by $425 and $227, respectively.

[49] State and City EITC benefits are based on the Federal Credit.

Table Twenty-One
Tax Liabilities, Credits, & Net Tax Effect on Income for Filers with Children & Federal AGI Less than $40,000

(Numbers are Means)

	Single-Parents			Married-Parents		
A. Summary	2008	2009	Change	2008	2009	Change
Pre-Credit Liability	$1,348	$1,342	-$6	$1,171	$1,204	$33
Federal Credits	$3,136	$3,057	-$79	$4,287	$4,713	$425
State Credits	$961	$991	$30	$1,134	$1,361	$227
City Credits	$310	$236	-$74	$461	$333	-$128
FICA	$1,474	$1,525	$51	$1,784	$1,910	$126
Net Tax Effect	-$2,953	-$2,815	$137	-$4,630	-$5,097	-$467
B. Selected Credits, Deductions, & Payments						
Federal EITC	$2,310	$2,504	$195	$2,773	$3,487	$714
State EITC	$657	$715	$58	$802	$1,018	$216
City EITC	$115	$125	$10	$139	$174	$36
Real Estate Standard Deduction	$493	$495	$2	$978	$985	$7
Recovery Rebate	$833	N.A.	N.A.	$1,278	N.A.	N.A.
Making Work Pay	N.A.	$371	N.A.	N.A.	$747	N.A.
Economic Recovery Payment	N.A.	$250	N.A.	N.A.	$250	N.A.

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: Means in Panel A are for all filers, regardless of their participation in the particular category. Means in Panel B are only for filers who received the credit or payment

Note: N.A. = not applicable.

5.2 Effects of Tax Programs and Nutritional Assistance on Poverty Rates

As Table Twenty-Two shows, from 2008 to 2009, the poverty reducing effects of tax programs and nutritional assistance became smaller for persons living in single-parent families while they were becoming larger for persons living in two-parent families. In 2008, tax programs lifted 6.9 percent and nutritional assistance programs raised 5.5 percent of persons in single-parent families out of poverty. These effects declined to 4.6 percentage points and 4.9 percentage points, respectively, for taxation and nutritional assistance in 2009. Both of these income sources became less effective as income from earnings plummeted, widening the gap between many of those living in low-income, single-parent families and the poverty line.

Increased participation and more generous benefit levels generated larger program effects for persons living in two-parent families. In 2008, tax programs lifted 3.2 percent and nutritional assistance raised 2.6 percent of persons living in families with two parents

out of poverty. In 2009, these effects rose to 4.4 percentage points and 3.2 percentage points for taxation and nutritional assistance, respectively.

Table Twenty-Two

Effect of Additional Resources on the Poverty Rate of Persons Living in Families with Children

(Numbers are Percent of the Population)

	One-Parent Family		Two-Parent Family	
A. Poverty Rate by Income Concept	2008	2009	2008	2009
Total CEO Income	31.4	34.6	14.6	14.0
CEO Income without Taxes	38.3	39.3	17.8	18.5
CEO Income without Nutritional Assistance	36.9	39.5	17.2	17.3
B. Effect of Change in Income Concept				
Taxation	-6.9	-4.6	-3.2	-4.4
Nutritional Assistance	-5.5	-4.9	-2.6	-3.2

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

VI. IN CONCLUSION

CEO's assignment has been to develop a measure of poverty that is useful for policymaking. Meeting that goal – creating a social indicator that is appropriate to the twenty-first century – requires two important improvements to the current poverty measure. The first is to update the definition of resources available to low-income families. The official measure's use of pre-tax cash is woefully out of date. Without a more inclusive definition of resources, it is impossible to understand much of what public policy now does to support a family's ability to meet its basic needs. We need to know how taxation and in-kind benefits bolster incomes. We also need to understand how non-discretionary spending for childcare, commuting, and medical care reduce a family's capacity to meet other needs. The second required improvement is to create a poverty threshold that is appropriate to contemporary life in New York City. Both improvements – a more inclusive definition of resources and a more realistic threshold – create a poverty measure that can answer important questions about the extent to which policy, in addition to labor market opportunities, is lifting people above a minimum standard of income adequacy.

The emphasis in this year's report has been on the family resource side of poverty measurement. This reflects the context in which it is written. Americans have been living through the most severe economic downturn since the 1930s. Indicators of employment and earnings reflect this, and, in an incomplete way, so does the official poverty measure. The question we have focused on is, given the damage that economic conditions created, how adequate has the policy response been?

Our work does not provide a global answer to that question. We offer no insight into the broad macroeconomic efficacy of Federal stimulus programs. We did not attempt to measure the indirect effect that stimulus spending had on poverty through, for example, its impact on employment. What we have measured is the effect of programs that put cash or cash-like resources directly into the pockets of needy New Yorkers. Here our findings are dramatic and, hopefully, informative.

If there is an overarching message in this year's report it is this: policy affects poverty. To a large degree, policy initiatives aimed at bolstering family income succeeded in preventing a rise in poverty in New York City from 2008 to 2009. This insight is only

possible using a poverty measure that includes far more than pre-tax cash as family income. We believe that this is a strong argument for adopting a National Academy of Sciences poverty measure nationally.

This principal finding should also inform the ongoing debate about the capacity of public policies to address poverty. Not every anti-poverty program meets its goals and deserves to be protected. But calls for across-the-board cutbacks to programs that help low-income families cannot be justified by the assertion that when it comes to poverty, "nothing works."

The rise in poverty among persons living in single-parent families is an important piece of bad news. Policy effects are important in this context as well. For at least a generation, single-parent families have been at the center of the debates and policy initiatives concerning American poverty. A central policy goal has been to make employment the path out of poverty. Policymakers recognized that the wage rates offered by the jobs many single parents could obtain do not lift them out of poverty. They expanded programs that "make work pay" in order to keep single-parent families out of the ranks of the working poor.

In the context of a strong labor market, many single parents could find jobs and did benefit from tax credits and other work supports. As a package, this offered a level of income well above that provided by Public Assistance. But when the economy contracts and work is hard to find, single parents are vulnerable, we have seen, to a double blow. Single-parent families are typically one-earner families. Joblessness not only means lost wage income; in the absence of a second worker, it also triggers the loss of work-conditioned benefits. An obvious priority is quickly reconnecting single parents to employment. If the demand side of the labor market remains weak, this may require an expansion of subsidized employment programs. Recently a number of states made good use of the TANF Emergency Fund for just this purpose.[50] Within a policy context that emphasizes work-plus-benefits, prolonged periods of joblessness will continue to consign many single parents and their children to poverty.

[50] See LaDonna Pavetti, Liz Schott, and Elizabeth Lower-Basch. *Creating Subsidized Employment Opportunities for Low-Income Parents: The Legacy of the TANF Emergency Fund*. Center on Budget and Policy Priorities and Center for Law and Social Policy. February 16, 2011. Available at: http://www.clasp.org/admin/site/publications/files/ Subsidized-Employment-Paper-Final.pdf

APPENDIX A:
THE POVERTY UNIVERSE AND UNIT OF ANALYSIS

The Introduction to this report noted that a measure of poverty must establish a threshold, a line that demarcates the poor from the rest of society. It must also define what resources a family can draw on to meet its needs. Once these are in place, a method for measuring poverty needs to assess which groups in the population it can be meaningfully applied to. The "poverty universe" is the population whose poverty status can be determined.

Another important task is to create a "poverty unit of analysis." People live together for a variety of reasons. The ones that are relevant to poverty measurement are that they pool economic resources and satisfy material needs as a unit. As described below, CEO expands the definition of the unit of analysis beyond the family-based unit that is employed by the official measure.

Who Is Counted in Measuring Poverty?

Not everyone can be counted in measuring poverty. For example, the poverty universe used by the Census Bureau in its official poverty measure excludes most people living in "group quarters" such as college dormitories, nursing homes, military bases, and prisons.[51] Most of this population is in no position to earn income. At the same time, group quarters residents typically receive housing and other services from the institutions they reside in. An additional challenge is the lack of information the American Community Survey (ACS) provides about these individuals. This makes it very difficult to determine the group's poverty status. Therefore, CEO excludes the entire population in group quarters from our measure.

Another group that is excluded from the official poverty measure is unrelated persons under 15 years of age living in households. The Census Bureau does not assign a poverty status to this group because the ACS does not collect data on their individual incomes. CEO, however, includes this group in our poverty universe. As explained below, unrelated individuals under 15 are placed in a poverty unit with other members of their household and their poverty status is determined by the income of the unit as a whole.

[51] See http://www.census.gov/acs/www/Downloads/data_documentation/GroupDefinitions/2006GQ_Definitions.pdf for a complete definition of group quarters.

In this report, we have made a small change from prior work. In response to a suggestion in the Interagency Technical Working Group's *Observations*, we have included foster children living in private households in our poverty universe. In 2009, this adds 10,775 persons to our poverty universe.

In sum, the CEO poverty universe excludes the entire group quarters population, but includes the entire household population that is represented in the ACS sample. As Table A One illustrates, the universe for this study includes over 8.2 million out of the nearly 8.4 million New York City residents in 2009. All of the remaining 177,000 people are living in group quarters.

Table A One
The CEO Poverty Universe, 2009

	Number of Persons	Share of Population
Group Quarters	176,694	2.1
Poverty Universe	8,214,372	97.9
Total City Population	8,391,066	100.0

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

The Poverty Unit of Analysis: Who Is Sharing Income and Expenses?

From the perspective of the current Census Bureau methodology, individuals are considered poor if the total income of the family they live in fails to reach the appropriate poverty threshold for their family's size and type. The rationale for this is straightforward: family members who reside in the same household share resources and living expenses. Spouses typically pool their income and make joint decisions about major expenditures. Parents provide financial support to their children. Treating family members as lone individuals whose poverty status is determined by their own income would place nearly every non-working spouse and child in poverty.

Families in the Census Bureau's poverty measures that use the ACS are composed of people who are related to the household head by blood, marriage, or adoption.[52] CEO modifies the Census Bureau's family unit in three ways:

[52] Note that Census family does not mean nuclear family. Any relative of the household head, such as a sibling, grandchild, in-law, aunt, uncle, or cousin is considered a family member in the Census (and CEO) poverty measure.

1. People who are unmarried partners of the household head are considered part of that head's family rather than separate unrelated individuals.[53] Following a recommendation by the NAS Panel, such people are treated as the reference person's spouse.[54] If the household also includes children of the partner who have not already been identified as children of the reference person, they are included as children in the reference person's family.
2. CEO creates additional family units, "unrelated subfamilies," within households when there is evidence that two or more persons who are not related to the householder are related to each other. An example of such a unit would be two persons who are married to each other and are boarders in someone else's home. Because of data limitations, unrelated subfamilies can only be observed when they are composed of married couple families, with or without their own children, or single persons with children.
3. We place other unrelated individuals who are claimed as dependents for tax filing purposes into the poverty unit of those claiming them. Individuals claimed as dependents are being supported by others in the household. Given that relationship, we judge that they should be members of the poverty unit of the person(s) who they are dependent upon. This step assigns nearly all the unrelated children in private households to a poverty unit. In the few instances where the tax program (see Appendix C for a detailed description of the CEO tax model) cannot connect an unrelated child to a tax unit, the child joins the poverty unit of the household's reference person.

Together, these three modifications bring 189,548 individuals who would have been treated as single-person poverty units or excluded from the poverty universe in the official measure into multi-person poverty units in the CEO measure.

Thus, the poverty unit of analysis for this study is composed of:

1. Expanded families: all persons residing in the same household who are related to the household's reference person by blood, marriage, adoption,or are the unmarried reference person's partner (and any children and dependents of those partners not already identified as related to the reference person), and others who are claimed by

[53] The ACS Subject Definition manual defines an unmarried partner as, "a person age 15 years and over, who is not related to the householder, who shares living quarters, and who has a close personal relationship with the householder." The gender of the partners is irrelevant to this designation.
[54] Citro and Michael, p. 306.

the household head as dependents for tax filing purposes. As Table A Two reports, this group accounts for 80.9 percent of the total poverty universe.

2. Unrelated subfamilies. This group accounts for less than one percent of the poverty universe.
3. The remainder of the poverty universe is composed of "unrelated individuals." These are people who are either living alone (12.5 percent of the universe) or are living in a household with others with whom they have no familial or obvious economic relationship (4.2 percent of the universe). Both groups of unrelated individuals are treated as "single-person families" and their poverty status is determined using their individual CEO incomes.[55]

A poverty threshold is assigned to each unit based on its size and composition. (See below.) The sum of the resources of all the people in the unit is computed and compared to the threshold to determine whether the members of the unit are poor.

Table A Two
The Unit of Analysis for Poverty Measurement, 2009

	Number of Persons	Percent of Poverty Universe
People in Families: Official Definition	6,649,147	80.9
People in Unrelated Subfamilies	32,833	0.4
People in Unmarried Partner Subfamilies	427,734	5.2
Total People in CEO Families	6,838,695	83.3
Unrelated Individuals Living with Others	346,837	4.2
Unrelated Individuals Living Alone	1,028,840	12.5
Total Poverty Universe	8,214,372	100.0

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

[55] One exception is when we have prorated the housing adjustment across several poverty units within households.

APPENDIX B:
DERIVING A POVERTY THRESHOLD FOR NEW YORK CITY

One of the primary goals of the CEO poverty measure is to establish a realistic standard of need for New York City. The National Academy of Sciences recommended that the first step in creating the poverty threshold was to compute a nationwide threshold based on the distribution of "reference family" expenditures on food, clothing, shelter, and utilities, plus "a little bit more" for miscellaneous expenses, such as household supplies and personal care products.[56] The NAS did not recommend a specific poverty line; instead it suggested that the threshold fall between the 30th and 35th percentile of the distribution of the amounts that families spend on the items in the threshold. (These percentiles were equivalent to 78 percent and 83 percent of the median level of spending on these goods at the time of the report.)[57] The NAS also offered an upper and lower bound for the "little bit more" that it recommended be included in the threshold, a multiplier ranging from 1.15 to 1.25 times the food, clothing, shelter, and utilities expenditure estimate.[58] In its NAS-related alternative poverty measures research, the Census Bureau has used the mid-point of the percentage of the median (80.5 percent) and multiplier (1.2) for miscellaneous expenses.[59] This study continues that practice. As Table B One indicates, in 2009 this yields a threshold of $29,477.[60]

The Academy argued that because living costs are not uniform across the United States, the poverty thresholds should be geographically adjusted. Since research indicates that the largest source of the disparity in inter-area living costs is a result of differences in housing and utilities costs, the Panel recommended that only the part of the threshold that is made up

[56] The reference family is composed of two adults and two children. It is referred to as the reference family because, as we discuss below, the thresholds for other families are calculated in reference to families of this type. This family was chosen by the NAS because it is the most common structure among families that include children less than 18 years of age.

[57] The relationship between the percentiles of the distribution and the percentages of the median may have changed since the NAS Panel report.

[58] Citro and Michael, p. 106. Miscellaneous necessities cover items such as some non-work-related travel (e.g., for shopping), household supplies (e.g., detergent), and personal care products (e.g., soap).

[59] For example, see Short, Kathleen, et al. 1999. U.S. Bureau of the Census: Experimental Poverty Measures, 1990 to 1997. Washington, D.C.: U.S. Department of Commerce, Economics and Statistics Administration. Also, Short, Kathleen. 2001. U.S. Bureau of the Census: Experimental Poverty Measures: 1999. Washington, D.C.: U.S. Department of Commerce, Economics, and Statistics Administration.

[60] The NAS thresholds are calculated from the Bureau of Labor Statistics' Consumer Expenditure Survey. A description of this survey is available at: http://www.bls.gov/cex/home.htm. The nationwide threshold (labeled FCSU-CE) is posted at: http://www.census.gov/hhes/povmeas/data/nas/web_tab5_povertythres2009.xls. Note that this threshold does not include principal payments by homeowners in expenditures.

of shelter and utilities expenditures should be adjusted. It further suggested that the U.S. Department of Housing and Urban Development's (HUD) Fair Market Rents (FMR) could be used as the adjustment factor.[61]

In its NAS-related research, the Census Bureau has used 44 percent as the share of the total threshold that represents shelter and utilities expenditures.[62] For 2009, this share equaled $10,790. This study adjusted this amount to take into account the high cost of housing in New York City. This was done by comparing a five-year moving average of the New York metropolitan area FMR for a two-bedroom apartment to the national average (weighted by population) for a similar apartment. The New York City five-year moving average of the FMR in 2009 was $1,206 versus a national average of $826; this implies that New York City rents for such apartments were 1.46 times the national average.[63]

Adjusting the shelter and utilities component of the threshold by multiplying it by 1.46 to account for New York's higher housing costs creates a new shelter and utilities portion of the reference family threshold equal to $15,744. When this is added to the non-shelter and utilities portion of the threshold (which remains unchanged from the NAS national measure), the total threshold for the reference family of two adults and two children becomes $29,477 (see Table B One). This threshold is about 20 percent higher than the nationwide NAS threshold and about 35 percent higher than the official Census Bureau poverty line of $21,756.[64]

[61] Citro and Michael, pp. 182-201.
[62] This proportion has not been recalculated or updated since the early 1990s. Given the run-up in housing prices and expenditures since that time, this proportion may well have risen.
[63] The Fair Market Rents are available at: www.huduser.org. This approach is a deviation from that taken in the Census Bureau's experimental poverty measures reports. In that research, the regional adjustments are carried out by grouping all households within each state into one metropolitan and one non-metropolitan area. This method would have put New York City in the same housing market as far lower New York housing cost areas such as Albany, Buffalo, and Syracuse. Our approach provides a more New York City-specific measure.
[64] Interestingly, the difference between the U.S. and New York City NAS-based thresholds is close to a 2003 estimate of 22 percent for cost of living differences in a much more inclusive market basket of goods. See Bettina H. Aten, "Report on Interarea Price Levels WP2005-11." Washington, D.C.: U.S. Department of Commerce, Bureau of Economic Analysis, November 2005.

Table B One
CEO Poverty Threshold for Reference Family
(Two Adults & Two Children), 2009

NAS Threshold at National Level	$24,522
Shelter & Utilities Share of National NAS Threshold (44%)	$10,790
NAS Shelter & Utilities Share Times FMR Index for NYC (1.4592)	$15,744
Non-Shelter Share of Threshold (56%)	$13,732
Sum of Adjusted Shelter & Non-Shelter Shares	$29,477

Sources: CEO calculation from data provided by U.S. Bureau of the Census and U.S. Department of Housing and Urban Development.
Note: See text for explanation of concepts.

Once a threshold for the reference family has been set, thresholds need to be calculated for families (or poverty units) of other sizes and compositions (i.e., number of children and number of adults). This study uses the three-parameter scale developed by David Betson after the release of the NAS report. The scale is used in the Census Bureau's experimental poverty measure reports and has gained wide acceptance among poverty researchers.[65]

Table B Two provides a selection of family size adjustments using Betson's scale. These are known as equivalence scales because they are used to compute the amounts of income needed by families of different types to be equivalently well off. The scales give the adjustments that are needed to convert the threshold for the reference family of two adults and two children to thresholds for other family sizes. For example, to calculate the threshold for a family of two adults and one child, the table indicates that the reference family threshold of $29,477 would have to be multiplied by 0.88, and would yield a threshold of $25,940.

[65] Betson, David. March 1996. "Is Everything Relative? The Role of Equivalence Scales in Poverty Measurement." University of Notre Dame. http://aspe.hhs.gov/poverty/papers/escale.pdf.

Table B Two

Factors Used by CEO to Adjust Reference Family Thresholds for Units of Other Sizes & Types

	Number of Children under 18			
Number of Adults	None	One	Two	Three
One	0.463	0.699	0.830	0.953
Two	0.653	0.880	1.000	1.114
Three	1.000	1.114	1.223	1.328
Four	1.223	1.328	1.430	1.529

Source: Computed by CEO based on Betson, David. 1996. *Is Everything Relative? The Role of Equivalence Scales in Poverty Measurement*. University of Notre Dame. Available at: http://aspe.os.dhhs.gov/poverty/papers/escale.pdf.

Table B Three lists the resulting CEO poverty thresholds for a variety of families and compares them to the official thresholds for families of corresponding sizes and compositions. The CEO thresholds are always higher, but not by the same factor. This reflects the differences between the Betson scale and the scale implicit in the food-based official thresholds. An important difference between the scaling methods (not reported in the table) is that the official method creates a different, and lower, poverty threshold for individuals and some families with a householder who is age 65 or older. The official threshold for a single adult under 65 is $11,161 but $10,289 if the person is older. The CEO threshold makes no distinction by age. While the CEO threshold for a single, non-elderly person is 1.224 times the official threshold, it is 1.328 times the official threshold for a single, elderly person.

Table B Three

Comparison of Poverty Thresholds, 2009

Poverty Unit Composition	CEO	Official	CEO/Official
One Adult[1], No Child	$13,662	$11,161	1.224
Two Adults[1], No Child	$19,263	$14,366	1.341
One Adult[1], One Child	$20,615	$14,787	1.394
One Adult, Two Children	$24,474	$17,285	1.416
One Adult, Three Children	$28,087	$21,832	1.287
Two Adults, One Child	$25,945	$17,268	1.502
Two Adults, Two Children	$29,477	$21,756	1.355
Two Adults, Three Children	$32,836	$25,603	1.282

Sources: American Community Survey Public Use Micro Sample as augmented by CEO, and CEO Calculations from Tables B One and B Two.

[1] Adult is non-elderly in official threshold.

Modification to the Calculation of the Geographic Adjustment

Earlier CEO reports calculated the ratio of Fair Market Rents for New York City to those of the country as a whole using one year of HUD rental data. In this report, we use a five-year moving average of the HUD Fair Market Rents. This follows the Interagency Technical Working Group suggestion that five years of housing data be used for the geographic adjustment. Table B Four provides the CEO poverty thresholds used in this report, derived from a five-year moving average of FMR ratios, and compares them with thresholds that would have been generated using one year of FMR data. The revised method smooths out the effect of anomalous one-year Fair Market Rent estimates on the geographic adjustment. This generally leads to somewhat lower levels and smaller year-to-year changes in the New York City threshold.

Table B Four

Comparison of CEO Thresholds:
Five-Year Moving Average vs. One-Year FMRs

	Threshold Calculated with:		Percentage Change from Prior Year	
Year	Five-Year Average FMR	One-Year FMR	Five-Year Average FMR	One-Year FMR
2005	$24,419	$24,317	N.A.	N.A.
2006	$25,781	$26,109	5.6	7.4
2007	$27,813	$28,166	7.9	7.9
2008	$29,634	$30,421	6.5	8.0
2009	$29,477	$29,579	-0.5	-2.8

Sources: CEO calculation from data provided by U.S. Bureau of the Census and U.S. Department of Housing and Urban Development.
Note: See text for explanation of concepts.

APPENDIX C:
THE CEO TAX MODEL

Because taxation has an important effect on the income available for families to meet their needs, the NAS recommended that the net effect of taxation be included in an improved measure of poverty. Income tax liabilities and payroll taxes reduce after-tax income, but over the last several decades policymakers have increased the scope and generosity of tax credits, many of which are refundable. As a result, many low-income families enjoy "negative" taxation; they receive more from the tax system than they pay into it. New tax credit programs were created and existing programs were expanded in 2008 and 2009 as part of the Bush and Obama Administrations' efforts to stimulate the economy. These changes, we noted in the report, further increased the poverty-reducing effect of the tax system.

The Tax Model

The American Community Survey does not include any information about taxes. CEO, therefore, has created a tax model. The model's first task is to create tax filing units within the ACS's households. Then it applies the tax code to estimate the taxes owed and tax credits received for New York City tax filers.

Creating Tax Filing Units

ACS households are composed of all persons co-residing in a housing unit. Within the household, each member is identified only through their relationship to the person answering the ACS questionnaire. This person, the respondent, is usually, but not always, the primary homeowner or renter. Household structures are often complex. Occupants may include a family embodying several generations; related sub-families; families unrelated to the respondent; and one or more unrelated individuals, including roomers and boarders.

The challenge is to use the information available in the ACS to identify how many tax returns are filed from each household, along with whom, on the return, is the filer and who is a spouse, unmarried partner, or dependent. CEO addresses this problem by first dividing ACS households into Minimal Household Units (MHUs) that create a richer set of information about how persons in the household are related to each other. For example, two married boarders with a child will be identified as such, using age and other demographic characteristics. The children of unmarried partners (unless they are coded as children of the

respondent) are identified in a similar manner and are then coded as the child of a specific parent.[66]

Next, the tax model identifies who in each MHU is a filer and who in the household might be their spouse or dependent. Additional decisions are made about allocating children and indigent household members to filers as dependents.[67] Each tax filer is then given a filing status of Married Filing Joint, Head of Household, Single, or Married Filing Separate.[68] This status will determine their tax rate, exemptions, deductions, and eligibility for credits.

The Tax Calculator

A simulated Federal, New York State, and New York City tax return is prepared for each tax filing unit based on income and other data provided in the ACS.[69] We identify adjusted gross income for the tax unit, which is the sum of all earned income, interest income, and other income sources. Social Security earnings are included to the extent they are taxable. Personal exemptions and standard deductions are subtracted from adjusted gross income to find taxable income. Then we calculate the Federal tax liability on that income and – going through the steps of a Federal 1040 tax return – compute each of the tax credits for which they are eligible. Once the 1040 is completed, an IT-201 New York State tax return is created, which relies on income and credit calculations from the Federal return. The IT-201 also generates New York City tax liabilities and credits. In a final step, FICA payroll taxes are applied to all wage and salary income, and self-employment taxes are deducted from self-employment earnings.

Tax Policy

Our tax model incorporates the following changes in tax credits and deductions in 2008 and 2009:

- Recovery Rebate Tax Credit for Individuals: A one-time tax rebate included in the Economic Stimulus Act of 2008. This credit is based on information provided in the 2007 tax return, to be paid out in 2008. The maximum payment

[66] The MHU methodology is derived from Jeffrey Passel, "Editing Family Data in Census 2000 Public-Use Microdata Samples: Creating Minimal Household Units (MHU's)." (August 23, 2002).
[67] See NYC Center for Economic Opportunity, *The CEO Poverty Measure, 2005-2008*, (2010), for details on the creation of tax filing units.
[68] The ACS does not provide enough information to identify widowed filers, the other status used by the IRS.
[69] Due to lack of data in the ACS, tax estimates for middle- to higher-income households are less accurate than estimates for lower income households who have fewer itemized deductions, capital gains, etc. For this reason, we confine our analysis to filers with adjusted gross incomes of under $40,000.

was $600 for single filers, $1,200 for married filers, and an additional $300 per qualifying child. The timing of this credit is difficult to model. The Stimulus Act became law in early 2008, just as returns were being filed for 2007 taxes. In order to receive the credit, individuals who were not required to file for that year had to file a return regardless. Filers who had already sent in a tax return could claim the credit retroactively, possibly carrying their rebate into the 2009 calendar year. Filers whose 2008 income generated a different credit than that estimated by their 2007 return had to reconcile the difference in their 2008 return filed in early 2009. The ACS does not contain any information as to when this credit was received, nor can we track tax units from year to year using 2007 returns to estimate rebates filed for in 2008. Therefore, we assumed that all filers received the credit in calendar year 2008, based on the model's 2008 returns. We include no rebate credit in 2009. We expect this overestimates the amount of credit that was actually received within the year 2008.

- Additional Standard Deduction for Real Estate: Passed as part of the Housing Assistance Act of 2008 and extended by the Emergency Economic Stabilization Act of 2008. Filers who take the standard deduction (all filers in the CEO tax model) and are homeowners can claim an additional standard deduction of up to $500 ($1,000 for married filers) against their local property taxes.
- Additional Child Tax Credit: The Additional Child Tax Credit is a refundable supplement to the Child Tax Credit. Prior to passage of the Emergency Economic Stabilization Act of 2008, the credit for some filers was to be based on an earned income threshold of $12,050. Instead, this threshold was lowered to $8,500, and lowered again to $3,000 in 2009. The result is that more filers with lower incomes received a refundable credit.

The changes below stem from the American Recovery and Reinvestment Act of 2009:

- Make Work Pay Credit: A credit of up to $400 ($800 for married filers). The credit was awarded via a change in withholding tables, not through tax filing. The CEO model adds it as a standard tax credit.
- Economic Recovery Payment: A payment of $250 distributed to recipients of Social Security retirement or disability payments and Veterans or Railroad

Retirement benefits. The ACS only identifies Social Security recipients. Although not technically a tax credit, we include this payment as a tax offset.

- Expansion of the Earned Income Credit: Two changes occurred. The maximum credit for married filers increased in an acceleration of the ongoing elimination of the marriage penalty in the EITC, and a third tier of credits was added to allow filers with more than two children to claim a larger credit. The maximum possible credit for a married couple with three children was $4,824 in 2008. In 2009, the maximum credit for this family rose to $5,657.
- College Tuition Credits: The tuition credit in the CEO model combines the Lifetime Learning Credit and, prior to 2009, the Hope Credit for college students in the tax unit. In 2009, the Hope Credit was replaced by the American Opportunity Credit. The new credit is up to forty percent refundable.
- School Tax Relief Credit: A credit against the income tax for New York City residents and funded by New York State. The credit was reduced in 2009.
- New York State and City Earned Income Credits: No legislative change was made to these credits, but they are calculated at 30 percent and five percent of the Federal EITC respectively. Thus, changes at the Federal level in 2009 resulted in an expansion of the State and City EITC.

Tax Policy and the Tax Units

One change in tax policy prompted a change in the organization of our tax units. The additional "third child" tier added to the Federal EITC affected our allocation of dependents. Until 2009, the maximum EITC benefit level was capped at two children. In an extended family where a parent had more than two children, we allocated the additional children to other qualifying tax filers in the household if this would increase their EITC. For example, a grandmother could gain a dependent for EITC purposes. As a result, her filing status would change from single filer to head of household filer.[70]

We continue this practice in the 2009 tax model. But since the rules now maximize the EITC at three children, fewer children are assumed to be available for claiming by other household members. This reduces the number of head of household filers. Table C One's Panel A displays CEO's estimate of the number of filers by type in 2008 and 2009, using

[70] This brings our model closer to the pattern evident in administrative data. See NYC Center for Economic Opportunity (2010), Appendix C.

our revised method for creating tax filing units. The number of head of household units declines by 17,894 from 2008 to 2009. If we had maintained our prior method (labeled "Hypothetical" in Panel B), the fall in the number of head of household filers would have been 7,492.

Table C One
Change in Filing Status Due to Change in Tax Unit Construction

A. Actual	2008	2009	Difference
Married Filing Joint	338,130	356,250	18,120
Head of Household	515,242	497,348	-17,894
Married Separate	46,320	40,920	-5,400
Single	1,195,562	1,282,315	86,753
Total	2,095,254	2,176,833	81,579

B. Hypothetical	2008	2009	Difference
Married Filing Joint	338,130	356,250	18,120
Head of Household	515,242	507,750	-7,492
Married Separate	46,320	40,920	-5,400
Single	1,195,562	1,274,318	78,756
Total	2,095,254	2,179,238	83,984

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

Results

In this section, we compare tax credits and tax liabilities from 2007 to 2009. This allows us to see the change in taxable income and tax liabilities as the recession took hold in New York City. It also illustrates the increase in tax credits due to policy changes over that same time period. Tables C Two through C Four report aggregates, that is, the total value of each tax liability or credit incurred or received by all the relevant tax filers.

Major Tax Components

In Table C Two, we divide all the filers with Adjusted Gross Income under $40,000 into two income groupings: from $1 through $20,000 and from $20,001 through $40,000. Taxable Income is Adjusted Gross Income after deductions and exemptions. Pre-Credit Liability is the income tax on Taxable Income before any credits are applied. Federal, State, and City credits are the sum of tax credits received from each level of government. Net Income Tax is the tax due after all credits have been applied. A negative value for Net Income Tax indicates that tax credit refunds were greater than the taxes owed, and that the

tax system creates a net gain to the taxpayer. A positive number indicates a net loss to the taxpayer, since taxes paid are greater than taxes refunded.

For lower-income filers, the benefits gained from taxes grew from 2007 to 2008 but declined from 2008 to 2009, in part because their tax liability increased more than the tax credits available to them. The tax burden for filers in the higher income group is consistently positive, but Net Income Tax declined from 2007 to 2008. Although it increased from 2008 to 2009, the 2009 tax burden remained smaller than 2007's.

Table C Two

Components of Net Income Tax Liability, 2007-2009

Total Dollar Value ($1,000s)

A. Adjusted Gross Income from $1 through $20,000				Difference	
	2007	2008	2009	2007-2008	2008-2009
Adjusted Gross Income	$9,881,621	$9,866,207	$11,053,257	-$15,415	$1,187,050
Taxable Income	$1,965,285	$1,892,886	$2,222,316	-$72,399	$329,430
Pre-Credit Liability	$503,018	$491,320	$575,944	-$11,698	$84,625
Federal Credits*	$915,265	$1,340,174	$1,398,974	$424,909	$58,800
State Credits	$452,105	$467,083	$492,879	$14,978	$25,796
City Credits	$228,181	$227,553	$156,876	-$628	-$70,677
Net Income Tax*	-$1,017,467	-$1,467,298	-$1,341,747	-$449,831	$125,551

B. Adjusted Gross Income from $20,001 through $40,000				Difference	
	2007	2008	2009	2007-2008	2008-2009
Adjusted Gross Income	$27,624,660	$28,010,025	$29,290,113	$385,365	$1,280,088
Taxable Income	$14,948,525	$15,061,950	$15,707,115	$113,426	$645,165
Pre-Credit Liability	$3,403,632	$3,456,143	$3,645,181	$52,512	$189,038
Federal Credits*	$891,847	$1,661,615	$1,567,732	$769,768	-$93,883
State Credits	$308,316	$326,957	$366,136	$18,641	$39,178
City Credits	$200,259	$200,313	$111,751	$54	-$88,562
Net Income Tax*	$2,009,740	$1,274,243	$1,630,128	-$735,497	$355,885

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
*Includes Economic Recovery Payment to Social Security recipients in 2009.

In addition to the tax liability shown above, FICA payroll taxes for Social Security and Medicare are an additional factor in the total tax picture. For filers earning up to $20,000, FICA rose from $513 million in 2007 to $595 million in 2009, offsetting just over 44 percent of the net income they gained from the income tax system. Filers with Adjusted Gross Income from $20,001 to $40,000 saw their FICA payments rise from $1.8 billion in 2007 to $1.9 billion in 2009. In the latter year, FICA more than doubled this group's total tax burden.

Table C Three

FICA (Payroll Taxes)

Total Dollar Value ($1,000s)

Adjusted Gross Income	2007	2008	2009
$1 - $20,000	$513,087	$510,914	$594,743
$20,001 - $40,000	$1,789,130	$1,814,489	$1,890,413

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

Individual Tax Credits

Table C Four below details changes in individual tax credits from 2007 to 2009, including the EITC and stimulus credits. The table divides tax filers into the same income groupings as Table C Two above. Total Tax Relief is the sum of all credits; for lower income taxpayers it increased steadily from $1.5 billion in 2007 to $2.0 billion in 2009. The main sources of this growth were the increase in the Federal, State, and City EITC, especially from 2008 to 2009, and stimulus credits, including the Recovery Rebate, Making Work Pay Credits, and the Economic Recovery Payment.

For the higher income group, Total Tax Relief peaked in 2008 and fell back slightly in 2009. The combined EITCs also increased for them, but stimulus credits declined from 2008 to 2009. The switch from the Recovery Rebate Credit to the wage-dependent Making Work Pay Credit resulted in a loss of over $300 million in tax credits.

Table C Four

Selected Tax Credits, 2007-2009

Total Dollar Value ($1,000s)

A. Adjusted Gross Income from $1 through $20,000				Difference	
Federal	2007	2008	2009	2007-2008	2008-2009
Child & Dependent Care	$13,219	$16,014	$15,963	$2,795	-$51
Child Tax*	$22,479	$27,902	$21,532	$5,424	-$6,371
Elderly & Disabled	$1,169	$799	$242	-$370	-$557
Tuition**	$14,965	$13,773	$25,099	-$1,192	$11,326
Earned Income Tax Credit	$863,433	$889,610	$968,642	$26,177	$79,032
Real Estate Standard Deduction	N.A.	$68,577	$69,589	N.A.	$1,013
Recovery Rebate Credit	N.A.	$78,513	N.A.	N.A.	N.A.
Making Work Pay	N.A.	N.A.	$260,371	N.A.	N.A.
Economic Recovery Rebate	N.A.	N.A.	$56,268	N.A.	N.A.
New York State					
Household Credit	$23,087	$22,957	$26,991	-$131	$4,034
Child & Dependent Care	$14,541	$17,616	$17,560	$3,075	-$56
Child Tax	$38,205	$38,929	$38,091	$724	-$838
Tuition	$43,438	$49,963	$51,957	$6,525	$1,994
Real Property Tax	$47,198	$45,209	$45,721	-$1,989	$512
Earned Income Tax Credit	$248,821	$256,256	$277,946	$7,436	$21,690
New York City					
Household Credit	$8,139	$8,061	$8,552	-$79	$492
School Tax Relief (STAR)	$142,739	$140,461	$64,058	-$2,278	-$76,403
Child & Dependent Care	$7,606	$8,578	$10,568	$972	$1,990
Earned Income Tax Credit	$43,172	$44,480	$48,432	$1,309	$3,952
Total Tax Relief	$1,532,211	$1,727,698	$2,007,583	$195,487	$279,885

B. Adjusted Gross Income from $20,001 through $40,000				Difference	
Federal	2007	2008	2009	2007-2008	2008-2009
Child & Dependent Care	$18,548	$20,487	$18,503	$1,940	-$1,985
Child Tax*	$276,211	$271,794	$261,748	-$4,417	-$10,045
Elderly & Disabled	$113	$118	$45	$6	-$74
Tuition**	$105,483	$108,799	$67,693	$3,316	-$41,106
Earned Income Tax Credit	$491,493	$530,001	$681,028	$38,508	$151,027
Real Estate Standard Deduction	N.A.	$88,136	$93,743	N.A.	$5,607
Recovery Rebate Credit	N.A.	$730,416	N.A.	N.A.	N.A.
Making Work Pay	N.A.	N.A.	$411,916	N.A.	N.A.
Economic Recovery Rebate	N.A.	N.A.	$19,968	N.A.	N.A.
New York State					
Household Credit	$21,545	$20,814	$19,307	-$731	-$1,507
Child & Dependent Care	$19,848	$21,887	$19,622	$2,039	-$2,265
Child Tax	$79,497	$80,814	$78,166	$1,316	-$2,648
Tuition	$50,525	$54,539	$54,068	$4,014	-$471
Real Property Tax	$0	$0	$0	$0	$0
Earned Income Tax Credit	$135,672	$147,653	$193,672	$11,982	$46,019
New York City					
Household Credit	$1,972	$1,944	$1,203	-$28	-$741
School Tax Relief (STAR)	$167,917	$166,619	$72,643	-$1,298	-$93,976
Child & Dependent Care	$5,661	$5,120	$3,756	-$540	-$1,364
Earned Income Tax Credit	$24,575	$26,500	$34,051	$1,925	$7,551
Total Tax Relief	$1,399,059	$2,275,641	$2,031,132	$876,582	-$244,509

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Note: N.A. = not applicable.
*Includes refundable additional child tax credit.
**Combines American Opportunity Credit and Hope Credit in 2007 and 2008; American Opportunity Tax Credit and Lifetime Learning Credit in 2009.

Taxes and the Poverty Rate

The poverty rate would be higher in the absence of net taxation. For low-income New Yorkers, payroll and income tax liabilities are so effectively offset by tax credits that the tax system creates an addition to their total resources. This poverty-reducing effect increased with the Federal stimulus programs and is illustrated in Table C Five below. A modest 0.5 percentage point decline in the poverty rate in 2007 grew to a tax-created 2.0 percentage point decline in 2009. Because tax credits have been targeted toward persons in working families with children, the effect of taxation on the poverty rate is particularly dramatic for them. By 2009, the tax system was lifting 4.1 percent of this group out of poverty. However, as we note elsewhere, families that are not working are shut out of tax-based income supports.

Table C Five

Impact of Net Taxes on Poverty Rates, 2007-2009

(Numbers are Percent of the Population)

A. All Persons	2007	2008	2009
Total CEO Income	20.7	19.6	19.9
CEO Income without Taxes	21.2	21.4	21.9
Impact of Taxes on the Poverty Rate	-0.5	-1.9	-2.0
B. Persons Living in Working Families with Children			
Total CEO Income	13.7	12.1	11.7
CEO Income without Taxes	15.3	15.9	15.8
Impact of Taxes on the Poverty Rate	-1.6	-3.8	-4.1

Source: Tabulated from American Community Survey Public Use Micro Sample as augmented by CEO.

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APPENDIX D:
ESTIMATING THE VALUE OF NUTRITIONAL ASSISTANCE

The cash-equivalent value of the nation's two largest nutritional assistance programs, Food Stamps and the National School Lunch Food Program, is an important component of income in the CEO poverty measure.[71] Unfortunately, the information on Food Stamp benefits in the ACS is incomplete and the survey provides no information at all about School Lunches. This appendix describes how CEO estimates which families are participating in these programs and the value of the benefits they receive.

Food Stamps

Data in the ACS about Food Stamp participation are very limited. First, as of 2008, the ACS only indicates whether a member of a household received Food Stamps at any time in the prior 12 months, providing no information on the value of the benefit, which must be estimated.[72] CEO's decision to make use of New York City administrative data as its source for imputing the value of Food Stamps received leads to a second issue: Food Stamp participation in the ACS is reported at the household level, which differs from a typical Food Stamp case. A household is comprised of persons who share residence in a housing unit. A Food Stamp case, in contrast, includes household members who purchase and prepare food in common. The distinction shows up clearly in the data. In 2007, for example, the average New York City Food Stamp case had 1.85 members, while the average ACS household reporting Food Stamp receipt had 2.87 members. A third problem is underreporting of program participation.

CEO's method for imputing the yearly value of Food Stamps thus entails three steps: (1) creating Food Stamp units within ACS household units; (2) estimating the value of yearly Food Stamp receipt; and (3) adjusting the number of Food Stamp cases created in the ACS data to correct for underreporting.

To create commensurable units, CEO developed a program to divide ACS households into the maximum number of "Food Stamp units" that the program rules allow. The

[71] The Food Stamp program was renamed as the Supplemental Nutritional Assistance Program (SNAP) in the 2008 Farm Bill. We will refer to the benefits colloquially as "Food Stamps," as most people still use this term.
[72] The decision to drop the question about the value of Food Stamps received was influenced by the Census Bureau's testing of the ACS questionnaire, which revealed that respondents were more likely to indicate receipt of the benefit if the follow-up question about the value of the benefit did not appear in the survey instrument. See: http://www.census.gov/acs/www/AdvMeth/content_test/H6_Food_Stamps.pdf.

Supplemental Nutrition Assistance Program (SNAP) uses the following rules to determine who in a household must be in the same Food Stamp case:

1. Spouses.
2. Parents and children under 22, including spouses of these children, and grandchildren.
3. A child under 18 living with, and under the parental control of, an adult that provides 50 percent or more of the minor child's support.
4. Anyone else in the household that purchases and prepares food together.

These three rules are based on relationships within the household, some of which are readily described by variables in the ACS. Others are not and must be created. To construct these relationships, we use the minimal household unit (MHU) program, which was originally written by Jeff Passel, Senior Demographer at the Pew Hispanic Center. The MHU program is designed to parse an ACS household into its smallest family unit.[73] The program loops through the data, linking individuals within the ACS household by kinship and marriage. This work creates Food Stamp case units that conform to the three rules listed above.

Because CEO does not attempt to infer who else in a household is purchasing and preparing food together, the program creates the maximum number of Food Stamp units within each household allowable under SNAP rules. The size and composition of the Food Stamp cases produced with this method accurately reproduce that of the cases in the administrative data. In 2007, for example, the proportion of single-person Food Stamp cases created in the ACS (57.5 percent) is virtually identical to the proportion of single-person cases in the administrative data (57.6 percent). Using the Food Stamp unit rather than the ACS household also increases the estimated number of Food Stamp cases in the 2007 ACS from 405,475 (50 percent of the administrative total) to 625,394 (78 percent of the administrative total).[74] See Table D One.

[73] Passel, Jeffrey. "Editing Family Data in Census 2000 Public-Use Micro Data Samples: Creating Minimal Household Units (MHUs)." August 2002.
[74] Tables on the development of the Food Stamp imputation model are for 2007, which is the last year for which data on the value of Food Stamps is reported in the ACS.

Table D One

Distribution of Food Stamp Cases by Size, 2007

	ACS Households		CEO Food Stamp Units		Administrative Cases	
Size	Frequency	Percent	Frequency	Percent	Frequency	Percent
One	120,621	29.7	401,400	57.5	443,378	57.6
Two	89,263	22.0	130,443	18.7	149,863	19.5
Three	68,936	17.0	71,358	10.2	89,344	11.6
Four	54,999	13.6	49,640	7.1	49,685	6.5
Five	32,276	8.0	23,853	3.4	21,282	2.8
Six	19,864	4.9	10,844	1.6	8,439	1.1
Seven	8,440	2.1	5,159	0.7	3,685	0.5
Eight	5,214	1.3	2,433	0.3	1,735	0.2
Nine	3,788	0.9	2,879	0.4	895	0.1
Ten or more	2,074	0.5	666	0.1	997	0.1
Total	405,475	100.0	698,675	100.0	769,303	100.0

Sources: American Community Survey Public Use Micro Sample as augmented by CEO and New York City Human Resources Administration, EDW.

Once commensurable units are created, we begin the Food Stamp value estimation process by compiling administrative data on Food Stamp cases in New York City from the Human Resources Administration's internal database. The data includes all cases in New York City that were active for any period between July and June of the appropriate year. This period is chosen because it represents the mid-point in the ACS rolling sample, helping to ensure that the administrative data was comparable to the ACS data. To preserve consistency with our poverty universe, individuals in group quarters were removed from both the administrative data and the ACS sample.

The administrative data set contains demographic information about the Food Stamp case-heads and families, as well as relevant budget information such as household income. For each case, we summed the total of Food Stamp payments over the previous year. Using this data, we developed a regression model using the demographic characteristics present in both the administrative and ACS data sets in order to predict the yearly value of Food Stamp payments of families in New York City. This model was developed after testing numerous specifications. The final model we arrived at displays consistency over the years 2005-2009.

Table D Two
Regression Modeling of Yearly Food Stamp Value 2005-2009

	2005	2006	2007	2008	2009
Intercept	123.10	123.13	47.22	38.09	47.40
	[30.77]	[31.52]	[30.33]	[30.44]	[29.40]
Household Size	696.56	699.45	674.70	738.73	793.86
	[8.40]	[8.61]	[8.37]	[16.55]	[16.14]
Number of Children	105.80	121.01	161.36	93.62	169.11
	[7.77]	[8.02]	[7.91]	[13.60]	[13.13]
Elderly Household Head	82.55	50.87	19.59	-22.24	-53.06
	[25.09]	[25.69]	[24.65]	[25.85]	[26.60]
Elderly or Disabled Person in Unit	-144.13	-158.49	-54.41	-77.41	160.98
	[16.89]	[17.57]	[17.11]	[17.92]	[18.64]
Age of Household Head	5.57	7.33	7.98	8.84	9.09
	[0.66]	[0.68]	[0.66]	[0.69]	[0.69]
R^2	.513	.505	.488	.479	.496

Source: New York City Human Resources Administration, EDW.
Notes: Standard errors in brackets. All coefficients significant at the $p < 0.001$ level.

The ACS and administrative data are constructed differently and are utilized for very different purposes, a fact that complicated the development of a regression model for the purpose of matching records. This was a particular issue with regard to measuring income. While the ACS reports yearly cash income from all sources, the administrative data only contains the monthly income reported on a Food Stamp application. This creates two challenges. First, families often apply for Food Stamps after an income shock such as a job loss, yielding a potentially biased estimate of the family's income over the past year. Second, Food Stamp applicants are allowed to make deductions from their income while applying, further complicating comparisons of the two variables. These differences between the income variables in the two data sets lead to a poor statistical match, since Food Stamp units in the ACS have higher income than otherwise comparable administrative Food Stamp cases. As a result, we made the decision to leave income out of the regression model.

The ACS contains data on whether a household received Food Stamps for some period over the previous year but does not contain data on how many months the household participated in the program. This is, potentially, a source of unexplained variation, as households receiving Food Stamps for six months will have a lower yearly value than

households receiving them for the full year, holding other factors constant. However, using a model that excludes the months of receipt variable is justified for two reasons. First, the variables included in regression correlate with the months of receipt variable. As a result, a good deal of the variation from the months of receipt variable is captured by the coefficients in the included variables. Second, since this model is used for prediction rather than inference, we are less concerned with potential bias in the individual coefficients.

The regression model described above was then used to impute Food Stamp values through a predictive mean match (PMM).[75] First, we used the regression coefficients to estimate Food Stamp values for observations in the ACS and in the administrative data. These ACS and administrative values were then matched using a nearest neighbor algorithm whereby an ACS case would be matched with the administrative case with the closest estimated value, plus the added constraint that required both the host and donor cases to be in the same Community District.[76] This additional match criterion was designed to capture neighborhood effects that were not explicitly in the model. The ACS case was then given the actual Food Stamp value from the administrative case. Once an administrative case donated its value to an ACS case, it was removed from the donor pool.

The advantage of using PMM rather than simply using the estimated values is that PMM does a better job at preserving the actual distribution of Food Stamp values, as can be seen in Table D Three. Regression estimates accurately capture the mean and aggregate values of the distribution but yield considerably less variation than seen in the actual data. This is unsurprising, given the fact that regressions are designed to model means rather than full distributions.

Table D Three
Comparison of Estimated & PMM Food Stamp Value Distributions, 2007 ACS

	Regression	PMM	Administrative
Food Stamp Cases	698,675	698,675	804,433
Mean	$1,934	$1,893	$1,855
Median	$1,470	$1,696	$1,693
Standard Deviation	$1,116	$1,503	$1,511
Sum (in Thousands)	$1,267,734	$1,240,477	$1,391,875

Sources: American Community Survey Public Use Micro Sample as augmented by CEO and New York City Human Resources Administration, EDW.

[75] See O'Donnell, Sharon and Rodney Beard, "Imputing Medical Out of Pocket (MOOP) Expenditures using SIPP and MEPS," for an application of this method in a similar context.
[76] The ACS's public use micro sample areas are constructed to match New York City's Community Districts.

Given the gap between the number of Food Stamp cases in the administrative data and the number of cases in the ACS households reporting Food Stamp receipt, CEO decided to assign participation in the Food Stamp program to some of the apparently eligible units that did not report receipt. There are several possible reasons for not reporting receipt. Unfortunately, none of these factors are directly measurable in the ACS, which limits our ability to model underreporting of participation.

What is known is that Food Stamp participation is highly correlated with participation in other income support programs, such as Public Assistance (PA) and Supplemental Security Income (SSI). Analysis of administrative data shows that in 2007, roughly 80 percent of people on PA and SSI participated in the Food Stamp program. Given this high degree of participation, we assigned Food Stamp values to individuals who were eligible for Food Stamps and reported PA or SSI receipt, but did not report Food Stamp receipt.[77] Adding these cases increased the number of Food Stamp units from 625,394 to 698,675 in that year.

Table D Four
Comparison of Self-Reported & Estimated Food Stamp Values, 2007 ACS

	Cases		Individuals		Total Value	
	Thousands	Ratio	Thousands	Ratio	Thousands	Ratio
ACS Households (Self-Reported Participation & Values)	405	0.50	1,164	0.79	$879,185	0.63
CEO Food Stamp Units (Self-Reported Participation, Matched Values)	625	0.78	1,164	0.79	$1,117,917	0.80
CEO Food Stamp Units (Adjusted Participation, Match Values)	699	0.87	1,348	0.91	$1,240,477	0.89
Administrative	804	1.00	1,475	1.00	$1,391,875	1.00

Sources: American Community Survey Public Use Micro Sample as augmented by CEO and New York City Human Resources Administration, EDW.

The CEO Food Stamp estimates of the trends in Food Stamp receipt and value from 2005 to 2009 are reported in Table D Five. They come close to replicating the observed trends in the administrative data, but do not do so exactly. Specifically, while the administrative data shows a consistent upward trend over the five years, the CEO estimates show a decrease in cases and aggregate value from 2006 to 2007, which interrupts the overall trend of increases. This is likely the result of sampling variability in the ACS.

[77] "Eligible" is defined using the SNAP program rules, such as that the recipient be a citizen or legal resident for five years or more with a gross income less than 130 percent of the official poverty line.

Additionally, the CEO estimates show a larger spike in the number of cases between 2007 and 2008 than the spike seen in the administrative data. This may be a result of the change in the question regarding Food Stamps in the 2008 ACS survey, described above.

Table D Five

Food Stamp Receipt, 2005-2009

	2005	2006	2007	2008	2009
Poverty Units	499,456	507,444	495,760	548,287	607,883
Food Stamp Cases	695,453	712,842	698,675	773,634	875,458
Aggregate Value (in Thousands)	$1,133,319	$1,259,358	$1,240,477	$1,379,449	$1,915,239
Mean per Food Stamp Case	$1,764	$1,886	$1,893	$1,881	$2,279
Median per Food Stamp Case	$1,615	$1,691	$1,696	$1,754	$1,942

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Note: Values reported at the Food Stamp Unit level.

School Lunches

The National School Lunch Program (NSLP) offers free lunches to all school children whose family income is below 130 percent of the Federal poverty guidelines and reduced-price lunches to school children whose family income is between 130 and 185 percent of the Federal poverty guidelines. Like Food Stamps, receipt of subsidized school lunches can free resources that would otherwise be spent on food.

The ACS does not record whether children in households receive a free or reduced-price lunch, making it necessary for the study to estimate which families might benefit from the program. To develop this estimate, we first used ACS schooling and income variables to establish eligibility. Only children from kindergarten through high school were assumed to be eligible for lunch subsidies. The total number of free and reduced-price lunch recipients found in the ACS was comparable to the numbers shown in City administrative data.[78]

Next, the benefit value per lunch was applied, and multiplied by the number of school days. To calculate an annual school lunch value for 2009, the study followed the United States Census Bureau methodology and used the Census Bureau's dollar value of $2.855 per day for free and $2.455 for reduced-price lunches.[79] The school lunch value was then

[78] We compared the ACS data with New York City Department of Education data from October 31, 2005, indicating that 599,896 public school students were eligible for either free or reduced-price lunch versus 617,874 in the ACS. One possible explanation for the discrepancy in data is that the ACS analysis calculates eligibility for all students, while the DOE data is only for public school students.
[79] Jessica Semega, personal correspondence to the authors. Ms. Semega is a Statistician with the U.S. Census Bureau Income Surveys Branch, Housing and Household Economic Statistics Division.

multiplied by 175 school days, assuming 180 school days per year and allowing five days for absence.[80] This established an annual value of $500 for those children who received free lunches and $430 for those who received reduced-price lunches.

The value of the lunch subsidy was then assigned to each family, based on number of eligible children. Table D Six provides the mean, median, and aggregate values for family units with children receiving free or reduced-price lunches. The estimates of free and reduced-price school lunches are quite consistent over the five-year period. The differences in the population eligible for the program are small enough that they may simply be the result of sampling variability.

Table D Six

Students Eligible for Free or Reduced Price School Lunch, 2005-2009

	2005	2006	2007	2008	2009
Free	445,496	462,579	426,014	423,247	433,143
Reduced Price	172,378	166,417	170,152	161,449	161,595
Total	617,874	628,996	596,166	584,696	594,738
Aggregate Value (in Thousands)	$253,603	$255,663	$258,838	$258,085	$278,194
Mean per Family	$740	$762	$801	$810	$849
Median per Family	$719	$738	$781	$814	$859

Source: American Community Survey Public Use Micro Sample as augmented by CEO.
Note: Family is poverty unit.

Impact of Nutritional Assistance on CEO Poverty Rate

Adding the value of nutritional assistance to family resources has a noticeable impact on the poverty rate. As Table Seven shows, nutritional assistance decreased the Citywide poverty rate by at least 2.1 percentage points in each year. This effect is somewhat higher for families with children, lowering the poverty rate for this group by between 2.9 and 3.8 percentage points; this difference is driven by the fact that families with children can benefit from the School Lunch program as well.

[80] School Year Calendar for 2005-2006 and 2006-2007, the New York City Department of Education.

Table D Seven

Impact of Nutritional Assistance on Poverty Rates, 2005-2009

	2005	2006	2007	2008	2009
All Persons					
Total CEO Income	20.1	19.9	20.7	19.6	19.9
CEO Income without Nutritional Assistance	22.3	22.5	22.8	22.1	22.5
Impact of Nutritional Assistance on Poverty Rate	-2.2	-2.6	-2.1	-2.5	-2.7
Persons Living in Families with Children					
Total CEO Income	21.6	21.6	23.1	20.5	20.8
CEO Income without Nutritional Assistance	24.8	25.5	25.9	24.1	24.5
Impact of Nutritional Assistance on Poverty Rate	-3.2	-3.8	-2.9	-3.6	-3.8
Persons Living in Families with Single Parents					
Total CEO Income	33.4	32.1	34.2	31.4	34.6
CEO Income without Nutritional Assistance	38.7	38.1	39.2	36.9	39.5
Impact of Nutritional Assistance on Poverty Rate	-5.3	-6.1	-5.0	-5.5	-4.9
Persons Living in Families with Elderly Head of Household					
Total CEO Income	23.7	22.9	23.1	23.5	22.6
CEO Income without Nutritional Assistance	26.4	25.6	26.0	26.4	25.9
Impact of Nutritional Assistance on Poverty Rate	-2.7	-2.6	-2.9	-2.9	-3.3

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

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APPENDIX E:
ADJUSTMENT FOR HOUSING STATUS

An important step in creating the CEO measure of a family's resources is the adjustment we make for housing status. The adjustment is recognition that not all families in New York City require the same level of expenditures to obtain shelter of equivalent size and quality. Homeowners who have paid off their mortgages have lower spending needs for shelter than do those who are still making mortgage payments. Renters living in public housing or who are receiving a Section 8 or a similar housing subsidy have dramatically lower shelter costs than families who pay market rate rents. Tenants in rent-regulated apartments, a considerable share of renter households in New York City, also receive some protection from the high cost of housing.

To account for this difference, CEO makes a "housing status adjustment" to family resources. Households living in "non-market rate" housing units (participants in means-tested housing assistance programs, tenants in rent-regulated apartments, tenants who pay no rent, and homeowners free and clear of a mortgage) receive an addition to their income equal to the difference between the shelter and utilities share of their poverty threshold and what they pay out of pocket for these items. This approach places a dollar value on the advantages of residence in non-market rate housing. If housing-related expenditures are less than the housing and utilities portion of the threshold, the difference represents funds that are available to the family to meet their non-housing needs.

> Housing Status Adjustment = Housing and Utilities Portion of the Poverty Threshold – the maximum of (Out-of-Pocket Housing and Utilities Expenditures, 0)

The ACS provides most of the data needed to make this adjustment. The ACS identifies whether a household rents or owns its home and, among homeowners, distinguishes between those who are paying off a mortgage and those who own their home free and clear. The ACS also provides information about monthly homeowner costs (the sum of mortgage

payments, if any, property taxes, insurance, and utility payments).[81] Thus, the survey provides all the data needed for the CEO adjustment for homeowners.

This, unfortunately, is not true for renters. There are two rent variables in the ACS – contract rent and gross rent. Contract rent is the rent received each month by the landlord. Gross rent is contract rent plus utility payments.[82] These two variables do not represent renter out-of pocket expenditures for shelter and utilities, *if* the household is participating in a rental subsidy program.[83] An additional shortcoming of the ACS is that it does not provide any information as to whether a renter household resides in a public housing development, receives a means-tested rental subsidy, or lives in a rent-regulated apartment.

CEO addresses the need to assign housing program participation and out-of-pocket spending by matching renter households in the ACS to renter households in the New York City Housing and Vacancy Survey (HVS). The HVS is conducted every three years by the U.S. Census Bureau. The survey provides a sample of roughly 18,000 households in the City and collects detailed information on their demographic as well as housing-related characteristics.[84] Most important for creating the CEO housing adjustment, it identifies renters' housing status and provides data on what renters, including those who receive a rent subsidy, pay out of pocket for their housing needs.

Improvements in Assigning Housing Status and Measuring Housing Expenditures

The housing adjustment has a dramatic impact on the Citywide poverty rate. In 2008, for example, the CEO poverty rate would have been 6.4 percentage points higher if the effect of housing status had been ignored.[85] This is a much larger effect than that of taxation or nutritional assistance programs. Given the importance of the housing adjustment, we have devoted considerable effort since our last report to improve the method we use to match HVS to ACS households, and have reassessed the extent to which we use information from the two surveys when both provide data on the same household characteristic. That

[81] The ACS variable, SMOCP, "Selected Monthly Owner Costs," is the sum of payments for mortgages and condominium fees (if any); real estate taxes; fire, hazard, and flood insurance on the property; and utilities and fuels.
[82] ACS Subject Definitions, 2008.
[83] Although ACS respondents are instructed to provide the rent received by the landlord, it is unclear whether subsidy recipients include the portion of the rent they do not pay in their answers. See Parker, Julie, "Rent: A Story of Misreporting?" NAWRS 2010, http://www.nawrs.org/LA2010/Papers/t1c3.pdf.
[84] Descriptive material about the HVS can be found at: http://www.census.gov/hhes/www/housing/nychvs/nychvs.html.
[85] See Table E Eleven. We use 2008 data throughout the appendix, as this is the year of the most recent HVS.

work has lead to several changes. First, we decided that we should use the ACS variable to measure housing status for all households, except renters who pay rent.[86] Thus, our matching of HVS to ACS households is now restricted to that group. Second, we have created a matching routine that makes use of a wider variety of HVS households. The routine also uses a somewhat different set of variables to match households and relaxes the matching criteria in smaller steps than our earlier work. Third, we use the ACS housing expenditure variables for all households except those who are classified as receiving a tenant-based subsidy. What follows is a detailed account of these improvements.

Our Earlier Matching Strategy

The original imputation did not distinguish between renter or owner households and assigned all ACS records their housing status and housing expenditures from matched HVS donor records. The match was based on the following six household characteristics:

1. Neighborhood (Community Districts [CD] or Public Use Micro Sample Area [PUMA])[87].
2. Race/Ethnicity of the householder.
3. Whether or not the householder was 65 or older.
4. Intervals of household income (20K intervals, until 140K and higher).
5. Whether the household was rented or owned.
6. Number of persons in the household (capped at six).

The matching routine began with the first record in the ACS and cycled through the HVS data set until it found a corresponding HVS record based on the matching criteria. Once the match was made, it exited out of the loop, moved to the next ACS record, and returned to the first HVS record to look for the next match. If there wasn't an HVS record that matched on all criteria, the program dropped or relaxed certain variables incrementally to eventually find a match. The steps were:

1. Match on all characteristics.
2. Match on five characteristics, drop age.
3. Match on four characteristics, drop age and ethnicity.
4. Combine the upper income bands and drop age.
5. Combine the upper income bands, and drop age and ethnicity.

[86] Each survey includes a small group of households that are identified as renters who do not pay rent.
[87] CDs are identified in the ACS as PUMAs. In the HVS, they are referred to as Sub-Borough areas. Both are patterned after the City's CDs and are, therefore, nearly identical.

6. Follow steps 1 – 5 and match on contiguous Community Districts, starting with the Community District that has the closest median household income.

When we examined the original imputation's results, we realized that by simply assigning the first matching HVS record we were severely limiting the number of HVS records chosen as donors for the ACS data set. For example, if the first HVS record represented a rented household with an income of under $20,000 in Bronx CD 1 that was headed by a non-elderly Hispanic, then every ACS household with these same characteristics would be assigned this HVS donor record's housing status and expenditures. The program would never reach other HVS household records that might have also fulfilled these criteria and could have also been used as a donor. Table E One, below, shows the distribution of HVS records that were used in the 2008 ACS original imputation program.

Table E One
Number of Times Each HVS Record Used as Donor in Original Imputation

Number of Donations	Frequency	Percentage	Number of Donations	Frequency	Percentage
0	11,921	66.4	22	8	0.0
1	1,646	9.2	23	5	0.0
2	1,142	6.4	24	5	0.0
3	825	4.6	25	3	0.0
4	597	3.3	26	5	0.0
5	455	2.5	27	2	0.0
6	294	1.6	28	2	0.0
7	209	1.2	30	3	0.0
8	182	1.0	31	3	0.0
9	142	0.8	32	2	0.0
10	108	0.6	33	1	0.0
11	83	0.5	34	3	0.0
12	58	0.3	35	3	0.0
13	52	0.3	37	2	0.0
14	46	0.3	38	4	0.0
15	32	0.2	41	2	0.0
16	27	0.2	43	1	0.0
17	23	0.1	45	1	0.0
18	19	0.1	49	1	0.0
19	12	0.1	50	1	0.0
20	11	0.1	52	1	0.0
21	12	0.1	53	1	0.0
			Total	17,955	100.0

Sources: 2005 New York City Housing and Vacancy Survey, 2005 American Community Survey Public Use Micro Sample as augmented by CEO.

As reported in the table, most (66.4 percent) of HVS households are never used as donors. Among those that are used, only 27.4 percent are used once (1,646 of the 6,034 matched households); the rest are used multiple times. Considering that the donor and recipient data sets are representative samples of the same population, the highly uneven distribution of the pattern of donation was a concern.

New Matching Method

Our work to improve the matching program began with an effort to achieve a more balanced distribution of donations from the HVS in the hope that if we could increase the proportion of HVS records that are used as donors, the assignment of housing status would more closely mirror the donor file. Instead of limiting the match to the first available HVS record, all HVS records are evaluated to find matches on the given set of criteria. After all donor records have been evaluated, a subset of all *matching* donor records is made. The subset is then sorted, and the donor record with the lowest number of previous donations in the subset is chosen as the match and its donation counter variable is incremented by one. Picking the potential donor record with the lowest number of donations helps ensure that a larger number (and hopefully more representative distribution) of records are used as donors.

A second source of potential improvement was the characteristics used as matching criteria. We modified some of the variables to better identify corresponding households between the data sets. For example, household income is banded by its place in the distribution rather than by an absolute number, and is adjusted for the number of persons in the household. In addition, the number of household characteristics is increased. We added variables that measure whether the household had earned income, household composition, and contract rent to the matching algorithm. Listed below are characteristics used for matching renter households in the new algorithm:

1. Neighborhoods (CD or PUMA).
2. Race/Ethnicity of the householder (Non-Hispanic White, Non-Hispanic Black, Hispanic, Non-Hispanic Other Race).
3. Whether the householder was 65 or older.
4. Equivalized household income as a ranking based on the distribution. (In the new program, income was banded into septiles, sextiles, quintiles, and quartiles calculated for each respective data set.)

5. Contract rent as a ranking based on the distribution. (Contract rent was also ranked based on the distribution and banded similarly to equivalized household income.)
6. Number of bedrooms in the household (studio, 1 through 4+).
7. Household composition (husband and wife with and without children, male and female-headed single households with and without children, households of unrelated people, and single person households).
8. Whether or not the household had wage income.

We also reconsidered the incremental size and order by which we relaxed criteria. Our goal was to preserve the geographic, racial, and family composition distribution of the housing statuses found in the HVS. Because the distribution of participation in means-tested housing assistance (in particular the location of public housing) varies by neighborhood, we attempted to match as many households as possible within the same neighborhood. By using smaller incremental changes when loosening matching criteria, we matched 89.5 percent of households in the ACS before moving outside the PUMA of residence to look for donors in the HVS. This happens after the seventeenth step. Listed below are the steps for matching (each step builds upon the changes to the previous match):

1. Match on all characteristics.
2. Drop whether or not household has wage income.
3. Relax number of bedrooms from five to four categories: from studio through 4+ bedrooms to studio through 3+ bedrooms.
4. Relax household income to sextiles.
5. Relax rent of household to sextiles.
6. Relax household composition to five categories: husband and wife with children, single parent with children, husband and wife without children, multiple person household without children, single person household.
7. Relax number of bedrooms to three categories: 1 = studio and 1 bedroom, 2 = 2 bedrooms, 3 = 3+ bedrooms.
8. Relax household income further to quintiles.
9. Relax rent of household further to quintiles.
10. Relax household composition to three categories: households with children, multiple person household without children, single person household.

11. Relax Race/Ethnicity to three categories: combine White and Asian into one category; Black and Hispanic categories remain unchanged.
12. Relax number of bedrooms further to two categories: 1 = studio and 1 bedroom, 2 = 2+ bedrooms.
13. Relax household income further to quartiles.
14. Relax rent of household further to quartiles.
15. Relax household composition further to two categories: households with children and households without children.
16. Relax Race/Ethnicity further to two categories: Black/Hispanic and White/Asian.
17. Drop age of household head.
18. Do steps 1 through 17 for contiguous PUMAs, starting with the PUMA with the closest median household income.
19. Do steps 1 through 17 for any PUMA within the borough, starting with the PUMA with the closest median household income.
20. Same PUMA, drop number of bedrooms.
21. Same PUMA, loosen income to three categories by combining 2nd and 3rd quartiles into one category; 1st and 4th quartiles unchanged.
22. Same PUMA, drop household composition.
23. Same PUMA, drop Race/Ethnicity.
24. Same PUMA, drop income.
25. Do steps 20 through 24 for any PUMA within the borough, starting with the PUMA with the closest median household income.

The resulting distribution of HVS donor households in the new procedure, reported in Table E Two, indicates that a much larger percentage (67.6 percent) of records are used as donors and of those used, a much higher percentage (52.1 percent) are only used once (4,200 of the 8,067 matched households).

Table E Two
Number of Times HVS Record Used as Donor for 2008 ACS with New Methodology

Number of Donations	Frequency	Percent
0	3,865	32.4
1	4,200	35.2
2	2,087	17.5
3	959	8.0
4	409	3.4
5	208	1.7
6	112	0.9
7	37	0.3
8	29	0.2
9	15	0.1
10	6	0.1
11	3	0.0
12	1	0.0
13	1	0.0
Total	11,932	100.0

Sources: 2008 New York City Housing and Vacancy Survey, 2008 American Community Survey Public Use Micro Sample as augmented by CEO.

Once the ACS and HVS renter households were matched, we created a housing status variable to categorize the ACS households. This is a CEO-created categorical scheme derived from both variables found in the HVS[88] and variables that are common to the ACS and HVS: renter with no rent, homeowner free and clear of a mortgage, and homeowner with a mortgage. The housing status categories are summarized in Table E Three. We also altered the hierarchy used to decide a household's housing status. In the old imputation, if a household lived in public housing or Mitchell-Lama rental and received tenant-based subsidies, it was characterized as a public housing or Mitchell-Lama household. In the new imputation, these households are characterized as tenant-based subsidy households. This allows us to use ACS housing expenditures for all housing statuses except subsidy recipients, whose HVS out-of-pocket rent variable is used.

[88] The variables used were Control Status, which indicates what type of housing development the unit is in and whether or not that household participated in at least one of the several tenant-based subsidy programs that are available to low-income renters.

Table E Three

Definition of CEO Housing Status

Renter - Public Housing	Living in a building that is NYCHA-operated public housing.
Renter - Mitchell-Lama	Living in Mitchell-Lama rental housing.
Renter - Tenant-Based Subsidy	Receiving Federal Section 8, Public Assistance Shelter Allowance, Senior Citizen Rent Increase Exemption, "Jiggets" rent supplement program, Employee Incentive Housing Program, Work Advantage Housing program for the homeless, or some other Federal, State, or City subsidy program.
Renter - Stabilized/Controlled	Living in an apartment under rent control or rent stabilization status.
Renter - Other Regulated	Living in an apartment under article 4 or 5, HUD or Loft Board regulated building, or building owned by the City in "In Rem" status.
Renter - Market Rate	Living in a rental apartment that is neither public housing nor stabilized/controlled, and the occupants do not receive a subsidy.
Renter - No Cash Rent	Does not pay cash rent to occupy apartment.
Owner - Owned Free & Clear	Living in a housing unit that is owned with no mortgage.
Owner - Paying Mortgage	Living in a housing unit that is owned and has a mortgage.
Owner - No Mortgage Status Reported	There is no mortgage status reported in the HVS.

Sources: 2008 New York City Housing and Vacancy Survey, 2008 American Community Survey Public Use Micro Sample as augmented by CEO.

Note: In the new methodology, tenant-based subsidy takes precedence over all other housing statuses. For example, if someone lives in public housing and also receives a subsidy, they are categorized as receiving a subsidy.

To judge whether this leads to a more accurate assignment of housing status, we compare the housing statuses of the HVS to the ACS derived from the original and the new imputation. Table E Four compares the 2008 HVS to the 2008 ACS using our prior imputation method.[89] We were particularly concerned with the estimates for residence in public housing and receipt of a tenant-based housing subsidy. The ACS distribution had only 3.5 percent of all New York City households living in public housing while the HVS had 5.9 percent of the household population in that category. The share of ACS households assigned a tenant-based subsidy is considerably closer to the HVS proportion (5.9 percent compared to 6.3 percent); still, it is less than the proportion in the HVS.

[89] These tables have been split up because in 2009, the Census Bureau released a new 2008 HVS which corrected about 20,000 market-rate households that were erroneously categorized as Stabilized/Controlled. The HVS in Table E Five has those corrections; the HVS in Table E Four focusing on the match between the HVS and the original imputation does not have the corrected Market Rate and Stabilized/Controlled totals.

Table E Four

Comparison of Housing Status Between 2008 HVS & Original Imputation for 2008 ACS

	HVS		Original Imputation for ACS	
Renters	Frequency	Percent	Frequency	Percent
Public Housing	183,651	5.9	107,834	3.5
Mitchell-Lama Rental	58,809	1.9	51,956	1.7
Tenant-Based Subsidy	194,400	6.3	179,116	5.9
Stabilized/Controlled	902,981	29.1	868,107	28.4
Other Regulated	37,592	1.2	69,807	2.3
Market Rate	669,119	21.6	725,585	23.7
No Cash Rent	35,402	1.1	N.A.	N.A.
Owners				
Owned Free & Clear	359,039	11.6	304,619	10
Paying Mortgage	654,100	21.1	733,586	24.2
No Mortgage Status Reported	6,206	0.2	5,082	0.2
No Match Found	N.A.	N.A.	9,585	0.3
Total	3,101,298	100.0	3,055,277	100

Sources: 2008 New York City Housing and Vacancy Survey, 2008 American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: N.A. = not applicable. This table displays results in the housing status hierarchy used in the first two reports where Public Housing and Mitchell-Lama Rental takes precedence over Tenant-Based Subsidy recipiency.
This table displays an older HVS data set. In October 2010, Census reissued a new HVS because there were about 20,000 households that were mischaracterized as Stabilized/Controlled that should have been Market Rate.
See Table E Three for explanation of housing statuses.

Table E Five reports results using the new approach to matching households and exhibits a greater degree of similarity in the distribution of households between the HVS and the ACS. For example, the new method places 13.8 percent of all ACS households in either public housing, Mitchell-Lama rental, or in receipt of a tenant-based subsidy. The corresponding proportion in the HVS is 14.1 percent. The original method, by contrast, assigns only 11.1 percent of all households to these three categories.[90]

[90] Considering only renter households, the new methodology places 20.9 percent in the public housing, Mitchell-Lama rental, or tenant-based subsidy housing statuses. The HVS proportion is 21.0 percent. The earlier imputation only assigned 16.9 percent of renters in these three categories.

Table E Five

Comparison of Housing Status Between 2008 HVS & 2008 ACS with New Imputation

	2008 HVS		2008 ACS with New Imputation	
Renters	Frequency	Percent	Frequency	Percent
Public Housing	158,304	5.1	144,583	4.7
Mitchell-Lama Rental	40,164	1.3	34,854	1.1
Tenant-Based Subsidy	238,391	7.7	243,506	8.0
Stabilized/Controlled	884,845	28.5	850,021	27.8
Other Regulated	37,592	1.2	71,432	2.3
Market Rate	687,254	22.2	630,775	20.6
No Cash Rent	35,402	1.1	50,449	1.7
Owners				
Owned Free & Clear	359,039	11.6	381,626	12.5
Paying Mortgage	654,100	21.1	648,031	21.2
No Mortgage Status Reported	6,206	0.2	N.A.	N.A.
Total	3,101,298	100.0	3,055,277	100.0

Sources: 2008 New York City Housing and Vacancy Survey, 2008 American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: N.A. = not applicable. See Table E Three for explanation of housing statuses.

The new procedure performs better on one important criteria: it reproduces the distribution of housing status found in the HVS across the ACS sample. But we are still concerned about how well the new procedure reproduces patterns by key demographic variables. The next three tables report housing status by different characteristics of the household for renters in the 2008 HVS and the imputed values for renter households in the 2008 ACS. Table E Six provides results by the race/ethnicity of the head of household. Table E Seven provides results by borough and Table D Eight reports results by the composition of the household. In each of the tables, the numbers are the share that each demographic (or geographic) group represents within the housing status category. For example, Table E Six indicates that in the HVS, 6.7 percent of the household heads in public housing are Non-Hispanic Whites. The corresponding proportion in the ACS is 5.4 percent.

While it is difficult to summarize all the information contained in them, careful inspection of the three tables reveals that with the exception of the distribution of those living in public housing and Mitchell-Lama rentals by race/ethnicity (see Table E Six), the imputation preserves the ranking across groups found in the HVS. For example, households with a Hispanic head comprise the largest race/ethnic group among tenant-based subsidy holders in the HVS. This is reproduced in the ACS, as is the borough ranking order of households in public housing developments and those receiving tenant-based subsidies.

Table E Six

Comparison of Renter Housing Status by Race/Ethnicity, 2008 HVS & 2008 ACS

(Numbers are Group's Share of Each Housing Status Category)

2008 HVS	NH White	NH Black	Hispanic, Any Race	NH Asian/Other
Public Housing	6.7	47.2	42.9	3.2
Mitchell-Lama Rental	34.4	41.3	15.1	9.2
Tenant-Based Subsidy	20.8	31.7	42.5	5.0
Stabilized/Controlled	38.9	21.5	29.9	9.7
Other Regulated	20.2	25.4	43.0	11.5
Market Rate	47.5	19.5	19.4	13.6
Group Total	36.8	24.5	28.8	10.0

2008 ACS	NH White	NH Black	Hispanic, Any Race	NH Asian/Other
Public Housing	5.4	40.4	50.9	3.3
Mitchell-Lama Rental	35.2	32.5	20.3	11.9
Tenant-Based Subsidy	19.3	31.3	43.5	5.8
Stabilized/Controlled	38.8	20.3	29.7	11.2
Other Regulated	18.1	33.6	40.8	7.5
Market Rate	45.7	20.3	20.2	13.8
Group Total	35.3	23.8	30.2	10.7

Sources: 2008 New York City Housing and Vacancy Survey, 2008 American Community Survey Public Use Micro Sample as augmented by CEO.

Note: See Table E Three for explanation of housing statuses. Rows sum to 100 percent.

Table E Seven

Comparison of Renter Housing Status by Borough, 2008 HVS & 2008 ACS

(Numbers are Group's Share of Each Housing Status Category)

2008 HVS	Bronx	Brooklyn	Manhattan	Queens	Staten Island
Public Housing	23.5	32.5	33.3	9.0	1.7
Mitchell-Lama Rental	22.3	32.5	26.4	17.0	1.9
Tenant-Based Subsidy	33.4	31.0	22.5	11.3	1.8
Stabilized/Controlled	18.8	27.8	31.0	21.5	0.8
Other Regulated	29.3	28.1	32.2	9.0	1.3
Market Rate	9.1	35.6	24.0	26.2	5.1
Group Total	17.9	31.3	27.8	20.6	2.5

2008 ACS	Bronx	Brooklyn	Manhattan	Queens	Staten Island
Public Housing	25.4	30.6	31.5	10.2	2.2
Mitchell-Lama Rental	18.5	28.9	28.6	19.4	4.5
Tenant-Based Subsidy	32.7	32.5	21.6	10.7	2.5
Stabilized/Controlled	19.5	26.1	32.3	21.6	0.6
Other Regulated	18.4	23.4	49.1	6.8	2.2
Market Rate	9.8	36.0	22.7	26.9	4.5
Group Total	18.4	30.3	28.4	20.6	2.3

Sources: 2008 New York City Housing and Vacancy Survey, 2008 American Community Survey Public Use Micro Sample as augmented by CEO.

Note: See Table E Three for explanation of housing statuses. Rows sum to 100 percent.

Table E Eight

Comparison of Renter Housing Status
by Household Composition, 2008 HVS & 2008 ACS
(Numbers are Group's Share of Each Housing Status Category)

2008 HVS	Husband & Wife with Child	Husband & Wife, No Child	Male Headed with Child	Female Headed with Child	Male Headed without Child	Female Headed without Child	Living Alone
Public Housing	7.9	10.2	2.7	25.8	2.6	11.0	39.8
Mitchell-Lama Rental	8.2	19.9	1.0	14.3	3.8	5.5	47.3
Tenant-Based Subsidy	10.9	6.9	2.1	28.8	3.8	9.1	38.4
Stabilized/Controlled	14.7	18.0	1.9	8.7	7.5	8.7	40.5
Other Regulated	6.0	15.9	0.8	11.7	3.6	6.8	55.2
Market Rate	19.3	17.9	1.9	8.7	11.3	10.4	30.5
Group Total	15.0	16.1	2.0	12.5	7.8	9.4	37.2

2008 ACS	Husband & Wife with Child	Husband & Wife, No Child	Male Headed with Child	Female Headed with Child	Male Headed without Child	Female Headed without Child	Living Alone
Public Housing	7.8	7.7	2.6	27.0	3.8	14.7	36.5
Mitchell-Lama Rental	8.4	20.0	2.2	12.1	3.3	10.0	44.1
Tenant-Based Subsidy	9.3	8.6	3.7	32.6	4.1	7.9	33.8
Stabilized/Controlled	13.4	13.7	3.0	10.9	7.6	9.7	41.7
Other Regulated	6.1	11.8	1.4	14.3	4.1	9.0	53.2
Market Rate	17.2	15.0	2.8	11.3	9.9	11.8	32.1
Group Total	13.3	13.1	2.9	15.0	7.4	10.5	37.7

Sources: 2008 New York City Housing and Vacancy Survey, 2008 American Community Survey Public Use Micro Sample as augmented by CEO.

Note: See Table E Three for explanation of housing statuses. Rows sum to 100 percent.

Shelter and Utility Expenditures, Housing Status Adjustment, and Poverty Rates

Having matched HVS to ACS household records, the next step in the housing adjustment is to compute out-of-pocket expenditures for shelter and utilities (HOOP). As noted above, this information is provided in the ACS for homeowners and non-subsidy recipient renter households, but not for those that receive subsidies. Therefore, for tenant-based subsidy recipients we use HVS variables. In the HVS, utility payments are not included in the tenant's out-of-pocket rent value. We estimate utilities by taking the difference between the gross rent and contract rent variables. This is added to out-of-pocket rent to create HOOP for tenant-based subsidy recipients.[91]

[91] In the 2008 HVS, data is missing for about 2.0 percent of renters who report receipt of a subsidy. For these households, we use HVS Monthly Gross Rent.

Below is a summary of the ACS and HVS variables used to calculate a household's out-of-pocket shelter and utilities expenditures:

Owner Households

ACS Selected Monthly Owner Costs – Sum of payments for mortgages, deed of trust, contracts to purchase, taxes, insurance, utilities, and other owner fees.

Renter Households (except for subsidy recipients and renters not paying cash rent)

ACS Gross Rent – Contract rent plus the estimated average monthly cost of utilities, if paid by the renter.

Renters with Subsidies

HVS Out-of-Pocket Rent – The monthly out-of-pocket payment made for rent by renter of unit, plus the difference between their HVS gross and contract rents.

No Cash Rent Households

Sum of ACS-reported electricity, other fuel costs, gas and water utility payments.

Table E Nine, below, compares the ACS and HVS rent variables for the matched renter households. The table shows the considerable disparity between the HVS out-of-pocket rent for households receiving tenant-based subsidies and the HVS and ACS contract rents for those households. The only other noteworthy differences between the ACS and HVS rents are for the Mitchell-Lama Rental and Other Regulated statuses which make up only 1.1 percent and 2.3 percent of all NYC households, respectively.

Table E Nine

Comparison between Monthly Rental Variables in 2008 HVS & 2008 ACS

	2008 ACS Variables		2008 HVS Variables		
	Median Monthly Rent	Median Gross Rent	Median Monthly Contract Rent	Median Monthly Gross Rent	Median Out-of-Pocket Rent
Public Housing	$410	$470	$400	$425	$400
Mitchell-Lama Rental	$770	$841	$750	$797	$736
Tenant-Based Subsidy	$790	$890	$794	$875	$260
Rent Regulated	$910	$1,028	$913	$1,020	$910
Other Regulated	$460	$520	$347	$462	$340
Market Rate	$1,200	$1,340	$1,200	$1,300	$1,200
Total	$910	$1,030	$925	$1,025	$900

Source: 2008 American Community Survey Public Use Micro Sample as augmented by CEO.
Note: See Table E Three for explanation of housing statuses.

Table E Ten compares median HOOP and housing status adjustment, by housing status, for the 2008 HVS and the 2008 ACS with the new methodology. The median housing status adjustment calculated for the HVS public housing recipients differs by only $57 from that calculated from the ACS. The differences in the median housing adjustment for other groups, however, are larger. For tenant-based subsidy recipients, for example, it comes to $877.

Table E Ten

Out-of-Pocket Expenditures & Housing Adjustment by Housing Status
2008 HVS & 2008 ACS with New Housing Methodology
(Numbers are Medians)

	2008 HVS		2008 ACS	
	Expenditures	Adjustment	Expenditures	Adjustment
Renters:				
Public Housing	$5,100	$4,966	$5,640	$4,909
Mitchell-Lama	$9,840	$385	$10,092	0 [2]
Tenant-Based Subsidy	$4,284	$5,712	$3,960	$6,589
Stabilized / Controlled	$12,360	0 [1]	$12,336	0 [3]
Other Regulated	$6,000	$3,817	$6,240	$3,706
Market Rate	$16,260	N.A.	$16,080	$0
No Cash Rent	$540	$10,306	$840	$8,106
Owners				
Owned Free & Clear [4,5]	$8,650	$1,609	$8,448	$2,374
Paying Mortgage [4,5]	$18,260	N.A.	$29,436	$0

Sources: 2008 New York City Housing and Vacancy Survey, 2008 American Community Survey Public Use Micro Sample as augmented by CEO.
Notes: See Table E Three for explanation of housing statuses. The housing statuses in this table are setup with the new hierarchy where tenant-based subsidies take precedence over any other housing category.
The Housing Adjustment for this table was calculated using a threshold that uses the 5 year average for Fair Market Rent. N.A. = not applicable.

[1] 37.2% of Stabilized/Controlled in the HVS have some housing adjustment. For those with a housing adjustment, the median was $3,081. [2] 48.9% of the Mitchell-Lama Rentals in the ACS using the new methodology have some housing adjustment. For those with a housing adjustment, the median was $4,429. [3] 39.1% of Stabilized/Controlled in the ACS using the new methodology have some housing adjustment. For those with a housing adjustment, the median was $3,829. [4] In the HVS 2,499 Owner Free and Clear and 2,799 Owner Paying Mortgage have no reported costs. They were removed from the calculations. [5] Many of the variables used to calculate the HVS owner's cost are top-coded, so the median value for the HVS owner's cost might be higher than these values.

Table E Eleven shows the effects of the housing status adjustment on the poverty rate for New York City as a whole and each of the housing status groups that receive an adjustment. The Citywide poverty rate for 2008 without the housing adjustment is 26.0 percent, which drops to 19.6 when the housing status adjustment is included.

Table E Eleven

Effect of Housing Adjustment on Poverty Rate for 2008 ACS

	Poverty Rate based on Total CEO Income	Poverty Rate without Housing Adjustment	Percentage Point Difference
Total New York City	19.6	26.0	-6.4
Renter - Public Housing	36.6	59.2	-22.6
Renter - Mitchell-Lama	20.4	28.7	-8.3
Renter - Tenant-Based Subsidy	32.6	63.3	-30.7
Renter - Stabilized/Controlled	23.0	29.1	-6.1
Renter - Other Regulated	33.4	53.2	-19.8
Renter - No Cash Rent	11.0	30.3	-19.3
Owner - Free & Clear	10.9	15.4	-4.5

Source: 2008 American Community Survey Public Use Micro Sample as augmented by CEO.
Note: See Table E Three for explanation of housing statuses.

There is a large drop in poverty, after the housing status adjustment, for public housing residents and tenant-based subsidy recipients. The large declines in poverty for residents in these housing statuses reflect the large median housing status adjustments reported in Table E Ten. Public housing households receive a median housing status adjustment of $4,909 and households that receive tenant-based subsidies receive a median adjustment of $6,589. This lowers the poverty rate for these groups by 22.6 percent and 30.7 percent, respectively. Another important group is the more than 28 percent of all New York City households that reside in units that are either rent stabilized or controlled. Although the median housing adjustment for this category is zero dollars, over 39 percent of rent stabilized/controlled units do receive a housing adjustment – with the median for those receiving adjustments of $3,829. This creates a 6.1 percentage point decline in the group's poverty rate.

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APPENDIX F:
WORK-RELATED EXPENSES

The National Academy of Sciences Panel recommended that work-related expenditures be treated as a non-discretionary expense since they are deductions in the computation of CEO income. Unfortunately, the American Community Survey does not include all of the data needed to calculate these items. What follows is a description of our method for estimating these costs. The methodology used to calculate childcare expenses for this report is different than the one used in the previous two reports.

Childcare Costs

CEO deducts the cost of childcare expenditures from income in the construction of our poverty measure. Because we are only interested in childcare costs that are non-discretionary, that is, necessary for work, we only count the expenses incurred when all parents are working. If one or both parents are not working, their childcare spending is uncounted.

In prior reports, CEO's childcare cost imputation model assigned estimated childcare expenditures using a regression procedure based on work by John Iceland and David Ribar.[92] Using data on childcare expenditures in the 2001 and 2004 Survey of Income and Program Participation (SIPP), we estimated a regression model in two steps: (1) a probit model that estimated the probability of paying for childcare; and (2) an ordinary least squares regression to predict childcare costs for the group that was classified as paying for childcare.[93]

In our current work, we have developed a different approach to this imputation, which employs a predicted mean match (PMM) of observations in the SIPP with observations in the ACS. This model uses a Tobit regression to generate expected childcare expenditure values that will be used for the match between working families (poverty units) in the SIPP and ACS.

[92] Iceland, John and David C. Ribar. "Measuring the Impact of Child Care Expenses on Poverty." Paper presented at the 2001 Population Association of America (PAA) meetings in Washington, D.C., March 29, 2001.

[93] For more detailed discussion of the previous imputation model, see Appendix F from NYC Center for Economic Opportunity. *The CEO Poverty Measure, 2005-2008*. (New York, N.Y.: Center for Economic Opportunity, 2010).

Creation of the SIPP Data Set

In order to generate a sufficient sample, we combined data from the 2001 and 2004 SIPP childcare module data sets. First, we removed foster children from this sample, given that their childcare costs are subsidized by government programs. Next, we took several steps to ensure that the unit of analysis within the SIPP was consistent with the "poverty units" CEO creates in the ACS.

The SIPP is a longitudinal data set that samples participants over a two-year period. Individual observations in the SIPP are linked by sampling unit, household address, and family. The sampling unit is the original household as of the first round of interviews. A "household" is defined, as in the ACS, as all members living within the household unit, including family members and all unrelated individuals such as lodgers, foster children, or employees. Over the two-year SIPP sampling period, some members of a sampling unit leave and form their own households at a different address. Thus, in order to form a unique identifier for each household, we concatenated the sampling unit ID (SSUID) and the household address ID (SHHADID). Further, since ID markers can be reassigned to new sampling units between survey panels, we also included panel year as part of the constructed household ID. This yielded an unweighted count of 65,378 unique households.

A "family" in the SIPP is comprised of a group of two or more persons related by birth, marriage, or adoption that reside together. Unlike the ACS, the SIPP identifies and links members of subfamilies, even if they are unrelated to the reference person. (CEO creates unrelated sub-families in the ACS).[94] Unique families within a sampling unit are identified with the RFID variable. The constructed family ID variable concatenates RFID with the constructed household ID. This yielded 71,584 unique families.

The SIPP places unmarried partners of the reference person into a different family within the household, which does not include their own children, if there are any. This is inconsistent with CEO's unit of analysis, which treats unrelated partners as equivalent to spouses and includes them and their children in the reference person's poverty unit. Thus, in order to make "families" in the SIPP commensurate with CEO poverty units, we placed unmarried partners of the reference person and their children into the reference person's family.

[94] For a more detailed explanation of CEO's "poverty unit of analysis," see Appendix A in this report.

Individual relationships to the reference person are designated in the SIPP with a household relationship variable (ERRP). All unmarried partners of the reference person (ERRP = 10) were placed in the same family as the reference person. Additionally, all children of the unmarried partner (including non-biological children) were placed in the reference person's family.

Finally, we had to address the issue of minors classified as "other non-relatives of the reference person" (ERRP = 13). For this group, we used the following rule: if there was no other parent or guardian in the household, the individual was placed in the reference person's family; otherwise, they were placed in their parent/guardian's family.

Placing unmarried partners and unrelated minors in the reference person's family reduced the number of unique families to 68,378. Removing the small number of observations without an adult reference person further reduced the sample to 68,333. Out of this number, 22.1 percent of the families (15,130) had all parents working,[95] at least one child 12 years of age or younger,[96] and lived in an urban area. This number represents the sample of SIPP families that was used for the match.

Matching SIPP and ACS Cases

Since SIPP data is measured for the reference month, the two income variables (total person income and earned income) were annualized, adjusted using the Betson equivalency scales,[97] and inflated using the ratio of the CPI index for the ACS data set year and 2004 or 2001, depending on which panel the observation came from. This data was aggregated from the person to the family level.

The SIPP divides childcare payments into eleven categories, organized by provider. These include grandparents, other relatives, family day care, day care, preschool, Head Start, other non-relative, after school sports, clubs, other after school activities, and private lessons. These payments are further subdivided in the SIPP by child, yielding a total of 80 childcare payment variables. Childcare payments were measured as the sum of all such childcare payment variables in the SIPP topical mode. These values were inflated using the CPI childcare cost index.

[95] The CEO childcare model caps childcare costs by the weeks worked of the spouse that works less. If one spouse does not work, this family will have no childcare costs. In order to reflect this in the imputation procedure, we narrowed the SIPP sample to mirror the rules we apply to ACS observations.
[96] While our previous model used families with children under 12, we increased the age range so as to be consistent with the tax code, which provides childcare tax credits for children 12 and under.
[97] See Appendix B for a description.

This SIPP data set was then used to develop a regression model to predict childcare costs for families. While CEO's previous childcare imputation model relied on a two-step process, our new imputation model employs a Tobit model, which allows us to estimate both the probability model and the OLS model in one step. Following Iceland and Ribar – as well as our previous model – we estimated separate regressions for the two-parent and single-parent sub-samples in the SIPP. The results of these regressions are presented below.

Table F One

Childcare Regression Model

	Two Parent Sample		Single Parent Sample	
Variable	Value	Standard Error	Value	Standard Error
(Intercept)	-$749	0.7	-$434	0.9
Log Income	$74	0.1	$33	0.1
Log Earned Income	-$17	0.1	-$8	0
Race	$8	0.1	$2	0.2
Children five & under	$74	0.1	$47	0.1
Children 6 to 12	-$3	0	$9	0.1
Children 13 to 17	-$37	0.1	-$29	0.1
Adults	-$54	0.1	-$42	0.1
Female Proportion of Family Income	$1	0	$1	0
Work Hours	$1	0	$1	0
Food Stamp Receipt	-$54	0.3	-$36	0.1
High School	-$14	0.2	$31	0.2
Some College	$17	0.2	$58	0.2
College	$18	0.2	$84	0.2
Post-Secondary Degree	$53	0.2	$103	0.3
Rent Property	$7	0.1	-$12	0.1
Pseudo-R^2	0.23		0.20	
N	11,308		3,822	

Source: Combined 2001 and 2004 Survey of Income and Program Participation (SIPP).

Notes: Weekly childcare expenditures in 2008 dollars. Sample comprised of SIPP families with at least one child under 13 and all parents working. Regressions were run using the SIPP person weight, WPFINWGT, of the family head. This weight functions similarly to a family weight for each adjusted family unit within the household.

These regression coefficients were used to compute predicted means for childcare expenditures in both the SIPP and ACS files. ACS observations were then matched with SIPP observations based on their predicted means, and the actual weekly childcare cost value from the SIPP observation was donated to the ACS observation. We constrained the match so that SIPP observations could only match with ACS observations that include the same number of parents. The table below compares the distributions of the SIPP childcare

values, the matched values, and the values from our previous imputation model for the subset of families with at least one working parent and at least one child 12 years of age or younger. The matched values closely reproduce the distribution of childcare costs in the SIPP and percentage of observations with zero childcare costs.

Table F Two
Weekly Childcare Payments

All Childcare Values (Weekly, 2008 Dollars)

	PMM	SIPP	Old
Mean	$51	$50	$77
Percent Zero	62.4	61.8	34.3
Percentile			
5th	$0	$0	$0
10th	$0	$0	$0
25th	$0	$0	$0
50th	$0	$0	$66
75th	$66	$68	$114
90th	$180	$171	$174
95th	$240	$248	$218

Positive Childcare Values (Weekly, 2008 Dollars)

	PMM	SIPP	Old
Mean	$137	$131	$117
Percentile			
5th	$12	$12	$45
10th	$21	$21	$53
25th	$51	$48	$67
50th	$102	$100	$96
75th	$180	$178	$142
90th	$274	$279	$206
95th	$411	$365	$259

Sources: American Community Survey Public Use Micro Sample as augmented by CEO, Combined 2001 and 2004 Survey of Income and Program Participation (SIPP).

The weekly childcare values were then adjusted to reflect annual costs. In order to calculate these costs, we followed the procedure from our previous report, which is designed to capture non-discretionary childcare spending. We multiplied the weekly value by that spouse's reported number of weeks worked and capped the childcare costs for the family by

the wages of the lower-earning spouse. The table below shows the distributions for the annualized values using the PMM procedure as well as CEO's previous imputation model.

Table F Three

Annual Childcare Values

	All Childcare Values		Positive Childcare Values	
	PMM	Old	PMM	Old
Mean	$2,235	$4,043	$6,049	$6,360
Percent Zero	63.1	36.4	N.A.	N.A.
Percentile				
5th	$0	$0	$356	$1,222
10th	$0	$0	$720	$2,350
25th	$0	$0	$2,053	$3,747
50th	$0	$3,493	$4,562	$5,293
75th	$2,737	$6,271	$8,163	$8,076
90th	$7,803	$9,618	$12,004	$11,319
95th	$10,894	$12,386	$17,826	$14,070

Sources: American Community Survey Public Use Micro Sample as augmented by CEO, Combined 2001 and 2004 Survey of Income and Program Participation (SIPP).
Note: N.A. = not applicable.

One noteworthy difference between the PMM and the previous imputation model is that the PMM values for payers are much larger at the upper end of the distribution and smaller at the lower end of the distribution. This is likely the result of the fact that the PMM, by matching the actual childcare value from the SIPP into the ACS, better captures the full distribution of spending on childcare. In contrast, the previous, regression-based imputation employs expected values, which tend to cluster more closely around the mean, reducing the influence of outliers in the imputed data.

A second important difference between the new and previous imputation models is the discrepancy in the percentage of families paying for childcare. While in the previous model 65.7 percent of families in the sample paid for childcare, the new model yields 37.6 percent, which is much closer to the value in the SIPP. This change stems from the use of matched values from the SIPP rather than regression-based estimates. In the previous model, we estimated the probability of a family paying for childcare and imputed values to families whose propensity score was above a certain threshold. The threshold we used yielded an overestimate of the percentage of families paying for childcare, at least with respect to the distribution in the SIPP data.

Table F Four

A. Childcare Values (Working Families with Children 12 & Under)

	Weekly Values				Annualized Values			
	All Values		Positive Values		All Values		Positive Values	
	PMM	SIPP	PMM	SIPP	PMM	SIPP	PMM	SIPP
Mean	$51	$50	$137	$131	$2,235	N.A.	$6,049	N.A.
Percent Zero	62.4	61.8	N.A.	N.A.	63.1	N.A.	N.A.	N.A.
Percentile								
5th	$0	$0	$12	$12	$0	N.A.	$356	N.A.
10th	$0	$0	$21	$21	$0	N.A.	$720	N.A.
25th	$0	$0	$51	$48	$0	N.A.	$2,053	N.A.
50th	$0	$0	$102	$100	$0	N.A.	$4,562	N.A.
75th	$66	$68	$180	$178	$2,737	N.A.	$8,163	N.A.
90th	$180	$171	$274	$279	$7,803	N.A.	$12,004	N.A.
95th	$240	$248	$411	$365	$10,894	N.A.	$17,826	N.A.

B. Mean Weekly Expenditures

Sub-Group	PMM	SIPP
Marital Status		
Married	$72	$55
Single	$38	$35
Age of Children		
Under 6 Only	$61	$62
6 to 12 Only	$33	$18
Number of Children		
1	$56	$47
2	$49	$57
3	$49	$45
>3	$45	$41
Pre-tax Income		
<$20,000	$15	$22
$20,000-$40,000	$28	$28
$40,000-$80,000	$42	$39
>$80,000	$98	$73

Sources: American Community Survey Public Use Micro Sample as augmented by CEO, Combined 2001 and 2004 Survey of Income and Program Participation (SIPP).

Note: N.A. = not applicable.

Impact of Childcare Costs on CEO Poverty Rate

Subtracting the cost of paid childcare from CEO income has a modest impact on our poverty rate estimates for the total population. This is because many families do not fit the criteria for non-discretionary childcare costs and because more than half of the families that do fit the criteria do not pay for childcare. As a result, childcare costs do not impact the poverty rate by more than 0.3 of a percentage point in any of the years in the study period.

Interestingly, childcare costs do not exhibit much of an impact on the poverty rate, even for the subset of families that do fall into the non-discretionary spending category. However, further sub-setting this group reveals an important distinction. Childcare costs have little impact on the poverty rate for two-parent families. In contrast, the poverty rate for single-parent families is considerably affected by childcare costs, which raises the poverty rate for this group by between 2.5 and 3.2 percentage points. This difference stems from the fact that childcare costs are only calculated for families in which all parents are working. Since this is a relatively high income group, including childcare costs does not push many two-parent families under the poverty threshold. In contrast, single-parent families have lower incomes and less flexibility because they cannot share childcare duties with a spouse or partner.

Table F Five

Impact of Childcare Costs on Poverty Rates 2005-2009

	2005	2006	2007	2008	2009
All Persons					
Total CEO Income	20.1	19.9	20.7	19.6	19.9
CEO Income without Childcare Adjust	19.9	19.6	20.4	19.2	19.5
Impact of Childcare on Poverty Rate	0.2	0.3	0.3	0.3	0.3
Persons Living in Families with Eligible Parents*					
Total CEO Income	12.3	14.0	14.9	13.7	13.1
CEO Income without Childcare Adjust	11.4	12.7	13.6	12.4	11.8
Impact of Childcare on Poverty Rate	0.9	1.3	1.4	1.4	1.3
Persons Living in Eligible One-Parent Families					
Total CEO Income	23.2	23.6	24.7	24.0	23.3
CEO Income without Childcare Adjust	20.7	20.7	21.5	21.0	20.1
Impact of Childcare on Poverty Rate	2.5	3.0	3.2	3.0	3.2
Persons Living in Eligible Two-Parent Families					
Total CEO Income	6.7	8.9	10.2	8.0	8.2
CEO Income without Childcare Adjust	6.6	8.5	9.7	7.6	7.8
Impact of Childcare on Poverty Rate	0.1	0.4	0.5	0.5	0.4

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

*Eligible working parents are individuals with at least one child 12 years or younger and who have worked in the past year. This restricted definition is used to conform with the imputation model, which only assigns childcare costs to these parents.

Commuting Costs

This report employed the same model to calculate commuting costs that has been used in our other working papers. We assumed an eight-hour work day and used the ACS variable,

"WKHP – Usual hours worked per week past 12 months" to calculate the number of days worked per week. We multiplied that by two, for a trip to and from work, and capped the number of trips per week at 14. We made fare and cost assumptions based on "JWTR – Means of transportation to work," "JWRIP – Vehicle occupancy," "POWPUMA – Place of work PUMA," and "POWSP-Place of work – State or foreign country recode," and multiplied the cost per trip by the number of trips per week to arrive at a weekly commuting cost. We then multiplied the weekly cost by the "WKW – Weeks worked in the last 12 months,"[98] to arrive at an annual commuting cost. For those driving to work, we used the IRS standard mileage rate of 55 cents per mile for 2009, a slight increase from the 2008 average rate of 54.5 cents.[99]

In 2009, there was an increase in fares (LIRR, Metro-North, and New York City Subway) and bridge and tunnel tolls by the Metropolitan Transportation Authority (MTA). The base MetroCard fare increased, as did the price for all unlimited ride MetroCards, while the bonus percentage for buying $8 or more stayed at 15 percent. In 2009, we used $1.96 for the price of a subway or bus ride.[100]

Table F Six below shows commuting modes with weekly and annual costs for 2009, and reflects these changes. The highest commuting costs were incurred by those that commuted by taxi, railroad, or drove alone. Close to half (46.4 percent) of all commuters used either the subway or bus for their commute. At a cost per trip of $1.96, this resulted in a weekly median commuting cost of $20. The annual median for commuting costs was $980.

[98] In 2008, the WKW variable was changed from the actual number of weeks to a range format. For our 2008 and 2009 calculations, we used the midpoint of each range in our calculations.

[99] The IRS issued two standard mileage rates for 2008: 50.5 cents for the first half of the year and 58.5 cents for the second half of the year. We used an average of the two for our calculations.

[100] For 2005-2008, we used a weighted average of the prices of the various MetroCard options. This was done because the price per ride for long-term unlimited ride MetroCard options were the cheapest, but they also required the largest upfront payment. In 2009, we chose to use $1.96, the price per ride for the multi-ride MetroCard, because it was by far the cheapest option and required a much smaller initial investment than the other unlimited ride options. Please see information on the MTA website: http://www.mta.info/mta/09/.

Table F Six

Transportation Mode & Costs, 2009

Mode of Transport	Number of Commuters	Percent	Weekly Cost Median	Weekly Cost Mean	Annual Cost Median	Annual Cost Mean
Drove Alone	872,442	20.6	$45	$52	$2,102	$2,520
Drove with Others	198,089	4.7	$19	$24	$902	$1,149
Bus	450,589	10.7	$20	$19	$980	$882
Subway	1,511,139	35.7	$20	$20	$980	$941
Railroad	63,693	1.5	$47	$53	$2,350	$2,487
Ferry	7,066	0.2	$0	$0	$0	$0
Taxi	41,786	1.0	$96	$92	$4,800	$4,418
Motorcycle	4,738	0.1	$36	$43	$1,804	$2,084
Bike	22,906	0.5	$0	$0	$0	$0
Walked	368,763	8.7	$0	$0	$0	$0
Worked at Home	141,393	3.3	$0	$0	$0	$0
Other Method	20,461	0.5	$20	$19	$980	$871
No Mode	525,703	12.4	$20	$17	$392	$494
All Modes	4,228,768	100.0	$20	$26	$980	$1,247
Percent Using Subway or Bus		46.4				
Cost Per Trip		$1.96				

Sources: American Community Survey Public Use Micro Sample as augmented by CEO and data from the following sources: "Regional Travel-Household Interview Survey," February 2000, New York Metropolitan Transportation Council-New Jersey Transportation Planning Authority; IRS Revenue Procedure 2008-72 established the standard mileage rates for deductible costs of operating an automobile for business purposes; The New York City Taxicab Fact Book, March 2006, Schaller Consulting.

Note: Those that commuted via "Other Method" or had no mode but did have work within the last 12 months were assigned the average cost of a subway or bus trip.

Effect of Work-Related Expenses on Poverty Rates

Panel A of Table F Seven illustrates the impact of work-related expenses on poverty rates for the years 2005-2009. The first line of this table shows the poverty rate using all the elements of CEO income. The second line provides the poverty rate using CEO income without work-related expenses. As expected, poverty rates without work-related expenses are lower (with decreases ranging from 1.4 percentage points to 1.8 percentage points) because families would now have more income available to purchase the necessities in the threshold. When looking at the poverty rate estimated after each specific work-related expense (reported on the fourth and sixth lines of the table), we see that the largest impact is from commuting costs.

Table F Seven
Impact of Work-Related Expenses on Poverty Rates, 2005-2009

A. All Persons	2005	2006	2007	2008	2009
Total CEO Income	20.1	19.9	20.7	19.6	19.9
CEO Income without Work-Related Expenses	18.6	18.1	18.9	17.8	18.0
Impact of Work-Related Expenses on Poverty Rate	1.4	1.8	1.8	1.8	1.8
CEO Income without Commuting Costs	18.9	18.4	19.2	18.0	18.3
Impact of Commuting Costs on Poverty Rate	1.2	1.6	1.5	1.5	1.6
CEO Income without Childcare Expenditures	19.9	19.6	20.4	19.2	19.5
Impact of Childcare Expenditures on Poverty Rate	0.2	0.3	0.3	0.3	0.3
B. Persons Living in Working Families with Children					
Total CEO Income	11.3	12.5	13.7	12.1	11.7
CEO Income without Work-Related Expenses	9.1	9.6	10.9	9.4	9.2
Impact of Work-Related Expenses on Poverty Rate	2.2	2.9	2.8	2.6	2.5
CEO Income without Commuting Costs	9.4	10.0	11.4	9.9	9.7
Impact of Commuting Costs on Poverty Rate	1.8	2.4	2.2	2.2	2.0
CEO Income without Childcare Expenditures	10.9	11.9	13.1	11.5	11.0
Impact of Childcare Expenditures on Poverty Rate	0.4	0.6	0.6	0.6	0.7

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

Panel B of Table F Seven shows the impact of work-related expenses on persons living in working families with children.[101] Work-related expenses have a larger impact on poverty rates for this specific population than they do for the City as a whole. The difference between the poverty rates calculated with and without the deduction for work-related expenses ranges from 2.2 percentage points to 2.9 percentage points. Unsurprisingly, given the definition of the group in Panel B, the difference in the effect of work-related expenses on poverty rates comes from both childcare and commuting costs.

[101] A working family is defined as a family that has collectively, in the past 12 months, worked the equivalent hours of at least one full-time, year-round worker (at least 1,750 hours).

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APPENDIX G:
MEDICAL OUT-OF-POCKET SPENDING

Following the National Academy of Sciences' recommendation, CEO's measure of income is net of what families spend for their medical care. Medical out-of pocket expenditure (MOOP) includes health insurance premiums, co-pays, deductibles, and health services that are not covered by insurance. Since the ACS does not report this information, it must be imputed from an outside data source.

In our previous working papers, CEO developed estimates of MOOP expenditures based on data from the Medical Expenditure Panel Survey (MEPS).[102] The data divided families in the MEPS sample into 79 cells defined by their demographic and economic characteristics. For each cell, estimates were made of MOOP expenditures for each decile of the spending distribution. We then constructed cells in the ACS with the identical demographic and economic characteristics. Next, we created a "hot-deck" imputation program to break the ACS cells into nine equally sized groups and randomly distribute each of the MEPS-derived decile values to the families within them.

In this report, we continue to use the MEPS as our donor data set. However, rather than compute a distribution of expenditures within demographic cells, we impute MOOP values using a predicted mean match. The PMM procedure better captures the full distribution of medical spending, which is particularly important given that medical spending data is highly skewed and non-normally distributed.

Developing a PMM Model for MOOP Imputation

In order to develop a predictive mean match for MOOP, CEO employed the variables used in the hot-deck imputation in our previous two reports. All variables were measured for the head of the poverty unit.[103] Income, poverty unit size, and number of children were measured as continuous variables, while the age, race, education, and working status categories were included as binary variables. Additionally, income was included as a quadratic term, as the data suggest that MOOP is a concave function of income. Health insurance status was measured as a categorical variable, with private insurance coded as one,

[102] For a detailed explanation of how we construct the MEPS data used for the imputation, see Appendix G from NYC Center for Economic Opportunity, *The CEO Poverty Measure, 2005-2008*. (New York, N.Y.: Center for Economic Opportunity, 2010).
[103] See Appendix A for a description of the CEO poverty unit of analysis.

public insurance coded as two, and no insurance coded as three. Coding the variable in this fashion yields a negative coefficient on insurance status, as the groupings are ordered from highest to lowest spending.

In 2008, the ACS began measuring insurance status, which is an important covariate in a model of MOOP. Thus, the imputation model for 2008 and onward contains insurance status, while the years previous cannot. This may create some discontinuity, over time, in our estimates. We address it by using Food Stamp receipt as a proxy for Medicaid status for the years prior to 2008. In addition, a good deal of the variation in insurance status is picked up by the full-time work and income variables (which proxy for private insurance) and the age of the poverty unit head variable (which proxies for Medicare enrollment). We tested the 2008 data using the model without insurance status and found similar outcomes to the model with insurance status, yielding a mean MOOP value of $2,867 compared with $2,895 for the model including insurance status.[104] However, as is noted in the discussion at the end of this section, this proxy method is imperfect and may impact the quality of the statistical match.

Following O'Donnell and Beard, we estimated a Tobit model, since the MOOP data in the MEPS contain a large fraction of families with zero expenditure.[105] We tested several regression models, evaluating them based on goodness of fit. Since Tobit models do not have traditional R^2 values, we relied on a pseudo-R^2 measure developed and tested in Veall and Zimmermann (1994).[106] The regression coefficients are reported in the table below.

[104] Additional information on the comparison of imputation models with and without insurance status is available upon request.
[105] O'Donnel, Sharon and Rodney Beard. "Imputing Medical Out of Pocket Expenditures using SIPP and MEPS," presented at the American Statistical Society Annual Meetings, August 2009.
[106] Veall, Michael and Klauss Zimmermann. "Goodness of Fit Measures in the Tobit Model." *Oxford Bulletin of Economics and Statistics*, 56, 4 (1994).

Table G One
MOOP Regression Model

Variable	Value	Standard Error
Intercept	1,428	1.73
Income	126	0.14
Income Squared	-2	0
Family Size	982	0.47
Number of Children	-587	0.66
Age 30-39	374	1.15
Age 40-49	932	1.13
Age 50-64	1,642	1.07
Age 65+	1,861	1.18
Insurance Status	-1,404	0.51
Work Full-Time	-445	0.76
Black	-1,117	1.04
Hispanic	-967	1.11
Asian	-765	1.72
Other Race/Ethnicity	-596	2.28
High School	511	1.04
Bachelor's Degree or Greater	931	1.16
Pseudo R^2	0.25	

Source: 2007 Medical Expenditure Panel Surveys inflated to 2008 prices using the CPI Medical Index.
Notes: Income measured as household income divided by 10,000. All variables significant at $p < 0.001$.

The final model had a pseudo-R^2 of 0.250, which is relatively low. This is likely due to the fact that the ACS does not have measures of individual and family health status, which contribute greatly to the variation in MOOP. However, if the matching variables capture the systematic determinants of healthcare spending, then we can regard individual health status as randomly distributed. Conditional on the matching variables, a matched pair of cases should be equally likely to suffer from ill or enjoy good health. Thus, even though the model leaves a good deal of variance unexplained, that unexplained variance should be unrelated to the distribution of MOOP values across the two data sets.

ACS and MEPS cases were matched using the regression model, based on their predicted means. When cases were matched, the actual MOOP value from the MEPS case was donated. Since there are slightly less than half as many donor cases in the MEPS as cases in the ACS, we allowed MEPS observations to donate their values to multiple ACS observation. We also applied a rule that a single MEPS case could not donate more than three times. This ensured that all ACS cases could be matched, and helped preserve the full

distribution of MOOP values from the MEPS. After some experimentation, we imposed a further restriction on the match: MEPS and ACS observations could only be paired if they had the same health insurance status and the reference person of the poverty unit was or was not elderly. We did this because initial testing of the imputation model without these conditions yielded poor matches for certain sub-groups. Adding these matching criteria overcame this problem.

The following Table G Two shows the distribution of MOOP values in the MEPS, the PMM values, and the hot-deck matched values for 2008. Both the PMM and hot-deck values track the distribution of MOOP values in the MEPS. However, the PMM outperforms the hot-deck in the higher and lower ends of the distribution, as well as the mean. For example, the mean MOOP value in the MEPS data is $3,096. The PMM estimate for the mean MOOP value is $2,895, which is closer to the MEPS estimate than the hot-deck estimate of $2,726.

Table G Two
Comparison of MOOP Distributions

	MEPS	PMM	Hot-Deck
Mean	$3,096	$2,895	$2,726
Sum (Thousands of Dollars)	N.A.	$9,487,853	$8,851,334
Percent Zero	6.2	6.5	4.2
Percentile			
5th	$0	$0	$11
10th	$55	$31	$142
25th	$570	$448	$732
50th	$1,980	$1,711	$2,049
75th	$4,283	$3,893	$3,984
90th	$7,302	$6,773	$6,479
95th	$10,123	$9,316	$8,243

Sources: American Community Survey Public Use Micro Sample as augmented by CEO, 2007 Medical Expenditure Panel Surveys inflated to 2008 prices using the CPI Medical Index.
Note: N.A. = not applicable.

Using the 2008 MEPS for Imputation

In November 2010, the Agency for Healthcare Research and Quality released the 2008 MEPS. Originally, we had intended on using this data set for the 2008 and 2009 ACS samples. However, closer inspection of the data suggested that using the 2007 MEPS data for imputation would lead to a distribution of matched values that more closely replicated the actual distribution of MOOP payments in 2008 than if we used the 2008 MEPS.

Though this finding is counterintuitive, it stems from the fact that the imputations must be done using unweighted data. Surveys such as the MEPS, however, are designed to be analyzed with sampling weights; applying them yields results that are representative for the target population as a whole. The difference between the 2007 and 2008 MEPS is that the weights play a larger role in the 2008 data. The table below shows the difference between the unweighted and weighted MOOP values for the 2007 and 2008 MEPS.

Table G Three
Comparison of Weighted & Unweighted MEPS Data

	2007 MEPS		
	Unweighted	Weighted	Difference
Mean	$2,823	$3,050	$227
Percentile			
5th	$0	$0	$0
10th	$30	$56	$26
25th	$430	$615	$185
50th	$1,710	$1,961	$251
75th	$3,869	$4,132	$263
90th	$6,718	$7,054	$336
95th	$9,288	$9,737	$449

	2008 MEPS		
	Unweighted	Weighted	Difference
Mean	$2,709	$3,096	$387
Percentile			
5th	$0	$0	$0
10th	$12	$55	$43
25th	$321	$570	$249
50th	$1,573	$1,980	$407
75th	$3,704	$4,283	$579
90th	$6,721	$7,302	$581
95th	$9,319	$10,123	$804

Sources: 2007 and 2008 Medical Expenditure Panel Surveys. 2007 MEPS inflated to 2008 prices using the CPI Medical Index.

The unweighted MOOP values are smaller for the 2008 MEPS than the 2007 MEPS. In contrast, the weighted values are larger for the 2008 MEPS. This latter pattern is in line with data on medical prices such as the CPI Medical Index, which indicates 3.7 percent growth in consumer medical costs from 2007 to 2008. The result of this anomaly is that when the data is imputed to the 2008 ACS, the 2007 MEPS yields more accurate data for 2008 medical spending than does the 2008 MEPS. The following table shows the matched

values using the 2007 and 2008 MEPS compared against the 2008 MEPS weighted data. The distribution of matched values in the ACS using the 2007 MEPS is somewhat closer to the weighted 2008 MEPS than the matched values using the 2008 MEPS. Using the 2007 MEPS yields a mean MOOP value of $2,895 versus $2,803 using the 2008 MEPS. The mean in the MEPS is $3,096.

Table G Four

Comparison of Matched MOOP Values
2007 & 2008 MEPS

	ACS 2008 Imputed with 2007 MEPS*	ACS 2008 Imputed with 2008 MEPS	MEPS 2008 weighted
Mean	$2,895	$2,803	$3,096
Percent Zero	6.5	7.5	6.2
Percentile			
5th	$0	$0	$0
10th	$31	$20	$55
25th	$448	$377	$570
50th	$1,711	$1,687	$1,980
75th	$3,893	$3,854	$4,283
90th	$6,773	$6,816	$7,302
95th	$9,316	$9,447	$10,123

Sources: American Community Survey Public Use Micro Sample as augmented by CEO, 2007 and 2008 Medical Expenditure Panel Surveys.
*MEPS 2007 was inflated to 2008 prices using the CPI Medical Index.

The distribution of matched values in the ACS using the 2007 MEPS is also closer to the weighted 2008 MEPS when looking at population subgroups by age and insurance status. In particular, the imputed mean values for both elderly and non-elderly poverty units on private insurance is $200 larger using the 2007 MEPS when compared with the 2008 MEPS, drawing them much closer to the original 2008 MEPS. This is particularly important, as the 2007 MEPS data seems to better capture the impact of the upper tail of the expenditure distribution on the distribution of MOOP in the ACS.

Table G Five
Comparison of Matched MOOP Values Using 2007 & 2008 MEPS by Subgroups

NYC, ACS 2008 with 2007 MEPS

	Non-Elderly			Elderly	
	Private	Public	Uninsured	Private	Public & Uninsured
Mean	$3,708	$859	$1,109	$4,174	$2,170
Median	$2,498	$222	$222	$3,124	$1,340

NYC, ACS 2008 with 2008 MEPS

	Non-Elderly			Elderly	
	Private	Public	Uninsured	Private	Public & Uninsured
Mean	$3,544	$907	$1,114	$3,900	$2,183
Median	$2,421	$138	$215	$2,825	$1,312

2008 MEPS, Weighted

	Non-Elderly			Elderly	
	Private	Public	Uninsured	Private	Public & Uninsured
Mean	$3,748	$883	$1,187	$4,367	$2,844
Median	$2,616	$166	$240	$3,120	$1,892

Sources: American Community Survey Public Use Micro Sample as augmented by CEO, 2007 and 2008 Medical Expenditure Panel Surveys.

Impact of MOOP on the CEO Poverty Rate

Including MOOP in our calculation of CEO income has a substantial impact on the overall poverty rate, ranging from three to four percentage points. The impact of MOOP is most pronounced for people living in poverty units headed by elderly individuals. For these people, MOOP increases the poverty rate by roughly six and seven percentage points.

The impact of MOOP on the overall poverty rate is smaller in 2008 and 2009 than for the previous years, though the decline is less pronounced for people living in poverty units headed by elderly individuals. The overall decrease may simply reflect the fact that the inclusion of insurance status in the 2008 and 2009 ACS allows for a better statistical match. Since elderly individuals, however, have less variation in insurance status (very few seniors have no insurance and a large fraction is on public insurance), the additional information has a small effect on the match for this group.

Table G Six

Impact of MOOP on Poverty Rates 2005-2009

A. All Persons	2005	2006	2007	2008	2009
Total CEO Income	20.1	19.9	20.7	19.6	19.9
CEO Income without MOOP Adjust	16.7	16.3	16.7	16.4	16.8
Impact of MOOP on Poverty Rate	3.4	3.6	4.0	3.2	3.1
B. Persons Living in Families with Elderly Household Head					
Total CEO Income	23.7	22.9	23.1	23.5	22.6
CEO Income without MOOP Adjust	16.9	16.6	16.7	17.7	16.5
Impact of MOOP on Poverty Rate	6.9	6.4	6.3	5.8	6.1

Source: American Community Survey Public Use Micro Sample as augmented by CEO.

APPENDIX H:
ACCURACY OF THE DATA

The principal data set for CEO's poverty estimates is the American Community Survey (ACS) Public Use Micro Sample (PUMS). The ACS is designed to sample one percent of the households in the U.S. each year. The PUMS is a subset of the full ACS sample. It provides information collected from roughly 25,000 households in New York City annually. Because the ACS is a survey, it is subject to two types of error: nonsampling error and sampling error.

Nonsampling Error: Nonsampling error is the error within survey data that is not specifically associated with the statistical sampling procedures of the sample data. Nonsampling error can occur because of erroneous responses by survey respondents, for example. Another source of nonsampling error can come from mistakes in the processing of the data by the Census Bureau, such as when data are edited or recoded.

Nonsampling error can affect the data in two ways; either randomly, which increases the variability of the data, or systematically, which introduces bias into the results. To minimize bias in the survey, the Census Bureau conducts extensive research of sampling techniques, questionnaire design, and data collection and processing procedures. For instance, after identifying a systematic underreporting of Food Stamp receipt and benefit dollar values in the ACS, the Census Bureau researched methods to increase the reported participation rate. The Census Bureau concluded, through this research, that changing the wording of the Food Stamp question to include "Food Stamp benefit card," as well as not asking about the Food Stamp benefit value, would significantly increase the number of households responding that they received Food Stamps.[107]

Sampling Error: Sampling error occurs in the ACS, as in other sample survey data, because inferences about the full population (such as the poverty rate for New York City) are derived from a subset of it (the poverty rate for the ACS sample). Another sample drawn from the same population would provide a different estimate of the poverty rate. The sampling error is estimated by the standard error, which can be thought of as a measure of

[107] John Hisnanick, T. Loveless, and J. Chesnut. U.S. Bureau of the Census: *2006 American Community Survey Content Test Report H.6 - Evaluation Report Covering Receipt of Food Stamps.* January 3, 2007: http://www.census.gov/acs/www/AdvMeth/content_test/H6_Food_Stamps.pdf.

the deviation of an estimate drawn from one sample from the average estimate of all possible samples.

For this report, CEO employed the replicate weight method recommended by the Census Bureau to compute direct standard errors for our estimated poverty rates. The standard errors provide a measure of sampling error and some types of non-sampling error.[108] Using the standard errors, we tested the statistical significance of differences and changes in the report's poverty rates at the 10 percent level of significance. In the report's tables, we highlight, in bold, statistically significant differences between poverty rates.

An additional source of error in the data results from CEO's need to impute information on items such as the value of Food Stamp benefits, housing status, childcare expenditures, and medical out-of-pocket expenditures from other survey data into the ACS sample. We do not, however, account for the imputation error in this report.

[108] U.S. Bureau of the Census. 2009. PUMS Accuracy of the Data (2008). Available at: http://www.census.gov/acs/www/Downloads/2008/AccuracyPUMS.pdf.

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