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1. Introduction

On signing the Food Stamp Act of 1964, President Johnson noted that “as a permanent program, the food stamp plan will be one of our most valuable weapons for the war on poverty” (Johnson, 1964). From a humble beginning of 2.9 million recipients per month and \$228 million in benefits in 1969 (earliest national figures), the program has grown to serve 47 million persons with benefits of over \$74.6 Billion in 2012 (USDA, 2013a). In the late 60’s and early 70’s, when the average monthly benefit was under \$20 per month per month, we did not record the effects of the then ‘Food Stamp’ program on poverty. But the program was already having major positive impacts on mothers’ health and then birth outcomes for poor people, especially for blacks and then longer run gains in health and school achievement (Almond, Hoynes and Schanzenbach, 2011; Hoynes, Schanzenbach and Almond, 2012) .

The annual effects of SNAP on poverty itself were first estimated in the late 1970s and then regularly after the Census Bureau began to record recipients and amounts of food stamps in 1979 (e.g., see U.S. Bureau of Census, 1982). This paper follows in that tradition and examines SNAP’s effectiveness as an antipoverty weapon. We begin with a brief overview of the program. We then estimate the extent to which SNAP reduces the prevalence of poverty, and also its depth and severity. Finally, we discuss the primary challenge to getting an accurate measure of SNAP’s antipoverty effect, and how the design of the program influences that effect.

2. SNAP: Eligibility, Participation, and Benefits

SNAP is the largest U.S. food assistance program, providing 46.6 million individuals with an average monthly benefit of \$133 in 2012. In contrast with many other programs serving low-income households, SNAP eligibility is not limited to specific demographic groups based on

family structure, age, or disability status, so benefits reach a broad range of disadvantaged households.

SNAP benefits are federally funded, but the program is administered in partnership with the States. For most of its history, the program has had nationally uniform program eligibility standards and benefit levels. Federal eligibility rules stipulate that households must meet three financial criteria to be eligible for SNAP: the gross income, net income, and asset tests.¹ A household's gross income before taxes in the previous month must be at or below 130 percent of the poverty guidelines (\$2,069 per month in fiscal year 2013 for a three-person household).² In addition to the gross income test, a household must have net monthly income at or below the poverty line. Net income is calculated by subtracting a standard deduction amount and certain expenses from gross income.³ Finally, income-eligible households must have assets less than \$2,000 (\$3000 for households with someone over age 60 or disabled).

Over the past decade, States have been granted increased flexibility in how they administer SNAP, in an effort to increase program access and reduce administrative burden (GAO, 2002). States have used this flexibility to modify the gross income and asset tests faced by SNAP applicants. For example, by 2011, almost all States had either removed the federal liquid asset test for most SNAP households, or at least exempted the value of all household vehicles from the asset test (USDA, 2013b).⁴ In addition, a majority of states have increased the gross income limit above 130 percent of the poverty guidelines, to be in alignment with the eligibility guidelines in their cash assistance programs. States have also implemented a number of program

¹ SNAP eligibility guidelines are available at: http://www.fns.usda.gov/snap/applicant_recipients/eligibility.htm

² Households with someone over the age of 60 are exempt from the gross income test.

³ Net income is equal to gross income minus a number of deductions. These deductions are a standard deduction, as well as deductions for labor market earnings (up to 20% of earnings), child care expenses, expenses for medical care of disabled dependents, and shelter costs in excess of 50 percent of a household's net income.

⁴ The federal asset test requires that the market value of a vehicle over \$4,650 be counted as part of the household's assets.

changes to simplify the process to apply for and remain on SNAP (GAO, 2002). Many of the changes are designed to increase SNAP participation among working poor households.

While the gross income limit and asset test now vary across States, the SNAP net income limit and benefit formula remain nationally uniform. A household's SNAP benefit is a function of the maximum SNAP benefit amount (also known as the benefit guarantee) and the household's net income. A SNAP household, also called an assistance unit, is defined as either a person living alone or a group of people who buy and share food together most of the time. Households with no net income receive the maximum SNAP benefit, based on the estimated cost of a nutritionally adequate diet for a given household size. For a three-person household in 2012, the maximum benefit is \$526 per month. The SNAP benefit reduction rate is 30 percent, reflecting the expectation that a household can contribute 30 percent of its own income to its food budget. Under this progressive benefit structure, the poorest SNAP households receive the largest benefits.

Indeed, monthly administrative data from USDA show that SNAP benefits are targeted to the poorest of poor households. As shown in Table 1, households in deep poverty (with gross income below 50 percent of the poverty guidelines) received over half of SNAP benefits in 2011. SNAP eligibility extends to households with monthly gross income above the poverty line, but their benefit levels tend to be relatively low. Table 1 indicates that about 16.6 percent of SNAP households had monthly gross income above the poverty guidelines, and these households received less than 9 percent of SNAP benefits.

Recently, concerns have been raised that changes in SNAP administration have resulted in the program being less targeted to the poor (Armor and Souza, 2012; Rector and Bradley, 2012). We do find some evidence that a higher percentage of SNAP benefits were received by

households above the poverty line in 2011 (8.6 percent) than in 2000 (4.3 percent), as shown in Figure 1. However, only a small percentage of total SNAP benefits (1.4 percent) in 2011 were received by households with monthly gross incomes above 130 percent of the poverty line.

It is important to note there are a number of measurement issues that must be considered when assessing the targeting efficiency of a program, such as the appropriate definitions of income and household. For example, the USDA Quality Control data records monthly, rather than annual, income, since monthly income is the basis for SNAP eligibility. The very idea of administering a program to address hunger and food insecurity with annual accounting periods is nonsensical. And because households are more likely to turn to SNAP during months of low income, we would expect to see a higher percentage of SNAP benefits received by households above the poverty line when income is measured on an annual basis.

Table 1 also illustrates the wide range of demographic groups that receive SNAP. Almost half of SNAP households contain children. Single-adult households comprise about half of SNAP households with children, but households with a married head also participate. Married-head households make up 9 percent of SNAP households and receive 15.5 percent of benefits. SNAP also serves elderly and disabled individuals. Roughly one in six SNAP households contain an elderly person, while one in five contains a nonelderly disabled person.

While SNAP provides an important safety net for children, elderly, and the disabled, the program has also become an increasingly important support to the working poor. In 2011, almost one-third of all SNAP households contained an adult who was working during the month of SNAP receipt, up from one-fifth of SNAP households in 1994 (Cody and Castner, 1999). Rosenbaum (2013) uses the same USDA administrative data to focus on households with children that contain a nondisabled working-age adult and finds that the percent who were

working during the month of SNAP receipt increased from less than 30 percent in 1990 to over 50 percent in 2011. Using household survey data, Rosenbaum (2013) shows that over 80 percent of SNAP households with children that contain a nondisabled working-age adult have earnings during the year before or after SNAP receipt. In contrast, the percent of SNAP households receiving TANF cash benefits has declined dramatically since the 1996 welfare reform legislation, and in 2011, only 7.6 of SNAP households received income from TANF.

There are two demographic groups whose SNAP eligibility was limited by the 1996 welfare reform legislation: (1) legal noncitizens and (2) nondisabled working-age adults without children. Subsequent legislation has restored the SNAP eligibility of many legal noncitizens, including all legal noncitizen children. However, adult and elderly legal noncitizens continue to face a number of restrictions to their SNAP eligibility, including a 5-year residency requirement. Legal noncitizens make up 4 percent of SNAP recipients and receive 4 percent of total SNAP benefits. Nondisabled working-age adults without children who did not meet SNAP work or training requirements were limited to three months of SNAP eligibility over a 3 year period. These restrictions were lifted as part of the 2009 stimulus legislation, and in 2011, this group comprised about 10 percent of the SNAP caseload, up from 4.5 percent in 2001.

3. Does SNAP Reduce Poverty?

Historically, the SNAP caseload has been very responsive to changes in the number of poor Americans, as shown in Figure 2, which is consistent with the well-established countercyclical nature of the program (Mabli et al., 2009; Ziliak et al., 2003). The extent to which SNAP reduces poverty is an important indicator of the program's effectiveness. In this section, we focus on SNAP's effect on the poverty rate. We build on previous research that has examined the

effect of SNAP benefits, as well as other near-cash government benefits, on the poverty rate (Citro and Michael, 1995; Iceland et al., 2001; Garner and Short, 2010; Blank, 2008; Ziliak, 2011; Tiehen, et al., 2012). We first estimate SNAP's effect on the official poverty rate, which allows us to examine the program's antipoverty effect over a 24 year period. While one can argue that adding refundable tax credits and other types of benefits to family income is not consistent with the official poverty measure threshold, adding SNAP benefits get right to the heart of the official threshold, which is based on income multiples of a food budget.

We then estimate SNAP's effect on the research Supplemental Poverty Measure (SPM). The SPM, which serves as a complement to the official poverty measure, was developed to provide a more comprehensive view of family well-being. It adjusts family income for taxes paid, in-kind benefits received, and refundable tax credits, and constructs a poverty line based on actual consumption of food, clothing and shelter, adjusted for regional differences in the cost of living (Short, 2011) The Census Bureau released the first report on the SPM in November 2011, covering the 2010 calendar year, and provides data to calculate the SPM from 2009 to 2011. We provide more details on the official and SPM poverty measures in the following sections.

3.1. The Current Population Survey Data

To measure the effect of SNAP on poverty, we use data from the Annual Social and Economic (ASEC) Supplement to the Current Population Survey (CPS). In our primary analysis, we use 24 years of CPS-ASEC data, which provides us with estimates of poverty and SNAP benefit levels from 1988 to 2011. The CPS is administered monthly by the Census Bureau for the Bureau of Labor Statistics and collects data from a nationally representative sample of households on employment, unemployment, earnings, occupation, and hours of work.

Respondents to the CPS provide information on several different sources of income, including noncash income sources such as SNAP.

We use the CPS because it is the data source for official U.S. poverty estimation and for the Research Supplemental Poverty Measure (SPM). A shortcoming of the CPS is that, as recently documented by Meyer et al. (2009), it underestimates the number of SNAP recipients and the value of SNAP benefits. We find that, in 2011, the reported average monthly individual participation in the CPS is 69.7 percent of the average monthly individual participation in SNAP administrative data and the reported total benefits in the CPS are 53.4 percent of administrative totals. We consider the implications of correcting for this measurement issue in our discussion of the results.

3.2. Official poverty

The official U.S. poverty measure is based on a comparison of a family's income relative to its needs. The income measure includes all pre-tax income, such as earnings, unemployment compensation, and Social Security payments. It also includes cash benefits from means-tested transfer programs such as Supplemental Security Income (SSI) and TANF. The measure does not include unrealized capital gains, and because it is a pre-tax measure, it does not include payroll taxes or income taxes paid, or Child Tax Credit (CTC) or Earned Income Tax Credit (EITC) payments. The family income measure does not include any noncash benefits such as SNAP benefits, housing assistance, or Medicaid. The family-income measure includes income of all family members in a household, but excludes income of non-relatives, such as unmarried cohabitators. A family's need is measured by the poverty threshold, based on a cost-of-basic-needs methodology. The U.S Federal poverty thresholds vary for persons of different ages and families of different sizes. In 2012 for example, the poverty threshold was set at \$11,945 for an

individual under 65 years of age, \$15,825 for a two-person family with one child and one adult, and \$23,283 for a family with two adults and two children.⁵ If family income is less than the poverty threshold, then all members of the family are considered poor.

Since SNAP benefits are not included in the family income measure for official U.S. poverty estimation, the program's role in reducing poverty is not reflected in official poverty statistics. To understand the effect of SNAP on poverty, we examine how supplementing income with SNAP benefits affects the official poverty rate. Figure 3 displays the official poverty rate from 1988 through 2011, as well as the poverty rate if SNAP benefits are included in family income.

It is clear from Figure 3 that the antipoverty effect of SNAP is stronger when poverty rates increase during difficult economic conditions, consistent with the countercyclical nature of the program. Figure 3 also shows an increase in the antipoverty effect of SNAP after the onset of the Great Recession, and particularly during the period since 2009 when the ARRA has increased SNAP benefits and removed eligibility restrictions on jobless adults. For example, in 2011, the official poverty rate was 15.0 percent, while accounting for SNAP benefits in family income reduced the poverty rate to 13.8 percent. This 8 percent reduction in the poverty rate means that SNAP lifted approximately 3.7 million people out of poverty in 2011.

SNAP benefits have an even stronger effect on those in deep poverty, whose family incomes are below 50% of the poverty line. In 2011, 20.4 million Americans (6.6 percent of the population) lived in deep poverty. SNAP reduced the rate of deep poverty in 2011 by 16.6 percent, lifting 3.4 million people out of deep poverty. Given that over half of SNAP benefits go to households in deep poverty, it is not surprising that SNAP's antipoverty effect is stronger

⁵ For a complete listing of the poverty thresholds for individuals and families of various sizes, see the U.S. Census Bureau's web page on poverty at: <http://www.census.gov/hhes/www/poverty.html/> .

among this group. Recent research finds even stronger antipoverty effects of SNAP among households with children in extreme poverty, whose cash income does not exceed \$2 per person per day. SNAP benefits reduced the rate of extreme poverty among households with children by 48 percent in mid-2011, helping to curtail otherwise large increases in extreme poverty between 1996 and 2011 (Shaefer and Edin, 2013).

While SNAP's benefit structure ensures that benefits are targeted to those in deep poverty, the program is not targeted to specific demographic groups. Table 2 provides some evidence on how the antipoverty effect of SNAP varies across demographic subgroups. The reduction in the poverty rate due to SNAP is largest among children, relative to adults and the elderly. SNAP benefits reduce poverty more among Blacks than among other racial/ethnic groups. The poverty reduction due to SNAP among Hispanics (7.0 percent) was somewhat lower than the national average in 2011, although the official poverty rate among Hispanics is similar to the rate among Blacks. This may be partially a result of the legal noncitizen eligibility restrictions in SNAP, as Table 2 also shows that SNAP has a much smaller effect on the poverty rate of noncitizens than of citizens. Interestingly, SNAP has a stronger effect on the poverty rate of employed adults than on unemployed adults. Although we saw in Table 1 that employed adults make up a relatively small proportion of SNAP participants, they are more likely to have income close to the poverty line than other participants and therefore are more likely to be lifted over the poverty line by their SNAP benefits. Thus, the program is operating as an important support to the working poor. SNAP also has a strong effect on the poverty rate of individuals in two-parent families, relative to those in single-parent families. Although there is variation in the antipoverty effect of SNAP across demographic subgroups, the overall finding from Table 2 is that the program reduces poverty among a broad range of disadvantaged populations.

3.3 The Supplemental Poverty Measure

Official U.S. poverty estimates do not account for SNAP and other in-kind benefits in family income. In 1995, Congress asked the National Academies to address this and other shortcomings of the official poverty measure. The National Academies panel recommended that the poverty thresholds be based on a typical low income family with children's expenditures for food, clothing, shelter, and a "small amount for other needs" for things like personal items and household supplies (Citro and Michael, 1995). It also recommended using a disposable income concept to measure family resources. Such a measure would more accurately reflect the income available to a family by adding the value of in-kind benefits and any tax credits to cash income and subtracting taxes owed and other necessary expenses, such as work-related child care and transportation and medical out-of-pocket expenses. The SPM is largely based on recommendations of the 1995 National Academies panel, with some modifications based on research and data developed since then.

The SPM is available from 2009 to 2011. We estimate the effect of SNAP on poverty using the SPM, and the results are shown in Figure 4. Under the SPM, 16.1 percent of Americans were considered to be poor in 2011, compared with the official poverty rate of 15.2 percent. If SNAP benefits were excluded from income, the SPM poverty rate would have been 17.6 percent. The difference in SPM poverty rates due to SNAP alone is almost 10 percent or 4.6 million fewer poor people (Short, 2012). The antipoverty effect of SNAP using the improved SPM measure is somewhat larger than the effect of SNAP using the official poverty measure, and further validates the importance of accounting for SNAP's role in reducing poverty.

4. Is SNAP more effective at reducing the depth and severity of poverty than the prevalence of poverty?

The SPM represents a major advance in the measurement of U.S. poverty and the role of government assistance in reducing poverty. However, even when in-kind benefits are included as income in poverty estimates, a simple poverty rate--how many people are living below the poverty threshold--may not show how hardship is reduced by government programs with progressive benefit structures, such as SNAP. Recent studies have paid greater attention to how government transfers have decreased the aggregate poverty gap, or the sum of the differences between the poverty line and the incomes of the poor (Scholz et al. 2009; Ziliak 2005, 2008), and others have examined trends in the distribution of government transfers to different income classes and demographic groups among the poor (Ben-Shalom, 2013; Moffitt and Scholz 2010; Ziliak 2008).

To get a broader understanding of the effect of SNAP on poverty, we examine how supplementing income with SNAP benefits affects the poverty gap and squared poverty gap poverty indices. These measures are from the Foster-Greer-Thorbecke (1984, hereafter referred to as FGT) family of poverty indices. The poverty gap index measures the depth of poverty and is defined by the mean distance below the poverty threshold, where the mean is formed over the entire population (the non-poor are counted as having zero poverty gap). The second measure is the squared poverty gap index, which provides a measure of the severity of poverty, and is defined as the mean of the squared proportionate poverty gaps.

The FGT class of poverty indices also referred to as P_α , can be represented as:

$$(1) \quad P_\alpha = 1/n \sum_i I(y_i < z) [(z - y_i)/z]^\alpha$$

where n is the sample size, i subscripts the individual or family, y is income, z is the poverty threshold, and I is an indicator function which takes the value of one if the statement is true and zero otherwise. When $\alpha=0$, the resulting measure is the proportion of people in poverty, or P_0 .

When $\alpha=1$, the FGT index results in the poverty gap index, or P_1 and the squared poverty gap index (P_2) results when $\alpha=2$.

The usefulness of these measures can be illustrated by considering a transfer of money from a rich person to a poor person that is not large enough to move the poor person above the poverty threshold. This transfer has no effect on the poverty rate, but the poor person is better off and this welfare improvement is reflected in a reduction of both the poverty gap and squared poverty gap indices. As another example, a transfer of income from a poor person to a poorer person will not alter either the headcount or the poverty gap index, but it improves the distribution of income of the poor and this change is reflected by a reduction of the squared poverty gap index.⁶

The difference between the poverty-gap index and the squared-poverty-gap index can be illustrated by considering two possible transfers of equal amounts from a non-poor person. The first is a transfer to a poor person whose income is equal to 50 percent of the poverty threshold and the second is a transfer to a poor person with higher income, equal to 75 percent of the poverty threshold. Again, the transfers are not enough to lift either person above the poverty threshold and therefore neither transfer will reduce the poverty rate. Since the transfers are of equal amounts, they will each reduce the poverty-gap index by the same amount. However, the squared poverty gap will be reduced more by the first transfer, which is received by a relatively poorer person, than by the second transfer. In general, the lower the income of the poor person who receives a transfer from a non-poor person, the greater will be the effect on the squared-poverty-gap index.

These examples point to an important reason to consider the poverty gap and squared poverty gap indices in addition to the commonly reported poverty rate. As discussed above,

⁶ Unlike the Sen (1976) or Kakwani (1980) poverty indices, the squared poverty gap index also satisfies "subgroup consistency" which means that if poverty increases in any subgroup, and does not decrease elsewhere, then aggregate poverty must increase (Foster and Shorrocks, 1991).

SNAP benefits are inversely related to net income, and as a consequence, adding benefits to income will raise only a small subset of recipients above the poverty threshold. However, the progressive benefit delivery design will be relatively more effective at reducing the depth and severity of poverty than at reducing the prevalence of poverty.

To examine the efficacy of SNAP benefits in reducing poverty one needs both measures of poverty and measures of their sampling variance, in order to know if changes in poverty are statistically significant or simply an artifact of the sampling procedure. We estimate the variance of P_α , using an estimation technique that accounts for the fact that the CPS data are not derived from a simple random sample.⁷

Our next step is to examine the impact of SNAP on poverty, by adding SNAP benefits to family income as in:

$$(2) \quad P'_\alpha = 1/n \sum_i I(\{y_i + fsb_i\} < z) [(z - \{y_i + fsb_i\})/z]^\alpha$$

where fsb_i is the value of SNAP benefits for family i , and all other terms are defined as in equation 1.

The percentage declines in the rate, depth, and severity of poverty from including SNAP benefits are calculated as $[(P_\alpha - P'_\alpha)/P_\alpha] * 100$. The percentage declines from 1988 to 2011 are displayed in Figure 5. The figure shows that the reduction in the poverty rate fails to capture much of the poverty alleviation properties of SNAP benefits. The reductions to both the depth and severity indices due to SNAP benefits were much larger than the reductions to the poverty rate. For example, from 2000 to 2011, supplementing income by the value of SNAP benefits had the effect of reducing the poverty gap index by an average of 11.0 percent and reducing the squared poverty gap index by an average of 14.0 percent. These poverty reductions are much

⁷ See Tiehen et al. (2012) for details.

greater than when just considering the change in the poverty rate, which was reduced by the inclusion of SNAP benefits by an average of 4.9 percent during the 2000-2011 period.

While SNAP's effect on the depth and severity of poverty is much stronger than its effect on the poverty rate, the changes over time are similar, showing the protective effect of the program during economic downturns. It is somewhat surprising to see, however, that the percentage declines in the depth and severity of poverty are somewhat lower in 2011 than in 1994, even though the 2011 SNAP caseload is nearly double the caseload in 1994. One possible explanation for this is the decline in the reporting rates of SNAP benefits over time, as documented by Meyer et al (2009), which finds that the reporting rate of SNAP benefits in the CPS declined from 72.1 percent of administrative totals in 1988 to 53.9 percent in 2007.

SNAP's effect on children is especially important, given that children experience higher rates of poverty than the overall population, and the poverty depth and severity indices are also higher for children than for the overall population (Tiehen et al, 2012). Figure 6 compares the average annual reductions in poverty due to SNAP among children, adults, and elderly from 2000 to 2011. The evidence that SNAP is more effective at reducing the depth and severity of poverty than the prevalence of poverty is even stronger when we consider poor children. From 2000 to 2011, for example, SNAP reduced the child poverty rate by an average of 6.2 percent, while reducing the depth index by 16.4 percent and the severity index by 22.3 percent. The percent declines in poverty are the smallest among the elderly, and are the annual declines are not statistically significant in most years. In contrast with the results for the overall population, SNAP's effect on the depth and severity of elderly poverty are not greater than its effect on the rate of elderly poverty. This likely reflects the fact that SNAP take-up is lower among the

elderly than among children, and that the severity of poverty, before accounting for SNAP benefits, is lower among the elderly than among children.

5. How Does the Design of SNAP Influence Its Antipoverty Effect?

We consider two features of the design of SNAP that have been subject to policy debate and that would be expected to influence the antipoverty effect of the program. The first feature is that the SNAP maximum benefit level is uniform across most of the United States (although it is higher in Alaska and Hawaii). The SNAP maximum benefit level is intended to cover the cost of a nutritionally adequate diet for a given household size. It is difficult to justify a uniform maximum SNAP allotment, given the growing body of evidence of substantial regional variation in food prices across regions and between urban and rural areas (Gregory and Coleman-Jensen, 2012; Leibtag, 2007; Leibtag and Kumcu, 2011; Todd et al., 2011). A recent Institute of Medicine panel examined the adequacy of SNAP benefits, and recommended that USDA examine possible approaches to account for food price variation (Caswell and Yaktine, 2013). If maximum benefit levels were increased in areas with higher than average food costs, the antipoverty effect of SNAP would be expected to increase in those areas. However, the IOM report notes the difficulty in implementing such an adjustment to the maximum benefit level, given the lack of regional price indices variation (Caswell and Yaktine, 2013).

A second feature likely to influence SNAP's antipoverty effect is the increased flexibility given to States in how they administer the program. As noted previously, many States have removed the federal liquid asset test and increased the gross income limit, through a policy option referred to as broad-based categorical eligibility. In another effort to increase program access, States have increased recertification periods—the number of months that could elapse

before a SNAP household had to recertify eligibility. Increasing certification periods reduces the transaction costs of participation, particularly for working households who may need to take off from work to complete the recertification process.⁸ The increase in certification periods began in the early 2000s, after a decade in which many States decreased certification periods to avoid federally-administered penalties for benefit calculation errors (Rosenbaum, 2000).

The changes that States have adopted in their administration of SNAP may contribute to state-level differences in the program's antipoverty effect. Recent research documents substantial state-level variation in the antipoverty effect of SNAP across states (Tiehen et al., 2013) and even within states (Wimer, et al, 2013). As shown in Figures 7a and 7b, adding SNAP benefits to family income reduced the poverty rate by an annual average of 4.4 percent from 2000 to 2009, and reduced the squared poverty gap index by 13.2 percent. In that time period, the average annual reductions in the state-level poverty rate due to SNAP benefits ranged from 2.5 percent in Florida to 9.3 percent in Hawaii. Likewise, the average annual reductions in the squared poverty gap index due to SNAP varied at the state-level from an annual average of 7.1 percent in Nevada to 19.5 percent in Kentucky.

There are a number of other factors that are likely to influence the antipoverty effect of SNAP, including state economic conditions and other State policies affecting low-income populations. Tiehen et al. (2013) and Wimer, et al. (2013) find that the following three State policies led to significant increases in the program's efficacy in reducing the poverty rate: (1) exempting vehicles from the asset test, (2) applying broad-based categorical eligibility to remove the asset test and/or increase the gross income limits, and (3) increasing recertification periods for earners. These findings provide some evidence on how the increased access to SNAP in

⁸ The federal government requires that states recertify the eligibility status of participants at least once a year, except for households in which all members are elderly or disabled, which can be certified for more than one year.

many States has increased the program's ability to reduce poverty. However, the study found little evidence that recent SNAP policies to increase program access have influenced the program's efficacy in reducing the severity of poverty. This is perhaps not surprising, given that most of the recent State policy options were aimed at increasing participation among the working poor. The poverty severity index is most sensitive to changes in income among the poorest of the poor, who are less likely to have their SNAP participation constrained by the asset test or short recertification periods.

6. Challenges to estimating an accurate measure of SNAP's antipoverty effect.

In this section, we consider three primary challenges to estimating an accurate measure of SNAP's antipoverty effect. The first challenge is in assessing the value of an in-kind transfer. By supplementing family income with the dollar value of SNAP benefits, our analysis assumes that a household's SNAP benefits are equivalent to cash. Economic theory implies that the value of the in-kind SNAP benefit may be less than its cash value for households whose preferred monthly food budget is less than their SNAP benefit. The consumption of these households is constrained by their receipt of an in-kind benefit which distorts their spending toward more than the preferred amount of food and less than their preferred amount of other goods. However, the predominate opinion of those who have addressed this question is that most SNAP households spend more on food than their SNAP benefit, which suggests that the benefits should be equivalent to cash (Smeeding, 1977; US Bureau of the Census, 1982; Breunig and Dasgupta, 2002; Hoynes and Schanzenbach 2009; Levedahl, 1995; Moffitt 1989).

The second challenge to measuring SNAP's antipoverty effect is accounting for the work disincentive effects of the program. If SNAP benefits reduce an individual's labor supply, then earned income will be lower than it would have been in the absence of SNAP and we would

overstate the effect of SNAP on total family income. The 30 percent benefit reduction rate in SNAP can be considered an implicit tax on earnings, which would be expected to reduce labor supply. Most research suggests, however, that the labor supply response to SNAP benefits is quite small (Fraker and Moffitt, 1988; Hagstrom, 1996; Keane and Moffitt, 1998; Moffitt, 2013), though a recent study does find larger effects on single mothers during the early years of the program (Hoynes and Schanzenbach, 2012).

However, the labor supply effect also depends on other programs with benefit reduction rates which also reduce work, and other programs with benefit structures that increase work effort. For instance negative work incentive effects could well be offset in more recent years by the joint receipt of the EITC which encourages work effort for low wage single parents to a much greater extent than it is discouraged by SNAP.

Finally, the most serious challenge to measuring SNAP's antipoverty effect may be the underreporting of SNAP benefits in household surveys such as the CPS, which results in an underestimate of SNAP's antipoverty effect. The decline over time in SNAP benefit reporting rates in the CPS means that the underestimate of SNAP's antipoverty effect has also become more severe over time. As we noted previously, almost half of aggregate SNAP benefits are not reported in the CPS. To illustrate the extent to which underreporting influences our estimates of the antipoverty effect of SNAP, we employ a correction that utilizes 2011 aggregate USDA administrative data on recipients and benefits. We use a weighting procedure to match the number of poor SNAP recipients in the CPS to the number in the administrative data. We then scale up SNAP benefits in the CPS households to match the aggregate benefits to poor recipients reported in the administrative data. In scaling up benefits, we split poor SNAP recipients into those in deep poverty and those whose incomes are between 51 and 100 percent of the poverty

line and match each category to administrative totals. The results of this correction approach applied to the 2011 data, displayed in Figure 8, are quite striking. The antipoverty effect of SNAP is at least doubled for each of the three poverty measures. These effects are similar to the ones found in other data which adjust for underreporting, nationally (Wheaton, et al., 2012) and in the state of Wisconsin (Chung, et al, 2013) and for the state of California (Wimer, et al., 2013). Underreporting of benefits has the greatest effect on the severity index, where SNAP's antipoverty effect is almost three times larger when we correct for underreporting. This is consistent with evidence that the proportion of total benefits received by participants in deep poverty was much greater in SNAP administrative data than in the CPS (Tiehen et al., 2012). Moreover, with these adjustments, SNAP surpasses the EITC as the nation's most effective anti-poverty program for the non-elderly.⁹

7. Summary and conclusion

This paper has systematically reviewed the work on the antipoverty effect of SNAP using administrative and survey data. SNAP is designed to meet one of our most important needs, ensuring that all eligible people have enough to eat. People who use SNAP to feed their families--on a benefit of about \$30 per person per week--work hard to stretch their food budgets and avoid hunger, and even if close to cash in terms of recipient value, SNAP helps meet these needs.

The program also has an important effect on poverty, even if our national statistics do not always capture all of SNAP's antipoverty effects. The anti-poverty effects are even larger than those found in Census Bureau estimates if one adjusts for underreporting. Using re-weighting

⁹ Recent reports from the Census Bureau (DeNavas-Walt, Proctor and Smith, 2013, p 21) suggests that if one applies the EITC to the current official poverty rate, it has a larger anti-poverty effect than does SNAP (P 21) , but that is before adjusting for benefit underreporting in SNAP. The EITC benefit is also simulated to have 100 percent take up rate, and therefore may slightly overestimate its effects.

methods to benchmark the CPS to administrative data, the anti-poverty effects are then almost again as large as without them. With underreporting adjustments, and depending on the poverty measure being considered, SNAP reduces poverty by 14-16 percent. And we conclude that SNAP is our nation's most effective anti-poverty program for the non-elderly when adjusted for underreporting, one that is especially good at reducing extreme poverty --by over 50 percent, and also especially effective for poor families with children.

In summary, the SNAP program currently costs one half of one percent (.5 percent) of GDP (Moffitt, 2013). For that amount we get a 16 percent reduction in poverty (8 million fewer poor people) after an adjustment for underreporting, based on USDA Administrative data. Moreover we get a 41 percent cut in the poverty gap, which measures the depth of poverty and a 54 percent decline in the severity of poverty, when we add SNAP benefits to Census money incomes and recalculate the official poverty rate. No other program for the nonelderly does such a great job preventing poverty, or alleviating poverty's weight on those who remain poor .We should be heralding and celebrating this success, not trying to reduce the program because it goes to those who don't need it.

Does the program go to those who need it? In terms of monthly program rules, USDA administrative data suggest that either by counting beneficiaries or benefits, the program does an excellent job in targeting the poor (below 100 percent poverty) and the near poor (up to 130 percent poverty). Using annual data, benefits might spill over by about 30 percent beyond the target (Chung, et al, 2013), but the program is not administered annually and cannot be judged by the arbitrary time period of one year alone. In our view, SNAP is highly target effective according to its own rules and regulations.

There is much more one can learn about the SNAP to make it work even better. For instance, why do we find such large state and regional differences in benefit receipt? Can it be explained by administrative discretion, where in some states online applications are quickly approved and where one stop application procedures help ease the burden of application, whereas in others, one requires proof of citizenship, picture identification and so on? And these issues extend to within-state consideration. In California alone, Wimer et al. (2013, page 9 and Figure 6) use a Program Access Index (PAI), calculated by the California Food Policy Advocates, to approximate the percentage of eligible SNAP participants who actually participate in the program in their county. They find that the anti-poverty effects of SNAP are almost three times higher in high PAI counties than in low PAI counties. Hence program delivery and approach to eligibility also matter at the county level.

Other differences in values of benefits received, seasonality and temporality might also be explored. Further analysis of spells of receipt of SNAP using longitudinal data can tell us if participation and changes in participation are concentrated on the cyclically (temporarily) poor or on the chronic (longer term) poor. But at the end of the day, one is left with the impression that SNAP is well administered important part of our antipoverty armor that needs protecting, not rebuking.

We close by returning to the question, do SNAP benefits go to those who need them? The reader does not have to just take our word on SNAP as they can also consider the opinion of others. For instance, consider the remarks of columnist David Brooks (2013) on SNAP taken from the July 12, 2013 PBS Newshour transcript, when asked about food stamps by Judy Woodruff:

“-- I was going to do a column, because the Republican critics are correct that the number of people on food stamps has exploded. And so I was going to do a column, this is wasteful, it's

probably going up the income streams to people who don't really need the food stamps. And so, this was going to be a great column, would get my readers really mad at me, I would love it, it would be fun.

But then I did some research and found out who was actually getting the food stamps. And the people who deserve to get it are getting. That was the basic conclusion I came to. So I think it has expanded. That's true. But that's because the structure of poverty has expanded in the country”

We rest his and our case.

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Table 1. Distribution of household and individual SNAP participation and benefits across income and demographic groups, 2011

	Percent of SNAP households	Percent of SNAP benefits
Household income as a percent of poverty		
Below 50%	42.6	55.1
50-100%	40.7	36.3
101-130%	11.9	7.2
Above 130%	4.7	1.4
Household structure		
Children in household	47.1	69.2
Single-parent	26.3	37.1
Married head	9.0	15.5
Multiple adults or children only	11.7	16.6
No children in household	52.9	30.8
Elderly in household	16.5	8.5
Disabled nonelderly in household	20.2	15.8
Household employment and program participation		
Employed person in household	30.5	35.9
Receives TANF	7.6	-
Receives SSI	20.2	-
Receives Social Security	22.4	-
Individual citizenship/ABAWD status		
Legal noncitizen	4.0	4.0
Nondisabled adult in childless household	10.2	13.3

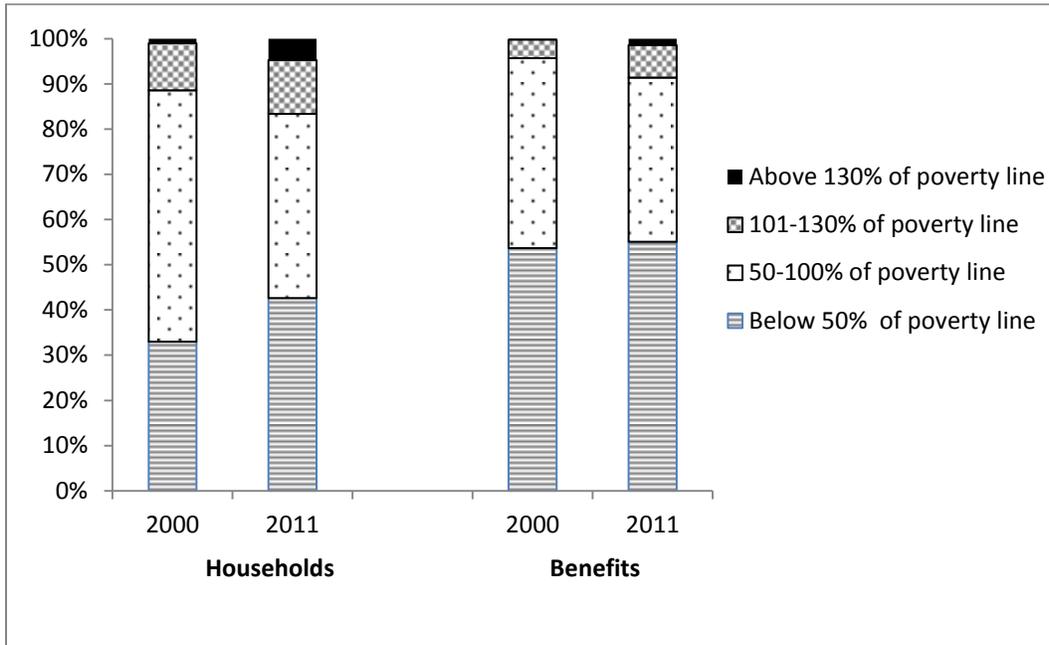
Source: USDA, Food and Nutrition Service, Quality Control Data

Table 2. The Antipoverty Effect of SNAP on Individuals, by Demographic Groups, 2011

	Rate	Rate if SNAP included	Percent difference
Age			
Under 18	21.9	19.7	9.9
18 - 64	13.7	12.8	6.7
65 and older	8.7	8.0	8.8
Race/ethnicity			
Non Hispanic White	9.8	9.1	7.9
Black	27.6	25.2	8.8
Hispanic	25.3	23.6	7.0
Asian	12.3	11.5	6.3
Other	21.8	19.5	10.6
Citizenship status			
Citizen	14.3	13.1	8.5
Noncitizen	24.3	23.3	4.3
Employment status			
Employed	6.7	6.1	7.8
Unemployed	26.8	25.0	6.7
Household structure			
Two-parent family	7.4	6.7	10.2
Single-parent family	26.9	25.0	7.0

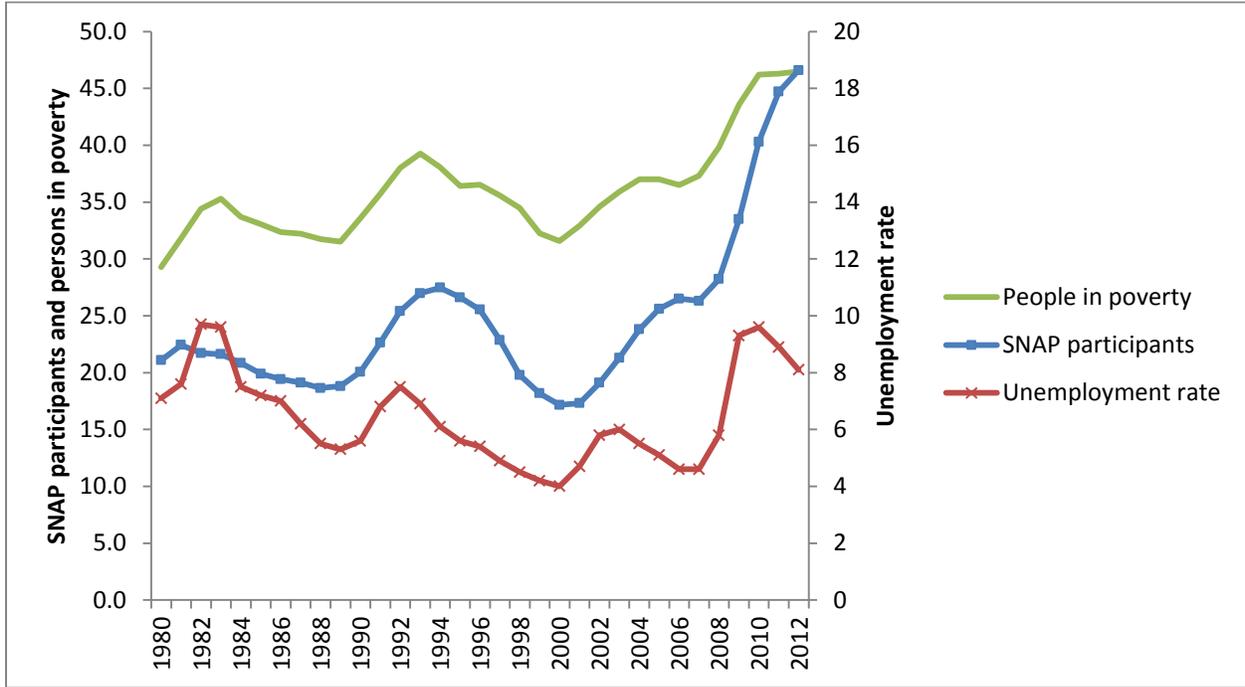
Source: Authors' calculations using Current Population Survey data.

Figure 1. The distribution of SNAP benefits across the income distribution, 2000 and 2011



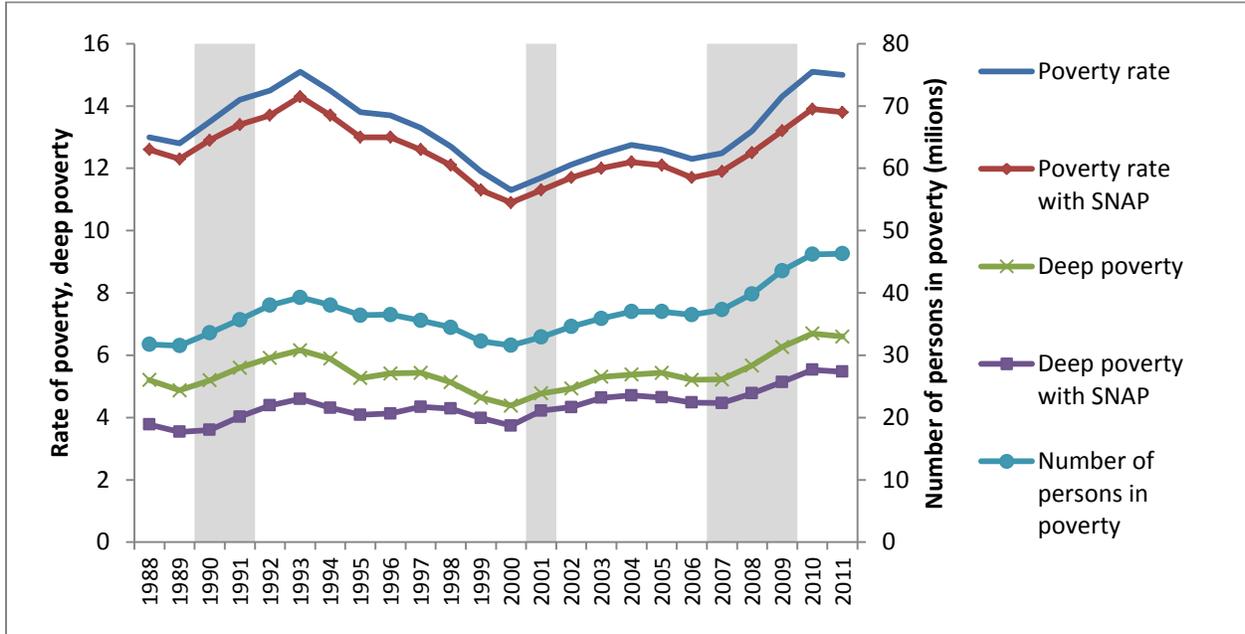
Source: USDA, Food and Nutrition Service Quality Control Data.
 Note: Income is defined as gross monthly income.

Figure 2. SNAP participants, people in poverty, and the unemployment rate, 1980-2012



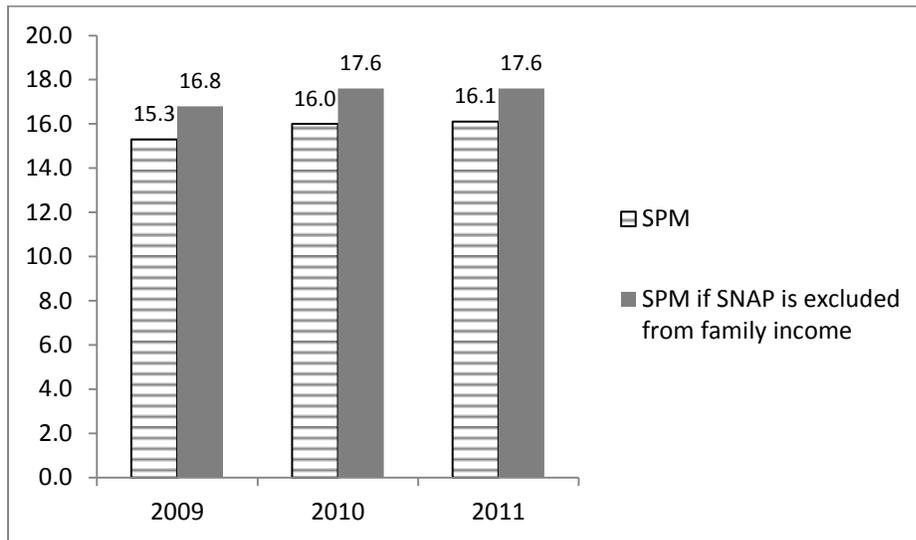
Source: USDA, Food and Nutrition Service, U.S. Census Bureau, and U.S. Bureau of Labor Statistics

Figure 3. The effect of SNAP benefits on official U.S. poverty, 1988 – 2011



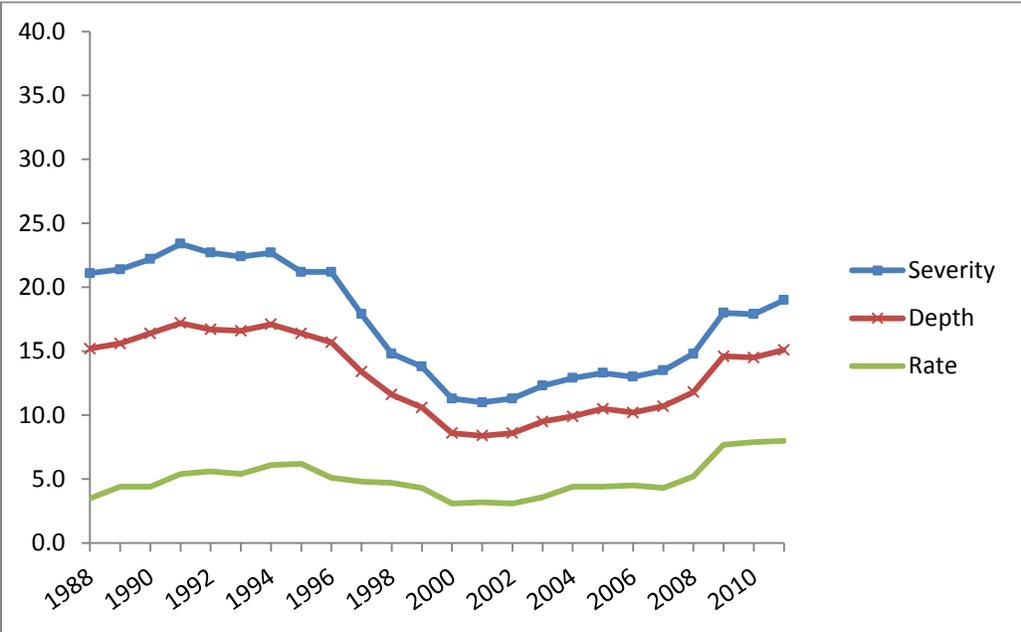
Source: Authors' calculations using Current Population Survey data.

Figure 4. Effect of SNAP on Research Supplemental Poverty Measure, 2009 – 2011



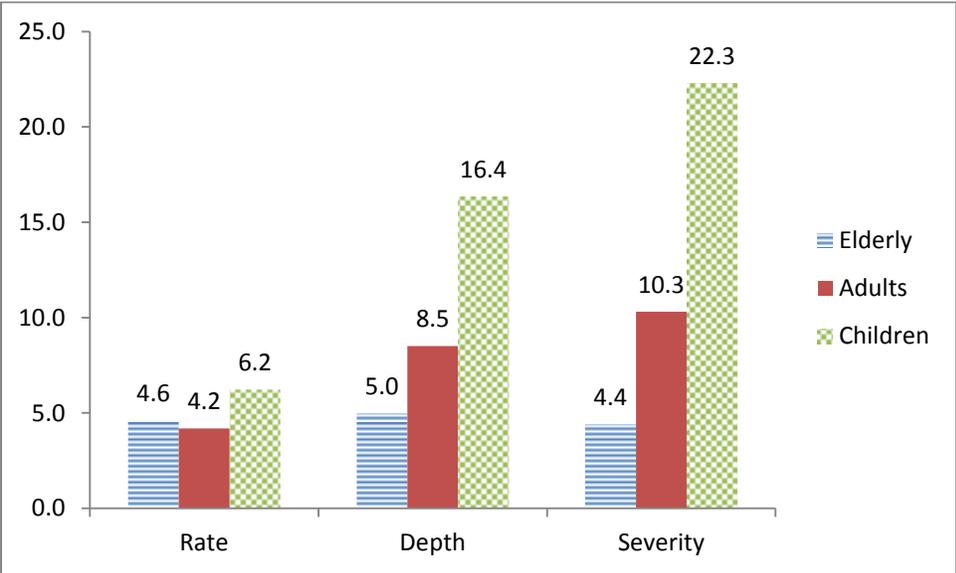
Source: Authors' calculations using Current Population Survey data.

Figure 5. Percent Reduction in Poverty due to SNAP, 1988-2011



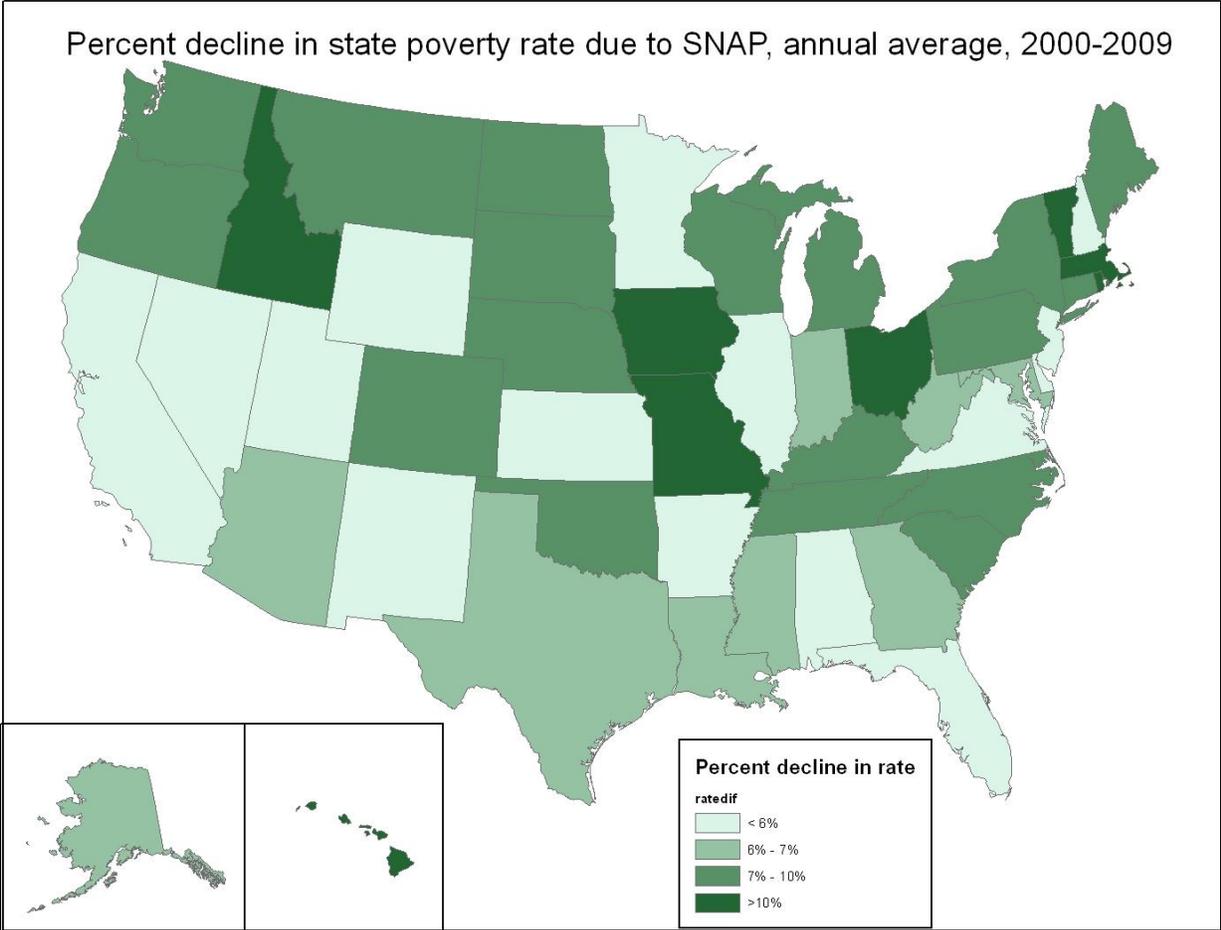
Source: Authors' calculations using Current Population Survey data.

Figure 6. Percent decline in poverty due to SNAP, by age, 2000-11



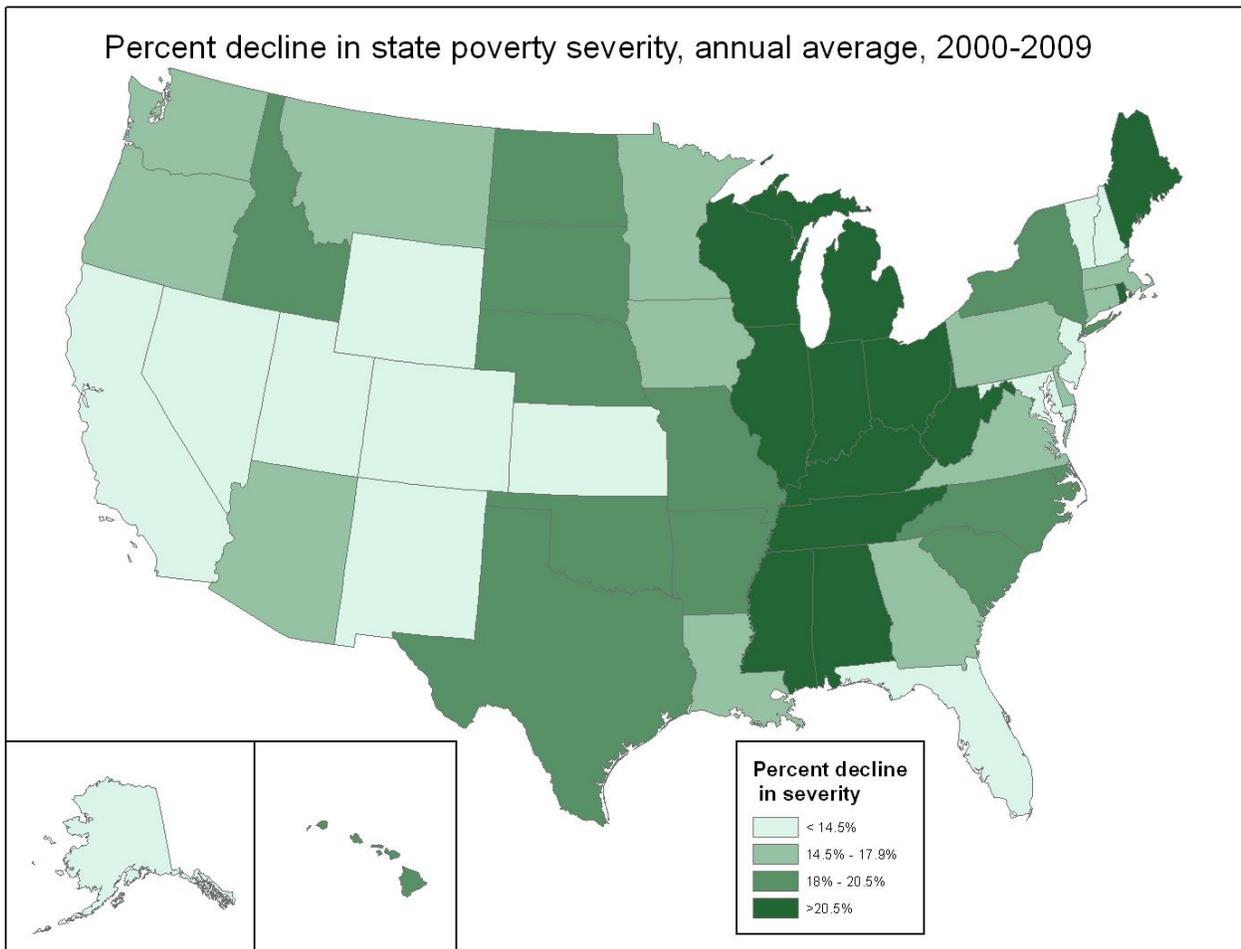
Source: Authors' calculations using Current Population Survey data.

Figure 7a. Percent decline in state poverty rate due to SNAP, annual average, 2000-2009



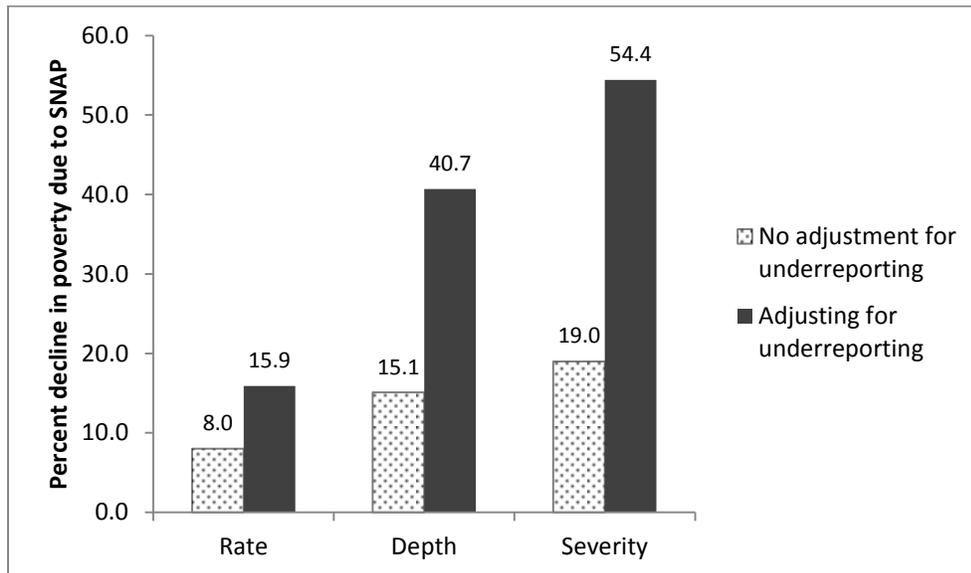
Source: Authors' calculations using Current Population Survey data.

Figure 7b. Percent decline in state poverty severity due to SNAP, annual average, 2000-2009.



Source: Authors' calculations using Current Population Survey data.

Figure 8. Percent decline in poverty due to SNAP with correction for underreporting, 2011



Source: Authors' calculations using Current Population Survey and USDA SNAP Quality Control data.