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David Johnson, Robert Schoeni,  
Laura Tiehen, and Jennifer Cornman

Assessing the Effectiveness of SNAP by  
Examining Extramarginal Participants

# **Assessing the Effectiveness of SNAP by Examining Extramarginal Participants**

David Johnson

Institute for Social Research, University of Michigan

Robert F. Schoeni

Institute for Social Research, Department of Economics, and  
Ford School of Public Policy, University of Michigan

Laura Tiehen

Economic Research Service, USDA

Jennifer C. Cornman

Jennifer C. Cornman Consulting

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## **ABSTRACT**

A primary objective of in-kind transfer programs is to promote the consumption of specific goods. Standard economic theory implies that the program's ability to achieve this objective depends critically on the proportion of recipients whose spending on the good is limited to the amount of the in-kind transfer, i.e., they are extramarginal. For these families, an increase in benefits will translate into an equal sized increase in consumption of the good. We find that roughly 30% of participants in SNAP are extramarginal, which is larger than previous estimates and implies in-kind benefits provided through SNAP promote food consumption. Furthermore, very low income SNAP families are much more likely to be extramarginal, and extramarginal families have extremely low income and are nearly five times more likely to be food insecure than families not on SNAP, implying that families are extramarginal not because their food needs are fully met by SNAP, but because their income is so low.

## INTRODUCTION

During the last few decades there has been a shift away from cash and towards in-kind transfers, with today roughly two-thirds of expenditures on federal government transfer programs in the US attributable to programs that provide assistance in kind (Currie and Gahvari, 2008; Moffitt, 2016). A primary rationale for providing transfers in kind instead of in cash is to induce consumption of specific goods, such as food, housing, and medical care. The original Food Stamp Act of 1964 stated that the purpose of the program was “...to safeguard the health and well-being of the Nation’s population and raise levels of nutrition among low-income households.” However, if recipients of in-kind transfers spend more on the good than the value of the in-kind transfer, i.e., they are inframarginal, standard economic theory implies that providing the benefit in kind instead of in cash will not induce greater consumption of that good, and a marginal change in the benefit will have the same effect on consumption of the good as a marginal change in cash income (Southworth, 1945).

A substantial body of research has tested this hypothesis, particularly for the Supplemental Nutrition Assistance Program (SNAP; formerly named the Food Stamp Program). SNAP is one of the largest in-kind transfer programs in the US, providing average monthly benefits of \$258 to 22 million households in 2015. These studies have produced a wide range of estimates of the effect of SNAP benefits on food spending, largely driven by the diversity in econometric approaches, data sources, and time periods of study. However, the general consensus from the studies is that increases in SNAP benefits induce a greater increase in food spending than would an equivalent cash transfer.<sup>1</sup>

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<sup>1</sup> Fraker (1990) reviews 17 studies and reports that most estimates of the marginal increase in food spending from an increase in SNAP benefits ranged from 0.17 to 0.47. A more recent review reports estimates from 0.26 to 0.69 (Fox et al., 2004). Beatty and Tuttle (2015), using the

A key parameter in determining the effects of changes in SNAP benefits on food consumption is the proportion of SNAP recipients who are inframarginal. Standard economic theory implies that inframarginal recipients will treat their SNAP benefits as they would cash, and therefore a marginal increase in SNAP benefits would have the same effect on food consumption as a marginal increase in income, which research implies is 0.05-0.10 (Fraker, 1990). Conversely, SNAP recipients could be extramarginal, where preferred food spending given one's budget constraint is less than or equal to the amount of SNAP benefits received. For extramarginal recipients, standard economic theory implies – as we demonstrate below – that a marginal increase in SNAP benefits will be entirely spent on food, i.e., 1.0. Given the at least 10-fold difference in the estimate of the marginal propensity to consume food out of SNAP benefits between these two types of recipients, an accurate estimate of the proportion extramarginal is critical to assessing the extent to which SNAP increases food consumption.

Research on the effectiveness of SNAP has devoted relatively little attention to accurately estimating the proportion extramarginal, which is the focus of our study. We use Panel Study of Income Dynamics (PSID) data from 1977 to 2013, which provides a more direct approach to measuring whether SNAP recipients are extramarginal than is possible in other national datasets. Furthermore, motivated by predictions from standard economic theory, we assess the factors associated with recipients being extramarginal, including income and participation in other in-kind transfer programs.

Our analyses suggest that the proportion extramarginal is higher than has been reported in prior studies, roughly 30% instead of 15%, implying that the effects on food spending of a

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2009 stimulus legislation benefit increase as a natural experiment, find an estimate of 0.48. A notable exception is Hoynes and Schanzenbach (2009), who examine the roll-out of the Food Stamp Program in the 1970s and find that increases in food stamp benefits and cash income led to similar increases in food spending.

marginal change in SNAP benefits will be much greater than an equivalent change in cash transfers even if the predictions of standard economic theory hold for inframarginal recipients. Our finding that a substantial percentage of SNAP recipients are extramarginal may help explain the prior research estimates that food spending is more responsive to changes in SNAP benefits than to changes in cash income (Fox et al., 2004; Fraker, 1990).<sup>2</sup> Furthermore, the proportion extramarginal is especially high among SNAP recipients with very low income – less than \$10 per-person per day - suggesting that these recipients desire more food than can be purchased with their SNAP benefits, but they must allocate all available cash income to other basic needs.

## **PREDICTIONS FROM ECONOMIC THEORY**

Predictions of the effects of changes in the food stamp program on food consumption have relied heavily on the model of consumer choice developed by Southworth (1945), which we depict graphically in figure 1a (similar to Fraker (1990), figure A3). The amount of the initial SNAP benefit is  $F_1$ , resulting in the budget constraint ABC. Preferences for inframarginal consumers are depicted by the indifference curve that intersects the budget constraint at G, and these consumers will choose a level of food consumption which is greater than the amount of SNAP benefits. The extramarginal consumer will have a different indifference curve and chooses to spend all of their income on other goods at point B with the amount of food spending exactly equal to the amount of the SNAP benefit,  $F_1$ . Despite facing the same budget constraint, the two consumers choose different bundles because the extramarginal consumer prefers less food relative to other goods.

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<sup>2</sup> Fraker et al. (1995) examine the cash-out of food stamps and find small effects on food spending. In their review of the war on poverty, Bitler and Karoly (2015) point to the previous results that SNAP is treated like cash.

An increase in SNAP benefits to  $F_2$  is represented by budget constraint AED. The new optimal bundle for the inframarginal consumer is at  $G'$ . For these consumers, the increase in SNAP benefits allows them to divert some of their cash resources from food to other goods, so the increase in spending on food is less than the amount of the increase in SNAP benefits. For the extramarginal consumer, however, the new optimal bundle is E, with no change in spending on other goods. That is, for extramarginal SNAP recipients the marginal propensity to consume food in response to a marginal change in SNAP benefits is 1.0. For inframarginal consumers, the marginal propensity to consume food is identical whether cash income or SNAP benefits are changed. Given that estimates of the marginal propensity to consume food out of cash income are 0.05-0.10 (Fraker, 1990), the effects on food consumption of changes in SNAP benefits depends critically on the proportion of consumers who are extramarginal.

The model implies that there are two primary factors that determine whether a consumer is extramarginal: preferences and the budget constraint. For any given budget constraint, consumers who place a lower preference on food than on other goods are more likely to be extramarginal. The budget constraint is determined by prices and the consumer's income. A reduction in cash income, holding the amount of the SNAP benefit constant, will rotate the budget constraint inward. This change will induce, among consumers who continue to be inframarginal, a reduction in spending on both food and nonfood items. Furthermore, the steeper slope implies that more consumers' optimal bundle will be at point B, i.e., they will be extramarginal. SNAP recipients who have very little cash income need to use that cash income to cover other necessities such as housing, and hence, they have no money left over to purchase food beyond the amount they can purchase with SNAP benefits. Therefore, we expect the proportion of recipients who are extramarginal to be higher among lower-income families.

Some SNAP recipients also receive other in-kind transfers, and these in-kind transfers alter the budget constraint. To demonstrate, consider the case where the other good depicted in the budget constraint is housing. If the recipient receives subsidized housing, the subsidized housing benefit will free up the limited cash they have, allowing them to purchase additional food beyond the amount they can purchase with their SNAP benefit, reducing the proportion extramarginal. This is depicted graphically in figure 1b. In sum, both higher income and participation in other in-kind transfer programs are expected to reduce the proportion extramarginal in SNAP.<sup>3</sup> If, however, the in-kind transfer is food, in particular food that can be purchased with SNAP benefits, then the effects of this in-kind transfer are the same as an increase in SNAP benefits. That is, the receipt of such in-kind food transfers will increase the likelihood of being extramarginal.

## **PRIOR ESTIMATES OF THE PROPORTION EXTRAMARGINAL**

Estimates of the proportion extramarginal from prior studies are summarized in table 1. Senauer and Young (1986) use early years of the same data set that we examine, the PSID, to estimate the proportion extramarginal in 1978 – 28% – and 1979 – 14%. They do not describe exactly how the estimates were calculated, but our reanalysis of the PSID in these years indicates that they used the same approach that we use for more recent data from the PSID, which is described below. If a family reports that they received food stamps in the month prior to the

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<sup>3</sup> The predictions of the standard Southworth model do not hold if in-kind benefits are sold. Recipients who are extramarginal would prefer to spend less on food than the amount of their in-kind benefit, and this can be achieved if they could sell their in-kind benefit for cash or other goods they value more than food. While there may have been locations or time periods when trafficking in food benefits was common (Moffitt, 1989), the latest estimates indicate that just 1.3% of SNAP benefits were trafficked in the US in 2009-2011 (Mantovani, Williams, and Pflieger, 2013).

interview, they are asked whether they spent any additional money on food at home beyond what they purchased with food stamps. The exact wording of the question in 1978 and 1979 was: "In addition to what you buy with food stamps, did you spend any money on food that you use at home?" The authors attribute the lower estimate in 1979 to the elimination of the policy requiring families to purchase food stamps.

Moffitt (1989) analyzes survey data from food stamp recipients in Puerto Rico in 1976. Comparing weekly food stamp benefits to the cash value of food used during the seven days prior to the interview, he finds that just 8% are extramarginal.

Schanzenbach (2002) reports estimates from three sources: experiments in San Diego and Alabama, and a national telephone survey. In the national telephone survey, respondents reporting they received food stamps were asked whether they typically spend less than or the same as the food stamp amount on food. Twenty-four percent answered affirmatively, i.e., they are extramarginal (Schanzenbach, 2002, table 5). An advantage of this approach is that it does not rely on comparing participants' reports of the amount of food stamp benefits they received and the amount they spent on food, both of which are likely to be measured with significant error.

For San Diego and Alabama, Schanzenbach (2002) finds that 18% and 21% are extramarginal, respectively. These estimates are based on a sample of food stamp cases drawn from administrative data. Recipients report in a survey the amount their household spends on food, and this amount is compared to the amount of the food stamp benefit as reported in the administrative data files. This approach is attractive because participation is confirmed through administrative records, thereby sidestepping the potential for biased estimates that might arise if survey respondents incorrectly claim that they did not receive benefits. Furthermore, the amount

of the benefit is likely to be measured more accurately because it is based on administrative data and not a report by the beneficiary.

Hoynes, McGranahan, and Schanzenbach (2015; table 4.3, column 5) estimate that 16% of recipients are extramarginal using the Consumer Expenditures Survey (CEX), years 1990 – 2013 combined. However, the authors identify important limitations of the CEX for estimating the proportion extramarginal including underreporting of both SNAP benefits and food spending.<sup>4</sup>

Todd and Ver Ploeg (2014) find that 19% of current SNAP participants are extramarginal, based on the 2005-2008 National Health and Nutrition Examination Survey (NHANES). The authors estimate the percent extramarginal by comparing household food spending to the reported amount of SNAP benefit received by the household in the prior 30 days. Food spending is calculated from responses to a series of questions about the amount of money the respondent household spent in the last 30 days on food at supermarkets, grocery stores, and other stores, as well as the amount spent eating out or on food carried out or delivered.

Review of prior studies highlights the challenges to estimating the proportion extramarginal. First, it has been found that a substantial share of individuals identified through administrative data as receiving food stamps do not report receiving food stamps when interviewed in national surveys (Meyer, Goerge, and Mittag, 2015). This error will bias estimates of the proportion extramarginal if this parameter is different for recipients who do versus do not report program participation accurately in such surveys. Meyer, Goerge, and Mittag (2015) find that under-reporting of food stamp participation is more common for recipients who have higher

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<sup>4</sup> Hoynes and Schanzenbach (2015) conclude that estimates from the CEX are likely to be upper bounds, but we think the direction of the bias is indeterminate because some factors, like underreporting of the SNAP benefit amount, will cause the estimate to be biased downwards.

incomes and receive relatively small benefits, and, as we find below, these types of recipients are less likely to be extramarginal. This suggests that estimates of the proportion extramarginal may be biased upwards. Figure 2 shows the participation rate in the PSID and the USDA administrative data over time. Except for the 1990s, the rates have been fairly similar. Figure 3 shows that the average benefit reported in the PSID has been similar to the average benefit reported by USDA. As discussed below, we use these results to assess the amount of the bias in estimates of the proportion extramarginal due to underreporting of food stamp participation in the PSID.<sup>5</sup>

Second, the amount of SNAP benefits and food expenditures as reported by survey respondents are measured with error for a variety of reasons. Furthermore, the time period measured for spending, e.g., last week vs typical week vs last three months, may not correspond to the time period of reported participation in food stamps, which is most often last month.

Third, some data on food spending may include expenditures on items that are not allowed under SNAP, such as food eaten at restaurants or delivered to the home. Nutrition quality is higher for food prepared at home than food purchased at restaurants (Lin, Guthrie, and Frazão, 1999) and therefore the distinction is important. Furthermore, an accurate estimate of the proportions inframarginal and extramarginal should consider spending only on food that qualifies under the SNAP program. This is important because, as discussed previously, the predicted behavior of an inframarginal household is that an increase in SNAP benefits will free up the cash resources that they have otherwise used for food. But if their cash resources were being used to purchase food at restaurants, an increase in SNAP benefits cannot be used to replace those resources, since they cannot be used for food at restaurants.

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<sup>5</sup> Hastings and Shapiro (2017) also find a low rate of extramarginal households (about 7%) using retail scanner data, yet find a large marginal propensity to consume.

Our analyses will address these limitations and examine changes in the proportion extramarginal over a 35-year period. The national survey data we use asks families on SNAP directly whether they spend on food at home no more than what they purchase with their SNAP benefit, i.e., whether they are extramarginal.

## **DATA AND METHODS**

### **Data**

Data come from the Panel Study of Income Dynamics (PSID), the longest running household panel survey in the United States. The PSID began in 1968 with a representative sample of 18,230 individuals in 4,802 families. All respondents from the original sample and anyone born to or adopted by one of these families have been followed. Data have been collected every year from 1968 to 1997 and every two years thereafter. Reinterview response rates have been 96-98%, and the sample of families now exceeds 9,000. Differential probabilities of selection due to sample design and attrition are accounted for using weights provided by the PSID.

Analyses presented here are based on two samples. To document trends in extramarginal rates, the sample includes families interviewed in any year between 1977 and 2013 who reported receiving SNAP benefits in the month prior to the interview.<sup>6</sup> An exception is that data from

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<sup>6</sup> In the years 1999-2007 the PSID did not ask about food stamp use last month. The receipt of food stamp question in these years referred to benefit receipt during the current year followed by a question asking which months the family received benefits. With this information and information on month of the family's interview, we created an indicator of whether the family received benefits the month before the interview, mirroring the receipt of benefits last month indicator in other survey years. We found that some families who reported benefit receipt this year did not report receiving benefits the month before their interview. Using unpaired t-tests separately by year, we examined whether estimates of extramarginal rates significantly differed depending on whether we included all families reporting receipt this year or just those reporting receipt the month before their interview. Results (not shown) indicated that estimates of

1988 and 1989 are not considered because the key question used to determine whether a family is extramarginal was not asked in these years. We also exclude families if we do not know whether they received SNAP benefits in a particular survey year (between 2 and 15 families are excluded each survey wave) and the Latino sample that was added to the PSID for a few years in the early 1990s. Over the study period, between 544 and 1667 families reported receiving SNAP benefits in a given survey year.

To examine factors that determine whether a SNAP family is extramarginal, we focus on the period 1999-2013. We limit the analysis of determinants to this period because we want to investigate the roles of other types of government in-kind transfers, and the PSID did not collect information on participation in most of these programs prior to 1999. Multivariate models estimated for all years 1977 – 2013 and limited to covariates other than alternative in-kind transfers led to very similar coefficient estimates to models estimated for years 1999 – 2013 and using the same more limited set of explanatory factors.

## **Measures**

### *Extramarginal*

The survey includes a direct question about whether the family spent more than their SNAP benefit on food at home. The relevant series of questions for 2013 is as follows:

F14. Did you or anyone else now living in your family use food stamp benefits last month? [If needed, the interviewer can read the following text: Food stamp benefits are issued by SNAP, the federal Supplemental Nutrition Assistance Program, also called Food Stamp Program.]

F16. How much did you receive in food stamp benefits last month?

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extramarginal rates do not significantly differ for these two groups of families. We, therefore, included in 1997-2007 all families reporting receipt this year, regardless of when they received.

F17. In addition to what you buy with food stamp benefits, do you or anyone else in your family spend any money on food that you use at home?

F18F22. How much do you and everyone else in your family spend on food that you use at home in an average week?

We believe F17 supports a more precise estimate of the proportion of SNAP recipients that are extramarginal than prior studies that rely on comparing reports of the amount of SNAP benefit with reports of the amount of spending on food eaten at home. In the PSID, the respondent simply reports whether they spend money on food at home beyond what they purchase with SNAP and is therefore independent of measurement error in the amount of SNAP or food spending.<sup>7</sup>

However, estimates may be biased if families on SNAP do not report program participation during the PSID interview and the rates of extramarginal differ between SNAP families that do versus do not report participation. As discussed above, estimates of SNAP participation based on the PSID versus administrative totals have varied over time. The estimates have been similar in many years, with larger differences in recent years. In the last decade, estimates based on PSID have averaged about 90% of estimates based on administrative data. We calculate an upper bound of the bias induced by underreporting by assuming that all of the

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<sup>7</sup> Between 1977 and 1993, the PSID distributed in the public use data only the amount of money spent (F18F22), not an indicator for whether the respondent answered yes or no to F17. For all survey waves, we created a dichotomous measure indicating whether a respondent reported spending zero additional dollars on food at home (extramarginal) or more than zero dollars (not extramarginal, i.e. inframarginal). Starting in 1994, however, the data included both the indicator of whether additional money was spent and the amount of money spent. We compared estimates of proportion extramarginal using each of these two variables and they were nearly identical. To maximize the number of years of comparable measurement, the analyses reported here are based on the variable representing the amount of money spent on food at home.

estimated 10% of SNAP families that fail to report their participation in the PSID are inframarginal.

In the PSID, SNAP participation and benefit amount are reported for the month prior to the interview. The follow-on questions about spending on food at home beyond the amount spent using SNAP (F17) and on food spending in an average week (F18F22) do not specifically refer to the month prior to the interview. It seems likely that the direct question about spending beyond the food stamp amount is interpreted by respondents as referring to the same month as the previous question on food stamp benefit receipt. However, it is possible that respondents consider the question on food spending in an average week as referring to a different time period than the previous month. If so, then the estimate of the proportion extramarginal will be biased. The direction of the bias will depend on how the family's food at home spending in the previous month (when they received food stamps) compares to their spending in the time period that they consider when answering the survey question.

We also considered three additional definitions of being extramarginal. One definition includes individuals who are "nearly" extramarginal, specifically individuals whose cash spending on food at home is \$0 or up to 15% of the value of the family's SNAP benefit. These individuals would become extramarginal if SNAP benefits were increased by roughly 15%, which is approximately the increase implemented by the American Recovery and Reinvestment Act of 2009 (ARRA). A second definition incorporates amounts spent on food away from home, that is, the family had no additional spending on food used at home or food away from home. We argued above that only spending on food at home should be considered, but including all food spending allows comparison with estimates from prior studies that do not restrict spending to

food at home.<sup>8</sup> The third definition includes spending on food away from home but considers a family extramarginal only if the total of cash spent on food at home and away from home is between \$0 and 15% of the value of the family's SNAP benefit.

### *Predictors*

In predicting whether a family is extramarginal, we examine a number of factors implicated by standard economic theory, including income, the amount of SNAP benefits received in the month, and receipt of government in-kind benefits other than SNAP, as well as demographic characteristics. Demographic variables include age of the family head (continuous), race of the family head (black, white, other), whether the head of the family is female, the level of education of the family head (less than high school, high school, more than high school), the number of people in the family unit, and the head's marital status (currently married vs. not currently married). Indicator variables representing survey year are also included.

The family unit's income, expressed in \$2013 using the CPI-U, is divided into 3 categories (1<sup>st</sup> decile, deciles 2-5, and deciles 6-10). Deciles are determined using the distribution of income for all families – not just recipient families – across all survey waves, and the one set of resulting cutpoints is used in each survey year. This specification was chosen based on visual inspection of nonparametric plots. PSID income is for the previous calendar year while the estimate of the proportion extramarginal is for last month. Some families may have low income last month while on SNAP but not have low income last year. This pattern would make it look like PSID families who participated last month are not as “on the edge” as they truly are and likely implies that the estimated negative relationship between income and being extramarginal is conservative.

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<sup>8</sup> PSID began collecting data on spending on food delivered in 1994. Including such spending lowers the rate of extramarginal by no more than 0.5 percentage points in any year.

We examine three types of in-kind government assistance programs that provide nonfood items. We examine the relationship of being extramarginal with whether anyone in the family is covered by Medicaid. We also examine assistance with heating and housing, specifically receiving help from the government to pay for heating and cooling; paying no or lower rent because the Federal, state or local government is paying all or part of the cost of rent; and living in a residence that is part of a public housing project. Finally, the model assesses participation in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), which provides both food and nonfood assistance.

We include indicators of participation last year in three other government food assistance programs: free or reduced cost meals for the elderly; free or reduced-cost breakfasts or lunches at school; child's attendance at a daycare that participates in the Child and Adult Care Food Program.

For some of the government assistance programs (public housing, meals for the elderly, meals for children, WIC, and participating child care centers), questions regarding participation in these programs were designed by PSID to reduce respondent burden by skipping families who would definitely not qualify for the program. For instance, information about receiving free meals for the elderly is only asked if the family has a member who is age 60 or over. We, therefore, create three categories representing participation in each program: 1) family not asked by PSID whether they participate in the program; 2) family is asked but they do not participate; and 3) family is asked and they do participate. Our focus is on the contrast between groups 2 and 3.

The last measure is the proportion of all spending on food that is spent on food away from home. Total spending on food is the sum of the value of a family's SNAP benefit and the

amounts of money spent on food used at home, food eaten away from home, and food delivered to home.

### *Missing data*

We handle missing data in two ways. First, for the value of a family's SNAP benefit and a family's expenditures on food, missing data are imputed. Prior to 1994, the PSID data for amount of food spending and SNAP benefits include imputations for missing data. We, therefore, imputed missing data on the value of SNAP benefits and on food expenditures for the period 1994-2013. We use the same imputation procedure that the PSID used to impute missing data for these variables prior to 1994. Second, for any explanatory variable with missing data, we add a missing data category and include the category in the regression analyses. For most variables, the missing data category does not have a significant impact on results. Two exceptions are receipt of food through WIC and having a child attend a daycare that participates in the Child and Adult Care Food Program. The missing data category for these two variables significantly predicts whether a family is extramarginal. As a result, we include a variable for missing data for each of the benefit categories, but do not include the coefficients in the table. Excluding the missing cases from the regressions leads to the same substantive conclusions.

### **Methods**

We first present annual estimates of the proportion of SNAP participant families that are extramarginal for the period 1977-2013. Next we examine the bivariate relationship between extramarginal and the explanatory characteristics previously described. In so doing, we pool the 1999-2013 data, creating a repeated cross-sectional database. These analyses are limited to the years 1999 – 2013 when the various explanatory factors are available in the PSID. Finally, we estimate multivariate linear probability models. We run a series of five models. The first model

includes year, demographic characteristics, and income (model 1). To this model we add receipt of other in-kind benefits (model 2). Finally, we incorporate the value of SNAP benefit (model 3), the proportion of food spending on food away from home (model 4), and then all explanatory factors (model 5). Descriptive statistics of the variables used in the multivariate analyses are reported in appendix table 1. All analyses are estimated using Stata 14.2 and PSID family weights.

## **RESULTS**

### **Proportion extramarginal**

The share of SNAP beneficiaries who are extramarginal has fluctuated between 15% and 35% over the last four decades (figure 4, “EM, food at home”). During the more recent period, 2003--2013, the average was 29%. As expected, the share increased in 2009 when SNAP benefits increased substantially as part of the ARRA, and then fell when real benefit levels subsequently declined.<sup>9</sup>

Some PSID families on SNAP do not correctly report program participation, which might bias estimates of the proportion extramarginal. Meyer, Mok, and Sullivan (2009) show that the under-reporting rate of receipt of food stamps is fairly large in surveys. They estimate a reporting rate in the PSID of 80 percent for Food Stamp Program participation and 85 percent for program benefits in 2004 (the latest year of their study). Our rates, however, (as shown in figure 2) are fairly close to the individual reciprocity rates in the administrative data. Our estimates differ from Meyer, Mok, and Sullivan (2009) because we assign SNAP receipt to all individuals in a PSID family that reports receipt. This may overstate participation, since all members of a PSID family may not be considered part of the SNAP unit (which is defined by the program as

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<sup>9</sup> The large fall in the extramarginal rate between 1997 and 1999 could be due to the slight change in the questionnaire.

persons who live together and customarily purchase and prepare food together). On the other hand, the Meyer, Mok, and Sullivan (2009) household-based estimates may understate participation, since they do not account for the fact that there could be multiple SNAP units in a single survey household.

With these rates of under-reporting, even if all SNAP participants who do not report SNAP benefits in the PSID are assumed to be inframarginal, the bias is modest. Over the last decade the largest shortfall was in the most recent wave, when 10% of PSID families on SNAP failed to report participation. This rate of underreporting would imply a maximum bias of just 0.03, or lower bound estimate of extramarginal of 27%, which is only slightly lower than 30%. Even if 20% of families fail to report SNAP, as found by Meyer, Mok, and Sullivan (2009), the lower bound estimate of the share who are extramarginal is substantial at 24%.

We compare estimates using the PSID to those obtained using the CEX Interview Survey, CEX Diary Survey, and the food security supplements to the Current Population Survey (CPS). The current estimates using the CEX Interview and Diary Surveys are based on comparing the reported amount of food stamp benefit in the last month of receipt to the reported amount of usual weekly spending on food at home adjusted to a monthly amount. CPS estimates are based on the Food Security Supplement which compares the monthly SNAP benefit to the expenditures on food at home during the last week (adjusted to a monthly value).<sup>10</sup> Table 2 demonstrates that the CEX Interview questions implemented before 2013 captured fewer extramarginal households, and this is due to the much lower average reported SNAP benefit in years prior to 2013. The old questions asked about the average monthly benefits during the past year. The recent estimates are more in-line with the estimates based on the CEX Diary Survey. Table 2

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<sup>10</sup> The CPS results are unpublished results obtained in correspondence with Diane Schanzenbach and Patricia Anderson.

also shows that using the CPS food security supplement yields estimates similar to those based on the CEX Diary and the PSID. Estimates using CPS that include spending on food away from home are lower than those that do not, but the difference is modest: the average of the yearly estimates is 27% without include spending on food away from home (table 2, CPS) versus 24% when it is included (not shown in table). Including food away from home using the CEX Interview lowers the estimate of the share extramarginal from 30-32% (table 2, 2013-2014) to 25-27% (not shown in table).

Some beneficiaries are not extramarginal but they spend a relatively small amount of their cash income on food at home. Most of these “nearly extramarginal” beneficiaries would become extramarginal if benefits were increased by an amount greater than the amount they spend on food out of cash income. We estimate the percent of beneficiaries who are extramarginal or nearly extramarginal by determining the share whose spending on food at home excluding food stamps is less than 15% of the amount of their food stamp benefit. We choose 15% because ARRA increased benefits by roughly that amount. The percent of beneficiaries who are extramarginal or nearly extramarginal – “EM +15%, food at home” in figure 4 – is much higher, and this is especially true between 1977 and 1997. During the last 10 or 15 years, the proportion “nearly extramarginal” is somewhat smaller. Still, in 2009, almost 40% of beneficiaries spent no cash income on food at home or the amount they spent with less than 15% of their SNAP benefit.

The SNAP program prohibits using benefits to purchase food eaten away from home or prepared food delivered to one's home. Therefore, the definition of extramarginal should only consider spending on food at home. As discussed above, some studies have included expenditures on food away from home and food delivered when defining extramarginal and

when estimating the effects of changes in SNAP benefits on food spending. As demonstrated in figure 4, including such spending lowers estimates of extramarginal to between 10% and 20%. In the last decade, the average is about 12%. Inclusion of spending on food not covered by SNAP is likely one reason Hoynes, McGranahan, and Schanzenbach (2015) and Todd and Ver Ploeg (2014) calculate lower estimates of the percent extramarginal. The fourth measure displayed in figure 4 – “EM +15%, food at home & away” -- includes spending on food away but also considers as extramarginal families whose cash spending on food at home and away, in total, is less than 15% of their SNAP benefit. This rate is only slightly lower than “EM +15%, food at home,” averaging just over 30% between 2003 and 2013. The substantial difference in estimates of “EM +15%, food at home & away” and “EM, food at home & away” arises because among SNAP families who spend no cash on food at home but do spend cash on food away, the average spent on food away is just \$52 a month, 1977-2013.

For the sample used in the multivariate models, i.e., survey years 1999 – 2013, we report in table 3 bivariate relationships between the rate of extramarginal and each of the explanatory factors. The relationship with income is very strong. Among recipients in the bottom income decile, i.e. food stamp families with less than \$10,000 annually, which translates to less than roughly \$10 per day per family member, 39% are extramarginal. Among recipients in the top half of the income distribution, 14% are extramarginal. Recipient families with larger SNAP benefits are much more likely to be extramarginal. Thirty-nine percent of the families in the top quartile of the SNAP distribution are extramarginal while just 13% in the bottom quartile and only 8% in the bottom decile (not shown) are extramarginal. Rates of extramarginal also differ by race (higher rates for blacks than whites), education (higher rates for recipients with at least a high school education), age (higher rates for younger recipients), and gender (higher rates for

female-headed households). The final characteristic, household size, shows that the extramarginal rate is higher for smaller families, with the highest rate for single person families. This is different than the results in Hoynes, McGranahan, and Schanzenbach (2015), but is likely due to their use of eligible families and how eligibility changes for larger family sizes.

### **Multivariate models**

Model 1 includes just the demographic and economic characteristics of recipients (table 4). Differences by income are very large. Households in the bottom decile of the income distribution are 21 percentage points more likely to be extramarginal than families in top half of the distribution (deciles 6-10), a difference that is similar to the bivariate difference in table 3. Families headed by a person who is black are 5.2 percentage points more likely than families with white household heads to be extramarginal. A 10-year increase in the age of the head of the family is associated with a reduction in being extramarginal by 4 percentage points. Larger families are less likely to be extramarginal. With few exceptions which we note below, the coefficients on personal sociodemographic and economic characteristics change very little when additional factors are accounted for in models 2-5.

The theoretical model predicts that receipt of in-kind transfers that do not include food should reduce the odds of being extramarginal, as these transfers are similar to increases in income. The estimates from model 2 are partially consistent with this hypothesis. Receiving heating subsidies and living in public housing are associated with lower rates of being extramarginal, though receiving a government rental subsidy or being covered by Medicaid are not. This pattern is fairly similar in subsequent models 3-5. That is, there is only weak evidence in support of the hypothesis that participating in in-kind transfer programs that provide non-food assistance reduces the likelihood of being extramarginal.

Consistent with the predictions of the theoretical model, participation in programs other than SNAP that provide food are associated with an increase in the odds of being extramarginal. However, none of the coefficient estimates representing the three non-SNAP food programs are statistically significant. It could also be that participation in cash transfer programs like TANF and SSI could decrease the likelihood of being extramarginal, even beyond income.<sup>11</sup>

Higher benefits are expected to increase the odds of being extramarginal, and the estimates are consistent with this prediction. A \$25 increase in monthly benefits, which represents 10% higher benefits relative to average benefits, raises the odds of being extramarginal by 2.5 percentage points. Finally, as discussed above, those households with a higher preference for other goods (all else equal) are more likely to be extramarginal. We include the share of food spending on food away from home as a method to assess these preferences. As expected, the coefficient is positive suggesting that those who prefer less food at home are more likely to be extramarginal.

## **DISCUSSION**

Standard economic theory implies that needy families will spend the same amount on food regardless of whether the government assistance they receive is in the form of cash or in the form of in-kind benefits such as SNAP. This prediction holds only for inframarginal families, and these families have been the focus of research analyzing the impact of changes in the amount of SNAP benefits on food spending. While important, we believe that it is at least as important to understand extramarginal families. Standard theory implies that for these families a marginal increase in SNAP benefits will translate into an equal sized increase in food spending, i.e., a

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<sup>11</sup> In a supplemental regression (not reported in the table), we control for the receipt of these cash transfer programs and find that they both reduce the rate of extramarginal, with SSI being a statistically significant factor.

marginal propensity to consume of 1.0. Analyses of the PSID indicate that a large fraction of SNAP recipients are extramarginal, about 30%. While this estimate is considerably higher than the estimates reported in most previous literature, it is fairly similar to estimates using the CPS, the CEX Diary, the redesigned CEX Interview, and estimates from a specialized national survey conducted by Schanzenbach (2002, table 5). Even if inframarginal families respond to an increase in SNAP benefits the same way they do to an increase in income, the increase in SNAP benefits will translate into substantial increases in food spending among recipients as a whole because nearly one-third of recipients are extramarginal. And conversely, a decrease in SNAP benefits would result in substantial decreases in food spending.

There are two leading hypotheses for why some families on SNAP spend no more on food than what they can purchase with their SNAP benefit. One hypothesis is that they simply do not need additional food; the amount of food they can purchase with their SNAP benefit is enough to meet their nutritional needs. Alternatively, families receiving SNAP want and need to purchase more food to meet their nutritional needs, but their cash incomes are so low they must use all of their available cash income to purchase other necessities such as housing, utilities, clothing, medical care, and the like.

The evidence tends to support the latter hypothesis. Families with very low income are much more likely to be extramarginal. All families receiving SNAP have low income, but among these families the *very* low income families are two – three times more likely to spend no cash income on food; they rely entirely on their SNAP benefit to meet their food needs. In our data, median annual income of extramarginal families is just \$11,398, or \$11 per person per day. These estimates likely overstate income of these families while on SNAP because it represents annual income in the previous calendar year among families receiving SNAP in the month prior

to the survey interview. Income is lower in the months families are on SNAP, and one-third of families on SNAP in the month prior to the interview were not enrolled for all 12 months of the prior calendar year. Administrative caseload data from the Quality Control data system is informative because it includes data on income of recipients in the month they are on SNAP. These data show for 2015 that 22% of SNAP families have no income at all and another 9.8% have just \$1-399 (Gray, Fisher, and Lauffer, 2016). Furthermore, the estimates of SNAP families with no income more than doubled between 2000 and 2012 (Hoynes and Schanzenbach, 2015, table 2.2). This increase is consistent with the increase in extramarginal households we observe during this period.

SNAP households with no net income receive the maximum SNAP benefit, which is set so that the household should be able to achieve a nutritious diet without having to contribute cash resources. However, a recent Institute of Medicine report has raised concerns about the adequacy of SNAP benefits (Caswell and Yaktine, 2013).

The rate of food insecurity among extramarginal families is another indicator that the food needs are not being met for many of these families. The PSID administered the USDA's module of questions on food security in 1999. We used these data to estimate the level of food insecurity among SNAP families who are extramarginal. Among these families, 34% were food insecure, which is nearly five times higher than the rate among families not receiving SNAP (7.7%).

In this study, we show that the prevalence of extramarginal SNAP recipients is significantly higher than previously thought. This finding has direct implications for measuring the effectiveness of increases or decreases in SNAP benefits. We also illustrate the importance of correctly identifying extramarginal recipients, which depends on a number of factors,

including the ability to distinguish between food at home (which can be purchased with SNAP benefits) and food from restaurants (which cannot), and to adequately identify spending on food at home beyond what is purchased with SNAP benefits.

We find that asking households directly about spending using SNAP benefits is important in identifying extramarginal households. Finally, we identify the factors that are associated with the probability that a SNAP recipient is extramarginal. We find that two in five SNAP families with annual incomes below \$10,000 rely solely on SNAP for their food-at-home purchases. This suggests that changes in SNAP benefits will have the greatest effect on the poorest SNAP households, and hence, address the original goals of the Food Stamp program - “*raise levels of nutrition among low-income households.*” The level of food spending rises in response to increases in SNAP benefits, especially for the lowest income families because many are extramarginal, suggesting improved nutrition levels for low-income households, and a general increase in well-being.

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Figure 1a: Different effects on food consumption of a change in SNAP benefits for inframarginal and extramarginal households

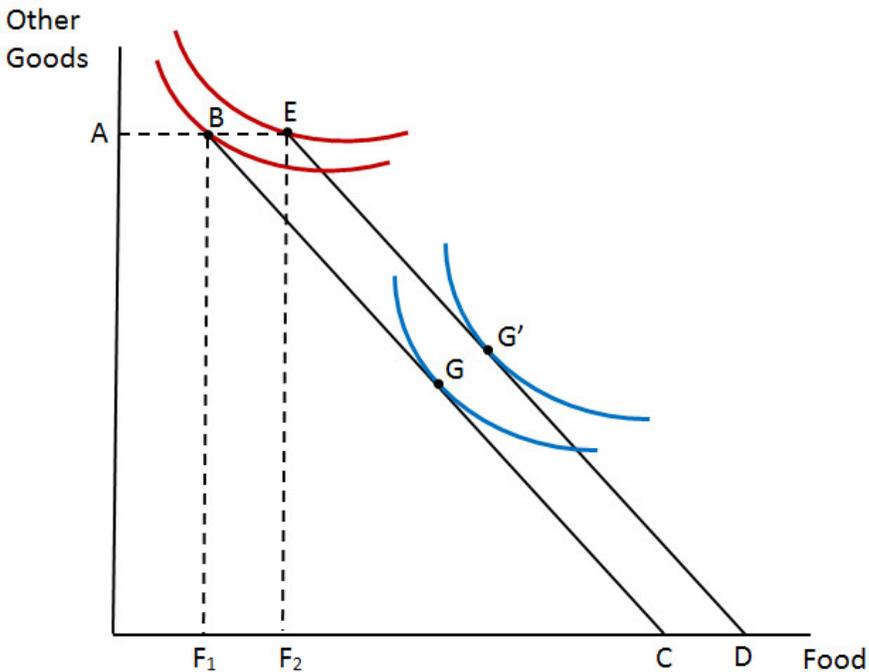


Figure 1b: Effects on food consumption of a change in non-food (housing) in-kind benefits

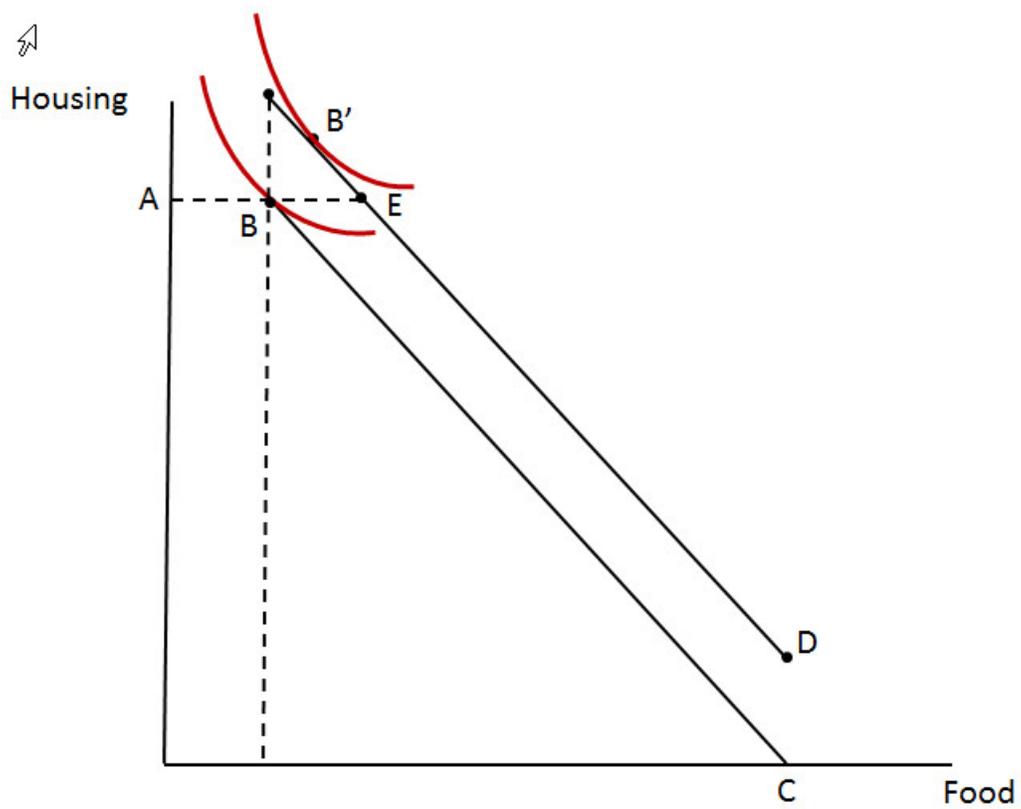


Figure 2: Percent of individuals receiving SNAP: PSID and USDA administrative data

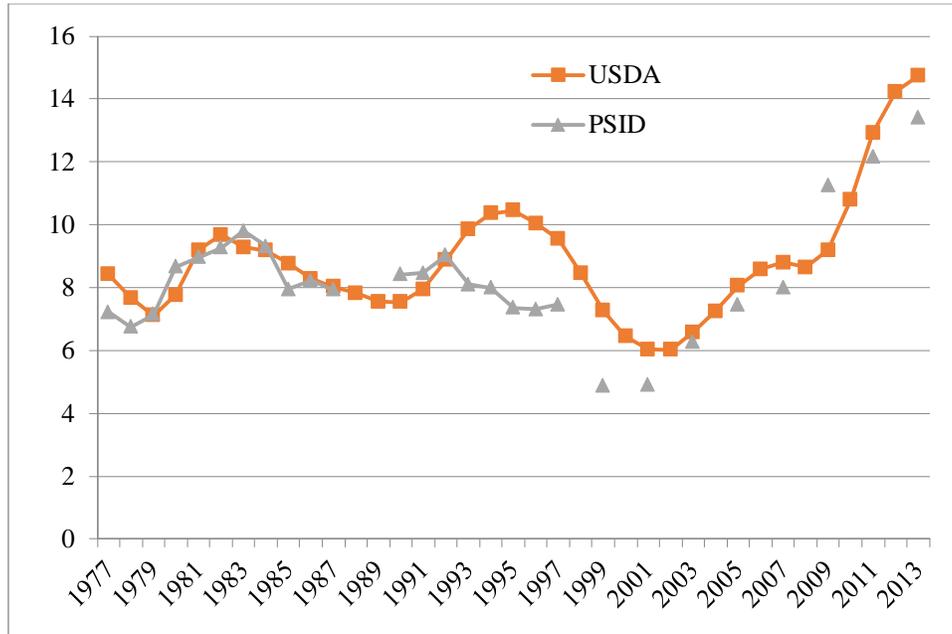


Figure 3: Mean SNAP benefits per household: PSID and USDA administrative data

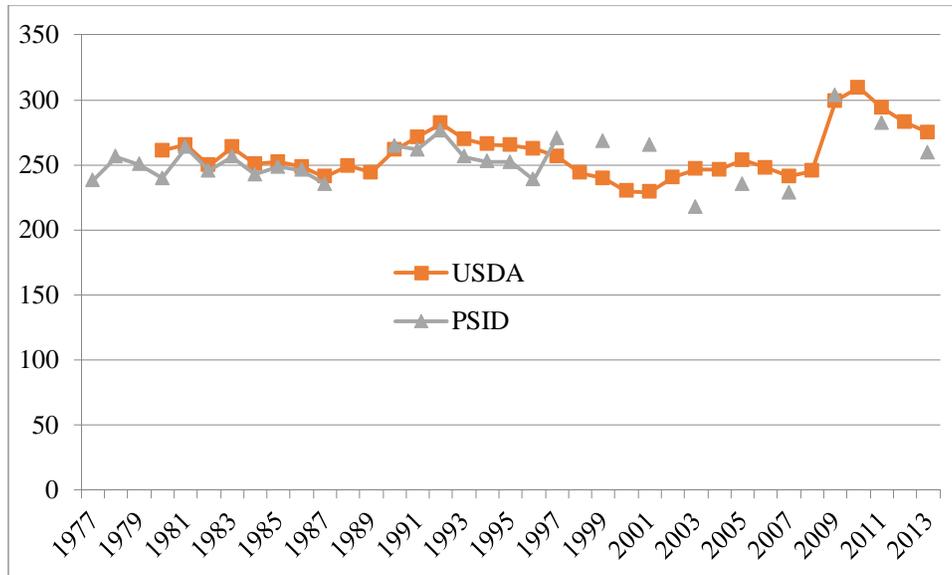


Figure 4. Percent of beneficiaries who are extramarginal (EM), 1977 – 2013

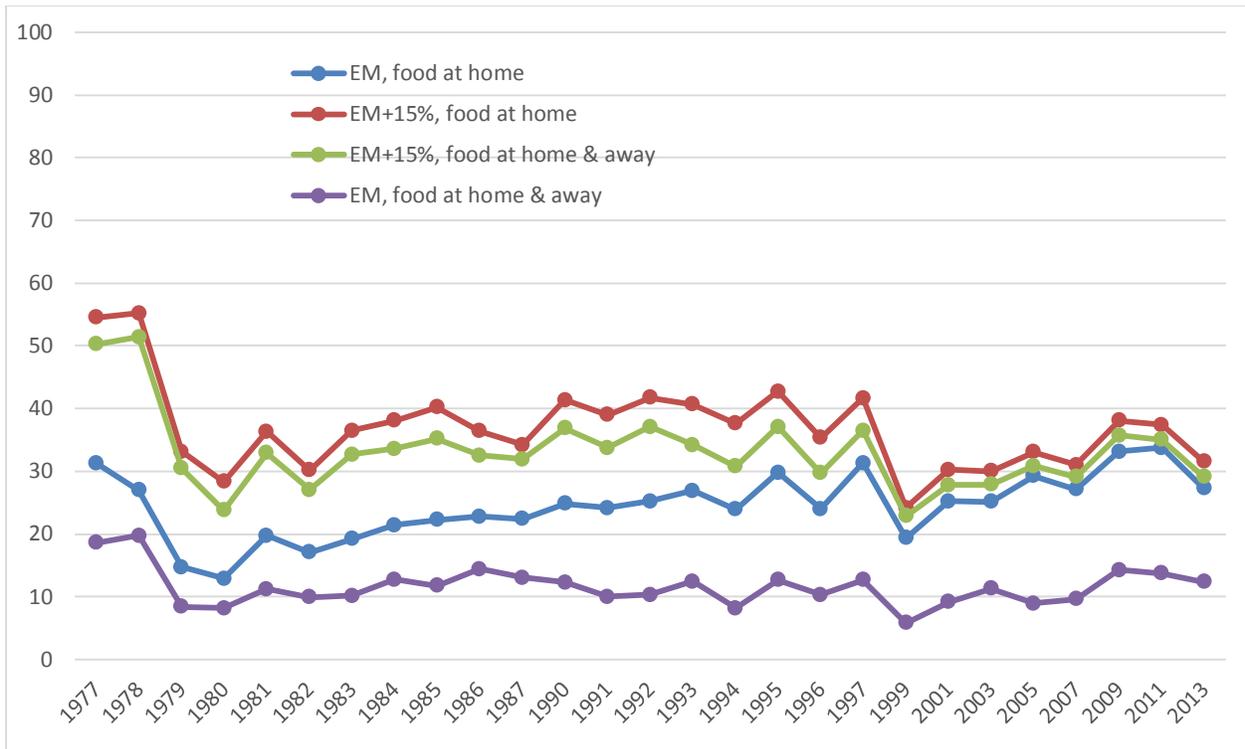


Table 1. Characteristics of prior studies reporting estimates of percent extramarginal

Study	% extramarginal	Year & population	Data	Method
Senauer & Young (1986)	1978=29% 1979=14%. (Page 38)	1978-1979, US	PSID	Direct question: "In addition to what you spent on food stamps, did you (FAMILY) spend any money on food that you use at home?" <sup>a</sup>
Moffitt (1989)	8%	1977, Puerto Rico	Cross-sectional survey	Weekly average food stamp benefit $\geq$ cash value of food used during the 7 days prior to the interview.
Schanzenbach (2002)	24% (table 5)	1990s, US	Cross-sectional survey	Direct question: "typically spend less than or same as food stamp amount on food?"
Schanzenbach (2002)	18% (page 20)	Early 1990s, San Diego	Survey, food stamp cash-out demonstration	Monthly food stamp benefit $\geq$ Cash value of food used at home during the 7 days prior to the interview (converted to monthly value)
Schanzenbach (2002)	21% (page 20)	Early 1990s, Alabama	Survey, food stamp cash-out demonstration	Monthly food stamp benefit $\geq$ Cash value of food used at home during the 7 days prior to the interview (converted to monthly value).
Todd & Ver Ploeg (2014)	19% (page 83)	2005-2008, US	NHANES	SNAP benefit $\geq$ reported total food spending over the past 30 days, including food at home and food away from home
Hoynes, McGranahan, & Schanzenbach (2015)	16% (table 4.3, right most column)	1990-2013, US	CE Interview	SNAP benefit $\geq$ "adjusted" total food spending, which equals spending on food at home plus 63% of spending on food away from home.

<sup>a</sup> Senauer & Young (1986) do not describe their method, but applying this method to the PSID we found estimates very similar to theirs: 27% in 1978 and 15% in 1979.

Table 2. Estimates of the percent extramarginal based on the PSID, CPS, CEX Diary, and CEX Interview for overlapping years					
	PSID	CPS	CEX Diary	CEX Interview, OLD	CEX Interview, NEW
2001	26.2	23.5			
2002		24.6			
2003	26.5	26.3			
2004		25.2			
2005	30.4	24.8			
2006		25.2			
2007	28.1	23.6	22.9	15.5	
2008		24.2	16.7	15.1	
2009	32.4	27.8	19.3	15.1	
2010		26.2	23.2	16.6	
2011	33.4	32.3	25.2	16.7	
2012		33.9	27.7	14.5	
2013	27.1	30.3	26.2		32.4
2014		24.8	25.3		30.0

Table 3: Percent of recipients who are extramarginal, 1999-2013 (n=8,084)

	% Extramarginal	t-test p-value for difference from 1st category		% Extramarginal	t-test p-value for difference from 1st category
Annual Family income <sup>1</sup>			Receives government heating subsidy		
6th-10th decile	14.12		No	29.63	
2nd-5th decile	23.60	<0.001	Yes	26.02	0.046
Bottom decile	38.50	<0.001	Lives in Public Housing		
Amount of SNAP benefit			No	28.5	
Bottom quartile	13.16		Yes	29.59	0.612
Second quartile	32.92	<0.001	Receives government rental subsidy		
Third quartile	29.22	<0.001	No	27.95	
Top quartile	39.44	<0.001	Yes	34.42	0.041
Head's Race			Receives free/reduced cost food for the elderly		
White	25.67		No	20.78	
Black	33.28	<0.001	Yes	12.31	0.094
Other	25.71	0.989	No elderly in household	30.48	<0.001
Head's Education			Receives free/reduced cost meals for children		
<High School	25.28		No	23.56	
High School	31.58	0.001	Yes	27.7	0.13
>High School	29.71	0.024	No children ages 5-18 in household	30.28	0.013
Household size			Receives assistance from WIC		
1	35.81		No	27.41	
2-3	27.01	<0.001	Yes	29.62	0.234
4+	23.77	<0.001	No female between ages 15-45 or child under 5 in household	29.79	0.203
Gender of Head			Child in child care center participating in child food program		
Male	24.89		No	27.44	
Female	31.54	<0.001	Yes	29.47	0.56
Head marital status			No children in household were in daycare	29.48	0.211
Not currently married	32.10		Covered by Medicaid		
Currently married	19.61	<0.001	No	27.94	
Age of head			Yes	29.52	0.329
16-24	43.54				
25-44	29.78	<0.001			
45-64	25.42	<0.001			
65+	19.99	<0.001			

<sup>1</sup> Income deciles are based on the weighted income distribution of the entire PSID sample, e.g. all years combined and both food stamp recipients and non-recipients

Table 4. Linear probability model of being extramarginal, 1999 – 2013 (n=8,084)

	Model 1	Model 2	Model 3	Model 4	Model 5
Year (2013=omitted)					
1999	-0.090** (0.029)	-0.092** (0.032)	-0.066* (0.032)	-0.092** (0.032)	-0.067* (0.031)
2001	-0.026 (0.034)	-0.023 (0.037)	-0.010 (0.037)	-0.024 (0.037)	-0.014 (0.037)
2003	-0.032 (0.030)	-0.026 (0.033)	0.016 (0.032)	-0.027 (0.033)	0.015 (0.032)
2005	0.008 (0.028)	0.006 (0.031)	0.041 (0.030)	0.005 (0.031)	0.038 (0.030)
2007	-0.007 (0.028)	-0.009 (0.031)	0.026 (0.030)	-0.010 (0.031)	0.023 (0.030)
2009	0.062* (0.026)	0.061* (0.029)	0.039 (0.028)	0.061* (0.029)	0.038 (0.028)
2011	0.060* (0.025)	0.061* (0.028)	0.047+ (0.027)	0.061* (0.028)	0.046+ (0.027)
Age of head	-0.004** (0.001)	-0.005** (0.001)	-0.003** (0.001)	-0.005** (0.001)	-0.003** (0.001)
Head is female	0.011 (0.025)	0.038 (0.027)	0.024 (0.026)	0.039 (0.027)	0.028 (0.026)
Head race (White=omitted)					
Black	0.052** (0.017)	0.054** (0.017)	0.052** (0.016)	0.053** (0.017)	0.047** (0.016)
Other	0.055+ (0.028)	0.047+ (0.028)	0.060* (0.028)	0.046 (0.028)	0.057* (0.028)
Missing	0.059 (0.059)	0.045 (0.058)	0.049 (0.056)	0.044 (0.058)	0.043 (0.055)
Education (<HS=omitted)					
HS	0.048* (0.019)	0.043* (0.019)	0.039* (0.018)	0.042* (0.019)	0.035+ (0.018)
>HS	0.016 (0.020)	0.011 (0.020)	0.004 (0.020)	0.011 (0.020)	0.001 (0.020)
Missing	0.018 (0.064)	0.020 (0.062)	0.068 (0.057)	0.021 (0.062)	0.075 (0.057)
Head's marital status (not married=omitted)					
Married	-0.052* (0.026)	-0.031 (0.028)	-0.039 (0.027)	-0.030 (0.028)	-0.033 (0.027)
Missing	0.607** (0.072)	0.577** (0.077)	0.393** (0.081)	0.573** (0.077)	0.369** (0.081)
Number in family unit	-0.010* (0.005)	-0.011+ (0.006)	-0.053** (0.007)	-0.011+ (0.006)	-0.054** (0.007)

Annual Family income (top 5 deciles=omitted) <sup>1</sup>					
Bottom (1st) decile	0.208**	0.209**	0.152**	0.212**	0.162**
	(0.024)	(0.026)	(0.026)	(0.026)	(0.026)
Deciles 2 - 5	0.071**	0.071**	0.043*	0.072**	0.048*
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Receives government heat subsidy					
Yes		-0.031+	-0.037*	-0.031+	-0.034*
		(0.018)	(0.017)	(0.018)	(0.017)
Missing		-0.076	-0.054	-0.077	-0.059
		(0.111)	(0.102)	(0.111)	(0.104)
Lives in public housing		-0.043+	-0.033	-0.043+	-0.032
		(0.022)	(0.021)	(0.022)	(0.021)
Government subsidizes all or part of rent					
Yes		0.010	0.017	0.010	0.015
		(0.031)	(0.030)	(0.031)	(0.030)
Missing		0.198	0.200	0.199	0.207
		(0.233)	(0.216)	(0.234)	(0.220)
Elderly family member receive free/reduced food (HH eligible, not participate=omitted)					
HH eligible, participates		0.078	0.075	0.078	0.076
		(0.048)	(0.047)	(0.048)	(0.047)
No elderly in HH/not asked		0.076	0.074	0.076	0.074
		(0.051)	(0.049)	(0.051)	(0.050)
Missing		0.210	0.228	0.211	0.229
		(0.295)	(0.328)	(0.293)	(0.317)
Child family member receive free/reduced food (HH eligible, not participate=omitted)					
HH eligible, participates		-0.020	-0.004	-0.020	-0.005
		(0.027)	(0.027)	(0.027)	(0.026)
No children ages 5-18 in household		-0.023	0.007	-0.024	0.006
		(0.024)	(0.023)	(0.024)	(0.023)
Missing		-0.012	-0.022	-0.012	-0.025
		(0.036)	(0.034)	(0.036)	(0.034)
Receives assistance from WIC (HH eligible, not participate=omitted)					
HH eligible, participates		-0.028	-0.009	-0.028	-0.009
		(0.020)	(0.019)	(0.020)	(0.019)
No female between ages 15-45 or child under 5 in household		0.028	0.039	0.028	0.041
		(0.031)	(0.030)	(0.031)	(0.030)
Missing		-0.180**	-0.149+	-0.179**	-0.145+
		(0.068)	(0.081)	(0.067)	(0.081)
Child in child care center participating in child food program (HH eligible, not participate=omitted)					
HH eligible, participates		0.021	0.020	0.021	0.020
		(0.033)	(0.032)	(0.033)	(0.032)

No children in household were in daycare	0.019 (0.040)	0.024 (0.039)	0.019 (0.039)	0.023 (0.039)
Missing	0.125* (0.057)	0.135* (0.057)	0.125* (0.057)	0.136* (0.056)
Covered by Medicaid				
Yes	-0.011 (0.017)	-0.019 (0.016)	-0.011 (0.017)	-0.019 (0.016)
Missing	0.006 (0.044)	0.006 (0.043)	0.006 (0.044)	0.008 (0.043)
Value of food stamp benefit (\$100)		0.072** (0.006)		0.075** (0.006)
Proportion of food spending spent on food out			0.036 (0.065)	0.179** (0.065)
Constant	0.329** (0.047)	0.272** (0.091)	0.145 (0.089)	0.264** (0.092)
R-squared	0.075	0.082	0.135	0.082

Standard errors in parentheses

\*\* p<0.01, \* p<0.05, + p<0.1

<sup>1</sup> Income deciles are based on the weighted income distribution of the entire PSID sample, e.g. all years combined and both food stamp recipients and non-recipients

Appendix Table 1: Weighted sample characteristics, food stamp recipients, all years 1999-2013 (n=8,084)			
	Percent/ Mean(SD)		Percent/ Mean(SD)
Year (unweighted)		Government Assistance	
1999	6.73	Receives government heating subsidy	
2001	6.87	No	74.16
2003	8.78	Yes	25.24
2005	11.21	Miss	0.59
2007	11.85	Lives in Public Housing	
2009	15.31	No	83.28
2011	18.72	Yes	16.72
2013	20.53	Receives government rental subsidy	
		No	89.45
Extramarginal	28.68	Yes	10.34
		Missing	0.21
Head Characteristics		Receives free/reduced cost food for the elderly	
Age	43.48 (20.87)	No	15.75
Female	56.96	Yes	1.59
Race		No elderly in household	82.58
White	51.23	Missing	0.08
Black	38.18	Receives free/reduced cost meals for children	
Other	9.43	No	6.85
Miss	1.16	Yes	32.15
Head's Education		No children ages 5-18 in household	54.81
Less than High School	35.55	Missing	6.19
High School	31.98	Receives assistance from WIC	
More than High School	31.54	No	42.09
Miss	1.02	Yes	21.13
Marital Status		No female between ages 15-45 or child under 5 in household	36.43
Not married	72.41	Missing	0.35
Married	27.56	Child in child care center participating in child food program	
Missing	0.03	No	46.67
Household characteristics		Yes	4.09
Annual Family income <sup>1</sup>		No children in household were in daycare	47.65
Bottom decile	39.69	Missing	1.59
2nd-5th decile	51.50	Covered by Medicaid	
6th-10th decile	8.81	No	54.45
Household size	2.86 (2.40)	Yes	42.50
Prop all food spending spent on food out	0.11 (0.17)	Missing	3.05
		Mean value of monthly food stamp benefit	258.81 (259.92)

<sup>1</sup> Income deciles are based on the weighted income distribution of the entire PSID sample, e.g. all years combined and both food stamp recipients and non-recipients.

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Population Studies Center  
University of Michigan  
Institute for Social Research  
PO Box 1248, Ann Arbor, MI 48106-1248 USA  
[www.psc.isr.umich.edu](http://www.psc.isr.umich.edu)