New York City Government Poverty Measure 2005–2016

An Annual Report from the Office of the Mayor

Appendix E: Estimating the Value of Nutritional Assistance

NYC Opportunity

Appendix E

Estimating the Value of Nutritional Assistance

SNAP: Supplemental Nutrition Assistance Program

Data in the American Community Survey (ACS) about SNAP[1] participation are very limited. First, as of 2008, the ACS only indicates whether a member of a household received SNAP at any time in the prior 12 months, providing no information on the value or duration of the benefit. This must be estimated. NYC Opportunity's decision to make use of New York City administrative data as its source for imputing the value of SNAP received leads to a second problem: SNAP participation in the ACS is reported at the household level, which differs from a typical SNAP case. A household is comprised of people who share residence in a housing unit. A SNAP case, in contrast, includes household members who purchase and prepare food in common. The distinction shows up clearly in the data. In 2016, for example, the average New York City SNAP case had 1.84 members while the average ACS household reporting SNAP receipt had 2.89 members. A third problem is underreporting of program participation.

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

To create commensurable units, NYC Opportunity developed a program to divide ACS households into the maximum number of "Food Stamp units" that the

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1 SNAP was formerly known as Food Stamps, and therefore referred to as such in earlier reports. Beginning with the 2005–2015 report, we changed our terminology to SNAP. However, for this report, we continue to refer to the units receiving benefits in our model as Food Stamp units.

program rules allow. SNAP uses the following rules to determine who in a household must be in the same SNAP case:

1. Spouses

2. Parents and children under 22, including spouses of these children, and grandchildren

3. A child under 18 living with, and under the parental control of, an adult that provides 50 percent or more of the minor child's support

4. Anyone else in the household that purchases and prepares food together

The first three of these rules are based on familial relationships within the household. Some of these are readily described by variables in the ACS. Others are not and must be created. To construct these relationships, we used the minimal household unit (MHU) program, which was originally created by Jeff Passel, Senior Demographer at the Pew Hispanic Center. The MHU program is designed to parse an ACS household into its smallest family units.[2] The program loops through the data, linking individuals within the household by kinship and marriage. This work creates Food Stamp units that conform to the first three rules listed above.

Because NYC Opportunity does not attempt to infer who else in the household is purchasing and preparing food together, the program creates the maximum number of Food Stamp units within each household allowable under SNAP rules. The size and composition of SNAP cases produced with this method accurately reproduces the number of cases reported in the administrative data. In 2016, for example, the proportion of single-person SNAP cases created in the ACS (62 percent) is quite close to the proportion of single-person cases in the administrative data (57.4 percent). Using the Food Stamp unit rather than the ACS household also increases the estimated number of SNAP cases in the 2016 ACS from 615,088 (59.1 percent of the administrative total) to 983,728 (94.6 percent of the administrative total). (See Table E.1.)

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

The administrative data set contains demographic information about the SNAP case heads and families, as well as relevant budget information such as household

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2 Passel, Jeffrey. "Editing Family Data in Census 2000 Public-Use Microdata Samples: Creating Minimal Household Units (MHUs)." August 2002.

income. For each case, we sum the total amount of SNAP payments over the previous year. Using these data, we developed a regression model using the demographic characteristics present in both the administrative and ACS data sets in order to predict the yearly value of SNAP payments to families in New York City.

We focus on variables that are strongly predictive of SNAP benefits and for which high quality data exist in both the ACS and administrative data sets. Case size is, unsurprisingly, the strongest predictor of benefit level. Further, the number of children, and the dummy variables for elderly case head and elderly or disabled member in the case, are also predictive of the benefit level. This is likely due to the fact that it is easier for these groups to remain on SNAP longer since they are not subject to work requirements. Age of the case head is included as a proxy for factors such as work status.[3] The coefficient on the age of the case head is positive, even when controlling for elderly status. This may be because the probability of employment among low-income New Yorkers declines after age 50, which would lead to an increasing benefit with age in the administrative data that are independent of elderly status.

The ACS and administrative data are constructed differently and are utilized for very different purposes, a fact that complicates the development of a regression model. This is a particular issue with regard to measuring income, an important determinant of benefit levels. While the ACS reports yearly cash income from all sources, the administrative data only contain the monthly income reported on the SNAP application. This creates two challenges. First, families often apply for SNAP after an income shock, such as a job loss, yielding a potentially biased estimate of the family's income over the past year. Second, SNAP applicants are allowed to make deductions from their gross income to qualify for the program, further complicating comparisons of the two variables.

In order to address this comparability issue, we construct a net income measure in the ACS that represents an estimate of what a Food Stamp unit would report on a SNAP application. We aggregate personal income to the Food Stamp unit and divide it by 12 to get a monthly estimate. We then apply the various income deductions allowed on the SNAP application, including a standard deduction and deductions for childcare expenses and medical expenses for elderly applicants.

This constructed net income measure has a similar distribution to that of the income reported in the administrative data, with positive values beginning at the 75th percentile. Given the highly skewed nature of this distribution, where most observations have a value of zero, we feel that a linear model would produce incoherent results. Instead, we convert the income data into a categorical variable with three categories: 1) income between zero and the 74th percentile; 2) income between the 75th and 89th percentile; and 3) income at or above the 90th percentile. We tested numerous regression specifications,

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3 While the New York City administrative database does contain information on work status of SNAP recipients, these data are generally low quality and contain large numbers of missing observations. As a result, we decided to use the age proxy in the regression model.

evaluating them on the basis of fit. The final model is generally consistent over the years 2005–2016, as shown in Table E.2.

As noted above, the ACS contains data on whether a household received SNAP for some period over the previous year, but does not contain data on how many months the household participated in the program. This is, potentially, a source of unexplained variation, as a household receiving SNAP for six months will have a lower yearly value than a household receiving benefits for the full year, holding other factors constant. However, using a model that cannot include a months-of-receipt variable is justified for two reasons. First, the variables included in regression correlate with the months-of-receipt variable in the administrative sample. As a result, a good deal of the variation in the months-of-receipt variable is captured by the coefficients in the included variables. Second, since this model is used for prediction rather than inference, we are less concerned with potential omitted variable bias in the individual coefficients.

We then match the administrative data into the ACS through a predictive mean match (PMM).[4] First, we use the regression coefficients to estimate SNAP values for observations in the ACS and in the administrative data. These ACS and administrative values are then matched using a nearest neighbor algorithm, whereby an ACS case would be matched with the administrative case that has the closest estimated value, with the added constraint of both host and donor cases being in the same Community District.[5] This additional match criterion is designed to capture neighborhood effects that were not explicit in the model. The ACS case was then given the actual SNAP value from the administrative case. Once an administrative case donates its value to an ACS case, it is removed from the donor pool.

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

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

What is known is that SNAP participation is highly correlated with participation in other income support programs such as Public Assistance (PA) and Supplemental

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4 See O'Donnell, Sharon and Rodney Beard, "Imputing Medical Out-of-Pocket (MOOP) Expenditures using SIPP and MEPS," 2009, for an application of this method in a similar context: https://www.census.gov/library/working-papers/2009/demo/odonnell-01.html

5 The ACS Public Use Micro Sample Areas (PUMA) are approximations of New York City's Community Districts.

Security Income (SSI). Analysis of administrative data shows that nearly all participants in means-tested cash benefit programs also receive SNAP. We assign SNAP values to individuals who were eligible for SNAP and reported PA or SSI receipt, but did not report SNAP receipt.[6] Adding these cases increased the number of Food Stamp units from 983,728 to 1,080,933 in 2016. (See Table E.3.)

Trends in the receipt of NYCgov Food Stamp estimates from 2005 to 2016 are shown in Figure E.1. The number of SNAP recipients increased by approximately 48 percent between 2008 and 2013. This rapid rise corresponds with the beginning of the Great Recession and subsequent economic stimulus programs that were put in place at the time. However, SNAP enrollment levels off in all three measures and begins to decline by 2014, dropping over 10 percentage points in 2016 from the 2013 peak.[7]

The NYCgov estimates of SNAP recipiency come close to replicating the observed trends in the administrative data, with a few exceptions. Specifically, while the administrative data show a consistent upward trend over these years, the NYCgov estimates show a decrease in cases and aggregate value from 2006 to 2007, which interrupts the overall pattern of increases. This is likely the result of sampling variability in the ACS. Additionally, the NYCgov estimates show a larger spike in the number of cases between 2007 and 2008 than seen in the administrative data. This may be a result of the change in the question regarding SNAP in the 2008 ACS survey, described above.[8] By 2016, the number of SNAP cases in the administrative data and NYCgov estimates converged at roughly 2 million people. The effect of SNAP in lowering the poverty rate is notable as shown in the 3.2 percentage point reduction in 2016. (See Table E.12; also discussed further in Chapter 3.)

Subsidized School Meals

The National School Lunch Program (NSLP) and the School Breakfast Program (SBP) offer free and reduced-price meals to low-income students. Free meals are provided to children with family income below 130 percent of the Federal Poverty Guidelines (FPL). Reduced-price lunches are provided to children with family income between 130 and 185 percent of the FPL.[9]

The ACS does not contain information on whether children receive free or reduced-price school meals; therefore, we model participation in these programs in our augmented ACS data set. Although participation in the subsidized school

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6 "Eligible" is defined using the SNAP program rules, requiring that the recipient be a U.S. citizen or legal resident for five years or more with a gross income less than 130 percent of the official poverty line.

7 Dean, Stacy and Dottie Rosenbaum. SNAP Benefits Will Be Cut for Nearly All Participants in November 2013. Washington, DC: Center on Budget and Policy Priorities. See: https://www.cbpp.org/research/snap-benefits-will-be-cut-for-nearly-all-participants-in-november-2013

8 The decision to drop the question about value of SNAP received was influenced by the Census Bureau's testing of the ACS questionnaire, which revealed that respondents were more likely to indicate receipt of the benefit if the follow-up question about the value of the benefit did not appear in the survey instrument. See: https://www.census.gov/content/dam/Census/library/working-papers/2007/acs/2007_Hisnanick_01.pdf

9 In the school year 2016–2017, all New York City public school students became eligible to receive free lunch. Beginning in 2017–2018, free lunch became available to all.

meals programs is widespread, it is not universal among eligible families.[10] Table E.4 indicates, for example, that out of 658,670 eligible school children, only 505,776 free or reduced price meals were served, on average, per school day.

Given this difference, we must estimate which families would be participating in the programs. We do so via a statistical model that assigns a probability that an eligible family would participate in either the NSLP or the SBP, given a set of characteristics that can be measured by variables that are available in the ACS. The model is estimated using New York City families that are included in the Census Bureau's Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS). The CPS is a survey at the national level with a very limited sample for local areas. To muster a sufficiently large number of observations, we pool six years of data. For this report's analysis we use the 2012 through 2017 ASEC, which provides information on participation from 2011 through 2016. The model's householder characteristics and household variables, as well as their coefficient values and their statistical significance, are provided in Table E.5.

In the ACS, we flag as eligible for free or reduced-price meals poverty units with school-age children[11] that have incomes below 185 percent of the FPL or are receiving SNAP, or have a member that was receiving Public Assistance. We then apply the model's coefficients to calculate each eligible poverty unit's probability of participation. These values fall between 0 and 1, with 1 being the highest probability of participation. Once the probability is calculated, we use New York City Department of Education (DOE) administrative data as our target number for assigning participation.

Our estimates account for those students that participated in Provision 2 of the NSLP, which is a program designed to reduce the administrative cost of determining eligibility by allowing schools to provide free lunch to everyone, regardless of eligibility, for four years. Provision 2 required us to assign free meal values to some students who – given their families' income – would be receiving reduced-price school meals. The adjustment is made so that the distribution of students in the ACS who are estimated as receiving free or reduced-price meals corresponds to the distribution in the administrative data. Because of Provision 2, the number of ACS-eligible for free lunch elementary school students is considerably smaller than the average daily number of free lunches served. Therefore, all elementary-aged children who were eligible for free lunch were assigned participation in the program. Table E.6 compares the NYCgov measure's modeled estimates of participation in the two school meal programs with the administrative data.

The final step in our modeling is to assign a dollar value to each free and reduced-price meal received in a year. For 2016, free lunch was valued at $3.34.

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10 Research (much of it sponsored by the U.S. Department of Agriculture) suggests that only about 75 percent of eligible students participate in the NSLP and as children get older they are less likely to participate.

11 Children were defined as school age if they were 5 years of age or older and less than 18.

For a free breakfast value we use $1.66; this is the "Non-severe Need" value of a free school breakfast for the school year 2015–2016, provided by the Food and Nutrition Service, USDA (U.S. Department of Agriculture).[12] We assume that students receive 175 school meals per year.[13] Table E.7 provides the estimated number of families receiving a free or reduced-price school meal and the mean, median, and sum of the school meal value for 2016.

The addition of school meals to families' resources decreases the citywide poverty rate by 0.6 percentage points, as Table E.8 illustrates. The effect is much larger for persons in families receiving school meals, a 2.4 percentage point decrease.

Special Supplemental Nutrition Program for Women, Infants, and Children

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides support for low-income pregnant and breastfeeding women, plus infants and children, who are at nutritional risk. To account for this additional income we include the value of WIC benefits in our measure of family income. As with the school meals programs, participation in WIC is not included in the ACS. Additionally, not every eligible family participates in the WIC program. Using administrative data, we model participation with a similar statistical match to the one used to model school meal participation. Prior to 2009, a fixed percentage of women, infants, and children were flagged as receiving WIC benefits based on characteristics derived from 2008 New York State Department of Health (DOH) administrative data.[14] For the years 2009 through 2015 we received new administrative data from NYS DOH, which allows us to improve the match of the population count receiving WIC. In this year's report, 2016 data was calculated along with 2015 administrative data, as 2016 data was not yet available.

The model is based on WIC-eligible household characteristics that are common and consistently defined in the ASEC; the ACS assigns a probability that a given eligible family will participate in WIC. The model is estimated using New York City families that are included in the ASEC section of the CPS. To muster a sufficiently large number of observations, we pool six years of data. For this report's analysis we use the 2012 through 2017 ASEC, which provides information on WIC participation from 2011 through 2016. The model's householder characteristics and household variables, as well as their coefficient values and their statistical significance, are provided in Table E.9. For more detailed information about our methodology, please refer to Appendix E of an earlier NYC Opportunity report on poverty, 2005–2010.[15]

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12 See: https://www.federalregister.gov/documents/2015/07/17/2015-17600/national-school-lunch-special-milk-and-school-breakfast-programs-national-average-paymentsmaximum

13 The school year is required to be no less than 180 days; we used 175 days to account for occasional absences.

14 This 2008 data was available when we first estimated the NYCgov poverty rate in 2008 and was applied retrospectively to years 2005 to 2008.

15 See the CEO Poverty Measure, 2005–2010: http://www1.nyc.gov/assets/opportunity/pdf/12_poverty_measure_report.pdf

After identifying WIC participants, we assign an annual benefit value of $637, which is the annualized USDA Food and Nutrition Services average monthly WIC benefit for New York State residents.[16] We then aggregate all individual WIC benefits to arrive at a family benefit value. Table E.10 shows that $637 is also the median benefit per family, indicating that the majority of poverty units contain only one WIC recipient.

The addition of WIC benefits to resources has a negligible effect on the citywide poverty rate, a 0.3 percentage point fall as Table E.11 indicates.[17] The effect is much larger, however, among those in families receiving WIC benefits, at 3.5 percentage points. Prior to 2010, the effect WIC had on the poverty rate was small. For the years 2005 to 2009, the poverty rate would have been 0.1 percent higher if not for WIC benefits. However, with the new administrative data since 2009, the impact of WIC has decreased poverty by an average of 0.3 percentage points, including 2016. (See Table E.12.)

Impact of Nutritional Assistance on the NYCgov Poverty Rate

Nutritional assistance is an important component of NYCgov income and has a considerable impact on the poverty rate. Table E.12 pulls together the effects of SNAP, school meals, and WIC programs on the NYCgov poverty rate for the years 2005–2016. SNAP accounts for the bulk of the impact of nutritional assistance – reducing poverty by 3.2 percentage points in 2016. School meals and WIC have more modest impacts for the city as a whole, at 0.6 and 0.3 percentage points, respectively. This is unsurprising, given that the latter two programs are targeted at specific populations while SNAP is more broadly available. SNAP also accounts for the increase in the impact of nutritional assistance, particularly during the recovery from the Great Recession (2008 to 2013). As discussed earlier, this is the result of the rapid expansion of the program during this period. The effect of SNAP on the overall poverty rate began declining in 2014 and stabilized at 3.2 percentage points over the last two years.

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16 The average monthly benefit for New York State residents is $53.97. We assume that WIC recipients participate for 12 months. This overstates the value of the benefit, but given the program's modest effect, we do not believe we have introduced much distortion in our poverty estimates. See USDA Food and Nutrition Service data at: http://www.fns.usda.gov/pd/wic-program

17 This echoes the effect of WIC benefits for the nation in the new Federal Supplemental Poverty Measure. See: Short, Kathleen. "The Research on Supplemental Poverty Measure, 2010." U.S. Census Bureau, Current Population Reports, Consumer Income, pp. 60-241. U.S. Government Printing Office, Washington, DC. November 2011.

Table E.1
Percentage Distribution of SNAP Cases by Size, 2016

Size	ACS Households		NYCgov Food Stamp Units		Administrative Cases	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
1	185,518	30.2	610,241	62.0	596,657	57.4
2	133,882	21.8	165,290	16.8	214,597	20.6
3	98,023	15.9	95,298	9.7	117,532	11.3
4	80,700	13.1	58,237	5.9	63,006	6.1
5	58,669	9.5	32,795	3.3	26,757	2.6
6	28,348	4.6	11,773	1.2	10,981	1.1
7	13,795	2.2	4,699	0.5	4,682	0.5
8	6,962	1.1	2,247	0.2	2,573	0.2
9	4,265	0.7	1,600	0.2	1,547	0.1
10 or More	4,926	0.8	1,548	0.1	1,797	0.2
Total	615,088	100.0	983,728	100.0	1,040,129	100.0

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

Table E.2
Regression Model to Predict Yearly SNAP Benefit Value, 2005–2016

| Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Intercept	-393.60	-394.60	-411.40	-472.90	-615.10	-748.10	-638.20	-942.70	-850.44	-789.70	-645.60	-709.20
	[-7.85]	[-7.82]	[-7.98]	[-9.12]	[-12.35]	[-14.23]	[-12.93]	[-19.42]	[-17.32]	[-16.71]	[-13.48]	[-13.95]
Income between 75th-89th Percentile	-215.30	-173.30	-195.40	-128.80	-609.90	-498.60	-451.00	-575.80	-660.44	-724.70	-863.80	-937.46
	[-12.54]	[-10.06]	[-10.8]	[-6.96]	[-32.62]	[-25.79]	[-25.14]	[-31.88]	[-37.11]	[-43.15]	[-51.12]	[-53.47]
Income at or above 90th Percentile	-1376.00	-1375.00	-1427.00	-1435.00	-1675.00	-1826.00	-1795.00	-1830.00	-1967.37	-1967.00	-2030.00	-2204.26
	[-61.3]	[-60.47]	[-62.06]	[-60.85]	[-73.12]	[-73.94]	[-76.16]	[-82.42]	[-85.04]	[-90.95]	[-93.97]	[-98.08]
Household Size	849.20	846.10	829.60	838.80	1037.00	1251.00	1209.00	1245.00	1318.37	1197.00	1170.00	1188.07
	[101.48]	[102.01]	[95.88]	[93.62]	[115.21]	[132.68]	[133.57]	[142.74]	[151.88]	[145.09]	[137.44]	[127.76]
Number of Children	110.90	111.50	136.90	169.10	164.90	163.20	161.30	154.20	94.87	146.50	135.40	167.75
	[15.01]	[14.97]	[17.25]	[20.23]	[19.67]	[18.54]	[18.95]	[18.75]	[11.63]	[18.44]	[16.21]	[18.17]
Elderly Household Head	74.73	47.37	59.19	32.12	53.26	98.18	54.00	-0.25	47.63	26.27	8.64	19.74
	[2.6]	[1.65]	[2.01]	[1.08]	[1.75]	[3.04]	[1.76]	[-0.01]	[1.68]	[1.01]	[0.34]	[0.76]
Elderly or Disabled Person in Unit	75.33	57.89	146.70	138.90	322.20	449.20	426.70	414.20	372.69	301.10	310.50	319.71
	[4.54]	[3.44]	[8.54]	[7.97]	[18.84]	[25.13]	[24.81]	[25]	[22.55]	[19.25]	[19.57]	[19.28]
Age of Household Head	18.99	21.33	21.10	23.65	28.16	36.48	33.66	42.05	38.57	39.26	32.87	35.86
	[9.2]	[10.33]	[9.96]	[11.09]	[13.38]	[16.16]	[15.95]	[20.54]	[18.82]	[20.29]	[17.11]	[17.84]
Age of Household Head Squared	-0.13	-0.14	-0.14	-0.16	-0.20	-0.29	-0.24	-0.30	-0.28	-0.28	-0.22	-0.25
	[-5.86]	[-6.63]	[-6.36]	[-7.19]	[-9.08]	[-11.97]	[-10.82]	[-14.05]	[-13.25]	[-14.28]	[-11.46]	[-12.72]
R^2	0.58	0.57	0.56	0.54	0.59	0.60	0.58	0.59	0.59	0.60	0.59	0.60

Source: New York City Human Resources Administration.
Notes: The dependent variable is the annual value of Food Stamps. "Income" is net of deductions allowable by Food Stamp program rules. t-statistics in brackets.

Table E.3
Comparison of Self-Reported and Estimated SNAP Values, 2016

	Cases		Individuals		Aggregate Value	
	Number	Ratio	Number	Ratio	Number	Ratio
ACS Households, Self-Reported Participation	615,088	0.59	1,777,045	0.93	N.A.	N.A.
NYCgov Food Stamp Units, Self-Reported Participation, Estimated Value	983,728	0.95	1,777,045	0.93	$2,413,191,587	0.94
NYCgov Food Stamp Units, Estimated Value, Case Adjusted	1,080,933	1.04	1,913,508	1.00	$2,535,163,064	0.99
Administrative	1,040,129	1.00	1,916,785	1.00	$2,561,671,610	1.00

Sources: New York City Human Resources Administration; American Community Survey (ACS) Public Use Micro Sample as augmented by NYC Opportunity.
Note: "Ratio" compares the estimated value to administrative data.
N.A. - Not applicable – the unadjusted ACS does not contain data on the value of the SNAP benefit."

Figure E.1
Comparison of Food Stamp Recipient Trends, 2005–2016
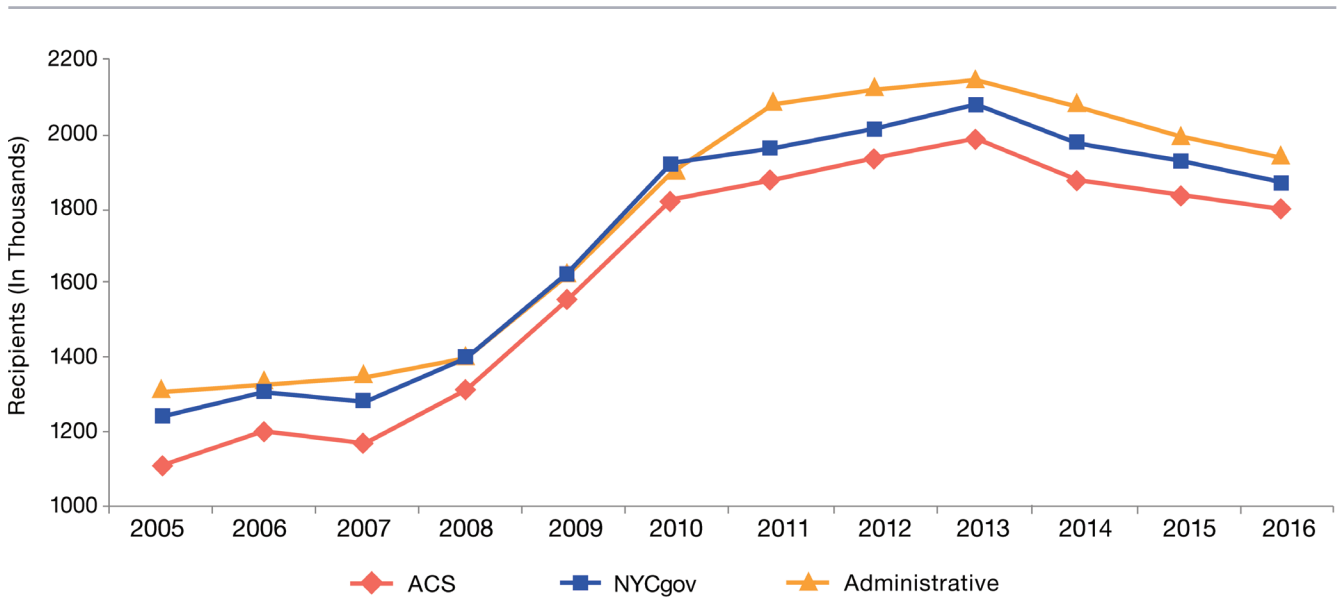
Source: American Community Survey Public Use Micro Sample as augmented by NYC Opportunity.

Table E.4

Comparison of Eligibility to Participation in the National School Lunch Program, 2016

Grade Level	Eligible for Free or Reduced-Price School Lunch	Receiving Free or Reduced-Price Lunch
Elementary	322,179	322,179
Middle	143,121	104,179
High	193,370	79,418
Total	658,670	505,776

Sources: New York City Department of Education and American Community Survey Public Use Microsample as augmented by NYC Opportunity.
Note: "Receiving" is measured as the average number of meals served per day in the 2015–2016 school year.

Table E.5

Logit Regression Model to Predict School Meals Participation, Coefficient Definitions and Values, 2012–2017

Variable			Estimate		
			B	S.E.	Exp(B)
Household Head Characteristics	Race/ Ethnicity	Non-Hispanic White	-.318	.006	.727
		Non-Hispanic Black	-.168	.006	.846
		Hispanic	.408	.005	1.504
		Other Race/Ethnicity (omitted variable)			
	Education	High School Graduate through College Graduate	-.098	.004	.907
		Master's Degree or Higher	-.414	.008	.661
		Less Than High School (omitted variable)			
	Citizenship	Foreign Born, Citizen by Naturalization	.232	.004	1.261
		Foreign Born, Not a Citizen	.447	.004	1.563
		Citizen by Birth (Omitted Variable)			
	Work Experience	Works Less Than Full Time, Year Round	-.230	.004	.795
		Does Not Work	-.009	.004	.991
		Works Full Time, Year Round (omitted variable)			
Household Characteristics		Female Householder	-.039	.004	.962
		Age of Householder	-.012	.000	.988
		Age of Youngest School-aged Child	-.079	.000	.924
		Single Householder	.555	.004	1.742
		Number of Persons in Household	-.095	.001	.910
		Household Receives Food Stamps	1.286	.003	3.620
		Household Income/Poverty Guideline Ratio	-.056	.001	.945
		Constant	1.547	.011	4.696

Source: Current Population Survey Annual Social and Economic Supplement, New York City Sample, 2010–2015.
Notes: All coefficients significant at the $p < 0.01$. Analysis used the household weight. Dependent Variable, HFLUNCH, recoded to a binary. N = 1304.

Table E.6

Comparison of Administrative to Estimated Data on Participation in Subsidized School Meal Programs, 2016

Grade Level	DOE Data		NYCgov Modeled Data	
	Receiving Free or Reduced-Price Meals		Receiving Free or Reduced-Price Meals	
	School Lunch	School Breakfast	School Lunch	School Breakfast
Elementary	327,943	168,321	322,179	168,274
Middle	104,222	31,758	104,179	31,715
High	79,440	36,516	79,418	36,558
Total	511,605	236,595	505,776	236,547

Sources: New York City Department of Education (DOE) and American Community Survey aPublic Use Microsample as augmented by NYC Opportunity.
Note: "Receiving" in the DOE data is measured as the average number of meals served per day in the 2015–2016 school year.

Table E.7

Participation and Value of Free and Reduced-Price School Meals, 2016

	School Lunch	School Breakfast
Number of Families	301,374	144,651
Mean Value	$970	$463
Median Value	$585	$291
Aggregate Value	$292,333,149	$67,032,294

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

Table E.8

Impact of School Meals on NYCgov Poverty Rate, 2016
(Numbers are Percent of the Population)

	Total Population	Persons in Participating Families
A. Poverty Rates		
Total NYCgov Income	19.5	36.8
Net of School Meals	20.1	39.2
B. Marginal Effect		
School Meals	-0.6	-2.4

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

Table E.9
Logit Regression Model to Predict WIC Participation, Coeffecient Definitions, and Values, 2011–2016

Variable			Estimate		
			B	S.E.	Exp(B)
Household Head Characteristics	Race/ Ethnicity	Non-Hispanic White	.518	.008	1.679
		Non-Hispanic Black	.857	.007	2.356
		Hispanic	.780	.007	2.182
		Other Race/Ethnicity (omitted variable)			
	Education	High School Graduate through College Graduate	-.967	.011	.380
		Master's Degree or Higher	-.223	.005	.800
		Less Than High School (omitted variable)			
	Citizenship	Foreign Born, Citizen by Naturalization	-.167	.005	.846
		Foreign Born, Not a Citizen	.247	.005	1.280
		Citizen by Birth (Omitted Variable)			
	Work Experience	Works Less Than Full Time, Year Round	.051	.005	1.053
		Does Not Work	.174	.005	1.190
		Works Full Time, Year Round (omitted variable)			
Household Variables		Single Female Household Head	-.108	.004	.898
		Infant Present in Household	.674	.005	1.963
		Number of Persons in Household	-.035	.001	.965
		Household Receives Food Stamps	.610	.004	1.841
		Household Income/Poverty Guideline Ratio	.399	.002	1.490
		Constant	-1.585	.011	.205

Source: Current Population Survey Annual Social and Economic Supplement, New York City Sample, 2012–2017.
Notes: All coefficients significant at the $p < 0.01$ level. Analysis used the household weight. Dependent Variable was HRWICYN, "Does anyone in household participate in WIC program."
N = 612.

Table E.10
Participation and Value of WIC, 2016

Number of Families	148,164
Mean Value	$945
Median Value	$637
Aggregate Value	$139,954,608

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

Table E.11
Impact of WIC Benefits on NYCgov Poverty Rate, 2016
(Numbers are Percent of the Population)

	Total Population	Persons in Participating Families
A. Poverty Rates		
Total NYCgov Income	19.5	37.7
Net of WIC	19.8	41.2
B. Marginal Effect		
WIC	-0.3	-3.5

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

Table E.12
Impact of Nutritional Assistance on the NYCgov Poverty Rate, 2005–2016
(Numbers are Percent of the Population)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
A. Poverty Rates												
Total NYCgov Income	20.3	20.0	19.8	19.0	19.4	20.6	20.8	20.7	20.7	20.6	19.9	19.5
Net of:												
SNAP	22.4	22.0	21.7	21.1	22.2	24.1	24.4	24.4	24.7	24.2	23.1	22.7
School Meals	20.9	20.5	20.4	19.4	19.9	21.1	21.3	21.2	21.3	21.1	20.6	20.1
WIC	20.5	20.1	19.9	19.1	19.6	20.8	21.1	21.0	20.9	20.8	20.1	19.8
Total Nutritional Assistance	23.0	22.6	22.3	21.7	22.8	24.9	25.1	25.2	25.6	24.9	24.1	23.5
B. Marginal Effects												
SNAP	-2.1	-2.0	-1.9	-2.1	-2.8	-3.5	-3.6	-3.7	-4.0	-3.6	-3.2	-3.2
School Meals	-0.6	-0.5	-0.6	-0.4	-0.5	-0.4	-0.6	-0.5	-0.6	-0.5	-0.7	-0.6
WIC	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.2	-0.2	-0.2	-0.3
Total Nutritional Assistance	-2.7	-2.5	-2.5	-2.6	-3.4	-4.3	-4.4	-4.5	-4.9	-4.3	-4.2	-4.0

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