

Supplemental Nutrition Assistance Program Household Composition: Issues and Findings from Linked Survey and Administrative Data

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Outline

- **Background**
- **Data and methods**
- **Selected findings**

Background

Policy analysis of SNAP

- **To inform SNAP policymaking, researchers may pose questions such as:**
 - What fraction of its target population does SNAP reach?
 - What differentiates SNAP participants from eligible non-participants?
 - What accounts for changes in SNAP participation over time?
 - How would a change in SNAP eligibility criteria or the benefit formula affect the number and characteristics of SNAP participants?
- **To answer these questions requires information on the population eligible for SNAP—actually or hypothetically**
- **Program administrative data provide information on participants and on applicants denied benefits**
- **Survey data are the sole source of information on eligible non-participants**

SNAP eligibility

- **Participants must meet nonfinancial criteria**
 - Citizen or eligible noncitizen
 - Meet work requirements, if applicable
 - Not in other excluded group (strikers, certain students, etc.)
- **SNAP “households” must meet one of these:**
 - **Categorical eligibility criteria**
 - Pure public assistance
 - State TANF-funded program (many have no asset test)
 - **Financial criteria**
 - Income under federal limits
 - Assets under federal limits
- **Eligible SNAP households must qualify for a benefit**

How we simulate eligibility with survey data

- **Apply nonfinancial criteria to each person in a sample survey household, where possible**
- **Create SNAP eligibility unit(s) among the persons meeting nonfinancial criteria within each survey household**
- **For each simulated eligibility unit:**
 - **Assess categorical eligibility**
 - **For those not categorically eligible, calculate gross and net countable income and compare to applicable thresholds; for those below thresholds, determine asset eligibility**
- **For units simulated eligible, calculate the monthly SNAP benefit amount; to receive benefits, units must qualify for a positive benefit; small units are entitled to the minimum benefit**

SNAP household formation

- **Challenge: Determining which people who live together would apply for SNAP together**
- **Certain family members living together must apply together**
 - Spouses
 - Children under age 22 and parents
 - Children under 18 and a guardian if parents are not present
- **Also others who purchase and prepare food together**
 - Exception for elderly people with a substantial disability
- **Income and assets of ineligible members of SNAP household considered in eligibility and benefit determination**

Motivation for the study

- **SNAP quality control sample data reveal differences between actual SNAP units and survey households reporting SNAP participation**
- **The source of these differences is not entirely clear because:**
 - Only one survey (SIPP) identifies members of the SNAP unit
 - Participation in SNAP is underreported in all surveys, but more so in some than others
 - Comparisons are between administrative variables and survey variables
- **Consistency with administrative data is important for the credibility of policy analysis**
- **Resolving differences between survey and administrative data can improve the quality of inferences about the SNAP population and increase the accuracy of policy forecasts**

Distribution of unit/household size among households reporting SNAP in 2009

SNAP Unit Size	SNAP QC Data	SIPP SNAP Units	SIPP Hholds	CPS Hholds	ACS Hholds
1	46.7	35.1	22.6	22.9	21.6
2 or 3	34.8	39.4	39.5	40.6	39.7
4 or 5	15.3	19.8	27.2	27.1	27.7
6+	3.2	5.8	10.8	9.4	11.0

Source: Czajka et al., 2012, Figure VIII.1.

Study objectives

- **By linking SNAP administrative records to survey households, we sought to:**
 - Better understand the discrepancies in the size and characteristics of simulated versus actual SNAP units
 - Evaluate a SNAP eligibility simulation that allows adults to form the smallest units consistent with SNAP regulations and the limitations of ACS data (on relationships and food preparation)
 - Learn how to improve the specification of simulated SNAP eligibility units more generally

Data and Methods

How the Census Bureau links records

- All survey and administrative records processed by the Census Bureau are assigned a Protected Identification Key (PIK) and a Master Address File Identifier (MAFID), where possible, and direct identifiers are removed
- The PIK has a one-to-one correspondence with the Social Security number (SSN); the Census Bureau uses a Social Security Administration database to assign PIKs
- PIKs can be assigned to over 99 percent of the administrative records when they contain SSNs and around 90 percent of Census Bureau survey records
- All record linkage at the Census Bureau is done using the assigned PIKs
- Records without PIKs cannot be linked

Challenges in working with state SNAP files

- **Experience with state files to date suggests that each state file is likely to present a unique set of issues**
- **Files are not documented for external use**
 - Expertise may reside in a small number of state staff
 - Quality assessments of fields are not readily available
 - Quality is not uniform across fields
- **Fields provided are a subset of the full set and determined through negotiation**
 - Fields received by the Census Bureau will vary by state
 - Eligibility information is the most limited
- **Participants in other programs and other non-beneficiaries may be included; SNAP participants must be distinguished**

Issues in creating and analyzing linked files

- **Typically, 9 to 10 percent of the respondents to Census Bureau household surveys cannot be assigned PIKs; these include:**
 - Respondents without SSNs
 - Respondents providing incomplete or inaccurate personal information
 - For the 2012 ACS, the PIK rates for New York and Colorado were 89.4 and 91.6 percent, respectively; for the SNAP administrative records they were 99.2 and 99.9 percent, respectively, for persons in benefit units
- **Duplicate PIKs—and multiple PIKs for the same individual—can be present in both the survey and administrative data**
- **Geocoding of addresses may be incomplete or inconsistent; address lines may be missing entirely**
- **Members of the same administrative SNAP unit sometimes have different addresses recorded in the administrative data**

Construction of analysis files

- **Four files were created**
 - New York SNAP data matched with ACS, SIPP, and CPS ASEC
 - Colorado SNAP data matched with ACS
- **State SNAP records were linked with survey person records**
- **Unmatched survey records of persons living with matched persons were added to complete the survey household**
- **Unmatched SNAP records in SNAP units with one or more matched participants were added to complete the enhanced household**
- **Unmatched SNAP units sharing addresses with matched units were to be added but the address data were inadequate**
- **(For ACS only) the ERS simulated unit ID was appended**

Households in each analysis file

Analysis File	Actual	Projected
ACS/New York SNAP	19,856	
CPS ASEC/New York SNAP	604	
SIPP/New York SNAP	1,274	
ACS/Colorado SNAP	2,899	
CPS ASEC/Colorado SNAP		90
SIPP/Colorado SNAP		190

Source: Mathematica Policy Research, from linked 2012 survey and SNAP administrative data.

Research questions addressed

- **How often does the entire household participate in SNAP, and how often does a participating household include nonparticipating members?**
- **To what extent might the non-participating household members be an artifact of imperfect links?**
- **How well do the SNAP unit simulations match the size distribution of actual SNAP units?**
- **How well do the simulated SNAP units match the characteristics of actual SNAP units?**
- **How prevalent are multiple SNAP units within the same household?**
- **How well do the SNAP unit simulations capture multiple SNAP units within a household?**

Selected Findings

ACS / New York linked file

Match status of ACS household and NY administrative unit members

Match Status Summary	Number	Percent
ACS households containing matched person(s)	19,586	100.0
All ACS household members matched	10,892	55.6
All administrative unit members matched	10,232	52.2
Some administrative unit members not matched	660	3.4
Some ACS household members not matched	8,694	44.4
All administrative unit members matched	7,284	37.2
Some administrative unit members not matched	1,410	7.2

Source: Mathematica Policy Research, from linked 2012 ACS and New York SNAP administrative data.

ACS / New York linked file

ACS household members by match result to NY SNAP administrative data

Match Result	Number	Percent
All ACS household members	57,442	100.0
Has a match	39,371	68.5
Has a PIK but no match	15,260	26.6
Has no PIK	2,811	4.9
ACS household heads	19,586	100.0
Has a match	14,328	73.2
Has a PIK but no match	4,802	24.5
Has no PIK	456	2.3

Source: Mathematica Policy Research, from linked 2012 ACS and New York SNAP administrative data.

Note: Universe is the membership of New York ACS households in which one or more members matched a New York SNAP record in the interview month or prior two months.

ACS / New York linked file

New York SNAP administrative records by match result to ACS

Match Result	Number	Percent
New York SNAP administrative records	43,137	100.0
Matched an ACS record	39,371	91.3
Did not match but has a PIK	3,747	8.7
Did not match and has no PIK	19	0.0

Source: Mathematica Policy Research, from linked 2012 ACS and New York SNAP administrative data.

Note: Universe is the membership of New York SNAP units in which one or more members matched a New York ACS record.

ACS / New York linked file

Comparison of households, simulated units, and administrative units

	Matched ACS NY Households	All Simulated SNAP units	Eligible Simulated SNAP units	New York Administrative SNAP units
Total number	19,586	29,852	18,463	21,159
Size (percent)				
1 member	28.4	58.1	58.1	52.9
2 members	21.7	18.1	16.8	19.7
3 members	17.2	9.7	9.9	12.6
4 members	13.8	7.4	7.6	7.6
5 members	9.1	3.9	4.1	3.7
6 or more members	9.8	2.9	3.5	3.4

Source: Mathematica Policy Research, from linked 2012 ACS and New York SNAP administrative data.

ACS / New York linked file

Comparison of households, simulated units, and administrative units

	Matched ACS NY Households	All Simulated SNAP units	Eligible Simulated SNAP units	New York Administrative SNAP units
Total number	19,586	29,852	18,463	21,159
Age group (percent)				
Children (0 to 17)	43.9	29.7	32.0	38.3
Children only	0.0	0.1	0.1	4.4
Nonelderly adults	77.5	72.5	69.6	65.8
Elderly adults (60+)	41.7	29.9	32.4	32.9
Living alone	17.1	22.2	25.6	25.1

Source: Mathematica Policy Research, from linked 2012 ACS and New York SNAP administrative data.

ACS / New York linked file

Prevalence of multiple SNAP units in New York ACS households

Administrative SNAP units with matches to same ACS household	All	Simulated SNAP units within ACS household			
		One	Two	Three	Four +
Total number	19,586	12,946	4,282	1,555	803
Total percent	100.0	66.1	21.9	7.9	4.1
Percent of total					
With one unit	92.8	64.8	18.7	6.4	2.9
With two units	6.5	1.3	3.0	1.4	0.8
With three or more units	0.7	0.0	0.1	0.2	0.4

Source: Mathematica Policy Research, from linked 2012 ACS and New York SNAP administrative data.

ACS / New York linked file

Prevalence of multiple SNAP units in New York ACS households

Administrative SNAP units with matches to same ACS household	All	Simulated eligible SNAP units within ACS household			
		One	Two	Three	Four +
Total number	15,076	12,393	2,150	413	120
Total percent	100.0	82.2	14.3	2.7	0.8
Percent of total					
With one unit	91.9	79.2	10.7	1.7	0.3
With two units	7.2	2.8	3.3	0.8	0.3
With three or more units	0.8	0.1	0.2	0.3	0.2

Source: Mathematica Policy Research, from linked 2012 ACS and New York SNAP administrative data.

ACS / Colorado linked file

Match status of ACS household and CO administrative unit members

Match Status Summary	Number	Percent
ACS households containing matched person	2,889	100.0
All ACS household members matched	1,237	42.7
All administrative unit members matched	1,163	40.1
Some administrative unit members not matched	74	2.6
Some ACS household members not matched	1,662	57.3
All administrative unit members matched	1,342	46.3
Some administrative unit members not matched	320	11.0

Source: Mathematica Policy Research, from linked 2012 ACS and Colorado SNAP administrative data.

ACS / Colorado linked file

ACS household members by match result to CO SNAP administrative data

Match Result	Number	Percent
All ACS household members	9,214	100.0
Has a match	5,666	61.5
Has a PIK but no match	3,064	33.3
Has no PIK	484	5.3
ACS household heads	2,899	100.0
Has a match	1,806	62.3
Has a PIK but no match	1,001	34.5
Has no PIK	92	3.2

Source: Mathematica Policy Research, from linked 2012 ACS and Colorado SNAP administrative data.

Note: Universe is the membership of Colorado ACS households in which one or more members matched a Colorado SNAP record in the interview month or prior two months.

ACS / Colorado linked file

Colorado SNAP administrative records by match result to ACS

Match Result	Number	Percent
Colorado SNAP administrative records	6,367	100.0
Matched an ACS record	5,666	89.0
Did not match but has a PIK	696	10.9
Did not match and has no PIK	5	0.1

Source: Mathematica Policy Research, from linked 2012 ACS and Colorado SNAP administrative data.

Note: Universe is the membership of Colorado SNAP units in which one or more members matched a Colorado ACS record.

ACS / Colorado linked file

Comparison of households, simulated units, and administrative units

	Matched ACS CO Households	All Simulated SNAP units	Eligible Simulated SNAP units	Colorado Administrative SNAP units
Total number	2,889	4,221	2,359	3,075
Size (percent)				
1 member	23.2	50.9	52.9	55.7
2 members	20.0	17.6	15.7	14.3
3 members	18.0	11.5	11.4	12.3
4 members	15.7	9.5	8.8	8.7
5 members	11.1	6.2	6.8	5.5
6 or more members	12.0	4.3	4.5	3.4

Source: Mathematica Policy Research, from linked 2012 ACS and Colorado SNAP administrative data.

ACS / Colorado linked file

Comparison of households, simulated units, and administrative units

	Matched ACS NY Households	All Simulated SNAP units	Eligible Simulated SNAP units	Colorado Administrative SNAP units
Total number	19,586	29,852	18,463	21,159
Age group (percent)				
Children (0 to 17)	54.0	38.1	38.9	44.7
Children only	0.0	0.1	0.0	9.3
Nonelderly adults	86.5	81.5	79.4	73.8
Elderly adults (60+)	28.0	20.7	22.3	18.3
Living alone	10.5	14.8	17.8	15.6

Source: Mathematica Policy Research, from linked 2012 ACS and Colorado SNAP administrative data.

ACS / Colorado linked file

Prevalence of multiple SNAP units in Colorado ACS households

Administrative SNAP units with matches to same ACS household	All	Simulated SNAP units within ACS household			
		One	Two	Three	Four +
Total number	2,899	1,979	642	200	78
Total percent	100.0	68.3	22.1	6.9	2.7
Percent of total					
With one unit	94.5	67.1	19.7	5.8	2.0
With two or more units	5.5	1.2	2.4	1.1	0.7

Source: Mathematica Policy Research, from linked 2012 ACS and Colorado SNAP administrative data.

ACS / Colorado linked file

Prevalence of multiple SNAP units in Colorado ACS households

Administrative SNAP units with matches to same ACS household	All	Simulated eligible SNAP units within ACS household		
		One	Two	Three
Total number	1,973	1,660	262	51
Total percent	100.0	84.1	13.3	2.6
Percent of total				
With one unit	94.5	82.2	10.7	1.6
With two or more units	5.5	2.0	2.6	1.0

Source: Mathematica Policy Research, from linked 2012 ACS and Colorado SNAP administrative data.

For More Information

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