

**Issues in Comparisons of Food Stamp Recipients:  
Caseloads from Maryland State Administrative Records  
and  
The Census 2000 Supplementary Survey**

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#### Executive Summary

- We expect estimates of the number of households that reported receiving Food Stamps in the Census 2000 Supplementary Survey and the American Community Survey to differ from the results of state administrative records of Food Stamp recipients in 1999. They differ by much more than expected.
- For the State of Maryland, the difference between the actual count of households that received Food Stamps in calendar year 1999 from the program records (169,200) and the estimate from the Census 2000 Supplementary Survey (91,300) is substantial, a difference of roughly 80,000 households. Sampling error alone cannot account for the difference as the 90-percent confidence interval for the survey estimate, the measure of sampling variation, is about 79,500 –103,200.
- It is impossible to completely identify or disentangle the exact contribution of the factors to differences between the data sets. Nevertheless, we conclude that factors in the differences in estimates from the surveys and the counts from program records of households actually receiving Food Stamps in Maryland include the following:
  - o **Misreporting in the survey** is likely an important factor but we cannot definitively identify reasons for the misreporting. Respondents may forget Food Stamps they received the year before the survey if the benefit amounts were small and received for only a few months. About 35,000 Maryland households received Food Stamps in 1999 for only 1 to 3 months. It is possible that some portion of them, when asked in the survey to report whether they had received Food Stamps in the 12 months before filling out the survey form forgot, were unsure of the months when they received the Food Stamps, or if the amount was small, they may have considered the receipt too inconsequential to mention.

- Some have speculated that people may be embarrassed to report receipt of public assistance in a survey, especially if they are able-bodied adults. Our evidence shows that differences in the two data sets are considerably higher in households with no children present than where children are present. We do not know from the publicly-available statistics the age of the householder in the 31,000 households with no children present that did report receipt of Food Stamps. The tangential evidence suggests that half to two-thirds may be headed by older people. That leaves unanswered the question about those households without children that did not report receipt of Food Stamps and whether they are able-bodied adults who did not want to admit to their circumstances. The administrative records include homeless people and others living in shelters and this would account for a small part of the difference.
- **Undercoverage** of housing units occurs in all surveys. Data on coverage error are not currently available from Census 2000. Baltimore City, Baltimore County, and Prince George's County have, in past censuses, experienced higher than average undercounts. Baltimore City households accounted for about 4 in 10 of Maryland's Food Stamp recipient households. Baltimore County and Prince George's County had 1 in 10 recipient households each.
- There are crucial **differences in concepts and data collection methods** between the data sets. The survey was of households only and did not include people living in group quarters. A person is counted as a household member if they have lived, or intend to live, in the household for two or more months. The administrative records included about 8,600 people who lived in group quarters and received Food Stamps in 1999 but we could not determine their length of stay. The largest group was the 5,600 people who received Food Stamps for at least one month while living in a shelter for the homeless at some point in 1999. Only about 400 of that group received Food Stamps for the entire calendar year 1999; more than half received the Food Stamps for less than four months. Most people are homeless for relatively short periods, and some move in and out of "homelessness" throughout the year. There were fewer than 50 Food Stamp recipients who lived in other types of group quarters. About 3,000 people who received Food Stamps at some point in 1999 lived in alcohol and drug and other rehabilitation treatment centers. The stay is generally for less than two months and thus, they might have been eligible for sample selection and inclusion in a household survey. We cannot determine what portion of these 8,600 people

are a source of misreporting and differences in the data sets but it is likely that some are.

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## I. Introduction

We expect estimates of the number of households that report receiving Food Stamps<sup>1</sup> in a survey to differ from the count shown in state administrative records. There are crucial differences in concepts and data collection methods between the surveys and the administrative records that affect the results.

This paper uses information for the State of Maryland to examine the extent of the differences and to shed light on reasons for the differences. We compared the *actual* number of households<sup>2</sup> in which one or more members received Food Stamps at any time in calendar year 1999 from Maryland's Department of Human Resources with *estimates* of households that reported receiving Food Stamps at any time in the 12 months before filling out the form in the Census 2000 Supplementary Survey<sup>3</sup> for Maryland and five large counties, and for Calvert

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<sup>1</sup> The Food Stamp Act of 1977 defines this federally funded program as one intended to "permit low-income households to obtain a more nutritious diet." Title XIII of P.L.95-113. The Food and Nutrition Service of the U.S. Department of Agriculture administers the program through state and local public assistance offices. The specific eligibility rules vary little among states.

<sup>2</sup> In the two surveys, a "household" includes all the people who occupy (or intend to occupy) a housing unit for two or more months. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live separately from any other people in the building and which have direct access from the outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated people who share living arrangements. In the administrative records, "household" additionally includes people living in shelters for the homeless, large group homes of 6 or more people, licensed battered spouse shelters, rehabilitation centers, and alcohol and drug treatment centers. For this study, we did not subtract these groups from the administrative records because the numbers were relatively small (6,339 people in 1999 of whom 5,665 were homeless) and because we could not determine if they had received Food Stamps while living in a regular housing unit at any time in 1999. Later in the paper we provide a table that does subtract the homeless population from the administrative counts but this does not begin to explain the large differences between the survey estimates and the administrative counts.

<sup>3</sup> The Census 2000 Supplementary Survey is a Decennial Census program designed to demonstrate the feasibility of collecting long form type information at the same time as, but separate from, the Decennial Census. It used the questionnaire and methods developed for the American Community Survey to collect demographic, social, economic, and housing data from a national sample of 700,000 households. Group quarters were not included in the sample. The Census 2000 Supplementary Survey was conducted in 1,203 counties with monthly samples of about 58,000 housing units. The Census 2000 Supplementary Survey is designed to be used in combination with data from the ACS comparison site tests to produce annual estimates. Economic, demographic, and housing characteristics from the Census 2000 Supplementary Survey are reported for the United States as a whole, the 50 states, and the District of Columbia, as well as large counties and cities. Comparisons of C2SS data with data from

County, in the American Community Survey 2000<sup>4</sup>. Appendix A shows the Census 2000 Supplementary Survey question (the question is exactly the same for the American Community Survey 2000 from which the statistics are provided for Calvert County). Appendix B describes Maryland's eligibility rules for receiving Food Stamps in 1999.

The purpose of this paper is to inform our understanding of how statistics from the Census 2000 Supplementary Survey and the American Community Survey are related to the statistics compiled by states from their management information systems for the Food Stamp program. Once we identify sources of difference, we can use results from the two data sets in conjunction with each other to better understand trends in receipt of Food Stamps in Maryland and its jurisdictions and changes in the characteristics of the population receiving Food Stamps.

It is worthwhile to understand the differences because survey estimates of households receiving Food Stamps are used by the U.S. Department of Agriculture's Food and Nutrition Service (USDA/FNS) to administer the program and make policy decisions based on nationally-comparable survey estimates. The actual counts from state administrative records are not comparable across states because state eligibility rules vary.

If there were no measurement errors in either data set, and if we could develop a file from the administrative records that exactly matched concepts such as the residence and time references of the surveys, we would expect the actual count of households receiving Food Stamps to be about the same (within sampling error) as the survey statistics. While we cannot do an exact

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the 2001 Supplementary Survey will provide information about changes for states and large cities and counties after 2000.

<sup>4</sup> The American Community Survey is being developed by the Census Bureau to replace the long form. It will provide updated demographic, social, economic and housing profiles for communities *every year* instead of just once in ten years. For the first time, communities will be able to measure change in the characteristics of their population and housing over time on an annual basis. Communities will have improved estimates of the population groups moving in and out of their area as well as current data for strategic planning. Pending approval from the Congress, the Census Bureau plans to start full operation of the American Community Survey in 2005. Under that plan, community profiles will start to become available in mid-2006 for areas and population groups of 65,000 or more people. Profiles for areas of 20,000 – 64,999 people will first become available starting in 2008 as three-year averaged estimates. Population groups of less than 20,000 will have 5-year estimates starting in 2010, and the estimates will be updated every year thereafter. Further information about the survey is available at the Census Bureau's website: [www.census.gov/acs/www](http://www.census.gov/acs/www). Community profiles for development sites are available now through the Census Bureau's American FactFinder at: <http://factfinder.census.gov> or on a free CD-ROM available by telephoning 1-888-456-7215 or by sending an e-mail to: [acs@census.gov](mailto:acs@census.gov)

replica of the concepts and definitions of the two data sets, we have developed a profile from the administrative records that is reasonably close to the survey concepts.

As expected, there were differences between the actual counts and the survey estimates. What we did not expect were the very large differences in the absolute numbers for the State and all six counties. The percentage distributions of Maryland households receiving Food Stamps in each county and Baltimore City, however, were essentially the same in both data sets once we accounted for sampling error in the survey.

How do we explain the large differences? The next section details our findings. There are no definitive answers. There is some indication that one factor is likely to be **misreporting** in the survey because people may forget they received Food Stamps for a few months or they might be confused about the time period when they received them. That is, those who received Food Stamps for only a few months, and for relatively small amounts, may not have reported receipt of Food Stamps in the survey, possibly because they forgot about it completely, did not remember whether they received the benefit in the 12 months before the survey, or considered the amount too inconsequential to mention. Another factor is likely to be some **undercoverage** of housing units in the surveys, especially in Baltimore City, although information about coverage from Census 2000 is not currently available. This assumption is based on studies from the 1990 census<sup>5</sup>. Additional factors include differences in the **universe** (whether Food Stamp recipients who lived in group quarters at some point during the year were part of the eligible survey universe), and other errors in the data sets as well as differences in the methods of **data collection, time references, and conceptual differences**.

Below, we discuss the results of comparing the two data sets, likely sources of differences, and our conclusions.

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<sup>5</sup> Cynthia Taeuber, Jane Staveley, and Richard Larson, "Issues in Comparisons of Decennial Census Poverty Estimates With Public Assistance Caseloads in Maryland," paper for the National Association for Welfare and Research Statistics, August 2001.

## II. Results of Comparing Maryland State Records of Food Stamp Recipients and the Census 2000 Supplementary Survey

### Households Reporting Receipt of Food Stamps

In Maryland, in calendar year 1999, over 169,200 households received Food Stamps for one or more months compared with the estimate of about 91,300 households from the Census 2000 Supplementary Survey (Table 1A). Four in ten Maryland Food Stamp recipient households (about 71,400 households) were in Baltimore City and another 45,200 households were in Baltimore County, Prince George's County, and Montgomery County. Figure 1A charts the differences among the jurisdictions. The differences in the survey estimates and the administrative records counts are statistically significant in all jurisdictions but Montgomery County. In Baltimore City and for the entire State, the differences are of both statistical and practical significance.

For every jurisdiction shown in Table 1A, the difference between the actual count of households receiving Food Stamps and the survey estimate is substantial. The administrative count is roughly double the survey estimate for the State and for Baltimore City, for example. For the jurisdictions, the differences ranged from 1.4 to 2.6 times as many households in the administrative records as the survey estimates.

Sampling error alone does not account for this large difference except for Montgomery County, the only jurisdiction where the difference in the count and survey estimate is not statistically significant. The "balance of state" count and estimate are also not statistically different. For the State of Maryland, the administrative record count is about 169,200 households and the survey's 90-percent confidence interval (the sampling variation) is about 79,500 – 103,100 households. If we use the survey estimate of 91,300 households, we are left with a difference of about 78,000 households between the two.

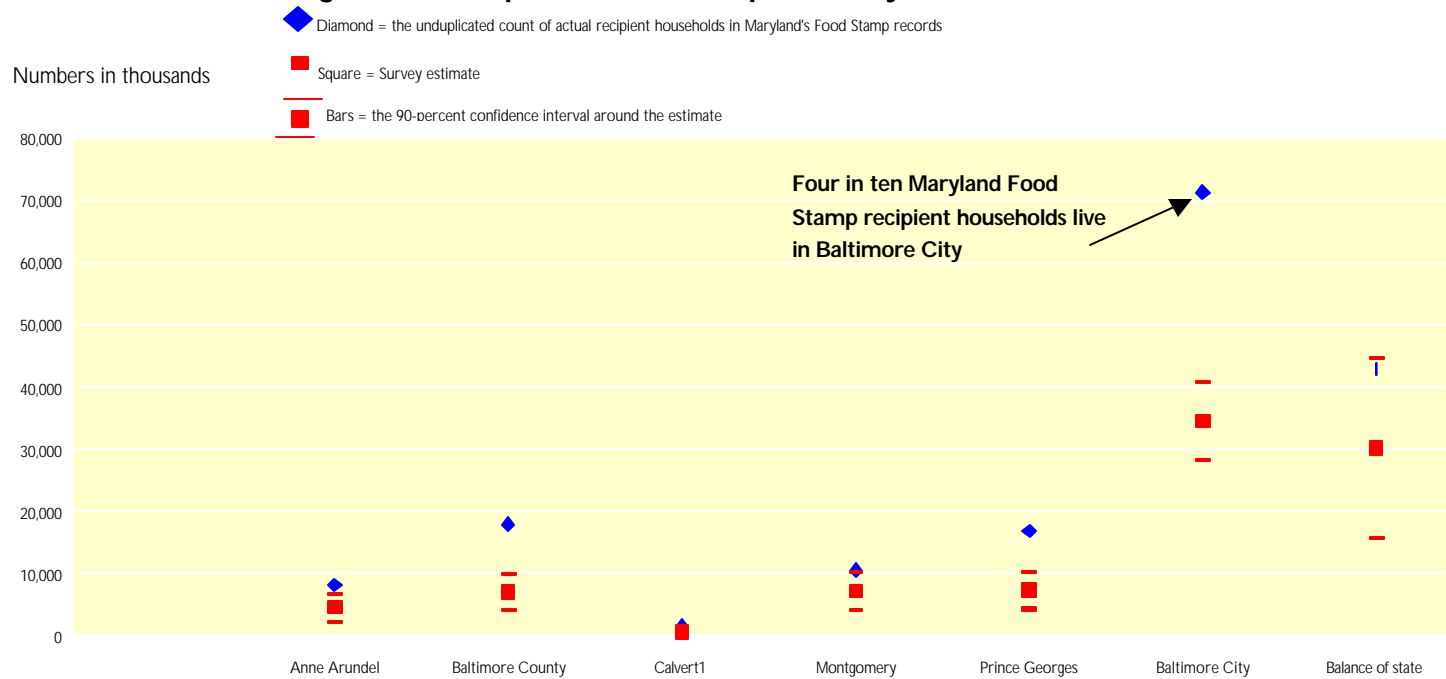
**Table 1A. Households Reporting Receipt of Food Stamps in the Census 2000 Supplementary Survey and Actual Receipts from Maryland State Administrative Records in Calendar Year 1999**

State and counties	Actual Recipients in State Food Stamp Records	Survey <sup>1</sup> Estimate	90-percent Confidence Interval	
			Lower bound	Upper bound
<b>Maryland</b>	169,221	91,325	79,476	103,174
<b>Anne Arundel</b>	8,267	4,532	2,219	6,845
<b>Baltimore County</b>	17,877	6,976	4,052	9,900
<b>Calvert<sup>1</sup></b>	1,502	667	411	923
<b>Montgomery</b>	10,474	7,187	4,075	10,299
<b>Prince George's</b>	16,888	7,266	4,365	10,167
<b>Baltimore City</b>	71,385	34,493	28,215	40,771
<b>Balance of State</b>	42,828	30,204	15,648	44,760

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

**Fig. 1A. Receipt of Food Stamps in Maryland Households in 1999**



<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

Table 1B and Figure 1B show the percentage of Maryland households receiving Food Stamps in 1999. The apparent differences between the data sets are not statistically significant for any jurisdiction. More than 60 percent of households that received Food Stamps in 1999 were located in three jurisdictions: four in ten were in Baltimore City; 1 in 10 were in Baltimore County; and 1 in 10 were in Prince George's County.

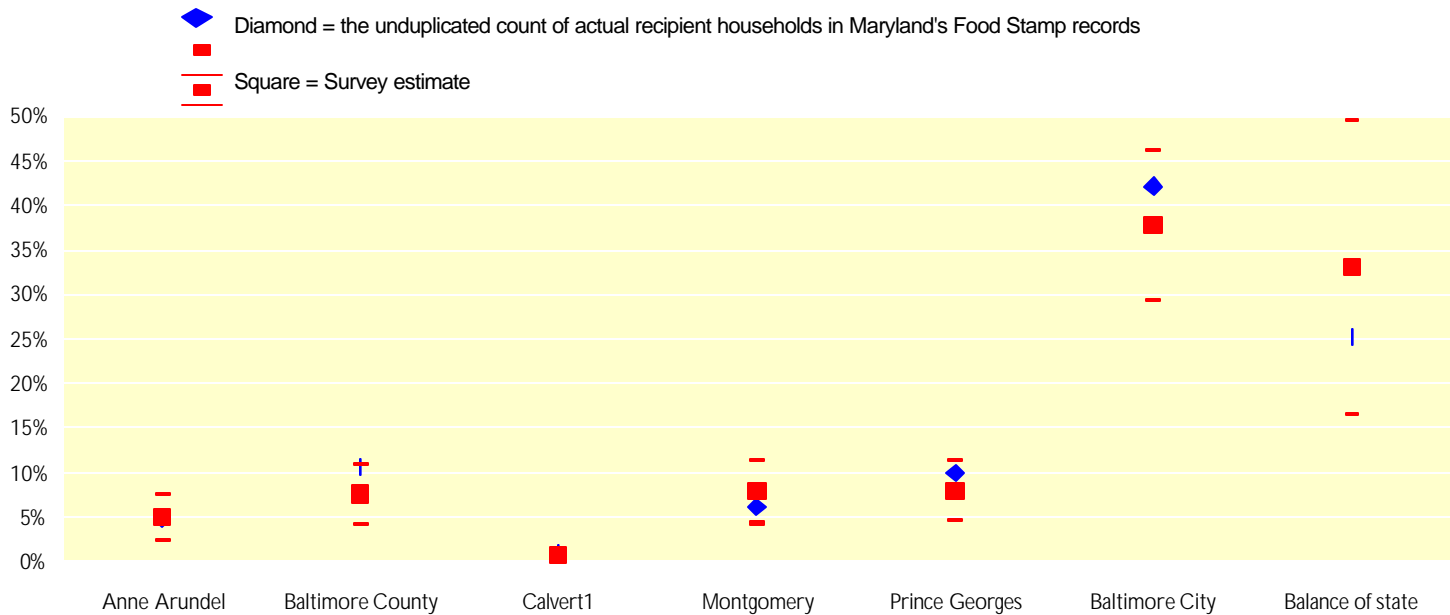
**Table 1B. Percentage of Households in Maryland Reporting Receipt of Food Stamps in the Census 2000 Supplementary Survey and Actual Receipts from Maryland State Administrative Records in Calendar Year**

State and counties	Percentage of Actual Household Recipients in State Food Stamp Records	Survey <sup>1</sup> Estimated Percentage	90-percent Confidence Interval	
			Lower bound	Upper bound
<b>Maryland</b>	100.0	100.0	-	-
<b>Anne Arundel</b>	4.9	5.0	2.4	7.6
<b>Baltimore County</b>	10.6	7.6	4.2	11.0
<b>Calvert<sup>1</sup></b>	0.9	0.7	0.4	1.0
<b>Montgomery</b>	6.2	7.9	4.3	11.5
<b>Prince George's</b>	10.0	8.0	4.7	11.3
<b>Baltimore City</b>	42.2	37.8	29.4	46.2
<b>Balance of State</b>	25.2	33.1	16.6	49.6

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

**Fig. 1B. Percentage of Maryland Households Receiving Food Stamps in 1999**  
 (Apparent differences between the data sets are not statistically significant for any geographic area)



<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

### Is Memory a Factor?

We are not able to say to what extent “forgetting” is a factor in misreporting Food Stamp receipts in the survey. A problem with the “memory” speculation as a reason for misreporting is that in Maryland, Food Stamp recipients receive training on what they can and cannot buy with the benefits. That leads to speculation that people may be confused about the benefits they receive. In Maryland, recipients are issued a single debit card for Food Stamps and, if they are eligible, for temporary cash assistance. Maryland state officials think that because of the training recipients receive, it is unlikely that such a large number of people would be confused about whether they received Food Stamps or what the amount is for Food Stamps versus temporary cash assistance. They need to know the amount of each because they are limited at the grocery store to the monthly value of the Food Stamp benefit for which they are eligible. A final bit of speculation is that people are embarrassed to report they receive public assistance – we will discuss what evidence we have on this point below (Tables 2A and Table 3A).

Nevertheless, we surmise that misreporting in the survey is likely to some extent, possibly because respondents forget that they received Food Stamps in the year before the survey when the amounts are small and the benefits were received for only a few months. The Census 2000 Supplementary Survey question asks respondents if *any* household member received Food Stamps *at any time* in the 12 months before filling out the form. From the administrative records, we examined the number of months households received Food Stamps in 1999 (Table 1C). About 35,000 households received Food Stamps for only 1 to 3 months (one-fifth of households receiving this benefit). It is possible that some portion of them, when asked in the survey to report whether they had received Food Stamps in the 12 months before filling out the survey form forgot, were unsure of the months when they received the Food Stamps, or considered the amount too inconsequential to mention. Research on other census questions shows that when respondents are asked to remember what happened in the year before filling out the survey, the likelihood of misreporting increases.

Most of the 35,000 households that received Food Stamp benefits for only one to three months were located in just three jurisdictions: Baltimore City (13,300 households representing 19 percent of the City’s Food Stamp households); Baltimore County (4,200 households, 23 percent); and Prince George’s County (4,200 households, 25 percent). As we saw in Table 1A, these are the three jurisdictions where the relative differences between the administrative records and the survey estimates are the highest.

Table 1C shows that about half of the households receiving Food Stamps, received the benefit for 9 or more months. This was about the same proportion in Baltimore City and Baltimore County. In Prince George's County, half of the households received Food Stamps for 7 or more months.

**Table 1C. Number of Months Maryland Households Received Food Stamps in Calendar Year 1999**

<b>Number of months</b>	<b>Number of households</b>	<b>Percentage of households</b>	<b>Cumulative frequency</b>	<b>Cumulative percentage</b>
<b>1</b>	12,764	7.5	12,764	7.5
<b>2</b>	10,454	6.2	23,218	13.7
<b>3</b>	11,895	7.0	35,113	20.8
<b>4</b>	11,715	6.9	46,828	27.7
<b>5</b>	9,006	5.3	55,834	33.0
<b>6</b>	8,232	4.9	64,066	37.9
<b>7</b>	7,879	4.7	71,945	42.5
<b>8</b>	8,019	4.7	79,964	47.3
<b>9</b>	7,603	4.5	87,567	51.8
<b>10</b>	7,540	4.5	95,107	56.2
<b>11</b>	8,688	5.1	103,795	61.3
<b>12</b>	65,426	38.7	169,221	100.0

Source: Special tabulations of Food Stamp recipient households from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France Institute, University of Baltimore.

### **Food Stamp Recipients Living in Shelters for the Homeless**

There is a discrepancy between the count of Food Stamp recipients from Maryland's administrative records and the survey estimates. It made virtually no difference to exclude Food Stamp recipients who lived in shelters for the homeless at some time in 1999.

The Census 2000 Supplementary Survey was a household survey and did not include group quarters. Shelters for the homeless, thus, are not part of the sample design. This

would be a complicated factor to account for in creating a file of administrative records that closely matches the survey universe. People may be homeless part of the year and in a housing unit that is eligible to be part of the survey sample at other times during the year. The portion of the homeless population that lives in shelters the entire year is unknown and would vary among states and within states from year to year as policies change. Even if we make the extreme and obviously incorrect assumption that all 5,665 people who received Food Stamps in 1999 while living in a shelter for the homeless never lived in a housing unit in Maryland in 1999, and we completely exclude this group from the administrative record counts, it made little difference. There were still nearly 163,600 households that received Food Stamps in 1999 (Table 1D).

Other types of living quarters that could cause difficulty in making the universes comparable, and depend on the length of stay at the unit, include: Alcohol and Drug Treatment Centers (600 Food Stamp recipients in 1999); Licensed Battered Spouse Shelters (31); Emergency housing (128); group homes for 6 or more people (15); and rehabilitation residences (2,480) where the length of stay is usually less than a month. We don't know how many of the people in these situations have housing units to which they return or what their response rates would be for a survey. It is likely a small source of bias in the survey.

**Table 1D. Households Reporting Receipt of Food Stamps in the Census 2000 Supplementary Survey and Actual Receipts of Households Excluding Recipients Living in Shelters for the Homeless from Maryland State Administrative Records in Calendar Year 1999**

State and counties	Actual Recipient Households in State Food Stamp Records, Excluding Shelters for the Homeless	Survey <sup>1</sup> Estimate	90-percent Confidence Interval	
			Lower bound	Upper bound
<b>Maryland</b>	163,556	91,325	79,476	103,174
<b>Anne Arundel</b>	8,008	4,532	2,219	6,845
<b>Baltimore County</b>	17,412	6,976	4,052	9,900
<b>Calvert<sup>1</sup></b>	1,476	667	411	923
<b>Montgomery</b>	10,193	7,187	4,075	10,299
<b>Prince George's</b>	16,761	7,266	4,365	10,167
<b>Baltimore City</b>	67,556	34,493	28,215	40,771
<b>Balance of State</b>	42,150	30,204	15,648	44,760

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

<sup>2</sup>In Calendar Year 1999, 5,665 people received Food Stamps for at least one month while living in a shelter for the homeless. Only 406 of this group received Food Stamps for the entire year. About 3,200 people (57 percent) received Food Stamps for 1 to 3 months in Calendar Year 1999.

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

Table 1E shows us that of the nearly 5,700 people who received Food Stamps while living in a shelter for the homeless, about 3,200 (57 percent) received the benefit for only 1 to 3 months in 1999. Only 406 such people received Food Stamps for the entire year.

**Table 1E. Number of Months People Living in a Shelter for the Homeless in Maryland Received Food Stamps in Calendar Year 1999**

Number of months	Number of people in shelters for the homeless	Percentage of people in shelters for the homeless	Cumulative frequency	Cumulative percentage
1	939	16.6	939	16.6
2	784	13.8	1,723	30.4
3	755	13.3	2,478	43.7
4	724	12.8	3,202	56.5
5	418	7.4	3,620	63.9
6	389	6.9	4,009	70.8
7	323	5.7	4,332	76.5
8	269	4.8	4,601	81.2
9	261	4.6	4,862	85.8
10	194	3.4	5,056	89.2
11	203	3.6	5,259	92.8
12	406	7.2	5,665	100.0

Source: Special tabulations of Food Stamp recipient households from the Maryland Department of Human Resources, Client Automated Resource and Eligibility System (CARES), 1999, prepared by the Jacob France Institute, University of Baltimore.

### **Households With Children Compared To Those Without Children**

Households with children under 18 were slightly more likely to report receipt of Food Stamps in the survey than were those without children. The counts of such households in the administrative records are generally about one and a half times as high as the survey estimates. In households without children, the administrative record counts were two to three times as high.

Maryland had nearly 89,000 households with children under 18 that received Food Stamps in 1999 (Table 2A, Figure 2A). The Census 2000 Supplementary Survey estimated there were about 60,301 such households. The difference is not explained by sampling error except for Anne Arundel County, Montgomery County, and the "Balance of State" category, where the differences between the two data sets are not statistically significant. Baltimore County stands out in Table 2A because the survey estimate is about one-third of the actual count. We could find no explanation for this large difference.

**Table 2A. Households With Children Under 18 Reporting Receipt of Food Stamps in the Census 2000 Supplementary Survey and Actual Receipts from Maryland State Administrative Records in Calendar Year 1999**

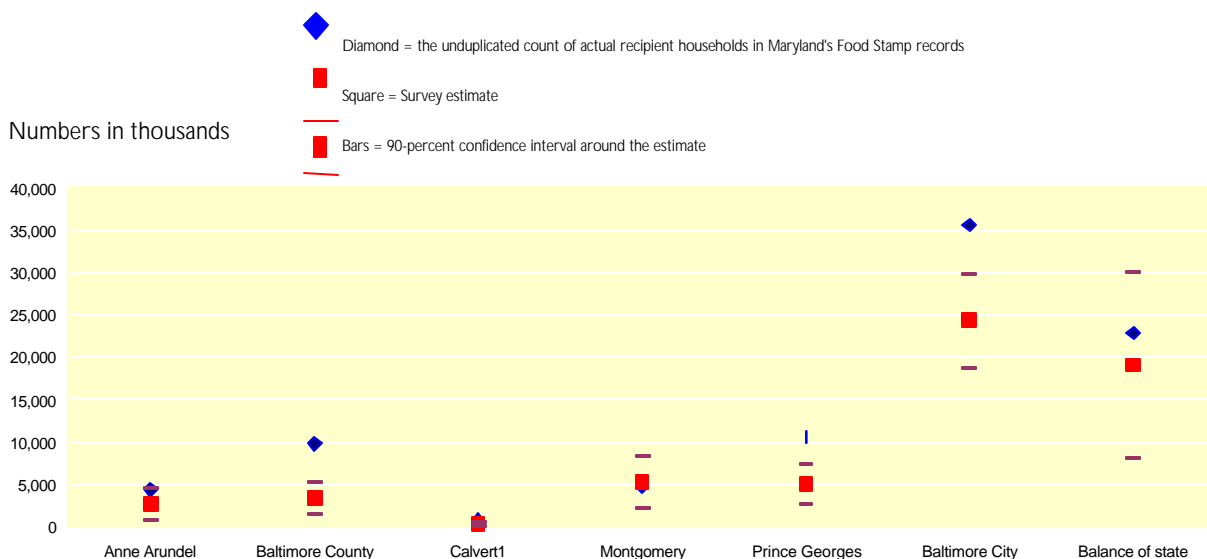
State and counties	Actual Recipients in State Food Stamp Records	Survey <sup>1</sup> Estimate	90-percent Confidence Interval	
			Lower bound	Upper bound
<b>Maryland</b>	88,964	60,301	51,975	68,627
<b>Anne Arundel</b>	4,360	2,789	901	4,677
<b>Baltimore County</b>	9,829	3,385	1,502	5,268
<b>Calvert<sup>1</sup></b>	839	365	174	556
<b>Montgomery</b>	4,829	5,300	2,302	8,298
<b>Prince George's</b>	10,644	5,002	2,634	7,370
<b>Baltimore City</b>	35,569	24,337	18,813	29,861
<b>Balance of State</b>	22,894	19,123	8,097	30,149

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp

recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

**Fig. 2A. Receipt of Food Stamps in Maryland Households With Children Under 18 in 1999**



<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

Table 2B and Figure 2B show that except for Baltimore County, the percentage of the Maryland's Food Stamp recipient households are very similar in both data sets.

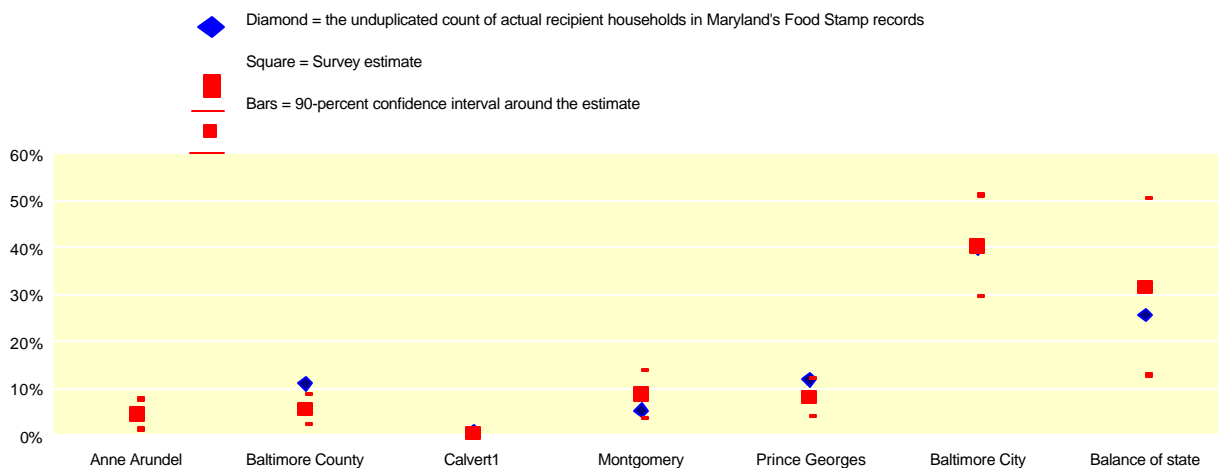
**Table 2B. Percentage of Households in Maryland With Children Under 18 Reporting Receipt of Food Stamps in the Census 2000 Supplementary Survey and Actual Receipts From Maryland State Administrative Records in Calendar Year 1999**

State and counties	Percentage of Actual Recipient Households in State Food Stamp Records	Survey <sup>1</sup> Estimated Percentage	90-percent Confidence Interval	
			Lower bound	Upper bound
<b>Maryland</b>	100.0	100.0	-	-
<b>Anne Arundel</b>	4.9	4.6	1.4	7.8
<b>Baltimore County</b>	11.0	5.6	2.4	8.8
<b>Calvert<sup>1</sup></b>	0.9	0.6	0.3	0.9
<b>Montgomery</b>	5.4	8.8	3.7	13.9
<b>Prince George's</b>	12.0	8.3	4.2	12.4
<b>Baltimore City</b>	40.0	40.4	29.7	51.1
<b>Balance of State</b>	25.7	31.7	12.9	50.5

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

**Fig. 2B. Percentage of Maryland Households With Children Receiving Food Stamps in 1999**



<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

Table 3A and Figure 3A show households with no children that received Food Stamps in Maryland in 1999. Here the actual counts of households receiving Food Stamps are two to three times higher than the survey estimates for all jurisdictions. Some speculate that able-bodied adults, especially those without children, may be embarrassed to admit in a survey that they received public assistance, including Food Stamps. We have no way to prove this assertion. We can only note that the difference between Tables 2A and 3A are striking. Table 3B and Figure 3B show that the percentage distributions are generally similar, as we have seen previously. Baltimore City's count is not statistically different from the survey estimate.

Some have speculated that people may be embarrassed to report receipt of public assistance in a survey, especially if they are able-bodied adults. The evidence from Tables 2A and 3A shows that the differences in the two data sets are considerably higher in households with no children present than in households where children are present. We cannot determine from the publicly-available statistics for the survey the age of the householder in households with no children present that did report receipt of Food Stamps (about 31,000 households). The tangential evidence suggests that one-half to two-thirds may be headed by older people. Table 4A shows 23,000 Food Stamp households with a person 60+ years – they are not necessarily the householder, however, although most probably are. That leaves unanswered the question about those households without children that did not report receipt of Food Stamps and whether they are able-bodied adults who did not want to admit to their circumstances. The administrative records include homeless people and others living in shelters and this would account for a small part of the difference.

**Table 3A. Households With No Children Under 18 Reporting Receipt of Food Stamps In the Census 2000 Supplementary Survey and Actual Receipts From Maryland State Administrative Records in Calendar Year 1999**

State and counties	Actual Recipients in State Food Stamp Records	Survey <sup>1</sup> Estimate	90-percent Confidence Interval	
			Lower bound	Upper bound
<b>Maryland</b>	80,257	31,024	24,927	37,121
<b>Anne Arundel</b>	3,907	1,743	482	3,004
<b>Baltimore County</b>	8,048	3,591	1,636	5,546
<b>Calvert<sup>1</sup></b>	663	302	129	475
<b>Montgomery</b>	5,645	1,887	872	2,902
<b>Prince George's</b>	6,244	2,264	413	4,115
<b>Baltimore City</b>	35,816	10,156	6,762	13,550
<b>Balance of State</b>	19,934	11,081	3,427	18,735

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

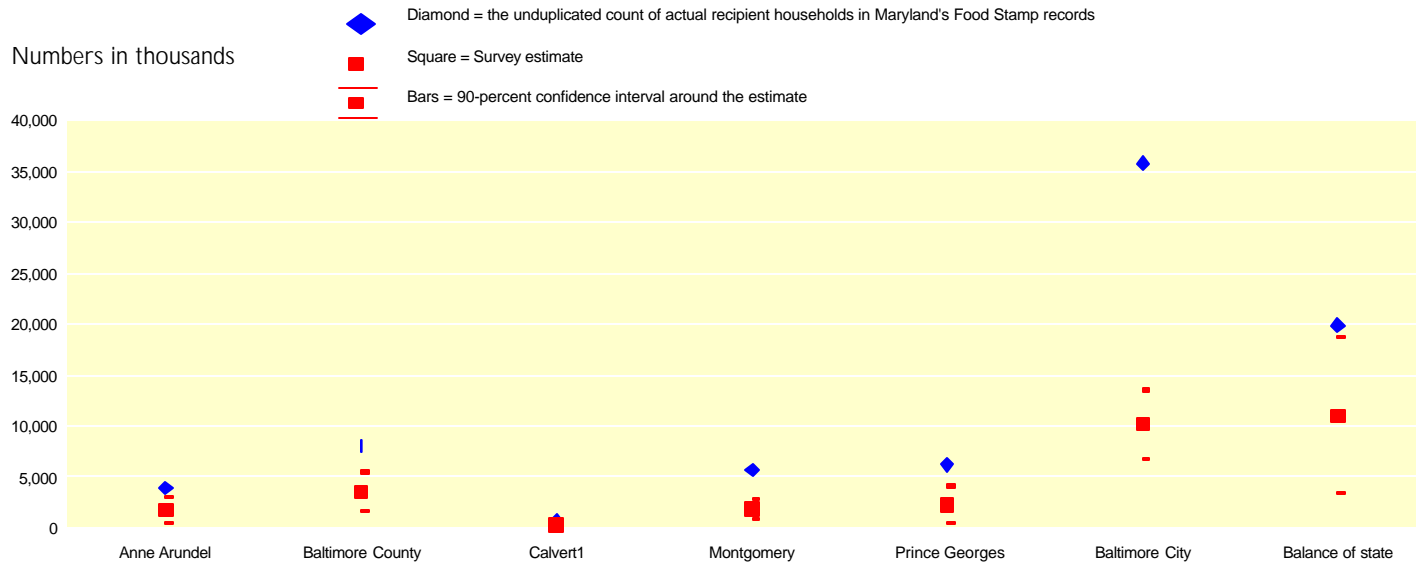
**Table 3B. Percentage of Households in Maryland With No Children Under 18 Reporting Receipt of Food Stamps in the Census 2000 Supplementary Survey and Actual Receipts from Maryland State Administrative Records in Calendar Year 1999**

State and counties	Percentage of Actual Recipient Households in State Food Stamp Records	Survey <sup>1</sup> Estimated Percentage	90-percent Confidence Interval	
			Lower bound	Upper bound
<b>Maryland</b>	100.0	100.0	-	-
<b>Anne Arundel</b>	4.9	5.6	1.4	9.8
<b>Baltimore County</b>	10.0	11.6	4.9	18.3
<b>Calvert<sup>1</sup></b>	0.8	1.0	0.4	1.6
<b>Montgomery</b>	7.0	6.1	2.6	9.6
<b>Prince George's</b>	7.8	7.3	1.2	13.4
<b>Baltimore City</b>	44.6	32.7	20.0	45.4
<b>Balance of State</b>	24.8	35.7	10.0	61.4

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

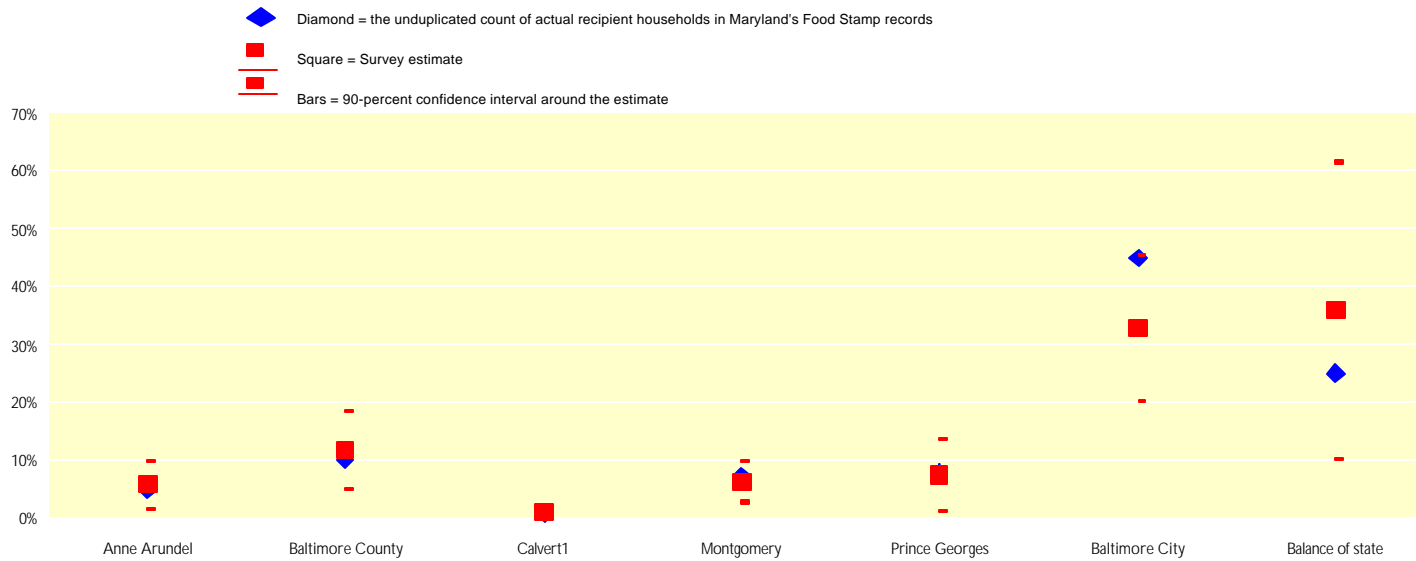
**Fig. 3A. Receipt of Food Stamps in Maryland Households With No Children in 1999**



<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

**Fig. 3B. Percentage of Maryland Households With No Children Receiving Food Stamps in 1999**



<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P095 in both surveys. Special tabulations of Food Stamp recipients from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France institute, University of Baltimore.

## Households With Older People

Some have speculated that older people may qualify for only the minimum value of Food Stamps and use them for only a few months. If that is the case, they could be one group that gets Food Stamps but does not report it in surveys.

We could not develop exactly comparable tables for the two data sets based on what is publicly available from the survey. Food Stamp records available to us carry the date of birth of the household head only. The Census 2000 Supplementary Survey statistics are shown for households that reported someone received Food Stamps and that also had at least one person in the household 60 years or older (not necessarily the designated householder).

About 23,000 households reported in the Census 2000 Supplementary Survey that they received Food Stamps and that there was at least one person aged 60 or older in the household (Table 4A, Figure 4A). Baltimore City had about 7,300 such households, nearly one-third of the state's households of this type.

Table 4B, a summary from the state Food Stamp records, shows us that there were about 23,600 households that received Food Stamps and with a head 60 years or older. Only about 12 percent of these households received Food Stamps for 1 to 3 months. Sixty percent received Food Stamp benefits continuously in 1999. Baltimore City had nearly 7,700 such households and 3 in 5 received benefits for all 12 months. This leads us to conclude that it is unlikely that it is older people who are not reporting receipt of Food Stamps in the survey.

**Table 4A. Households With At Least One Person in the Household 60 Years and Older Reporting Receipt of Food Stamps in 1999 in the Census 2000 Supplementary Survey**

State and counties	Survey <sup>1</sup> Estimate	90-percent Confidence Interval	
		Lower bound	Upper bound
<b>Maryland</b>	22,957	18,771	27,143
<b>Anne Arundel</b>	419	0	906
<b>Baltimore County</b>	2,903	1,080	4,726
<b>Calvert<sup>1</sup></b>	295	123	467
<b>Montgomery</b>	2,224	562	3,886
<b>Prince George's</b>	2,252	556	3,948
<b>Baltimore City</b>	7,328	4,883	9,773
<b>Balance of State</b>	7,536	1,815	13,257

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland's housing units in 2000).

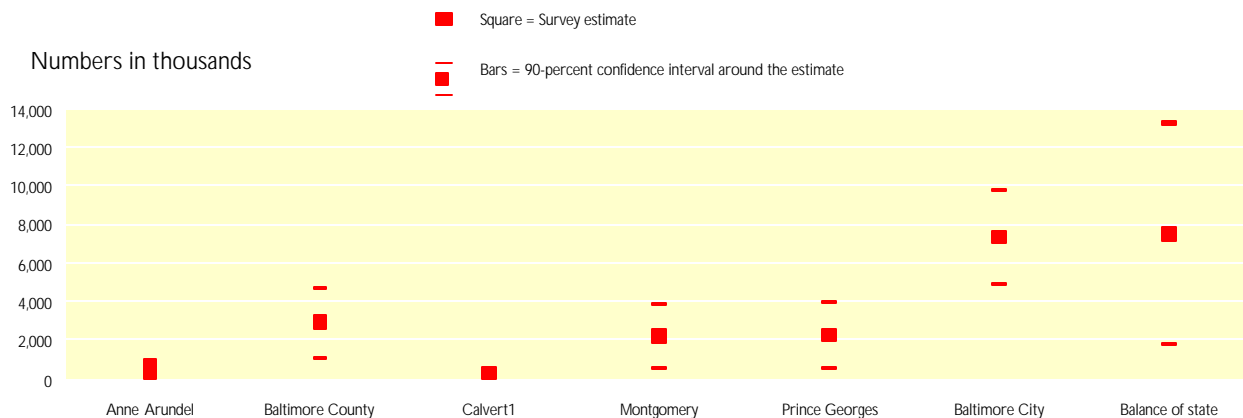
Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and, for Calvert County only, the American Community Survey 2000, Table P094 in both surveys.

**Table 4B. Number of Months Maryland Households With a Householder 60 Years and Older Received Food Stamps in Calendar Year 1999**

Number of months	Number of households w/householder 60+ years	Percentage of households w/householder 60+ years	Cumulative frequency	Cumulative percentage
1	890	3.8	890	3.8
2	914	3.9	1,804	7.7
3	954	4.1	2,758	11.7
4	871	3.7	3,629	15.4
5	751	3.2	4,380	18.6
6	752	3.2	5,132	21.8
7	749	3.2	5,881	25.0
8	810	3.4	6,691	28.4
9	803	3.4	7,494	31.8
10	816	3.5	8,310	35.3
11	1,105	4.7	9,415	40.0
12	14,136	60.0	23,551	100.0

**Source:** Special tabulations of Food Stamp recipient households from the Maryland Department of Human Resources, Client Automated Resource and Eligibility system (CARES), 1999, prepared by the Jacob France Institute, University of Baltimore.

**Fig. 4A. Households With At Least One Person in the Household 60 Years and Older Reporting Receipt of Food Stamps in the Census 2000 Supplementary Survey**



<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of all housing units in Maryland in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and the American Community Survey 2000 (for Calvert County only), Table P094.

Questions have been raised about whether the older population that is eligible for Food Stamps applies for them. Maryland has about 371,000 households with a householder 65 years and older.<sup>6</sup> Roughly 41,000 reported incomes below the poverty level (Table 5). Not all poor people are eligible for Food Stamps, but these statistics indicate it is likely that many poor elderly households do not apply for Food Stamps. Most poor elderly households are in Baltimore City or in the smaller urban and rural counties (“balance of 5).

**Table 5. Poor Households With Householders 65 Years and Older in the Census 2000 Supplementary Survey**

State and counties	Survey <sup>1</sup> Estimate	90-percent Confidence Interval	
		Lower bound	Upper bound
<b>Maryland</b>	41,217	36,232	46,202
<b>Anne Arundel</b>	2,503	1,246	3,760
<b>Baltimore County</b>	6,691	4,319	9,063
<b>Calvert<sup>1</sup></b>	359	115	603
<b>Montgomery</b>	4,745	2,905	6,585
<b>Prince George’s</b>	4,624	2,754	6,494
<b>Baltimore City</b>	10,070	6,892	13,248
<b>Balance of State</b>	12,225	11,448	13,002

<sup>1</sup>Statistics for Calvert County are from the American Community Survey, a 5-percent sample of housing units. Statistics for Maryland and the other counties are from the Census 2000 Supplementary Survey, a sample of nearly 15,000 housing units (about 0.7 percent of Maryland’s housing units in 2000).

Source: U.S. Bureau of the Census, Census 2000 Supplementary Survey and the American Community Survey 2000 (for Calvert County only), Table P118 .

<sup>6</sup> U.S. Census Bureau, Census 2000 Supplementary Survey, Table P016.

### III. Sources of Differences Between Maryland State Administrative Records of Food Stamp Recipients and the Census 2000 Supplementary Survey

Here, we discuss sources of differences between results from the administrative records for Maryland's Food Stamp program and the Census 2000 Supplementary Survey. Differences include data collection methods, sources of error, and conceptual differences.

Error in the survey comes from sampling part of the population rather than the entire population and missing households. Both data sets are subject to errors during data collection and processing but at different levels. Conceptual differences include differences in the population included in the universe of the data sets, differences in the timing of data collection and reference periods, and differences in definitions.

Documentation of concepts, methods of data collection and processing, and the accuracy of data the Census Bureau produces is on its web site: [www.census.gov](http://www.census.gov). Because administrative records developed primarily to manage programs generally have not been treated as statistical files,<sup>7</sup> documentation for administrative files can be difficult for researchers to obtain. Current administrative forms used to collect data are on the Maryland Department of Human Resources' (DHR) web site, but forms change and copies of outdated ones (which provide information about how questions were asked) are generally not kept. The current caseworker manual is also on DHR's web site but rules change and critical information about differences in the data sets over time may exist only in the memories and desk drawers of long-time employees. Once they leave the agency, the history may be lost forever. Agencies responsible for the conversion of administrative records to statistical files may use the information below as a guide to the type of documentation that researchers need in order to better use administrative records as statistical files.

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<sup>7</sup> Administrative records are about a *particular* person or business, or in this case, for receiving Food Stamps. Statistical data provide an aggregate description, a profile, of a *group* of people or businesses. See George T. Duncan, Thomas B. Jabine, and Virginia A. de Wolf (eds.), Private Lives and Public Policies: Confidentiality and Accessibility of Government Statistics, Washington, D.C.: National Academy Press, 1993, pg. 24.

## Data Collection Methods

Data collection, processing methods, and quality control efforts make a difference in results. *All* data sets, including administrative records, have errors in them, some that can be identified and measured and some that cannot. Sometimes we can identify errors that introduce bias into the statistics (for example, people who *do not* respond may have characteristics quite different from people who *do* respond. As a result, the response distributions do not represent the entire population).

The long form of the decennial census, the Census 2000 Supplementary Survey, and the American Community Survey collect general demographic, social, economic, and housing information. Each is a representative sample survey, albeit with different sample sizes.<sup>8</sup> Each is designed to represent the total household<sup>9</sup> population (rather than a subset of the population as in administrative records) without contacting every household. The characteristics of the population and housing are estimates from the sample, not complete counts. The range of error (variance or “margin of error”) from sampling is described below. The size of the sample varies according to the size of the population in an area in order to maintain a specified level of reliability. Additional information about the sample design and size for each area is provided for each survey in the relevant documentation on the Census Bureau’s web site.

Annual information for Maryland’s Food Stamp program is from The Maryland Department of Human Resources’ Client Automated Resource and Eligibility System (CARES). Special tabulations of the data were prepared by the Jacob France Institute at the state and county levels and for Baltimore City. The aggregate data in the tabulations

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<sup>8</sup> Overall, the Census 2000 long form was a 1 in 6 sample of households and 1 in 6 people living in group quarters compared with the Census 2000 Supplementary Survey (C2SS) that had a sample of about 0.7 percent of households. The C2SS did not include people living in group quarters. The samples from the Supplementary Surveys in 2001 and 2002 are also about 0.7 percent of households. The samples are designed to be added together to increase the sample size and decrease the variance for 2000-01 and 2000-02 products. The American Community Survey has been tested in various counties since 1996 and the sample size has varied. Once the survey is fully operational, starting in 2005 (pending Congressional approval of funding), the sample size is planned as 3 million addresses each year. The survey design of the American Community Survey allows samples to be added over 5 years (15 million addresses) to approximate the size of the census long form sample. The decennial long form, the Supplementary Surveys, and the American Community Survey all have differential sample sizes according to the size of the jurisdiction (that is, the sample is larger in smaller jurisdictions and rural areas).

<sup>9</sup> The Supplementary Surveys are for households only. In 2003, the American Community Survey sampled households only. Once the ACS is fully implemented, the Census Bureau plans to include a sample of people living in group quarters (pending Congressional approval of funding).

were derived from the responses to questions asked of recipients on intake forms. These forms differ among states and may change from year to year as eligibility rules change. Such forms have been thought of as a management tool rather than a necessary part of the documentation of a statistical file. The actual intake form that was used for the time period under comparison is an essential tool for the analyst but can be very difficult to obtain. Access to earlier versions of intake forms on an agency's website, as well as instructions that were provided to caseworkers at the time for filling out the form, would be helpful to analysts.

Differences in how data are collected in the surveys and for administrative records have some impact on differences in the survey estimates and the counts from the administrative records of the number of people receiving Food Stamps. For example, the census accepts any response reported. Those applying for Food Stamps are subject to criminal penalties for fraud if they do not provide full information about all sources of income and assets and if they do not report changes in their status that would disqualify them from continuing to receive Food Stamps. Food Stamp error rates for Maryland are described below in "Data Error: Nonsampling Errors."

### **Data Error: Sampling Error**

All data sets have error. For sample surveys, total error consists of nonsampling errors and sampling error. There are "nonsampling" errors in administrative data sets as well as in censuses and surveys. These are discussed in the next section. Here, we discuss "sampling error."

Statistics based on a sample are estimates and may differ somewhat from what would have been obtained if data had been collected from every person.<sup>10</sup> We can measure the range of the error that occurs when we collect information from a sample of the population to draw inferences about the total population. Sampling needs to be considered as a possible reason for difference in any comparisons among data sets and

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<sup>10</sup> Data from a sample are estimates of the actual figures that would have been obtained by interviewing the entire population using the same methodology. Any particular sample estimate would differ somewhat from other samples of the same population. The deviation of a particular sample estimate from the average of all possible samples from the same population collected under essentially the same conditions is called the "sampling error." The standard error of a sample estimate is a measure of the variation among the estimates from all the possible samples. Thus, it is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. Sampling errors and some types of nonsampling errors are estimated by the standard error. The method of calculating the estimated standard error for an estimate is described in the documentation of census data under "Accuracy of the Data."

sets a lower bound for the total error (that is, sampling error and nonsampling error as described below) of an estimate of a characteristic.

You can think of the decennial census as occurring in two parts. The “complete count” is based on responses to the “short form.” It contains basic demographic and housing questions asked of every person and housing unit. The short form, while called a “complete count” is nevertheless, subject to nonsampling errors. The “long form,” a representative sample of total housing units<sup>11</sup> and a sample of people living in group quarters, asks additional social, economic, and housing questions. Like the census long form, the Census 2000 Supplementary Survey and the American Community Survey are samples of the population and the forms (at least the forms for 1996 through 2002) ask questions that are essentially the same as those on the Census 2000 long form. An exception is that the Census 2000 long form does not ask about receipt of noncash benefits, including Food Stamps, as do the Census 2000 Supplementary Survey and the American Community Survey for 2000.

Because the statistics from the census long form, the Census 2000 Supplementary Survey, and the American Community Survey are based on information collected from a representative sample of the population and not every person, the profiles of the characteristics of people and housing are *estimates* with some level of error. Information about these potential errors is provided or referenced with the data. The Census Bureau recommends that data users incorporate information about sample error into their analyses as these errors could affect inferences made in comparisons of the characteristics of population groups. Because of sample error, an important rule analysts follow is to not overemphasize small differences.

The statistics from the Census 2000 Supplementary Survey and the American Community Survey are based on samples of housing units and are subject to sampling variability that we can measure. The degree of uncertainty of an estimate is represented by a confidence interval.<sup>12</sup> The Census Bureau uses a 90-percent confidence interval.

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<sup>11</sup> Vacant and occupied housing units—the instructions on the 2000 census form directed respondents to include all usual residents of occupied housing units as of April 1, 2000. The decennial census uses a “usual residence” concept, defined as the place where a person lives and sleeps most of the time. The Census 2000 Supplementary Survey and the American Community Survey use a “de facto” or “current residence” rule (people who are staying for two or more months at a temporary location are included at that location). One difference expected under the American Community Survey residence rule is fewer owner-occupied units, and more renter-occupied units. In addition, the vacancy rate may be somewhat reduced.

<sup>12</sup> The sample estimate and its estimated standard error permit the construction of interval estimates with prescribed confidence that the interval includes the average result of all possible samples. For example,

This interval can be interpreted roughly as providing 90-percent certainty that the true number falls in the range between the lower and upper bounds. The tables in this report provide the 90-percent confidence interval for the survey estimates for more appropriate comparisons with the counts of households receiving Food Stamp benefits in Maryland.

Administrative records count all people in the program and so sample error is not a consideration. When comparing the characteristics of program participants with distributions from the surveys, however, sample error must be considered. Data users need to compute the range of the sample error in the survey data to interpret whether *apparent* differences between the two data sets are *actual* differences. In the example below, there is an apparent difference between the survey estimate (2,789) and the count from the Food Stamp records (4,360). When the margin of error for the sample is computed, however, the number of Food Stamp household recipients (4,360) falls within the range (technically, the 90-percent confidence interval) for the estimate of households receiving Food Stamps (901 – 4,677). Thus, once we account for the variability in the measure that is a result of sampling households rather than taking a full census, we cannot say there is a difference between the survey estimate and the actual count from the administrative records.

**Example of Using Sample Error in Comparisons  
Receipt of Food Stamps in Households With Children Under 18  
in Anne Arundel County, MD: 1999**

Actual count from State Food Stamp records.....	4,360
Census 2000 Supplementary Survey:	
Published estimate.....	2,789
90-percent confidence interval.....	901 – 4,677

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sample estimates from the census long form, the Census 2000 Supplementary Survey, and the American Community Survey are shown as 90-percent confidence intervals. We say with a specified probability of confidence (90 percent in this case) that the confidence interval includes the average estimates from all possible samples (approximately the value if we had collected data from the total population). We cannot make the statement that the average value has a certain probability of falling between the limits of the confidence interval.

## Data Error: Nonsampling Errors

In addition to the variability from sampling, all data, whether collected from the total population, a sample of the population, or from participants in a state program such as Food Stamps, are subject to nonsampling error. Nonsampling error may be introduced during any of the complex operations used to collect, process, and publish census or survey statistics as well as information from administrative records. We describe errors of coverage<sup>13</sup>, data editing, data processing, and recording information incorrectly below. These errors apply to the data in both administrative records and surveys. Some aspects of nonsampling error can be measured while other aspects cannot be measured or even identified.

Nonsampling error may affect the data randomly which increases the variability and is reflected in the standard error. It may affect the data in a consistent direction, introducing bias that is not reflected in the standard error. For example, if respondents consistently tend to underreport their income, then the resulting counts of households or families by income category will tend to be understated for the higher income categories and overstated for the lower income categories. It is impossible to completely eliminate nonsampling errors from data sets, regardless of whether it is a survey or administrative record set. The Census Bureau attempts to control the sources of such error during the collection and processing operations. The decennial census, the Census 2000 Supplementary Survey, and the American Community Survey include evaluation studies of the amount of error remaining after application of quality control operations (see the Census Bureau's website).

Nearly 80 percent of the Census 2000 Supplementary Survey forms were filled out by someone in the sampled household and mailed back. There is no trained interviewer to clarify the meaning or intent of the question.

With regard to Maryland's Food Stamp program, the purpose of the administrative database was to collect data for determining eligibility for the program and to generate the correct benefits for each case. Therefore, the accuracy of the data is critical to the effective management of the program. The data are checked, beginning with the recording and processing of the application information, through ongoing reviews of information maintained on active cases. Maryland conducts quality control procedures

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<sup>13</sup> Errors of coverage include missing whole households or group quarters, or people within the households or group quarters.

to ensure that those applicants who were eligible received Food Stamps, that the payment amounts were accurate, and that Food Stamps are not issued to those who do not meet the eligibility requirements. The Quality Control Division at the Department of Human Resources (DHR) conducts continuous reviews of a statewide sample of active cases, closed cases, and applications that are denied to check for client mistakes, client fraud and management errors. Workers in the Quality Control Division at DHR conduct face-to-face interviews with a sample of recipients and verify the information provided by the recipients with other sources. The results of the survey are used to develop corrective action plans to address the causes of eligibility and payment errors. A measure of this "error" rate for Food Stamps is calculated and reported annually and is shown in Table 6.

**Table 6. Error Rates in FY1999 in Provision and Denial of Food Stamps**

<b>Area</b>	<b>Error Rate (percentage)</b>	<b>Sample Size</b>
<b>Maryland State</b>	13.2	1045
<b>Anne Arundel County</b>	37.5	41
<b>Baltimore County</b>	9.5	109
<b>Calvert County</b>	14.5	12
<b>Montgomery County</b>	16.7	63
<b>Prince George's County</b>	10.5	107
<b>Baltimore City</b>	11.5	439

Source: The Maryland Department of Human Resources, Division of Quality Control.

### Coverage

Some households and people are missed entirely by surveys and the census and this introduces bias. Coverage refers to the proportion of the total population (or eligible universe in the case of administrative records for the Food Stamp program) included in the data set. Undercoverage is a source of bias in data. For example, we know from evaluation studies of the 1990 census that young Black men were more likely to be missed than were young White men.

For the surveys, coverage of housing units is an issue. A housing unit, for example, could be completely missed because it is in open country in a rural area. What is apparently a single-family home could have an illegal apartment within it that the field staff does not discover and the householder does not report.

“Within household omissions” occur if the person filling out the survey questionnaire omits a household member, either on purpose, by accident, or through confusion about whether the person should be included (such as people in drug and alcohol rehabilitation centers for a month or so). They may also mistakenly include people on the survey form who should not be included as a usual resident of the household (for example, temporary visitors or a family member in prison or away at college), resulting in an “overcount” for that household and a double count if the person is also on the form for their other residence.

Errors in processing both survey and administrative records can affect coverage as well. Forms can be lost or the data not captured properly (such as keying errors or misreading marks on forms that are optically scanned).

For Census 2000, there is reason to believe there was an overcount of the population nationally, and relatively less difference than in the 1990 Census between the counts of Whites and those of other racial groups. We cannot extrapolate the national results to individual jurisdictions in Maryland.<sup>14</sup> For administrative records, the proportion of the eligible population that is actually included in the program is generally not documented. In the case of those eligible for Food Stamps, there is no means to determine the total eligible population, only the number who apply. If we come to better understand the sources of difference between the survey results and the administrative counts of households that receive Food Stamps, we may be better able to determine the eligible population who do not apply for services. At this point, we cannot do that.

#### Data editing process for confidentiality, nonresponse, inconsistent responses, and unacceptable responses

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<sup>14</sup> (1) David A. Freedman and Kenneth W. Wachter, “On the Likelihood of Improving the Accuracy of the Census Through Statistical Adjustment,” *Science and Statistics: A Festschrift for Terry Speed*. Institute of Mathematical Statistics Monograph 40 (2003) pp. 197–230. D. R. Goldstein and S. Dudoit, eds. Available at: <http://www.stat.berkeley.edu/users/census/>; and (2) U.S. Census Bureau, “Census 2000 Testing, Experimentation, and Evaluation Program Summary,” at <http://www.census.gov/pred/www/>

The objective of the field and processing operations the Census Bureau use is to produce a set of data that describe the population as accurately and clearly as possible. To meet this objective, questionnaires are reviewed for consistency, completeness, and acceptability.

To maintain *confidentiality* of the data as required by law (Title 13 of the U.S. Code), the Bureau of the Census applies a confidentiality edit to the data before it is released to introduce a small amount of uncertainty into the estimates of the characteristics. The Census Bureau does this to avoid disclosure of information about any individual person, household, or housing unit, especially for small geographic areas and population groups. The confidentiality edit is controlled so that the basic structure of the data is preserved. There is a general description in the documentation of the various statistical techniques the Census Bureau uses to protect confidentiality. Sample surveys, because they are random and not for the entire population, also make it more difficult to identify individuals.<sup>15</sup>

Problems with questions that were not answered, inconsistent with other information, or unacceptable (such as “don’t know”) were followed up for the surveys as necessary. The rules for how many questions or which questions must have responses before the household is contacted to obtain further answers have varied among decennial census products and the American Community Survey. The rules are in the documentation of each survey.

There are two types of nonresponse to consider in a census or survey. The first type is when a field representative determines a housing unit is occupied and can determine a count of the residents but cannot find out about their characteristics. This can happen, for example, when the enumerator cannot find the residents at home and, as a last resort, gets the count of people and a few characteristics from neighbors or a landlord. A second type of nonresponse is when the form is partially filled out, that is, the person filling out the form leaves some questions without answers (this happens on censuses, surveys, and administrative records).

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<sup>15</sup> The confidentiality rules for the American Community Survey are stricter than those for the long form of the decennial census because the data are released every year. This would not be an issue if geographic boundaries never changed but they do. For example, cities annex adjoining land. If the annexation is a small area, it might be possible to identify individuals by subtracting the data for two consecutive years. To protect small population groups and individuals, the American Community Survey will not always release data for annexed areas if there is a possibility of identifying an individual. ZIP code areas also change frequently so that “sliver” areas from year to year create confidentiality issues that must be addressed before data can be released.

Administrative records may allow “don’t know” as a response or leave no response as a “blank” if the information is not critical for determining a person’s eligibility for benefits. The decennial census and the American Community Survey, by contrast, consider “don’t *unacceptable responses* because they introduce bias. Questionnaires are also reviewed for certain specific inconsistencies and population coverage.

The characteristics of nonrespondents may differ considerably from those who do respond. Questionnaires are reviewed for omissions. Nonresponse to the decennial census, the Census 2000 Supplementary Survey, and the American Community Survey is reduced substantially by contacting respondents during fieldwork, either by telephone or personal visit, to obtain answers.<sup>16</sup> Documentation for the surveys describes further how unacceptable data are handled.

Review of Food Stamp records by the supervisor, after the data had been entered into the system, provided the opportunity to edit incorrect data. We do not consider this an important source of error in Food Stamp records.

#### Data processing errors

There are many phases involved in processing data, whether from a census or sample survey or administrative records. Every step presents a potential source of error. Processing census questionnaires includes the field editing, followup, and transmittal of completed questionnaires; the manual coding of handwritten responses (such as the address of the place where people work); and electronic capture of the data.

The quality of the various choices of technology varies for capturing the information the respondent has put on the form. Data quality assurance operations measure error levels and the Census Bureau takes steps at each stage to ensure a high quality product.

With regard to administrative records, there were a number of checks to reduce errors during data processing. The information system’s screen edit processing only allowed data in its proper form to be entered into the system. The system performed a series of checks, which included ensuring that the correct type of code was entered, the required

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<sup>16</sup> The 1990 census had an extensive follow-up operation for nonresponse to questions on the long form as does the American Community Survey. Because of time and cost considerations, Census 2000 did not have this operation and we expect that imputation rates for nonresponse for individual questions will be higher than in 1990 or for the American Community Survey.

transaction information was entered, and it compared individual elements to check for consistency. Errors identified by the screen editing process affecting eligibility determination and benefit issuance had to be corrected before the application could be processed.

#### Recording information incorrectly: self reports and the consistent errors of enumerators and eligibility workers

The person filling in answers on a form or responding to the questions of a census enumerator or eligibility worker is a source of error no matter how detailed the instructions are or how clearly the questions are formed. The enumerator or eligibility worker may misinterpret or otherwise incorrectly record information given by a respondent, fail to collect information, or collect information from households not designated as part of the sample. The errors of field workers can create large-scale, consistent errors for all the work they do, another source of bias in the data for that particular area. An evaluation study from the 1950 census showed that error is decreased when individuals fill out a form for themselves (self reporting) compared with an enumerator filling it out. The errors respondents make tend to be more random unless there is a significant problem with the question that confuses groups of people. This is generally found and fixed ahead of time by extensive testing of all questions on decennial censuses, the Census 2000 Supplementary Survey, and the American Community Survey.

The Census Bureau minimizes the problems of incorrectly recording information through standardized training of enumerators and quality control operations such as reinterviews of respondents to ensure responses are not fabricated.

Recording errors by workers were identified and steps taken to address those errors by DHR. The problems of incorrectly recording information were minimized by having a series of checks built into the system that recorded the information so that incorrect and inconsistent data were flagged with error messages, and by having supervisors check the information.

#### Conceptual differences

There are conceptual differences between survey statistics and administrative records in how the population universe is defined, and the time the data are collected as well as

the reference period for a question. As discussed above, the surveys collected statistics at households only while the Food Stamp records included recipients, regardless of their type of living quarters. Such studies are further complicated because people move in and out of different types of living quarters within a year. Additionally, in the Census 2000 Supplementary Survey, data collection occurs continuously throughout the year and so there is not a frozen moment in time to which one's status refers—it represents an average situation over a year.

It is essential to check the universe statement to be sure your universes are comparable between the survey data and the administrative record data set. The census long form, the Census 2000 Supplementary Survey, and the American Community Survey are representative samples of the total population. The results are weighted to provide estimates of the characteristics of the total population. Data tables include the specific universe for a particular table within the table title. In the American FactFinder (where the data sets are found on the Census Bureau's website), a universe statement is at the top of each table.

The universe for administrative records such as Food Stamps is the total group of clients who receive the benefits and services of the program. Not everyone who is eligible necessarily applies to the program. This can cause some confusion when comparing surveys with administrative records. For example, not all poor people, as defined by Executive Order of the Office of Management and Budget, receive Food Stamps because some are not eligible (for example, they may have assets that make them ineligible) and some who are eligible for assistance don't apply. Appendix B describes the eligibility rules.

#### Time of data collection and reference period for a question

Time references between the surveys and the Food Stamp records were different.<sup>17</sup> Maryland's Food Stamp eligibility decisions were related to a calendar month. The surveys refer to receipt of Food Stamps in the 12 months prior to filling out the survey form. Always look at the question to determine its time reference (a copy of the questionnaire is part of the documentation for each survey on the Census Bureau's website).

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<sup>17</sup> For comparisons among data sets, it is important that published data products specify the exact time reference.

## IV. Conclusions

The statistics provided here show that there is a large difference between the estimates of the number of people receiving Food Stamps from the Census 2000 Supplementary Survey and the administrative records of actual counts of households receiving Food Stamps in 1999 in Maryland.

After developing an administrative records file that matched the survey universe as closely as possible, we examined a number of possible reasons for the large differences. These differences were generally consistent regardless of the jurisdiction and whether it was an urban or rural area. Maryland's jurisdictions with relatively large numbers of poor people tended to differ the most between the two data sets. We also examined comparisons for the United States between the Census 2000 Supplementary (C2SS) and the Current Population Survey (CPS). The March 2000 CPS reported 5.7 million households receiving Food Stamps nationally compared with 6.4 million in the C2SS. The national figures from the Food and Nutrition Service of the Department of Agriculture are not comparable because they track average monthly participation of households receiving Food Stamps, a different concept than the surveys (that indicated 7.3 million households).

In the end, we cannot make an authoritative statement as to why the differences are so large. We suspect that misreporting in the survey is the largest factor but cannot prove it definitively or identify which groups are the most likely to misreport. The best clue we had was that the differences were especially large for Food Stamp households without children.

As a next step, Maryland's Department of Human Resources, the Jacob France Institute at the University of Baltimore, the Economic Research Service of USDA, and the U.S. Census Bureau are collaborating on a research project to measure differences in Food Stamp Program participation by using linked administrative records data from Maryland's Food Stamp program and survey data.

Over the next year, this project will address the following questions:

- By how much do major national surveys conducted by the Census Bureau, such as the Current Population Survey (CPS) and the American Community Survey, report fewer participant households than administrative records show for the U.S. Food Stamp Program (FSP)?

- What are the demographic characteristics of households where there is misreporting of reciprocity?
- Do particular population groups consistently misreport participation and benefit reciprocity in the Census surveys? For example, do older people, many of whom receive relatively low amounts for Food Stamps and for short time periods, consider the reciprocity too inconsequential to bother reporting? Or is there confusion about the dates of reciprocity in relation to the way the question on the survey is asked?
- Are survey sampling procedures, nonresponse patterns, and survey weighting factors associated with under-representation of households that are most likely to participate in these programs?

This project serves a core need of the U.S. Census Bureau by providing information about the accuracy of an important data element in major national surveys fielded by the Census Bureau and how procedures or the question might be improved. This project also serves a core need of Maryland's Department of Human Resources and the USDA's Economic Research Service by providing greater understanding of Food Stamp Program participation measures that are essential for managing food assistance and nutrition programs.

## Appendix A

### Question on Food Stamp Reciprocity In the Census 2000 Supplementary Survey

Question 16 in the "Housing" section, asked about the entire household, not about individuals:

16. At any time, DURING THE PAST 12 MONTHS, did anyone in this household receive Food Stamps?

- Yes ———— **What was the value of the Food Stamps?**  
Past 12 months' value - *Dollars*
- No

## Appendix B

### Determination of Eligibility for Food Stamps in Maryland

Households in which all members are receiving public assistance are automatically eligible for Food Stamps and are not subject to an income eligibility test or a resource test. This includes those households receiving Temporary Cash Assistance, Temporary Emergency Medical and Housing Assistance (TEMHA), and SSI. All other households applying for Food Stamps need to meet the following resource and income tests.<sup>18</sup>

#### Resource Test

Each household may have up to \$2,000 in countable resources, or \$3,000 if at least one person is 65 years or older. Countable resources include bank accounts, cash, real estate, and personal property. The household's home and lot, household goods, personal belongings, and life insurance are not counted. Each household may have one car with a fair market value of \$4,650 or less. Additional cars or more expensive cars are counted as resources with some exceptions.

#### Income Test

Households with an elderly person, or person receiving certain types of disability payments have to meet a net income test<sup>19</sup>. All other non-public assistance households have to meet both a gross income test<sup>20</sup> and a net income test. Almost all income is countable. If the household's monthly gross income is equal to, or more than, the gross monthly income limit for its household size then the household is ineligible for Food Stamps. If its gross monthly income is less than the limit, then the following deductions are subtracted from gross monthly income to determine net monthly income.

- A 20 percent deduction from earned income
- A standard deduction of \$134 for all households

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<sup>18</sup> U.S. Department of Agriculture, *Food Stamp Resources, Income, and Benefits, for Households in the Contiguous States and the District of Columbia, 10/1/00 through 9/30/01*, USDA Web Site, July 31, 2001.

<sup>19</sup> Net income is gross income minus allowable deductions.

<sup>20</sup> Gross income is a household's total, nonexcluded income, before any deductions have been made.

- A dependent care deduction when needed for work, training or education, not more than \$200 for each child under age 2 and not more than \$175 for each other dependent
- Medical expenses for elderly or disabled members that are more than \$35 a month if they are not paid by insurance or someone else
- Child support payments
- Excess shelter costs<sup>21</sup> that are more than half the household's income after other deductions. This deduction is limited to \$275 per month unless there is an elderly or disabled household member in which case there is no limit.

The amount of the Food Stamp benefit, or allotment, is determined as follows. Maximum monthly Food Stamp allotments are determined for each household size based on the USDA's Thrifty Food Plan. In order to calculate the amount of the Food Stamp benefit received by each household, 30 percent of the net monthly income of the household is subtracted from the maximum monthly Food Stamp allotment for its household size.

#### **Maximum Monthly Food Stamp Allotments, FFY 2000**

<u>Household Size</u>	<u>Maximum Monthly Allotment</u>
1	\$ 127
2	\$ 234
3	\$ 335
4	\$ 426
5	\$ 506
6	\$ 607
7	\$ 671
8	\$ 767
Each additional person	\$ 96

Source: Committee on Ways and Means, U.S. House of Representatives, *The Green Book*, 2000.

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<sup>21</sup> Shelter costs include rent, mortgage and utilities.

## Certification Periods

In Maryland, local departments of social services establish a specific period of time during which the household is eligible to receive Food Stamps. This is the certification period. When the certification period expires, the household must be recertified by completing a new application and submitting the required verification information. If this is not done in a timely fashion, the household's Food Stamp benefits will cease. Generally, the local department assigns the longest certification period possible, given the predictability of the household's circumstances, and given the following limitations.

Households in which all the members are elderly or disabled may be certified for up to 24 months. The certification period for all other households may not exceed 12 months. Households with stable circumstances may be certified for at least six months.<sup>22</sup> Households with earnings should have a four-month recertification period. Households with unstable circumstances<sup>23</sup> may be certified for a shorter period but generally not less than three months.<sup>24</sup>

Households are required to report changes in household circumstances. If the household becomes ineligible for Food Stamps, the certification period is shortened.

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<sup>22</sup> Annotated Code of Maryland, Title 07, Subtitle 03, Chapter 17, COMAR Online, State of Maryland, Office of the Secretary of State, Division of State Documents.

<sup>23</sup> Unstable circumstances can include intermittent work history, a deficit budget, zero gross income, or an able-bodied adult without dependents.

<sup>24</sup> The local department may assign certification periods of one month or two months if it appears likely that the household will become ineligible in the near future.