

**Issues in Comparisons of Decennial Census Poverty Estimates
With Public Assistance Caseloads in Maryland**

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by

**Cynthia Taeuber
The Jacob France Center, University of Baltimore/U.S. Census Bureau**

**Jane Staveley
The Jacob France Center, University of Baltimore**

and

**Richard Larson
The Family Investment Administration
The Maryland Department of Human Resources**

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Cynthia Taeuber, Jane Staveley, and Richard Larson

Executive Summary

- *We expect estimates of population characteristics from surveys such as the decennial census and the American Community Survey to differ from the results of state administrative records such as welfare records. Not all poor people apply for public assistance and not all poor families are eligible for public assistance. Thus, we expect the census estimates of poor to be higher than the counts of families and children who received benefits from Aid to Families With Dependent Children (AFDC) – but this is not always the case.*
- There are crucial differences in concepts and data collection methods among data sets. This means there are differences in what is measured even though it seems the concepts are similar (such as the number of poor children and the number of children receiving public assistance). It is comparing the proverbial apples with oranges.
- It is impossible to completely disentangle the exact contribution of each factor to the differences between the 1990 census and administrative records. Nevertheless, we conclude that the three most important factors in the differences in estimates for Maryland of poor children and poor families, and counts of AFDC recipients and cases are:
 - ✓ *Sampling error from the decennial census long form:* Decennial census estimates of the number of poor in the 1990 census come from a sample survey and are not an exact count of poor children or poor families. It is an estimate that includes both sampling and nonsampling error (for example, response error and people and entire households who were missed from the census). Sample error and some nonsample errors are measurable. Maryland's AFDC records reflected the number of families receiving benefits. The records were reviewed for quality on an ongoing basis and the measured error rate was generally very low.
 - ✓ *Undercounting people in the 1990 census.* Some households and people are missed entirely by the census. There is no means to determine the total population that is eligible for AFDC, only the count of those people who are recipients.
 - ✓ *Differences in the definition and reporting of "income" between the two data sets:* In the decennial census, "income" refers to money income only. Noncash benefits are not part of the poverty definition. The AFDC program

counted money income but considered it somewhat differently. “Income” used in determining eligibility for AFDC in FY1989 included earned income (wages and self-employment earnings) after allowable deductions and disregards, as well as unearned income (with some exclusions such as Food Stamps and other means-tested benefits). In addition, a family’s resources or assets were taken into account when determining eligibility. There may be differences in the amount of income reported between the two data sets.

- As expected, there are differences between Maryland’s counts of children and families who received AFDC payments in 1989, and the 1990 census estimates of children and families with related children headed by women alone who were poor in 1989.
- In Maryland, an estimated 128,500 children under 18 were poor in calendar year 1989 and about 118,300 children were in families receiving AFDC payments in calendar year 1989. When sample error is accounted for, as expected, every county had a higher estimate of poor children than they had children in families receiving AFDC payments.
- *In Baltimore City, however, even after accounting for sampling error, more children received AFDC (68,039) than the estimated number of poor children in the 1990 census (55,851-58,555). Baltimore City had about 45 percent of Maryland’s poor children and 58 percent of the AFDC recipient children. In Baltimore City, a relatively large percentage of both the poor children and AFDC recipients were African American. While there are crucial differences in concepts and data collection between the 1990 census and AFDC eligibility, we conclude that the most plausible explanation for the large difference in the data sets is undercount of African American children in the 1990 census of Baltimore City.*
- Contrary to expectations, in Maryland, there were about 21,000 more families in the basic AFDC program (63,106) than there were female-headed families with related children who were estimated to be poor in calendar year 1989 (42,170). Baltimore City alone accounted for most of the difference, a difference of about 14,500 families. Prince George’s County accounted for about 2,400 of the difference; Anne Arundel County, about 950; and Baltimore County, nearly 900 families.
- Baltimore City had 57 percent of Maryland’s basic AFDC cases and 50 percent of its poor female-headed families with related children. About 86 percent of families receiving AFDC in Baltimore City were headed by African American women, as were 83 percent in Prince George’s County.
- Sampling error alone does not explain the difference between the number of basic AFDC cases and the number of poor families headed by women. The absolute differences were relatively small in most counties with the notable exceptions of Baltimore City and Prince George’s County.

- There are no estimates of the undercount of female-headed families in the census or of the quality of their reports of their income. Nevertheless, it is reasonable to assume that undercount is an important factor in the difference between the count of families headed by women alone who were poor and those who received AFDC payments, particularly when we note that it was Baltimore City and Prince George's County, both with large African American populations, where the absolute differences were the largest and accounted for most of the difference in Maryland. It is likely the difference in the definitions of "income" between the two data sets is also an important contributing factor to the observed differences.
- Sample error and missing people (undercount) in the 1990 census are likely to be the most important factors related to the observed differences between those on AFDC and the estimates of poor in the 1990 census. Differences in the definition of income are likely to be of secondary importance. Additional factors include:
 - ✓ Time references differ. For example, the 1990 census data refer to family income in calendar year 1989. The marital and family status of the mother, and the age of the child, is as of April 1, 1990, however. For AFDC data, income refers either to the month before the application for assistance is made or expected income in the month after the application. The average monthly caseload during the year is published in an annual report for the fiscal year. Thus, the publicly-available FY1989 report contained the average monthly basic AFDC cases for the period July 1, 1988 through June 30, 1989. For this report, special tabulations were made available for calendar year 1989 to improve comparability between the two data sets.
 - ✓ Survey research shows that how you ask a question, where it is placed on the questionnaire, and how many questions are on a questionnaire affect the resulting data distributions.
 - ✓ Steps to maintain data quality: The Census Bureau takes many steps to improve the quality of the published estimates. These include extensive testing of questions so respondents understand what is being asked, following up to try to obtain answers to questions respondents leave blank, and statistical editing of the data to maintain confidentiality and for no response, inconsistent responses, and unacceptable responses (such as "don't know"). Other nonsample errors occur, such as recording information incorrectly, but the extent is unknown. The level of nonsample errors in the AFDC administrative records (AIMS database) for FY1989 was very low, according to error rate measures from ongoing quality control investigations.
 - ✓ The census data on the number of poor in 1989 were released in late 1992. In Maryland, from 1989 to 1993, there was a significant increase in the number of children receiving AFDC. Some may have incorrectly compared the estimated number of poor children in 1989 with the number of AFDC child recipients in 1992 or 1993.

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I. Introduction

We expect that estimates of population characteristics from surveys such as the decennial census and the American Community Survey will differ from the results of administrative records compiled by state and local agencies for the management of programs. Crucial differences in concepts and data collection methods among data sets mean that different things are being measured. Sometimes the words used in two data sources may be the same (such as “race” or “age”), or the concepts may seem similar (such as the number of poor children and the number receiving public assistance) when in fact, the concepts are different and significantly affect the results. It is often like comparing the proverbial apples and oranges.

In this paper, we examine issues in comparing 1990 census estimates of the number of poor¹ people living in Maryland with records kept by the state of Maryland for its counties and Baltimore City on the number of children and families who received public assistance payments in the Aid to Families with Dependent Children program (AFDC) in 1989.² This will help inform our understanding of the results of Census 2000 and the American Community Survey³ in coming years and how these relate to the statistics

¹ The data on poverty status were derived from answers to the questions on income on the decennial census long form. Poverty statistics are prescribed by the Office of Management and Budget (OMB) in Directive 14 as the standard federal agencies must use for statistical purposes. Following the OMB’s Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to detect who is “poor” under the official definition. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being “below the poverty level.” There are 48 poverty thresholds (income cutoffs) based on family size, number of related children and whether a householder is 65 years or older. This is discussed in detail in the technical documentation for the 1990 census at the Census Bureau’s website: www.census.gov.

² We use two sets of data published for the AFDC program in Maryland. In comparing the number of children in poverty with the number of children receiving AFDC, we use the total number of child recipients of AFDC during the month. In comparing the number of poor female-headed families with related children with the number of AFDC cases, we use the number of cases in the Basic AFDC program and exclude the number of cases in the Unemployed Parent Program. The Basic Program was for single-parent families with children, and almost all were female-headed families. The Unemployed Parent program was for two-parent families with children. In FY 1989, less than 1 percent of the total AFDC cases were in the Unemployed Parent program.

³ 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 2003. Community profiles will start to become available in mid-2004 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 2006 as three-year average estimates. Population groups of less than 20,000 will have 5-year estimates starting in 2008, and will be updated every year thereafter. Further information about the survey is available at the Census Bureau’s website: 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

compiled by states from their management information systems. The differences are important to understand because estimates of poverty from the 1990 census were used in determining the allocation of funding states and their jurisdictions received for various programs for social services.

We expect the number of poor children and the number of poor families headed by the mother alone, as estimated in the decennial census, to be somewhat higher or roughly equal to the number receiving public assistance payments. This is because not all poor people are eligible for welfare and not all who are eligible apply.

From the 1990 census, we learn that, as expected, there were more poor children in Maryland counties than the number receiving AFDC benefits. In Baltimore City, however, more children received AFDC than the estimated number of poor children in the decennial census (Table 1).

When we compare the estimated number of female-headed families with children who were poor in the 1990 census with the number of families who received AFDC payments, we encounter apparent anomalies. Contrary to our expectations, in Maryland, there were about 21,000 more families who received AFDC payments in calendar year 1989 than the decennial census estimated were poor in calendar year 1989. Much of the difference was in Baltimore City and Prince George's County.

How do we explain the differences, particularly the comparison in the data sets for female-headed families and basic AFDC cases? The short answer is that we cannot make a direct comparison between estimates of poor in the decennial census and the number receiving public assistance. One must account for error in the data as well as differences in the methods of data collection, the population universes, time references, and conceptual definitions. Once we identify the sources of difference, we can use results from the two data sets in conjunction with each other to better understand the characteristics of the population group and trends.

Part II below is a general discussion of factors that are important to consider in any analysis that uses 1990 decennial census estimates of poverty, and data from Maryland's administrative records databases, AIMS and AMF,⁴ that were used for managing the AFDC program. In Part III, we suggest specific reasons for the apparent differences between the 1990 census estimates of poor children and families headed by women alone, and Maryland's AFDC child recipients and cases, in 1989. Part IV provides a summary of our conclusions and recommendations.

⁴ AIMS was the Automated Income Maintenance System and was used by the Maryland Department of Human Resources to determine financial eligibility and to calculate benefit amounts for the AFDC program in Maryland. AMF was the Automated Master File and was the database that listed individuals, who applied for or received AFDC benefits or services in Maryland, together with some basic demographic information. Beginning in 1993, the AIMS and AMF files were replaced by the CARES (Client Automated Resource and Eligibility System) file. Conversion took place on a county-by-county basis and was completed in 1998 when Baltimore City switched over to CARES.

II. Sources of Differences Between Results of the Decennial Census and Public Assistance Records

In this section, we will discuss sources of differences between results of the decennial census and public assistance records. These include data collection methods, sources of error, and conceptual differences. Error in the census comes from sampling part of the population rather than the entire population and missing people during the count. The two data sets handle inconsistent, unacceptable, and unknown responses differently. Both data sets are subject to errors from recording information incorrectly and during data processing, but at different levels. Conceptual differences include differences in the population included in the universe of the data set, differences in the time of data collection and reference periods, and differences in definitions (particularly for race and ethnicity and for income).

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. Because administrative records developed primarily to manage programs generally have not been treated as statistical files,⁵ documentation for administrative files can be difficult for researchers to obtain. Administrative forms used to collect data change and copies of outdated ones (which provide information about how questions were asked) are generally not kept. 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 list below as a guide to the type of documentation that researchers need in order to better use administrative records as statistical files.

A. 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 and the American Community Survey both collect demographic, social, economic, and housing information. Both are representative sample surveys designed to represent the total population (rather than a subset of the population as in administrative records) without contacting every household. The characteristics of

⁵ Administrative records affect a *particular* person or business, in this case, for receiving benefits. 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.

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. The sample 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 AFDC program was summarized and published at the state and county levels and for Baltimore City.⁶ The aggregate data in the reports 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. 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. The 1989 AFDC intake form for Maryland, for example, was not available for this study. Instead, we relied on a later, but similar, version of the form, information from computerized data files, and institutional memories. Information on instructions provided to caseworkers for completing the application process was obtained from state regulations and the AFDC Manual of the Income Maintenance Administration, Department of Human Resources, State of Maryland. Access to the forms on an agency’s website, as well as instructions that are provided to caseworkers for filling out the form, would be helpful to analysts.

Differences in how data are collected have some impact on differences in the estimates of the number of poor children and families in comparison with the number receiving AFDC. For example, the census accepts any response reported and we know that overall, income is underestimated, especially for sources of income other than wages, such as interest, public assistance⁷, and Social Security. Those applying for AFDC (also see section IID) are subject to criminal penalties for fraud if they do not provide full information about all sources of income and assets (which is not to say the data are a perfect reflection of the income of AFDC recipients – fraud and misunderstanding of what is being counted does occur but the error rate is low, as described in Section IIC under “Processing Errors”).

B. 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.”

⁶ State of Maryland, Department of Human Resources, Income Maintenance Administration, Management Report, Annual Report, Fiscal Year 1989 through Fiscal Year 1995.

⁷ Recent research indicates that reports of public assistance on the Current Population Survey are underreported nationally. This may be related to respondent confusion with the recent changes in the names of public assistance programs. The Census Bureau continues research on how this affects the reporting of public assistance in Census 2000 and the American Community Survey.

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.⁸ 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 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 units⁹ and a sample of people living in group quarters, asks additional social, economic, and housing questions. Like the census long form, the American Community Survey is a sample of the population and the form (at least the forms for 1996 through 2002) asks questions that are essentially the same as those on the Census 2000 long form.

Because the statistics from the census long form 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. For example, in this paper, we show that sample error explains much of the apparent differences between the estimates of the number of poor children and counts of AFDC recipient children (Table 1). Because of sample error, an important rule analysts follow is to not overemphasize small differences.

⁸ 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.”

⁹ Vacant and occupied housing units –the instructions on the 1990 census form directed respondents to include all usual residents of occupied housing units as of April 1, 1990. The decennial census uses a “usual residence” concept, defined as the place where a person lives and sleeps most of the time. The American Community Survey uses 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.

Census long-form data are based on a sample and are subject to sampling variability that we can measure. The degree of uncertainty of an estimate is represented by a confidence interval.¹⁰ The Census Bureau uses a 90-percent confidence interval. 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. Tables 1 and 3 both provide the 90-percent confidence interval for the 1990 census estimates for a more appropriate comparison with the counts of children and families receiving AFDC 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 long form sample of the decennial census and the American Community Survey, 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 (see Table 1). For example, over calendar year 1989, an average of 1,824 children in Charles County, MD received AFDC payments. The 1990 census published point estimate of the estimated number of poor children for calendar year 1989 was lower, with only 1,664 poor children. At first it seems there is a mistake because we expect more poor children than AFDC recipients (not all poor people are eligible or apply for public assistance). We cannot look at the long-form sample estimate as an exact count, however, as it is an estimate based on a sample of households. When the margin of error due to sampling in the census is computed, the results are as expected. The 90-percent confidence interval estimates there were 1,471 to 1,857 poor children in calendar year 1989. The annual average of 1,824 AFDC recipient children falls within that range as expected.

**Example of Using Sample Error in Comparisons
Children Under 18 in Charles County, MD: 1989**

Average monthly AFDC caseload of children in families receiving AFDC...	1,824
1990 Census:	
Published estimate of poor children in 1989.....	1,664
90-percent confidence interval.....	1,471 – 1,857

¹⁰ 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, sample estimates from the census long form 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.

C. 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 AFDC, 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 coverage¹¹, 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 but the Census Bureau attempts to control the sources of such error during the collection and processing operations. The decennial census 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).

With regard to Maryland's AFDC program, the purpose of the AIMS administrative database was to collect data for determining eligibility for the program and to generate the correct benefit check for each AFDC case. Therefore, the accuracy of the data was critical to the effective management of the program. The data were checked, beginning with the recording and processing of the application information, through ongoing reviews of information maintained on active AFDC cases. As required by the federal government, Maryland conducted quality control procedures to ensure that those who were eligible received checks, that the payment amounts were accurate, and that checks were not issued to those who did not meet the eligibility requirements. The Quality Control Division at the Department of Human Resources conducted a continuous review of a statewide sample of active cases, closed cases and applications that were denied, in order to check for client mistakes, client fraud and management errors. Workers in the Quality Control Division at DHR conducted face-to-face interviews with a sample of recipients and verified the information provided by the recipients with other sources. The results of the survey were used to develop corrective action plans to address the causes of eligibility and payment errors. A measure of this "error" rate was calculated and reported annually by the federal government for each state. In general, these error rates were low in Maryland indicating that the counts of AFDC cases and recipients are of high quality.¹²

¹¹ Errors of coverage include missing whole households or group quarters, or people within the households or group quarters.

¹² *Automated Income Maintenance System, AIMS Procedures Manual*, 1983-1985, The Maryland Department of Human Resources; State of Maryland, Department of Human Resources, Income

- **Coverage**

Some households and people are missed entirely by the census and this introduces bias. Coverage refers to the proportion of the total population (or eligible universe in the case of administrative records such as state welfare programs) 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 infants were more likely to be missed than were other young children.

For the decennial census and the American Community Survey, coverage is measured for total housing units, group quarters, households, and people. 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 census questionnaire omits a household member, either on purpose, by accident, or through confusion about whether the person should be included (such as newborns, children away at boarding school, or boarders). They may also mistakenly include people on the census 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 census 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).

Estimates of census coverage are provided in the documentation at the Census Bureau’s website, (click on “Subjects A-Z,” “U,” and then go to “Undercount”). Also see Table 2 of this paper.

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 public assistance, there is no means to determine the total eligible population, only the number who apply.

- **Data editing process for confidentiality, nonresponse, inconsistent responses, and unacceptable responses**

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.¹³

Problems with questions that were not answered, inconsistent with other information, or unacceptable (such as “don’t know”) were followed up 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).

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 know” or a blank as

¹³ 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.

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 and the American Community Survey is reduced substantially by contacting respondents during fieldwork, either by telephone or personal visit, to obtain answers.¹⁴

For decennial censuses and the American Community Survey, any remaining nonresponse to a question is “imputed” by computer edits that use reported data for a person or housing unit with similar characteristics. Where information is entirely missing for a person or housing unit, the computer editing process substituted the full set of characteristics from a previously accepted housing unit. Documentation for both the decennial census and the American Community Survey describes more detail about these edits and shows the percentage of responses that were imputed. The assignment of acceptable codes in place of blanks or unacceptable entries enhances the usefulness of the data. When imputation is very high for a particular item, however, the analysis of the data should take this source of bias into account as imputation procedures use information from respondents to represent the characteristics of nonrespondents.

Review of AFDC records by the eligibility worker, after the data had been entered into the system, provided the worker with the opportunity to edit incorrect data. There were no imputation procedures for AFDC records used as statistical files.

- **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 a person’s occupation or the address of the place where they 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.

¹⁴ 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.

With regard to administrative records, there were a number of checks to reduce errors during data processing. Information on the client was obtained by the eligibility worker, who completed the input forms and forwarded them to the supervisor, if supervisory sign-off was required by the local department. The supervisor reviewed the input forms for completeness and accuracy and then returned the forms to the eligibility worker for any corrections. The information on the form was entered into the system by the data entry operator. The 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 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. The completed transaction was returned to the eligibility worker for final review.¹⁵

- **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 AFDC 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 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 recipients and management were identified and steps taken to address those errors by DHR. The problems of incorrectly recording information were minimized by having supervisors check the completed forms, and by having a series of checks built into the system that recorded the

¹⁵ *Automated Income Maintenance System, AIMS Procedures Manual, 1983-1985, The Maryland Department of Human Resources.*

information so that incorrect and inconsistent data were flagged with error messages. Following input of the data into the system, the eligibility worker reviewed the output for accuracy.¹⁶

D. Conceptual differences

There are conceptual differences between census data 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. There are also conceptual differences in the way questions are asked, the order of questions, and definitions. As examples, we discuss below differences between the two data sources in the questions regarding race and income.

- **Population universe**

The universes differed between the 1990 census and Maryland's AFDC records. The census attempts to include and generally represents the total population.¹⁷ The AFDC records include recipients of the programs rather than the total universe of those eligible for assistance. Documentation for administrative records should include an exact copy of the intake form to help researchers estimate the universe of people who are eligible for the program.¹⁸

It is essential to check the universe statement to be sure your universes are comparable between the census data and the administrative record data set. The long form data from the decennial censuses 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.

In census data, people live in housing units (occupied households and vacant housing units) or in group quarters (such as prisons, nursing homes, shelters, and college dormitories). Population tables are for "total persons," which includes people living in group quarters. Group quarters are further divided between institutional group quarters (such as prisons and nursing homes) and "noninstitutional group quarters" (such as shelters for the homeless, college dormitories, and military barracks). Tables such as the income and poverty tables are shown for "households," "families," or "persons in noninstitutional quarters" (the latter includes households and noninstitutional group quarters). Poverty status is not calculated for people living in institutions.

¹⁶ Ibid.

¹⁷ The population is representative with the exception of bias caused by missing people who probably have characteristics different from those who are counted.

¹⁸ Such information could be in the caseworker manual but it would be easier for researchers to access if documentation were on a web site.

A common error is to compare “family” or “person” information from administrative records with a table from the census for “households” or “total population” (includes people living in group quarters). In the precise nomenclature of census terms,¹⁹ a household and a family may be the same, but not necessarily. A household may contain unrelated people living together or with a family, or a household may contain several families living together (families within families—such as on television, the Walton family consisted of three families in one household -- the two grandparents, John and his wife and kids, and Mary Ellen and her baby. A second example from a television program is the Archie Bunker household. It had two families – the primary family was Archie and Edith; the second “subfamily” was Gloria, Gloria’s husband “Meathead,” and their baby). Detailed definitions are part of the documentation for both the decennial census and the American Community Survey. For example, a “family” is defined as consisting of at least two people who are married or who are parent and related child. Such documentation is needed for administrative records to ensure comparisons are appropriate.

Yet another common error is to use a census table that refers to all people or people of only a certain age group or some other status (such as “*related children under 6*” or “*educational attainment of people 25 years and older*”) and fail to use the same universe from the administrative records. You can check the glossary of terms (see previous footnote for website) for the definition of census terms. For example, “related children” include stepchildren and adopted children, but not foster children.

The universe for administrative records such as AFDC records 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, are welfare recipients 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.

In 1989 in Maryland, an “AFDC assistance unit” was usually an eligible parent(s) or caretaker relative and all children who were related by blood (whole or half) and adopted child(ren) living in the same home. There were additional regulations to cover special circumstances and requirements specifying when to include or exclude stepparents and caretaker relatives in the assistance unit. The income of every person in the assistance unit was counted in determining eligibility and amount of the grant. Foster children were excluded from an AFDC

¹⁹ A glossary of terms is available at < http://www.census.gov/CMS/www/html/meth_doc/datadef.htm>.

assistance unit and so decennial census tabulations of “related children” most closely compare with these data.²⁰

Another source of difference is that in 1989, AFDC was provided to U.S. citizens, permanent residents (that is, those with a “green card”), and aliens legally admitted to the U.S. for permanent residency.²¹ Census tabulations of poor families and related children include citizens and foreign-born people who are not citizens including undocumented immigrants. This was probably not a significant issue in Maryland in 1989 but if many undocumented immigrants moved into Maryland over the decade of the 1990s, it may be more important in comparisons with Census 2000 data. It is possible to tabulate census data from the Public Use Microdata files to obtain estimates of poor citizens and immigrants²² but for the state and largest counties only.

- **Time of data collection and reference period for a question**

Decennial census questions generally, but not always, refer to April 1 in the year ending in “0.” Answers to demographic and many housing questions are supposed to be answered as of April 1 (regardless of when the form is actually filled out), but answers to some questions, particularly the economic questions and some of the housing questions, have different reference dates within the question. Some questions ask about one's activities the week or year preceding the census. For example, in the 1990 census, a person's place of residence, age, marital status, family status, and race/Hispanic origin is what it was on April 1, 1990. Income refers to the person's total cash income for the calendar year, January 1-December 31, 1989.²³

²⁰ State of Maryland, Department of Human Resources, Income Maintenance Administration, Manual of Guidelines and Procedures for Aid to Families with Dependent Children, Section 3A (Assistance Unit), October 1, 1989.

²¹ State of Maryland, Department of Human Resources, Income Maintenance Administration, Manual of Guidelines and Procedures for Aid to Families with Dependent Children, Section 3A6(7) (Assistance Unit), October 1, 1989. An appropriate comparison with Census 2000 will entail different variables. Under TANF, Maryland provides Temporary Cash Assistance (TCA) to legal immigrants who lived in the US before August 1996, as part of the required state-funded maintenance of effort. The decennial census includes, but does not identify, undocumented immigrants. Census 2000 asks whether a person is a citizen, the year they came to live in the United States, and the state or country where a person was born.

²² Since 1790, people have been included in the census of the United States at the living quarters they say is their “usual” residence, that is, the place where they live and sleep most of the time or the place they consider to be their usual residence (not necessarily their legal or voting residence). Each person whose usual residence was in the United States was to be included in the 1990 and 2000 censuses, without regard to the person's legal status or citizenship. As in previous censuses, foreign travelers in the United States who had not established a residence were specifically excluded from the census (such as those with a visitor's visa). Americans with a usual residence outside the United States were not enumerated in the 1990 census except for United States military and federal civilian employees, and their dependents who were stationed overseas at the time of the census. They were included in the population counts for states for purposes of Congressional apportionment, but were excluded from all other tabulations for states and their subdivisions.

²³ Data collection for the American Community Survey occurs continuously over a year. The estimates for the summarized characteristics of an area are a 1-, 3-, or 5-year average. Some reference dates are different

Time references between the census and the AFDC records were different.²⁴ Maryland's AFDC eligibility decisions were related to a calendar month and were based on one of two budgets – either a prospective budget (best estimate of what the “assistance unit’s income, assets, and family circumstances were expected to be in a current or future payment month) or a retrospective budget (the exact financial circumstances of the assistance unit during a specific past month and that is used to determine the grant amount for a future month). Payment occurred in the “payment month” when the case was reported as a paid case for the purposes of the statistical report. Thus, there is the “budget month,” the “processing month,” and the “payment month.”²⁵ In Table 1, we computed the average monthly caseload for the calendar year for 1989 AFDC recipients to improve the comparison with the decennial census data.

As the above discussion indicates, just because you are looking at 1990 census data does not necessarily mean that you can make comparisons with administrative records for the year 1990. If you do, you are likely to be misled by seemingly surprising results. You need to 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). Comparisons that involve income and poverty status are prime examples. In calendar year 1989, the reference year for the income questions, the economy was growing in most areas and area profiles of income and poverty status reflected that situation. Shortly after the 1990 census was completed, the economy experienced a recession (July, 1990- March, 1991). The number of AFDC cases in Maryland began to rise significantly starting in the second half of 1989, preceding the recession in Maryland by a year. It is incorrect to compare decennial census poverty numbers for 1989 with welfare caseloads in 1990 (or even worse, to make the comparison when the decennial poverty data were released in late 1992 and the number of AFDC cases had climbed even higher, from about 63,100 families in CY1989 in Maryland to nearly 79,300 in CY1993 – see Table 3).²⁶

from those of the decennial census. For example, the income questions in the American Community Survey ask about the 12 months prior to the time of the interview rather than the decennial’s calendar year (continuing evaluation research, available on the Census Bureau’s website, tries to determine whether most people follow the instruction literally or actually provide income for the prior calendar year regardless of the instruction). Enrollment in school refers to any enrollment in the three months before the survey form is filled out, and the migration question asks about the person’s place of residence one year prior to filling out the form. By contrast, in the 1990 census, the reference is April 1, 1985; for Census 2000, it was 1995.

²⁴ For comparisons among data sets, it is important that published data products specify the exact time reference. The average monthly AFDC caseload and recipient counts were published for each fiscal year in an annual report.

²⁵ State of Maryland, Department of Human Resources, Income Maintenance Administration, Manual of Guidelines and Procedures for Aid to Families with Dependent Children, Section 2E (Prospective and Retrospective Budgeting), October 1, 1989.

²⁶ Researchers should check for a similar situation in 2000. The economy was strong at the time of Census 2000 and in 1999, the reference period for the income question. Changes began later in 2000.

- **Differences in the way questions are asked, the order of questions, and definitions**

Survey research shows that how you ask a question, where it is placed on the questionnaire, and how many questions are on a questionnaire affect the resulting data distributions. Questions that appear on decennial censuses (see Appendix A for list of 1990 topics) and the American Community Survey are tested for these effects. Testing may involve nationally representative sample surveys or targeted samples that compare alternative questionnaire wording and order, focus groups, trend analyses, and comparison of the resulting distributions with other surveys and records.

In addition, definitions of terms used in the questions vary among data sources. Results, therefore, are not always comparable. For example, in the census and AFDC records, race and ethnicity (see Appendix B), as well as income (discussed below), are different. These examples show that seemingly simple questions, such as race and income, are not strictly comparable between AFDC records and the decennial census or the American Community Survey.

- Income and poverty

As discussed below, “income” is defined differently in the census and the American Community Survey (see Appendix C), and AFDC data sets (Appendix D). Logically, we expected the conceptual differences to be a noticeable source of disparity between the census estimates of poor families and children and the number of families and children receiving AFDC payments. We cannot, however, untangle the significance of the effect of the dissimilarities in the two definitions from other factors. Nevertheless, the net differences between the census estimates and the AFDC counts of families suggest that the definitional differences, while not as important as sampling error and undercount in the census, play a secondary role.

- ✓ *Poverty as defined for the decennial census:* The amount of money income, and the sources of income, are self-reported in the census. Following the Office of Management and Budget's (OMB's) Statistical Policy Directive 14, the U.S. Census Bureau uses a set of money income thresholds that vary by family size and composition to detect who is poor. For example, in 1989, the threshold for a family with one parent and two related children was \$9,990 and \$12,679 if there were three children. With four children, the threshold increased to \$14,572. If a family's total income is less than the threshold, then that family, and every individual in it, is considered poor. The poverty thresholds do not vary geographically, but over time, they are updated for inflation at the national level using the Consumer Price Index (CPI-U). The official poverty definition counts money income before taxes and

does not include capital gains and noncash benefits (such as public housing, Medicaid, and Food Stamps). The value of non-money assets are not included and there is no measure of overall wealth. Poverty is not defined for people in military barracks, institutional group quarters, or for unrelated individuals under age 15 (such as foster children). Such people are excluded from the poverty universe--that is, they are considered neither as "poor" nor as "nonpoor."

- ✓ *AFDC income eligibility in 1989*: The definitions of "income" differ between the census data and determination of eligibility for public assistance so that a precise comparison between the two measures is not possible. Income as defined to determine eligibility for AFDC is complicated. Figure 1 shows the steps in the eligibility process and a detailed explanation of the process is provided in Appendix D.

As shown in Appendix D, the income levels used for the initial test in an AFDC application were higher than the federal poverty standards for the equivalent family. However, once the family passed the initial test, there were a number of financial requirements the family had to meet related to (a) the amount of resources (assets) the family possessed; (b) the amount of earnings the family received after application of allowable deductions and disregards; and (c) the amount of certain categories of unearned income received by the family, because some categories of unearned income were counted in the eligibility calculation and some were not. It was possible for a family with income above the federal poverty level to receive an AFDC benefit but only if that family had limited resources and was eligible for all the deductions and disregards on earnings, and had unearned income that was not counted in the eligibility calculation.

Because of the specific rules applied to the differing circumstances of AFDC applicants, it is impossible to say with certainty that income eligibility for the AFDC program was more or less stringent than the census definition of poverty. *After accounting for differences resulting from the sample error and the census undercount, differences remain. Compared with the other sources of error and conceptual differences, we believe the definitional differences in income are likely to be the most important.*

III. Results of Comparing 1990 Census Estimates of Poverty and AFDC Caseloads in Maryland

As discussed above, a comparison of the number of poor from the decennial census with the number of AFDC cases is not straightforward. Data error, collection methods, and conceptual differences all contribute to making such a comparison difficult. Below we provide the 1990 census estimates of poor children and families headed by women alone as well as the counts of AFDC cases and child recipients. We suggest explanations for the differences in the results.

A. Poor Children

Results

In Maryland, an estimated 128,500 children under 18 were poor in calendar year 1989 and nearly 118,300 were in families receiving AFDC payments (Table 1, columns 4 and 8). As expected, when sample error is accounted for (see below), every county had a higher estimate of poor children than they had children in families receiving AFDC payments. In Baltimore City, however, more children received AFDC than the estimated number of poor children in the 1990 census. About 68,000 children in Baltimore City received AFDC payments compared with an estimated 57,200 poor children. In the “Nonsampling Error” section below, we show that a plausible explanation for the large difference in Baltimore City after accounting for sample error is the undercount of children in the decennial census.

Sampling error

As the administrative database provides a full count of cases and individuals, sampling error is not a consideration in AFDC statistics.

Poverty estimates from the decennial census are based on asking income questions of a sample of all households and people living in noninstitutional quarters. Because estimates from sample surveys are not based on complete counts of the population, they are subject to variability, that is, the published estimate has a margin of error. Table 1 shows both the 1990 census estimate from the sample data of the number of poor children in 1989 (column 4) as well as the lower and upper bounds (columns 5 and 6) of the 90 percent confidence interval (see section IIB above).

When making comparisons with sample data, it is important to compute the confidence interval, the range most likely to include the actual count if we could have gathered data from the entire population. The correct comparison here is the counts of children receiving AFDC (column 8) with the upper bound estimate of the confidence interval (column 6), the most likely maximum estimate of poor children for each county. It is only Baltimore City's count of AFDC child recipients that falls outside the confidence interval with about 68,000 AFDC child recipients and an upper bound, or likely maximum, of nearly 58,600 poor children.

Nonsampling error

As noted in the previous section, the results of the quality control process conducted by Maryland's Department of Human Resources indicate that nonsampling errors are not a major factor with regard to the counts of cases and individuals in Maryland's AFDC program as recorded in the AIMS administrative database.

In decennial censuses, failure to include all housing units and every person within households is one source of error. Nationally, the Census Bureau estimated that 1.6 percent of the total population and 3.2 percent of children under 18 were missed in the 1990 census.²⁷ In Maryland, the estimated rate of people missed was higher than the national average. The Census Bureau estimated 2.1 percent of the total population and 4.3 percent of all children were missed in Maryland (Table 2).

When adjusted for the undercount, the 1990 census showed about 1.2 million children under age 18 in the state of Maryland. As shown in Table 2, the Census Bureau estimates they missed about 52,100 of Maryland's children. Most of the missed children were White or African American. About 26,900 missed children were White (3.4 percent of the White children counted) and 23,300 were African American (6.4 percent of the African American children counted). By comparison, the estimated number of missed children from racial groups other than African American and children of Hispanic origin was relatively small. Yet, compared with Whites and Asians, children from all other racial groups, and children of Hispanic origin (who may be of any race), were disproportionately missed in the 1990 census.

The census counted about 180,000 children in Baltimore City in 1990, about 7 in 10 of whom were African American (Table 1). The estimated undercount of children in Baltimore City was 11,500. That's roughly 1 in 5 (22 percent) of Maryland's undercounted children. Undercount estimates are not available by race for counties or Baltimore City but it is reasonable to assume that a disproportionate share of the children who were missed were racial groups other than White or Asian as was true for the total state. Baltimore City had about 10,800 more children receiving AFDC (68,000) than were estimated as poor (57,200). *A plausible explanation for the large difference between the number of poor children and those receiving AFDC payments is the undercount of children in the 1990 census of Baltimore City.*

²⁷ For Census 2000, the estimated national net undercount for the total population was 1.18 percent; for the under 18 population, 1.54 percent.

We do note, however, that Prince George's County had an estimated 9,700 children who were missed, nearly as high a proportion of Maryland's missed children (18.6 percent) as Baltimore City. Additionally, the majority of Prince George's County's children, 6 in 10, were African American. Like Baltimore City, most AFDC recipients in Prince George's County were African American (86 percent and 84 percent respectively). And yet, unlike Baltimore City, Prince George's County followed the expected pattern by having more poor children (12,216) than AFDC recipients (10,818). We do not think this negates the plausibility of our explanation that the census undercount is the most significant source of difference in the two data sets for Baltimore City. All counties, including Prince George's, had similar shares of poor children and AFDC recipients. Baltimore City was the exception to the pattern. Prince George's County had 9.5 percent of Maryland's poor children²⁸ and 9.0 percent of the AFDC recipients, for example. Baltimore City had about 45 percent of Maryland's poor children and 58 percent of the AFDC recipients.

Data collection methods

Differences in data collection methods have some impact on differences in the estimates of poor children in comparison with the number receiving AFDC. We don't know to what extent this contributes to differences in the distributions. Different groups are included in each count as described above under population universes.

Nationally, the 1990 census counted about 3.2 million children under age one although there were nearly 4.1 million births in the year before the census. The lower count of children under age one was partly because some infants were not listed as a household member.²⁹ It is unlikely that AFDC applicants failed to include an infant on their records as the number of children was related to the amount and type of benefits the family received.

We know there are unmeasured differences in the proportions for racial groups in each data set because of differences in the data collection methods.

Conceptual differences

²⁸ Shown in column 7 of Table 1, which is derived from the point estimate (column 4).

²⁹ The instructions specifically say to include infants but there is still a higher miss rate for infants than for other children. This does not mean that 851,000 infants were missed in the census. Rather, research by Gregory Spencer of the Census Bureau showed that many infants were included in the census but their age was incorrectly reported as "1" year old rather than "0" years old. This is partly because people tend to round up the age of babies to "1" and partly because the questionnaire did not ask people to give their age as of April 1, 1990. Those enumerated after April 1st who had had a birthday in the meantime often gave their age as 1 year old creating an artificially low count of infants. Spencer showed there is variation by geography and race in the relative change in the zero-year-old population. In a Modified Age-Race-Sex (MARS) file created by Spencer, there were 21.8 percent more zero-year-olds in the modified file for Maryland than in the 1990 census (nationally, the age modification edits added 22.7 percent more zero-year-olds). Also, the MARS file has more people aged 0-17 years because on average, about 10 percent of 18 year-olds in the census were added to the MARS file of people under 18.

In comparing AFDC recipients and poor children from the decennial census, the most important conceptual difference is the definition of “income” and “poverty.” A second factor, when looking at the racial composition of the two groups, is the definition of “race” and how persons of Hispanic origin are identified. These differences are described above but we cannot measure the extent of their contribution to differences between the data sets.

B. Poor Families Headed by Mothers Alone

Results

Contrary to expectations, in Maryland, there were about 21,000 more families who received AFDC payments (63,106) than there were families with related children headed by women alone, who were poor in calendar year 1989 (42,170). Baltimore City alone accounted for most of the difference, a difference of about 14,500 families. Prince George’s County accounted for about 2,400 of the difference; Anne Arundel County, about 950; and Baltimore County, nearly 900 families.

When we compare the percentage of the State’s total poor in each county with the percentage of AFDC recipients, the distributions were similar. For example, in the three counties above that accounted for most of the difference in the counts of Maryland’s AFDC recipients and estimates of poor, Prince George’s County had about 8 percent of the state’s poor female-headed families and 9 percent of the AFDC families. It was only Baltimore City that had a noticeable difference with 57 percent of Maryland’s AFDC families and 50 percent of the state’s poor female-headed families.

In 14 of Maryland’s counties and Baltimore City, more than half of the families receiving AFDC payments were headed by African American women. In Baltimore City, 86 percent of such families were headed by African American women, the highest percentage in the state. In Prince George’s County, it was 83 percent.

Sampling error

Sampling error alone does not explain the difference between the number of AFDC cases and the number of poor families headed by women for most counties and Baltimore City. Even when sampling error is considered, most counties and Baltimore City had more single-parent families with children receiving AFDC payments than were estimated to be poor in calendar year 1989.³⁰ The absolute differences were small in most counties, however, except for Baltimore City and Prince George’s County. In Baltimore City, about 21,200 female-headed families with related children were poor but nearly 35,700 such families received AFDC payments. Prince George’s County also had a noticeable difference with about 3,500 poor families compared with over 5,700 families receiving AFDC payments.

³⁰ Based on a comparison of the upper bound of the 90 percent confidence interval of poor female-headed families with related children under age 18 with the number of such families receiving AFDC in CY1989.

Nonsampling error

There are no estimates of the undercount of female-headed families in the census or of the quality of their reports of their income. A study by Kathryn Edin³¹ of welfare and low-income single mothers in cities in four states found that even a full-range of benefits (AFDC, food stamps, Medicaid, and housing subsidies) typically met only three-fifths of a family's needs and that welfare mothers must work covertly to avoid losing benefits. Income may be underreported to some unknown degree for AFDC in Maryland as well. This could account for some of the discrepancy between the two data sets, although it has not been measured. Nevertheless, it is reasonable to assume that undercount is an important factor in the difference between the count of families headed by women alone who were poor and those who received AFDC payments, particularly when we note that it was Baltimore City and Prince George's County, both with large African American populations, where the absolute differences were the largest and accounted for most of the difference in Maryland.

Data collection methods and conceptual differences

We do not know the exact extent to which differences in data collection methods and conceptual differences affect the estimates of poor families with related children headed by a woman alone and such families receiving AFDC payments. It is likely the difference in the definitions of "income" between the two data sets is also an important contributing factor to the observed differences.

³¹ Edin, Kathryn, and Laura Lein (1997), *Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work*. New York: Russell Sage Foundation.

IV. Conclusions and Recommendations

As we expected, there are differences between estimates of poor children and poor families from the 1990 census and counts from the administrative records for the AFDC program. To explain the differences, we looked at sources of uncertainty, error, and differences in each data set. The differences are important to understand because estimates of poverty from the 1990 census were used in determining the allocation of funding states and their jurisdictions received for various programs for social services.

We conclude that sample error explains much of the apparent difference, especially among children. Nevertheless, sample error alone does not account for why some counties and Baltimore City had more AFDC cases than the 1990 census estimate of poor families. Undercount of the African American population in the 1990 census is the most plausible explanation for most of the remaining differences among the counties, especially in Prince George's County and Baltimore City. It is also likely that differences in the definition of income, and possibly the reporting of income, between the two data sets is a relevant factor although it is impossible to compute a measure of its contribution to the difference.

Census 2000 was an operational success and the undercount nationally is lower than it was in 1990. Poverty data from Census 2000 will be released in 2002 – 2003. States summarize the records from their management information systems from today's public assistance program, Temporary Assistance for Needy Families (TANF). They make the summarized information available as monthly counts and average monthly caseloads for the fiscal year. While the TANF records are a complete count of the number of people and families receiving benefits from the program, the eligibility rules and other aspects of the TANF programs differ greatly among states. Therefore, because the census uses the same definitions and methods of data collection in every state, current federal legislation often mandates, as part of funding formulas and for performance bonuses, the use of a consistent measure, the poverty estimates from the decennial census, as the most equitable measure available to distribute funding to states. The Executive branch and the Congress have not yet made a decision about whether funding for programs will be based on census counts adjusted for the differential undercount among states. The judicial system may also have a say in the matter in time. Poverty rates may be higher than they appear in Census 2000 estimates in jurisdictions that had a relatively high undercount.

Eventually, funding allocations and bonuses for improved program performance *may* be based on the more current information that will become available if the American Community Survey is fully implemented. Sample error in the poverty estimates will continue as an important factor in county estimates. The Census Bureau expects that as the address list needed to do the survey must be updated every year, coverage of housing units will gradually improve and this will contribute to higher quality data than has been possible from past methods.

To better use the two data sets in conjunction with each other for program evaluation and informed strategic planning in the next decade, we recommend expanding the analysis to data sets containing information on other programs providing means-tested benefits in Maryland. Over the past decade, Maryland's AFDC/TANF caseload declined by almost two-thirds. Federal welfare reform in 1996 replaced AFDC with TANF, resulting in significant changes in how assistance was provided to needy families. Therefore, in addition to analyzing TANF data, it would also be useful to examine data sets for other programs that serve Maryland's population in poverty, such as the Food Stamp program, and Medical Assistance, in particular the Maryland Children's Health Program. We also recommend:

- Establishing formal documentation of the TANF and other program records to enhance their usefulness to researchers. This includes providing:
 - copies of intake forms;
 - the instructions to workers who determine whether a case is eligible for assistance (including, for example, the rules regarding citizenship and immigration status);
 - the instructions for whether the worker or the applicant fills in the information (especially for race and Hispanic origin and whether more than one category can be marked);
 - definitions of concepts such as "income" and explanations of the time references (prospective and retrospective budgets, for example);
 - processing rules for blank or "unknown" entries;
 - the rules for quality control checks during data processing; and
 - reports of ongoing quality control investigations and other reports related to accuracy of the data.

- Maintaining historical documentation of the summarized TANF and other program statistical files on a web site to ease access for researchers. Provide a web link to the section of the Census Bureau's website on poverty data so researchers will be aware of reports from the Census Bureau on data quality issues and how to compute sample error.

- Publishing monthly averages of TANF and other program recipients and cases for the calendar year as well as the state fiscal year. Income and poverty data are based on a calendar year.

- Establish edit rules for TANF and other program statistical files to impute responses where the information was left blank and for useless responses such as "don't know" (and remove this as an option on intake forms) and inconsistent responses. For each item, report the imputation rate so that researchers will be aware of high levels of imputation and the likelihood of bias for that item.

Figure 1. Steps to Determine Income Eligibility for AFDC Program in Maryland: 1989

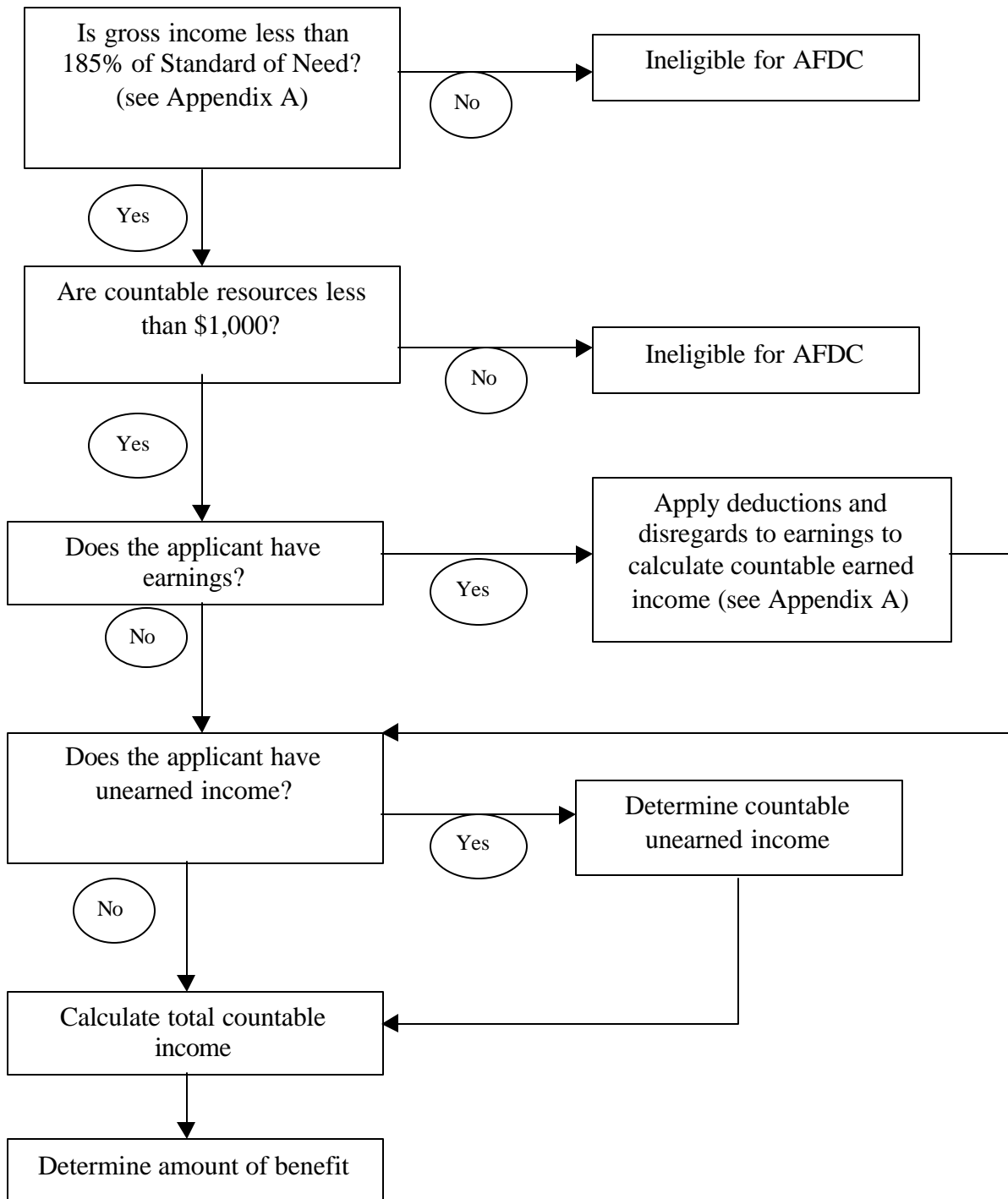


Table 1 -- 1990 Census Estimates of Poor Children in 1989 Compared With AFDC Caseloads in 1989: Maryland

State and counties	1990 Census sample estimates of children under 18 years			1990 Census estimates of poor children in 1989				Maryland counts of children under 18 receiving AFDC		
	Total ¹	Percentage African American ¹	Undercount estimate of total children ²	1990 Census estimate ³	Lower bound of 90 percent confidence interval	Upper bound of 90 percent confidence interval	Percentage of Maryland's poor children	Monthly Average, Calendar Year 1989 ⁴	Percentage of Maryland's AFDC child recipients	Percentage African American, FY1990 ⁵
MD, total	1,162,222	29.3	52,139	128,523	126,442	130,604	100.0	118,304	100.0	71.7
Allegany	16,489	3.2	509	3,913	3,622	4,204	3.0	2,412	2.0	5.4
Anne Arundel	105,306	13.7	4,125	6,123	5,666	6,580	4.8	4,881	4.1	43.8
Baltimore City	180,043	69.9	11,492	57,203	55,851	58,555	44.5	68,039	57.5	86.3
Baltimore	151,489	16.1	6,379	10,917	10,307	11,527	8.5	7,921	6.7	37.3
Calvert	14,652	16.3	536	980	832	1,128	0.8	773	0.7	70.9
Caroline	7,058	19.1	274	985	838	1,132	0.8	541	0.5	57.3
Carroll	32,862	2	977	1,381	1,204	1,558	1.1	786	0.7	15.3
Cecil	19,162	4.6	750	1,782	1,583	1,981	1.4	1,201	1.0	17.1
Charles	29,712	19.4	1,025	1,664	1,471	1,857	1.3	1,824	1.5	66.3
Dorchester	6,891	35.5	322	1,341	1,170	1,512	1.0	1,062	0.9	79.5
Frederick	39,527	6	1,262	2,274	2,048	2,500	1.8	1,203	1.0	35.3
Garrett	7,690	1	243	1,423	1,247	1,599	1.1	681	0.6	0.0
Harford	48,782	10	1,787	3,239	2,907	3,571	2.5	1,725	1.5	37.0
Howard	48,504	12.3	1,732	1,797	1,549	2,045	1.4	951	0.8	55.2
Kent	3,757	25.1	183	529	421	637	0.4	255	0.2	66.5
Montgomery	177,120	14.2	7,072	9,058	8,501	9,615	7.0	5,530	4.7	53.7
Prince George's	178,430	59.9	9,680	12,216	11,571	12,861	9.5	10,818	9.1	83.8
Queen Anne's	8,369	11.8	321	655	534	776	0.5	422	0.4	60.8
St. Mary's	21,481	14.2	829	2,224	1,951	2,497	1.7	1,198	1.0	68.0
Somerset	4,828	40.1	249	861	692	1,030	0.7	643	0.5	62.5
Talbot	6,402	20.1	256	639	519	759	0.5	445	0.4	76.3
Washington	27,642	4.5	1,006	3,383	3,109	3,657	2.6	2,398	2.0	12.1
Wicomico	18,293	28.6	798	2,816	2,567	3,065	2.2	1,931	1.6	74.1
Worcester	7,733	28.9	332	1,120	963	1,277	0.9	666	0.6	76.9

- ¹Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 3C (sample data), Table P-13. (We used sample estimates of the number of children to be consistent with the poverty estimates which are from the long-form sample. Complete counts (short form) are shown in STFI, Tables P-11 and QT-P1. For Maryland, the complete count of children under 18 was 1,162,241). Poverty status refers to total family income in 1989 and family status on April 1, 1990.
- ²Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, <www.census.gov/dmd/www/90census.html>.
- ³Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 3 (sample data), Table P-119 (also shows data by race). See <http://factfinder.census.gov.servlet/dtttable 7>.
- ⁴Source: The Maryland Department of Human Resources, special tabulations of data for "Total Paid Children" for calendar year 1989 prepared by RESI, Towson University, Towson, Maryland.
- ⁵Source: The Maryland Department of Human Resources, special tabulation of AIMS/AMF data for FY1990 prepared by the Jacob France Center, University of Baltimore. Reciprocity by race was not available for CY1989.

Table 2: Estimates of Undercount in the 1990 Census, by Race and Hispanic Origin: United States and Maryland

Area, Race/Hispanic Origin	Total Population				Under 18 Years			
	Adjusted	Official	Net undercount ¹	Undercount rate	Adjusted	Official	Net undercount ¹	Undercount rate
United States								
Total	252,730,369	248,709,873	4,020,496	1.6%	65,706,164	63,604,432	2,101,732	3.2%
White	201,505,234	199,686,070	1,819,164	0.9%	48,692,937	47,628,229	1,064,708	2.2%
Black	31,380,567	29,986,060	1,394,507	4.4%	10,312,447	9,584,415	728,032	7.1%
AIEA*	2,051,915	1,959,234	92,681	4.5%	743,289	696,967	46,322	6.2%
API+	7,447,361	7,273,662	173,699	2.3%	2,152,881	2,083,387	69,494	3.2%
Other	10,345,292	9,804,847	540,445	5.2%	3,804,610	3,611,434	193,176	5.1%
<i>Hispanic Origin</i> **	23,527,851	22,354,059	1,173,792	5.0%	8,167,721	7,757,500	410,221	5.0%
Maryland								
Total	4,882,452	4,781,468	100,984	2.1%	1,214,380	1,162,241	52,139	4.3%
White	3,438,148	3,393,964	44,184	1.3%	792,329	765,441	26,888	3.4%
Black	1,241,091	1,189,899	51,192	4.1%	364,412	341,106	23,306	6.4%
AIEA*	13,278	12,972	306	2.3%	3,598	3,412	186	5.2%
API+	141,616	139,719	1,897	1.3%	39,256	38,472	784	2.0%
Other	48,319	44,914	3,405	7.0%	14,785	13,810	975	6.6%
<i>Hispanic Origin</i> **	133,101	125,102	7,999	6.0%	38,655	36,311	2,344	6.1%

* AIEA - American Indian, Eskimo and Aleut

+ API - Asian and Pacific Islander

** Hispanic Origin - may be of any race

¹In a Census, some people are not counted. In 1990 we estimated the number of people not counted by conducting a post-enumeration survey separately from the Census and comparing the findings. The net undercount for 1990 is the difference between how many people were actually counted in the 1990 census (the official count) and the estimate of how many people lived in the United States at that time (the adjusted count). The adjusted count is an estimate based on the survey and the census enumeration itself. If the adjusted count is greater than the official count, the difference is called an undercount. In a few cases, the official count is greater than the adjusted count. When that happens, we have an overcount, which we designate as a negative number. The net undercount rate is the ratio of the net undercount to the adjusted count; it is often expressed as a percent. Further information is available at <www.census.gov/dmd/www/techdoc1.html>.

Source: U.S. Bureau of The Census, 1990 Census of Population, www.census.gov/dmd/www/90census.html

Table 3 -- 1990 Census Estimates of Female-Headed Families With Related Children Under 18 Who Were Poor in 1989 Compared with AFDC Caseloads in 1989: Maryland

State and counties	Female-headed families with related children, poor in 1989					Single-parent families with children receiving AFDC				
	1990 Census ¹	Lower bound of 90 percent confidence interval	Upper bound of 90 percent confidence interval	County's percentage of State	Number of African American female-headed families ¹	Monthly Average, Calendar Year 1989 ²	Percentage of State	FY1990 Percentage African Americans ³	Monthly Average, Calendar Year 1990 ²	Monthly Average, Calendar Year 1993 ²
MD, total	42,170	41,407	42,933	100.0	28,148	63,106	100.0	71.4	67,955	79,156
Allegany	1,092	1,013	1,171	2.6	103	1,198	1.9	5.6	1,272	1,308
Anne Arundel	1,717	1,553	1,881	4.1	872	2,666	4.2	41.3	2,998	3,647
Baltimore City	21,172	20,698	21,646	50.2	18,131	35,680	56.5	86.1	36,782	39,330
Baltimore	3,719	3,481	3,957	8.8	1,421	4,615	7.3	36.5	5,416	7,126
Calvert	225	176	274	0.5	151	403	0.6	67.2	452	467
Caroline	312	261	363	0.7	189	309	0.5	57.3	343	387
Carroll	370	307	433	0.9	36	466	0.7	13.9	514	609
Cecil	450	384	516	1.1	79	659	1.0	14.7	710	822
Charles	469	398	540	1.1	307	931	1.5	63.9	1,025	1,274
Dorchester	477	415	539	1.1	339	583	0.9	77.0	652	683
Frederick	626	546	706	1.5	232	674	1.1	32.0	777	1,055
Garrett	248	208	288	0.6	0	317	0.5	0.0	339	300
Harford	1,005	888	1,122	2.4	281	977	1.5	35.3	1,121	1,322
Howard	543	448	638	1.3	225	524	0.8	53.9	597	794
Kent	134	99	169	0.3	91	145	0.2	63.0	153	133
Montgomery	2,567	2,363	2,771	6.1	1,076	2,922	4.6	54.2	3,279	4,096
Prince George's	3,525	3,280	3,770	8.4	2,998	5,919	9.4	83.3	7,048	10,655
Queen Anne's	157	118	196	0.4	65	248	0.4	56.1	255	265
St. Mary's	427	350	504	1.0	205	626	1.0	60.2	656	863
Somerset	314	255	373	0.7	243	346	0.5	64.3	413	466
Talbot	266	217	315	0.6	211	258	0.4	73.9	283	322
Washington	1,120	1,027	1,213	2.7	111	1,308	2.1	11.0	1,373	1,478
Wicomico	889	802	976	2.1	583	974	1.5	71.4	1,084	1,277
Worcester	346	291	401	0.8	199	358	0.6	74.0	413	477

¹Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 3C (sample data), Tables P-123, P-124B. Poverty status refers to total family income in 1989 and family status on April 1, 1990.

²Source: The Maryland Department of Human Resources, special tabulations of data for "Basic Paid Cases" for calendar years 1989-1993, prepared by RESI, Towson University, Towson, MD.

³Source: The Maryland Department of Human Resources, special tabulation of AIMS/AMF data for FY1990, prepared by the Jacob France Center, University of Baltimore. Reciprocity by race was not available for CY 1989.

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- ¹Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 3C (sample data), Table P-13. (We used sample estimates of the number of children to be consistent with the poverty estimates which are from the long-form sample. Complete counts (short form) are shown in STFI, Tables P-11 and QT-P1. For Maryland, the complete count of children under 18 was 1,162,241). Poverty status refers to total family income in 1989 and family status on April 1, 1990.
- ²Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, <www.census.gov/dmd/www/90census.html>.
- ³Source: U.S. Bureau of the Census, 1990 Census of Population and Housing, Summary Tape File 3 (sample data), Table P-119 (also shows data by race). See <http://factfinder.census.gov.servlet/dtttable 7>.
- ⁴Source: The Maryland Department of Human Resources, special tabulations of data for "Total Paid Children" for calendar year 1989 prepared by RESI, Towson University, Towson, Maryland.
- ⁵Source: The Maryland Department of Human Resources, special tabulation of AIMS/AMF data for FY1990 prepared by the Jacob France Center, University of Baltimore. Reciprocity by race was not available for CY1989.

Appendix A

Topics on 1990 Census Long Form

In 1990, the Census Bureau conducted censuses in the United States, Puerto Rico, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the U.S. Virgin Islands, and Palau. Only the United States data for 1990 are available through the American FactFinder (see Census Bureau's website at <www.census.gov>). The reference data for the 1990 census is April 1, 1990.

The 1990 census short-form questionnaire asked questions on age, race, sex, marital status, Hispanic origin, and household relationship. Housing items include occupancy/vacancy status, tenure, units in structure, contract rent, meals included in rent, value, and number of rooms in housing unit.

The 1990 census long form (sample) items included:

Population:

Age	School enrollment
Ancestry	Self-care limitation
Citizenship	Travel time to work
Class of worker	Urban and rural population
Educational attainment	Veteran/military status
Employment status	Work disability status
Family type	Work status in 1989
Farm and nonfarm population	Workers in family in 1989
Foreign-born status	
Gender	
Group quarters	
Hispanic origin	
Household type and relationship	
Income in 1989*	
Industry	
Language spoken at home	
Marital status	
Means of transportation to work	
Mobility limitation status	
Occupation	
Place of birth	
Place of work	
Poverty status in 1989 (a derived measure – see footnote 1 of this paper)	
Private vehicle occupancy	
Race	
Residence in 1985	

Housing:

Age of householder
Bedrooms
Condominium status
Farm and nonfarm housing
Heating fuel
Hispanic origin of householder
Housing units
Kitchen facilities
Meals included in rent
Mortgage status
Occupancy status
Plumbing facilities
Race of householder
Rent
Rooms
Selected monthly owner costs
Sewage disposal
Telephone availability
Tenure
Units in structure
Urban and rural housing
Utilities in rent
Value of housing unit
Vehicles available
Water source
Year householder moved into unit
Year structure built

*Total income" is the sum of the amounts reported separately for wages, salary, commissions, bonuses, or tips; self-employment income from own nonfarm or farm businesses, including proprietorships and partnerships; interest, dividends, net rental income, royalty income, or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); any public assistance or welfare payments from the state or local welfare office; retirement, survivor, or disability pensions; and any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony.

Appendix B

Differences in the Race and Ethnicity Questions: 1990 Census and AFDC Records in Maryland

The decennial census and the American Community Survey, compared with Maryland's AFDC records, differ in how the race question is asked and recorded and how the response is categorized. Testing by the Census Bureau shows that the categories for the race question greatly affect the resulting distributions.

- ✓ *Self report versus observer reports:* For the AFDC program, the response to the question on racial identity was used to ensure compliance with Civil Rights laws. The response might be based on the self report of the respondent or on the perception of an eligibility worker filling out an application form if the person chose not to respond to the question. Decennial censuses and the American Community Survey are based mostly on the self report of the person filling out the questionnaire for the household. A household may include people who are not related to the primary family and the response for them could be based on the perception of the person filling out the form rather than a self report. We have no measure of the extent to which this occurs or whether it adversely affects the accuracy of the responses for unrelated household members.
- ✓ *Reporting of more than one race:* In 1990, for both the census and the AFDC program, a respondent or applicant was instructed to report only one racial category.³² Instructions can affect results and there are differences among administrative records in how to respond for people whose parents are of different races – some forms allow them to check all categories that apply to them, others require that only one race category be checked. Census 2000 and the American Community Survey allow multiple responses, while previous censuses allowed only one response. A national test survey in 1996³³ showed that the option to choose more than one race did not appreciably affect the proportion of people who reported solely as White, African American, or American Indian. Asian and Pacific Islanders, along with Alaska Natives, were the most likely to report more than one racial category.³⁴ An instruction to “mark all that apply” resulted in a different count of Asian and Pacific

³² In Census 2000 and the American Community Survey, a person may choose to mark more than one race. Nationally, about 1.9 percent of adults, marked more than one race. From 1990 to 2000, the number of interracial couples more than quadrupled. Children under age 18 were more likely to identify with more than one race in 2000 (4.2 percent).

³³ Population Division Working Paper No. 18, Results of the 1996 Race and Ethnic Targeted Test, May 1997. Available at <http://www.census.gov/population/www/documentation/twps0018/>

³⁴ *Ibid.*, pg. 1-8

Islanders as a single race than did the instruction, “mark one or more.”³⁵ We expect differences in reporting multiple races among younger people and in large urban areas where rates of intermarriage are higher than in other parts of the country.

- ✓ *Categories:* The Census Bureau’s research shows that people are more likely to respond to the race and Hispanic origin questions if they see a term within the category that they call themselves. To accomplish this, the Census Bureau uses category lists, such as “Black, African Amer., or Negro,” terms with which most people identify. For example, in various research projects conducted after the 1990 Census, “Black” was the preferred terminology over “African American” and about 2-3 percent of respondents in this category preferred the term “Negro.” Over the decade, the preference for “African American” increased and was included in the category list for Census 2000 and the American Community Survey. Preferences are often related to age and educational attainment. Cognitive research indicated that foreign-born Blacks from the Caribbean and Africa did not believe that “African American” referred to them.

The 1990 census race categories³⁶ are compared below with the AFDC race categories. The most significant difference is that “Hispanic” is considered a “race” in AFDC records while in the census, Hispanic is considered an ethnicity and Hispanics may be of any race.

AFDC categories: The AFDC intake forms for 1989 are no longer available. Instead we relied on a later but similar version of the form (Maryland Department of Human Resources, Family Investment Administration Combined Application, April 1997). The race categories were not listed

³⁵ Ibid., pg. 1-9

³⁶ There were changes in the category titles and instructions for the Census 2000 question on race. An instruction change for Census 2000 allowed respondents to mark one or more races to indicate their racial identity. There are 15 check box response categories and three write-in areas on the Census 2000 questionnaire, compared with 16 check box response categories and two write-in areas in 1990. The three separate identifiers for the American Indian and Alaska Native populations (American Indian, Eskimo, or Aleut) used earlier have been combined into one category - - American Indian or Alaska Native - - with instructions for respondents who check the box to print the name of their enrolled or principal tribe. The Asian and Pacific Islander category has been split into two categories Asian, and Native Hawaiian and Other Pacific Islander. There are six specified Asian and three detailed Pacific Islander categories shown on the Census 2000 questionnaires, as well as Other Asian and Other Pacific Islander that have write-in areas for respondents to provide other race responses. Finally, the category, “Some Other Race,” which is intended to capture responses such as Mulatto, Creole, and Mestizo, also has a write-in area. All of the responses collected in Census 2000 can be collapsed into the minimum race categories identified in the 1997 revisions to the standards on race and ethnicity issued by the Office of Management and Budget, plus the category, “Some Other Race.” Other changes include terminology and formatting changes, such as spelling out “American” instead of “Amer.” for the American Indian or Alaska Native category; and adding “Native” to the Hawaiian response category. In the layout of the Census 2000 questionnaire, the Asian response categories were alphabetized and grouped together, as were the Pacific Islander categories after the Native Hawaiian category. American Indians and Alaska Natives can report one or more tribes. In addition, the question on Hispanic origin is sequenced immediately before the question on race.

directly on the intake form. Rather they came from the Data Dictionary for the Automated Master File (AMF). The computerized system additionally allowed for an “Unknown” category.

White, not of Hispanic Origin
Black, not of Hispanic Origin
American Indian/Alaskan Native
Asian or Pacific Islander
Hispanic
Other
Unknown

1990 census categories: The race question was asked of all people and based on their own classification of the single race with which they felt most closely identified.³⁷ The race categories include both racial and national origin or socio-cultural groups other than for people of Hispanic origin. People were asked a separate question on whether they were of Hispanic origin. Some data products showed racial distributions cross-classified by Hispanic origin. The race categories and definitions for the 1990 census³⁸ were:

*White*³⁹

*Black or Negro*⁴⁰

*American Indian, Eskimo, or Aleut*⁴¹ —People who reported "American Indian" were asked to report their enrolled or principal tribe.

³⁷ If the race entry was missing, race was assigned based upon the reported entries of race by other household members using specific rules of precedence of household relationship. See the data documentation at the Census Bureau’s website.

³⁸ In 1997, the Office of Management and Budget (OMB) issued guidelines on how data for respondents who report two or more races are to be tabulated. These guidelines stipulated that data producers should provide the number of respondents who marked (or selected) only one category, separately for each of the five racial categories, as well as the detailed distribution of respondents who reported two or more races, so long as data quality standards and confidentiality requirements are met. For Census 2000, 63 possible combinations of the six basic racial categories exist, including six categories for those who report exactly one race, and 57 categories for those who report two or more races. These categories will be the basic presentation for the PL 94-171 Redistricting File. In some other presentations, the 57 combinations of two or more races will be collapsed into a category called "Two or More Races," resulting in seven mutually exclusive and exhaustive racial categories: American Indian and Alaska Native alone, Asian alone, Black or African American alone, Native Hawaiian and Other Pacific Islander alone, Some Other Race alone, White alone, and Two or More Races. This approach is a tally of all respondents and sums to 100 percent of the total population. The American Community Survey data products will eventually be the same as those for Census 2000.

³⁹ Included in this category are national origin entries that are written in such as Canadian, German, Italian, Lebanese, Near Easterner, Arab, or Polish.

⁴⁰ Included in this category are responses that are written in such as African American, Afro-American, Black Puerto Rican, Jamaican, Nigerian, West Indian, or Haitian.

⁴¹ Also included in this category were people who reported specific “Eskimo” entries such as Arctic Slope, Inupiat, and Yupik, and "Aleut" entries such as Alutiiq, Egegik, and Pribilovian.

Asian or Pacific Islander—included write-in responses and specific nationality categories for Asians. Specific Asian categories listed on the questionnaire were "Chinese,"⁴² "Filipino,"⁴³ "Japanese,"⁴⁴ "Asian Indian,"⁴⁵ "Korean,"⁴⁶ "Vietnamese,"⁴⁷ and "Other Asian."⁴⁸ Those who identified themselves as Pacific Islanders included people from cultural groups or the name of the island with which they identified.⁴⁹

Other Race--Persons not included in the 1990 census categories listed above reported "Other race" and wrote in entries such as multiracial, multiethnic, mixed, interracial, Wesort, or a Spanish/Hispanic origin group.

- ✓ *Hispanic origin*: In Maryland's AFDC records, "Hispanic origin" is one of the "race" choices. In the census, it is asked separately as a question on ethnicity (that is, people of Hispanic origin may be of any race, such as White Hispanic, Black Hispanic). Census tabulations are available for race groups "Not of Hispanic origin" and, where possible, such tabulations should be used in comparisons with the AFDC data.⁵⁰

Some Hispanics expect to see "Hispanic origin" as an option in the race question while others do not. Results of the 1996 Race and Ethnic Targeted Test (1996 RAETT) show that whether Hispanic origin is part of the race question or is asked separately affects results. In that test, a combined race and Hispanic origin question (as in Maryland's AFDC records) produced lower counts of the two categories, "White" and "Asian or Pacific Islander," than did separate race and Hispanic origin questions. It made little difference in the count of persons who identified themselves as "Black, African Amer., or Negro" or "American Indian or Alaska Native."⁵¹ In the combined question of the 1996 RAETT that allowed more than one category to be

⁴² Chinese may also have reported their race as Cantonese, Tibetan, or Chinese American.

⁴³ Filipino provided additional responses such as Philipino, Philippine, or Filipino American.

⁴⁴ Japanese provided additional responses such as Nipponese or Japanese American.

⁴⁵ Asian Indians also identified themselves as Bengalese, Bharat, Dravidian, East Indian, or Goanese.

⁴⁶ Koreans also reported "Korean American."

⁴⁷ Vietnamese also reported "Vietnamese American."

⁴⁸ Write-in responses that were coded in this category included Cambodians, Nepali, Tongan, Hmong (including Laohmong and Mong), Laotian (or Laos or Lao), Thai (including Thailand or Siamese), Bangladeshi, Burmese, Indonesian, Pakistani, Sri Lankan, Amerasian, or Eurasian.

⁴⁹ These responses included Polynesian, Micronesian, Melanesian, Tahitian, Northern Mariana Islander, Palauan, and Fijian. Hawaiians also identified themselves as Part Hawaiian or Native Hawaiian. Samoans identified themselves as American Samoan or Western Samoan. Guamanians also identified themselves as Chamorro or Guam.

⁵⁰ Table P10 in Summary Tape File 1 of the 1990 census provides the racial distributions of people who said they were "not of Hispanic origin" compared with the racial distribution of those who said they were of Hispanic origin.

⁵¹ *Ibid.*, pg. 1-20

marked, a high percentage of the responses included both Hispanic origin and one of the four major race categories.⁵²

When Hispanic origin is asked as a separate question as it is in the Census Bureau surveys, the sequence of the race and Hispanic origin questions makes a difference. Results from the 1980 and 1990 censuses as well as other national surveys show that placing the Hispanic origin question before the race question reduces (but does not eliminate) nonresponse to the Hispanic origin question, reduces the proportion of Hispanics reporting as “Other race,” and increases Hispanics who report their race as “White.”⁵³

The term “Latino” was not used in the 1990 census. “Latino,” while not universally acceptable, was an important identifier in California. Thus, for Census 2000 and the American Community Survey, the term was added and the category is now, “Spanish/Hispanic/Latino.”⁵⁴

⁵² *Ibid.*, pg. 1-9

⁵³ *Ibid.*, pp. 1-4 and 1-18

⁵⁴ Population Division Working Paper No. 18, Results of the 1996 Race and Ethnic Targeted Test, May 1997, pp. 2-11 and 2-12. Available at <http://www.census.gov/population/www/documentation/twps0018/>.

Appendix C

Income Question in the 1990 and 2000 Censuses and the American Community Survey

23a. How did this person usually get to work LAST WEEK? If this person usually used more than one method of transportation during the trip, fill the circle of the one used for most of the distance.

Car, truck, or van Motorcycle
 Bus or trolley bus Bicycle
 Streetcar or trolley car Walked
 Subway or elevated Worked at home
 Railroad Skip to 28
 Ferryboat Other method
 Taxicab

If "car, truck, or van" is marked in 23a, go to 23b. Otherwise, skip to 24a.

b. How many people, including this person, usually rode to work in the car, truck, or van LAST WEEK?

Drove alone 5 people
 2 people 6 people
 3 people 7 to 9 people
 4 people 10 or more people

24a. What time did this person usually leave home to go to work LAST WEEK?

a.m.
 p.m.

b. How many minutes did it usually take this person to get from home to work LAST WEEK?

Minutes — Skip to 28

25. Was this person TEMPORARILY absent or on layoff from a job or business LAST WEEK?

Yes, on layoff
 Yes, on vacation, temporary illness, labor dispute, etc.
 No

26a. Has this person been looking for work during the last 4 weeks?

Yes
 No — Skip to 27

b. Could this person have taken a job LAST WEEK if one had been offered?

No, already has a job
 No, temporarily ill
 No, other reasons (in school, etc.)
 Yes, could have taken a job

27. When did this person last work, even for a few days?

1990 1980 to 1984 } Go to 28
 1989 1979 or earlier } Skip to 32
 1988 Never worked }
 1985 to 1987

28-30. CURRENT OR MOST RECENT JOB ACTIVITY. Describe clearly this person's chief job activity or business last week. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business last week, give information for his/her last job or business since 1985.

28. Industry or Employer

a. For whom did this person work? If now on active duty in the Armed Forces, fill this circle and print the branch of the Armed Forces.

(Name of company, business, or other employer)

b. What kind of business or industry was this? Describe the activity at location where employed.

(For example: hospital, newspaper publishing, mail order house, auto engine manufacturing, retail bakery)

c. Is this mainly — Fill ONE circle

Manufacturing Other (agriculture, construction, service, government, etc.)
 Wholesale trade
 Retail trade

29. Occupation

a. What kind of work was this person doing?

(For example: registered nurse, personnel manager, supervisor of order department, gasoline engine assembler, cake icer)

b. What were this person's most important activities or duties?

(For example: patient care, directing hiring policies, supervising order clerks, assembling engines, icing cakes)

30. Was this person — Fill ONE circle

Employee of a PRIVATE FOR PROFIT company or business or of an individual, for wages, salary, or commissions
 Employee of a PRIVATE NOT-FOR-PROFIT, tax-exempt, or charitable organization
 Local GOVERNMENT employee (city, county, etc.)
 State GOVERNMENT employee
 Federal GOVERNMENT employee
 SELF-EMPLOYED in own NOT INCORPORATED business, professional practice, or farm
 SELF-EMPLOYED in own INCORPORATED business, professional practice, or farm
 Working WITHOUT PAY in family business or farm

31a. Last year (1989), did this person work, even for a few days, at a paid job or in a business or farm?

Yes
 No — Skip to 32

b. How many weeks did this person work in 1989? Count paid vacation, paid sick leave, and military service.

Weeks

c. During the weeks WORKED in 1989, how many hours did this person usually work each week?

Hours

32. INCOME IN 1989 — Fill the "Yes" circle below for each income source received during 1989. Otherwise, fill the "No" circle. If "Yes," enter the total amount received during 1989. For income received jointly, see instruction guide. If exact amount is not known, please give best estimate. If net income was a loss, write "Loss" above the dollar amount.

a. Wages, salary, commissions, bonuses, or tips from all jobs — Report amount before deductions for taxes, bonds, dues, or other items.

Yes → \$.00
 No
 Annual amount — Dollars

b. Self-employment income from own nonfarm business, including proprietorship and partnership — Report NET income after business expenses.

Yes → \$.00
 No
 Annual amount — Dollars

c. Farm self-employment income — Report NET income after operating expenses. Include earnings as a tenant farmer or sharecropper.

Yes → \$.00
 No
 Annual amount — Dollars

d. Interest, dividends, net rental income or royalty income, or income from estates and trusts — Report even small amounts credited to an account.

Yes → \$.00
 No
 Annual amount — Dollars

e. Social Security or Railroad Retirement

Yes → \$.00
 No
 Annual amount — Dollars

f. Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments.

Yes → \$.00
 No
 Annual amount — Dollars

g. Retirement, survivor, or disability pensions — Do NOT include Social Security.

Yes → \$.00
 No
 Annual amount — Dollars

h. Any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony — Do NOT include lump-sum payments such as money from an inheritance or the sale of a home.

Yes → \$.00
 No
 Annual amount — Dollars

33. What was this person's total income in 1989? Add entries in questions 32a through 32h; subtract any losses. If total amount was a loss, write "Loss" above amount.

None OR \$.00
 Annual amount — Dollars

Please turn the page and answer questions for Person 2 listed on page 1. If this is the last person listed in question 1a on page 1, go to the back of the form.

31 c. Interest, dividends, net rental income, royalty income, or income from estates and trusts — Report even small amounts credited to an account.

- Yes Annual amount — Dollars
 \$ | | | | | | | | | | .00 Loss
- No

d. Social Security or Railroad Retirement

- Yes Annual amount — Dollars
 \$ | | | | | | | | | | .00
- No

e. Supplemental Security Income (SSI)

- Yes Annual amount — Dollars
 \$ | | | | | | | | | | .00
- No

f. Any public assistance or welfare payments from the state or local welfare office

- Yes Annual amount — Dollars
 \$ | | | | | | | | | | .00
- No

g. Retirement, survivor, or disability pensions — Do NOT include Social Security.

- Yes Annual amount — Dollars
 \$ | | | | | | | | | | .00
- No

h. Any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony — Do NOT include lump-sum payments such as money from an inheritance or sale of a home.

- Yes Annual amount — Dollars
 \$ | | | | | | | | | | .00
- No

32 What was this person's total income in 1999? Add entries in questions 31a—31h; subtract any losses. If net income was a loss, enter the amount and mark (X) the "Loss" box next to the dollar amount.

- Annual amount — Dollars
- None OR \$ | | | | | | | | | | .00 Loss

Question is asked of all households on the short (100-percent) and long (sample) forms.

→ Now, please answer questions 33—53 about your household.

33 Is this house, apartment, or mobile home —

- Owned by you or someone in this household with a mortgage or loan?
- Owned by you or someone in this household free and clear (without a mortgage or loan)?
- Rented for cash rent?
- Occupied without payment of cash rent?

34 Which best describes this building? Include all apartments, flats, etc., even if vacant.

- A mobile home
- A one-family house detached from any other house
- A one-family house attached to one or more houses
- A building with 2 apartments
- A building with 3 or 4 apartments
- A building with 5 to 9 apartments
- A building with 10 to 19 apartments
- A building with 20 to 49 apartments
- A building with 50 or more apartments
- Boat, RV, van, etc.

35 About when was this building first built?

- 1999 or 2000
- 1995 to 1998
- 1990 to 1994
- 1980 to 1989
- 1970 to 1979
- 1960 to 1969
- 1950 to 1959
- 1940 to 1949
- 1939 or earlier

36 When did this person move into this house, apartment, or mobile home?

- 1999 or 2000
- 1995 to 1998
- 1990 to 1994
- 1980 to 1989
- 1970 to 1979
- 1969 or earlier

37 How many rooms do you have in this house, apartment, or mobile home? Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms.

- | | |
|----------------------------------|--|
| <input type="checkbox"/> 1 room | <input type="checkbox"/> 6 rooms |
| <input type="checkbox"/> 2 rooms | <input type="checkbox"/> 7 rooms |
| <input type="checkbox"/> 3 rooms | <input type="checkbox"/> 8 rooms |
| <input type="checkbox"/> 4 rooms | <input type="checkbox"/> 9 or more rooms |
| <input type="checkbox"/> 5 rooms | |

Appendix D

Determination of Eligibility for AFDC in 1989

In order to apply for AFDC, the gross income⁵⁵ of an assistance unit had to be less than 185% of the State's standard of need. The standard of need varied over time and by family size. In 1989, 185% of the standard of need for two-person, three-person and four-person families was as follows:

Two-person family	\$ 792 per month (\$ 9,504 per year)
Three-person family	\$1,014 per month (\$12,168 per year)
Four-person family	\$1,221 per month (\$14,652 per year)

If a family's gross income was above the level for its family size, the family's application for AFDC was denied. If the family's gross income was at, or below, the level for its family size, the application moved on to the next step.

In the next step, the resources of the family were assessed. Families who owned countable resources with an equity value of more than \$1,000⁵⁶ were ineligible to receive AFDC and their applications were denied.

Finally, the family's countable income (earned and unearned) was calculated⁵⁷. If the countable income was equal to or more than the maximum monthly benefit for its family size, the application was denied. The maximum benefit in 1989 was 72.3 percent of the standard of need and is listed below for two-person, three-person and four-person families:

Two-person family	\$ 309 per month (\$3,708 per year)
Three-person family	\$ 396 per month (\$4,752 per year)
Four-person family	\$ 477 per month (\$5,724 per year)

⁵⁵ State of Maryland, Department of Human Resources, Income Maintenance Administration, Manual on Guidelines and Procedures for Aid to Families With Dependent Children, Section 4A. Total gross income is all unearned income, earned income, and Earned Income Tax Credit before application of income disregards.

⁵⁶ *Ibid.* The following resources were not counted in the \$1,000 limit: home, first \$1,500 of equity value of a car, basic household items (e.g. clothing, toys, appliances), burial plot, tools and equipment for employment, farm machinery and livestock, and life estates.

⁵⁷ Working recipients were allowed, per month, a \$75 flat work expense deduction, and a maximum childcare deduction of \$160 per child. From the resulting adjusted earnings, they could disregard the first \$30, and then disregard one-third of the remainder. The result was countable earned income. It should be noted, however, that recipients could only use the \$30 and one-third disregard for four months and use the \$30 disregard for a further eight months. In addition, certain categories of unearned income were not counted, including Food Stamps, Emergency Assistance grants, School Lunch Program, Section 8 subsidies, income and resources of an SSI recipient living with the AFDC unit, education grants, loans and scholarships, in-kind contributions, support service payments for Project Independence, reimbursement by employers for out-of-pocket expenses, and bona fide loans.

A family who had earnings above the poverty level and took all the deductions and disregards could be eligible for an AFDC benefit. For example, the poverty threshold for a parent with two related children was \$9,990 per year (\$833 per month). A single mother with two children, earning \$1,000 per month, could deduct \$75 in work expenses followed by a maximum of \$320 in child care expenses. She could then disregard \$30 of the adjusted earnings and one-third of the remainder leaving a total of \$383 in countable earned income. A three-person family was entitled to a maximum benefit of \$396. Deducting the countable income from the maximum benefit results in a monthly benefit of \$13 for this three-person family, assuming the mother had no countable unearned income. If the family were no longer eligible for the one-third disregard, however, the family's earnings would have to fall below the poverty level in order to qualify for an AFDC benefit.

Appendix E

Comparison of Counts of AFDC Paid Cases and Child Recipients in Calendar Year 1989 and Fiscal Year 1989: Maryland

State and counties	AFDC - Total		AFDC - Basic	
	Average number of children under 18 receiving AFDC		Average number of single-parent families with children receiving AFDC	
	CY1989	FY1989	CY1989	FY1989
MD, total	118,304	116,998	63,106	62,409
Allegany	2,412	2,418	1,198	1,192
Anne Arundel	4,881	4,794	2,666	2,606
Baltimore	7,921	7,556	4,615	4,404
Calvert	773	773	403	399
Caroline	541	550	309	312
Carroll	786	759	466	451
Cecil	1,201	1,177	659	631
Charles	1,824	1,725	931	875
Dorchester	1,062	1,055	583	569
Frederick	1,203	1,193	674	666
Garrett	681	690	317	304
Harford	1,725	1,721	977	982
Howard	951	820	524	458
Kent	255	244	145	142
Montgomery	5,530	5,383	2,922	2,855
Prince George's	10,818	10,505	5,919	5,753
Queen Anne's	422	431	248	252
St. Mary's	1,198	1,187	626	625
Somerset	643	619	346	325
Talbot	445	422	258	240
Washington	2,398	2,347	1,308	1,272
Wicomico	1,931	1,827	974	920
Worcester	666	640	358	343
Baltimore City	68,039	68,162	35,680	35,833

Source: The Maryland Department of Human Resources, special tabulations of data for "Total Paid Children" and "Basic Paid Cases" for calendar year 1989, prepared by RESI, Towson University, Towson, MD. Fiscal year data from The Maryland Department of Human Resources, Income Maintenance Administration, Management Report, Annual Report, Fiscal Year 1989, Tables 3 and 4. rev. 4/27/01 dhrreprtbls.xls