Measuring Food Security in the United States

United States Department of Agriculture

Food and Nutrition Service

Office of Analysis, Nutrition, and Evaluation

Household Food Security in the United States, 1995-1997

Technical Issues and Statistical Report

Contract No.: 53-3198-7-007
MPR Reference No.: 8463-080

MATHEMATICA
Policy Research, Inc.

Measuring Food Security in the United States

Household Food Security in the United States, 1995-1997: Technical Issues and Statistical Report

Final Report of the Project to Analyze 1996 and 1997 Food Security Data

December 2001

James Ohls
Larry Radbill
Allen Schirm

Submitted to:

U.S. Department of Agriculture
Food and Nutrition Service
3101 Park Center Drive
Alexandria, VA 22302

Project Officer: Gary Bickel

Submitted by:

Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, NJ 08543-2393
Telephone: (609) 799-3535
Facsimile: (609) 799-0005

Project Director: James Ohls

ACKNOWLEDGMENTS

The authors would like to thank Gary Bickel, the project officer for the study, for guidance and suggestions throughout the work. Valuable advice and comments were also received from Mark Nord and Steven Carlson. The advice of our Advisory Committee members also proved extremely useful at certain key points in the research. They included Christine Olson, Ben Wright, and Cheryl Wehler. Robert Mislevy also provided critical suggestions on Rasch modeling and the interpretation of Rasch model results, and Don Rubin made suggestions about dealing with missing data. Jeff Passel assisted in calculating correct weights from the CPS files. In addition to people already named, the following provided important advice at a research conference where parts of this material were presented: Susan Mayer, Christopher Jencks, Margaret Andrews, David Smallwood, Jean Pierre Habicht, and Helen Jensen.

Extraordinary programming support was provided by Abhijay Prakash, Jean Knab, and Jeanne Bellotti.

Roy Grisham edited the manuscript and substantially improved the clarity of the exposition. Key production support was provided by Jane Nelson, Jill Miller, and Marjorie Mitchell.

CONTENTS

CONTENTS *(continued)*

CONTENTS *(continued)*

Chapter **Page**

TABLES

TABLES *(continued)*

Table **Page**

FIGURES

EXHIBITS

EXECUTIVE SUMMARY

This is the Final Report for the project, "Analysis of the Current Population Survey Data for Food Security and Hunger Measurement" conducted by Mathematica Policy Research, Inc. (MPR) for the USDA Food and Nutrition Service (FNS), beginning in 1997. The project provided USDA with technical support and statistical estimation work for analyzing the 1996 and 1997 data on food security collected in the U.S. Census Bureau, Current Population Survey (CPS) Food Security Supplement. More broadly, the work examined a number of analytic and empirical issues relevant to analyzing the first three years of CPS food security data available—those for 1995, 1996, and 1997.

It was originally intended that the Final Report would provide the main vehicle for dissemination of the substantive findings on the prevalence of food insecurity based on the 1996 and 1997 data. However, because of the importance of making these results available as early as possible, USDA elected to issue an "Advance Report," thus making the results of the 1996 and 1997 analyses conducted by MPR available before completion of the overall project. In addition, since 1999, a number of publications have become available that present estimates of food insecurity prevalence, as well as discussions of the methods used in computing food security estimates in general. Most important, Andrews et al. (2000) provides a comparative analysis of the annual data for the five-year period 1995 through 1999, while Bickel et al. (2000) provides a how-to guide for measuring food security that incorporates relevant work done prior to that time, including earlier work from the current project. Selected issues in food security are also considered in Ohls et al. 1999.

In light of these developments, USDA suggested that MPR recast this Final Report to focus on several selected topics related to the 1995-1997 data, rather than provide comprehensive treatment of the overall research, much of which has since been incorporated in later publications. The Final Report has been organized around these suggestions.

Among the issues addressed in the report are:

- The stability of the food security measurement scale over time
- Temporal adjustments to the categories or designated ranges of severity on the underlying continuous scale used to classify households by food security status
- Screening issues related to ensuring a strictly comparable analysis sample over the 1995-1997 CPS food security samples
- Alternative imputation strategies for dealing with missing data
- The degree to which household responses to the food security questions are "modal," in the sense that households consistently respond affirmatively to questions involving

less severe food insecurity whenever they respond affirmatively to questions involving relatively more severe food insecurity

- The degree to which the estimated parameters of the model used to measure the severity of food insecurity vary across different groups of households, defined by ethnicity and other characteristics

The first section below provides background information about the analysis. Subsequent sections summarize findings on each of the above issues.

BACKGROUND

The analysis in this report is based on a statistical procedure which assigns households to food security status, based on their answers to a series of 18 survey questions. The food security categories used are:

- Food secure
- Food insecure—no hunger
- Food insecure with hunger

The data used for national-level analysis of food security are from annual supplements to the CPS, which is fielded monthly to more than 40,000 U.S. households.

Households are classified by food security status in the analysis, based on a procedure, Rasch modeling, which has a long history in the statistical literature. The first work in applying the Rasch model to food security data was undertaken under an earlier contract let by USDA (Hamilton et al. 1997). The Rasch model, as used in that work, posits that there is a single, one-dimensional attribute among households that indicates food insecurity. The model then uses a set of assumptions and statistical methods to assign "severity levels" to each of a series of 18 survey questions relating to food insecurity and hunger. A continuous food security measure is then assigned to each household in the data set, based on households' replies to the 18 questions. Supplemental procedures developed by Hamilton et al. are then used to translate the continuous scale score into a limited number of discrete food security statuses.

The objectives of the current project were to extend the analysis to 1996 and 1997 data and to address a number of related issues associated with measuring food security over time. Our findings in selected areas are summarized below.

STABILITY OF THE PARAMETERS OF THE MODEL OVER TIME

An important issue in examining the validity of the Rasch modeling approach is whether the model parameter estimates are stable over time. The underlying theory on which the Rasch model is based posits that, if the wording of an item does not change, its estimated level of severity should not change. For example, even if food insecurity became more prevalent over time, a household at a given level of insecurity this year is expected to answer each item the same way a household at that level of insecurity did a year earlier. Due to sampling variability and other factors, such as minor wording changes, we do not expect estimated model parameters to remain *exactly* the same over time; but a finding of major changes over time would call into question the validity of the model. Particularly problematic would be a finding of important changes in the ordering of the items by severity.

To examine issues of model stability, we estimated the model independently on three CPS data sets (1995-1997), using consistent conventions as to statistical scaling. Some variation across years was found, as expected. In general, however, the estimated parameters of the model were quite stable. Also, the estimated order of severity of the different questions remained largely constant, with the only changes in severity order occurring among questions that were very close to each other on the severity scale in the original estimation work. The conclusion of this component of the research is that the food security model is sufficiently temporally stable to make it a reasonable tool to use in time series analysis.

ADJUSTING "CUT POINTS" USED TO CLASSIFY HOUSEHOLDS INTO A LIMITED NUMBER OF FOOD SECURITY STATUS CATEGORIES

The Rasch model places each household on a continuous numeric food security scale. For purposes of policy analysis, it is also useful to establish numerical "cut points" that assign households to a small number of designated categories which summarize their food security status. To create this categorical measure, Hamilton et al. (1997a and 1997b) specified four categories: food secure, food insecure without hunger, food insecure with moderate hunger, and food insecure with severe hunger. More recently, the latter two categories have usually been collapsed to form a single category, while additional scale development work has identified a new nested category, food insecure with children's hunger (Nord and Bickel 1999 and 2001).

A key issue that arises in this work is whether it is appropriate to keep the same continuous scale cut points over time, or whether, alternatively, some temporal adjustments may be needed. The analysis of the body of the report concludes that, at least in some situations, it is not optimal to attempt to classify households based on the same cutpoints over time.

While the Rasch model places households on a continuous food security scale, due to certain statistical properties of the model substantial numbers of households tend to be clustered at certain points in the scale. If cut points are held constant, there is a risk that, because of chance statistical variation, the score assigned to one of these clusters of households might accidentally cross one of the cutpoints in a given year, causing considerable instability in estimates of food security prevalence.

Chapter V of the Final Report identifies several technical approaches for avoiding this difficulty. The discussion is based on the principle that a household with a given pattern of survey answers should always be classified into the same food security grouping, independent of when the data are collected.

SCREENING HOUSEHOLDS INTO THE SAMPLE IN THE 1995-1997 SURVEYS

The food security supplements in the 1995-1997 CPS had two general sections. The first section gathered information about food expenditures, participation in several programs aimed at providing food to needy families (for example, food stamps and school meal programs), and the sufficiency of food eaten during the preceding 12 months. The second section gathered more-detailed information about food insecurity and coping behaviors during the previous 12 months and prior 30 days. Not all households were asked this second set of questions, which includes the questions used to construct the food security scale. In order to minimize respondent burden, households who, on the basis of earlier questions, appeared to have a high likelihood of being food secure were excluded from the more detailed questions and were assumed to be food secure in the analysis. This pre-screening applied to higher income households in all three years, 1995-1997, and in one year, 1996, it was applied to lower-income households as well. Beginning in 1998 and continuing consistently since then, the CPS Food Security Supplement has included a new, less restrictive, pre-screen applied to higher-income households.

To ensure comparability in the analysis samples for the three years, the current research developed a common screen, such that any households giving survey answers that passed this common screen would have been tracked into the food security module in any of the three years. Households that did not pass the common screen were, for purposes of the analysis, treated as if they had not been tracked into the food security module of the survey—essentially, they were assumed to be food secure. Technical details concerning how this common screen was constructed are provided in Appendix B of the Final Report.

While use of the common screen has the desired effect of ensuring consistency in the 1995-1997 analysis samples, it also has the effect of treating as food secure a number of households who, during the survey, gave indications of experiencing food insecurity. Across the three years, use of the common screen was found to result in estimates of the prevalence of food insecurity which are between 1.0 and 1.5 percentage points lower than those that are obtained when the maximum available samples are used in the estimation.[1]

---

[1]The 1995-1997 files used in the current report, like the corresponding public use files available on the CPS website, have one further adjustment which is designed to make them more comparable to the 1998 data. In the 1998 survey, households were not asked relatively severe food security questions if they had already consistently answered "no" to blocks of less severe questions. The 1995-1997 data were edited to emulate this screening by replacing answers to the more severe questions with missing value codes for questions which would have been skipped in 1998. See: www.bls.census.gov/cps/foodsecu/1997/agnote.htm ("Food Security, Scales and Screener Variables").

IMPUTING MISSING DATA

Most households gave complete answers to the food security questions they were asked in the CPS; however, a limited number did not. Appendix C of the report examines a number of alternative approaches for including households with partially missing data in the analysis. One approach is reliance on the Rasch model itself, which has the capacity to assign food security scale scores to observations with incomplete data. However, as is noted in Appendix C, in some instances, the determinations made within the model for cases with substantial amounts of missing data may lack face validity. Also, as a practical matter, many researchers may not have easy access to the software needed to implement the model.

An alternative algorithm for dealing with missing data has therefore been developed. Depending on the exact configuration of food security module answers given by the respondent, this alternative algorithm essentially involves imputing missing data items based on either (a) the highest severity item, in terms of level of food security severity, that the respondent answered positively; or (b) the lowest severity item answered negatively.

"MODALITY" OF HOUSEHOLD FOOD SECURITY RESPONSE PATTERNS

The Rasch model implies that many households will exhibit item response patterns that are reasonably "modal" in the sense that if a household answers "yes" to any of the items, it will tend to answer "yes" to the less severe items, then answer "no" to the more severe items. A household that exhibits this pattern exactly—a string of all "yes" answers followed by a string of all "no" answers—is said to be a "modal" household. There is nothing in Rasch theory that predicts that all households will be modal; indeed, the model cannot be estimated if all households are exactly modal. Still, it is of interest in understanding the data to examine the degree of modality present. A large number of strongly nonmodal response patterns could call into question the validity of the model.

Analysis of the 1997 data indicates that most household response patterns tend to be either exactly or approximately modal. Of those households in the 1997 data who gave an affirmative answer to at least one question, approximately 39 percent households provided answer patterns that were exactly modal, while another 36 percent gave sets of answers which had only a single nonmodal response.

CONSISTENCY OF ESTIMATED FOOD SECURITY MODEL PARAMETERS ACROSS POPULATION SUBGROUPS

Essentially, the analysis conducted with the aggregated CPS data sets assumes that different subgroups of the population are similar with regard to how they experience food insecurity. To test this assumption, the Rasch model was estimated separately for subgroups of the population, defined according to (a) race/ethnicity; (b) household composition; (c) metropolitan status; and (d) region of country.

The results of this analysis indicate considerable robustness of the analysis to this kind of disaggregation. In general, estimated severity levels for the individual questions were found to have consistent patterns across different subgroups, and the magnitudes of the parameters do not change substantially.

There is no clear statistical test of how much difference in the estimated subpopulation models would affect confidence in the overall modeling approach. However, the judgment of statistical experts who have used the Rasch model extensively in other contexts is that the findings of the subgroup analyses can reasonably be judged to be highly consistent with one another.

CONCLUSION: REFLECTIONS ON THE STRENGTHS AND LIMITATIONS OF THE FOOD SECURITY METHODOLOGY

We conclude by discussing the strengths and limitations of the use of the Rasch model as a basis for food security measurement. Possible directions for future research are also noted.

The food security scale reflects more than 10 years of methodological development by both government and private groups. The use of the Rasch model methodology has made it possible to guide the development of the food security estimates with a thoroughly studied model that has well-understood statistical properties. In terms of goodness-of-fit criteria, the mathematical form of the measurement model shows strong correspondence on "fit" to the empirical data. The approach has undergone extensive review by experts in both the public and the private sector. In general, these experts consider the model an appropriate application of the IRT methodology, and they have viewed the analysis results as reasonable.

Another important strength, as established by the current project, is that the estimated item parameters of the IRT model are robust across time and population subgroups. The values obtained from the 1996 and 1997 data are essentially the same as the original 1995 values.[2] In addition to stability over time, there is stability across subgroups, defined by such characteristics as race/ethnicity, household composition, and region of the country.

Tempering these strengths are a number of limitations which should also be recognized. Most of these, if not all, are a matter of careful interpretation of what the food security measure does and does not do. For example, the CPS indicator questions for food insecurity and hunger and the scale developed from them are designed to provide a household-level measure of the severity of conditions as experienced within U.S. households. This is in line with the conceptual understanding of food insecurity as a condition of deprivation or stress experienced by households in meeting members' basic food needs. However, the experience of hunger as such, which appears only at a more severe stage of food insecurity, is strictly individual. The household classification, "food insecure with hunger" refers to that more severe range where evidence of reduced food intake and hunger has appeared for one or more household members. But this is a collective measure which may apply to all household members, to adult members only, or to as few as one (adult) member.

---

[2]Note, however, that there has not yet been an opportunity to assess temporal stability in the context of anything other than a strong economy.

Second, the basic measure is designed to capture respondents' experiences over the course of a year, while household circumstances can change markedly during such a period. Accordingly, the 12-month measure—designed to provide reliable benchmark and trend figures—may not represent the current situation of given households. Similarly, the "food insecure with hunger"designation can, in principle, result from just one serious episode during the year, although for most such households evidence of a repeated pattern of reduced (adult) food intakes during the year must be established.

In addition, a number of issues of interpretation flow from the need to have a simple categorical measure as a means of classifying households for purposes of manageable data reporting and monitoring, in addition to the underlying continuous scaled measure. The categorical measure was created to make the scale more accessible to non-technical users and more convenient to users whose needs could be better served by a simple categorical variable than by the detailed continuous measure. The categorical measure as such is straightforward: it represents designated ranges of severity along the continuous scale (i.e., qualitatively differing severity levels of "food insecure"), plus the category of households that either show no evidence of food problems within the CPS data set, and hence can be deemed to be "food secure," or that show only one or two indications of food stress, which is deemed insufficient as evidence to establish confidently their status as "food insecure."

The interpretive problems with the categorical measure stem from at least three sources. First, the designation of appropriate severity ranges, and their exact delineation in operational form based on the available set of indicators, is inherently judgmental and thus leaves room for disagreement.

Second, the Rasch model employs a probabilistic logic in generating the continuous scale measure of severity of household food insecurity; similarly, the corresponding severity-range summary categories share this probabilistic nature. However, the naming conventions adopted for the severity-range categories are determinate in form, which can be misleading.

Thirdly, a misplaced specificity and determinateness can easily be attributed to the individual indicator items as well, causing a misunderstanding of their actual role in the measurement process.

To illustrate this last point, straightforward names adopted for the severity-range categories raise issues of face validity when they seemingly contradict the clear language of particular indicator items embedded within the measurement scale. For instance, it is technically possible for a household to be classified "food insecure with hunger," even though the respondent has answered "no" to the particular question, "In the last 12 months were you ever hungry but didn't eat because you couldn't afford enough food?" In this case, the respondent either must have replied "yes" to a series of increasingly severe indicators of food insufficiency, including at least three items indicating reduced food intake for themselves and/or other adult members of the household, one of which establishes a repeated pattern of such reduced intakes over the year, or they must have replied "yes" to *most* of the foregoing, plus one or more of the items that are *more* severe than the explicit hunger question. The categorical measure (and its naming convention) reflects the judgment that, on the balance of this evidence, one or more adult members of the household has, with high probability, experienced resource-constrained hunger sometime during the year. Conversely, the opposite case also can occur: the household can be classified "food insecure *without* hunger," based on its overall pattern of

response and the resulting scale score, even though the respondent has answered "yes" to the explicit hunger question as such.

In creating the scale, a number of steps were taken to minimize the effects of these factors. For instance the numerical cutpoints defining the categories were set to be conservative, in the sense that there must be three answers to questions thought to indicate food insecurity before a household is classified as food insecure, and similarly for the hunger classification. Also, analysis presented in the text of the report indicates that substantial numbers of respondents follow close-to-expected, response patterns, which do not lead to any apparent anomalies in classification. Nevertheless, room for disagreement remains as to what types of answers to the questions should be construed as reflecting the language used in designating the three scale categories.

A possible solution to some of these issues would be to state the category names in more-probabilistic terms, such as "probably food insecure" or "a high likelihood of hunger." This would be in keeping with the probabilistic nature of the underlying model, and it might help ease the concerns of those who are bothered by the anomalies posed by apparently inconsistent patterns of question responses. However, such category name changes might also interfere with the clarity of meaning of the categories themselves, thus reducing their effectiveness.

Overall, it is important to recognize that these limitations have not prevented the food security scale from becoming an important, widely used research and policy tool. Questions to support the scale have been included in an increasing number of national surveys and scale results are frequently cited in the policy process. This evidence suggests that many policy analysts have found the scale to be a valuable tool for measuring an important aspect of material deprivation among America's poor.

I. INTRODUCTION

For decades, ensuring that everyone in the United States has effective access to adequate, nutritious food has been a major policy goal of the federal government. More recently, increased attention has been paid to developing ways of measuring how well this goal is being achieved. A growing body of literature has emerged from work done in the late l980s, aimed at measuring households' "food security." As part of this literature, the U.S. Department of Agriculture (USDA) has begun publishing estimated rates of food security and food insecurity in the United States. The research reported below was undertaken to continue this work.

A. PURPOSE OF THE REPORT

This is the Final Report for the project, "Analysis of the Current Population Survey Data for Food Security and Hunger Measurement" conducted by Mathematica Policy Research, Inc. (MPR) for the USDA Food and Nutrition Service (FNS) beginning in 1997. The project provided USDA with technical support and statistical estimation work for analyzing the 1996 and 1997 data on food security collected in the annual Food Security Supplement to the U.S. Census Bureau, Current Population Survey (CPS). More broadly, the work examined a number of analytic and empirical issues relevant to analyzing the first three years of CPS food security data available—those for 1995, 1996, and 1997.

It was originally intended that the Final Report would provide the vehicle for the main dissemination of the substantive analytical findings on the prevalence of food insecurity based on the 1996 and 1997 data. However, because of the importance of making these results available as early as possible, USDA eventually elected to issue an "Advance Report," thus making the results of the 1996 and 1997 analyses conducted by MPR available before completion of the overall project.

The Advance Report also included comparable results based on 1998 data. In addition, since 1999, a number of other publications have become available which present estimates of food insecurity prevalence, as well as discussions of the methods used in computing food security estimates in general. Most important, Andrews et al. (2000) provide a comparative analysis of the annual data for the five-year period 1995 through 1999, while Bickel et al. (2000) provide a "how to" guide for measuring food security that incorporates relevant work done prior to that time, including earlier work from the current project. Other important contributions include Ohls et al. (1999) and Prell and Andrews (2001).

In light of these developments, USDA suggested that MPR recast this final report to focus on several selected topics related to the 1995-1997 data, rather than providing a comprehensive treatment of the overall research, much of which has either been reported previously or incorporated in later publications. This report has been organized around these suggestions.

B. OVERVIEW OF REPORT

Chapter II provides a brief summary of the past work in the food security area and of the methods currently being used to measure food security; it thus provides a context for the subsequent material. Chapter III presents results that describe the stability of the estimated food security scale across different years. Chapter IV provides a summary of "benchmark" methods that can be used to estimate the food security scale on different data sets and with different assumptions as to which parameters are to be held constant and which are not. Chapter V discusses issues related to adjusting the food security model over time, to accommodate both the availability of new data and possible developments in the underlying methodology. Chapter VI provides some broad conclusions about the food security scale.

Appendices provide new tabulations of the data and explore additional methodological issues, such as:

- Summary of salient parts of item response theory and related measurement issues
- Screening households into the food security analysis
- Imputing missing food security data
- How “modal” are household response patterns?
- Item-severity levels, by subgroup

II. BACKGROUND

The publication of the U.S. Department of Agriculture (USDA) 1997 report on food security levels in the United States (Hamilton et al. 1997a and 1997b; and Price et al. 1997) has spurred widespread interest in measuring food security for various groups in the U.S. population. Using data from the April 1995 Current Population Survey (CPS), that set of reports presented a comprehensive method for measuring food security levels. Other major surveys that have measured food security or plan to do so are the Panel Study of Income Dynamics, the National Health and Nutrition Examination Survey, the Continuing Survey of Food Intakes by Individuals, the Survey of Program Dynamics, and the Early Childhood Longitudinal Study.

The 1997 USDA report was based on a single CPS data set, that for April 1995. Important next steps in food security research have been to extend that analysis to later years, and to develop a method for measuring changes in food security over time. Major research questions include:

- Are estimated model parameters stable over time?
- What method is most appropriate for assessing changes in the prevalence of food insecurity in the U.S. population?
- How sensitive are prevalence estimates to alternative ways of implementing the procedures used in the 1997 report?

This chapter gives background information that will be useful in addressing these issues. Section A provides background for our work, describing the roots of the food security concept in prior research. The CPS data used for the current study are described in Section B, while Section C describes the Rasch model used in both the original analysis of the 1995 data and the current work measuring the severity of food insecurity as experienced within households.

A. A BRIEF SUMMARY OF THE LITERATURE INFORMING THE FOOD SECURITY CONCEPT

Although hunger has long been a concern of American social and nutrition policy, attempts to measure it systematically have posed major challenges to advocates and policy analysts alike. Early attempts to equate hunger directly to malnutrition were not successful, because they encountered conceptual difficulties in defining malnutrition and operational difficulties in developing reliable and inexpensive ways of measuring people's nutrient intake. Furthermore, as additional discussion took place, it was recognized that feeling physical "hunger," a sensation experienced by most people fairly frequently, is not equivalent to the experience of hunger resulting from lack of resources to obtain food, a situation more closely related to economic deprivation. Obviously, refinement of the concept was needed.

From the late 1970s through the early 1980s, there was growing interest in broadening the concept of hunger to the more general construct of resource-constrained food insecurity. This broader concept came to be defined in terms of the phenomena and experiences associated with food stress for the households, as well as household members actually experiencing hunger. Lacking access to food because of resource constraints also came to be included in most analysts' definition of "hunger" as a policy issue.

The broadening of the relevant concepts took place partly within the U.S. government, with the inclusion of a basic question related to food insecurity in the two most recent administrations of the Nationwide Food Consumption Survey and a small set of such questions in the Third National Health and Nutrition Examination Survey and the Survey of Income and Program Participation. Two private research efforts gave substantial impetus to the evolving focus on food insecurity. First, the Community Childhood Hunger Identification Project (CCHIP)—organized by the Food Research and Action Center and funded by local and national business and philanthropic

organizations—demonstrated that reasonable and consistent answers could be obtained using a set of survey questions designed to measure food insecurity (Wehler et al. 1991). Second, work at Cornell University provided additional theoretical support and advanced the development of measurement scales based on answers to survey questions about food security (Radimer et al. 1992).

Beginning in 1992, a federal interagency working group on food security measurement—under the leadership of the USDA Food and Nutrition Service (FNS) and the DHHS Centers for Disease Control and Prevention, National Center for Health Statistics (NCHS)—began a systematic effort to develop a battery of questions about food insecurity based on the prior research, which could be administered regularly in government-conducted surveys. Drawing on previous research findings about food insecurity, together with additional research commissioned from outside researchers, USDA staff assembled the full range of food security survey questions that had been used, and identified sets of items that held promise as reliable indicators for use with U.S. state- or national-level populations. The Federal Interagency Group was assisted in this work by an expert panel that included many leading food security researchers.

FNS passed an important milestone when it won approval from the U.S. Office of Management and Budget (OMB) for a supplement to the April 1995 CPS containing a set of questions designed to measure food security. The supplement gathered information about households' shopping patterns and various aspects of food insufficiency and insecurity during the 30 days and 12 months prior to the interview.

In 1995, Abt Associates, assisted by staff from Tufts University and Cornell University and CAW and Associates, Inc., was engaged by the USDA to analyze the 1995 CPS data. Faced with a questionnaire containing more than 50 items, the Abt team worked with the USDA to further refine the underlying concepts of food insufficiency and food insecurity. Along with this conceptual work,

the team had to identify which of the CPS questionnaire items could reliably measure food insecurity. In the early stages of their work, they relied heavily on factor analysis to identify a group of items that, taken together, appeared to measure food insecurity. Next, the Abt team applied a scaling procedure (described later) to assign a food security measure to each household. Based on these measures, households were classified into four categories—food secure; food insecure without hunger; food insecure with moderate hunger; and food insecure with severe hunger—and the Abt team was able to estimate the prevalence of these four designated levels of food security/insecurity.

Table II.1 summarizes the published food insecurity prevalence estimates for the five years for which data have been analyzed. As shown in the table, depending on the year of estimation, approximately 89 to 91 percent of U.S. households are estimated to be food secure. The rate of food insecurity with hunger is estimated to be in the range of 3 to 4 percent. The remaining households, approximately 5 to 7 percent, are in the less severe range where there are signs of food insecurity but the households are not classified as hungry.

This report extends the research of the CCHIP, Cornell, USDA, and Abt researchers. The work done by the Abt team was focused on developing and implementing a measure of the severity of food insecurity using data from the April 1995 CPS. The present report analyzes data from two additional rounds of surveys: the September 1996 and April 1997 CPS.[1] With these additional data, the focus shifts to issues that arise in the development of a stable and consistent ongoing social indicator. The issues examined here are of the kind that can be critical when prevalence is measured on a routine basis and changes in prevalence are closely monitored by policymakers. The availability of food-

[1]The food security supplement has been fielded by the U.S. Census Bureau on an annual basis, including the August 1998, April 1999, September 2000, and April 2001 CPS. Current plans call for food security data to be collected henceforth in the same month each year, beginning in December 2001.

TABLE II.1

PREVALENCE OF FOOD SECURITY FOR HOUSEHOLDS, BY YEAR
(Percentage)

		Food Insecure		
Year	Food Secure	All	Without Hunger	With Hunger
1995	89.7	10.3	6.4	3.9
1996	89.6	10.4	6.3	4.1
1997	91.3	8.7	5.6	3.1
1998	89.8	10.2	6.6	3.6
1999	91.3	8.7	5.9	2.8

SOURCE: Andrews et al. 2000.

security data from three years in sequence has made it possible to address issues that arise when tracking changes over time.

B. THE CPS DATA ON FOOD SECURITY

Data for the current study come from the USDA-sponsored Food Security Supplement to the CPS. The CPS is a monthly survey of about 50,000 households conducted by the U.S. Census Bureau for the Bureau of Labor Statistics. The sample is designed to represent the civilian, noninstitutional population of the United States. Each monthly sample is divided into eight representative subsamples, or rotation groups. A given rotation group is interviewed for a total of eight months: it is in the sample for 4 consecutive months, leaves the sample during the following 8 months, then returns for another 4 consecutive months. In each monthly sample, one of the eight rotation groups is in the first month, another rotation group is in the second month, and so on.[2] Under this system, 75 percent of the sample is common from month to month, and 50 percent is common from year to year for the same month.

The primary purpose of the CPS is to provide information about the labor force characteristics of the U.S. population. In each month, however, a supplement is added to the core questionnaire. In March of each year, for instance, the Census Bureau sponsors the Annual Demographic Supplement. This survey is the data source for the official income and poverty statistics published by the Census Bureau each year. In April 1995, September 1996, April 1997, August 1998, April 1999, September 2000, and April 2001, a special supplement was added to the CPS core

[2]More formally, the CPS sample is actually one of geographic addresses rather than households. If sample members move to a new address, they are not interviewed at that new address and they thus leave the sample. However, the address those sample members moved *from* remains in the sample, and the new residents are interviewed. These are known as "replacement households."

questionnaire which included questions about household food sufficiency, food security, food expenditures, food program participation, and several other related items. The structure of the food security supplement used in these surveys was as follows:

1. Food expenditures during the prior week
2. Participation in food assistance programs (food stamps, meal programs for the elderly, school meal programs, and the Special Supplemental Food Program for Women, Infants, and Children)
3. Food insufficiency during the prior 12 months and ways of coping with that insufficiency
4. Food security and hunger indicator questions for the prior 12 months and the prior 30 days

Not all households were asked the full set of questions in the supplement. To minimize respondent burden, a set of preliminary screening questions was used in some cases to determine whether there was evidence that a household might have experienced food insecurity. If there was no such evidence, the subsequent food security questions were skipped. This preliminary screen has been applied to higher-income households in every year and was applied to lower-income households as well in one year (1996). Across the three CPS samples in 1995, 1996, and 1997, different screening procedures were used. Beginning in 1998, the structure of the food security questionnaire was redesigned in a more fundamental way (but with content unchanged), including a basic change in screening procedure, now expected to remain constant.

Table II.2 shows unweighted sample sizes for the three CPS samples used here. The initial sample size for the April 1995 CPS was 53,665 households. Budget cuts in January 1996 resulted in reduced sample sizes, which are reflected in the initial sample sizes for September 1996 and April 1997 shown in Table II.2. The initial sample for September 1996 was 47,795; for April 1997, it was

TABLE II.2

CPS SAMPLE SIZES
Unweighted Number of Households

	April 1995	Sept. 1996	April 1997
Full CPS	53,665	47,795	47,306
Households in Supplement	44,730	41,811	41,146
Households Tracked Into Food Security Module	18,453	10,957	11,175
Answered all key questions asked[a]	18,179	10,685	10,937
Answered at least half of key questions asked, but not all[a]	195	203	171
Answered fewer than half of key questions asked[a]	79	69	67

[a]There are 18 key questions for households with children and 10 for those without children.

47,306. In all three samples, roughly 85 percent of the core households entered the Food Security Supplement.[3] Of those households, about 40 percent of the April 1995 sample passed the screening questions and were asked the balance of the Food Security Supplement. For the 1996 and 1997 surveys, tighter screening procedures resulted in only about 26 percent of households being asked the rest of questions in the Food Security Supplement. In all cases, there is a presumption that households failing to pass the screen are food secure. The differences in the screening procedures used across these three samples have important implications for the consistent measurement of food insecurity during the 1995-1997 period, a necessary prerequisite for measuring the changes in food insecurity across those years. These issues are discussed in more detail in Appendix B.

Most of the research reported below is based on 18 key questions (items) that are used for the measurement of household food insecurity. Households with one or more children are asked all these questions; childless households are asked only the 10 items that do not pertain to children. Once the differences between households with and without children were taken into account, there was little item nonresponse. In all three samples, more than 97 percent of the households that passed the initial screen responded to all the items used to measure food insecurity that they were asked. However, the fact that childless households responded to only 10 of the 18 items asked of households with children presents an additional complication, as discussed below.

C. THE ONE-PARAMETER LOGISTIC ITEM RESPONSE THEORY (RASCH) MODEL

The Food Security Supplement to the April 1995 CPS contained more than 65 questions, of which about 50 were potential indicators of food insufficiency, insecurity, or actual hunger and thus

[3]The sample attrition at this stage is due mainly to households in the CPS being told that they are about to start a new module, and declining to do so.

were candidates for inclusion in the measurement scale. Of the entire question set, four questions were used as a preliminary screen to identify households that showed no indication of food insecurity during the prior 12 months, and thus were not to be burdened with additional questions. Of the remaining items, 18 are used directly to measure households' food insecurity levels over the prior 12 months. (Of the questions *not* used in the measurement scale, some apply only to the 30 days prior to the interviews; others were found during preliminary analysis not useful in developing the full food insecurity scale.)

An important objective achieved in the first round of research on the 1995 data was to develop a method for combining answers on the 18 items into a single scale measuring the level of severity of household food insecurity as experienced within the U.S. population. In doing this, it was necessary to take the following factors into account:

- Not all questions apply to all households; in particular, eight of the questions are not relevant to households that do not have children
- The data included some item nonresponse involving households that did not answer all the questions asked.

In developing the desired food security scale, the researchers involved drew heavily on a rich body of procedures developed originally in the educational testing literature called "Item Response Theory" (IRT). IRT methods have been widely used in educational contexts, such as the Scholastic Aptitude Tests (SAT) and the National Assessment of Educational Progress, to measure student attributes (such as math ability), using tests which, for test security reasons and other factors, are not identical.[4] In applying IRT methods to the food security measurement context discussed in the

[4]For summaries of IRT theory, see Hambleton (1993) and Wright and Masters (1982).

present report, the attribute being examined is food insecurity and the test items are the individual food security questions on the CPS supplement.

The methods used in the original analysis of the 1995 food security data, which are also applied in the present report, involve a closely related technique called "Rasch modeling."[5] The salient characteristic of the Rasch model is that the model involves estimating only a single parameter, often called the "severity" level, which is used to characterize each question on the scale. Other versions of IRT theory estimate either two or three parameters per question.

Appendix A provides a more detailed summary of the Rasch model. We conclude this section by noting certain salient properties of Rasch models that are relevant to the following discussion:

- The scale measure for households with complete data can be calculated based only on the number of questions about food insecurity which they answer affirmatively.
- The scale measure determined by the model is unique up to a linear transformation; once a scale is developed, any linear transformation of the scale conveys the same information.
- In a Rasch model, each household's level of food security, and each item's level of severity, are determined simultaneously within the model.

D. RELATIONSHIP BETWEEN IRT MODELING AND THE FOOD INSECURITY PREVALENCE ESTIMATES

As noted above, this report covers a number of different topics in food security measurement, some of which are related principally to the IRT-based model estimation and some of which relate more directly to food security prevalence estimates. As a context for these discussions, it is useful to provide an overview of the relationship between the model and the prevalence estimates. The

[5]Some researchers view Rasch modeling as a subset of IRT theory; others disagree with that characterization. In any event, they clearly are closely related.

IRT-based model played several important roles in the development of the food security scale currently being used. First, it helped establish the order of severity for different individual questions in the CPS module, thus facilitating the work done by the initial research team in identifying ranges of responses corresponding to various food security levels. Second, the IRT-based model provided a formal way to calibrate food security levels for households without children on the same scale as households with children, even though some of the CPS questions were not applicable to the former group.

Third, the model provided a mechanism for dealing with item non-response on the survey (though this was of limited importance, given that, as discussed later in the report, item nonresponse was quite low). Fourth, the IRT model has provided a way of partially testing the stability of the index over time and across subgroups. In addition, the IRT model may be useful in the future for continuing to examine the stability of the processes which determine levels of food security.

These uses of the IRT-based modeling having been stated, it may be noted that repeated application of the measurement model is *not* needed for the ongoing measurement and monitoring of food security, or for the measurement of food security on the same basis in local areas. As summarized earlier, now that the model estimation work has been done, and the underlying measurement scale created the actual scale measure for a specific household with complete data on the food security questions can be calculated simply by counting the number of affirmative answers to the questions; no further estimation work is needed. This greatly simplifies the ongoing work of making annual food insecurity prevalence estimates.

E. CONVENTIONS USED IN THIS REPORT

Because the scaling of parameters can be changed using any linear transformation without losing meaning, a convention is needed as to scaling when comparing parameters estimated with different data sets. The convention used in this report, unless otherwise noted, is that the mean of the item parameters is set to 7 and the slopes of the item response curves at their inflection points (see Appendix A) are equal to 1.

Also, because different sample screening procedures were used in different years of the CPS, a convention is needed as to how to make the data sets comparable across years. Except when otherwise noted, the convention used is to define the sample using the "common screen" as described in Appendix B.

III. STABILITY OF ESTIMATED MODEL PARAMETERS OVER TIME

An important issue in examining the validity of the Rasch modeling approach is whether the model parameter estimates are stable over time. The underlying theory on which the Rasch model is based posits that, if the wording of an item does not change, its estimated severity level should not change. For example, even if food insecurity became more prevalent over time, a household at a given level of severity this year is assumed to answer each item the same way as a household at that same level of severity did a year earlier. Due to sampling variability and other factors, such as minor wording changes**,** we do not expect estimated model parameters to remain *exactly* the same over time; but a finding of major changes over time would call into question the validity of the model. Particularly problematic would be a finding of important changes in the ordering of the items by severity.

Table III.1 shows estimated item parameters based on separate estimation for each of the three years. For each year, only data from that year are used in the estimation. The estimates use the common screen as described in Appendix B. Each set of item parameters has been scaled in the standard way used in this report, with the mean set at 7 and the slopes of the item characteristics curves at their inflection points set at 1.

Of particular interest in our analysis was whether the severity ranking of the items remained reasonably constant. This was of interest, both as a general indication of parameter stability and because the item order had been drawn on substantially in the original Hamilton et al. (1997) work in designing the algorithm that translates the continuous Rasch model into the designated categorical household food security levels. (See Chapter V.)

TABLE III.1

COMPARISON OF ITEM CALIBRATIONS ESTIMATED FROM
APRIL 1995, SEPTEMBER 1996, AND APRIL 1997 CPS FOOD SECURITY DATA

		1995		1996		1997		Change (1995 to 1997)			
Item		Parameter	Standard Error	Parameter	Standard Error	Parameter	Standard Error	Parameter	Standard Error	t	Pr(|T|>|t|)
50	Child not eat whole day	11.463	0.220	11.167	0.192	11.284	0.245	-0.18	0.330	-0.543	0.587
44	Child skipped meal, 3+ months	10.206	0.106	10.168	0.208	9.873	0.187	-0.33	0.215	-1.550	0.121
43	Child skipped meal	9.662	0.104	9.687	0.155	9.293	0.170	-0.37	0.200	-1.849	0.065
29	Adult not eat whole day, 3+ months	8.999	0.086	9.043	0.059	8.999	0.073	0.00	0.113	0.004	0.997
47	Child hungry	8.641	0.083	8.995	0.069	8.957	0.111	0.32	0.139	2.274	0.023
28	Adult not eat whole day	8.448	0.074	8.452	0.070	8.516	0.072	0.07	0.103	0.660	0.509
40	Cut size of child's meals	8.386	0.116	8.587	0.102	8.564	0.087	0.18	0.145	1.231	0.219
38	Adult lost weight	8.294	0.049	8.158	0.095	8.168	0.087	-0.13	0.100	-1.267	0.206
35	Adult hungry but didn't eat	7.227	0.042	7.227	0.079	7.297	0.060	0.070	0.074	0.952	0.341
57	Child not eating enough	6.954	0.096	7.022	0.045	6.915	0.094	-0.04	0.134	-0.288	0.774
25	Adult cut size or skipped meals, in 3+ months	6.388	0.042	6.416	0.036	6.463	0.054	0.08	0.068	1.099	0.272
32	Adult eat less than felt they should	5.643	0.040	5.614	0.053	5.663	0.036	0.02	0.054	0.365	0.715
56	Couldn't feed child balanced meals	5.610	0.050	5.613	0.056	5.818	0.075	0.21	0.090	2.310	0.021
24	Adult cut size or skipped meals	5.590	0.046	5.505	0.040	5.586	0.047	0.00	0.065	-0.063	0.950
58	Adult fed child few low cost foods	4.334	0.059	4.361	0.056	4.522	0.057	0.19	0.081	2.309	0.021
55	Adult not eat balanced meals	3.977	0.042	3.940	0.055	4.079	0.066	0.10	0.078	1.300	0.194
54	Food bought didn't last	3.719	0.048	3.686	0.039	3.700	0.070	-0.02	0.085	-0.226	0.821
53	Worried food would run out	2.461	0.081	2.363	0.052	2.306	0.087	-0.16	0.119	-1.307	0.192
Mean		7.000		7.000		7.000		0.000			
Std Dev		2.467		2.474		2.413		0.181			
Sample size		6,507		6,203		5,429					

The items in Table III.1 are listed in their 1995 estimated order of severity. Inspection of Table III.1 reveals one "inversion" of adjacent items in the 1995 ordering when the model is estimated with 1996 data and two in the 1997 results. In the 1996 estimates, the estimated severity level of Item 40 rises considerably, while the level of Item 28 does not, causing Item 40 to move ahead of Item 28 in the severity ranking. The same inversion happens in 1997, as well as one between Items 32 and 56, where Item 56 is estimated to be less severe than Item 32 in 1995, but somewhat more severe in 1997. In assessing the significance of these changes in item ordering within each of the two pairs of items, it is important to note that each pair of items began (in the 1995 analysis) very close together. The distance on the severity scale separating Items 28 and 40 was less than .10 in 1995 (8.448 versus 8.386), on a scale that spans approximately 9 units. This is smaller than the standard error of Item 40, by itself. Items 32 and 56 were even closer together in 1995 (5.643 versus 5.610). Thus, the inversions that occurred could easily be due to statistical sampling error.

Furthermore, as shown in the table, not only is the item order quite stable, the magnitudes of the estimated item parameters do not change substantially. While there is some change over time, the degree of variation is small, relative to the overall range of the scale. For instance, the severity of the most severe (and least precisely estimated) item, Item 50, fluctuates only relatively slightly. From a value of 11.463 in 1995, it drops to 11.167 in 1996, then rises to 11.284 in 1997. Fluctuations are greater for some other items. The largest difference over time is for Item 43, which changes by .37 units 2.65 to 2.29 between 1995 and 1997.

While the fluctuations in parameters are relatively small, three are statistically significant with a 95 percent level test. They are Q47, Q56, and Q58, each of which has associated "t" statistics of about 2.3. This is due in part to the very large sample sizes in the CPS.

It appears that these differences are not large enough to materially affect the conclusions of the analysis. However, to further assess the issue of whether changes in the item parameters of the magnitudes observed in Table III.1 should be judged large enough to be pertinent to the substantive analysis, we sought the advice of two experts who have worked with the Rasch model extensively and who are generally regarded as leading national authorities on its use: Dr. Benjamin Wright, professor of education at the University of Chicago, and Dr. Robert Mislevy, principal scientist at Educational Testing Service. Both experts view the food security results as remarkably stable, given their overall experience with similar models.

IV. STANDARD BENCHMARK METHODOLOGY

As an aid to those doing research related to food security measurement, this chapter summarizes the steps involved in starting with raw survey data and producing household food security scores and category assignments. This material is consistent with, and provides a summary of, the material in the food security measurement guide revised by USDA in 2000 (Bickel et al. 2000). It should be noted that this material applies directly only to data collected using the 1995-1997 CPS data collection instrument.[1] Certain changes were made in the 1998 and subsequent surveys, particularly in the screening questions. For a discussion of how these changes can be treated, see Bickel et al. 2000.

In Section A, we describe estimation procedures to be used if a researcher wishes to score raw survey data, using all the conventions and calibrations that are part of the official government method used in producing national food security statistics—as presented, for instance, in Andrews et al. (2000). In this situation, use of the Rasch model is not necessary;[2] the required steps are described in Section A. In Section B, we describe the processing steps needed if a researcher wishes to reestimate the underlying model as part of the analysis. This might be done, for example, if a researcher wishes to check whether there have been any substantial changes in the underlying population parameters (that is, the "severity levels" of individual survey items) since the basic model was calibrated, or if the parameters for a sample group display distinctive characteristics different from the national patterns.

[1]Under the contract for the current research, the work presented in this report includes analysis only of the surveys done through 1997.

[2]Although it is unnecessary, Rasch model software could be used, if desired.

A. THE BASIC GOVERNMENT METHOD (NO RECALIBRATION OF THE MODEL)

The following steps are needed in order to apply the conventions used in this report to a raw-data set.

1. Check and Edit the Data

The first step is to examine the data to make sure that all relevant variables are within the ranges permitted by the survey and that the skip logic is consistent. Any problems should be resolved before proceeding to the next step.

2. Construct Binary Variables from the Raw Data for Each of the 18 Food Security Variables

All the variables used to calculate scores and assign households to categories have just two values—an affirmative and a negative (ignoring, for now, missing value codes). However, some of the survey questions have more than two possible responses. For instance, there are several questions in the food security module with response categories of "often true," "sometimes true," and "never true." These variables must be recoded to binary form. In the preceding example, for instance, both the "often true," and "sometimes true" categories are coded to "1" (that is, affirmatively), with the third category coded to "0." The rules for doing this recoding are presented in Bickel et al. (2000, p. 28), which lists the wording of each question and its answer categories.

3. Screening[3]

Apply the following criteria to each household:

[3]These screening procedures apply to data collected with the CPS instruments used in 1995-1997. They may have to be adapted for instruments with different screeners. See, for example, Bickel et al. 2000.

3a. Determine whether the household is "poor," as defined by Table IV.1.

3b. Now apply the screens in Exhibit IV.1, as follows:

If the household is "poor" *and* if the household passed Screen 2 from Exhibit IV.1, then retain the household in the sample for the detailed food security analysis.

If the household is non-poor, *and* if the household passed Screen 1 from the Exhibit IV.1, then retain the household in the sample for the detailed food security analysis.

3c. If neither of the conditions in Step 3b applies, then classify the household as food secure, and do not compute a score for the household on the continuous food security scale.

4. Impute Missing Data

If a case has at least one valid answer for the 18 food security variables—but if there are missing data for some of the relevant variables—the next step is to impute values for the missing values. This is done using the algorithm presented in Exhibit IV.2.

5. For Each Household, Count the Number of Affirmative Answers to the 18 Food Security Variables

Next, for each household, compute the total number of affirmative answers.

6. Determine the Continuous Scale Score and Food Security Classification

The scale score and food security classification for a household can then be determined from the number of affirmative answers, using Table IV.2. The scale score for a household with all negatives (18 for a household with children, 10 for a household without children) is technically undefined because such a household is outside the range that can be measured using the CPS food security supplement; however this score is set to 0 as an approximation . The score assigned in the table to households with all affirmatives is also not derived from the Rasch model but, rather, reflects the judgment of a reasonable score that reflects the situation of the small number of households who respond to the question in this way.

TABLE IV.1

THRESHOLDS USED TO CLASSIFY HOUSEHOLDS AS "POOR," AND DHHS POVERTY GUIDELINES AT TIME OF SURVEY

Household Size	"Poor" if Family Income Below (in Dollars):	Threshold as a Percent of Poverty Guideline			
		1994	1995	1996	1997
1	15,000	204	201	194	190
2	20,000	203	199	193	189
3	25,000	203	199	193	188
4	30,000	203	198	192	187
5	35,000	203	198	192	186
6	40,000	202	197	192	186
7	50,000	225	219	213	207
8	50,000	202	197	192	186
9	60,000	221	215	209	202
10+	75,000	253	246	239	232
Average		212	207	201	195
Average for Households With 6 or Fewer Persons		203	199	193	188

EXHIBIT IV.1

SCREENS USED IN THE CPS SURVEYS

Screen 1

Households reporting any one of the following passed the screen:

- Sometimes or often not enough to eat; or
- Ran out of food in last 12 months; or
- Not always the right kind of food **and** ran short of money.

Screen 2

Households reporting any one of the following passed the screen:

- Sometimes or often not enough to eat; or
- Ran out of food in last 12 months; or
- Not always the right kind of food; or
- Ran short of money.

EXHIBIT IV.2

ALGORITHM FOR IMPUTING MISSING FOOD SECURITY DATA

---

1. Items are ranked by increasing severity (see below)[a]
2. Only cases with 1+ nonmissing responses are processed. For each of those cases, do the following:
3. Find the most severe "yes" response.
4. Find the least severe "no" response.
5. Identify the less severe of steps #3 and #4, above.
6. For all missing items less severe than step #5, impute a "yes."
7. For all missing items more severe than step #5, impute a "no."
8. Do not change any nonmissing items.

The item ranking used in implementing the above is:

Q53
Q54
Q55
Q58
Q24
Q56
Q32
Q25
Q57
Q35
Q38
Q40
Q28
Q47
Q29
Q43
Q44
Q50

---

[a]The items that refer to children are only used for households with children.

TABLE IV.2

CONTINUOUS SCALE SCORES BASED ON THE NUMBER OF AFFIRMATIVE ANSWERS

Number of Yes Responses			
Household with Child	Household with No Child	Scale Value for Standard Computational Metric	Food Security Status Category
0	0	0.0	
1		1.4	
	1	1.7	Food secure
2		2.6	
	2	3.1	
3		3.4	
4		4.1	
	3	4.2	
5		4.8	Food insecure without
	4	5.2	hunger
6		5.4	
7		6.0	
	5	6.2	
8		6.6	
	6	7.1	
9		7.2	
10		7.7	Food insecure with
	7	8.0	hunger, moderate
11		8.3	
12		8.8	
	8	9.0	
13		9.3	
14		9.8	
	9	10.1	
15		10.4	Food insecure with
	10	11.1	hunger, severe
16		11.1	
17		12.2	
18		13.0	

SOURCE: Bickel et al. 2000.

B. CHECKING THE CALIBRATION OF THE MODEL ON THE DATA SETS

As noted earlier, reestimation of the item parameters of the model is not necessary for scoring a new data set using the standard government method. It is sometimes useful, however, to run the model on new data sets as they become available, in order to assess whether any substantial changes have occurred in item calibration that might signal changes in the underlying phenomena of food insecurity and hunger being examined. Also, some researchers may wish to reestimate the model as part of a strategy to use different imputation methods than those used in this report. Below, we describe the steps involved in computing food insecurity scores when reestimation of the model is desired.

1. Edit the Data

Same as under Section A above.

2. Construct Binary Variables from the Raw Data for Each of the 18 Food Security Variables

Same as under Section A above.

3. Screening

Same as under Section A above.

4. Estimate the Rasch Model Parameters

The next step in the process is to estimate both household parameters and item parameters for the Rasch model. This can be accomplished using one of several software programs currently

available.[4] Following are some guidelines for doing this:

- Some software packages allow estimation of IRT models involving more than one parameter. However, if a Rasch model comparable to that which has been used in this report is desired, a *one-parameter logistic IRT model* should be specified.

- As noted earlier, a Rasch scale is unique only up to a linear transformation. Each software package has its own default normalization for fixing this scale. The conventions used for this purpose in this report are: (a) the mean of the item parameters is set equal to 7; (b) the slope of the item response functions at their inflection points are set equal to 1. This normalization facilitates the assessment of parameter values in comparison to the national benchmark values by utilizing the same metric (unit of measure).

- The software produces both item parameters and household parameters. The item parameters are the question-severity levels; the household parameters are the household scores on the continuous household scale.

[4]For instance: BIGSTEPS Rasch-Model Computer Program, MESA Press, 5835 Kimbark Ave., Chicago IL. 60637-1609. BILOG Scientific Software International, 7833 N. Lincoln Ave., Suite 100, Lincolnwood, IL 60712-1704.

V. DEFINING "CUTPOINTS" OVER TIME

The Rasch model places each household in a continuous numeric food security scale. For purposes of policy analysis, it is also useful to assign households to a small number of categories corresponding to designated ranges of severity on the underlying continuous scale, that can summarize their food security status. To create this categorical measure, Hamilton et al. (1997a) specified four categories: food secure, food insecure without hunger, food insecure with moderate hunger, and food insecure with severe hunger. More recently, the latter two categories have usually been collapsed to form a single category.

In this chapter, we first summarize the work done by Hamilton et al. in categorizing households based on the output of the Rasch model. An essential step in that work was the specification of "cutpoints," which partition the continuous food security scale into the designated categories. After describing how Hamilton et al. established cutpoints, we highlight several key issues that arise in defining cutpoints, and then present alternative approaches to dealing with these issues.

1. Earlier Work

Hamilton et al. (1997a) established numerical "cutpoints" on the continuous food security scale and placed households in categories based on their numerical scores in relation to these cutpoints. For instance, on a 0 to 10 scaling of the continuous variable as used in that work, households with scores less than approximately 2.1 were ranked as food secure, those with scores between approximately 2.1 and 4.5 were ranked as food insecure without hunger, and so on.

These cutpoints were set by a group of experts that included members of the Abt Associates research team, academic consultants, and staff from the USDA Food and Nutrition Service (FNS), the Economic Research Service (ERS), and other Federal agencies. The process they went through

was based on a detailed analysis of the content of the food security module questions, as that content related to the conceptual basis of the food security severity-range categories being developed.

Members of the team focused largely on "modal" households—namely, households that answered negatively to all the more severe questions, once they had answered any single question negatively. (Such a response pattern may not be modal in the statistical sense of "most frequent.") Through careful analysis of the content of the question sequence, the working group assessed how modal households answering affirmatively to varying numbers of questions in the sequence should be classified.

In locating these cutpoints, the team was concerned to identify the threshold level of credible evidence needed to identify the particular conditions of food insecurity described by each designated category, or range of severity, on the underlying empirically determined scale. For example, in locating the threshold degree of severity for classifying a household as "food-insecure," it was judged that affirmative responses to at least three independent indicators of food insecurity was sufficient to identify the condition of food insecurity. (Most food-insecure households show more than three of the scaled indicators of the condition, but all households classified as food insecure must show at least three.)[1]

Following the same logic, the technical team next identified the "hunger threshold" for households within the sequence of these scale items, ordered by measured severity level, that capture reported reductions in quantity of food intakes for adults in the household. The same procedural rule

[1]A methodologically less stringent ("more liberal") determination would hold that any one or two indications of the recognized and measurable conditions of food insecurity should be deemed sufficient to classify the household as food-insecure. Similarly, a methodologically more stringent determination ("more conservative") might require four or five separate indicators as the observable threshold for the condition. In setting three indicators as the operational rule for identifying the severity threshold (and scale cutpoint) for food insecurity, the technical team attempted to lean in the direction of methodological conservatism. This was done in order to hold to a very low level the likelihood of "false positive" classifications occurring with the method adopted.

was adopted as for the food-insecurity threshold—that is, multiple separate indications of reduced food intake for adults, including a repeated pattern of cutting or skipping meals in three or more months, were judged sufficient for defining the measurement category and for classifying households to the category, "food insecure with hunger evident."

In the context of Rasch measurement of the severity of a phenomenon, these operational rules become extremely simple for households that answer completely all questions in the scale sequence (that is, item nonresponse of zero).

The substantive analysis described above led to decisions on approximate values as to where the numerical scale cutpoints should fall. Final exact values of the cutpoints were then determined by Abt technical staff.[2]

2. Generalization of Cutpoints to Other Years

During the current contract, as the research was extended to the 1996 and 1997 data, the issue arose as to whether it was appropriate to use the same 1995 numerical cutpoint values for the later years. The conclusion reached was that, if the Rasch model were recalibrated on the new data sets, use of the same numerical cutpoints might not necessarily be feasible. The reasons for this, and the alternative procedures considered, are described below.

Background. A key basis for the following discussion is that, for any given Rasch model calibration, households with complete data that give the same number of affirmative responses are assigned the same score, independent of which questions are answered affirmatively. This characteristic means that, ignoring cases with missing data for now, all households with children

[2]Essentially, the working group defined each cutpoint as being between two adjacent groups of households on the continuous scale, such as the group of households with two affirmative answers and the group with three affirmative answers. Technical staff then chose specific points between these boundaries.

were assigned to 1 of only 17 points on the continuous scale, corresponding to the possible range of affirmative answers from 1 to 17.[3] Similarly, households without children were assigned to one of nine locations on the scale. Thus, the complete-data households, which are nearly all the households, are not distributed smoothly across the continuous scale; rather, the distribution is "lumpy," with 26 clusters of households.

The only households not assigned to 1 of these 26 clusters are the relatively few with missing items on the food security data items. Because scores assigned to cases with missing data depend both on *how many* items they are missing and *which* items they are missing, their scores tend to be distributed across the scale, without significant clustering.

Why Constant Numerical Cutpoints May Not Be Feasible. In principle, if a Rasch model is correctly specified, the estimated item-severity levels should not change when the model is estimated on different years' data. In practice, however, some changes between years in these parameters may be inevitable, due to statistical sampling error and, probably, to at least some modest changes in the phenomenon being studied. This, in turn, implies that there will be at least slight changes between years in the points on the continuous scale to which households with any given numbers of affirmative answers are assigned.

This leads to the following analytic possibility: if a cutpoint happened to be located on the food security scale very near the score for a cluster of households, then it is possible that a slight movement in the cluster's score from one year to the next, perhaps caused entirely by sampling error, could lead to all the households in the cluster being placed in a different category. The lumpiness

[3]Households at the extremes, with 0 or 18 affirmative answers, cannot be assigned a specific place on the scale. This does not affect the argument in the text; thus, for ease of exposition, we ignore it.

in the distribution of scores could cause food security prevalence estimates to be more unstable than the real underlying characteristics being measured.

A generalization of the concern is as follows:

> If the model is reestimated on a different data set, but the cutpoints used in assigning households to categories are not changed, there is a risk that households with the same answer patterns could be assigned to different categories in the two versions of the model, because of changes in the model's estimated item parameters.

In practice, it is not clear exactly how serious the risk is in the current application. Because of the high degree of model stability observed from one year to the next (see Chapter III), the numeric scale values associated with any given response pattern change relatively little. Indeed, experiments conducted with the 1995-through-1997 data suggest that it would have been possible to use the 1995 cutpoints developed in Hamilton et al. (1997) with models based on each of the three years of data, without encountering the problem of large clusters of households with the same answer pattern being assigned to different categories in different years. However, there is nothing in the Rasch modeling process to ensure that this would not happen in the future, if cutpoints values are held constant.

3. Alternative Approaches to Setting Cutpoints

As noted above, the algorithm for translating from the Food Security Module question responses to the food security categories was originally developed in terms of the content of the question sequence. In light of this, it would appear that a highly desirable objective of the food security measurement process should be to develop a method which ensures that, at least for cases with complete data, the same pattern of responses is consistently translated into the same food security category classifications. This feature is particularly desirable for households with complete data, since, as described above, these cases are clustered at only 26 points on the numerical scale, and,

therefore, a change in food security classification for one of these clusters of households could have substantial implications for estimates of food security prevalence levels.

As noted above, reestimating the model each year, but keeping the same cutpoints, does not guarantee that the objective of a constant relationship of question response patterns to assigned food security levels is met. How can this objective be achieved? Four possible approaches for doing this are described here:

1. **Hold the model calibration and cutpoints constant.** As long as the model parameters used to assign numerical food security scores to households are kept constant over time, this will guarantee that the same response patterns are equated to the same numerical scores. If the cutpoints are held constant, this, in turn, ensures that the same answer patterns are equated to the same household classifications. In the current application, for instance, if the 1995 parameters are consistently used, the cutpoints established with the 1995 data will always achieve the desired objectives. Under this approach, a simple algorithm can be specified for complete-data households that maps the number of affirmative responses into a category assignment. For households with missing data, however, Rasch model software can be used to obtain numerical scores for comparison with specified cutpoints.

2. **Define the classifications of household response patterns into food security levels directly, without going through the intermediate step of a numerical score.** This essentially defines away the cutpoint problem. However, by itself, it does not provide a method for dealing with cases with missing data. In the Rasch model, the score assigned to a household with missing data depends on the exact number of missing items and their severity levels.

3. **Impute responses for the missing items, then define the classification of households as in the previous alternative.** This method, which is part of the government's benchmark methodology described in Chapter IV, involves developing a relatively simple algorithm for imputing missing data and then translating from the number of affirmative answers (including any imputed affirmatives) to a food security classification. It is similar to Alternative 2, but includes a solution to the problem of dealing with missing data cases.

4. **Recalibrate the model and the cutpoints with each new application.** The fourth alternative is to set new cutpoints with each new application of the model. One way of doing this would be to place the cutpoints between the scale scores assigned to households that "bound" the edges of the food security categories. For instance, under the procedures used in the Hamilton et al. analysis and in this report, a complete-data household with seven affirmatives is categorized as food insecure without hunger, and

one with eight affirmatives is categorized as food insecure with hunger. Therefore, for any given Rasch model calibration, the numerical cutpoint that will ensure these households are categorized as desired, must be between the numerical score assigned in that new model calibration to households with seven affirmatives and the score assigned to households and with eight affirmatives. Where within this range to assign the cutpoint is arbitrary; however, the midpoint has some attraction as a practical solution, because it is likely to reduce the sensitivity of classifications of missing data households.

Summary. All but the second of the four methods outlined above represent reasonable approaches to the issue of how to ensure that households with the same response patterns are grouped into the same food security categories from one year to another. The first and third are the same, except in the treatment of missing data. From among these two, the third is recommended, because it is simpler and more intuitive and because it makes the method more accessible to other researchers by not requiring use of Rasch model software.

The disadvantage of the second approach is that, by itself, it does not provide a solution for dealing with missing data cases. Finally, the fourth alternative, like the first, has the disadvantage of requiring Rasch model software for implementation. This alternative also involves the cutpoints changing somewhat over time, which could potentially be confusing to some users of the analysis. An advantage of the last approach, however, is that it captures the effect of changes over time in item parameters.

VI. CONCLUSION: REFLECTING ON THE STRENGTHS AND LIMITATION OF THE FOOD SECURITY METHODOLOGY

In this concluding chapter, we draw upon the results of our research, together with related work, to discuss the strengths and limitations of the use of the Rasch model as a basis for food security measurement. Possible directions for future research are also noted.

A. STRENGTHS AND LIMITATIONS OF THE METHODOLOGY

As indicated earlier, the food security scale reflects more than 10 years of methodological development by both government and private groups. Use of the IRT methodology has made it possible to guide the development of the food security estimates with a thoroughly studied model that has well-understood statistical properties. The approach has undergone extensive review by experts in both the public and the private sector. In general, these experts consider the model an appropriate application of the IRT methodology, and they have viewed the analysis results as reasonable.

Another important strength, which has been revealed by the current project, is that the estimated item parameters of the IRT model are robust across time and population subgroups. The values obtained from the 1996 and 1997 data are essentially the same as the original 1995 values.[1] In addition to stability over time, there is stability across subgroups defined by such characteristics as race/ethnicity, household composition, and region of the country. (See Appendix E.)

Tempering these strengths are several limitations that should be recognized (as noted earlier on pp. xx-xxi). Perhaps the most important of these limitations occurs as a result of the process used to translate the continuous food security scale score into food security categories (that is, food secure,

[1]Note, however, that there has not yet been an opportunity to assess temporal stability in the context of anything other than a strong economy.

food insecure without hunger, and food insecure with hunger). The process of developing rules for translating the values on the continuous scale into these categories was inherently much more judgmental than the process of deriving continuous scale scores. To be sure, the location of each boundary was carefully set by a broad-based group of experts to reflect the consensus of their judgment about how the words in the conceptual basis of the designated severity range categories should be interpreted, defined operationally, based on the observed sequence of indicator items available in the CPS data. However, room for disagreement remains as to what patterns of response to the questions should be construed as reflecting appropriately the naming conventions used in designating the severity-range categories.

This problem is exacerbated by the fact that many households do not exhibit response patterns that are exactly consistent with the item hierarchy. While such "nonmodal" answers are to be expected, given the underlying probabilistic model (in the same way that a student has a chance of getting a hard math problem right after getting an easier problem wrong), nonmodal answers sometimes create patterns that defy easy classification into the prevalence groups. An example of this type of difficulty is that it is possible for a household to be classified as "food insecure with hunger," even though the respondent may have answered negatively the question, "In the past 12 months, ...were you ever hungry but didn't eat because you couldn't afford enough food?" For this to happen, the respondent either must have replied "yes" to a series of increasingly severe indicators of food insufficiency, including at least three items indicating reduced food intake for themselves and/or other adult members of the household, one of which establishes a repeated pattern of such reduced intakes over the year; or they must have replied "yes" to *most* of the foregoing, plus one or more of the items that are *more* severe than the explicit hunger question. The categorical measure (and its naming convention) reflects the judgment that, on the balance of this evidence, one or more

adult members of the household has, with high probability, experienced resource-constrained hunger sometime during the year. Conversely, the opposite case also can occur: the household can be classier "food insecure *without* hunger," based on its overall pattern of response and the resulting scale score, even though the respondent has answered "yes" to the explicit hunger question as such. They have argued that probabilistic labels for the categories would be more accurate, and certainly more consistent with the underlying probabilistic model.

An additional limitation of the food security data available for the years 1995-1997 stems from the use in the CPS data collection of a preliminary screen for high-income households which was changed slightly in each of the first three years of data collection, as well as a (somewhat looser) screen applied to low-income households in one year (1996). The need to use a common screen for the 1995-1997 period to compensate for differences in the survey screens tested during these years requires imposing the assumption that certain households are food secure, even though they gave survey responses indicating the contrary. While this convention is necessary to ensure strict comparability in analysis findings across this time, the use of the screens involves discarding information, and the method used of retroactively applying a common screen, results in estimated prevalence rates that are lower than they would otherwise be. Tests of the sensitivity of the findings to differences in various assumptions and procedures found that the screening procedure used, especially in 1996, tend to have a relatively large impact. This problem is exacerbated by weaknesses in the income data present on the relevant CPS files, since some households probably are being misclassified as to income level, on which the application of the preliminary screen is based.

B. DIRECTIONS FOR FURTHER RESEARCH

Several potential directions for future research are suggested by these analyses. One important activity will be to continue to estimate food security prevalence rates for future years, in order to monitor trends in U.S. and state-level food security. Associated with this, we recommend continuing to estimate the IRT model item parameters each year, as data become available. In contrast to the approach adopted in this report, in which the prevalence rates are estimated without reestimating the model, the reestimation process is, in our judgment, important for monitoring whether underlying structural changes are occurring that would warrant reassessing the model itself.

An additional line of research that is of considerable interest, and that has already begun (Nord and Bickel 1999), is to develop a measure for estimating the prevalence of hunger among children. It is possible that adults respond differently to food insecurity, depending on whether there are children (especially young children) in the household, and separate scales based on adults and child-specific indicators could reflect these differences.

A more substantial extension of the current work, which would be valuable, is to develop food security models for *individuals* as well as *households* as the units of observation. There is considerable interest in the policy community in obtaining estimates of particular categories of adults and (especially) of children who are food insecure. The work done so far—based on survey questions asked mostly about all household members collectively—provides only a likely upper bound on such estimates. For instance, while we can estimate the number of children living in households that are food insecure with hunger, we cannot yet directly estimate the number of children who themselves have been hungry due to lack of household resources. The latter number may be significantly smaller than the former, for instance, if parents to shield some of their children

from hunger more than others, or if older children shield younger children, even at the cost of experiencing greater hunger themselves.

Making substantial headway on the individual scales will require a different data collection instrument than the current CPS Food Security Supplement, since most questions on that supplement are asked at the household level. Experimental work in this direction was undertaken with one rotation group in that survey. More extensive work developing individual scales can be carried out with data from the Fourth National Health and Nutrition Examination Survey (NHANES4) and the most recent Continuing Survey of Food Intakes by Individuals. Both of these data sources are collecting key food security items at the personal as well as household level.

REFERENCES

Anderson, J.J., C.A. Wehler, and R.I. Scott. "Scaling and Indexing to Measure the Severity of Food Insecurity and Hunger." In conference on Food Security Measurement Research: Papers and Proceedings, January 21-22, 1994. Alexandria, VA: U.S. Department of Agriculture, Food and Consumer Service, 1995.

Andrews, Margaret, Mark Nord, Gary Bickel, and Steven Carlson. *Household Food Security in the United States, 1999.* Washington, DC: U.S. Government Printing Office, 2000.

Bickel, Gary, Mark Nord, Cristofer Price, William Hamilton, and John Cook. *Guide to Measuring Household Food Security.* Washington, DC: U.S. Department of Agriculture, Food and Nutrition Service, March 2000.

Hambleton, Ronald H. "Principles and Selected Applications of Item Response Theory." In *Educational Measurement, Third Edition,* edited by Robert Linn. New York: Collier MacMillan, 1993.

Hamilton, William L., John Cook, William L. Thompson, Lawrence F. Buron, Edward A. Frongillo, Jr., Christine M. Olson, and Cheryl A. Wehler. *Household Food Security in the United States in 1995: Summary Report of the Food Security Measurement Project.* Cambridge, MA: Abt Associates, 1997a.

Hamilton, William L., John Cook, William L. Thompson, Lawrence F. Buron, Edward A. Frongillo, Jr., Christine M. Olson, and Cheryl A. Wehler. *Household Food Security in the United States in 1995: Technical Report of the Food Security Measurement Project.* Cambridge, MA: Abt Associates, 1997b.

Nord, Mark, and Gary Bickel. "The Prevalence of Children's Hunger in U.S. Households, 1995-1999." Washington, DC: U.S. Department of Agriculture, Economic Research Service, August 9, 2000.

Ohls, Jim, Allen Schirm, Abhijay Prakash, and Larry Radbill. "Methodogical Findings and Early Conclusions Based on the 1995, 1996, and 1997 Food Security Data." Paper presented at the Second Food Security Measurement and Research Conference sponsored by the Economic Research Service and Food and Nutrition Service, United States Department of Agriculture, Alexandria, VA, February 1999.

Price, Cristofer, W. Hamilton, and J. Cook. *Guide to Implementing the Core Food Security Model.* Cambridge, MA: Abt Associates, 1997.

Radimer, K., C. Olson, J. Greene, C. Campbell, and J. Habicht. "Understanding Hunger and Developing Indicators to Assess It in Women and Children." *Journal of Nutrition Education,* vol. 24, supplement, January/February 1992, pp. 35S-45S.

U.S. Department of Agriculture, Food and Nutrition Service. "Measuring Food Security in the United States. Household Food Security in the United States 1995-1998 (Advance Report)." Washington, DC: USDA, July 1999.

Wehler, C., R. Scott, J. Anderson, and L. Parker. *Community Childhood Hunger Identification Project: A Survey of Childhood Hunger in the United States.* Washington, DC: Food Research and Action Center, 1991.

Wright, Benjamin D., and Geofferey N. Masters. *Rating Scale Analysis. Rasch Measurement.* Chicago: Mesa Press, 1982.

APPENDIX A

SUMMARY OF SALIENT PARTS OF ITEM RESPONSE THEORY AND RELATED MEASUREMENT ISSUES

SUMMARY OF SALIENT PARTS OF ITEM RESPONSE THEORY AND RELATED MEASUREMENT ISSUES

Item response theory (IRT) has played an important role in the development of the food insecurity scale and forms the basis of the continuous form of the scale. In the original analysis of the 1995 CPS data, Hamilton et al. (1997) used IRT modeling, in conjunction with other analytic techniques, to identify a core set of items that could be used to construct a scale to measure the relative degrees of food insecurity of different households. IRT models were also used in that work to "calibrate" the model and perform initial analyses of the stability of the index across several key demographic groups.

In the analysis of the 1996 and 1997 data, we have relied on IRT methods to assess the temporal stability of the models and to assess the sensitivity of the index to different screening procedures used in the April 1995, September 1996, and April 1997 CPS food security supplements. We have also used IRT to analyze the stability of the index across demographic groups.

This appendix presents an introduction to IRT, since it may not be familiar to some readers. Our presentation emphasizes those aspects of the theory and models that are most pertinent to the use of IRT models in measuring food insecurity.[1]

The balance of this appendix is organized as follows. Section 1 provides an overview of IRT methods. Section 2 describes in greater detail the variant of IRT methods that has been used in the food security research. Section 3 discusses methods for estimating parameters.

[1]For more complete discussions of item response theory models, see Hambleton (1993) and Wright and Masters (1982).

1. Overview of IRT

IRT models are a subset of a broader group of latent variable models that includes LISREL models and other factor analytic models used in the social sciences. IRT begins by assuming the existence of some characteristic that cannot be measured directly but can be assessed indirectly. The objective is to measure this latent trait. For example, IRT methods have been used most extensively in educational testing to measure student ability levels. They are used, for instance, by Educational Testing Service (ETS) for scoring and test development work with the Scholastic Aptitude Tests (SAT). IRT models are also used to measure trends in cognitive achievement among U.S. children in the National Assessment of Educational Progress (NAEP). We will be focusing on a specific IRT model: the one-parameter logistic model, also known as the Rasch model (named for Georg Rasch, who introduced the model in the 1950s) (Wright and Masters 1982).

The IRT model is based on the assumption that the latent trait is a unidimensional continuum.[2] In traditional educational testing applications, the characteristic is some type of ability or aptitude (such as the quantitative skills tested in parts of the SAT exams). In our application, the characteristic is a household's relative level of "food insecurity."

It is also assumed that the characteristic being measured is associated with respondents—students in the traditional testing applications, but households in our application—and that, in principle, it is possible to determine where every respondent falls on the underlying continuum relative to every other respondent. The continuum is measured as an interval level scale, which means that we cannot determine the absolute quantity of the characteristic that each respondent has, but we can determine the *relative* differences between respondents. In other words,

[2]The assumption of a single underlying dimension can be tested using principal component/factor analysis models.

we can compare the positions of respondents **A**, **B**, and **C** and then determine how much closer (and in which direction) **A** is to **C** than **B** is to **C**. For example, **A** might be twice as far below **C** as **B** is above **C** (as would be the case, for instance, if **A** = -1, **B** = 2, and **C** = 1).

While the characteristic itself cannot be measured directly, there are indirect indicators that can be observed and that can provide information about the characteristic. In traditional applications, these indicators are responses to test questions; in the current application, they are responses to questions on a household survey. Just as respondents have locations on the underlying scale, these indicators also have locations *on the same underlying scale as the respondents*. In traditional testing applications, we think of this in terms of the relative difficulty of different test items. In our application, some survey questions ask about behaviors associated with more severe levels of food insecurity than are asked about by other questions.

In the current application, the Rasch model has two important advantages over other latent variable approaches, such as LISREL models. First, because the "ability" of students and the "difficulty" of test items can be estimated independently of each other, this IRT model provides a framework for assessing how test items function, across groups, over time, and relative to each other.[3] For example, with IRT models, it is possible to address each of the following questions:

- Do all respondents *of the same ability* find a given item equally difficult?
- Do this year's respondents find an item more or less difficult *than respondents of the same ability* found it last year?

[3]In more formal terms, all model parameters are estimated using maximum likelihood procedures. The form of the likelihood function allows the item parameters to be integrated out of the expression when estimating the respondent parameters. In similar fashion, the respondent parameters can be integrated out of the likelihood expression when the item parameters are estimated. We discuss estimation of the model parameters later, in Section 3.

- If item **A** was more difficult than item **B** last year, is it still more difficult this year? Has its difficulty relative to Item B changed?

The key in all three examples is the assumption that the evaluation of the item is independent of the ability of the students taking the test. If one group of students have much higher ability than a second group, the first group will be more likely than the second group to answer each of the test questions correctly. The Rasch model provides a way to determine whether the test items are more (or less) difficult for one group, relative to another group, *after accounting for their different abilities*. In the current application, the model provides the means by which survey questions can be evaluated across groups with different degrees of food insecurity, and over time, even when the prevalence of food insecurity changes. In similar fashion, the evaluation of respondent ability is independent of the difficulty of the items used to construct the test.[4]

A second advantage of the IRT models is that they allow for "test equating." In traditional applications, students may be given different sets of test questions to discourage cheating. Computerized "adaptive" tests, under which each student receives a test that is tailored to his or her own ability level, are increasingly being used to achieve greater testing efficiency. In these applications, there is a need to score all students on the same scale, despite their having been given different tests. In the current application, childless households were not asked the eight food security questions that refer specifically to children. Despite this, there is a need to assess the level of food insecurity of all households, regardless of whether children are present. The IRT model used here

[4]However, as we discuss below, using test items that properly target the ability level of the respondent results in more efficient estimates (that is, estimates with smaller standard errors) of that respondent's ability than do test items with difficulty levels that are far from the respondent's ability.

provides a way to equate the 10-item test administered to childless households with the 18-item test administered to households with children.[5]

2. Formal Properties of the One-Parameter Logistic IRT Model

Formal Statement of Model

The IRT model used here is built from the following assumptions:

- There is a unidimensional variable that is not observed directly (for example, quantitative aptitude or food insecurity).
- Each respondent (student or household) has a position on that latent variable, denoted by b_j, where the subscript j identifies each respondent. The b_j are referred to as the respondent parameters in the model, and a value for b is estimated for each respondent. In educational testing, b is the respondent's ability.
- Each test item has a position on the latent variable, denoted by d_i, where the subscript i identifies each item. The d_i are referred to as the item parameters in the model, and a value for d is estimated for each item. In educational testing, d is the item's difficulty.
- The probability that a given respondent "correctly" answers a specific test item is *only* a function of the difference between *that* respondent's ability (b) and *that* test item's difficulty (d).[6] Specifically,

$$(1) \quad Probability\ (Correct\ Response|b_j) = \frac{e^{(b_j - d_i)}}{1 + e^{(b_j - d_i)}},$$

or, equivalently,

---

[5]In earlier work on food security, Hamilton et al. (1997) also used IRT models, in conjunction with other models, to identify the specific questionnaire items to be used for constructing the food insecurity index.

[6]There are many different values for b_j and d_i that yield the same probability. All such pairs of values are linear functions of each other. In order to estimate unique values for b_j and d_i, it is necessary to impose two constraints. One commonly used constraint is to reposition all the d_i so that they have a mean of 0. A second constraint that is commonly used fixes the slope of the response function shown in Equation 1, evaluated at its inflection point (where b_j equals d_i), to be equal to 1. In the next section, we discuss in greater detail how b_j and d_i are estimated.

$$(2) \quad P(\Theta_j) = \frac{e^{(\Theta_j - d_i)}}{1 + e^{(\Theta_j - d_i)}}$$

Note that the probability of a correct response to any single item is only a function of the respondent's ability (*b*) and the item's difficulty (*d*). The probability of a correct response does not depend on any of the other test items. This property—known as conditional local independence—is an important assumption of this IRT model.[7] Also, the probability of a correct response does not depend on any characteristics of the respondent other than ability (*b*).[8]

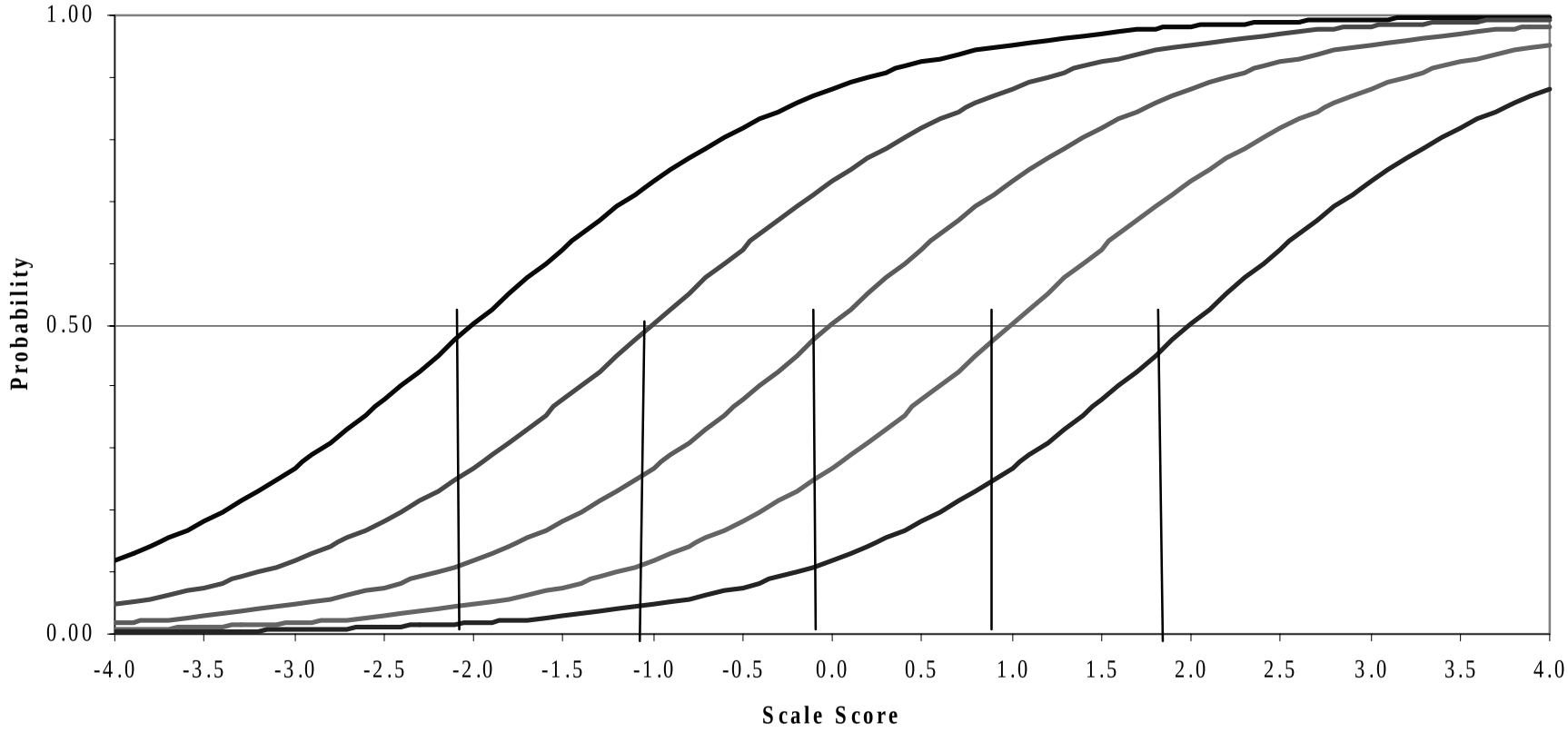
Item and Test Characteristic Curves

Equation 1 is the formula used to compute the probability that a specific respondent (respondent *j*) will correctly answer a specific test item (item *i*). Figure A.1 shows a plot of Equation 1 for five equally spaced hypothetical test items. These plots are called "item characteristic curves." The horizontal axis is the latent variable, and the vertical axis is the probability of a correct answer to a test item. The difficulty of an item is the value on the horizontal axis where this probability is .5. The first item has a difficulty (*d*) of −2, because when the value on the latent variable is −2 (read on the horizontal axis), the probability of a correct answer is 0.5 (read on the vertical axis). The other four items have difficulties of −1, 0, 1, and 2. Figure A.2 shows item characteristic curves for a

[7]Some IRT models relax this assumption, allowing for multipart test questions. These partial-credit models take into account structural dependencies among test items. For example, situations where one question can be answered correctly only if a prior question was answered correctly can be accommodated.

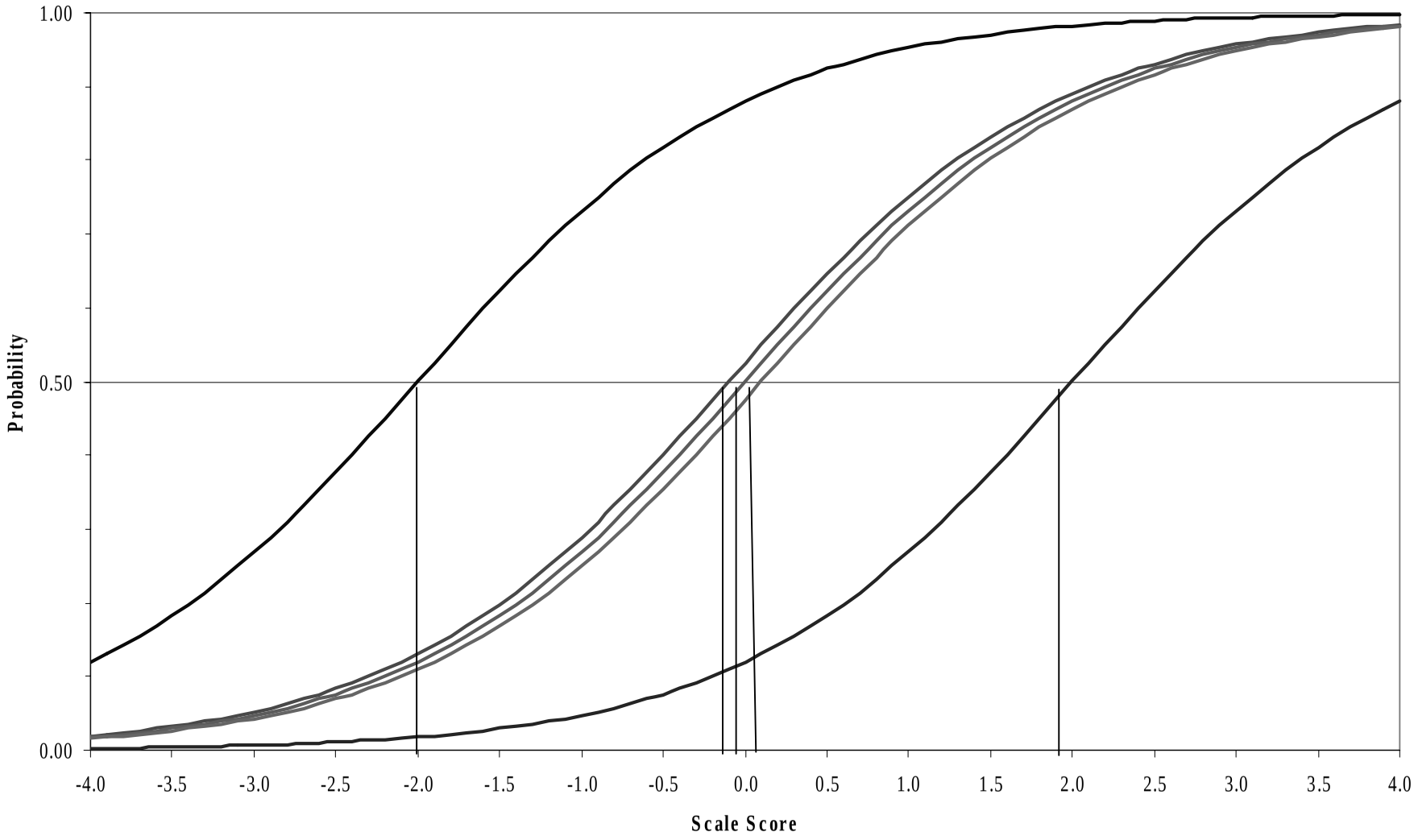
[8]The assumption that the probability of a correct response does not depend on any respondent characteristics other than *b* (in traditional applications, this is the respondent's ability; here, it is a household's level of food insecurity) can be tested in a variety of ways. In traditional testing applications, such evaluations are the basis for assessing whether test items are culturally biased, for example. Here, such an evaluation would indicate whether members of different demographic groups respond to comparable levels of food insecurity in different ways.

FIGURE A.1
ITEM CHARACTERISTIC CURVES
5 Equally Spaced Items (Example 1)



Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.

FIGURE A.2
ITEM CHARACTERISTIC CURVES
5 Items, 3 Very Close Together (Example 2)



Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.

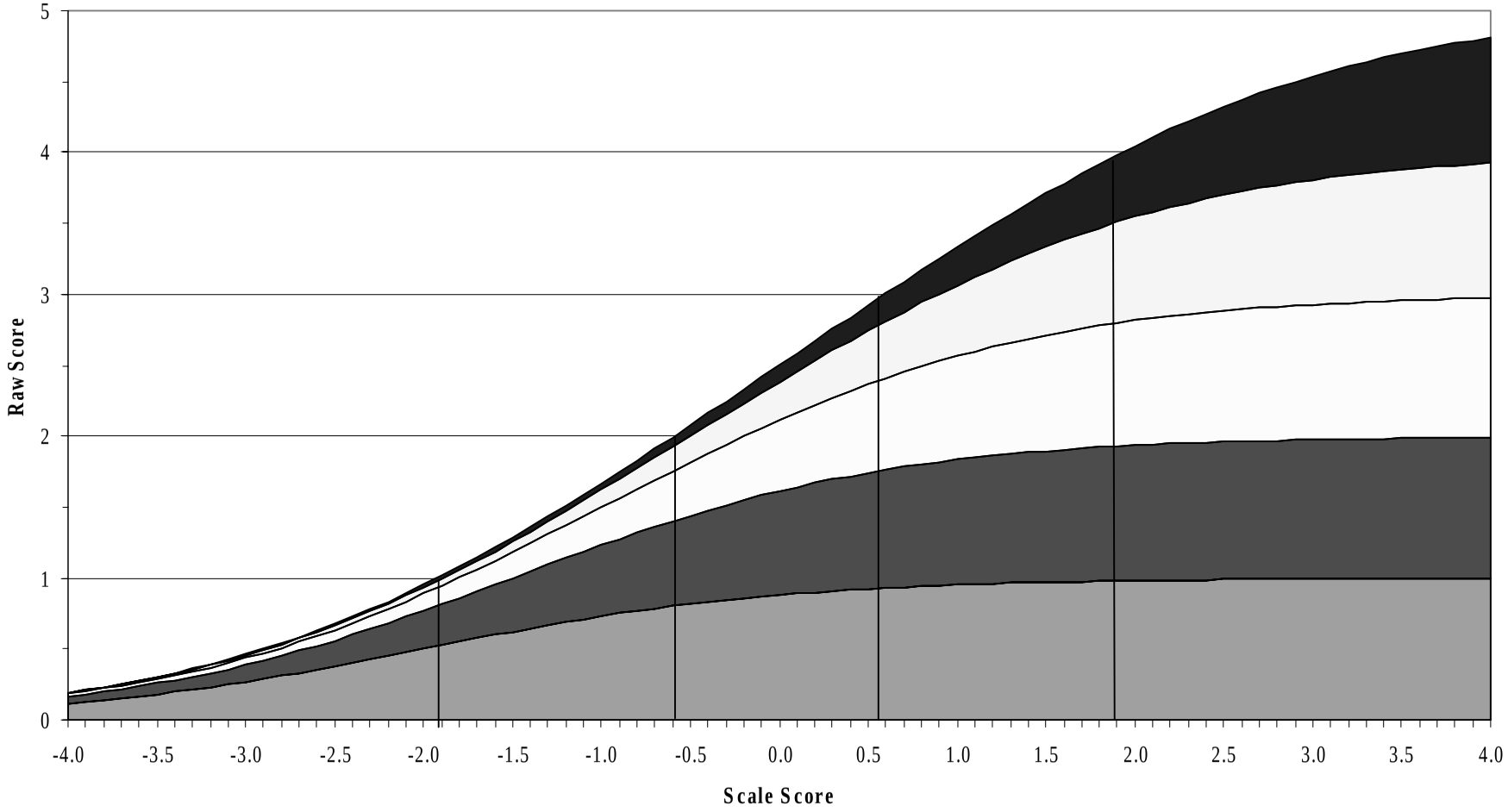
different set of five hypothetical items. In this example, the items are *not* equally spaced: while the first and last items still have difficulties of -2 and 2, the middle three items are clustered close to 0: they have difficulties of −0.1, 0.0, and 0.1.

Just as multiple items can be combined to form a test, multiple-item characteristic curves can be combined to produce a test characteristic curve. Raw test scores are computed by summing the number of correct answers, and the test characteristic curve is created by summing the characteristic curves of the items included in the test. Figure A.3 shows the test characteristic curve that results when the items shown in Figure A.1 constitute the test. Figure A.4 shows a similar curve for the test that results when the five items from Figure A.2 are combined. The interpretation of the vertical axis of the test characteristic curve is slightly different from its interpretation in the context of item characteristic curves. Rather than represent the probability of a correct response to a single item, the vertical axis represents the expected number of correct responses to all items included in the test—the expected value of the respondent's raw score on the test.[9]

Just as an item characteristic curve relates the probability of a correct (or "positive" in the food security context) answer to a respondent's estimated location on the latent variable, a test characteristic curve relates the number of correct answers on a test to a respondent's location on the latent variable. For example, in Figure A.3, respondents who answer one of the five items correctly (read on the vertical axis) are assigned a scale score of −1.9 (on the horizontal axis). Respondents with raw scores of 2, 3, and 4 are assigned scale scores of −0.5, 0.6, and 2.0, respectively. (While

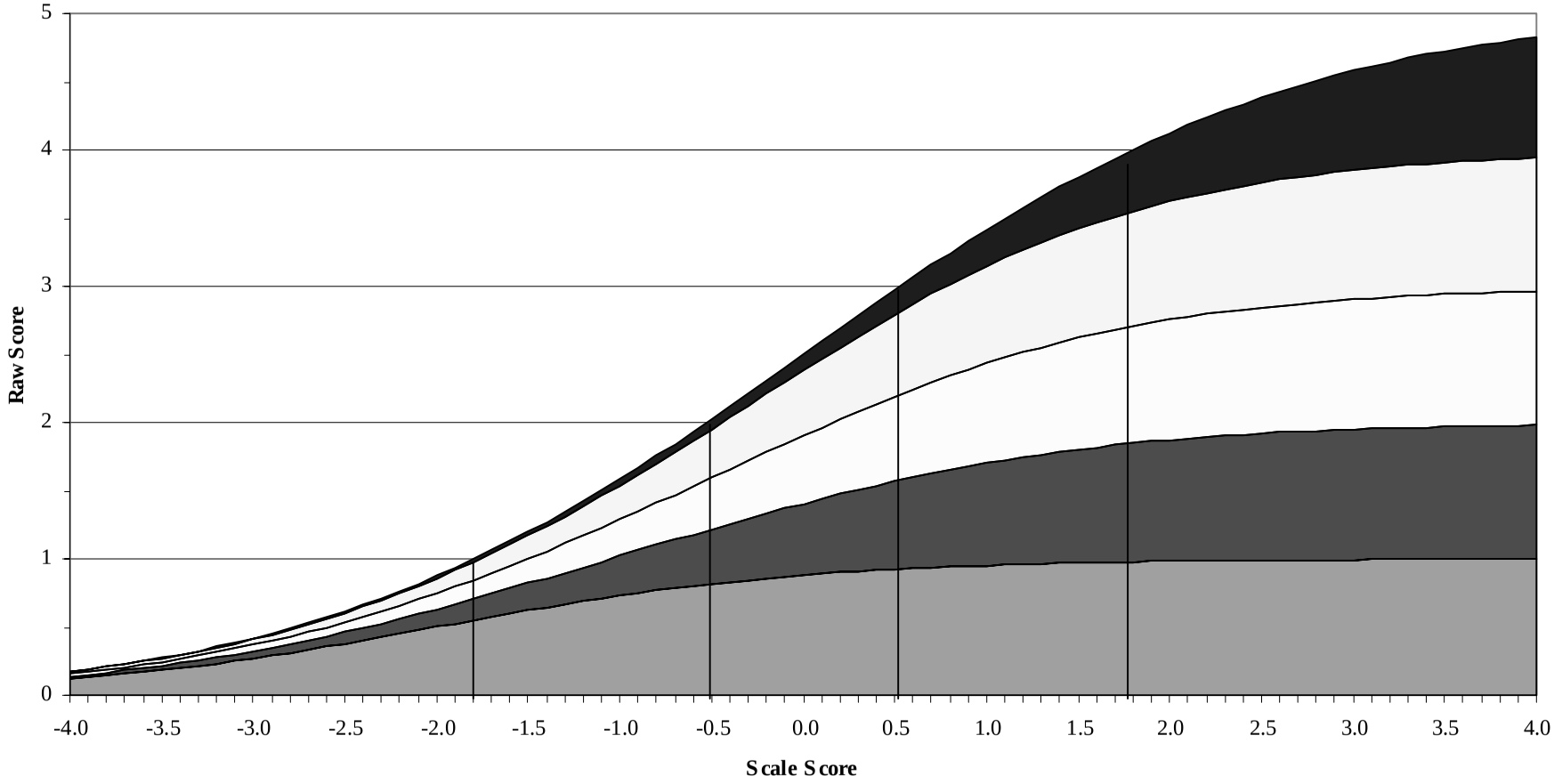
[9]Actually, there is no difference in the two situations. In both cases, the vertical axis measures the expected value of the outcome. In the case of the item characteristic curves, those expected values are between 0 and 1. For test characteristic curves, the expected values range between 0 and the number of items in the test. Item characteristic curves can be summed to create a test characteristic curve because expected values are additive.

FIGURE A.3
TEST CHARACTERISTIC CURVE
Sum of Item Characteristic Curves
5 Equally Spaced Items (Example 1)



Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.

FIGURE A.4
TEST CHARACTERISTIC CURVE
Sum of Item Characteristic Curves
5 Items, 3 Very Close Together (Example 2)



Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.

it may not be intuitively obvious, it can be shown mathematically that these are maximum likelihood estimates of the respondents' latent trait values.)

Impossibility of Scoring "Extreme" Response Patterns

Several important points should be noted. First, using this test and this IRT model, respondents with raw scores of 0 or 5 cannot be assigned scale scores. In the case of no correct responses, all we know is that the respondent's scale score ability is below the range that can be measured by this test. The problem is, the model is completely uninformative about *how far* below the range of this test the respondent's score lies. In the case of a perfect score (a correct response for each of the five items), all we know is that the respondent's scale score is above the range that can be measured by this test. Again, however, the model provides no information about *how far* above.

In the current food security application, it is clear that the IRT model cannot provide scale scores to households that answered "Yes" to every item they were asked. Because there are very few such households, this presents no real problem. However, the model also cannot provide scale scores for households that answer "No" to all items (households with raw scores of zero). This *is* a limitation, because nearly 90 percent of the sample falls in this category. It is clear that such households should be classified as "food secure," and they are so identified in the ordinal variable that classifies households into one of the three food-insecurity categories. However, the IRT results are uninformative about *how much more* secure they are than the households that answered "Yes" to only one item. The model is also uninformative about whether all such households are equally secure. Although none of the households reported any behaviors that are symptomatic of food insecurity, some are undoubtedly at greater risk than others.

Lack of a Direct Relationship Between Item Scores and Respondent Scores

Another important feature to note is that the scale scores assigned to *respondents* do not have any simple relationship to the difficulties of the *items*. In Figure A.1, the five items had difficulties of −2, −1, 0, 1, and 2; but the scores assigned to respondents in Figure A.3 are −1.9, −0.5, 0.6, and 2.0 (and notice that the score of 2.0 is assigned to students with 4 positive answers, not 5). The lack of an obvious relationship between the item parameters and the respondent parameters can be seen even more clearly by comparing Figures A.2 and A.4. While the items in Figure A.2 had difficulties of −2, −0.1, 0, 0.1, and 2, the scale scores assigned to respondents are −1.8, −0.5, 0.5, and 1.8. Respondents with two positive answers are assigned a scale score (−0.5) that is actually below the difficulty level of the second item in the test (−0.1). Partly because of the lack of a simple relationship between item difficulties and respondent scale scores, it is not useful to think of test items as directly measuring a specific level of ability.[10]

5. The Scaling of the Latent Variable Is Arbitrary

Scaling of the IRT parameters is arbitrary. We noted above that the latent variable is measured as an interval-level scale. We also noted that many pairs of values for *b* and *d* produce the same probability, and those pairs are each linear functions of each other. The three hypothetical IRT scales shown in Figure A.5 are all equivalent: in every case, the difference between the first and fourth numbers is twice the difference between the first and third numbers.

[10]It is appropriate, however, to recognize that a test item provides more information about respondents with locations on the latent scales close to the difficulty of the item, and less information about respondents with locations far from the item's difficulty. The key point to recognize here is that a test item provides information about a *range* of abilities, not a single point. We will discuss this issue in more detail later.

FIGURE A. 5

THREE EQUIVALENT IRT SCALES

•	−1	5	8	17
•	11	17	20	29 (added 12 to line 1)
•	10	70	100	190 (added 2 to line 1, then multiplied by 10)

In most of this report, we use a different scaling convention than Hamilton et al. (1997) used in their work. Therefore, some of the IRT parameters presented in this report appear to be substantially different from those derived in the earlier work, when, in fact, our estimates are close to those reported by Hamilton et al.

Maximizing Information Content of Items

Although each test item provides information about respondents with a range of abilities, the *amount* of information depends on how close a respondent's ability is to a test item's difficulty. The amount of information provided by an item reaches its maximum for respondents with ability levels equal to the item's difficulty. This relationship can be formalized, and is shown in Equation 3:

$$(3) \quad I_i(\Theta) = \frac{[P_i'(\Theta)]^2}{P_i(\Theta)[1-P_i(\Theta)]},$$

where $I_i(\Theta)$ is the information provided by item *i* at the point Θ on the latent variable,

$P_i'(\Theta)$ is the slope of the item response function (Equation 1) evaluated at Θ,

and $P_i(\Theta)$ is the probability of a correct response to item *i* by a respondent with ability Θ.[11]

In the Rasch model, Equation 3 simplifies to Equation 4:

[11]This is also the formula for Fisher's Information for the IRT models discussed here.

(4) $I_i(\Theta) = P_i(\Theta)[1 - P_i(\Theta)]$,

which reaches a maximum at $P_i(\Theta) = .5$, the point on the graph where the respondents' ability equals the items' difficulty.

Figure A.6 illustrates the form of the information function for the five hypothetical items originally presented in Figure A.1, and Figure A.7 shows the information curves for the five hypothetical items from Figure A.2. In each case, note that an item's information reaches a maximum at the item's location—that is, its estimated difficulty. But also note that each item provides information about a range of values along the latent variable.

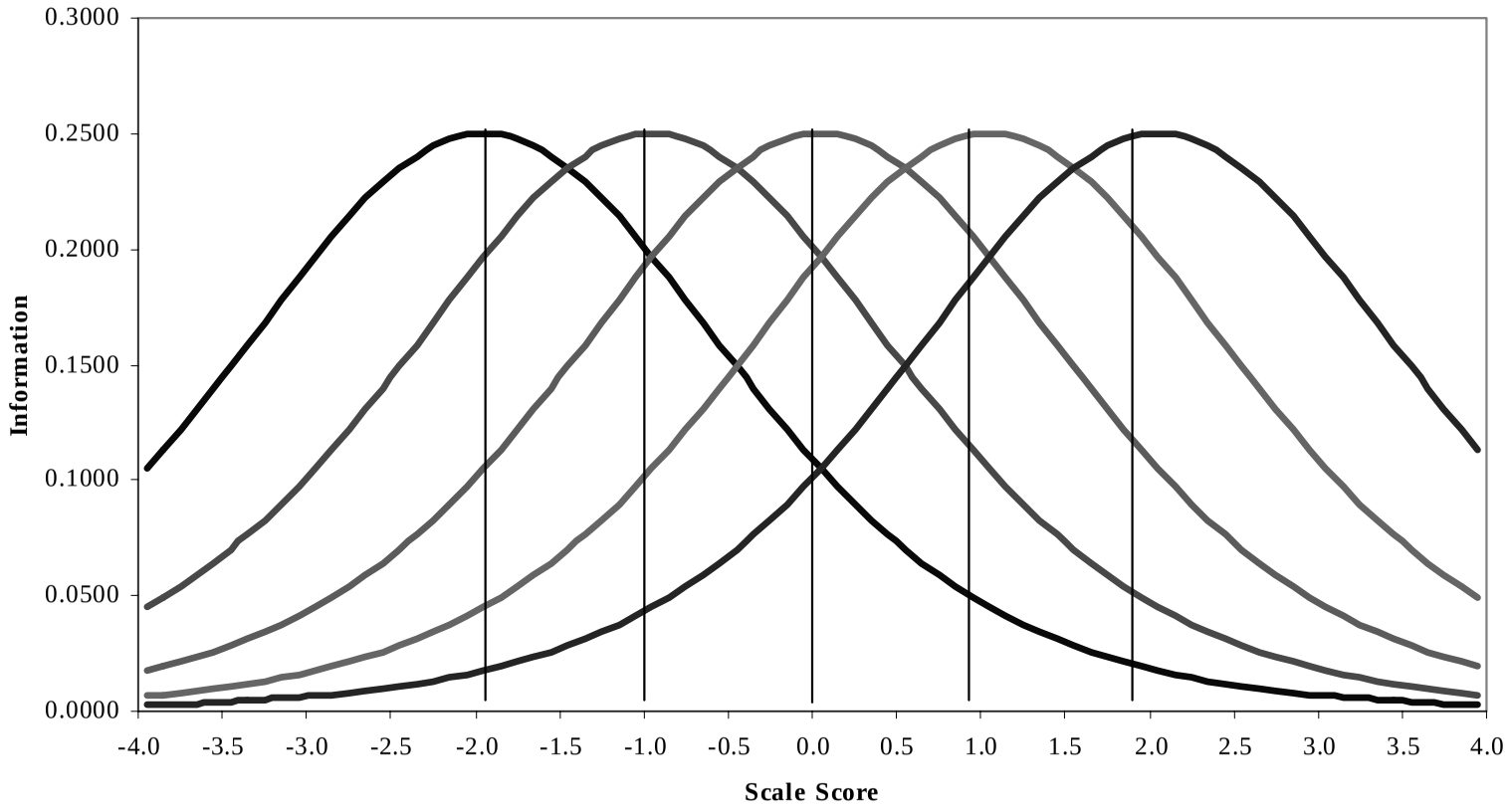
Just as item characteristic curves are summed to arrive at a test characteristic curve, the item information curves are summed to arrive at a test information curve:

(5) $I_T(\Theta) = \sum_{i=1}^{n} I_i(\Theta)$.

In Equation 5, $I_T(\Theta)$ is the total test information evaluated at Θ. To put this in more familiar terms, the test information is inversely related to the standard error of the estimated value of Θ for respondent *j*:

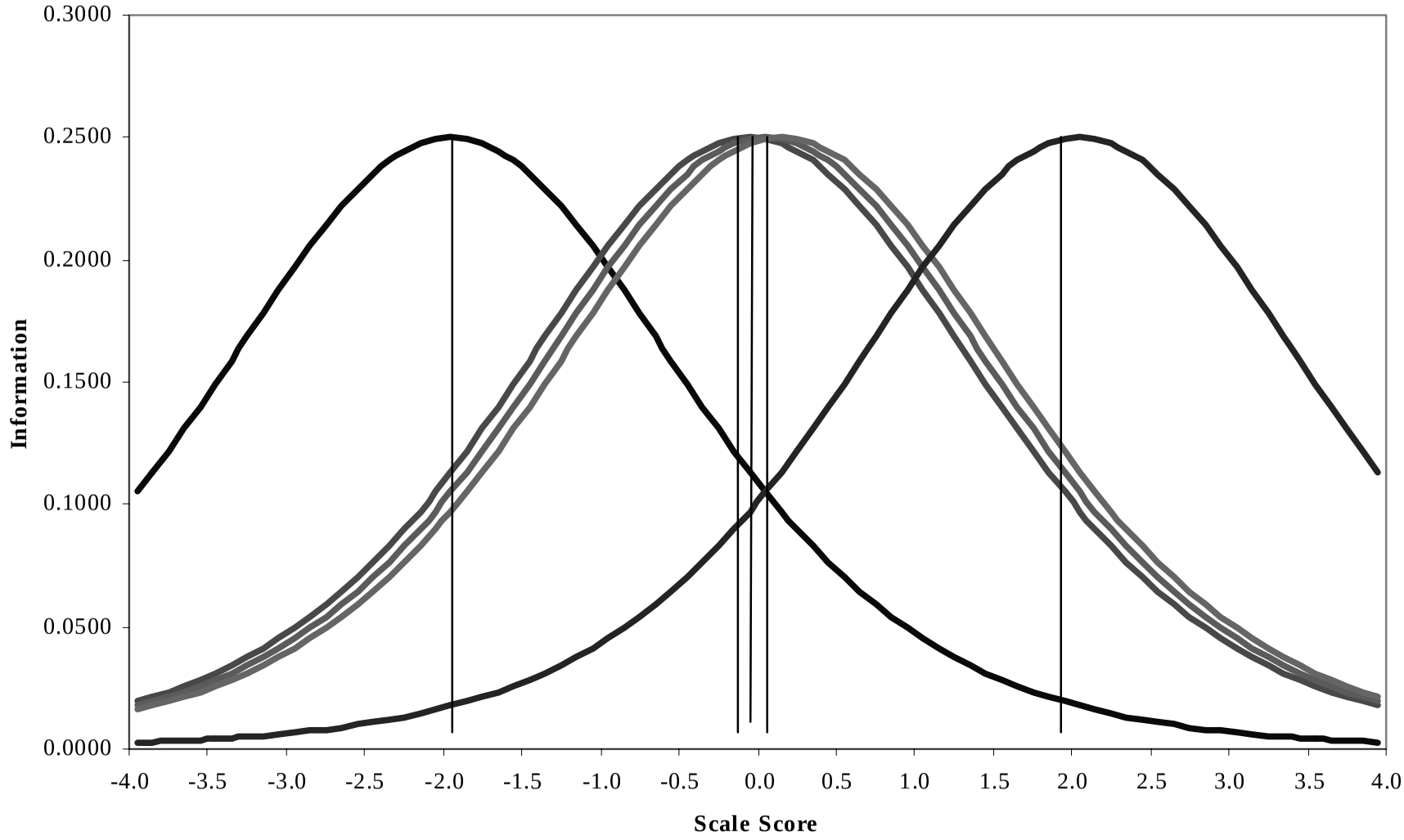
(6) $SE(\Theta_j) = \frac{1}{\sqrt{I_T(\Theta_j)}}$.

FIGURE A.6
ITEM INFORMATION CURVES
5 Equally Spaced Items (Example 1)



Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.

FIGURE A.7
ITEM INFORMATION CURVES
5 items, 3 Very Close Together (Example 2)



Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.

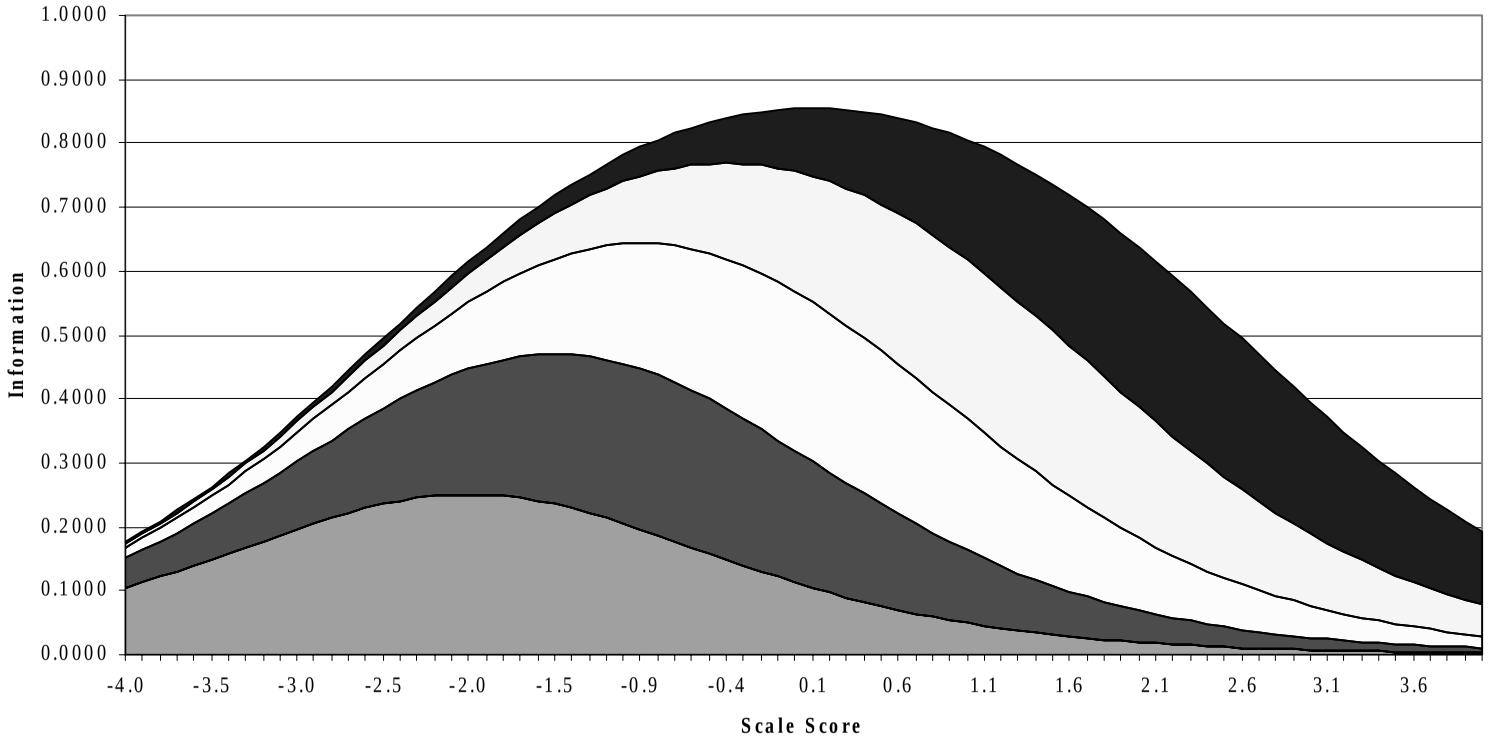
In other words, when a test provides more information about a respondent's ability, that respondent's ability (scale score) is estimated more precisely.

Figures A.8 and A.9 show the test information curves for the hypothetical tests depicted in Figures A.6 and A.7. The curve shown in Figure A.9 has a higher maximum than the curve shown in Figure A.8 (0.96 for the curve shown in Figure A.9, compared to 0.85 for the Figure A.8 curve). This is a result of having the three middle test items much more tightly clustered in the Figure A.9 example than in the Figure A.8 example: the Figure A.9 test provides more information about that part of the ability scale where the test items are clustered.

In both examples, it is clear that the amount of information a test provides about a respondent is a function of that respondent's ability relative to the difficulty of the test items. For example, the test information curve shown in Figure A.8 illustrates how much more information the five-item test provides about a respondent with an ability of 0.1 (where the test information is close to its maximum value of 0.85) than a respondent with an ability of 3.6 (where the test information is only 0.25). In general, the standard error of the estimate of a respondent's scale score is inversely related to the number of test items (longer tests yield more precise estimates than shorter tests) and how well the difficulty of the test items match the ability of the respondent (questions from a second-grade reading test would yield highly imprecise estimates of sixth-grade reading ability).

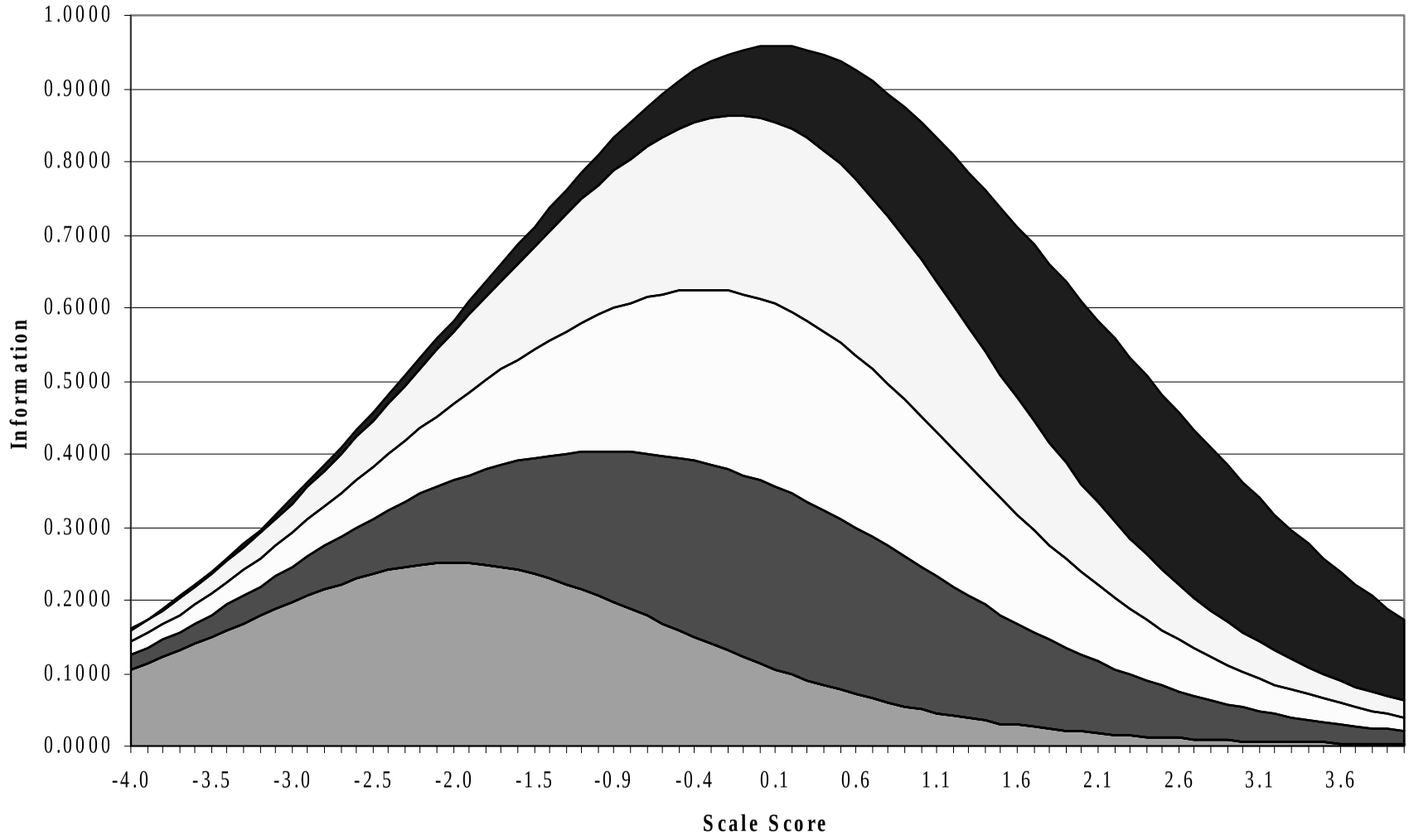
The test information curves for the two versions of the food security test are shown in Figure A.10. The information curve for the 18-item test administered to households with children is above the curve for the 10-item test over the entire range of the food insecurity scale: the 18-item test yields estimates of household food insecurity that are substantially more precise than the 10-item test. The curves also show that the 18-item test attains its maximum information at a more extreme level of food insecurity than does the 10-item test. This happens because the items that ask about

FIGURE A.8
TEST INFORMATION CURVE
Sum of Item Information Curves
5 Equally Spaced Items



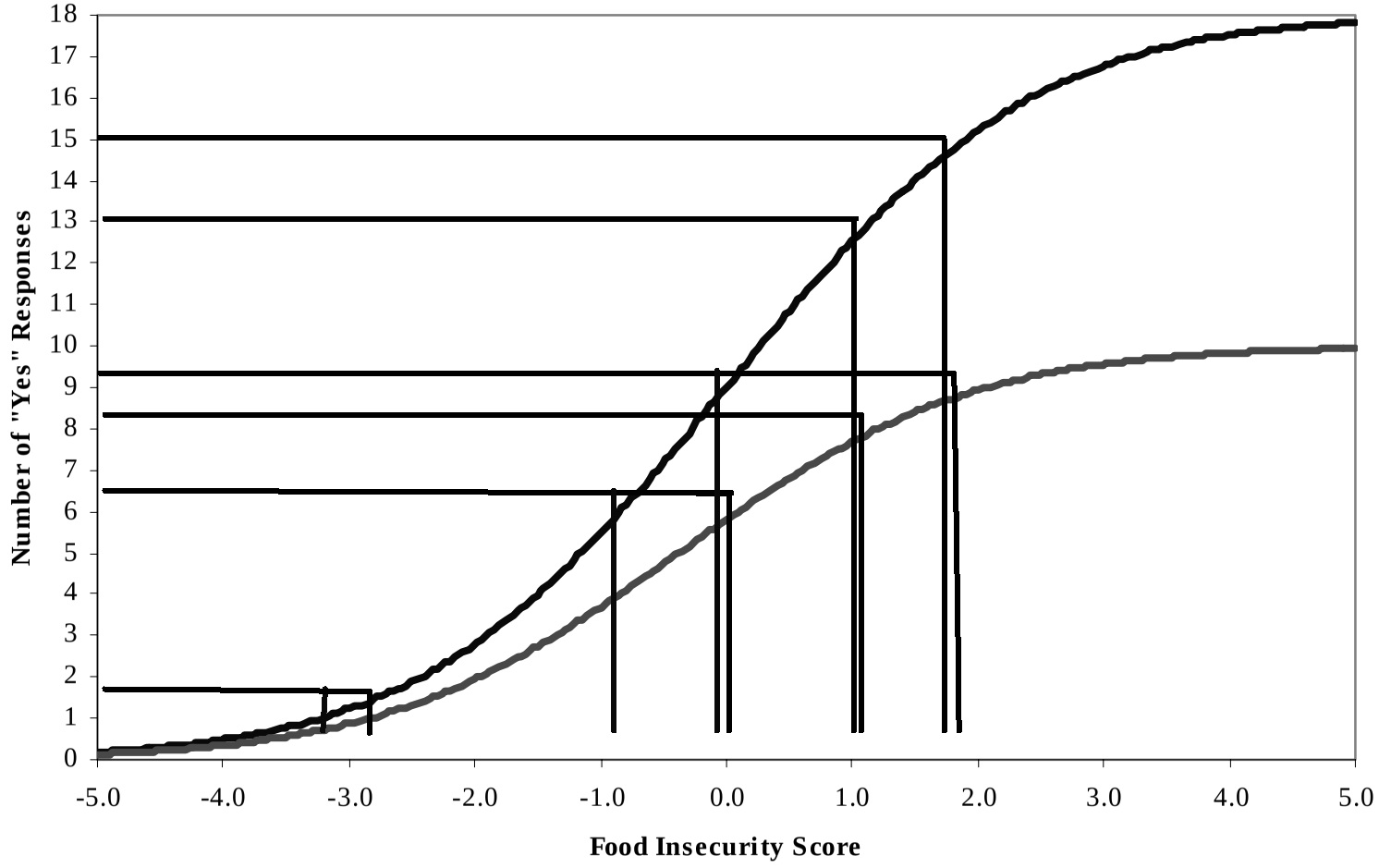
Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.0

FIGURE A.9
TEST INFORMATION CURVE
Sum of Item Information Curves
5 items, 3 Very Close Together



Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.

FIGURE A.10
18- AND 10-ITEM TEST CHARACTERISTIC CURVES
Based on 1995 Item Calibrations



Note: As explained in the text, the exact scaling of the horizontal axis is arbitrary. This figure is centered at 0 for ease of exposition.

children have severity levels that are higher, on average, than the items that do not ask specifically about children.

Mapping Raw Scores to Scale Scores

Another aspect of the Rasch model to note is that, except for respondents who did not answer some of the questions, all respondents with the same raw score are assigned the same scale score, regardless of which items they answered positively.[12] This one-to-one mapping between raw scores and respondent scale scores with the Rasch model means that, when all respondents take the same test and all answer the same questions, the number of correct responses completely determines the scale score assigned to a respondent. Even though the scale scores appear to be drawn from a continuous, interval-level variable, only a small number of actual scores are assigned when the test has a small number of items. If a test has only five items, all respondents answering all the questions (except for those at the extremes with either zero or five correct answers) will be assigned one of four different scale scores because model-based scale scores can be assigned only for those respondents with raw scores from 1, 2, 3, or 4.[13]

Equating Scores from Different Tests

The use of test characteristic curves is the key to scoring respondents on a common scale when they take different tests. Once the difficulty of each test item, relative to every other item, is known,

[12]This can be seen by examining the property noted at the end of Section 2 above—that the test characteristics curves can be used to assign respondent scores based on the number of correct answers to test items.

[13]While the IRT model provides no basis for assigning scores beyond the range of the test, other statistical techniques can sometimes be used. For example, if student scale scores are believed to have a specific distributional form, scale scores can be assigned to students with extreme raw scores so that, when the student scores are combined with the scores assigned by the model, the scores do, in fact, have the *assumed* distribution.

test characteristic curves can be constructed for any combination of those items. Each test characteristic curve translates raw scores—the number of current responses—into scale scores for respondents. Because all test items are calibrated on the same scale, the resulting respondent scores are also on a common scale, even when the tests taken by different respondents have few test items in common.[14]

In the current application, there are basically two different versions of the test: (1) an 18-item test administered to households with children, and (2) a 10-item test administered to households without children.[15] Figure A.10 shows the two resulting test characteristic curves that are used for assigning household scores based on households' responses to the food insecurity questions. Using these curves, a raw score of 9 is mapped to a scale score of about 0.0 for households with children, but is mapped to a scale score of about 2.0 for households without children. Using the upper curve in Figure A.10, households with children are assigned 1 of 17 different scale scores. Using the lower curve, childless households are assigned 1 of 9 different scale scores.

[14]In principle, it is possible to have different tests with no common items. For example, when tests are used to monitor student progress through elementary school, it is possible to test first-grade students and sixth-grade students using separate, grade-appropriate tests that measure student performance on a common scale. For this to work, there must be at least one test with some overlapping content at an earlier stage. In the example of monitoring student progress through elementary school, there would likely be at least one test per year with some overlapping content in each pair of adjacent tests. Item calibrations from those tests establish the relative difficulty of test items. Then, using those calibrations as fixed reference points, all other test items can be calibrated relative to those reference points. Once all items have been calibrated with respect to each other, the scores assigned to students will all be measured on a common scale.

[15]In April 1997, essentially two additional tests were administered. Because of an error in the questionnaire, two of the CPS rotation groups—about a quarter of the sample—were not asked one of the food security questions. For the households affected, this resulted in a 17-question version of the test being administered to households with children, and a 9-question version administered to households without children.

3. ESTIMATION OF RESPONDENT AND ITEM PARAMETERS

Up to this point, the discussion has been about the properties of the IRT model, assuming that the model parameters (or at least the item parameters) were already known. In many applications, the model parameters—both the respondent parameters and the item parameters—need to be estimated. In this section, we briefly describe how those parameters are estimated. Specialized software for estimating these models is readily available and easily used.[16]

Several approaches have been devised for estimating the parameters of the IRT models used here, all of which are different variations of maximum likelihood estimators. The goal in maximum likelihood estimation is to *choose the values of the model parameters that maximize the likelihood of yielding the observed sample*. For example, if a trait has a uniform distribution in the population, then the maximum likelihood estimate for the population mean value is the mean value observed in the sample itself. Any other estimate of the population mean (such as the mean from some other sample, the median from the current sample, or even the mean from a census) would result in a lower likelihood of observing the current sample. One important point to notice in this example is that it begins by assuming a specific distribution for the trait in the population (in this case, the trait is assumed to be uniformly distributed). This is a strong assumption; in many applications, results are not robust to different distributional assumptions that usually cannot be fully tested. An assumption about the underlying distribution is always a necessary starting point in maximum likelihood

[16]For instance: BIGSTEPS Rasch-Model Computer Program, MESA Press, 5835 Kimbark Ave., Chicago IL. 60637-1609. BILOG Scientific Software International, 7833 N. Lincoln Ave., Suite 100, Lincolnwood, IL 60712-1704.

estimation. Maximum likelihood estimators are often not unbiased.[17] However, Rasch model parameters estimated using conditional likelihood procedures are unbiased, consistent, and efficient.

The likelihood expression for the Rasch model uses Equation 1 as its starting point. Equation 1 expresses the probability of a current response by a specific individual to a single test item as a function of that item's difficulty and that person's ability. If U_{ij} is the response (and equals 1 for a correct response, 0 for an incorrect response), then, from Equation 1, we have:

$$(7) \qquad P\ (U_{ij}=1|b_j)=\frac{e^{(b_j-d_i)}}{1+e^{(b_j-d_i)}}=P_{ij}$$

$$P(U_{:i}=0|b_:)=(1-P_{:i})=Q_{:i}.$$

Thus, we represent the probability of a correct response by respondent j to item i as P_{ij}, and the probability of an incorrect response as Q_{ij}. If there are five test items, person j's responses might be something like (1,1,0,1,0). The associated probabilities would be ($P_{1j,}P_{2j,}$ $Q_{3j,}$ $P_{4j,}$ and Q_{5j}). The probability of this specific string of responses would then be the product of the five probabilities—that is, Pr(1,1,0,1,0) = $P_{1j}P_{2j}Q_{3j}P_{4j}Q_{5j}$. Generalizing from this example, the likelihood of a sample is the product of the probabilities across all sample members of each person's response string. The likelihood function, then, has the following form:

$$(8) \quad L=\prod_i\prod_j P_{ij}^{U_{ij}}Q_{ij}^{1-U_{ij}},$$

[17]For example, the maximum likelihood estimator for the variance of a normally distributed variable is $\frac{1}{N}\sum_{i=1}^{N}(\bar{x}-x_i)^2$. An unbiased estimator, however, is $\frac{1}{N-1}\sum_{i=1}^{N}(\bar{x}-x_i)^2$.

where P and Q are defined in Equation 7.

The product over i gives the probability of person i's response string. The product over j multiplies the response string probabilities for everybody who took the test. Rather than maximize Equation 8 directly, the log of the likelihood function is generally used:

$$(9)\quad \ln(L) = \sum_{j}\sum_{i}[U_{ij}\ln(P_{ij})] + [(1 - U_{ij})\ln(Q_{ij})].$$

The goal, then, is to find the values of b_j and d_i that maximize the expression in Equation 9. Generally, the problem is broken into two parts, so that item parameters (d_i) are first estimated (using either marginal or conditional maximum likelihood); then, using those estimated item parameters, the respondent parameters are estimated (using a numerical procedure equivalent to translating raw scores into scale scores, using the test characteristic function). Joint estimation of the item and person parameters is also an option and may be statistically more efficient than the two- stage procedure just described. All these estimation strategies are easily implemented with the current generation of IRT software.

APPENDIX B

METHOD FOR SCREENING HOUSEHOLDS INTO THE FOOD SECURITY ANALYSIS

METHODS FOR SCREENING HOUSEHOLDS INTO THE FOOD SECURITY ANALYSIS

The food security supplements in the 1995-1997 CPS had two general sections. The first section gathered information about food expenditures, participation in several programs aimed at providing food to needy families (for example, food stamps and school meal programs), and the sufficiency of food eaten during the preceding 12 months. The second section gathered more-detailed information about food security and coping behaviors during the previous 12 months and prior 30 days. Not all households were asked this second set of questions, which includes the questions used to construct the food security scale. In order to minimize respondent burden, households who, on the basis of earlier questions, appeared to have a high likelihood of being food secure were excluded from the more detailed questions and were implicitly assumed to be food secure in the analysis.

The screening procedures used to determine which households were asked the second set of questions were different in each of the three CPS samples (1995-1997) analyzed for this report; this section describes the analytic techniques we have developed to put these samples on a consistent basis for analysis purposes. We begin in the next section by providing background information. Then we describe the screening procedures used in each of these three CPS samples and identify a "greatest common denominator" screen. The latter is an analysis "screen" that can be applied uniformly across all the samples, to ensure that the samples used in the analytic work are comparable. (A standard screening procedure, which as been used consistently in all subsequent years, was adopted in 1998.)

Parts of this material overlap with information provided in Chapter IV. However, the discussion here provided additional detail not presented in that earlier, summary treatment.

1. Background

Measuring Income in the CPS Core

As will be described below, the food security supplement screening procedures were based partly on income. Therefore, we begin by describing the income data used.

Income is measured in the CPS core questionnaire, not the food security supplement. The income measure that is a part of the CPS core is quite limited. The only question about income is one that allows only categorical responses, is asked only of the household reference person, and is asked only when the household rotates into the CPS sample (in month 1 and in month 5 of the CPS sample rotation). For all other households, information from the most recent response is carried forward to the current interview month. Income information for replacement households[1] is collected when the household first appears in the CPS sample. The income question is:

> (I am going to read a list of income categories.) Which category represents (your/name of reference person/the total combined income) (total combined income during the past 12 months/of all members of this FAMILY during the past 12 months)? This includes money from jobs, net income from business, farm or rent, pensions, dividends, interest, social security payments, and any other money income received (by members of this FAMILY who are 15 years of age or older).
>
> <1> Less than $5,000
> <2> $5,000 to $7,499
> <3> $7,500 to $9,999
> <4> $10,000 to $12,499
> <5> $12,500 to $14,999
> <6> $15,000 to $19,999
> <7> $20,000 to $24,999
> <8> $25,000 to $29,999
> <9> $30,000 to $34,999
> <10> $35,000 to $39,999
> <11> $40,000 to $49,999
> <12> $50,000 to $59,999
> <13> $60,000 to $74,999
> <14> $75,000 or more

[1]The CPS is designed to visit the same addresses over time, not the same people. When the members of a household move to a new address, they leave the CPS sample (unless they happen to move into another CPS address). The new residents of the CPS address are a replacement household, and are interviewed for that address's remaining, planned interviews.

Defining "Poor" Households in the Food Security Supplement

Screening in the 1995-1997 data depended, in part, on whether households were "poor," as defined by the criteria set up for the screening. Each version of the food security supplement applied different screening criteria to households categorized as "poor" and those categorized as "nonpoor." Here we describe the definitions used. Table B.1 shows the thresholds used to define households as poor. All the supplements used the same set of thresholds. Table B.1 also shows the threshold levels as a percentage of the DHHS Poverty Guidelines published in 1994, 1995, and 1996.[2] Within each year, the thresholds across households of different sizes, up through six people, are nearly constant multiples of the poverty guidelines. For the small number of households with 7, 9, or 10+ members, much higher thresholds were used.

Because thresholds set at constant *nominal* dollars were used over this period, the criteria used to classify households as "poor" were increasingly stringent (in *real* terms) over time, as shown in the decreasing percentages across rows of Table B.1. Because the categories for the CPS income variable are fixed at the same nominal levels across the three CPS samples, it is not possible to apply an income screen at a constant *real* value.

Even with the limitations noted, however, it is a fair approximation to describe the "poor" (or low-income) households as those reporting incomes less than about 200 percent of the poverty guideline.

Measuring Food Sufficiency

Several different versions of the basic food sufficiency questions were administered, but the general form of them is the same. All ask about household experiences over the prior 12 months and

[2]The DHHS Poverty Guidelines are widely used to determine program eligibility (for example, by the Food Stamp Program, WIC, and the National School Lunch Program).

TABLE B.1

THRESHOLDS USED TO CLASSIFY HOUSEHOLDS AS "POOR" AND DHHS POVERTY GUIDELINES AT TIME OF SURVEY

Household Size	"Poor" if Family Income Below (in Dollars):	Threshold as a Percent of Poverty Guideline			
		1994	1995	1996	1997
1	15,000	204	201	194	190
2	20,000	203	199	193	189
3	25,000	203	199	193	188
4	30,000	203	198	192	187
5	35,000	203	198	192	186
6	40,000	202	197	192	186
7	50,000	225	219	213	207
8	50,000	202	197	192	186
9	60,000	221	215	209	202
10+	75,000	253	246	239	232
Average		212	207	201	195
Average for Households With 6 or Fewer Persons		203	199	193	188

ask the respondent (the household reference person) to choose the statement that best describes the household's experience. The response categories are:

1. Enough of the kinds of food we want to eat
2. Enough but not always the kinds of food we want to eat
3. Sometimes not enough to eat
4. Often not enough to eat
5. Don't know
6. Refused
7. No response

In the following discussion of screening procedures, we will refer to response 2 as "Not always the kind of food we want." Responses 3 and 4 will be referred to jointly as "Sometimes or often not enough to eat."

Two other related items were also used in the screening process. One item asks:

> "In the last 12 months, did you ever run short of money and try to make your food or your money go further?"

We will refer to this item as "Ran short of money." The second item asks:

> "In the last 12 months, did you ever run out of the foods that you needed to make a meal and didn't have enough money to get more?"

We will refer to this item as "Ran out of food."

Across the 1995-1997 supplements, these items were combined at various times and with various groups of households to create two screens:

Screen 1

- Sometimes or often not enough to eat; **or**
- Ran out of food; **or**
- Not always the kind of food we want **and** ran short of money.

Screen 2

- Sometimes or often not enough to eat; **or**
- Ran out of food; **or**
- Not always the kind of food we want; **or**
- Ran short of money.

Note that the screens are identical except that, under Screen 1, it is necessary to *both* not eat the kind of food we want *and* run out of money, whereas *either* condition is sufficient under Screen 2. Thus, Screen 2 is more liberal, allowing more households to pass, while Screen 1 is more restrictive.

2. Application of the Screens

Table B.2 summarizes the screening procedures used in each of the CPS samples:

TABLE B.2

CRITERIA USED IN 1995-1997 SURVEYS TO SCREEN HOUSEHOLDS INTO THE FOOD SECURITY MODULE

	"Poor" Households	"Nonpoor" Households
April 1995	All "poor" households entered the sample.	Screen 1
September 1996	Screen 2	Rotation groups 1, 2, 3, 5, 6, 7: Screen 1 Rotation groups 4 and 8: Screen 2.
April 1997	Screen 2	Rotation groups 1, 5, and 7: Screen 1. Rotation groups 2, 4, 6, and 8: Screen 2. Rotation group 3 used an incorrect variant of Screen 1.[3]

Note: See text for definitions of screens.

[3]Households reporting any one of the following passed the (incorrect) screen: 1. Sometimes not enough to eat (incorrectly omitting "often not enough to eat") ; or 2. Ran out of food in last 12 months; or 3. Enough to eat (instead of "Not always the right kind of food") and ran short of money.

The procedures were designed to screen out households that showed no indication of any food insufficiency. A household passing the applicable screen was asked the remaining questions in the food security supplement. In effect, to avoid the food-security questions a household had to say "No" to all screening questions. Households that had missing data for the screening items (including "Don't know" or "Refused" responses) passed the screen.

3. A Consistent Screen for 1995-1997

Applying consistent screening procedures across all the CPS samples is important in two different contexts. First, to the extent that estimated item parameters differ across the three CPS samples, it is important to know whether those differences reflect changes, over time, in how the items are functioning or differences in the composition of the population responding to those items.[4] Second, to the extent that estimates of the prevalence of food insecurity and hunger differ across the CPS samples, it is important to know whether those changes reflect real changes, over time, in prevalence or differences in the size (and composition) of the population for which the condition was measured.

To allow consistency in the analysis, we have developed an algorithm for screening households that can be applied uniformly across the 1995-1997 CPS samples. All households failing to pass the screen are categorized as food secure and are assigned the same score as households that answered "No" to all the applicable food-security questions. The screen is the following:

"Pass into the sample if

(a) household is poor and passes Screen 2, or

[4]The concern here is with changes in the composition of the responding population that are an artifact of the screening procedures used, rather than those that reflect real changes in population composition.

(b) household is not poor and passes Screen 1"

4. A "Tighter," Consistent Screen

The common screen described above utilizes the CPS income data to determine exactly which screening criteria to apply to a case. However, as noted in Section 1, there are significant limitations in the quality of these income data. Therefore, a different, considerably "tighter" screen was considered in parts of the analysis, which consisted of applying "Screen 1" regardless of income. However, this screen has not been used in the main parts of the analysis because of the loss of sample size involved in applying it.

5. Impacts on Prevalence Estimates

Relative to the other assumptions, conventions, and choices of analysis procedures discussed in this report, the screening conventions described above tend to have relatively substantial impacts on estimates of food security prevalence. Table B.3 compares the basic prevalence estimates based on the common screen presented earlier with "full sample" estimates, based on all the available information. Since, in certain cases, the imposition of the common screen essentially involves automatically coding the food security answers to be negative (that is, to indicate no evidence of food insecurity), the imposition of the common screen must, by definition, lead to higher estimated prevalences of food security. As shown in the table, estimated rates of food security are reduced by approximately 1 to 1.5 percentage point when the maximum samples are used rather than the samples defined by the common denominator.

How the differences in prevalence should be interpreted depends on one's view of the accuracy of the information contained in the cases that were screened out. Since these screened-out cases are

TABLE B.3

FOOD SECURITY PREVALENCE ESTIMATES WITH ALTERNATIVE DEFINITIONS OF THE ANALYSIS SAMPLE

Using Alternative Household Screening Conventions
(Entries are Percentages)

		Food Insecure		
	Food Secure	All	Without Hunger	With Hunger
1995				
Common Denominator Sources	89.6	10.3	6.4	3.9
Maximum Sample	88.1	11.8	7.6	4.2
1996				
Common Denominator Sources	89.5	10.5	6.4	4.1
Maximum Sample	88.6	11.3	7.0	4.3
1997				
Common Denominator Sources	91.2	8.8	5.7	3.1
Maximum Sample	90.3	9.6	6.4	3.2

households with relatively higher income and/or little evidence of food insufficiency, it is possible that some of the households that answered affirmatively to 3 or more of the detailed 18 items of food security information may, for some reason, have been confused or gave misleading answers. In this case, using the lower food security estimates, based on the common screen, may be appropriate. On the other hand, to the extent that the answers given by these screened-out households are accurate, the "full sample" estimates may provide a better picture of food security in America. Our decision to focus on the estimates based on the common screen was based principally on the importance of having a consistent measure of food security *over time*. It does not reflect any assessment of which of the two sets of estimates more accurately reflects the underlying phenomenon of interest.

APPENDIX C

IMPUTING MISSING FOOD SECURITY DATA

IMPUTING MISSING FOOD SECURITY DATA

More than 99 percent of the households in the 1995-1997 CPS data sets have complete responses to the questions used to construct the Food Security Index.[1] The remaining households, however, must either be dropped from the analysis or have their missing items imputed. This section discusses two alternative approaches to dealing with item nonresponse and describes the approach used in the current study.

1. Alternative 1: Using the Rasch Model to Impute Missing Items

As long as at least one relevant question has been answered, the Rasch model is capable of estimating a food security level for a household with missing data, as part of its maximum likelihood estimation approach. However, a potential drawback of using an imputation approach based on the Rasch model is that, when the number of unanswered questions is large, the standard error of the estimated household food security level tends to become large; and, in some cases, the estimated household score can lack face validity, in terms of the questions on which they are based. Hamilton et al. (1997) dealt with this problem by estimating scores only for those households with at least half the relevant items answered (9 out of 18 items for households with children, and 5 out of 10 items for households without children).

Another drawback of using the Rasch model for imputation is that it fails to use all the available data. Under quite general assumptions, it is reasonable to believe that imputation accuracy can be improved by drawing *both* on information about the answers to the food-security questions

[1]The percentage in the text ignores the problem created by answers to questions on one item in 1997, where the item was incorrectly administered to about 25 percent of the sample.

with valid answers *and* on available data on household characteristics. The Rasch approach ignores the latter source of information.[2]

Another issue in using the Rasch model to estimate household scores for households with missing data is that the approach requires the user to have available software for estimating the Rasch model. While such software is relatively easy to obtain, this may present an obstacle to some users who do not already have this software up and running for other purposes.

2. Alternative 2: An Algorithm Based on Modality Assumptions for Imputing Missing Data

An alternative approach to dealing with missing responses to food security items is to impute responses outside the Rasch model, then treat the households as complete data households when assigning scores and categories. This method--which, with one exception, noted below, is the one used in the present study--has the advantages: (a) it can be specified so as to ensure that imputations have face validity; and (b) it can be implemented without Rasch software, thus increasing its accessibility. Below, we describe the algorithm we have used, first in intuitive terms and then more formally.

The basic imputation approach relies on the notion that the most sensible response patterns are those that are "modal." That is, if the questions are ordered by their severity levels, households with any affirmative responses tend to answer affirmatively to the items with the lowest severity levels and then at some point begin answering negatively to the more severe items. In this context, our imputation method assumes that, as a general rule, the highest affirmative answer indicates the household's true level of food insecurity, and the method fills in missing data below that affirmative with other affirmatives and missing data above the highest affirmative with negatives. *There is,*

[2]The approach used in the current study, as described later in the text, also ignores this information.

however, an important exception to this general rule. If there is a negative answer below the highest affirmative answer, then the imputation takes this as suggesting a lower overall level of food insecurity than that implied by the highest affirmative. In the latter case, the algorithm selects the lowest negative response and fills in affirmatives for missing data below that negative response and negatives above it.

A more formal statement of this algorithm was presented in Chapter IV of the text of the report as Exhibit IV.1.

3. Details of Procedures Used in Current Analysis

In general, in the work summarized in this report, we have used the imputation method outlined immediately above, in Subsection 2. This method is substantially easier to implement than the Rasch-based approach, and the differences in analysis results are negligible, given (a) the small number of cases involved, and (b) that both methods tend to yield similar classifications of households.

There is one exception, however. In the 1997 sample, roughly a quarter of the cases were incorrectly asked one of the questions. For these cases, we first implemented the imputation algorithm in Section 2 above, ignoring the question that had been asked incorrectly (Question 35; "Respondent was hungry but didn't eat"). We then used Rasch model software to calculate continuous food security scores for those households, using the standard item calibrations utilized throughout this study. These numerical scores were then translated into food security categories, based on the table relating numbers of answers to continuous scores and food security categories.[3]

[3]In converting the continuous scores of these households into food security categories, we used the midpoints of the boundary categories as the cutpoints.

APPENDIX D

HOW "MODAL" ARE HOUSEHOLD RESPONSE PATTERNS?

HOW "MODAL" ARE HOUSEHOLD RESPONSE PATTERNS?

The Rasch model implies that many households will exhibit item response patterns that are reasonably "modal," in the sense that if a household answers "yes" to any of the items, it will tend to answer "yes" to the least severe items first, and then answer "no" to all of the more severe items. A household that exhibits this pattern exactly—a string of all "yes" answers followed by a string of all "no" answers--is said to be a "modal" household. There is nothing in the Rasch theory that predicts that all households will be modal; (indeed, the probabilistic Rasch model cannot be estimated if all households are exactly modal). Still, it is of interest in understanding the data to examine the degree of modality that is present. A large number of strongly nonmodal response patterns could call into question the validity of the model.

A. NUMBER OF RESPONSE CHANGES TO MAKE HOUSEHOLD MODEL.

One approach to examining the degree to which households exhibit modal answers is to calculate for each household the minimum number of answers that would have to be different in order to make the household responses be modal. Of course, if the household's answers are already perfectly modal, then the number of answers that would have to be changed is zero. However, consider, as an example, a household with the following response pattern: three "yes" answers, then a "no," then a "yes," then all "no's." For such a household, only one item (the first "no" or the last "yes") would have had to be changed to make the response pattern modal. Similarly, to take a second example, suppose a household has two "no" answers, then four "yes" answers, then all "no," answers. It would require at least two changes (the first two "no" answers) to make the household modal.

Table D.1 tabulates the minimum number of answer changes required to make the households in the 1997 sample modal. It shows that 39 percent of the households in the 1997 data are perfectly modal. For another 36 percent there is only one discrepancy between their scores and a modal pattern. Fifteen percent have two such discrepancies, while 9 percent have three or more. Overall, this suggests substantial adherence to modal response patterns.[1]

Households without children appear to exhibit greater modality than those with children. However, this may be due to the fact that there are many fewer questions applicable to the group without children (10, rather than 18, for households with children), and hence fewer opportunities for nonmodality.

Table D.2 presents a more detailed look at these issues, focusing on households with children. The central section of the table shows, for each possible number of "yes" answers, the frequency distribution of the *highest* item (in terms of severity) to which the nonmodal households with children answered "yes." For instance, the fifth row shows that, when one considers the 233 nonmodal households that gave 5 "yes" answers, for 57 of them, the highest "yes" answer was on Item 6, while for another 44, the highest "yes" answer was Item 7, and so on.

The shading in the table reflects the fact that certain cell entries are logically impossible—if, for instance, there are five "yes" answers, the highest nonmodal item with a "yes" answer cannot come before the sixth item. To the extent that the nonmodal households are "almost" modal, we would expect households to be clustered just to the right of the shaded area. For instance, using a

[1]Of course, for a household with just one nonmodal answer, that answer could be severely nonmodal (a "no" at the beginning of a long string of "yes" answers, or a "yes" many items after the previous "yes"). We examine the severity of nonmodality shortly.

TABLE D.1

PERCENT OF HOUSEHOLDS BY THE MINIMUM NUMBER OF NONMODAL RESPONSES TO THE FOOD SECURITY ITEMS
(Percentages; 1997 Data)

Number of Nonmodal Responses[a]	All Households	Households Without Children	Households With Children
0	39	50	30
1	36	38	33
2	15	9	21
3	6	2	9
4	2	0	4
5	1	0	2
6+	0	0	1
Total	100	100	100

[a] Minimum number of responses that would have to be changed for the household to be modal.

TABLE D.2

ANALYSIS OF MODALITY BY NUMBER OF YES RESPONSES TO FOOD SECURITY ITEMS
(1997 Data: Unweighted Households with Children)

	ALL		MODAL		NONMODAL - HIGHEST YES RESPONSE ITEM																	NONMODAL	
Number of Yes	HH	%	HH	%	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	HH	%
1	600	20.4%	367	42.5%	56	69	82	7	7	11	0	0	1	0	0	0	0	0	0	0	0	233	11.2%
2	485	16.5%	204	23.6%		77	111	22	16	38	4	4	4	1	3	1	0	0	0	0	0	281	13.5%
3	372	12.6%	104	12.0%			117	30	29	54	15	11	6	2	2	1	1	0	0	0	0	268	12.9%
4	320	10.9%	72	8.3%				18	71	75	42	15	9	5	7	2	2	0	0	1	1	248	11.9%
5	241	8.2%	8	0.9%					57	44	48	32	20	12	6	10	0	2	0	2	0	233	11.2%
6	236	8.0%	8	0.9%						35	48	98	14	9	9	3	3	6	1	2	0	228	11.0%
7	178	6.0%	10	1.2%							39	49	30	22	6	8	5	5	3	1	0	168	8.1%
8	132	4.5%	33	3.8%								20	22	24	10	10	4	7	0	2	0	99	4.8%
9	129	4.4%	32	3.7%									21	17	15	4	12	19	4	4	1	97	4.7%
10	68	2.3%	10	1.2%										4	14	2	15	16	2	5	0	58	2.8%
11	62	2.1%	7	0.8%											8	2	14	15	9	5	2	55	2.6%
12	44	1.5%	1	0.1%												1	10	16	5	11	0	43	2.1%
13	28	1.0%	0	0.0%													5	12	1	8	2	28	1.3%
14	22	0.7%	0	0.0%														7	2	10	3	22	1.1%
15	14	0.5%	5	0.6%															1	5	3	9	0.4%
16	8	0.3%	0	0.0%																4	4	8	0.4%
17	2	0.1%	0	0.0%																	2	2	0.1%
18	3	0.1%	3	0.3%																		0	0.0%
TOTAL	2,944	100.0%	864	100.0%	56	146	310	77	180	257	196	229	127	96	80	44	71	105	28	60	18	2,080	100.0%
					2.7%	7.0%	14.9%	3.7%	8.7%	12.4%	9.4%	11.0%	6.1%	4.6%	3.8%	2.1%	3.4%	5.0%	1.3%	2.9%	0.9%		

previous example, a household with five "yes" answers that has the sixth item as its highest "yes" answer has only one nonmodal answer in its overall string of answers. For most rows in the table, nonmodal households do cluster near the shaded diagonal, suggesting that the nonmodal response patterns are not severely nonmodal. About 47 percent of nonmodal households are in the first two off-diagonal cells, and an additional 22 percent are in the third cell.

B. BOUNDS ON THE EFFECTS OF NONMODALITY ON PREVALENCE ESTIMATES.

A useful way to understand the implications of nonmodal response patterns is to assess their effects on prevalence estimates. Accordingly, in this section, we calculate for each household the minimum and maximum food-insecurity levels that can be obtained by making the household's response pattern modal (Table D.3). To obtain the minimum insecurity level, we classify a household based on the items before its first "no" answer. This effectively converts all higher "yes" answers to "no" answers, giving a modal pattern. To obtain the maximum insecurity level, we classify a household based on the items up to and including its last "yes" answer. This effectively converts all lower "no" answers to "yes" answers, again giving a modal pattern.

Consider, as an example, a household with children that answers "yes" to the first two items, "no" to the third and fourth items, "yes" to the next four items, and "no" to the last ten items (for six "yes" answers in all). For this household, the minimum food insecurity level is based on the modal pattern of "yes" to the first 2 items and "no" to the last 16 items. The maximum food insecurity level is based on the modal pattern of "yes" to the first 8 items and "no" to the last 10 items.[2] Likewise,

[2]In contrast, the Rasch model would assign this household the same insecurity score as any other household with six "yes" answers (and no missing responses), effectively treating it as though it had the modal response pattern of "yes" to the first 6 items and "no" to the last 12.

TABLE D.3

MINIMUM AND MAXIMUM FOOD INSECURITY PREVALENCE ESTIMATES
(Percent of Households)

Food Security Status	Base Estimate	Estimate Involving Minimum Estimate of Food Insecurity	Estimate Involving Maximum Estimate of Food Insecurity
1995			
Food Secure	89.6	90.47	87.30
Food Insecure, Hunger Not Evident	6.4	6.67	6.03
Food Insecure, Hunger Evident	3.9	2.66	6.66
Food Security Status Not Determined	0.1	0.20	
1996			
Food Secure	89.5	90.50	87.22
Food Insecure, Hunger Not Evident	6.4	6.55	6.14
Food Insecure, Hunger Evident	4.1	2.69	6.64
Food Security Status Not Determined	0.1	0.26	
1997			
Food Secure	91.2	92.00	88.21
Food Insecure, Hunger Not Evident	5.7	5.75	4.01
Food Insecure, Hunger Evident	3.1	2.09	7.79
Food Security Status Not Determined	0.1	0.16	

NOTES: To compute the maximum estimate of food insecurity, households were classified based on the most severe item with "yes" response.

To compute the minimum estimate of food insecurity, households were classified based on the most severe "yes" item preceding the least severe "no" response.

Percentages may not add to 100 due to rounding.

when every household is classified at its maximum food insecurity level, the overall prevalence of insecurity is at a maximum. In each of the three years, going to the "minimum insecurity" scenario tends to raise the proportion of households that are classified as food secure by about 1 percentage point compared to the "base" estimates, and there is a decrease in the proportion classified as experiencing hunger of between 1 and 2 percentage points. Going to the scenario with "maximum insecurity" raises the proportion with hunger by between 2 and 5 percentage points, depending on the year.

Interestingly, the scenario that involves the minimum food insecurity category causes the proportion of households in the middle category--food insecure without hunger--to go up in each of the three years. This is because more households move into this category from the most severe category than leave it to enter the food secure category.

APPENDIX E

ITEM SEVERITY LEVELS BY SUBGROUPS

ITEM- SEVERITY LEVELS, BY SUBGROUPS

In addition to examining the stability of the model parameters over time, it is important to examine model stability for key subgroups in the population, in order to test whether the data support the aggregation of various components of the population into a single model, as has been done so far in the discussion. Here, we report findings from estimating models for subsets of households classified by (1) race/ethnicity; (2) household composition, including the presence of children; (3) metropolitan versus nonmetropolitan locations; and (4) region.

Our overall conclusions are that the results obtained from the Rasch model are reasonably robust when examined by subgroup. The next section presents our results for the race/ethnicity classification in some detail; we then more briefly review the findings from the other groupings. We focus on the race/ethnicity classification because of its intrinsic importance and because we anticipated prior to the analysis that the differences between groups might be most pronounced with this classification.

1. Findings When Households Are Classified by Race

Table E.1 presents the raw item scores for 1997 for the 18 questions used in the food security scale—first, for all households, then for each of four race/ethnicity subgroups. For purposes of comparison, these scores have been normalized, using the standard procedures summarized in Chapter II of the main report. They are estimated based on the 1997 CPS data, using the common screen.

Table E.2 summarizes the order of severity in which each item enters the model, both for the sample as a whole and for each of the subgroups, defined by ethnicity. Table E.3 shows the

TABLE E.1

THRESHOLD PARAMETER ESTIMATES FOR 18-ITEM 12-MONTH FOOD SECURITY SCALE
BY RACE/ETHNIC GROUP

April 1997 CPS Data, Common Denominator Screen

	Model									
	Constrained		Unconstrained							
	All Households		White		Black		Hispanic		Other	
Item	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err
50	11.284	0.245	11.599	0.561	10.805	0.684	11.527	0.815	12.372	2.244
44	9.873	0.187	10.301	0.232	9.833	0.287	9.301	0.431	10.000	0.725
43	9.293	0.170	9.647	0.183	9.075	0.186	8.890	0.392	10.000	0.725
29	8.999	0.073	8.735	0.106	9.363	0.137	9.196	0.259	9.013	0.466
47	8.957	0.111	8.870	0.139	9.025	0.237	9.186	0.233	8.346	0.350
28	8.516	0.072	8.286	0.115	8.716	0.106	8.899	0.165	8.182	0.342
40	8.564	0.087	8.754	0.133	8.526	0.232	8.125	0.120	9.470	0.724
38	8.168	0.087	7.852	0.108	8.474	0.201	8.688	0.232	7.958	0.394
35	7.297	0.060	6.859	0.097	7.871	0.140	7.911	0.155	6.955	0.244
57	6.915	0.094	7.354	0.093	6.701	0.168	6.213	0.235	6.818	0.327
25	6.463	0.054	6.279	0.079	6.577	0.104	6.692	0.129	6.223	0.252
32	5.663	0.036	5.437	0.075	5.804	0.108	5.943	0.144	5.542	0.258
56	5.818	0.075	5.941	0.102	5.763	0.163	5.478	0.228	5.478	0.304
24	5.586	0.047	5.316	0.070	5.756	0.107	5.996	0.133	5.400	0.303
58	4.522	0.057	4.548	0.066	4.419	0.139	4.316	0.257	4.664	0.346
55	4.079	0.066	4.059	0.097	4.064	0.152	3.875	0.172	3.700	0.404
54	3.700	0.070	3.847	0.075	3.277	0.124	3.365	0.294	3.791	0.430
53	2.306	0.087	2.316	0.112	1.952	0.170	2.400	0.244	2.092	0.699
Mean	7.000		7.000		7.000		7.000		7.000	
Std Dev	2.413		2.481		2.475		2.473		2.651	
Sample size	5,429		3,347		1,079		779		225	

TABLE E. 2
ITEM ORDERING FOR RACE/ETHNIC GROUPS AND FULL POPULATION
April 1997 CPS, 12-Month Scale

	Question	Full Population	White	Black	Hispanic	Other
q50	Child not eat whole day	1	1	1	1	1
q44	Child skipped meal, 3+ months	2	2	2	2	2
q43	Child skipped meal	3	3	4	6	2
q29	Adult not eat whole day, 3+ months	4	6	3	3	5
q47	Child hungry	5	4	5	4	6
q28	Adult not eat whole day	7	7	6	5	7
q40	Cut size of child's meals	6	5	7	8	4
q38	Adult lost weight	8	8	8	7	8
q35	Adult hungry but didn't eat	9	10	9	9	9
q57	Child not eating enough	10	9	10	11	10
q25	Adult cut size or skipped meals, in 3+ months	11	11	11	10	11
q32	Adult eat less than felt they should	13	13	12	13	12
q56	Couldn't feed child balanced meals	12	12	13	14	13
q24	Adult cut size or skipped meals	14	14	14	12	14
q58	Adult fed child few low cost foods	15	15	15	15	15
q55	Adult not eat balanced meals	16	16	16	16	17
q54	Food bought didn't last	17	17	17	17	16
q53	Worried food would run out	18	18	18	18	18

Based on weighted 1997 data using BilogMG calibrations.

TABLE E.3

CROSS-GROUP DIFFERENCES IN THRESHOLD PARAMETER ESTIMATES
BY RACE/ETHNIC GROUP

April 1997 CPS Data, Common Denominator Screen

	Black - White			Hispanic - White			Other - White		
Variable	Estimate	Std Err	Pr(|T|>|t|)	Estimate	Std Err	Pr(|T|>|t|)	Estimate	Std Err	Pr(|T|>|t|)
50	0.794	0.731	0.278	0.072	1.023	0.944	-0.773	2.391	0.747
44	0.468	0.354	0.187	1.000	0.503	**0.047**	0.302	0.744	0.685
43	0.573	0.209	**0.006**	0.757	0.396	0.056	-0.352	0.693	0.611
29	-0.628	0.188	**0.001**	-0.460	0.283	0.104	-0.278	0.424	0.512
47	-0.155	0.290	0.594	-0.316	0.214	0.141	0.524	0.366	0.153
28	-0.430	0.161	**0.008**	-0.613	0.213	**0.004**	0.104	0.325	0.750
40	0.229	0.246	0.352	0.629	0.204	**0.002**	-0.715	0.763	0.349
38	-0.622	0.221	**0.005**	-0.837	0.243	**0.001**	-0.107	0.430	0.804
35	-1.012	0.179	**0.000**	-1.052	0.189	**0.000**	-0.096	0.272	0.725
57	0.654	0.183	**0.000**	1.141	0.195	**0.000**	0.536	0.329	0.104
25	-0.298	0.114	**0.009**	-0.413	0.147	**0.005**	0.056	0.290	0.846
32	-0.367	0.141	**0.009**	-0.506	0.183	**0.006**	-0.105	0.290	0.718
56	0.178	0.172	0.300	0.463	0.261	0.077	0.464	0.325	0.154
24	-0.441	0.130	**0.001**	-0.680	0.132	**0.000**	-0.084	0.305	0.783
58	0.129	0.147	0.381	0.232	0.252	0.357	-0.116	0.356	0.745
55	-0.005	0.153	0.975	0.185	0.195	0.344	0.360	0.424	0.397
54	0.569	0.129	**0.000**	0.482	0.269	0.074	0.056	0.424	0.895
53	0.364	0.188	0.053	-0.084	0.233	0.717	0.224	0.686	0.744

difference between estimated parameters, as well as estimates of the statistical significance of the differences.

When the item orderings for Black households are compared to those for Whites, half of the items remain in exactly the same locations. Most of the remaining items differ in order between the two groups by only one or two places. (For instance, Item 40 is ordered at position 15 in the analysis for the White sample and position 17 for the Black sample.) Only one item, Item 29, changes by more than two places. Similar patterns holds when comparisons are made between the White sample and the Hispanic sample.

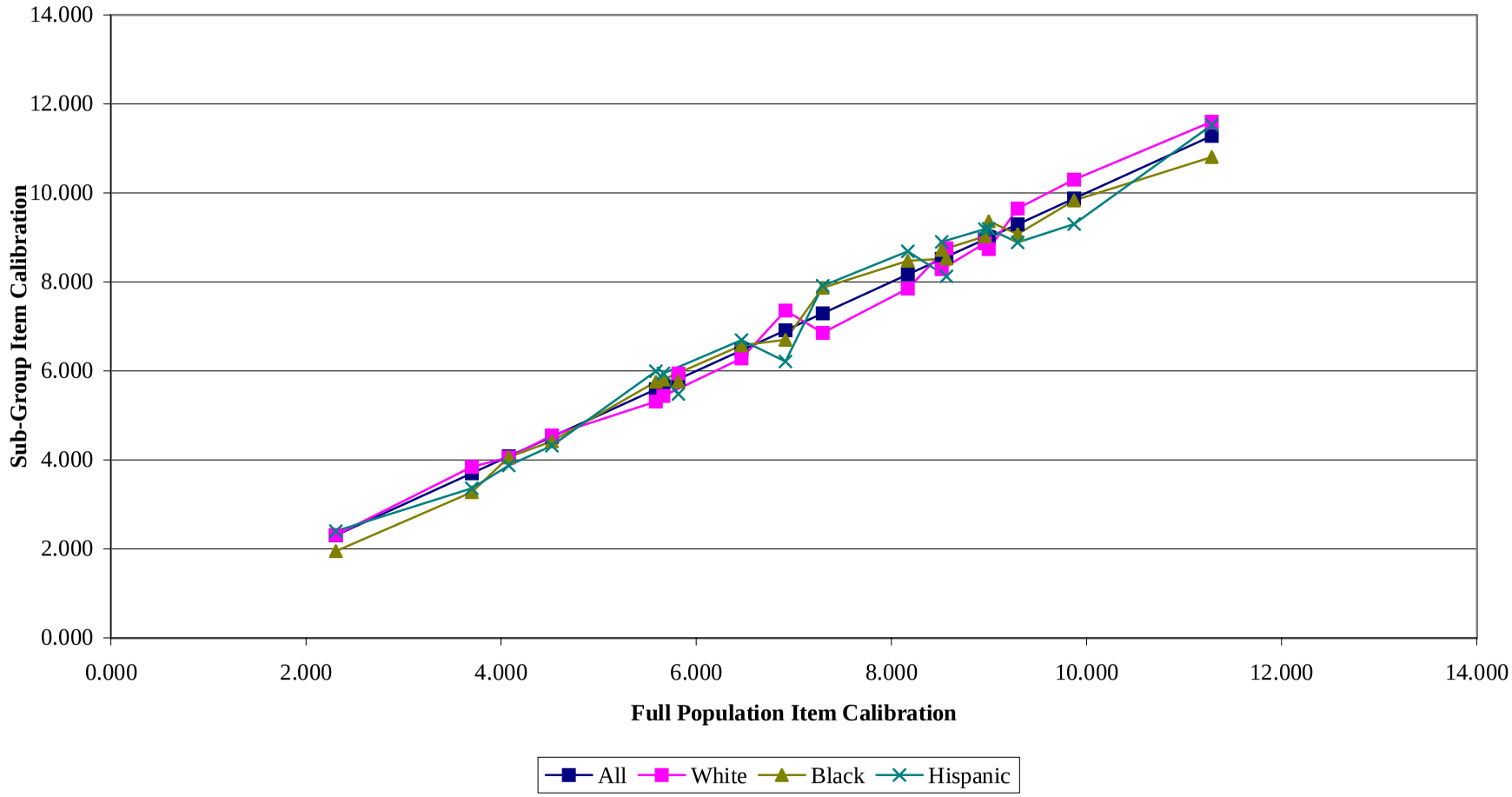
As shown in Table E.3, about half the Black-White differences and more than half of the Hispanic-White differences are statistically significant. However, in general, the differences are relatively modest.

Figure E.1 provides a visual representation of the calibration of each item for the full sample, as plotted against each subgroup calibration. For instance, the lowest point designated with a triangle indicates that, for the least severe item (Item 53) the Black subgroup parameter for that item is slightly below the calibration of the full group or the other subgroups.[1] The closeness with which the lines in the figure track each other provides an additional way of confirming that the separately estimated item parameters for the different racial/ethnic groups are very similar to each another.

Despite the heuristic appeal of both the tabular and the graphic comparisons of the item calibrations across groups, what really matters, we believe, is whether differences of the type and size we are observing are likely to have any substantial effects on the overall food security measurement process. Given the complexity of the issues underlying this question, there appears

[1]The horizontal coordinate of the triangle discussed in the text is the location of the least severe item (Item 53) when parameters are estimated using the full sample. The vertical coordinate of the diamond is the location of the parameter when the estimation is done only over the Black subsample.

FIGURE E.1
ITEM CALIBRATIONS FOR 3 RACE/ETHNIC GROUPS
vs. Full Population Item Calibrations
April 1997
CPS, 12-Month Scale



not to be a definitive, formal statistical test available to answer it. Therefore, we have appealed to the judgment of the two members of the project Advisory Committee, Benjamin Wright and Robert Mislevy, who have extensive experience using this type of model in a broad range of applications. Both have expressed the view that differences across subgroups of the magnitude shown in the above tables are not large enough to seriously interfere with the measurement process that we are pursuing.

Therefore, we have concluded that, on balance, the results of our analysis by race/ethnicity subgroup tend to support the overall modeling exercise being undertaken.

2. Other Findings

The rest of the tables in this section present comparable analysis results for several other subgroup classifications. Three tables and a figure are presented for each. In general, the observed differences across subgroups are either similar to, or smaller than, the differences for race/ethnicity.

Household composition. When a similar analysis is done, based on household composition, the item order for the subgroups track very closely with each other, with no item changing its order by more than one place (Tables E.4, E.5, E.6, and Figure E.2). In general, as shown in Table E.4, the estimated absolute values of the items for households without children tends to be higher than those for households with children. However, this arises from the arbitrary scaling convention of ensuring a mean of 7 for the items, coupled with the fact that the 10 items applicable to households without children happen, on average to be of lower than average severity.[2]

Metropolitan status. When the analysis is disaggregated according the metropolitan versus nonmetropolitan residence, ten of the items stay in the same positions across the two relevant

[2]The ten items applicable to households without children have an average value of 6.077 in the estimates for all households with children, as compared to the average of 7.000 for the entire set of 18 items.

TABLE E.4

THRESHOLD PARAMETER ESTIMATES FOR 12-MONTH FOOD SECURITY SCALE
BY HOUSEHOLD TYPE

April 1997 CPS Data, Common Denominator Screen

	Model							
	Constrained		Unconstrained					
	All Households		Kids		Elderly		Others	
Item	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err
50	11.284	0.245	11.211	0.246				
44	9.873	0.187	9.819	0.184				
43	9.293	0.170	9.247	0.168				
29	8.999	0.073	8.926	0.099	10.103	0.161	10.070	0.132
47	8.957	0.111	8.915	0.111				
28	8.516	0.072	8.478	0.096	9.753	0.160	9.481	0.113
40	8.564	0.087	8.528	0.086				
38	8.168	0.087	8.328	0.145	9.401	0.168	8.861	0.090
35	7.297	0.060	7.233	0.082	8.763	0.135	8.157	0.077
57	6.915	0.094	6.904	0.096				
25	6.463	0.054	6.598	0.066	7.188	0.122	7.273	0.062
32	5.663	0.036	5.720	0.046	6.416	0.070	6.560	0.104
56	5.818	0.075	5.818	0.078				
24	5.586	0.047	5.690	0.062	6.649	0.111	6.250	0.066
58	4.522	0.057	4.530	0.061				
55	4.079	0.066	4.323	0.070	4.244	0.191	4.860	0.088
54	3.700	0.070	3.715	0.094	4.390	0.144	4.675	0.095
53	2.306	0.087	2.017	0.102	3.092	0.164	3.813	0.108
Mean	7.000		7.000		7.000		7.000	
Std Dev	2.413		2.404		2.500		2.144	
Sample size	5,429		2,944		874		1,611	

Notes: Standard errors have been estimated using a balanced replication procedure to account for the complex sample design of the CPS .

TABLE E.5
ITEM ORDERING FOR THREE HOUSEHOLD TYPES AND FULL POPULATION
April 1997 CPS, 12-Month Scale

	Question	Full Population	Kids	Elderly	Others
q50	Child not eat whole day	1	1		
q44	Child skipped meal, 3+ months	2	2		
q43	Child skipped meal	3	3		
q29	Adult not eat whole day, 3+ months	4	4	1	1
q47	Child hungry	5	5		
q28	Adult not eat whole day	7	7	2	2
q40	Cut size of child's meals	6	6		
q38	Adult lost weight	8	8	3	3
q35	Adult hungry but didn't eat	9	9	4	4
q57	Child not eating enough	10	10		
q25	Adult cut size or skipped meals, in 3+ months	11	11	5	5
q32	Adult eat less than felt they should	13	13	7	6
q56	Couldn't feed child balanced meals	12	12		
q24	Adult cut size or skipped meals	14	14	6	7
q58	Adult fed child few low cost foods	15	15		
q55	Adult not eat balanced meals	16	16	9	8
q54	Food bought didn't last	17	17	8	9
q53	Worried food would run out	18	18	10	10

Based on weighted 1997 data using BilogMG calibrations.

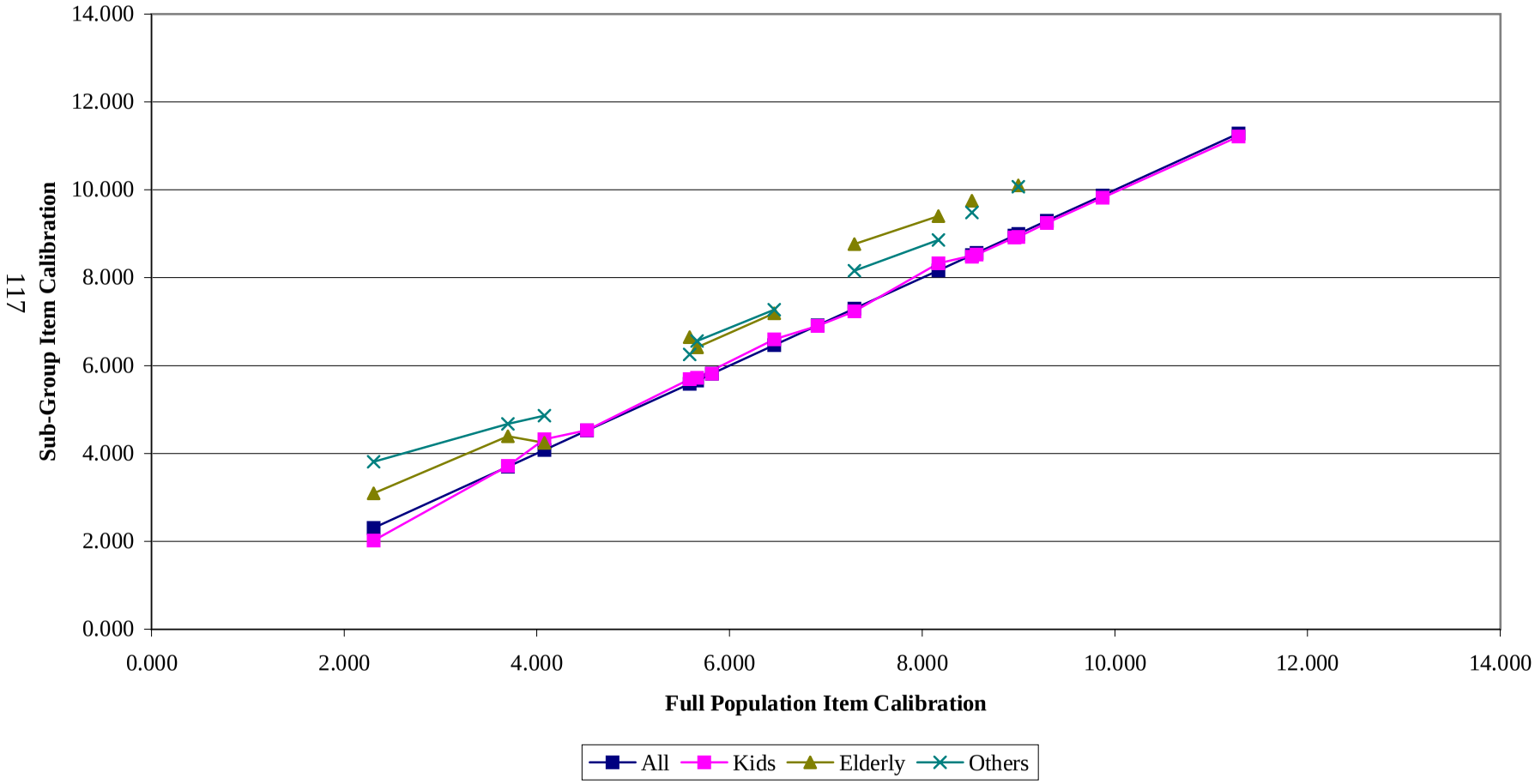
TABLE E.6

CROSS-GROUP DIFFERENCES IN THRESHOLD PARAMETER ESTIMATES
BY HOUSEHOLD TYPE

April 1997 CPS Data, Common Denominator Screen

	Kids-Elderly			Kids-Others		
Variable	Estimate	Std Err	Pr(|T|>|t|)	Estimate	Std Err	Pr(|T|>|t|)
50						
44						
43						
29	-0.033	0.193	0.865	0.000	0.171	0.999
47						
28	-0.168	0.161	0.298	0.103	0.155	0.507
40						
38	-0.004	0.205	0.986	0.537	0.153	**0.000**
35	-0.565	0.154	**0.000**	0.041	0.112	0.713
57						
25	0.328	0.126	**0.009**	0.242	0.094	**0.010**
32	0.150	0.082	0.068	0.007	0.108	0.949
56						
24	-0.114	0.111	0.304	0.285	0.091	**0.002**
58						
55	0.832	0.178	**0.000**	0.215	0.121	0.076
54	0.039	0.191	0.839	-0.244	0.099	**0.013**
53	-0.466	0.175	**0.008**	-1.187	0.121	**0.000**

FIGURE E.2
ITEM CALIBRATIONS FOR HOUSEHOLD TYPE GROUPS
vs. Full Population Item Calibrations
April 1997
CPS, 12-Month Scale



subgroups, and no change in order is more than two positions (Tables E.7, E.8, and E.9, and Figure E.3).

Region of Country. When the analysis is done by region of the country, no item switches by more than a one position (Tables E.10, E.11, E.12, and Figure E.4).

Summary. Overall, these findings suggest that there is considerable robustness in the model, when it is estimated for various population subgroups.

TABLE E.7

THRESHOLD PARAMETER ESTIMATES FOR 18-ITEM 12-MONTH FOOD SECURITY SCALE BY METROPOLITAN STATUS

April 1997 CPS Data, Common Denominator Screen

	Model					
	Constrained		Unconstrained			
	All Households		Metro		NonMetro	
Item	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err
50	11.284	0.245	11.087	0.369	11.751	1.017
44	9.873	0.187	9.742	0.241	10.721	0.611
43	9.293	0.170	9.145	0.190	10.087	0.478
29	8.999	0.073	9.123	0.124	8.772	0.257
47	8.957	0.111	8.954	0.166	9.074	0.272
28	8.516	0.072	8.612	0.097	8.227	0.220
40	8.564	0.087	8.523	0.101	8.961	0.284
38	8.168	0.087	8.113	0.120	8.355	0.176
35	7.297	0.060	7.342	0.080	7.036	0.203
57	6.915	0.094	6.858	0.129	6.813	0.129
25	6.463	0.054	6.430	0.070	6.441	0.125
32	5.663	0.036	5.724	0.053	5.486	0.192
56	5.818	0.075	5.800	0.099	5.533	0.179
24	5.586	0.047	5.541	0.060	5.733	0.157
58	4.522	0.057	4.553	0.078	4.188	0.273
55	4.079	0.066	4.141	0.079	3.721	0.302
54	3.700	0.070	3.766	0.097	3.415	0.306
53	2.306	0.087	2.549	0.109	1.687	0.443
Mean	7.000		7.000		7.000	
Std Dev	2.413		2.344		2.730	
Sample size	5,429		3,140		1,493	

Notes: Standard errors have been estimated using a balanced replication procedure to account fo the complex sample design of the CPS.

TABLE E.8
ITEM ORDERING BY METROPOLITAN STATUS AND FULL POPULATION
April 1997 CPS, 12-Month Scale

	Question	Full Population	Metro	NonMetro
q50	Child not eat whole day	1	1	1
q44	Child skipped meal, 3+ months	2	2	2
q43	Child skipped meal	3	3	3
q29	Adult not eat whole day, 3+ months	4	4	6
q47	Child hungry	5	5	4
q28	Adult not eat whole day	7	6	8
q40	Cut size of child's meals	6	7	5
q38	Adult lost weight	8	8	7
q35	Adult hungry but didn't eat	9	9	9
q57	Child not eating enough	10	10	10
q25	Adult cut size or skipped meals, in 3+ months	11	11	11
q32	Adult eat less than felt they should	13	13	14
q56	Couldn't feed child balanced meals	12	12	13
q24	Adult cut size or skipped meals	14	14	12
q58	Adult fed child few low cost foods	15	15	15
q55	Adult not eat balanced meals	16	16	16
q54	Food bought didn't last	17	17	17
q53	Worried food would run out	18	18	18

Based on weighted 1997 data using BilogMG calibrations.

TABLE E.9

CROSS-GROUP DIFFERENCES IN THRESHOLD PARAMETER ESTIMATES
BY METROPOLITAN STATUS

April 1997 CPS Data, Common Denominator Screen

	NonMetro-Metro		
Variable	Estimate	Std Err	Pr(|T|>|t|)
50	-0.664	1.057	0.530
44	-0.979	0.646	0.130
43	-0.943	0.508	0.064
29	0.352	0.324	0.279
47	-0.120	0.336	0.721
28	0.384	0.245	0.118
40	-0.438	0.302	0.147
38	-0.242	0.256	0.344
35	0.306	0.237	0.197
57	0.045	0.175	0.795
25	-0.011	0.139	0.936
32	0.238	0.213	0.265
56	0.267	0.212	0.208
24	-0.192	0.164	0.241
58	0.365	0.290	0.209
55	0.420	0.309	0.174
54	0.350	0.310	0.259
53	0.861	0.446	0.054

FIGURE E.3
ITEM CALIBRATIONS BY METROPOLITAN STATUS
vs. Full Population Item Calibrations
April 1997 CPS, 12-Month Scale

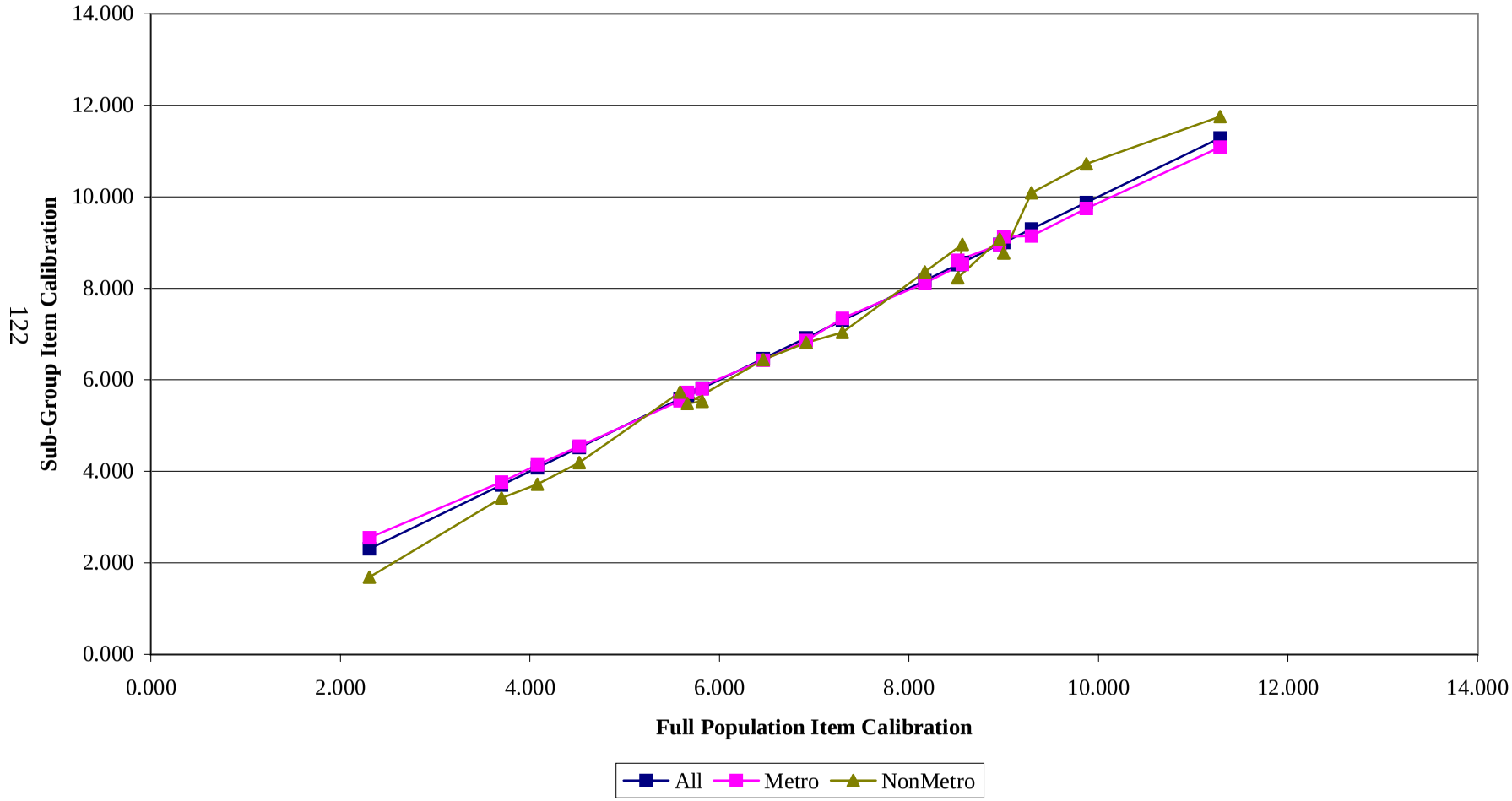


TABLE E.10

THRESHOLD PARAMETER ESTIMATES FOR 18-ITEM 12-MONTH FOOD SECURITY SCALE
BY REGION

April 1997 CPS Data, Common Denominator Screen

	Model									
	Constrained		Unconstrained							
	All Households		Northeast		Midwest		South		West	
Item	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err
50	11.284	0.245	10.666	0.522	12.397	1.662	11.197	0.466	11.670	0.285
44	9.873	0.187	9.955	0.381	9.484	0.265	10.326	0.222	9.538	0.621
43	9.293	0.170	9.619	0.443	9.305	0.237	9.407	0.153	8.888	0.501
29	8.999	0.073	8.892	0.176	9.066	0.205	8.988	0.156	9.017	0.073
47	8.957	0.111	9.018	0.357	8.710	0.185	9.128	0.158	8.850	0.294
28	8.516	0.072	8.532	0.210	8.580	0.215	8.429	0.118	8.548	0.097
40	8.564	0.087	8.801	0.216	8.514	0.251	8.698	0.143	8.226	0.148
38	8.168	0.087	7.895	0.254	8.369	0.130	8.285	0.166	8.000	0.086
35	7.297	0.060	7.282	0.146	7.060	0.163	7.463	0.106	7.220	0.109
57	6.915	0.094	6.922	0.199	7.000	0.147	6.767	0.066	7.003	0.333
25	6.463	0.054	6.309	0.106	6.449	0.126	6.499	0.095	6.475	0.148
32	5.663	0.036	5.505	0.070	5.579	0.213	5.711	0.069	5.707	0.080
56	5.818	0.075	5.887	0.163	5.675	0.211	5.769	0.134	5.895	0.152
24	5.586	0.047	5.512	0.084	5.462	0.210	5.668	0.076	5.551	0.142
58	4.522	0.057	4.499	0.146	4.375	0.334	4.460	0.102	4.668	0.116
55	4.079	0.066	4.361	0.174	3.992	0.375	3.899	0.071	4.132	0.168
54	3.700	0.070	3.822	0.095	3.695	0.389	3.437	0.065	3.918	0.221
53	2.306	0.087	2.523	0.171	2.289	0.509	1.871	0.106	2.695	0.242
Mean	7.000		7.000		7.000		7.000		7.000	
Std Dev	2.413		2.335		2.543		2.544		2.316	
Sample size	5,429		1,023		1,136		1,821		1,449	

Notes: Standard errors have been estimated using a balanced replication procedure to account for the complex sample design of the CPS.

TABLE E.11
ITEM ORDERING FOR 4 REGIONS AND FULL POPULATION
April 1997 CPS, 12-Month Scale

	Question	Full Population	Northeast	Midwest	South	West
q50	Child not eat whole day	1	1	1	1	1
q44	Child skipped meal, 3+ months	2	2	2	2	2
q43	Child skipped meal	3	3	3	3	4
q29	Adult not eat whole day, 3+ months	4	5	4	5	3
q47	Child hungry	5	4	5	4	5
q28	Adult not eat whole day	7	7	6	7	6
q40	Cut size of child's meals	6	6	7	6	7
q38	Adult lost weight	8	8	8	8	8
q35	Adult hungry but didn't eat	9	9	9	9	9
q57	Child not eating enough	10	10	10	10	10
q25	Adult cut size or skipped meals, in 3+ months	11	11	11	11	11
q32	Adult eat less than felt they should	13	14	13	13	13
q56	Couldn't feed child balanced meals	12	12	12	12	12
q24	Adult cut size or skipped meals	14	13	14	14	14
q58	Adult fed child few low cost foods	15	15	15	15	15
q55	Adult not eat balanced meals	16	16	16	16	16
q54	Food bought didn't last	17	17	17	17	17
q53	Worried food would run out	18	18	18	18	18

Based on weighted 1997 data using BilogMG calibrations.

TABLE E.12

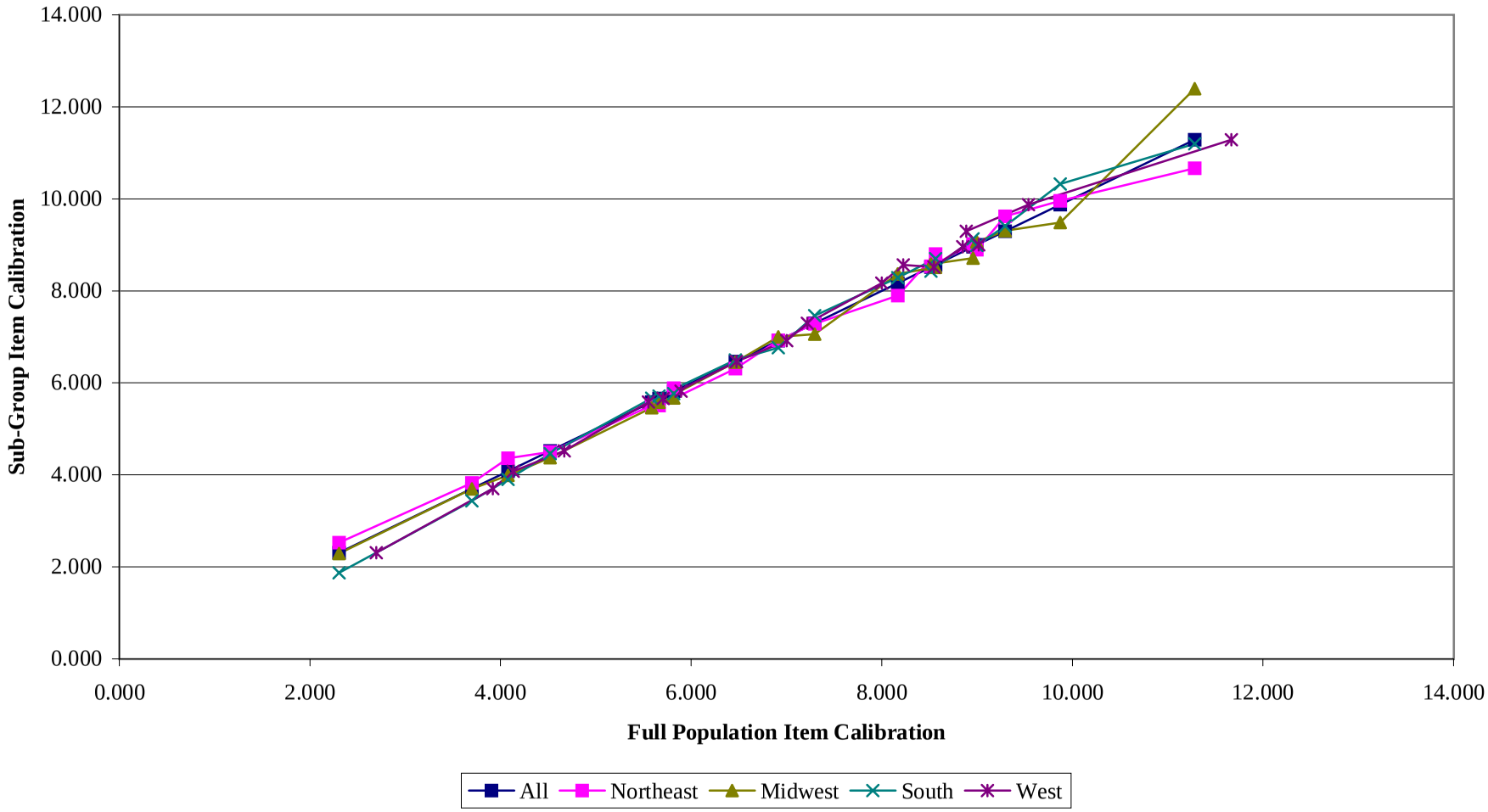
CROSS-GROUP DIFFERENCES IN THRESHOLD PARAMETER ESTIMATES
BY REGION

Y REGION

April 1997 CPS Data, Common Denominator Screen

	Northeast-Midwest			Northeast-South			Northeast-West		
Variable	Estimate	Std Err	Pr(|T|>|t|)	Estimate	Std Err	Pr(|T|>|t|)	Estimate	Std Err	Pr(|T|>|t|)
50	-1.731	1.763	0.326	-0.531	0.688	0.440	-1.004	0.577	0.082
44	0.471	0.457	0.303	-0.370	0.431	0.391	0.417	0.737	0.572
43	0.314	0.491	0.523	0.211	0.469	0.652	0.730	0.675	0.279
29	-0.174	0.276	0.528	-0.096	0.238	0.687	-0.125	0.192	0.517
47	0.308	0.397	0.438	-0.110	0.394	0.780	0.168	0.457	0.713
28	-0.048	0.306	0.875	0.104	0.242	0.669	-0.016	0.233	0.945
40	0.287	0.331	0.386	0.103	0.260	0.691	0.575	0.258	**0.026**
38	-0.474	0.279	0.090	-0.390	0.306	0.203	-0.105	0.262	0.689
35	0.222	0.223	0.320	-0.181	0.179	0.312	0.062	0.175	0.723
57	-0.078	0.254	0.760	0.156	0.209	0.456	-0.080	0.390	0.837
25	-0.140	0.170	0.412	-0.189	0.143	0.184	-0.166	0.181	0.360
32	-0.074	0.231	0.750	-0.205	0.095	**0.031**	-0.202	0.097	**0.038**
56	0.212	0.272	0.436	0.118	0.210	0.575	-0.008	0.225	0.972
24	0.050	0.234	0.831	-0.156	0.111	0.160	-0.039	0.162	0.811
58	0.124	0.371	0.739	0.039	0.177	0.827	-0.169	0.185	0.361
55	0.369	0.423	0.384	0.462	0.185	**0.013**	0.228	0.240	0.342
54	0.128	0.419	0.761	0.385	0.110	**0.001**	-0.096	0.240	0.690
53	0.235	0.561	0.676	0.653	0.199	**0.001**	-0.172	0.294	0.559

FIGURE E.4
ITEM CALIBRATIONS BY REGION
vs. Full Population Item Calibrations
April 1997 CPS, 12-Month Scale



APPENDIX F

PREVALENCE ESTIMATES AND THEIR STANDARD ERRORS

This appendix presents detailed food security prevalence tables and the corresponding standard error estimates for the 1995-1997 period. The estimates are disaggregated by year and income group. The exact prevalence estimates may, in some instances, vary slightly from those issued in the "Advance Report" which was issued by USDA in July 1999, with preliminary findings. These differences are due to additional editing and are not substantial.

Totals of food secure and food insecure cases do not quite add to population totals, because there were a very small number of households for which food insecurity status could not be calculated. All percentages are based on using all cases, including those with missing food security data, as the denominator.

Tabulations based on metropolitan status do not add to national totals, because for many households inside metropolitan areas, the CPS data do not indicate whether or not the household is in the central city.

The data for 1995-1997 are adjusted to reflect the screening adopted in 1998 and thereafter. Essentially, this means that certain households who answered "no" to all of the less severe food security questions are coded as having missing values for the more severe items. This is analogue to what would have been their treatment in the 1998 and subsequent years, when such households were skipped out of the later questions, based on their negative answers to the earlier ones.[1]

[1]The 1995-1997 files used in the current report, like the corresponding public use files available on the CPS website, have one further adjustment which is designed to make them more comparable to the 1998 data. In the 1998 survey, under certain circumstances, households were not asked relatively severe food security questions if they had already consistently answered "no" to blocks of less severe questions. The 1995-1997 data were edited to emulate this screening by replacing answers to the more severe questions with missing value codes for questions which would have been skipped in 1998. See: www.bls.census.gov/cps/foodsecu/1997/agnote.htm ("Food Security, Scales and Screener Variables").

The following shows the table numbers for the various tables:

	Year	Prevalence Table	Standard Error Table
All Income Groups	1995	F.1	F.22
	1996	F.2	F.23
	1997	F.3	F.24
Under 100 Percent of Poverty			
	1995	F.4	F.25
	1996	F.5	F.26
	1997	F.6	F.27
Over 100 Percent of Poverty			
	1995	F.7	F.28
	1996	F.8	F.29
	1997	F.9	F.30
Under 130 Percent of Poverty			
	1995	F.10	F.31
	1996	F.11	F.32
	1997	F.12	F.33
Over 130 Percent of Poverty			
	1995	F.13	F.34
	1996	F.14	F.35
	1997	F.15	F.36
Under 185 Percent of Poverty			
	1995	F.16	F.37
	1996	F.17	F.38
	1997	F.18	F.39
Over 185 Percent of Poverty			
	1995	F.19	F.40
	1996	F.20	F.41
	1997	F.21	F.42

TABLE F.1

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
USING THE COMMON DENOMINATOR SCREEN

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	100,445	89,969	89.6	10,392	10.3	6,437	6.4	3,955	3.9
Household Composition									
With Children < 6	18,353	15,199	82.8	3,116	17.0	2,177	11.9	939	5.1
With Children < 18	38,181	32,230	84.4	5,911	15.5	3,993	10.5	1,918	5.0
Married Couple Families	27,222	24,460	89.9	2,743	10.1	1,992	7.3	751	2.8
Female Head, No Spouse	8,578	5,808	67.7	2,764	32.2	1,751	20.4	1,013	11.8
Male Head, No Spouse	1,836	1,535	83.6	288	15.8	201	11.0	87	4.8
Other Households with Children	545	428	78.7	116	21.3	49	9.0	67	12.3
With No Children < 18	62,264	57,739	92.7	4,480	7.2	2,444	3.9	2,036	3.3
More Than One Adult	36,777	34,826	94.7	1,924	5.2	1,148	3.1	776	2.1
Women Living Alone	15,161	13,708	90.4	1,447	9.6	811	5.4	636	4.2
Men Living Alone	10,325	9,204	89.1	1,108	10.7	484	4.7	624	6.0
Households with Elderly	23,776	22,570	94.9	1,192	5.0	742	3.1	450	1.9
Elderly Living Alone	10,069	9,489	94.2	576	5.8	327	3.3	249	2.5
Race and Hispanic Ethnicity									
White Non-Hispanic	78,100	72,266	92.5	5,799	7.4	3,618	4.6	2,181	2.8
Black Non-Hispanic	11,906	9,321	78.3	2,569	21.6	1,521	12.8	1,048	8.8
Hispanic	7,753	5,971	77.0	1,749	22.6	1,136	14.7	613	7.9
Other Non-Hispanic	2,686	2,411	89.8	273	10.2	161	6.0	112	4.2

TABLE F.1 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	5,603	3,467	61.9	2,113	37.7	1,177	21.0	936	16.7
Under 1.00	15,924	10,717	67.3	5,154	32.3	3,081	19.3	2,073	13.0
Under 1.30	21,953	15,480	70.5	6,413	29.2	3,823	17.4	2,590	11.8
Under 1.85	32,182	24,030	74.7	8,080	25.1	4,935	15.3	3,145	9.8
1.85 and Over	58,400	56,615	96.9	1,777	3.0	1,176	2.0	601	1.0
Income Not Known	9,863	9,324	94.5	534	5.4	325	3.3	209	2.1
Area of Residence									
Inside Metropolitan Area									
In Central City	24,701	21,168	85.7	3,525	14.3	2,149	8.7	1,376	5.6
Not in Central City	37,059	34,092	92.0	2,935	7.9	1,757	4.7	1,178	3.2
Outside Metropolitan Area	22,658	20,173	89.0	2,460	10.8	1,590	7.0	870	3.8
Census Geographical Region									
Northeast	19,491	17,776	91.2	1,694	8.7	1,056	5.4	638	3.3
Midwest	23,656	21,442	90.6	2,212	9.3	1,375	5.8	837	3.5
South	35,891	31,906	88.9	3,966	11.1	2,498	7.0	1,468	4.1
West	21,407	18,845	88.0	2521	11.7	1,508	7.0	1,013	4.7

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.2

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
USING THE COMMON DENOMINATOR SCREEN

				Food Insecure					
		Food Secure		All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	101,508	90,809	89.5	10,592	10.5	6,462	6.4	4,130	4.1
Household Composition									
With Children < 6	17,871	14,703	82.3	3,127	17.5	2,176	12.2	951	5.3
With Children < 18	38,196	32,205	84.3	5,922	15.5	3,974	10.4	1,948	5.1
Married Couple Families	27,187	24,326	89.5	2,817	10.4	1,985	7.3	832	3.1
Female Head, No Spouse	8,488	5,793	68.2	2,669	31.4	1,699	20.0	970	11.4
Male Head, No Spouse	1,936	1,604	82.9	332	17.1	219	11.3	113	5.8
Other Households with Children	585	481	82.3	104	17.7	71	12.1	33	5.6
With No Children < 18	63,312	58,604	92.6	4,670	7.3	2,488	3.9	2,182	3.4
More Than One Adult	37,806	35,743	94.5	2,044	5.4	1,153	3.0	891	2.4
Women Living Alone	14,961	13,457	89.9	1,496	10.0	795	5.3	701	4.7
Men Living Alone	10,545	9,404	89.2	1,131	10.7	540	5.1	591	5.6
Households with Elderly	24,087	22,849	94.9	1,219	5.0	779	3.2	440	1.8
Elderly Living Alone	9,760	9,185	94.1	574	5.9	353	3.6	221	2.3
Race and Hispanic Ethnicity									
White Non-Hispanic	77,830	72,056	92.6	5,737	7.3	3,460	4.4	2,277	2.9
Black Non-Hispanic	12,083	9,332	77.2	2,709	22.4	1,684	13.9	1,025	8.5
Hispanic	8,165	6,340	77.6	1,805	22.1	1,101	13.5	704	8.6
Other Non-Hispanic	3,430	3,082	89.8	342	9.9	217	6.3	125	3.6

TABLE F.2 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	6,442	3,932	61.0	2,480	38.5	1,342	20.8	1,138	17.7
Under 1.00	14,548	9,390	64.5	5,106	35.1	2,951	20.3	2,155	14.8
Under 1.30	20,282	13,868	68.4	6,353	31.4	3,726	18.4	2,627	13.0
Under 1.85	32,814	24,449	74.5	8,290	25.3	5,038	15.4	3,252	9.9
1.85 and Over	57,123	55,379	96.9	1,743	3.1	1,082	1.9	661	1.2
Income Not Known	11,571	10,982	94.9	558	4.8	341	2.9	217	1.9
Area of Residence									
Inside Metropolitan Area									
In Central City	26,262	22,611	86.1	3,614	13.7	2,139	8.1	1,475	5.6
Not in Central City	40,956	37,604	91.8	3,291	8.0	1,968	4.8	1,323	3.2
Outside Metropolitan Area	19,958	17,698	88.7	2,256	11.3	1,461	7.3	795	4.0
Census Geographical Region									
Northeast	19,740	18,169	92.0	1,548	7.9	938	4.8	610	3.1
Midwest	24,132	22,029	91.3	2,092	8.7	1,281	5.3	811	3.4
South	35,792	31,460	87.9	4,274	12.0	2,644	7.4	1,630	4.6
West	21,844	19,151	87.7	2,677	12.2	1,598	7.3	1,079	4.9

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.3

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
USING THE COMMON DENOMINATOR SCREEN

				Food Insecure					
		Food Secure		All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	102,373	93,319	91.2	8,963	8.8	5,831	5.7	3,132	3.1
Household Composition									
With Children < 6	17,538	15,133	86.3	2,396	13.6	1,813	10.3	583	3.3
With Children < 18	38,195	33,237	87.0	4,920	12.9	3,538	9.3	1,382	3.6
Married Couple Families	26,859	24,751	92.2	2,095	7.8	1,585	5.9	510	1.9
Female Head, No Spouse	8,715	6,264	71.9	2,433	27.9	1,653	19.0	780	8.9
Male Head, No Spouse	2,105	1,793	85.2	312	14.8	248	11.8	64	3.0
Other Households with Children	516	429	83.2	81	15.7	52	10.1	29	5.6
With No Children < 18	64,178	60,082	93.6	4,042	6.3	2,293	3.6	1,749	2.7
More Than One Adult	37,788	36,034	95.4	1,739	4.6	1,086	2.9	653	1.7
Women Living Alone	15,411	14,144	91.8	1,245	8.1	690	4.5	555	3.6
Men Living Alone	10,980	9,904	90.2	1,059	9.6	517	4.7	542	4.9
Households with Elderly	24,420	23,278	95.3	1,125	4.6	775	3.2	350	1.4
Elderly Living Alone	10,323	9,795	94.9	517	5.0	335	3.2	182	1.8
Race and Hispanic Ethnicity									
White Non-Hispanic	78,021	73,234	93.9	4,749	6.1	2,967	3.8	1,782	2.3
Black Non-Hispanic	12,289	9,966	81.1	2,296	18.7	1,500	12.2	796	6.5
Hispanic	8,383	6,737	80.4	1,624	19.4	1,174	14.0	450	5.4
Other Non-Hispanic	3,680	3,382	91.9	294	8.0	190	5.2	104	2.8

TABLE F.3 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	6,206	4,070	65.6	2,121	34.2	1,313	21.2	808	13.0
Under 1.00	14,157	9,828	69.4	4,297	30.4	2,676	18.9	1621	11.5
Under 1.30	20,158	14,753	73.2	5,366	26.6	3,387	16.8	1979	9.8
Under 1.85	31,560	24,629	78.0	6,878	21.8	4,471	14.2	2407	7.6
1.85 and Over	58,980	57,467	97.4	1,504	2.6	995	1.7	509	0.9
Income Not Known	11,833	11,223	94.8	581	4.9	365	3.1	216	1.8
Area of Residence									
Inside Metropolitan Area									
In Central City	26,314	23,183	88.1	3,093	11.7	1,876	7.1	1217	4.6
Not in Central City	41,354	38,531	93.2	2,786	6.8	1,854	4.5	932	2.3
Outside Metropolitan Area	20,148	18,260	90.6	1,878	9.3	1,307	6.5	571	2.8
Census Geographical Region									
Northeast	19,897	18,298	92.0	1,576	7.9	992	5.0	584	2.9
Midwest	24,555	22,678	92.4	1,861	7.6	1,156	4.7	705	2.9
South	35,844	32,418	90.4	3,403	9.4	2,276	6.3	1127	3.1
West	22,077	19,925	90.3	2,122	9.6	1,407	6.4	715	3.2

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.4

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES UNDER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	15,924	10,717	67.3	5,154	32.3	3,081	19.3	2,073	13.0
Household Composition									
With Children < 6	4,648	2,752	59.2	1,866	40.2	1,198	25.8	668	14.4
With Children < 18	7,856	4,653	59.2	3,173	40.4	2,001	25.5	1,172	14.9
Married Couple Families	3,081	1,963	63.7	1,108	35.9	746	24.2	362	11.7
Female Head, No Spouse	4,150	2,312	55.7	1,831	44.1	1,125	27.1	706	17.0
Male Head, No Spouse	463	277	59.8	174	37.5	108	23.3	66	14.2
Other Households with Children	162	101	62.6	61	37.4	22	13.5	39	23.9
With No Children < 18	8,067	6,064	75.2	1,981	24.6	1,080	13.4	901	11.2
More Than One Adult	3,185	2,436	76.5	737	23.2	432	13.6	305	9.6
Women Living Alone	3,274	2,498	76.3	773	23.6	458	14.0	315	9.6
Men Living Alone	1,608	1,130	70.3	471	29.3	190	11.8	281	17.5
Households with Elderly	4,094	3,430	83.8	663	16.2	425	10.4	238	5.8
Elderly Living Alone	2,432	2,096	86.2	335	13.8	191	7.9	144	5.9
Race and Hispanic Ethnicity									
White Non-Hispanic	8,633	6,183	71.6	2,433	28.2	1,457	16.9	976	11.3
Black Non-Hispanic	4,178	2,653	63.5	1,516	36.3	857	20.5	659	15.8
Hispanic	2,592	1,500	57.9	1,068	41.2	692	26.7	376	14.5
Other Non-Hispanic	522	382	73.3	138	26.3	75	14.3	63	12.0

TABLE F.4 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	5,603	3,467	61.9	2,113	37.7	1,177	21.0	936	16.7
Under 1.00	15,924	10,717	67.3	5,154	32.3	3,081	19.3	2073	13.0
Under 1.30	15,924	10,717	67.3	5,154	32.3	3,081	19.3	2073	13.0
Under 1.85	15,924	10,717	67.3	5,154	32.3	3,081	19.3	2073	13.0
1.85 and Over	-	-	0.0	-	0.0	-	0.0	-	0.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	5,332	3,438	64.5	1,891	35.5	1,120	21.0	771	14.5
Not in Central City	3,632	2,446	67.4	1,166	32.1	654	18.0	512	14.1
Outside Metropolitan Area	4,599	3,205	69.7	1,380	30.0	865	18.8	515	11.2
Census Geographical Region									
Northeast	2,670	1,785	66.9	879	32.9	529	19.8	350	13.1
Midwest	3,364	2,355	70.0	1,008	30.0	605	18.0	403	12.0
South	6,606	4,515	68.3	2,079	31.5	1,247	18.9	832	12.6
West	3,284	2,063	62.8	1,188	36.2	699	21.3	489	14.9

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.5

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES UNDER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	14,548	9,390	64.5	5,106	35.1	2,951	20.3	2,155	14.8
Household Composition									
With Children < 6	4,035	2,300	57.0	1,721	42.7	1,118	27.7	603	15.0
With Children < 18	7,127	4,034	56.6	3,061	43.0	1,902	26.7	1,159	16.3
Married Couple Families	2,866	1,748	61.0	1,098	38.3	711	24.8	387	13.5
Female Head, No Spouse	3,697	1,959	53.0	1,726	46.7	1,034	28.0	692	18.7
Male Head, No Spouse	428	242	56.6	185	43.4	124	29.1	61	14.3
Other Households with Children	136	85	62.2	51	37.8	32	23.8	19	14.0
With No Children < 18	7,422	5,356	72.2	2,045	27.5	1,049	14.1	996	13.4
More Than One Adult	3,021	2,277	75.4	740	24.4	394	13.0	346	11.4
Women Living Alone	2,943	2,147	72.9	790	26.8	434	14.7	356	12.1
Men Living Alone	1,457	932	64.0	515	35.4	221	15.2	294	20.2
Households with Elderly	3,608	2,931	81.2	672	18.6	416	11.5	256	7.1
Elderly Living Alone	2,066	1,738	84.1	328	15.9	206	10.0	122	5.9
Race and Hispanic Ethnicity									
White Non-Hispanic	7,635	5,334	69.9	2,284	29.9	1,274	16.7	1,010	13.2
Black Non-Hispanic	3,772	2,154	57.1	1,593	42.3	938	24.9	655	17.4
Hispanic	2,516	1,457	57.9	1,052	41.8	630	25.0	422	16.8
Other Non-Hispanic	625	446	71.4	177	28.3	109	17.4	68	10.9

TABLE F.5 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	6,442	3,932	61.0	2,480	38.5	1,342	20.8	1138	17.7
Under 1.00	14,548	9,390	64.5	5,106	35.1	2,951	20.3	2155	14.8
Under 1.30	14,548	9,390	64.5	5,106	35.1	2,951	20.3	2155	14.8
Under 1.85	14,548	9,390	64.5	5,106	35.1	2,951	20.3	2155	14.8
1.85 and Over	-	-	0.0	-	0.0	-	0.0	-	0.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	5,171	3,258	63.0	1,893	36.6	1,113	21.5	780	15.1
Not in Central City	3,724	2,344	62.9	1,355	36.4	737	19.8	618	16.6
Outside Metropolitan Area	3,663	2,457	67.1	1,205	32.9	739	20.2	466	12.7
Census Geographical Region									
Northeast	2,426	1,724	71.1	692	28.5	376	15.5	316	13.0
Midwest	2,918	1,947	66.7	963	33.0	561	19.2	402	13.8
South	5,990	3,783	63.2	2,179	36.3	1,260	21.0	919	15.3
West	3,214	1,936	60.2	1,271	39.6	754	23.5	517	16.1

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.6

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES UNDER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	14,157	9,828	69.4	4,297	30.4	2,676	18.9	1,621	11.5
Household Composition									
With Children < 6	4,058	2,675	65.9	1,378	33.9	996	24.5	382	9.4
With Children < 18	7,036	4,435	63.0	2,590	36.8	1,790	25.4	800	11.4
Married Couple Families	2,632	1,850	70.3	778	29.5	572	21.7	206	7.8
Female Head, No Spouse	3,819	2,209	57.8	1,607	42.0	1,059	27.7	548	14.3
Male Head, No Spouse	463	303	65.3	160	34.7	125	27.1	35	7.6
Other Households with Children	122	74	60.4	45	37.2	34	28.3	11	8.9
With No Children < 18	7,121	5,392	75.7	1,708	23.9	886	12.4	822	11.5
More Than One Adult	2,793	2,147	76.9	639	22.9	348	12.5	291	10.4
Women Living Alone	2,759	2,131	77.2	620	22.5	339	12.3	281	10.2
Men Living Alone	1,569	1,114	71.0	448	28.5	198	12.6	250	15.9
Households with Elderly	3,326	2,768	83.2	556	16.7	385	11.6	171	5.1
Elderly Living Alone	2,023	1,746	86.3	276	13.7	175	8.7	101	5.0
Race and Hispanic Ethnicity									
White Non-Hispanic	7,026	5,154	73.3	1,863	26.5	1,061	15.1	802	11.4
Black Non-Hispanic	3,810	2,461	64.6	1,340	35.2	872	22.9	468	12.3
Hispanic	2,684	1,736	64.7	937	34.9	641	23.9	296	11.0
Other Non-Hispanic	637	477	74.9	157	24.7	101	15.9	56	8.8

TABLE F.6 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	6,206	4,070	65.6	2,121	34.2	1,313	21.2	808	13.0
Under 1.00	14,157	9,828	69.4	4,297	30.4	2,676	18.9	1621	11.5
Under 1.30	14,157	9,828	69.4	4,297	30.4	2,676	18.9	1621	11.5
Under 1.85	14,157	9,828	69.4	4,297	30.4	2,676	18.9	1621	11.5
1.85 and Over	-	-	0.0	-	0.0	-	0.0	-	0.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	4,951	3,267	66.0	1,673	33.8	989	20.0	684	13.8
Not in Central City	3,526	2,419	68.6	1,094	31.0	720	20.4	374	10.6
Outside Metropolitan Area	3,609	2,642	73.2	965	26.8	627	17.4	338	9.4
Census Geographical Region									
Northeast	2,487	1,678	67.5	802	32.3	480	19.3	322	13.0
Midwest	2,728	1,903	69.7	815	29.9	498	18.3	317	11.6
South	5,714	4,092	71.6	1,616	28.3	1,043	18.3	573	10.0
West	3,228	2,155	66.8	1,064	33.0	655	20.3	409	12.7

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.7

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES OVER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

				Food Insecure					
		Food Secure		All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	74,658	69,928	93.7	4,704	6.3	3,031	4.1	1,673	2.2
Household Composition									
With Children < 6	12,557	11,412	90.9	1,136	9.1	886	7.1	250	2.0
With Children < 18	27,630	25,162	91.1	2,459	8.9	1,778	6.4	681	2.5
Married Couple Families	22,106	20,622	93.3	1,476	6.7	1,120	5.1	356	1.6
Female Head, No Spouse	3,961	3,124	78.9	837	21.1	551	13.9	286	7.2
Male Head, No Spouse	1,227	1,126	91.7	101	8.3	84	6.9	17	1.4
Other Households with Children	335	291	86.7	45	13.3	23	6.9	22	6.4
With No Children < 18	47,028	44,766	95.2	2,244	4.8	1,252	2.7	992	2.1
More Than One Adult	29,217	28,141	96.3	1,067	3.6	654	2.2	413	1.4
Women Living Alone	9,885	9,282	93.9	600	6.0	321	3.2	279	2.8
Men Living Alone	7,926	7,343	92.6	579	7.3	278	3.5	301	3.8
Households with Elderly	16,038	15,559	97.0	471	3.0	284	1.8	187	1.2
Elderly Living Alone	6,075	5,859	96.4	211	3.5	117	1.9	94	1.6
Race and Hispanic Ethnicity									
White Non-Hispanic	61,416	58,293	94.9	3,111	5.1	2,006	3.3	1,105	1.8
Black Non-Hispanic	6,870	5,937	86.4	928	13.5	599	8.7	329	4.8
Hispanic	4,512	3,948	87.5	556	12.4	355	7.9	201	4.5
Other Non-Hispanic	1,860	1,750	94.1	110	5.9	71	3.8	39	2.1

TABLE F.7 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.00	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.30	6,030	4,763	79.0	1,259	20.9	742	12.3	517	8.6
Under 1.85	16,258	13,313	81.9	2,926	18.0	1,854	11.4	1072	6.6
1.85 and Over	58,400	56,615	96.9	1,777	3.0	1,176	2.0	601	1.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	17,056	15,616	91.6	1,434	8.4	909	5.3	525	3.1
Not in Central City	29,105	27,551	94.7	1,547	5.3	965	3.3	582	2.0
Outside Metropolitan Area	16,249	15,214	93.6	1,024	6.3	697	4.3	327	2.0
Census Geographical Region									
Northeast	14,543	13,822	95.0	710	4.9	474	3.3	236	1.6
Midwest	18,024	16,908	93.8	1,115	6.2	732	4.1	383	2.1
South	25,829	24,131	93.4	1,691	6.5	1,117	4.3	574	2.2
West	16,261	15,066	92.7	1,186	7.2	707	4.3	479	2.9

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.8

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES OVER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

				Food Insecure					
		Food Secure		All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	75,388	70,438	93.4	4,928	6.5	3,169	4.2	1,759	2.3
Household Composition									
With Children < 6	12,467	11,151	89.4	1,303	10.5	980	7.9	323	2.6
With Children < 18	27,836	25,206	90.6	2,612	9.4	1,883	6.8	729	2.6
Married Couple Families	22,082	20,460	92.7	1,611	7.3	1,188	5.4	423	1.9
Female Head, No Spouse	4,066	3,226	79.3	832	20.5	581	14.3	251	6.2
Male Head, No Spouse	1,297	1,171	90.3	125	9.7	84	6.5	41	3.2
Other Households with Children	392	349	89.0	43	11.0	29	7.5	14	3.5
With No Children < 18	47,552	45,232	95.1	2,317	4.9	1,287	2.7	1,030	2.2
More Than One Adult	29,709	28,575	96.2	1,131	3.8	673	2.3	458	1.5
Women Living Alone	9,976	9,351	93.7	624	6.3	318	3.2	306	3.1
Men Living Alone	7,867	7,305	92.9	561	7.2	296	3.8	265	3.4
Households with Elderly	16,292	15,820	97.1	470	2.9	313	1.9	157	1.0
Elderly Living Alone	5,941	5,736	96.6	205	3.4	121	2.0	84	1.4
Race and Hispanic Ethnicity									
White Non-Hispanic	60,975	57,828	94.8	3,139	5.2	1,988	3.3	1,151	1.9
Black Non-Hispanic	6,901	5,930	85.9	960	13.9	651	9.4	309	4.5
Hispanic	5,005	4,313	86.2	687	13.7	442	8.8	245	4.9
Other Non-Hispanic	2,508	2,366	94.4	141	5.6	88	3.5	53	2.1

TABLE F.8 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.00	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.30	5,733	4,478	78.1	1,247	21.7	775	13.5	472	8.2
Under 1.85	18,265	15,058	82.4	3,184	17.4	2,087	11.4	1097	6.0
1.85 and Over	57,123	55,379	96.9	1,743	3.1	1,082	1.9	661	1.2
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	18,045	16,511	91.5	1,525	8.4	921	5.1	604	3.3
Not in Central City	32,221	30,468	94.6	1,741	5.4	1,119	3.5	622	1.9
Outside Metropolitan Area	14,028	13,078	93.2	947	6.7	651	4.6	296	2.1
Census Geographical Region									
Northeast	14,690	13,921	94.8	765	5.2	502	3.4	263	1.8
Midwest	18,160	17,143	94.4	1,014	5.6	635	3.5	379	2.1
South	25,792	23,910	92.7	1,869	7.2	1,269	4.9	600	2.3
West	16,746	15,463	92.3	1,280	7.7	763	4.6	517	3.1

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.9

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES OVER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

				Food Insecure					
		Food Secure		All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	76,383	72,268	94.6	4,084	5.4	2,790	3.7	1,294	1.7
Household Composition									
With Children < 6	12,153	11,237	92.5	913	7.5	729	6.0	184	1.5
With Children < 18	27,964	25,902	92.6	2,056	7.4	1,557	5.6	499	1.8
Married Couple Families	21,892	20,730	94.7	1,157	5.3	897	4.1	260	1.2
Female Head, No Spouse	4,253	3,525	82.9	727	17.1	531	12.5	196	4.6
Male Head, No Spouse	1,499	1,362	90.9	136	9.1	111	7.4	25	1.7
Other Households with Children	320	285	88.9	35	11.1	17	5.5	18	5.6
With No Children < 18	48,420	46,366	95.8	2,028	4.1	1,233	2.5	795	1.6
More Than One Adult	29,845	28,915	96.9	923	3.1	621	2.1	302	1.0
Women Living Alone	10,295	9,728	94.5	557	5.4	324	3.1	233	2.3
Men Living Alone	8,279	7,723	93.3	547	6.6	288	3.5	259	3.1
Households with Elderly	16,742	16,262	97.1	473	2.9	331	2.0	142	0.9
Elderly Living Alone	6,374	6,146	96.4	220	3.5	144	2.3	76	1.2
Race and Hispanic Ethnicity									
White Non-Hispanic	61,383	58,802	95.8	2,570	4.2	1,728	2.8	842	1.4
Black Non-Hispanic	7,331	6,510	88.8	810	11.0	530	7.2	280	3.8
Hispanic	5,036	4,443	88.2	585	11.6	457	9.1	128	2.5
Other Non-Hispanic	2,634	2,513	95.4	120	4.6	76	2.9	44	1.7

TABLE F.9 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	0.0	-	0.0	-	0.0
Under 1.00	-	-	0.0	-	0.0	-	0.0	-	0.0
Under 1.30	6,001	4,925	82.1	1,068	17.8	711	11.8	357	6.0
Under 1.85	17,403	14,801	85.0	2,580	14.8	1,795	10.3	785	4.5
1.85 and Over	58,980	57,467	97.4	1,504	2.6	995	1.7	509	0.9
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	18,241	17,011	93.3	1,216	6.7	762	4.2	454	2.5
Not in Central City	32,660	31,185	95.5	1,466	4.5	998	3.1	468	1.4
Outside Metropolitan Area	14,368	13,543	94.3	821	5.7	613	4.3	208	1.4
Census Geographical Region									
Northeast	14,434	13,796	95.6	626	4.4	412	2.9	214	1.5
Midwest	18,784	17,855	95.1	929	5.0	594	3.2	335	1.8
South	26,406	24,857	94.1	1,539	5.8	1,079	4.1	460	1.7
West	16,759	15,760	94.0	990	5.9	705	4.2	285	1.7

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.10

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES UNDER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	21,953	15,480	70.5	6,413	29.2	3,823	17.4	2,590	11.8
Household Composition									
With Children < 6	5,823	3,602	61.8	2,190	37.6	1,430	24.6	760	13.0
With Children < 18	10,064	6,202	61.6	3,830	38.0	2,419	24.0	1,411	14.0
Married Couple Families	4,446	2,969	66.8	1,463	32.9	986	22.2	477	10.7
Female Head, No Spouse	4,799	2,701	56.3	2,090	43.5	1,272	26.5	818	17.0
Male Head, No Spouse	601	395	65.8	193	32.1	126	21.0	67	11.1
Other Households with Children	219	136	62.2	82	37.7	34	15.7	48	22.0
With No Children < 18	11,889	9,278	78.0	2,584	21.7	1,404	11.8	1,180	9.9
More Than One Adult	4,771	3,778	79.2	978	20.5	590	12.4	388	8.1
Women Living Alone	4,801	3,837	79.9	959	20.0	553	11.5	406	8.5
Men Living Alone	2,317	1,662	71.8	647	27.9	261	11.3	386	16.6
Households with Elderly	6,495	5,619	86.5	872	13.4	538	8.3	334	5.1
Elderly Living Alone	3,878	3,413	88.0	465	12.0	257	6.6	208	5.4
Race and Hispanic Ethnicity									
White Non-Hispanic	12,902	9,669	74.9	3,209	24.9	1,906	14.8	1,303	10.1
Black Non-Hispanic	5,076	3,289	64.8	1,776	35.0	1,022	20.1	754	14.9
Hispanic	3,295	2,021	61.3	1,250	37.9	792	24.0	458	13.9
Other Non-Hispanic	681	501	73.6	177	26.0	102	15.0	75	11.0

TABLE F.10 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	5,603	3,467	61.9	2,113	37.7	1,177	21.0	936	16.7
Under 1.00	15,924	10,717	67.3	5,154	32.3	3,081	19.3	2073	13
Under 1.30	21,953	15,480	70.5	6,413	29.2	3,823	17.4	2590	11.8
Under 1.85	21,953	15,480	70.5	6,413	29.2	3,823	17.4	2590	11.8
1.85 and Over	-	-	0.0	-	0.0	-	0.0	0	0
Income Not Known	-	-	0.0	-	0.0	-	0.0	0	0
Area of Residence									
Inside Metropolitan Area									
In Central City	6,967	4,644	66.7	2,320	33.3	1,386	19.9	934	13.4
Not in Central City	5,247	3,754	71.5	1,471	28.1	817	15.6	654	12.5
Outside Metropolitan Area	6,410	4,666	72.8	1,727	26.9	1,077	16.8	650	10.1
Census Geographical Region									
Northeast	3,692	2,642	71.6	1,038	28.1	617	16.7	421	11.4
Midwest	4,801	3,489	72.7	1,311	27.4	790	16.5	521	10.9
South	8,888	6,291	70.8	2,585	29.1	1,549	17.4	1036	11.7
West	4,572	3,059	66.9	1,479	32.4	867	19.0	612	13.4

Source: Tabulations of Current Population Survey, Food Security Supplement data.

Table F.11

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES UNDER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	20,282	13,868	68.4	6,353	31.4	3,726	18.4	2,627	13.0
Household Composition									
With Children < 6	5,345	3,253	60.9	2,073	38.7	1,360	25.4	713	13.3
With Children < 18	9,434	5,675	60.2	3,720	39.5	2,355	25.0	1,365	14.5
Married Couple Families	4,275	2,769	64.8	1,482	34.7	975	22.8	507	11.9
Female Head, No Spouse	4,403	2,439	55.4	1,947	44.2	1,186	26.9	761	17.3
Male Head, No Spouse	568	336	59.2	231	40.8	157	27.7	74	13.1
Other Households with Children	189	130	68.8	59	31.2	37	19.5	22	11.7
With No Children < 18	10,847	8,193	75.5	2,633	24.2	1,371	12.6	1,262	11.6
More Than One Adult	4,461	3,509	78.7	947	21.3	539	12.1	408	9.2
Women Living Alone	4,306	3,290	76.4	1,009	23.4	534	12.4	475	11.0
Men Living Alone	2,080	1,394	67.0	677	32.5	298	14.3	379	18.2
Households with Elderly	5,693	4,833	84.9	854	15.0	531	9.3	323	5.7
Elderly Living Alone	3,291	2,864	87.0	427	13.0	259	7.9	168	5.1
Race and Hispanic Ethnicity									
White Non-Hispanic	11,354	8,320	73.3	3,014	26.5	1,703	15.0	1,311	11.5
Black Non-Hispanic	4,768	2,865	60.1	1,870	39.3	1,128	23.7	742	15.6
Hispanic	3,321	2,060	62.0	1,253	37.7	764	23.0	489	14.7
Other Non-Hispanic	840	622	74.1	215	25.7	131	15.7	84	10.0

TABLE F.11 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	6,442	3,932	61.0	2,480	38.5	1,342	20.8	1138	17.7
Under 1.00	14,548	9,390	64.5	5,106	35.1	2,951	20.3	2155	14.8
Under 1.30	20,282	13,868	68.4	6,353	31.4	3,726	18.4	2627	13.0
Under 1.85	20,282	13,868	68.4	6,353	31.4	3,726	18.4	2627	13.0
1.85 and Over	-	-	0.0	-	0.0	-	0.0	-	0.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	6,830	4,529	66.3	2,277	33.3	1,334	19.5	943	13.8
Not in Central City	5,479	3,703	67.6	1,745	31.8	987	18.0	758	13.8
Outside Metropolitan Area	5,087	3,608	70.9	1,477	29.1	919	18.1	558	11.0
Census Geographical Region									
Northeast	3,404	2,532	74.4	860	25.3	473	13.9	387	11.4
Midwest	4,177	2,977	71.3	1,192	28.5	699	16.7	493	11.8
South	8,239	5,504	66.8	2,701	32.8	1,632	19.8	1069	13.0
West	4,462	2,855	64.0	1,600	35.9	922	20.7	678	15.2

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.12

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES UNDER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	20,158	14,753	73.2	5,366	26.6	3,387	16.8	1,979	9.8
Household Composition									
With Children < 6	5,178	3,543	68.4	1,628	31.5	1,194	23.1	434	8.4
With Children < 18	9,245	6,162	66.7	3,071	33.3	2,141	23.2	930	10.1
Married Couple Families	3,818	2,783	72.9	1,028	26.9	767	20.1	261	6.8
Female Head, No Spouse	4,606	2,801	60.8	1,802	39.1	1,184	25.7	618	13.4
Male Head, No Spouse	635	453	71.3	182	28.6	144	22.6	38	6.0
Other Households with Children	186	125	67.0	59	31.4	47	25.0	12	6.4
With No Children < 18	10,913	8,591	78.7	2,295	21.0	1,246	11.4	1,049	9.6
More Than One Adult	4,516	3,605	79.8	901	20.0	524	11.6	377	8.4
Women Living Alone	4,211	3,402	80.8	797	18.9	452	10.7	345	8.2
Men Living Alone	2,186	1,583	72.4	596	27.2	269	12.3	327	14.9
Households with Elderly	5,393	4,638	86.0	749	13.9	528	9.8	221	4.1
Elderly Living Alone	3,377	2,979	88.2	395	11.7	259	7.7	136	4.0
Race and Hispanic Ethnicity									
White Non-Hispanic	10,962	8,503	77.6	2,450	22.3	1,429	13.0	1,021	9.3
Black Non-Hispanic	4,815	3,224	66.9	1,580	32.8	1,026	21.3	554	11.5
Hispanic	3,515	2,367	67.3	1,132	32.2	799	22.7	333	9.5
Other Non-Hispanic	865	659	76.2	204	23.5	133	15.3	71	8.2

TABLE F.12 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	6,206	4,070	65.6	2,121	34.2	1,313	21.2	808	13.0
Under 1.00	14,157	9,828	69.4	4,297	30.4	2,676	18.9	1621	11.5
Under 1.30	20,158	14,753	73.2	5,366	26.6	3,387	16.8	1979	9.8
Under 1.85	20,158	14,753	73.2	5,366	26.6	3,387	16.8	1979	9.8
1.85 and Over	-	-	0.0	-	0.0	-	0.0	-	0.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	6,644	4,611	69.4	2,018	30.4	1,206	18.2	812	12.2
Not in Central City	5,240	3,815	72.8	1,407	26.8	945	18.0	462	8.8
Outside Metropolitan Area	5,241	4,029	76.9	1,209	23.1	792	15.1	417	8.0
Census Geographical Region									
Northeast	3,522	2,557	72.6	952	27.1	563	16.0	389	11.1
Midwest	4,021	2,953	73.4	1,059	26.3	647	16.1	412	10.2
South	8,088	6,038	74.7	2,044	25.2	1,345	16.6	699	8.6
West	4,527	3,206	70.8	1,310	29.0	832	18.4	478	10.6

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.13

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES OVER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	68,628	65,165	95.0	3,444	5.0	2,288	3.3	1,156	1.7
Household Composition									
With Children < 6	11,381	10,563	92.8	812	7.1	653	5.7	159	1.4
With Children < 18	25,422	23,613	92.9	1,803	7.0	1,360	5.3	443	1.7
Married Couple Families	20,742	19,615	94.6	1,121	5.4	880	4.2	241	1.2
Female Head, No Spouse	3,311	2,734	82.6	577	17.5	403	12.2	174	5.3
Male Head, No Spouse	1,090	1,008	92.5	82	7.5	66	6.1	16	1.4
Other Households with Children	279	256	91.8	23	8.2	11	3.8	12	4.4
With No Children < 18	43,206	41,552	96.2	1,641	3.8	928	2.1	713	1.7
More Than One Adult	27,630	26,799	97.0	826	3.0	496	1.8	330	1.2
Women Living Alone	8,358	7,943	95.0	414	4.9	226	2.7	188	2.2
Men Living Alone	7,217	6,810	94.4	402	5.6	206	2.9	196	2.7
Households with Elderly	13,638	13,370	98.0	262	2.0	171	1.3	91	0.7
Elderly Living Alone	4,628	4,543	98.2	83	1.8	52	1.1	31	0.7
Race and Hispanic Ethnicity									
White Non-Hispanic	57,147	54,807	95.9	2,335	4.1	1,558	2.7	777	1.4
Black Non-Hispanic	5,972	5,300	88.8	666	11.2	433	7.3	233	3.9
Hispanic	3,809	3,426	90.0	374	9.8	254	6.7	120	3.1
Other Non-Hispanic	1,701	1,632	95.9	69	4.0	43	2.5	26	1.5

TABLE F.13 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.00	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.30	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.85	10,228	8,550	83.6	1,667	16.3	1,112	10.9	555	5.4
1.85 and Over	58,400	56,615	96.9	1,777	3.0	1,176	2.0	601	1.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	0	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	15,421	14,410	93.4	1,005	6.6	643	4.2	362	2.4
Not in Central City	27,489	26,242	95.5	1,242	4.5	802	2.9	440	1.6
Outside Metropolitan Area	14,437	13,753	95.3	677	4.7	485	3.4	192	1.3
Census Geographical Region									
Northeast	13,521	12,965	95.9	551	4.1	386	2.9	165	1.2
Midwest	16,587	15,775	95.1	813	4.9	548	3.3	265	1.6
South	23,547	22,355	94.9	1,186	5.1	816	3.5	370	1.6
West	14,973	14,070	94.0	895	6.0	539	3.6	356	2.4

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.14

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES OVER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

				Food Insecure					
		Food Secure		All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	69,655	65,960	94.7	3,681	5.2	2,394	3.4	1,287	1.8
Household Composition									
With Children < 6	11,157	10,199	91.4	951	8.5	738	6.6	213	1.9
With Children < 18	25,529	23,565	92.3	1,953	7.6	1,430	5.6	523	2.0
Married Couple Families	20,673	19,440	94.0	1,227	6.0	925	4.5	302	1.5
Female Head, No Spouse	3,361	2,745	81.7	611	18.2	429	12.8	182	5.4
Male Head, No Spouse	1,157	1,077	93.1	79	6.8	51	4.4	28	2.4
Other Households with Children	339	303	89.5	36	10.5	25	7.4	11	3.1
With No Children < 18	44,126	42,395	96.1	1,727	3.9	964	2.2	763	1.7
More Than One Adult	28,269	27,343	96.7	924	3.3	528	1.9	396	1.4
Women Living Alone	8,613	8,208	95.3	404	4.7	217	2.5	187	2.2
Men Living Alone	7,244	6,843	94.5	401	5.5	220	3.0	181	2.5
Households with Elderly	14,208	13,918	98.0	287	2.0	198	1.4	89	0.6
Elderly Living Alone	4,716	4,611	97.8	105	2.2	68	1.4	37	0.8
Race and Hispanic Ethnicity									
White Non-Hispanic	57,256	54,842	95.8	2,410	4.2	1,560	2.7	850	1.5
Black Non-Hispanic	5,905	5,219	88.4	682	11.5	461	7.8	221	3.7
Hispanic	4,201	3,710	88.3	485	11.5	307	7.3	178	4.2
Other Non-Hispanic	2,293	2,190	95.5	103	4.5	66	2.9	37	1.6

TABLE F.14 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	0.0	-	0.0	0	0
Under 1.00	-	-	0.0	-	0.0	-	0.0	0	0
Under 1.30	-	-	0.0	-	0.0	-	0.0	0	0
Under 1.85	12,532	10,581	84.4	1,937	15.5	1,312	10.5	625	5
1.85 and Over	57,123	55,379	96.9	1,743	3.1	1,082	1.9	661	1.2
Income Not Known	-	-	0.0	-	0.0	-	0.0	0	0
Area of Residence									
Inside Metropolitan Area									
In Central City	16,385	15,240	93.0	1,141	7.0	700	4.3	441	2.7
Not in Central City	30,467	29,109	95.5	1,350	4.5	869	2.9	481	1.6
Outside Metropolitan Area	12,604	11,927	94.6	675	5.3	471	3.7	204	1.6
Census Geographical Region									
Northeast	13,712	13,113	95.6	598	4.4	406	3.0	192	1.4
Midwest	16,901	16,113	95.3	785	4.6	497	2.9	288	1.7
South	23,544	22,189	94.2	1,347	5.7	897	3.8	450	1.9
West	15,498	14,544	93.8	951	6.1	595	3.8	356	2.3

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.15

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES OVER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

				Food Insecure					
		Food Secure		All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	70,382	67,343	95.7	3,016	4.3	2,079	3.0	937	1.3
Household Composition									
With Children < 6	11,033	10,369	94.0	664	6.0	531	4.8	133	1.2
With Children < 18	25,755	24,175	93.9	1,576	6.1	1,206	4.7	370	1.4
Married Couple Families	20,706	19,797	95.6	906	4.4	702	3.4	204	1.0
Female Head, No Spouse	3,466	2,933	84.6	532	15.3	406	11.7	126	3.6
Male Head, No Spouse	1,326	1,212	91.4	115	8.7	93	7.0	22	1.7
Other Households with Children	256	234	91.3	22	8.7	5	2.1	17	6.6
With No Children < 18	44,627	43,167	96.7	1,440	3.3	873	2.0	567	1.3
More Than One Adult	28,122	27,458	97.6	661	2.4	445	1.6	216	0.8
Women Living Alone	8,843	8,456	95.6	380	4.3	211	2.4	169	1.9
Men Living Alone	7,662	7,253	94.7	399	5.2	217	2.8	182	2.4
Households with Elderly	14,676	14,392	98.1	280	1.9	187	1.3	93	0.6
Elderly Living Alone	5,019	4,913	97.9	102	2.0	60	1.2	42	0.8
Race and Hispanic Ethnicity									
White Non-Hispanic	57,446	55,453	96.5	1,983	3.5	1,360	2.4	623	1.1
Black Non-Hispanic	6,326	5,747	90.9	570	9.0	376	5.9	194	3.1
Hispanic	4,204	3,811	90.6	390	9.3	299	7.1	91	2.2
Other Non-Hispanic	2,405	2,331	96.9	74	3.1	45	1.9	29	1.2

TABLE F.15 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.00	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.30	-	-	0.0	-	0.0	-	0.0	0	0.0
Under 1.85	11,402	9,876	86.6	1,512	13.3	1,084	9.5	428	3.8
1.85 and Over	58,980	57,467	97.4	1,504	2.6	995	1.7	509	0.9
Income Not Known	-	-	0.0	-	0.0	-	0.0	0	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	16,549	15,668	94.7	869	5.3	544	3.3	325	2.0
Not in Central City	30,946	29,788	96.3	1,153	3.7	773	2.5	380	1.2
Outside Metropolitan Area	12,735	12,156	95.5	576	4.5	448	3.5	128	1.0
Census Geographical Region									
Northeast	13,399	12,917	96.4	477	3.6	329	2.5	148	1.1
Midwest	17,491	16,805	96.1	686	3.9	446	2.5	240	1.4
South	24,032	22,912	95.3	1,111	4.6	778	3.2	333	1.4
West	15,460	14,710	95.1	743	4.8	527	3.4	216	1.4

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.16

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES UNDER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	32,182	24,030	74.7	8,080	25.1	4,935	15.3	3,145	9.8
Household Composition									
With Children < 6	8,202	5,519	67.3	2,645	32.3	1,804	22.0	841	10.3
With Children < 18	14,634	9,860	67.4	4,736	32.3	3,105	21.2	1,631	11.1
Married Couple Families	7,713	5,655	73.3	2,039	26.4	1,428	18.5	611	7.9
Female Head, No Spouse	5,799	3,424	59.0	2,368	40.9	1,477	25.5	891	15.4
Male Head, No Spouse	840	595	70.9	231	27.6	156	18.6	75	9.0
Other Households with Children	282	186	65.9	96	34.1	43	15.1	53	19.0
With No Children < 18	17,548	14,170	80.8	3,344	19.0	1,830	10.4	1,514	8.6
More Than One Adult	7,682	6,331	82.4	1,334	17.4	814	10.6	520	6.8
Women Living Alone	6,470	5,295	81.8	1,171	18.1	671	10.4	500	7.7
Men Living Alone	3,395	2,544	74.9	840	24.8	345	10.2	495	14.6
Households with Elderly	8,801	7,776	88.3	1,016	11.6	632	7.2	384	4.4
Elderly Living Alone	5,033	4,518	89.8	511	10.2	286	5.7	225	4.5
Race and Hispanic Ethnicity									
White Non-Hispanic	20,384	16,079	78.9	4,282	21.1	2,620	12.9	1,662	8.2
Black Non-Hispanic	6,449	4,326	67.1	2,109	32.7	1,241	19.2	868	13.5
Hispanic	4,384	2,871	65.5	1,481	33.8	952	21.7	529	12.1
Other Non-Hispanic	965	754	78.1	210	21.7	123	12.7	87	9.0

TABLE F.16 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	5,603	3,467	61.9	2,113	37.7	1,177	21.0	936	16.7
Under 1.00	15,924	10,717	67.3	5,154	32.3	3,081	19.3	2073	13
Under 1.30	21,953	15,480	70.5	6,413	29.2	3,823	17.4	2590	11.8
Under 1.85	32,182	24,030	74.7	8,080	25.1	4,935	15.3	3145	9.8
1.85 and Over	-	-	0.0	-	0.0	-	0.0	-	0.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	9,489	6,678	70.4	2,804	29.5	1,702	17.9	1102	11.6
Not in Central City	8,287	6,257	75.5	2,005	24.2	1,143	13.8	862	10.4
Outside Metropolitan Area	9,433	7,296	77.3	2,114	22.4	1,368	14.5	746	7.9
Census Geographical Region									
Northeast	5,427	4,133	76.2	1,281	23.6	787	14.5	494	9.1
Midwest	7,206	5,479	76.0	1,725	24.0	1,071	14.9	654	9.1
South	12,762	9,583	75.1	3,162	24.8	1,951	15.3	1211	9.5
West	6,787	4,834	71.2	1,911	28.2	1,125	16.6	786	11.6

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.17

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES UNDER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	32,814	24,449	74.5	8,290	25.3	5,038	15.4	3,252	9.9
Household Composition									
With Children < 6	7,795	5,126	65.8	2,642	33.9	1,810	23.2	832	10.7
With Children < 18	14,321	9,458	66.0	4,813	33.6	3,162	22.1	1,651	11.5
Married Couple Families	7,422	5,270	71.0	2,123	28.6	1,461	19.7	662	8.9
Female Head, No Spouse	5,765	3,396	58.9	2,349	40.8	1,464	25.4	885	15.4
Male Head, No Spouse	846	578	68.4	267	31.6	185	21.9	82	9.7
Other Households with Children	288	214	74.2	74	25.8	52	18.1	22	7.7
With No Children < 18	18,492	14,990	81.1	3,477	18.8	1,876	10.1	1,601	8.7
More Than One Adult	8,524	7,127	83.6	1,390	16.3	812	9.5	578	6.8
Women Living Alone	6,730	5,498	81.7	1,224	18.2	660	9.8	564	8.4
Men Living Alone	3,238	2,365	73.0	864	26.7	405	12.5	459	14.2
Households with Elderly	9,885	8,823	89.3	1,054	10.6	676	6.8	378	3.8
Elderly Living Alone	5,269	4,758	90.3	510	9.7	315	6.0	195	3.7
Race and Hispanic Ethnicity									
White Non-Hispanic	20,635	16,367	79.3	4,244	20.6	2,531	12.3	1,713	8.3
Black Non-Hispanic	6,347	4,098	64.6	2,214	34.9	1,357	21.4	857	13.5
Hispanic	4,617	3,043	65.9	1,561	33.9	981	21.3	580	12.6
Other Non-Hispanic	1,215	942	77.5	271	22.3	169	13.9	102	8.4

TABLE F.17 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	6,442	3,932	61.0	2,480	38.5	1,342	20.8	1138	17.7
Under 1.00	14,548	9,390	64.5	5,106	35.1	2,951	20.3	2155	14.8
Under 1.30	20,282	13,868	68.4	6,353	31.4	3,726	18.4	2627	13.0
Under 1.85	32,814	24,449	74.5	8,290	25.3	5,038	15.4	3252	9.9
1.85 and Over	-	-	0.0	-	0.0	-	0.0	-	0.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	10,200	7,271	71.3	2,900	28.4	1,726	16.9	1174	11.5
Not in Central City	9,567	7,136	74.6	2,393	25.0	1,424	14.9	969	10.1
Outside Metropolitan Area	8,211	6,322	77.0	1,885	22.9	1,219	14.8	666	8.1
Census Geographical Region									
Northeast	5,605	4,454	79.5	1,139	20.3	691	12.3	448	8.0
Midwest	7,121	5,534	77.7	1,576	22.1	939	13.2	637	8.9
South	12,838	9,315	72.6	3,482	27.1	2,162	16.8	1320	10.3
West	7,250	5,146	71.0	2,094	28.9	1,247	17.2	847	11.7

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.18

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES UNDER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	31,560	24,629	78.0	6,878	21.8	4,471	14.2	2,407	7.6
Household Composition									
With Children < 6	7,460	5,406	72.5	2,046	27.4	1,515	20.3	531	7.1
With Children < 18	13,975	10,004	71.6	3,956	28.3	2,811	20.1	1,145	8.2
Married Couple Families	6,953	5,399	77.7	1,544	22.2	1,145	16.5	399	5.7
Female Head, No Spouse	5,754	3,657	63.6	2,093	36.4	1,423	24.7	670	11.7
Male Head, No Spouse	1,000	758	75.8	242	24.2	191	19.1	51	5.1
Other Households with Children	269	190	70.7	76	28.1	52	19.3	24	8.8
With No Children < 18	17,585	14,625	83.2	2,922	16.6	1,660	9.4	1,262	7.2
More Than One Adult	7,708	6,553	85.0	1,143	14.8	708	9.2	435	5.6
Women Living Alone	6,478	5,476	84.5	987	15.2	557	8.6	430	6.6
Men Living Alone	3,399	2,597	76.4	792	23.3	395	11.6	397	11.7
Households with Elderly	9,494	8,535	89.9	949	10.0	664	7.0	285	3.0
Elderly Living Alone	5,346	4,852	90.8	487	9.2	318	6.0	169	3.2
Race and Hispanic Ethnicity									
White Non-Hispanic	19,194	15,762	82.1	3,417	17.8	2,135	11.1	1,282	6.7
Black Non-Hispanic	6,345	4,467	70.4	1,863	29.3	1,214	19.1	649	10.2
Hispanic	4,753	3,383	71.2	1,351	28.5	963	20.3	388	8.2
Other Non-Hispanic	1,268	1,017	80.2	248	19.5	159	12.5	89	7.0

TABLE F.18 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	6,206	4,070	65.6	2,121	34.2	1,313	21.2	808	13.0
Under 1.00	14,157	9,828	69.4	4,297	30.4	2,676	18.9	1621	11.5
Under 1.30	20,158	14,753	73.2	5,366	26.6	3,387	16.8	1979	9.8
Under 1.85	31,560	24,629	78.0	6,878	21.8	4,471	14.2	2407	7.6
1.85 and Over	-	-	0.0	-	0.0	-	0.0	-	0.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	9,587	7,123	74.3	2,444	25.5	1,487	15.5	957	10.0
Not in Central City	9,189	7,255	79.0	1,911	20.8	1,288	14.0	623	6.8
Outside Metropolitan Area	8,119	6,529	80.4	1,584	19.5	1,099	13.5	485	6.0
Census Geographical Region									
Northeast	5,449	4,282	78.6	1,155	21.2	706	13.0	449	8.2
Midwest	6,740	5,322	79.0	1,408	20.8	893	13.2	515	7.6
South	12,422	9,756	78.5	2,655	21.4	1,790	14.4	865	7.0
West	6,949	5,269	75.8	1,661	23.9	1,082	15.6	579	8.3

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.19

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES OVER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	58,400	56,615	96.9	1,777	3.0	1,176	2.0	601	1.0
Household Composition									
With Children < 6	9,002	8,645	96.0	357	4.0	280	3.1	77	0.9
With Children < 18	20,852	19,956	95.7	896	4.3	674	3.2	222	1.1
Married Couple Families	17,475	16,930	96.9	545	3.1	438	2.5	107	0.6
Female Head, No Spouse	2,311	2,012	87.1	299	13.0	198	8.6	101	4.4
Male Head, No Spouse	851	808	94.9	43	5.0	36	4.2	7	0.8
Other Households with Children	216	206	95.7	9	4.3	2	1.1	7	3.2
With No Children < 18	37,547	36,659	97.6	881	2.3	502	1.3	379	1.0
More Than One Adult	24,719	24,247	98.1	470	1.9	272	1.1	198	0.8
Women Living Alone	6,689	6,485	96.9	201	3.0	107	1.6	94	1.4
Men Living Alone	6,139	5,928	96.6	209	3.4	122	2.0	87	1.4
Households with Elderly	11,331	11,213	99.0	118	1.1	77	0.7	41	0.4
Elderly Living Alone	3,473	3,437	98.9	36	1.0	22	0.6	14	0.4
Race and Hispanic Ethnicity									
White Non-Hispanic	49,664	48,397	97.4	1,262	2.5	844	1.7	418	0.8
Black Non-Hispanic	4,599	4,263	92.7	333	7.3	214	4.7	119	2.6
Hispanic	2,720	2,576	94.7	144	5.3	95	3.5	49	1.8
Other Non-Hispanic	1,417	1,379	97.4	37	2.6	23	1.6	14	1.0

TABLE F.19 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	0.0	-	0.0	-	0.0
Under 1.00	-	-	0.0	-	0.0	-	0.0	-	0.0
Under 1.30	-	-	0.0	-	0.0	-	0.0	-	0.0
Under 1.85	-	-	0.0	-	0.0	-	0.0	-	0.0
1.85 and Over	58,400	56,615	96.9	1,777	3.0	1,176	2.0	601	1.0
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	12,899	12,376	95.9	521	4.0	327	2.5	194	1.5
Not in Central City	24,450	23,739	97.1	708	2.8	476	1.9	232	0.9
Outside Metropolitan Area	11,414	11,123	97.4	289	2.5	194	1.7	95	0.8
Census Geographical Region									
Northeast	11,786	11,474	97.3	308	2.6	216	1.8	92	0.8
Midwest	14,182	13,784	97.2	398	2.8	266	1.9	132	0.9
South	19,674	19,063	96.9	608	3.1	413	2.1	195	1.0
West	12,757	12,295	96.4	463	3.6	281	2.2	182	1.4

Source: Tabulations of Current Population Survey, Food Security Supplement data.

Table F.20

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES OVER 185 PERCENT OF POVERTY THRESHHOLD

				Food Insecure					
		Food Secure		All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	57,123	55,379	96.9	1,743	3.1	1,082	1.9	661	1.2
Household Composition									
With Children < 6	8,708	8,326	95.6	382	4.4	288	3.3	94	1.1
With Children < 18	20,642	19,782	95.8	860	4.1	623	3.0	237	1.1
Married Couple Families	17,525	16,939	96.7	587	3.3	439	2.5	148	0.8
Female Head, No Spouse	1,998	1,788	89.5	210	10.5	152	7.6	58	2.9
Male Head, No Spouse	878	835	95.1	43	4.9	23	2.6	20	2.3
Other Households with Children	240	220	91.6	21	8.4	10	4.0	11	4.4
With No Children < 18	36,481	35,597	97.6	884	2.5	459	1.3	425	1.2
More Than One Adult	24,206	23,725	98.0	481	2.0	255	1.1	226	0.9
Women Living Alone	6,189	6,000	96.9	190	3.1	92	1.5	98	1.6
Men Living Alone	6,086	5,873	96.5	212	3.5	112	1.8	100	1.7
Households with Elderly	10,016	9,929	99.1	87	0.8	52	0.5	35	0.3
Elderly Living Alone	2,738	2,716	99.2	22	0.8	12	0.4	10	0.4
Race and Hispanic Ethnicity									
White Non-Hispanic	47,975	46,795	97.5	1,180	2.4	732	1.5	448	0.9
Black Non-Hispanic	4,326	3,986	92.2	339	7.9	232	5.4	107	2.5
Hispanic	2,905	2,727	93.9	177	6.1	90	3.1	87	3.0
Other Non-Hispanic	1,917	1,871	97.6	47	2.4	28	1.4	19	1.0

TABLE F.20 *(continued)*

	Total (000)	Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
		(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	-	-	0.0	-	0.0
Under 1.00	-	-	0.0	-	-	-	0.0	-	0.0
Under 1.30	-	-	0.0	-	-	-	0.0	-	0.0
Under 1.85	-	-	0.0	-	-	-	0.0	-	0.0
1.85 and Over	57,123	55,379	96.9	1,743	3.1	1,082	1.9	661	1.2
Income Not Known	-	-	0.0	-	-	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	13,016	12,498	96.0	518	4.0	308	2.4	210	1.6
Not in Central City	26,379	25,676	97.3	703	2.6	432	1.6	271	1.0
Outside Metropolitan Area	9,480	9,213	97.2	267	2.8	171	1.8	96	1.0
Census Geographical Region									
Northeast	11,511	11,192	97.2	319	2.7	188	1.6	131	1.1
Midwest	13,957	13,556	97.1	401	2.8	257	1.8	144	1.0
South	18,945	18,379	97.0	566	3.0	367	1.9	199	1.1
West	12,710	12,253	96.4	458	3.6	271	2.1	187	1.5

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.21

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES OVER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

		Food Secure		Food Insecure					
				All		Without Hunger		With Hunger	
	Total (000)	(000)	Percent	(000)	Percent	(000)	Percent	(000)	Percent
All Households	58,980	57,467	97.4	1,504	2.6	995	1.7	509	0.9
Household Composition									
With Children < 6	8,750	8,505	97.2	245	2.8	210	2.4	35	0.4
With Children < 18	21,025	20,334	96.7	691	3.3	537	2.6	154	0.7
Married Couple Families	17,571	17,181	97.8	390	2.2	324	1.8	66	0.4
Female Head, No Spouse	2,318	2,077	89.6	241	10.4	167	7.2	74	3.2
Male Head, No Spouse	962	907	94.3	54	5.7	45	4.7	9	1.0
Other Households with Children	173	168	97.1	5	2.9	-	0.0	5	2.9
With No Children < 18	37,955	37,133	97.8	813	2.1	459	1.2	354	0.9
More Than One Adult	24,930	24,510	98.3	419	1.6	261	1.0	158	0.6
Women Living Alone	6,576	6,383	97.1	190	2.9	106	1.6	84	1.3
Men Living Alone	6,449	6,240	96.8	203	3.1	91	1.4	112	1.7
Households with Elderly	10,575	10,495	99.2	80	0.8	51	0.5	29	0.3
Elderly Living Alone	3,050	3,040	99.7	10	0.3	1	0.0	9	0.3
Race and Hispanic Ethnicity									
White Non-Hispanic	49,215	48,194	97.9	1,016	2.0	654	1.3	362	0.7
Black Non-Hispanic	4,795	4,504	93.9	288	6.0	189	3.9	99	2.1
Hispanic	2,967	2,796	94.2	172	5.7	135	4.5	37	1.2
Other Non-Hispanic	2,002	1,974	98.6	29	1.4	18	0.9	11	0.5

TABLE F.21 *(continued)*

	Total (000)	Food Secure (000)	Food Secure Percent	Food Insecure All (000)	Food Insecure All Percent	Food Insecure Without Hunger (000)	Food Insecure Without Hunger Percent	Food Insecure With Hunger (000)	Food Insecure With Hunger Percent
Household Income-to-Poverty Ratio									
Under 0.50	-	-	0.0	-	0.0	-	0.0	-	0.0
Under 1.00	-	-	0.0	-	0.0	-	0.0	-	0.0
Under 1.30	-	-	0.0	-	0.0	-	0.0	-	0.0
Under 1.85	-	-	0.0	-	0.0	-	0.0	-	0.0
1.85 and Over	58,980	57,467	97.4	1,504	2.6	995	1.7	509	0.9
Income Not Known	-	-	0.0	-	0.0	-	0.0	-	0.0
Area of Residence									
Inside Metropolitan Area									
In Central City	13,606	13,155	96.7	443	3.2	263	1.9	180	1.3
Not in Central City	26,998	26,348	97.6	649	2.4	430	1.6	219	0.8
Outside Metropolitan Area	9,858	9,656	98.0	201	2.0	141	1.4	60	0.6
Census Geographical Region									
Northeast	11,471	11,191	97.6	274	2.4	186	1.6	88	0.8
Midwest	14,773	14,436	97.7	336	2.2	199	1.3	137	0.9
South	19,698	19,193	97.4	501	2.6	333	1.7	168	0.9
West	13,039	12,646	97.0	392	3.0	277	2.1	115	0.9

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.22

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	89.6	0.252	6.4	0.177	3.9	0.126
Household Composition						
With Children < 6	82.8	0.534	11.9	0.385	5.1	0.277
With Children < 18	84.4	0.424	10.5	0.342	5.0	0.208
Married Couple Families	89.9	0.309	7.3	0.319	2.8	0.184
Female Head, No Spouse	67.7	1.039	20.4	0.923	11.8	0.526
Male Head, No Spouse	83.6	1.759	11.0	1.393	4.8	1.050
Other Households with Children	78.7	3.965	9.0	2.139	12.3	3.615
With No Children < 18	92.7	0.221	3.9	0.129	3.3	0.143
More Than One Adult	94.7	0.243	3.1	0.171	2.1	0.140
Women Living Alone	90.4	0.389	5.4	0.347	4.2	0.153
Men Living Alone	89.1	0.536	4.7	0.394	6.0	0.548
Households with Elderly	94.9	0.202	3.1	0.142	1.9	0.154
Elderly Living Alone	94.2	0.429	3.3	0.263	2.5	0.317
Race and Hispanic Ethnicity						
White Non-Hispanic	92.5	0.204	4.6	0.152	2.8	0.102
Black Non-Hispanic	78.3	0.832	12.8	0.690	8.8	0.534
Hispanic	77.0	1.276	14.7	0.996	7.9	0.686
Other Non-Hispanic	89.8	1.309	6.0	0.990	4.2	0.586

TABLE F.22 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	61.9	1.155	21.0	1.190	16.7	0.722
Under 1.00	67.3	0.799	19.3	0.611	13.0	0.417
Under 1.30	70.5	0.702	17.4	0.483	11.8	0.435
Under 1.85	74.7	0.528	15.3	0.383	9.8	0.322
1.85 and Over	96.9	0.098	2.0	0.091	1.0	0.070
Income Not Known	94.5	0.469	3.3	0.385	2.1	0.243
Area of Residence						
Inside Metropolitan Area						
In Central City	85.7	0.431	8.7	0.343	5.6	0.308
Not in Central City	92.0	0.271	4.7	0.223	3.2	0.203
Outside Metropolitan Area	89.0	0.542	7.0	0.371	3.8	0.287
Census Geographical Region						
Northeast	91.2	0.464	5.4	0.345	3.3	0.184
Midwest	90.6	0.461	5.8	0.421	3.5	0.200
South	88.9	0.464	7.0	0.295	4.1	0.266
West	88.0	0.614	7.0	0.373	4.7	0.274

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.23

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	89.5	0.161	6.4	0.110	4.1	0.099
Household Composition						
With Children < 6	82.3	0.410	12.2	0.315	5.3	0.299
With Children < 18	84.3	0.334	10.4	0.177	5.1	0.246
Married Couple Families	89.5	0.279	7.3	0.270	3.1	0.130
Female Head, No Spouse	68.2	0.751	20.0	0.715	11.4	0.610
Male Head, No Spouse	82.9	2.377	11.3	1.410	5.8	1.763
Other Households with Children	82.3	2.289	12.1	1.873	5.6	1.346
With No Children < 18	92.6	0.159	3.9	0.106	3.4	0.113
More Than One Adult	94.5	0.196	3.0	0.135	2.4	0.168
Women Living Alone	89.9	0.445	5.3	0.308	4.7	0.240
Men Living Alone	89.2	0.439	5.1	0.365	5.6	0.405
Households with Elderly	94.9	0.220	3.2	0.201	1.8	0.112
Elderly Living Alone	94.1	0.436	3.6	0.359	2.3	0.238
Race and Hispanic Ethnicity						
White Non-Hispanic	92.6	0.147	4.4	0.112	2.9	0.065
Black Non-Hispanic	77.2	0.648	13.9	0.523	8.5	0.391
Hispanic	77.6	0.799	13.5	0.530	8.6	0.702
Other Non-Hispanic	89.8	0.687	6.3	0.493	3.6	0.418

Table F.23 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	61.0	0.882	20.8	0.752	17.7	0.748
Under 1.00	64.5	0.783	20.3	0.555	14.8	0.508
Under 1.30	68.4	0.567	18.4	0.415	13.0	0.377
Under 1.85	74.5	0.300	15.4	0.266	9.9	0.257
1.85 and Over	96.9	0.116	1.9	0.092	1.2	0.055
Income Not Known	94.9	0.357	2.9	0.312	1.9	0.181
Area of Residence						
Inside Metropolitan Area						
In Central City	86.1	0.312	8.1	0.318	5.6	0.294
Not in Central City	91.8	0.233	4.8	0.173	3.2	0.134
Outside Metropolitan Area	88.7	0.320	7.3	0.311	4.0	0.224
Census Geographical Region						
Northeast	92.0	0.266	4.8	0.220	3.1	0.125
Midwest	91.3	0.297	5.3	0.219	3.4	0.213
South	87.9	0.325	7.4	0.194	4.6	0.216
West	87.7	0.300	7.3	0.238	4.9	0.116

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.24

PREVALENCE OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	91.2	0.168	5.7	0.115	3.1	0.107
Household Composition						
With Children < 6	86.3	0.412	10.3	0.385	3.3	0.182
With Children < 18	87.0	0.303	9.3	0.231	3.6	0.196
Married Couple Families	92.2	0.349	5.9	0.302	1.9	0.140
Female Head, No Spouse	71.9	0.800	19.0	0.928	8.9	0.518
Male Head, No Spouse	85.2	1.426	11.8	1.199	3.0	0.791
Other Households with Children	83.2	2.865	10.1	2.408	5.6	1.415
With No Children < 18	93.6	0.153	3.6	0.116	2.7	0.112
More Than One Adult	95.4	0.189	2.9	0.147	1.7	0.155
Women Living Alone	91.8	0.350	4.5	0.341	3.6	0.246
Men Living Alone	90.2	0.665	4.7	0.344	4.9	0.500
Households with Elderly	95.3	0.210	3.2	0.203	1.4	0.116
Elderly Living Alone	94.9	0.320	3.2	0.285	1.8	0.172
Race and Hispanic Ethnicity						
White Non-Hispanic	93.9	0.139	3.8	0.129	2.3	0.082
Black Non-Hispanic	81.1	0.785	12.2	0.570	6.5	0.438
Hispanic	80.4	0.799	14.0	0.621	5.4	0.484
Other Non-Hispanic	91.9	0.634	5.2	0.555	2.8	0.430

TABLE F.24 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	65.6	1.061	21.2	0.938	13.0	0.698
Under 1.00	69.4	0.693	18.9	0.610	11.5	0.449
Under 1.30	73.2	0.633	16.8	0.512	9.8	0.428
Under 1.85	78.0	0.385	14.2	0.354	7.6	0.244
1.85 and Over	97.4	0.126	1.7	0.082	0.9	0.087
Income Not Known	94.8	0.529	3.1	0.336	1.8	0.375
Area of Residence						
Inside Metropolitan Area						
In Central City	88.1	0.446	7.1	0.292	4.6	0.273
Not in Central City	93.2	0.238	4.5	0.184	2.3	0.174
Outside Metropolitan Area	90.6	0.434	6.5	0.372	2.8	0.155
Census Geographical Region						
Northeast	92.0	0.290	5.0	0.289	2.9	0.158
Midwest	92.4	0.301	4.7	0.260	2.9	0.117
South	90.4	0.302	6.3	0.207	3.1	0.142
West	90.3	0.432	6.4	0.147	3.2	0.397

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.25

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES UNDER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	67.3	0.799	19.3	0.611	13.0	0.417
Household Composition						
With Children < 6	59.2	1.250	25.8	0.922	14.4	0.875
With Children < 18	59.2	1.043	25.5	0.956	14.9	0.736
Married Couple Families	63.7	1.424	24.2	1.368	11.7	1.102
Female Head, No Spouse	55.7	1.671	27.1	1.515	17.0	0.879
Male Head, No Spouse	59.8	3.068	23.3	3.664	14.2	2.877
Other Households with Children	62.6	9.016	13.5	6.507	23.9	7.308
With No Children < 18	75.2	1.053	13.4	0.714	11.2	0.642
More Than One Adult	76.5	1.273	13.6	1.141	9.6	0.900
Women Living Alone	76.3	1.442	14.0	1.280	9.6	0.561
Men Living Alone	70.3	2.637	11.8	1.411	17.5	2.090
Households with Elderly	83.8	1.035	10.4	0.988	5.8	0.620
Elderly Living Alone	86.2	1.117	7.9	0.972	5.9	0.754
Race and Hispanic Ethnicity						
White Non-Hispanic	71.6	0.767	16.9	0.601	11.3	0.558
Black Non-Hispanic	63.5	1.685	20.5	1.263	15.8	0.923
Hispanic	57.9	1.637	26.7	1.625	14.5	1.310
Other Non-Hispanic	73.3	2.559	14.3	1.659	12.0	1.929

TABLE F.25 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	61.9	1.155	21.0	1.190	16.7	0.722
Under 1.00	67.3	0.799	19.3	0.611	13.0	0.417
Under 1.30	67.3	0.799	19.3	0.611	13.0	0.417
Under 1.85	67.3	0.799	19.3	0.611	13.0	0.417
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	64.5	1.280	21.0	1.055	14.5	1.063
Not in Central City	67.4	0.825	18.0	0.938	14.1	0.797
Outside Metropolitan Area	69.7	1.397	18.8	0.863	11.2	0.875
Census Geographical Region						
Northeast	66.9	2.233	19.8	1.701	13.1	1.071
Midwest	70.0	1.223	18.0	1.213	12.0	0.806
South	68.3	1.457	18.9	1.086	12.6	0.692
West	62.8	1.028	21.3	0.578	14.9	0.805

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.26

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES UNDER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	64.5	0.783	20.3	0.555	14.8	0.508
Household Composition						
With Children < 6	57.0	1.694	27.7	1.309	15.0	0.931
With Children < 18	56.6	1.047	26.7	0.675	16.3	0.779
Married Couple Families	61.0	1.249	24.8	1.117	13.5	1.085
Female Head, No Spouse	53.0	1.158	28.0	1.315	18.7	1.004
Male Head, No Spouse	56.6	4.563	29.1	3.616	14.3	3.930
Other Households with Children	62.2	7.103	23.8	5.762	14.0	4.306
With No Children < 18	72.2	0.969	14.1	0.670	13.4	0.850
More Than One Adult	75.4	1.361	13.0	1.206	11.4	1.280
Women Living Alone	72.9	1.614	14.7	0.931	12.1	1.048
Men Living Alone	64.0	1.708	15.2	1.670	20.2	2.094
Households with Elderly	81.2	0.829	11.5	0.817	7.1	0.566
Elderly Living Alone	84.1	1.063	10.0	0.801	5.9	0.762
Race and Hispanic Ethnicity						
White Non-Hispanic	69.9	0.897	16.7	0.733	13.2	0.516
Black Non-Hispanic	57.1	1.400	24.9	1.004	17.4	0.981
Hispanic	57.9	2.374	25.0	1.349	16.8	1.500
Other Non-Hispanic	71.4	2.536	17.4	1.638	10.9	1.731

TABLE F.26 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	61.0	0.882	20.8	0.752	17.7	0.748
Under 1.00	64.5	0.783	20.3	0.555	14.8	0.508
Under 1.30	64.5	0.783	20.3	0.555	14.8	0.508
Under 1.85	64.5	0.783	20.3	0.555	14.8	0.508
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	63.0	1.025	21.5	1.086	15.1	0.854
Not in Central City	62.9	1.714	19.8	1.183	16.6	1.040
Outside Metropolitan Area	67.1	1.183	20.2	1.224	12.7	0.809
Census Geographical Region						
Northeast	71.1	1.359	15.5	1.368	13.0	1.207
Midwest	66.7	1.373	19.2	1.358	13.8	0.659
South	63.2	1.589	21.0	0.915	15.3	0.912
West	60.2	1.098	23.5	0.786	16.1	1.139

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.27

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES UNDER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	69.4	0.693	18.9	0.610	11.5	0.449
Household Composition						
With Children < 6	65.9	1.135	24.5	0.996	9.4	0.721
With Children < 18	63.0	0.823	25.4	0.956	11.4	0.727
Married Couple Families	70.3	1.483	21.7	1.278	7.8	0.654
Female Head, No Spouse	57.8	1.461	27.7	1.698	14.3	1.001
Male Head, No Spouse	65.3	3.515	27.1	3.546	7.6	1.983
Other Households with Children	60.4	6.951	28.3	6.232	8.9	5.179
With No Children < 18	75.7	0.864	12.4	0.666	11.5	0.595
More Than One Adult	76.9	1.179	12.5	1.231	10.4	1.111
Women Living Alone	77.2	1.184	12.3	1.012	10.2	0.702
Men Living Alone	71.0	2.373	12.6	1.662	15.9	2.217
Households with Elderly	83.2	1.188	11.6	1.143	5.1	0.524
Elderly Living Alone	86.3	1.229	8.7	1.103	5.0	0.740
Race and Hispanic Ethnicity						
White Non-Hispanic	73.3	1.048	15.1	0.973	11.4	0.502
Black Non-Hispanic	64.6	1.386	22.9	1.149	12.3	0.918
Hispanic	64.7	1.984	23.9	1.715	11.0	1.215
Other Non-Hispanic	74.9	2.347	15.9	2.016	8.8	1.943

TABLE F.27 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	65.6	1.061	21.2	0.938	13.0	0.698
Under 1.00	69.4	0.693	18.9	0.610	11.5	0.449
Under 1.30	69.4	0.693	18.9	0.610	11.5	0.449
Under 1.85	69.4	0.693	18.9	0.610	11.5	0.449
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	66.0	1.305	20.0	0.878	13.8	0.815
Not in Central City	68.6	1.151	20.4	1.363	10.6	0.738
Outside Metropolitan Area	73.2	1.405	17.4	1.268	9.4	0.700
Census Geographical Region						
Northeast	67.5	2.012	19.3	1.885	13.0	0.998
Midwest	69.7	1.668	18.3	1.538	11.6	0.821
South	71.6	0.899	18.3	0.945	10.0	0.518
West	66.8	1.491	20.3	0.777	12.7	1.383

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.28

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES OVER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	93.7	0.181	4.1	0.158	2.2	0.090
Household Composition						
With Children < 6	90.9	0.367	7.1	0.357	2.0	0.201
With Children < 18	91.1	0.309	6.4	0.298	2.5	0.137
Married Couple Families	93.3	0.256	5.1	0.222	1.6	0.158
Female Head, No Spouse	78.9	1.392	13.9	1.240	7.2	0.672
Male Head, No Spouse	91.7	1.101	6.9	1.085	1.4	0.466
Other Households with Children	86.7	2.748	6.9	2.330	6.4	2.374
With No Children < 18	95.2	0.158	2.7	0.139	2.1	0.125
More Than One Adult	96.3	0.202	2.2	0.166	1.4	0.135
Women Living Alone	93.9	0.267	3.2	0.258	2.8	0.190
Men Living Alone	92.6	0.607	3.5	0.384	3.8	0.492
Households with Elderly	97.0	0.218	1.8	0.200	1.2	0.130
Elderly Living Alone	96.4	0.479	1.9	0.342	1.6	0.277
Race and Hispanic Ethnicity						
White Non-Hispanic	94.9	0.168	3.3	0.149	1.8	0.080
Black Non-Hispanic	86.4	0.839	8.7	0.702	4.8	0.552
Hispanic	87.5	0.597	7.9	0.557	4.5	0.414
Other Non-Hispanic	94.1	1.324	3.8	1.045	2.1	0.414

TABLE F.28 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	79.0	1.072	12.3	0.859	8.6	0.672
Under 1.85	81.9	0.617	11.4	0.522	6.6	0.331
1.85 and Over	96.9	0.098	2.0	0.091	1.0	0.070
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	91.6	0.254	5.3	0.265	3.1	0.217
Not in Central City	94.7	0.238	3.3	0.175	2.0	0.169
Outside Metropolitan Area	93.6	0.408	4.3	0.345	2.0	0.165
Census Geographical Region						
Northeast	95.0	0.240	3.3	0.183	1.6	0.123
Midwest	93.8	0.551	4.1	0.476	2.1	0.185
South	93.4	0.205	4.3	0.257	2.2	0.169
West	92.7	0.406	4.3	0.230	2.9	0.206

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.29

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES OVER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	93.4	0.156	4.2	0.110	2.3	0.104
Household Composition						
With Children < 6	89.4	0.501	7.9	0.394	2.6	0.257
With Children < 18	90.6	0.243	6.8	0.215	2.6	0.164
Married Couple Families	92.7	0.285	5.4	0.241	1.9	0.135
Female Head, No Spouse	79.3	0.944	14.3	1.072	6.2	0.701
Male Head, No Spouse	90.3	1.461	6.5	1.010	3.2	1.062
Other Households with Children	89.0	1.981	7.5	2.159	3.5	1.124
With No Children < 18	95.1	0.154	2.7	0.111	2.2	0.109
More Than One Adult	96.2	0.157	2.3	0.120	1.5	0.090
Women Living Alone	93.7	0.414	3.2	0.263	3.1	0.329
Men Living Alone	92.9	0.488	3.8	0.363	3.4	0.335
Households with Elderly	97.1	0.209	1.9	0.165	1.0	0.115
Elderly Living Alone	96.6	0.397	2.0	0.314	1.4	0.287
Race and Hispanic Ethnicity						
White Non-Hispanic	94.8	0.145	3.3	0.112	1.9	0.079
Black Non-Hispanic	85.9	0.758	9.4	0.575	4.5	0.509
Hispanic	86.2	0.512	8.8	0.565	4.9	0.596
Other Non-Hispanic	94.4	0.518	3.5	0.453	2.1	0.350

TABLE F.29 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	78.1	0.839	13.5	0.668	8.2	0.879
Under 1.85	82.4	0.473	11.4	0.435	6.0	0.373
1.85 and Over	96.9	0.116	1.9	0.092	1.2	0.055
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	91.5	0.277	5.1	0.314	3.3	0.288
Not in Central City	94.6	0.228	3.5	0.187	1.9	0.111
Outside Metropolitan Area	93.2	0.288	4.6	0.263	2.1	0.168
Census Geographical Region						
Northeast	94.8	0.42	3.4	0.267	1.8	0.249
Midwest	94.4	0.392	3.5	0.234	2.1	0.242
South	92.7	0.221	4.9	0.209	2.3	0.149
West	92.3	0.237	4.6	0.144	3.1	0.228

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.30

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES OVER 100 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	94.6	0.164	3.7	0.108	1.7	0.095
Household Composition						
With Children < 6	92.5	0.430	6.0	0.382	1.5	0.183
With Children < 18	92.6	0.333	5.6	0.241	1.8	0.160
Married Couple Families	94.7	0.364	4.1	0.310	1.2	0.126
Female Head, No Spouse	82.9	1.041	12.5	0.912	4.6	0.528
Male Head, No Spouse	90.9	1.658	7.4	1.819	1.7	0.707
Other Households with Children	88.9	3.400	5.5	2.046	5.6	2.543
With No Children < 18	95.8	0.146	2.5	0.145	1.6	0.104
More Than One Adult	96.9	0.135	2.1	0.134	1.0	0.076
Women Living Alone	94.5	0.350	3.1	0.361	2.3	0.289
Men Living Alone	93.3	0.567	3.5	0.341	3.1	0.348
Households with Elderly	97.1	0.184	2.0	0.175	0.9	0.107
Elderly Living Alone	96.4	0.339	2.3	0.325	1.2	0.230
Race and Hispanic Ethnicity						
White Non-Hispanic	95.8	0.130	2.8	0.114	1.4	0.063
Black Non-Hispanic	88.8	0.868	7.2	0.630	3.8	0.446
Hispanic	88.2	1.245	9.1	0.940	2.5	0.497
Other Non-Hispanic	95.4	0.674	2.9	0.499	1.7	0.509

TABLE F.30 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	82.1	0.917	11.8	0.650	6.0	0.648
Under 1.85	85.0	0.451	10.3	0.401	4.5	0.230
1.85 and Over	97.4	0.126	1.7	0.082	0.9	0.087
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	93.3	0.558	4.2	0.344	2.5	0.310
Not in Central City	95.5	0.165	3.1	0.118	1.4	0.125
Outside Metropolitan Area	94.3	0.440	4.3	0.366	1.4	0.174
Census Geographical Region						
Northeast	95.6	0.267	2.9	0.177	1.5	0.127
Midwest	95.1	0.247	3.2	0.258	1.8	0.082
South	94.1	0.395	4.1	0.207	1.7	0.285
West	94.0	0.189	4.2	0.153	1.7	0.213

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.31

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES UNDER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	70.5	0.702	17.4	0.483	11.8	0.435
Household Composition						
With Children < 6	61.8	1.138	24.6	0.771	13.0	0.800
With Children < 18	61.6	0.886	24.0	0.790	14.0	0.677
Married Couple Families	66.8	1.261	22.2	1.268	10.7	0.900
Female Head, No Spouse	56.3	1.395	26.5	1.315	17.0	0.852
Male Head, No Spouse	65.8	3.623	21.0	3.540	11.1	2.396
Other Households with Children	62.2	7.120	15.7	5.076	22.0	6.167
With No Children < 18	78.0	0.931	11.8	0.499	9.9	0.565
More Than One Adult	79.2	1.011	12.4	0.804	8.1	0.674
Women Living Alone	79.9	1.284	11.5	1.080	8.5	0.431
Men Living Alone	71.8	2.129	11.3	1.175	16.6	2.095
Households with Elderly	86.5	0.813	8.3	0.509	5.1	0.686
Elderly Living Alone	88.0	1.156	6.6	0.606	5.4	0.855
Race and Hispanic Ethnicity						
White Non-Hispanic	74.9	0.620	14.8	0.465	10.1	0.471
Black Non-Hispanic	64.8	1.530	20.1	1.095	14.9	0.973
Hispanic	61.3	2.274	24.0	1.552	13.9	1.454
Other Non-Hispanic	73.6	3.540	15.0	2.161	11.0	1.902

TABLE F.31 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	61.9	1.155	21.0	1.190	16.7	0.722
Under 1.00	67.3	0.799	19.3	0.611	13.0	0.417
Under 1.30	70.5	0.702	17.4	0.483	11.8	0.435
Under 1.85	70.5	0.702	17.4	0.483	11.8	0.435
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	66.7	1.386	19.9	0.876	13.4	1.124
Not in Central City	71.5	0.616	15.6	0.812	12.5	0.687
Outside Metropolitan Area	72.8	1.166	16.8	0.742	10.1	0.764
Census Geographical Region						
Northeast	71.6	1.566	16.7	1.153	11.4	0.804
Midwest	72.7	0.703	16.5	0.867	10.9	0.845
South	70.8	1.290	17.4	0.894	11.7	0.737
West	66.9	1.711	19.0	0.843	13.4	1.021

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.32

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES UNDER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	68.4	0.567	18.4	0.415	13.0	0.377
Household Composition						
With Children < 6	60.9	1.450	25.4	1.169	13.3	0.755
With Children < 18	60.2	0.878	25.0	0.551	14.5	0.754
Married Couple Families	64.8	0.999	22.8	0.906	11.9	0.921
Female Head, No Spouse	55.4	0.950	26.9	1.121	17.3	0.926
Male Head, No Spouse	59.2	4.384	27.7	2.965	13.1	3.535
Other Households with Children	68.8	5.173	19.5	4.211	11.7	3.150
With No Children < 18	75.5	0.639	12.6	0.501	11.6	0.501
More Than One Adult	78.7	0.925	12.1	0.759	9.2	0.897
Women Living Alone	76.4	1.145	12.4	0.764	11.0	0.677
Men Living Alone	67.0	1.438	14.3	1.332	18.2	1.607
Households with Elderly	84.9	0.659	9.3	0.659	5.7	0.475
Elderly Living Alone	87.0	0.925	7.9	0.684	5.1	0.650
Race and Hispanic Ethnicity						
White Non-Hispanic	73.3	0.680	15.0	0.567	11.5	0.376
Black Non-Hispanic	60.1	1.239	23.7	0.832	15.6	0.924
Hispanic	62.0	1.843	23.0	1.263	14.7	1.293
Other Non-Hispanic	74.1	1.972	15.7	1.363	10.0	1.377

TABLE F.32 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	61.0	0.882	20.8	0.752	17.7	0.748
Under 1.00	64.5	0.783	20.3	0.555	14.8	0.508
Under 1.30	68.4	0.567	18.4	0.415	13.0	0.377
Under 1.85	68.4	0.567	18.4	0.415	13.0	0.377
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	66.3	0.788	19.5	0.862	13.8	0.959
Not in Central City	67.6	1.351	18.0	1.022	13.8	0.704
Outside Metropolitan Area	70.9	0.910	18.1	0.959	11.0	0.623
Census Geographical Region						
Northeast	74.4	0.953	13.9	0.915	11.4	0.389
Midwest	71.3	1.159	16.7	1.133	11.8	0.728
South	66.8	1.164	19.8	0.662	13.0	0.766
West	64.0	0.526	20.7	0.649	15.2	0.611

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.33

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES UNDER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	73.2	0.633	16.8	0.512	9.8	0.428
Household Composition						
With Children < 6	68.4	0.965	23.1	0.878	8.4	0.578
With Children < 18	66.7	0.752	23.2	0.780	10.1	0.669
Married Couple Families	72.9	1.282	20.1	1.078	6.8	0.632
Female Head, No Spouse	60.8	1.309	25.7	1.481	13.4	0.996
Male Head, No Spouse	71.3	2.742	22.6	2.376	6.0	1.504
Other Households with Children	67.0	6.129	25.0	5.697	6.4	3.462
With No Children < 18	78.7	0.791	11.4	0.584	9.6	0.504
More Than One Adult	79.8	0.955	11.6	0.973	8.4	0.802
Women Living Alone	80.8	0.993	10.7	0.907	8.2	0.644
Men Living Alone	72.4	1.882	12.3	1.276	14.9	1.695
Households with Elderly	86.0	0.895	9.8	0.786	4.1	0.398
Elderly Living Alone	88.2	1.037	7.7	0.891	4.0	0.526
Race and Hispanic Ethnicity						
White Non-Hispanic	77.6	0.772	13.0	0.720	9.3	0.430
Black Non-Hispanic	66.9	1.332	21.3	1.048	11.5	0.803
Hispanic	67.3	1.346	22.7	1.153	9.5	1.084
Other Non-Hispanic	76.2	1.683	15.3	1.535	8.2	1.617

TABLE F.33 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	65.6	1.601	21.2	0.938	13.0	0.698
Under 1.00	69.4	0.693	18.9	0.610	11.5	0.449
Under 1.30	73.2	0.633	16.8	0.512	9.8	0.428
Under 1.85	73.2	0.633	16.8	0.512	9.8	0.428
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	69.4	1.093	18.2	0.681	12.2	0.696
Not in Central City	72.8	1.018	18.0	1.032	8.8	0.710
Outside Metropolitan Area	76.9	1.097	15.1	1.036	8.0	0.556
Census Geographical Region						
Northeast	72.6	1.711	16.0	1.465	11.1	0.985
Midwest	73.4	1.622	16.1	1.554	10.2	0.924
South	74.7	0.707	16.6	0.717	8.6	0.286
West	70.8	1.568	18.4	0.575	10.6	1.447

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.34

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES OVER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	95.0	0.152	3.3	0.123	1.7	0.079
Household Composition						
With Children < 6	92.8	0.355	5.7	0.301	1.4	0.141
With Children < 18	92.9	0.279	5.3	0.253	1.7	0.118
Married Couple Families	94.6	0.247	4.2	0.220	1.2	0.113
Female Head, No Spouse	82.6	1.255	12.2	1.077	5.3	0.665
Male Head, No Spouse	92.5	0.946	6.1	0.969	1.4	0.511
Other Households with Children	91.8	2.061	3.8	1.794	4.4	1.977
With No Children < 18	96.2	0.133	2.1	0.109	1.7	0.100
More Than One Adult	97.0	0.152	1.8	0.137	1.2	0.128
Women Living Alone	95.0	0.374	2.7	0.226	2.2	0.246
Men Living Alone	94.4	0.519	2.9	0.296	2.7	0.391
Households with Elderly	98.0	0.197	1.3	0.160	0.7	0.107
Elderly Living Alone	98.2	0.402	1.1	0.291	0.7	0.220
Race and Hispanic Ethnicity						
White Non-Hispanic	95.9	0.140	2.7	0.111	1.4	0.078
Black Non-Hispanic	88.8	0.766	7.3	0.660	3.9	0.538
Hispanic	90.0	0.648	6.7	0.416	3.1	0.295
Other Non-Hispanic	95.9	0.721	2.5	0.715	1.5	0.370

TABLE F.34 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	0.0	na	0.0	na	0.0	na
Under 1.85	83.6	0.676	10.9	0.259	5.4	0.356
1.85 and Over	96.9	0.098	2.0	0.091	1.0	0.070
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	93.4	0.340	4.2	0.256	2.4	0.275
Not in Central City	95.5	0.249	2.9	0.161	1.6	0.182
Outside Metropolitan Area	95.3	0.339	3.4	0.280	1.3	0.152
Census Geographical Region						
Northeast	95.9	0.217	2.9	0.180	1.2	0.102
Midwest	95.1	0.358	3.3	0.307	1.6	0.125
South	94.9	0.200	3.5	0.240	1.6	0.118
West	94.0	0.430	3.6	0.184	2.4	0.260

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.35

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES OVER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	94.7	0.143	3.4	0.109	1.8	0.075
Household Composition						
With Children < 6	91.4	0.496	6.6	0.409	1.9	0.198
With Children < 18	92.3	0.269	5.6	0.231	2.0	0.131
Married Couple Families	94.0	0.306	4.5	0.269	1.5	0.125
Female Head, No Spouse	81.7	1.003	12.8	1.083	5.4	0.731
Male Head, No Spouse	93.1	1.305	4.4	0.714	2.4	1.101
Other Households with Children	89.5	2.255	7.4	2.362	3.1	0.882
With No Children < 18	96.1	0.144	2.2	0.119	1.7	0.081
More Than One Adult	96.7	0.147	1.9	0.107	1.4	0.095
Women Living Alone	95.3	0.305	2.5	0.218	2.2	0.208
Men Living Alone	94.5	0.535	3.0	0.342	2.5	0.363
Households with Elderly	98.0	0.187	1.4	0.147	0.6	0.088
Elderly Living Alone	97.8	0.335	1.4	0.245	0.8	0.198
Race and Hispanic Ethnicity						
White Non-Hispanic	95.8	0.125	2.7	0.109	1.5	0.065
Black Non-Hispanic	88.4	0.818	7.8	0.607	3.7	0.431
Hispanic	88.3	0.438	7.3	0.457	4.2	0.427
Other Non-Hispanic	95.5	0.537	2.9	0.418	1.6	0.303

TABLE F.35 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	0.0	na	0.0	na	0.0	na
Under 1.85	84.4	0.573	10.5	0.544	5.0	0.330
1.85 and Over	96.9	0.116	1.9	0.092	1.2	0.055
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	93.0	0.304	4.3	0.308	2.7	0.212
Not in Central City	95.5	0.231	2.9	0.215	1.6	0.101
Outside Metropolitan Area	94.6	0.316	3.7	0.284	1.6	0.130
Census Geographical Region						
Northeast	95.6	0.361	3.0	0.291	1.4	0.163
Midwest	95.3	0.352	2.9	0.200	1.7	0.200
South	94.2	0.201	3.8	0.193	1.9	0.107
West	93.8	0.257	3.8	0.195	2.3	0.135

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.36

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES OVER 130 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	95.7	0.158	3.0	0.112	1.3	0.079
Household Composition						
With Children < 6	94.0	0.420	4.8	0.395	1.2	0.202
With Children < 18	93.9	0.291	4.7	0.216	1.4	0.149
Married Couple Families	95.6	0.298	3.4	0.265	1.0	0.119
Female Head, No Spouse	84.6	1.067	11.7	0.912	3.6	0.647
Male Head, No Spouse	91.4	1.527	7.0	1.771	1.7	0.774
Other Households with Children	91.3	3.693	2.1	1.281	6.6	3.124
With No Children < 18	96.7	0.162	2.0	0.137	1.3	0.077
More Than One Adult	97.6	0.151	1.6	0.134	0.8	0.064
Women Living Alone	95.6	0.414	2.4	0.372	1.9	0.260
Men Living Alone	94.7	0.541	2.8	0.374	2.4	0.299
Households with Elderly	98.1	0.194	1.3	0.169	0.6	0.114
Elderly Living Alone	97.9	0.334	1.2	0.280	0.8	0.249
Race and Hispanic Ethnicity						
White Non-Hispanic	96.5	0.115	2.4	0.099	1.1	0.063
Black Non-Hispanic	90.9	0.848	5.9	0.617	3.1	0.476
Hispanic	90.6	1.039	7.1	0.732	2.2	0.492
Other Non-Hispanic	96.9	0.568	1.9	0.449	1.2	0.449

TABLE F.36 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	0.0	na	0.0	na	0.0	na
Under 1.85	86.6	0.585	9.5	0.534	3.8	0.235
1.85 and Over	97.4	0.126	1.7	0.082	0.9	0.087
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	94.7	0.446	3.3	0.314	2.0	0.266
Not in Central City	96.3	0.174	2.5	0.126	1.2	0.122
Outside Metropolitan Area	95.5	0.350	3.5	0.329	1.0	0.153
Census Geographical Region						
Northeast	96.4	0.295	2.5	0.143	1.1	0.175
Midwest	96.1	0.264	2.5	0.257	1.4	0.110
South	95.3	0.358	3.2	0.216	1.4	0.169
West	95.1	0.219	3.4	0.212	1.4	0.140

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.37

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES UNDER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	74.7	0.528	15.3	0.383	9.8	0.322
Household Composition						
With Children < 6	67.3	0.776	22.0	0.561	10.3	0.560
With Children < 18	67.4	0.591	21.2	0.535	11.1	0.485
Married Couple Families	73.3	0.646	18.5	0.676	7.9	0.606
Female Head, No Spouse	59.0	1.192	25.5	1.086	15.4	0.735
Male Head, No Spouse	70.9	2.806	18.6	2.699	9.0	1.857
Other Households with Children	65.9	6.727	15.1	4.472	19.0	5.644
With No Children < 18	80.8	0.692	10.4	0.427	8.6	0.422
More Than One Adult	82.4	0.886	10.6	0.713	6.8	0.421
Women Living Alone	81.8	1.077	10.4	0.891	7.7	0.331
Men Living Alone	74.9	1.423	10.2	0.938	14.6	1.571
Households with Elderly	88.3	0.546	7.2	0.373	4.4	0.400
Elderly Living Alone	89.8	0.853	5.7	0.499	4.5	0.601
Race and Hispanic Ethnicity						
White Non-Hispanic	78.9	0.545	12.9	0.408	8.2	0.355
Black Non-Hispanic	67.1	1.192	19.2	0.955	13.5	0.749
Hispanic	65.5	1.865	21.7	1.316	12.1	1.139
Other Non-Hispanic	78.1	2.211	12.7	1.569	9.0	1.201

TABLE F.37 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	61.9	1.155	21.0	1.190	16.7	0.722
Under 1.00	67.3	0.799	19.3	0.611	13.0	0.417
Under 1.30	70.5	0.702	17.4	0.483	11.8	0.435
Under 1.85	74.7	0.528	15.3	0.383	9.8	0.322
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	70.4	0.938	17.9	0.627	11.6	0.770
Not in Central City	75.5	0.623	13.8	0.622	10.4	0.555
Outside Metropolitan Area	77.3	0.971	14.5	0.692	7.9	0.562
Census Geographical Region						
Northeast	76.2	1.282	14.5	0.917	9.1	0.579
Midwest	76.0	0.913	14.9	0.781	9.1	0.647
South	75.1	0.882	15.3	0.658	9.5	0.571
West	71.2	1.329	16.6	0.767	11.6	0.717

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.38

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES UNDER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	74.5	0.300	15.4	0.266	9.9	0.257
Household Composition						
With Children < 6	65.8	0.891	23.2	0.790	10.7	0.576
With Children < 18	66.0	0.502	22.1	0.390	11.5	0.498
Married Couple Families	71.0	0.635	19.7	0.726	8.9	0.403
Female Head, No Spouse	58.9	0.889	25.4	1.061	15.4	0.841
Male Head, No Spouse	68.4	3.917	21.9	2.453	9.7	2.621
Other Households with Children	74.2	3.847	18.1	3.073	7.7	2.306
With No Children < 18	81.1	0.424	10.1	0.351	8.7	0.352
More Than One Adult	83.6	0.707	9.5	0.549	6.8	0.715
Women Living Alone	81.7	0.758	9.8	0.559	8.4	0.441
Men Living Alone	73.0	1.114	12.5	0.918	14.2	1.230
Households with Elderly	89.3	0.405	6.8	0.409	3.8	0.237
Elderly Living Alone	90.3	0.639	6.0	0.516	3.7	0.404
Race and Hispanic Ethnicity						
White Non-Hispanic	79.3	0.356	12.3	0.315	8.3	0.253
Black Non-Hispanic	64.6	1.004	21.4	0.684	13.5	0.754
Hispanic	65.9	1.215	21.3	1.114	12.6	0.962
Other Non-Hispanic	77.5	1.820	13.9	1.310	8.4	1.005

TABLE F.38 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	61.0	0.882	20.8	0.752	17.7	0.748
Under 1.00	64.5	0.783	20.3	0.555	14.8	0.508
Under 1.30	68.4	0.567	18.4	0.415	13.0	0.377
Under 1.85	74.5	0.300	15.4	0.266	9.9	0.257
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	71.3	0.694	16.9	0.873	11.5	0.608
Not in Central City	74.6	0.822	14.9	0.605	10.1	0.477
Outside Metropolitan Area	77.0	0.606	14.8	0.690	8.1	0.439
Census Geographical Region						
Northeast	79.5	0.767	12.3	0.625	8.0	0.365
Midwest	77.7	0.759	13.2	0.563	8.9	0.717
South	72.6	0.435	16.8	0.438	10.3	0.461
West	71.0	0.559	17.2	0.568	11.7	0.303

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.39

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES UNDER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	78.0	0.385	14.2	0.354	7.6	0.244
Household Composition						
With Children < 6	72.5	0.764	20.3	0.672	7.1	0.444
With Children < 18	71.6	0.603	20.1	0.566	8.2	0.432
Married Couple Families	77.7	0.811	16.5	0.719	5.7	0.378
Female Head, No Spouse	63.6	1.136	24.7	1.260	11.7	0.830
Male Head, No Spouse	75.8	2.286	19.1	1.841	5.1	1.224
Other Households with Children	70.7	4.533	19.3	4.110	8.8	2.365
With No Children < 18	83.2	0.466	9.4	0.421	7.2	0.337
More Than One Adult	85.0	0.600	9.2	0.611	5.6	0.491
Women Living Alone	84.5	0.683	8.6	0.689	6.6	0.471
Men Living Alone	76.4	1.593	11.6	0.809	11.7	1.350
Households with Elderly	89.9	0.481	7.0	0.480	3.0	0.240
Elderly Living Alone	90.8	0.624	6.0	0.609	3.2	0.317
Race and Hispanic Ethnicity						
White Non-Hispanic	82.1	0.483	11.1	0.458	6.7	0.193
Black Non-Hispanic	70.4	1.163	19.1	0.985	10.2	0.670
Hispanic	71.2	0.852	20.3	0.853	8.2	0.645
Other Non-Hispanic	80.2	1.480	12.5	1.174	7.0	1.159

TABLE F.39 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	65.6	1.061	21.2	0.938	13.0	0.698
Under 1.00	69.4	0.693	18.9	0.610	11.5	0.449
Under 1.30	73.2	0.633	16.8	0.512	9.8	0.428
Under 1.85	78.0	0.385	14.2	0.354	7.6	0.244
1.85 and Over	0.0	na	0.0	na	0.0	na
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	74.3	0.896	15.5	0.623	10.0	0.553
Not in Central City	79.0	0.618	14.0	0.634	6.8	0.459
Outside Metropolitan Area	80.4	0.925	13.5	0.788	6.0	0.395
Census Geographical Region						
Northeast	78.6	0.976	13.0	1.051	8.2	0.520
Midwest	79.0	1.114	13.2	1.042	7.6	0.536
South	78.5	0.547	14.4	0.473	7.0	0.164
West	75.8	0.589	15.6	0.418	8.3	0.833

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.40

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1995
FOR THOSE FAMILIES OVER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	96.9	0.098	2.0	0.091	1.0	0.070
Household Composition						
With Children < 6	96.0	0.326	3.1	0.277	0.9	0.150
With Children < 18	95.7	0.233	3.2	0.218	1.1	0.088
Married Couple Families	96.9	0.179	2.5	0.191	0.6	0.085
Female Head, No Spouse	87.1	1.232	8.6	1.031	4.4	0.553
Male Head, No Spouse	94.9	0.801	4.2	0.867	0.8	0.449
Other Households with Children	95.7	1.964	1.1	1.088	3.2	1.764
With No Children < 18	97.6	0.104	1.3	0.074	1.0	0.090
More Than One Adult	98.1	0.130	1.1	0.087	0.8	0.117
Women Living Alone	96.9	0.399	1.6	0.211	1.4	0.264
Men Living Alone	96.6	0.370	2.0	0.292	1.4	0.271
Households with Elderly	99.0	0.125	0.7	0.119	0.4	0.076
Elderly Living Alone	98.9	0.242	0.6	0.198	0.4	0.146
Race and Hispanic Ethnicity						
White Non-Hispanic	97.4	0.103	1.7	0.084	0.8	0.067
Black Non-Hispanic	92.7	0.676	4.7	0.628	2.6	0.436
Hispanic	94.7	0.634	3.5	0.605	1.8	0.281
Other Non-Hispanic	97.4	0.753	1.6	0.697	1.0	0.338

TABLE F.40 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	0.0	na	0.0	na	0.0	na
Under 1.85	0.0	na	0.0	na	0.0	na
1.85 and Over	96.9	0.098	2.0	0.091	1.0	0.070
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	95.9	0.165	2.5	0.211	1.5	0.186
Not in Central City	97.1	0.168	1.9	0.131	0.9	0.120
Outside Metropolitan Area	97.4	0.266	1.7	0.178	0.8	0.154
Census Geographical Region						
Northeast	97.3	0.189	1.8	0.182	0.8	0.121
Midwest	97.2	0.249	1.9	0.259	0.9	0.136
South	96.9	0.138	2.1	0.142	1.0	0.136
West	96.4	0.223	2.2	0.114	1.4	0.155

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.41

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1996
FOR THOSE FAMILIES OVER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	96.9	0.116	1.9	0.092	1.2	0.055
Household Composition						
With Children < 6	95.6	0.452	3.3	0.383	1.1	0.167
With Children < 18	95.8	0.254	3.0	0.196	1.1	0.109
Married Couple Families	96.7	0.279	2.5	0.206	0.8	0.114
Female Head, No Spouse	89.5	1.014	7.6	0.831	2.9	0.795
Male Head, No Spouse	95.1	1.451	2.6	0.811	2.3	1.269
Other Households with Children	91.6	1.660	4.0	2.084	4.4	1.227
With No Children < 18	97.6	0.131	1.3	0.105	1.2	0.071
More Than One Adult	98.0	0.128	1.1	0.121	0.9	0.074
Women Living Alone	96.9	0.330	1.5	0.227	1.6	0.273
Men Living Alone	96.5	0.484	1.8	0.325	1.7	0.374
Households with Elderly	99.1	0.109	0.5	0.106	0.3	0.059
Elderly Living Alone	99.2	0.242	0.4	0.207	0.4	0.124
Race and Hispanic Ethnicity						
White Non-Hispanic	97.5	0.117	1.5	0.089	0.9	0.060
Black Non-Hispanic	92.2	0.938	5.4	0.698	2.5	0.436
Hispanic	93.9	0.430	3.1	0.391	3.0	0.340
Other Non-Hispanic	97.6	0.489	1.4	0.430	1.0	0.244

TABLE F.41 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	0.0	na	0.0	na	0.0	na
Under 1.85	0.0	na	0.0	na	0.0	na
1.85 and Over	96.9	0.116	1.9	0.092	1.2	0.055
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	96.0	0.237	2.4	0.238	1.6	0.234
Not in Central City	97.3	0.137	1.6	0.139	1.0	0.112
Outside Metropolitan Area	97.2	0.347	1.8	0.265	1.0	0.160
Census Geographical Region						
Northeast	97.2	0.166	1.6	0.163	1.1	0.052
Midwest	97.1	0.260	1.8	0.233	1.0	0.128
South	97.0	0.250	1.9	0.183	1.1	0.091
West	96.4	0.178	2.1	0.097	1.5	0.146

Source: Tabulations of Current Population Survey, Food Security Supplement data.

TABLE F.42

STANDARD ERRORS OF PREVALENCE ESTIMATES OF FOOD SECURITY, FOOD INSECURITY, AND HUNGER
BY SELECTED CHARACTERSITICS OF HOUSEHOLDS, 1997
FOR THOSE FAMILIES OVER 185 PERCENT OF POVERTY THRESHHOLD
USING THE COMMON DENOMINATOR SCREEN

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
All Households	97.4	0.126	1.7	0.082	0.9	0.087
Household Composition						
With Children < 6	97.2	0.289	2.4	0.241	0.4	0.115
With Children < 18	96.7	0.215	2.6	0.142	0.7	0.155
Married Couple Families	97.8	0.199	1.8	0.161	0.4	0.090
Female Head, No Spouse	89.6	0.967	7.2	0.864	3.2	0.784
Male Head, No Spouse	94.3	1.179	4.7	1.403	1.0	0.688
Other Households with Children	97.1	2.460	0.0	na	2.9	2.460
With No Children < 18	97.8	0.128	1.2	0.108	0.9	0.079
More Than One Adult	98.3	0.116	1.0	0.114	0.6	0.076
Women Living Alone	97.1	0.424	1.6	0.343	1.3	0.248
Men Living Alone	96.8	0.367	1.4	0.265	1.7	0.292
Households with Elderly	99.2	0.123	0.5	0.120	0.3	0.101
Elderly Living Alone	99.7	0.180	0.0	0.043	0.3	0.174
Race and Hispanic Ethnicity						
White Non-Hispanic	97.9	0.093	1.3	0.073	0.7	0.064
Black Non-Hispanic	93.9	0.713	3.9	0.470	2.1	0.447
Hispanic	94.2	1.009	4.5	0.771	1.2	0.526
Other Non-Hispanic	98.6	0.384	0.9	0.234	0.5	0.290

TABLE F.42 *(continued)*

	Food Secure		Food Insecure			
			Without Hunger		With Hunger	
	Percent	Standard Error	Percent	Standard Error	Percent	Standard Error
Household Income-to-Poverty Ratio						
Under 0.50	0.0	na	0.0	na	0.0	na
Under 1.00	0.0	na	0.0	na	0.0	na
Under 1.30	0.0	na	0.0	na	0.0	na
Under 1.85	0.0	na	0.0	na	0.0	na
1.85 and Over	97.4	0.126	1.7	0.082	0.9	0.087
Income Not Known	0.0	na	0.0	na	0.0	na
Area of Residence						
Inside Metropolitan Area						
In Central City	96.7	0.394	1.9	0.246	1.3	0.257
Not in Central City	97.6	0.224	1.6	0.150	0.8	0.101
Outside Metropolitan Area	98.0	0.208	1.4	0.165	0.6	0.122
Census Geographical Region						
Northeast	97.6	0.170	1.6	0.077	0.8	0.127
Midwest	97.7	0.154	1.3	0.152	0.9	0.105
South	97.4	0.305	1.7	0.193	0.9	0.194
West	97.0	0.243	2.1	0.137	0.9	0.209

Source: Tabulations of Current Population Survey, Food Security Supplement data.