



Estimating the Range of Food-Insecure Households in India

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What Is the Issue?

Policymakers and researchers are increasingly concerned with assessing the worldwide food-insecure population and the ways it may be changing. A common denominator in different approaches to assessing food insecurity is the measurement of calories consumed. The ability to measure food consumption is basic not only to gauging food insecurity, but also for targeting and evaluating policies aimed at alleviating it, such as the U.S. Government's Feed the Future initiative. This report examines problems in measuring calorie consumption and the food-insecure population, even when extensive household survey data are available, and finds that the extent of food insecurity varies markedly according to how it is measured. The analysis focuses on India, the country with the largest food-insecure population in the world, using a large household data set compiled by the Government of India for tracking household food security.

What Did the Study Find?

The authors found significant differences in estimates of the size of India's food-insecure population—comprising people who consumed less than 2,100 calories per day—across three major assessment methodologies: (1) The aggregate production and consumption approach used in the annual global food insecurity assessment by the U.S. Department of Agriculture (USDA); (2) the household expenditure survey approach; and (3) the survey of direct responses to questions on household food security status. Each of the methods, summarized briefly, describes a different but important aspect of food security:

- **Aggregate production and consumption approach**—Food production and trade statistics are used to determine a country's total food availability, which can then be used to estimate the number of food-insecure households through data on income distribution. Based on this approach, USDA's 2005 global assessment estimated India's food-insecure population at 217 million people.
- **Household expenditure survey approach**—Household responses to the Indian Government's National Sample Survey allow estimation of calories derived from food purchased or produced by households and also provide information on the characteristics of these households. Using these data and appropriate weighting factors to expand to the entire population, the authors found a baseline estimate of 508 million food-insecure people in India for 2004/05. However, the estimates ranged from 404 million to 577 million, depending on alternative plausible assumptions on the calorie content of foods and of meals consumed outside the home.

This is a summary of an ERS report.

Find the full report at www.ers.usda.gov/publications/err133

ERS is a primary source of economic research and analysis from the U.S. Department of Agriculture, providing timely information on economic and policy issues related to agriculture, food, the environment, and rural America.

- **Survey of direct responses to questions on household food security**—This approach relies on survey questions that ask respondents about the adequacy of food consumption for household members. The authors found that estimates based on a specific question on household food security in India’s National Sample Survey gave an estimate of 19 million food-insecure people in 2004/05, sharply lower than for the alternative methods. The authors note, however, that the Indian survey instrument differs significantly from the carefully designed, multi-question modules used in the United States and elsewhere.

India’s household expenditure survey data may have the potential to provide the most accurate assessment of food insecurity, because they contain the most detail on household food availability. In analyzing the data, the authors found a large spread in estimates of the food-insecure population in India when they used alternative assumptions for estimating calories consumed. The highest and lowest counts of calorie intake resulted in an estimated difference of about 173 million food-insecure people in 2004/05. Specific measurement issues raised by the analysis are:

- Difficulty in determining calories in processed foods, an increasingly important component of diets across Indian households. Because of the wide range of nutritional content within various categories of processed foods, it is not possible to reliably discern calorie content from the survey data.
- Errors in estimating the calorie content of meals consumed outside the home and meals provided to nonhousehold members—growing trends in Indian diets—for which calories cannot be precisely estimated from the survey data. Miscounting calories from these sources, as well as those from processed foods, can distort estimates of food insecurity rates across income groups and survey years.
- Potential errors associated with estimating consumption of processed foods and meals outside the home, which vary with household characteristics such as income and, therefore, are nonrandom sources of error. In this analysis, we find that the errors are largest when accounting for calories consumed by the highest and lowest income households.
- Conflicting sources of information on the calorie content of unprocessed foods. The calorie conversion factors used by the Government of India and FAO differ substantially for some foods.

How Was the Study Conducted?

Household data collected in the 2004/05 round of India’s National Sample Survey, a survey of approximately 125,000 households conducted every 5 years, provide quantity and expenditure information for approximately 152 different food items for each household. Baseline estimates of calories purchased in the form of nonprocessed foods were calculated by multiplying quantities purchased by the average amount of calories per unit of quantity, using calorie conversion information from a source used by the Government of India. The baseline estimates of consumption of nonprocessed food calories were adjusted to account for household purchases of processed foods, calories included in the number of meals eaten outside the home, and meals given to nonhousehold members (such as to guests). The sensitivity of these baseline estimates of calorie consumption was then tested by perturbing the baseline assumptions, including (1) using an alternate source of information on the calorie content of foods from the Food and Agriculture Organization of the United Nations, (2) using alternate assumptions on the cost of calories from processed foods, and (3) accounting for the error involved in estimating the calories included in meals consumed outside the home or given to nonhousehold members.