



The impact of survey characteristics on the measurement of food consumption



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ABSTRACT

Survey characteristics affect the quality of the measurement of food consumption within households; thus, it is important to identify best practices for designing surveys that collect food data. This paper analyses the impact of survey characteristics on the measurement of food consumption from a sample of 81 national surveys. Results highlight regularities that can inform best practices in designing surveys and promoting the use of the data for multiple purposes. Surveys focused on food acquisition collect higher food quantities compared to those that target food consumption. Surveys based on recall interviews collect higher food quantities compared to those based on diaries, but the difference decreases with long reference periods. The use of standard units of measurement as well as the consideration of partakers in meals and of seasonality generates significant differences in the survey results. The impact of the different survey characteristics carries substantive implications when food consumption data are employed for assessing food security conditions. The results are part of a wider work program aimed at improving the quality of household survey data. More evidence is needed, ideally through coordinated sets of analyses and experiments in different contexts. Additionally, survey characteristics must be complemented by effective field work in order to generate high quality data. Towards this end, statistical capacity development is crucial to promote better data and more evidence-based decision making.

1. Introduction

Most countries regularly undertake national Household Consumption and Expenditure Surveys (HCES),¹ mainly for computing weights of the consumer price index, adjusting consumption in national accounts, and assessing poverty. As HCES are large-scale exercises, they collect a host of detailed information on a wide variety of topics. One of these topics is food consumption, in terms of expenditure and physical quantities, on which data is needed for analysing food and nutrition security conditions. Since the early 1960s, the FAO has used food consumption data collected in household surveys to derive parameters for the assessment of the prevalence of undernourishment (Naiken, 2014). However, most HCES are planned without considering food security among their objectives; thus, the food data collected in such surveys are not always fit for this purpose. In countries where statistical capacity is low and resources are limited, expanding the objectives of a given survey may constitute a low-hanging fruit, even while keeping in mind that including too many objectives in a survey may negatively affect the reliability of the information collected.

A recent study jointly conducted by the FAO, the International

Household Survey Network and the World Bank (Smith et al., 2014) found that less than 13% of the surveys analysed were collecting reliable food consumption data. The study adopted various criteria to assess reliability: the reference period during which consumption is reported; the time frame of the survey; the mode of data capture (recall or diaries); the focus on acquisition or actual consumption of foods; the comprehensiveness and specificity of the food list; the quality of the information on food away from home; and seasonality. Each of these characteristics affect the measurement of household food consumption; it is therefore important to develop guidelines, recommendations and best practices on these characteristics which offer a clear explanation of the impact of survey design on the measurement of food consumption. This is of particular importance when dealing with data that are used in the analysis of food and nutrition security.

Following the work of Smith et al. (2014), this paper offers an econometric analysis of the impact of survey characteristics on food consumption data. Two different approaches can be taken in this analysis. The first is based on experimental surveys, in which different techniques are applied for collecting the same data (Beegle et al., 2012; de Weerd et al., 2016). The second is based on the comparison of

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¹ With the expression “HCES” we refer to a broad category, which includes all surveys conducted on nationally representative samples that collect information on food consumption in a specific section of the questionnaire.

surveys in which data are collected with different techniques. Being based on experiments, the first approach allows for testing hypotheses against control samples, but it carries high costs and uncertainty on the extent to which results are valid in contexts others than those in which the experiment is conducted. The second approach does not allow for testing hypotheses against control samples, but is cheaper, and enables the simultaneous consideration of results from many different countries and regions. One challenge which is common to both approaches is that, to date, there is no recognized valid measure of the “true” consumption of a population that can serve as a benchmark.

This paper adopts the second approach. It adds to existing studies by analysing the impact of survey characteristics in a multiple regression run on a large sample of surveys. The characteristic of the questionnaires and the techniques for obtaining food data are assessed with reference to a caloric metric of food consumption, the *per capita* Dietary Energy Consumption (DEC). This is a key variable in the measurement of undernourishment, as estimated by the FAO and reported in the *State of Food Insecurity in the World Report* series. The results provide guidance on the key elements to be taken into account when developing a survey and of the existing trade-offs associated with choices. Ultimately, they contribute knowledge on how HCES can be made more suitable for collecting information relevant for analysing food and nutrition security.

The following section reviews concepts and definitions and proposes a survey typology, while Section 3 reviews previous studies. Section 4 describes the sample of surveys used in the analysis and Section 5 presents the main results, considering the impact of different characteristics on the level and variability of the DEC. Section 6 concludes.

2. Some concepts and definitions: A typology

Food data collected in HCES can be diverse, and often refers to diverse concepts. Even the term “food consumption” lends itself to multiple meanings. When the focus of the analysis is expenditure, the term “consumption” can designate the purchase of foods, disregarding the end-use of what was purchased. At the opposite end, analyses and surveys that focus on nutrition use the term “food consumption” to designate the intake of a food, possibly net of unusable parts.

When analysing food and nutrition security, all these aspects must be considered, as they together define what the FAO calls the different dimensions of food security. Food expenditure, along with other methods of acquiring food such as transfers, gifts and own-production, are variables of interest from the point of view of the ability to access food. What is actually ingested determines the physical well-being of each individual, as shaped by the characteristics of the diet. Expenditures and acquisitions are frequently – but not exclusively – centralized at the household level, at least for food that is prepared and consumed within a household. Consumption that happens away from home is usually an individual choice, as is food intake. For this reason, HCES tend to collect data on household purchases and other means through which households acquire food, while data on intake are typically collected in individual-level surveys.

In practice, this distinction is not clear-cut. The difference between foods purchased (or else acquired) and those that are physically consumed should become negligible when surveys rely on efficient samples. The difference is essentially a change in stocks – if we ignore food wasted in households. Stocks should be null on average if the data collection is homogeneously spread across time and space: in any given reference period some households may build stocks while others may consume food from stocks. However, surveys with less effective timing of household visits may show significant differences between acquisition and consumption.

In the sample of HCES considered in this paper (see Table A1 of the Appendix for a detailed description), we identify three different approaches to collecting food data:

- Type 1: *Acquisition*. Households report on food they acquired through purchases, own production and in-kind transfers. Actual consumption of the same food is not reported.
- Type 2: *Combination of acquisition and consumption*. Households report on food they acquired through purchases, without specifying the amount of food consumed. Food consumption derived from own-production or received from transfers is reported.
- Type 3: *Consumption*. Households report on food actually consumed, and on whether that same food was purchased, own-produced or received as a transfer.²

Type 1 surveys often collect only monetary values, which can only be converted into quantities through prices of the same or similar products. Examples of Type 1 surveys are the 2008 *Encuesta Nacional de Ingresos y Gastos de los Hogares* of Mexico or the 2009 *Household Income Survey* of Georgia. Type 2 surveys often collect the values of purchases in one module, and the quantities consumed from own consumption and transfers in another module. Information from different modules is not always easily reconciled, due to differences in the description and classification of items. Examples include the 2005–06 *Ghana Living Standard Survey* and the 2011 *Household Budget Survey* of Azerbaijan. Type 3 surveys often do not report information on food consumed away from home. Examples include the 2005 *Social and Living Standard Measurement Survey* of Pakistan and the 2009 *Enquête de Vulnérabilité Structurelle* in Chad.

HCES also differ significantly in terms of characteristics that affect the measurement of food consumption. One such characteristic is the survey method: that is, whether data is collected in a recall interview or the respondents are asked to fill a diary. During recall interviews, errors may arise from the length of the reference period. Short periods imply the risk of “telescoping”, where the respondent mistakenly attributes events to a period that is more recent than the one in which the event took place. Long periods, on the other hand, imply the risk of “memory loss”, that is, the inability to recall events that took place in the past (Molledo et al., 2014; Deaton and Grosh, 2000). When respondents fill in diaries, the risk is mostly their fatigue, which may arise in long survey periods.

Another distinctive characteristic of HCES is the reference period, which is the length of the period over which respondents are requested to report. In recall interviews, the reference period can vary from one day to one year.³ Diaries are usually filled repeatedly for a period ranging from 7 days to 30 days.⁴ A trade-off arises between the length of the reference period and the efficiency of the sampling, which affects the ability to capture habitual consumption. 12-month reference periods are required to capture the seasonality of consumption. However, if the sampling is properly distributed over a long period, seasonality may be captured by equally distributing interviews across the year, or – more accurately – through panels.

The number of food items presented to the respondents is another HCES characteristic that affects the measurement of food consumption. While in principle a detailed list allows for greater accuracy, a long list can make the questionnaire demanding for respondents and enumerators, potentially resulting in less accuracy. The accuracy is also affected by item classification; short lists decrease the accuracy of the classification, while longer lists increase its accuracy. Surveys show great

² We also define surveys that collect consistent information on both food consumption and acquisition from all sources as Type 3.

³ In 365-day recall surveys, respondents are often asked to report consumption of a “typical” or “usual” month or week in the last year.

⁴ When surveys rely on diaries, the recall period is usually one day, as respondents are expected to fill the diary once a day. However, the number of days during which respondents are asked to report – which we call the reference period of the diary – can vary. In recall interviews, the reference period and the recall period usually coincide, but there are surveys in which they do not. For instance, if households are asked to recall consumption during a “typical month” of a year, the reference period is considered to be one month and the recall period is considered to be one year.

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