

APPENDIX TO SECTION 9

UNIT OF ANALYSIS IN A LONGITUDINAL PANEL SURVEY

In most cases, the unit of analysis in longitudinal surveys is an individual person, not the family or household. This contrasts with the usual cross-sectional surveys which, depending on their purposes, may use any one of these different units of analysis as their focus. It is very difficult to define a longitudinal family or household in any rigorous way that would enable the unit to be followed over time. New families and households are continually being created and existing ones have changing memberships. In contrast, the concept of an 'individual' is stable in a longitudinal context. Longitudinal surveys can still tell us about families and households. But the information about the families or households is derived from the individuals who are related to that particular family or household context (and their membership changes over time).

A separate but related issue concerns how one targets these individuals and their families/households: the sampling unit and the unit about which the information is to be gathered may be different. Possible sample units for a longitudinal social survey include: the individual, the household, the dwelling (or address), or the establishment. For a household panel, for instance, the target group of households in the initial wave might be gathered from either a household-based or dwelling-based sampling frame. In the latter case, the sample will be constituted by selecting the persons (and their households) within the dwelling and subsequently following them regardless of whether they continue to live in that dwelling or not.

Single indefinite life panel – individuals

In such surveys, information might be collected about the persons in a sample member's household, but no attempt is made to follow these people;

they cannot become sample members in their own right. Sometimes, however, depending on a survey's purpose, an original panel may be supplemented subsequently, e.g. by immigrants of the same birth cohort as the original sample members (OSMs). Even in this case, the focus remains on a specific class of individuals.

Single indefinite life panels – households

The rare cases where there is an attempt to use a household panel requires a more complicated design than a cohort survey because it aims to remain representative of both individuals and the households within which they reside (note that in most household panels, the population of individuals refers to the civilian non-institutional population). Mechanisms are therefore needed to ensure that there is proper representation of the populations of persons and households as time passes, in particular for representing new entrants, persons and families into that population. To ensure the on-going cross-sectional representativity of the population: 1) define all adults and children in the representative sample of households in the first wave as OSMs; and 2) in second and subsequent waves, attempt interviews with all adult members of all households containing either an OSM or an individual born to an OSM whether or not they were members of the original sample. This underlies the design of virtually all household panels. Practice differs, however, in the treatment of new panel members who subsequently stop living with an OSM.

Examples of household panel surveys include: the European Community Household Panel, the U.S. Panel Study of Income Dynamics, and the British Household Panel Survey.

Multiple overlapping fixed life panel surveys (rotating panels)

A rotating panel survey comprises a succession of separate panel surveys with staggered starting times. An initial sample of respondents is selected and interviewed a pre-determined number of times, often at intervals shorter than for most household panels. During the life of this first panel, a new sample is selected, followed, and interviewed in the same way as the first. Third and subsequent panels are constructed similarly. Thus respondents are being continuously rotated out of the survey and their numbers replenished by those being rotated into the survey. Although each constituent panel has a pre-determined fixed life, the overall survey itself usually has an indefinite life.

The rules for rotating panels are similar to those in household panels. Every adult in each household belonging to the original sample for each constituent panel is designated an OSM. All OSMs are then followed throughout the life of their panel, even if they move to a different household.

At each interview, information is collected about the OSM and the other individuals with whom they reside.

The rotating panel design has three additional features. One, the shorter interval between the interviews relative to the household panels can be used to reduce recall errors about relatively high frequency events and details of such variables as income. Second, the survey as a whole can also provide better cross-section at a point in time from the combined data from the constituent overlapping panels. The increase in sample size reduces sample errors. Third, by restricting the duration of each panel to a finite period, often only a few years, problems of attrition are reduced and representativeness more easily maintained. Examples of this approach include the U.S. Survey of Income and Program Participation (SIPP) and the Canadian Survey of Labour and Income Dynamics (SLID).

The problem with all types of longitudinal study from the point of inequalities is that sample members are lost. Whilst the nature of the longitudinal study means that one has more information on the non-responders than in a cross-sectional survey, there is still the problem that those who are lost to follow-up are likely to be different from those who remain.