



ARK Feature

How do cross-sectional surveys differ from longitudinal surveys?

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Surveys are a useful way of recording public attitudes to a range of social policy and other issues. However, there is often confusion about some of the terms used in survey research, and so ARK is publishing a series of short methodological papers, using examples from its own surveys (<https://www.ark.ac.uk/ARK/surveys/overview>). In an earlier ARK Feature (number 9), Gillian Robinson looked at the differences between surveys and opinion polls (<https://www.ark.ac.uk/ARK/sites/default/files/2018-07/Feature9.pdf>).

This ARK Feature focuses on cross-sectional and longitudinal survey designs and explores the differences between them using Northern Ireland Life and Times (NILT) and Understanding Society (US) as examples. The table below highlights key features of cross-sectional and longitudinal surveys.

	Cross-sectional survey	Longitudinal survey
Description	Data are collected from a group of people (the 'sample') at a single point in time. This is the most frequently used survey design. If the survey is repeated at a later date, then a different sample of people is used.	Data are collected from the same group of people (the 'panel') at different points in time ('waves').
Types of analysis	Analysis can show if two variables have a statistical (or correlational) relationship. For example, does variable X increase if variable Y increases? However, they cannot show if the variables are causally related.	Analysis can show if two variables have a causal relationship. In other words, does an increase in variable X cause variable Y to increase?
Sampling	A different sample is used each time the survey is repeated.	The same group of people are questioned in each wave. However, response rates can drop with each wave of the survey. Such 'attrition' may be due to difficulties in re-connecting with respondents, or because they no longer wish to take part.

Northern Ireland Life and Times

NILT is an annual survey which began in 1998 and is invaluable for exploring how public opinion in Northern Ireland changes over time. Every year, around 1,200 adults aged 18 years or over take part. As NILT is a cross-sectional survey, this means that a different group of adults is asked to participate each time. However, a number of questions within the survey are asked every year, thus providing data at many points in time (a 'time-series'). For example, by repeating questions on key social policy issues every year (such as community relations) we can explore public opinion over the 20 years since the signing of the Good Friday/Belfast Agreement. Thus NILT can measure change at the aggregate, or societal, level but not at the individual level.

For more information about Northern Ireland Life and Times, visit <https://www.ark.ac.uk/nilt>, where you can find tables of results, questionnaires, datasets, technical notes, publications, and more.

Understanding Society

In contrast to NILT, US is a longitudinal survey of the members of approximately 40,000 households (at Wave 1) in the United Kingdom (UK) which began in 2009. While each wave of US can be treated as cross-sectional, the real value of the survey is that the same people take part over time. This means that change can be measured at the individual level. Households recruited at the first wave of the survey are visited each year to collect information on changes to their household and individual circumstances. The overall purpose of US is to provide high-quality longitudinal data on topics such as health, work, education, income, family, and social life to help understand the long-term effects of social and economic change, as well as policy interventions designed to impact upon the general wellbeing of the UK population.

For more information about Understanding Society, including technical notes, questionnaires, publications, and details of how to access the data, visit <https://www.understandingsociety.ac.uk>

Differences between cross-sectional and longitudinal analysis: Measuring income

Cross-sectional: NILT

Each year, NILT asks households about their household annual income. The data consistently indicate that the lowest household incomes are among respondents aged 18-24 years, and those aged 65 years or over. However, we cannot show how the income of individual people changes over their lifespan, because of the cross-sectional nature of the survey. In other words, we cannot explore issues of persistent poverty as this requires longitudinal data.

Longitudinal: US

In a project on persistent low income within the UK, the Department of Work and Pensions used US to compare the income of respondents in 2010-11 with their income during the period 2011-15. Over this time, there was limited upward movement - only four per cent of those in the lowest income group reached the highest income group. The analysis found that older people and families with children were most likely to experience persistent low income. The longitudinal design meant that the researchers could track the circumstances of individual people over every wave of the survey, something that is not possible with cross-sectional surveys.

Full information on this project is available at <https://www.understandingsociety.ac.uk/impact/who-is-experiencing-persistent-low-income-in-the-uk>

Notes:

Robinson, Gillian (2018) *Surveys and polls: How does the Northern Ireland Life and Times survey differ from opinion polls?*, **ARK Feature 9**

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