

What Is Longitudinal Data?

Longitudinal data, sometimes called panel data, is data that is collected through a series of repeated observations of the same subjects over some extended time frame—and is useful for measuring change. Longitudinal data effectively follows the same sample over time, which differs fundamentally from cross-sectional data because it follows the same subjects over some time, while cross-sectional data samples different subjects (whether individuals, firms, countries, or regions) at each point in time. Meanwhile, a cross-sectional data set will always draw a new random sample.

Longitudinal data is used widely in the social sciences, including among economists, political scientists, and sociologists.

Key Takeaways Longitudinal data is data that is collected sequentially from the same respondents over time.

This type of data can be very important in tracking trends and changes over time by asking the same respondents questions in several waves carried out of time.

Longitudinal data is used in finance to track company profitability, risk, and to understand the effect of economic shocks.

Understanding Longitudinal Data

Often, analysts are interested in how things change over time. In a typical cross-sectional sample, even if you measure some variable today and then again a year from now, you will probably be sampling different people each time. To get a better handle on how things change for the same people over time, you need to be able to track them and follow up with them a year from now, and in future waves. This is longitudinal data.

Longitudinal data is often used in economic and financial studies because it has several advantages over repeated cross-sectional data. For example, because longitudinal data measures how long events last, it can be used to see if the same group of individuals remain unemployed during a recession, or whether different individuals are moving in and out of unemployment. This can help determine the factors that most affect unemployment.

Applications of Longitudinal Data

Longitudinal analysis can also be used to calculate a portfolio's value at risk (VaR), using the historic simulation method. This simulates how the value of the current portfolio would have fluctuated over previous time periods, using the observed historical fluctuations of the assets in the portfolio during those times. It provides an estimate of the maximum likely loss over the next time period.

Longitudinal data is also used in event studies to analyze what factors drive

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abnormal stock returns over time, or how stock prices react to merger and earnings announcements. It can also be used to measure poverty and income inequality by tracking individual households. And because standardized test scores in schools are longitudinal, they can be used to assess teacher effectiveness and other factors affecting student performance.

Social scientists also use longitudinal data to try to understand causation of events that may have occurred in the past and how they lead to outcomes observed in later waves of the data. For instance, the effect of the passage a new law on crime statistics, or a natural disaster on births and deaths years later.

Reference

[Doing Comparative Case Studies: New Designs and Directions](#)

[Self-Concept, Motivation and Identity: Underpinning Success with Research and Practice \(International Advances in Self Research\)](#)