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## Subject 2. Time-Series and Cross-Sectional Data

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Data come in many different shapes and sizes, and measure many different things at different times. Often, financial analysts are interested in particular types of data, such as time-series data or cross-sectional data.

- **Time-series data** is a set of observations collected at usually discrete and equally spaced time intervals. The daily closing price of a certain stock recorded over the last six weeks is an example of time-series data. Note that a too-long or too-short time period may lead to time-period bias. Refer to subject g for details.

Other examples of time-series data would be staff numbers at a particular institution taken on a monthly basis in order to assess staff turnover rates, weekly sales figures of ice cream sold during a holiday period at a seaside resort and the number of students registered for a particular course on a yearly basis. All of the above would be used to forecast likely data patterns in the future.

- **Cross-sectional data** are observations that come from different individuals or groups at a single point in time. If one considered the closing prices of a group of 20 different tech stocks on December 15, 1986, this would be an example of cross-sectional data. Note that the underlying population should consist of members with similar characteristics. For example, suppose you are interested in how much companies spend on research and development expenses. Firms in some industries, such as retail, spend little on research and development (R&D), while firms in industries such as technology spend heavily on R&D. Therefore, it's inappropriate to summarize R&D data across all

companies. Rather, analysts should summarize R&D data by industry and then analyze the data in each industry group.

Other examples of cross-sectional data would be an inventory of all ice creams in stock at a particular store and a list of grades obtained by a class of students on a specific test.

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