

8 Time-series and correlation – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Time-series analysis	时间序列分析	_____	_____	_____
trend	趋势	_____	_____	_____
seasonal variation	季节性波动	_____	_____	_____
moving average	移动平均	_____	_____	_____
Correlation	相关性	_____	_____	_____
positive correlation	正相关	_____	_____	_____
negative correlation	负相关	_____	_____	_____

Recall

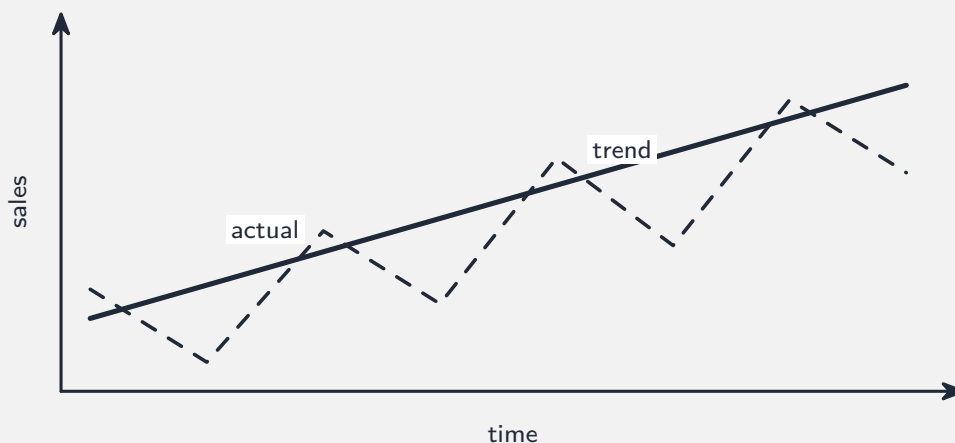
Firms use data to make better marketing choices. Two simple tools are time-series analysis and correlation.

New ideas

Read these first, then do the Practice.

■ 1 Time-series analysis

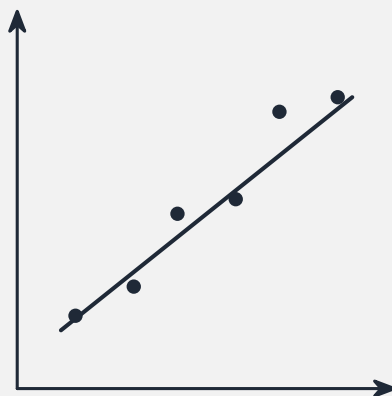
Time-series analysis 时间序列分析 studies past sales recorded over time:



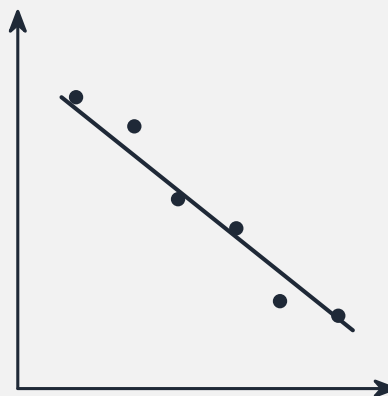
- the **trend** 趋势 is the general direction over the long run;
- the **seasonal variation** 季节性波动 is the regular rise and fall within a year;
- a **moving average** 移动平均 smooths the wobble to reveal the trend.

■ 2 Correlation

Correlation 相关性 measures how strongly two things move together:



positive



negative

- **positive correlation** 正相关—both rise together;
- **negative correlation** 负相关—one rises as the other falls.

Watch out: the *trend* is the long-run direction; *seasonal variation* is the regular within-year rise and fall. And correlation is *not* causation —two things moving together does not *prove* one causes the other.

Practice

Try these in order.

8.1 What does *time-series analysis* study? [1]

8.2 What is the *trend* in a set of sales data? [1]

8.3 Ice cream sells more each summer. Is that the trend or the seasonal variation? [1]

8.4 Advertising rises and sales rise too. What kind of correlation is that? [1]

8.5 Does strong correlation prove that one thing *causes* the other? [1]

8.6 Challenge. A firm sees that ice-cream sales and sunglasses sales both rise in summer, and concludes that selling more ice cream *causes* more sunglasses to sell. Explain why this conclusion is wrong. [2]
