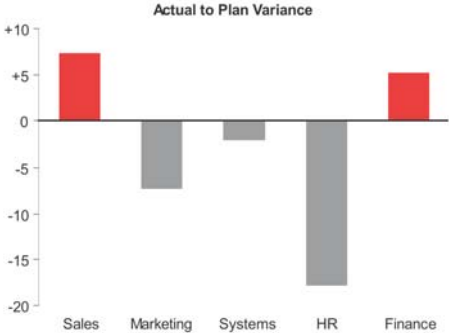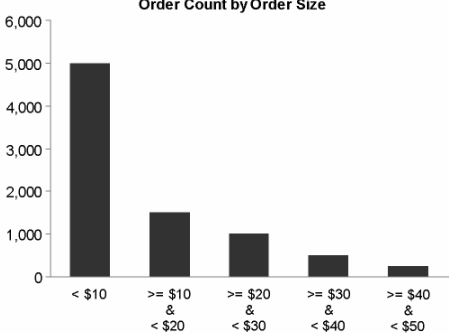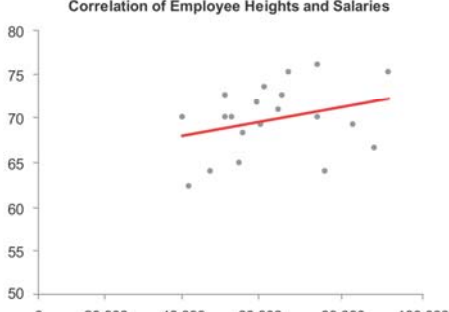# Selecting the Right Graph for Your Message

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| Type/Description | Encoding Methods | Example |
|---|---|---|
| **Nominal Comparison** A simple comparison of the categorical subdivisions of one or more measures in no particular order | • Bars only (horizontal or vertical) | Q1 2003 Calls by Region (bar chart with North ~3,000; East ~4,400; South ~2,200; West ~4,800) |
| **Time Series** Multiple instances of one or more measures taken at equidistant points in time | • Lines to emphasize overall pattern<br>• Bars to emphasize individual values<br>• Points connected by lines to slightly emphasize individual values while still highlighting the overall pattern<br>• Always place time on the horizontal axis | 2003 Sales (line chart, Jan–Dec, two series) |
| **Ranking** Categorical subdivisions of a measure ordered by size (either descending or ascending) | • Bars only (horizontal or vertical)<br>• To highlight high values, sort in descending order<br>• To highlight low values, sort in ascending order | Headcount (horizontal bar chart: Manufacturing, Sales, Engineering, Operations, Finance, Info Systems, Legal, Marketing) |
| **Part-to-Whole** Measures of individual categorical subdivisions as ratios to the whole | • Bars only (horizontal or vertical)<br>• Use stacked bars only when you must display measures of the whole as well as the parts | Regional % of Total Expenses (bar chart: West ~34%; East ~31%; North ~21%; South ~16%) |

| | | |
|---|---|---|
| **Deviation**<br>Categorical subdivisions of a measure compared to a reference measure, expressed as the differences between them | • Lines to emphasize the overall pattern only when displaying deviation and time-series relationships together<br><br>• Points connected by lines to slightly emphasize individual data points while also highlighting the overall pattern when displaying deviation and time-series relationships together<br><br>• Bars to emphasize individual values, but limit to vertical bars when a time-series relationship is included<br><br>• Always include a reference line to compare the measures of deviation against | **Actual to Plan Variance** |
| **Frequency Distribution**<br>Counts of something per categorical subdivisions (intervals) of a quantitative range | • Vertical bars to emphasize individual values (called a *histogram*)<br><br>• Lines to emphasize the overall pattern (called a *frequency polygon*) | **Order Count by Order Size** |
| **Correlation**<br>Comparisons of two paired sets of measures to determine if as one set goes up the other set goes either up or down in a corresponding manner, and if so, how strongly | • Points and a trend line in the form of a scatter plot<br><br>• Bars may be used, arranged as a *paired bar graph* or a *correlation bar graph*, if scatter plots are unfamiliar<br><br>• (Note: For descriptions of these graphs, see my book *Show Me the Numbers*.) | **Correlation of Employee Heights and Salaries** |

By understanding these seven types of quantitative relationships and the graphical methods that present them most effectively, you've already won half the battle. Knowing the best means to present data is the first big step; knowing how to design the separate components of a graph to communicate your message clearly, powerfully, and without distraction is the other big step, which we'll examine in the next article of this series.

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