



Selecting the Right Graph for Your Message

Stephen Few

September 18, 2004

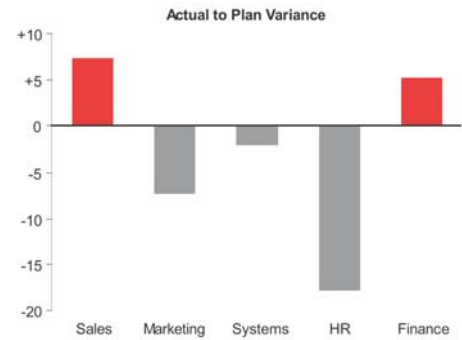
Few, S. (2004, September 8). *Selecting the right graph for your message*. Perceptual Edge.
https://www.perceptualedge.com/articles/ie/the_right_graph.pdf

Type/Description	Encoding Methods	Example																																							
<p>Nominal Comparison A simple comparison of the categorical subdivisions of one or more measures in no particular order</p>	<ul style="list-style-type: none"> • Bars only (horizontal or vertical) 	<p>Q1 2003 Calls by Region</p>  <table border="1"> <caption>Q1 2003 Calls by Region</caption> <thead> <tr> <th>Region</th> <th>Calls</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>3,000</td> </tr> <tr> <td>East</td> <td>4,500</td> </tr> <tr> <td>South</td> <td>2,200</td> </tr> <tr> <td>West</td> <td>4,800</td> </tr> </tbody> </table>	Region	Calls	North	3,000	East	4,500	South	2,200	West	4,800																													
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<p>Time Series Multiple instances of one or more measures taken at equidistant points in time</p>	<ul style="list-style-type: none"> • Lines to emphasize overall pattern • Points connected by lines to slightly emphasize individual values while still highlighting the overall pattern • Always place time on the horizontal axis 	<p>2003 Sales</p>  <table border="1"> <caption>2003 Sales</caption> <thead> <tr> <th>Month</th> <th>Grey Line</th> <th>Orange Line</th> </tr> </thead> <tbody> <tr><td>Jan</td><td>2,200</td><td>900</td></tr> <tr><td>Feb</td><td>2,500</td><td>1,000</td></tr> <tr><td>Mar</td><td>2,800</td><td>1,000</td></tr> <tr><td>Apr</td><td>2,500</td><td>900</td></tr> <tr><td>May</td><td>2,800</td><td>1,000</td></tr> <tr><td>Jun</td><td>3,000</td><td>1,000</td></tr> <tr><td>Jul</td><td>2,600</td><td>900</td></tr> <tr><td>Aug</td><td>2,800</td><td>500</td></tr> <tr><td>Sep</td><td>3,100</td><td>900</td></tr> <tr><td>Oct</td><td>2,900</td><td>900</td></tr> <tr><td>Nov</td><td>3,200</td><td>900</td></tr> <tr><td>Dec</td><td>3,600</td><td>1,000</td></tr> </tbody> </table>	Month	Grey Line	Orange Line	Jan	2,200	900	Feb	2,500	1,000	Mar	2,800	1,000	Apr	2,500	900	May	2,800	1,000	Jun	3,000	1,000	Jul	2,600	900	Aug	2,800	500	Sep	3,100	900	Oct	2,900	900	Nov	3,200	900	Dec	3,600	1,000
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<p>Ranking Categorical subdivisions of a measure ordered by size (either descending or ascending)</p>	<ul style="list-style-type: none"> • Bars only (horizontal or vertical) • To highlight high values, sort in descending order • To highlight low values, sort in ascending order 	<p>Headcount</p>  <table border="1"> <caption>Headcount</caption> <thead> <tr> <th>Department</th> <th>Headcount</th> </tr> </thead> <tbody> <tr><td>Manufacturing</td><td>230</td></tr> <tr><td>Sales</td><td>160</td></tr> <tr><td>Engineering</td><td>60</td></tr> <tr><td>Operations</td><td>50</td></tr> <tr><td>Finance</td><td>40</td></tr> <tr><td>Info Systems</td><td>40</td></tr> <tr><td>Legal</td><td>20</td></tr> <tr><td>Marketing</td><td>10</td></tr> </tbody> </table>	Department	Headcount	Manufacturing	230	Sales	160	Engineering	60	Operations	50	Finance	40	Info Systems	40	Legal	20	Marketing	10																					
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<p>Part-to-Whole Measures of individual categorical subdivisions as ratios to the whole</p>	<ul style="list-style-type: none"> • Bars only (horizontal or vertical) • Use stacked bars to display measures of the whole as well as the parts 	<p>Regional % of Total Expenses</p>  <table border="1"> <caption>Regional % of Total Expenses</caption> <thead> <tr> <th>Region</th> <th>% of Total Expenses</th> </tr> </thead> <tbody> <tr> <td>West</td> <td>33%</td> </tr> <tr> <td>East</td> <td>30%</td> </tr> <tr> <td>North</td> <td>21%</td> </tr> <tr> <td>South</td> <td>15%</td> </tr> </tbody> </table>	Region	% of Total Expenses	West	33%	East	30%	North	21%	South	15%																													
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Deviation

Categorical subdivisions of a measure compared to a reference measure, expressed as the differences between them

- Bars to emphasize individual values, but limit to vertical bars when a time-series relationship is included
- Always include a reference line (e.g., a line at zero) to signify the deviation

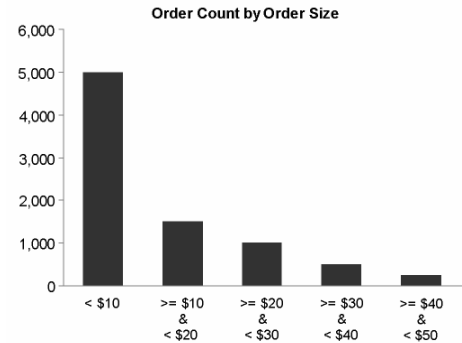


same as Peters' "Diverging Bar Chart"

Frequency Distribution

Counts of something per categorical subdivisions (intervals) of a quantitative range

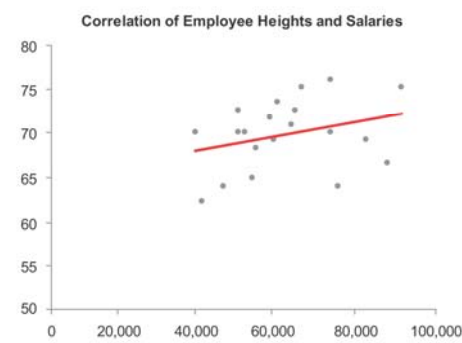
- Vertical bars to emphasize individual values (called a *histogram*)



Correlation

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
- (Note: For descriptions of these graphs, see my book *Show Me the Numbers*.)



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.

(This article was originally published in *Intelligent Enterprise*.)