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Data Visualization

September 28, 2016

Assignment #3

**Effectively Communicating Numbers Summary**

Our intuition when creating graphs is usually misleading: visual design skills must be learned. Unfortunately most graphs used in business today are poorly designed and sometimes to a point of misinformation. The reason is the graph produces have not been trained effectively. This article teaches us two main items: how to match our message to the right type of display and to design each component of our graphs so the data speaks clearly and the most important data speaks loudly.

The process of determining which graphs and charts to use has six steps. They are to 1. Determine the message and identify the data necessary to communicate it. 2. Determine if a table, graph or combination of both is needed to communicate the message. The remaining four steps only pertain to if one or more graphs is required. 3. Determine the best means to encode the values. 4. Determine where to display each variable. 5. Determine the best design for the remaining objects. 6. Determine if particular data should be featured above the rest, and if so, how. Tables work best when individual values must be precise while graphs work best when patterns, trends and exceptions want to be shown.

There are seven common relationships in quantitative business data. Time-series relationships show a series of measures taken across equal intervals of time. Ranking relationships represents vales that are sequenced by size. Part to whole relationships reveal the portion each value represents to some whole. Deviation relationships display how one or more sets of values differ from some reference set of values. Distribution relationships show values spread across their entire range. Correlation relationships reveal if there is a significant relationship between entities. Normal comparison relationships compare regional values but nothing more because people expect to see them in arranged in a certain order.

There are four types of objects that work best for encoding quatitvative values in graphs which are points, lines, bars and boxes. After determining the message and whether a graph, table or both is needed, we have to determine the best means to encode the values. The article shows a table which shows the best encoding methods for the seven relationship types. For example the table suggests that for time series relationships, one should use lines to “emphasize the overall shape of data”, “bars to emphasize and support comparisons between individual values”, and “points connected by lines to slightly emphasize individual values while still highlighting the overall shape of the data.

After determining the best means to encode the values, one must determine where to display each variable. If the text labels associated are long and there are many bars then a horizontal bar works especially well. Then determine the best design for the remaining objects by establishing the range for the scale, where a legend should be placed, a location for the quantitative scale, if the grid lines are required and whether descriptive text is needed. If some data is more important than the rest than we can follow these strategies. We can use borders around bars that should be emphasized, we can use thicker lines or color or make points larger.

Overall whenever we are creating a graph we must communicate the message clearly and accurately. The seven steps shown in this article will create a clear message.