Instructor's Notes

Title: Visualization of Quantitative Data

Suggested disciplines/courses:

Any course in which the instructor feels that students underappreciate the usefulness of graphic displays in understanding data.

Degree of difficulty: I (introductory)

Resources/Background Needed: No outside resources are needed. The author feels that no background beyond that commonly possessed by first year university students will be required.

Duration: One class period

Tips and tricks:

The author sees this module as a chance to try to convince students who are off-put by charts and graphs (and there are such students) that serious questions can be answered by analysis of data but it must be understood that data is the raw material. Information only presents itself after the data has been processed. The first set of questions is to emphasize that data without some processing doesn't tell us much. The second round of questions refer to graphics which are the result of one form of data processing. Questions about "used cars" should be much easier to answer after consulting the graphs.

Thoughts on group vs individual assignment: This module can be used in either mode.

Special instructions and assumptions: Be sure students know that data is raw material and must be processed before it gives up information. Graphs are to convey information, for example, the mean price of SE model cars, but graphs are not intended for great precision. With a graph we can see that the average price for all SE model is about $12,000 and the SEL model tends to higher prices than the SE model but these are quick (and correct) impressions. For two decimal precision Descriptive Statistics should be employed.

Deliverables and evaluation: Student will prepare answers to eight questions and a one paragraph reflection. This can be a "turn in your papers" assignment or a few individuals or groups could be selected to do an oral presentation during a class period. Visuals such as Power Points would be a worthwhile addition.

Additional Exercises (open ended questions): The instructor's imagination is the limit here. The class could collect data, or the instructor could provide data and the students could use a software package, e.g. Minitab, to create graphics and/or descriptive statistics for the data set.

Additional Notes / Samples / Examples / Extensions / Further Work:

The same data can be presented in graphic form by color of the car. We leave it to the instructor to create questions that can be answered by the following graphic.

As examples:

Which color car is most abundant?

Which is least abundant?

Among cars with a manual transmission, which color is most available?