Value-Driven Evaluation of Visualizations

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“No user studies are reported in this paper, thus it is unclear if the visualization will be useful.”
Really?
· Which cars have the best miles-per-gallon?
· How much does a Ford Taurus cost?
· Is there a correlation between car weight and torque?
· How many different countries manufacture cars?
· What is the range of car’s horsepower?
Evaluation

Explanation(s) and Illustration(s) of value
Visualization’s Value?
Visualization’s Value?

\[ V_{\text{alue}} = T + I + E + C \]
Visualization’s Value?

\[ V_{\text{value}} = T + I + E + C \]

Ability to minimize the total \textit{time} needed to answer a wide variety of questions about the data

(Without formal queries, Interaction really helps)
Visualization’s Value?

\[ V_{\text{alue}} = T + I + E + C \]

Ability to spur and discover **insights** or insightful questions about the data

(Would be very difficult with only the data)
Visualization’s Value?

\[ V_{\text{value}} = T + I + E + C \]

Ability to convey an overall essence
or take-away sense of the data

(The big picture: Whole is greater than
the sum of the parts)
Visualization’s Value?

\[ V_{\text{value}} = T + I + E + C \]

Ability to generate \textit{confidence} and trust about the data, its domain and context

(Beneficial data analysis process side effects)
Map of the Market

CiteVis

http://www.cc.gatech.edu/gvu/ii/citevis

http://www.marketwatch.com/tools/stockresearch-marketmap
Data Visualization 101

Problem:
You have a lot of data (& attributes) to understand

Do you?

- Pack all the data into one complex representation
- Spread the data into multiple coordinated views
- Use interaction to reveal different subsets of the data
“The effectiveness of information visualization hinges on two things: its ability to clearly and accurately represent information and our ability to interact with it to figure out what the information means.”

S. Few, *Now you see it*
Interaction

Understand the benefits (science of interaction)

Explore new interactive operations

Visualization on other display devices (touch)
For more, see my EuroVis ‘14 Capstone Talk
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