Decision support systems (DSS's) increasingly communicate through information visuals such as maps. When viewing a map, it is often assumed that all the data presented is truthful and accurate. This is never quite the case, however, as maps are just simplified representations of reality. Cartography faces the challenge of communicating data's reliability in order to enhance decision making. Individuals participating in various forms of management seek information to guide their learning, understanding, and decision-making. Web based decision support tools facilitate this, but often fail to provide any measure of the presented data's reliability. Therefore, decision support systems (DSS) put managers in contact with data of varying degrees of reliability, as uncertainty is unavoidable and inherent in information.

An example: You borrow a car with an inaccurate gas gauge. Its true to within a quarter tank of the needle.

As data is collected, examined, and presented, uncertainties compound.

Data that is being analyzed varies in reliability. This may be due to human error such as incorrectly measuring a phenomenon, or due to instrument error if a certain tool is not working correctly.

Data is often manipulated introducing error: Examples of this are interpolation and extrapolation, two methods producing results that are not completely accurate.

It is impossible to perfectly capture and represent the complexities of reality on a map.

Two separate human-subject surveys are being conducted evaluating symbol performance. The first is a comprehensive evaluation of all fifteen sets of symbols. It examines:

- Intuitive abilities of symbols
- Understanding of symbol sets
- Feedback regarding participant’s perceived effectiveness of the symbols

The second survey will place the most successful symbol sets from study one on maps for re-evaluation. The testing results from a testing environment similar to what decision-makers actually experience is desired (Hope and Hunter 2007).

Conclusions

Communicating uncertainty is important, but there is limited knowledge and studies examining comprehensively the best way to do this on a map. The proposed effectiveness testing will provide valuable information to the uncertainty visualization community and allow for better communication with individuals using decision support tools and maps.

References


