Quantitative Measurement of Intuitiveness of Visualization Techniques

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More and more visualizations and infographics are being adopted as a part of data communication (e.g., news articles and personal blogs) because they cannot only present more details succinctly but also allow viewers explore data by themselves. However, when an information provider needs to decide which type of graphs, there is not much reliable information out there. For example, we do not know what portion of general public understands how to comprehend a type of graph, such as a scatter plot, without any explanation. Thus, the aim of this project is to quantify the level of intuitiveness of different visualization techniques. First, we selected representative visualization techniques and standardize them in terms of style and color to make them more comparable. Second, in order to collect data from a massive general public, we developed a website, which enabled us to conduct a series of experiments online. Third, we developed questionnaires to measure the intuitiveness by employing massive data from crowdsourcing workers. Fourth, we measured the intuitiveness of the eight selected visualizations by recruiting 100 participants via crowdsourcing. We found that different visualization techniques have different level of intuitiveness. Generally, lesser portion of the participants tends hard to understand the techniques representing more than two different data. This study will lead to more fundamental understanding of both visualization techniques and what makes them intuitive. The results of this study will help to make decisions on which visualization techniques will fit to targeted audiences.