Eliciting High-Level Visual Comprehension: A Qualitative Study

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Summary:

A visualization designer creates a given visualization with a specific analytical or communication goal. However, perceptual studies of visualization effectiveness focus on isolated, low-level tasks, such as estimating specific statistics. Instead, we explore data interpretation and communication more holistically to bridge the gap between visualization designers and consumers. In this work, we conducted a qualitative study on five selected graphs from New York Times to investigate the high-level patterns people naturally see when they encounter a visualization without a guiding task. Participants described each of the tested graphs using natural language. The descriptions were coded using axial coding to identify whether the patterns people observed in the visualizations aligned with the designer's intentions. We found that interpretation varies with the number of subgraphs, additional annotations, labels, and units. Our findings provide a new lens on how design influences the high-level patterns people naturally see in visualization. The subsequent findings and guidelines on visual design can significantly strengthen social trust information visualization when data are visualized in social policies and information contexts.

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