

Engagement and recall in narrative information visualizations (#9390)

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Created: 03/24/2018 01:29 PM (PT)

Public: 04/23/2018 01:41 PM (PT)

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

There are different visualization strategies that are adopted in the design of visualizations. These are: an interactive approach, a narrative visualization approach, a combination of the interactive and narrative visualization approach, and a static approach (no-interactivity or non-narrative). Although each of these approaches will allow the viewer to engage with the data in different ways, a narrative based approach or a combination of the interactive and narrative visualization approach, may allow the viewer to better recall the meaningful aspects of the data which were highlighted through the story - such as trends and patterns in the data, and also affect how users interact with the data.

The purpose of this study is to measure the effect of using different visualization strategies on recall, operationalized through two variables: interactivity (static or interactive) and narrative (non-narrative or narrative). We aim to measure differences in recall of visualization content and interaction with the visualization across four combinations of these variables (static+non-narrative, static+narrative, interactive+non-narrative, interactive+narrative).

3) Describe the key dependent variable(s) specifying how they will be measured.

1. Amount of information retained from the visualization, which will be measured using a 11-item true/false questionnaire, which includes one attention check question.
2. Degree of interaction with the visualization, which will be measured through time spent on the visualization and the number of meaningful user interactions (clicks) with the visualizations in the interactive and interactive + storytelling conditions.

4) How many and which conditions will participants be assigned to?

4 conditions in a between subjects design. In each condition, a participant will be shown one of 4 different visualizations using one of the four possible combinations of interactivity×narrative.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

We will use a mixed-effects logistic regression model to analyse the data. We will try to predict whether the conditions - narrative, interactive, narrative + interactive have an effect on a participants' ability to recall information regarding the visualization (measured by the number of T / F questions answered correctly). In addition we will take into account mixed-effects due to differences in the abilities of different people to answer the questions and mixed-effects due to the visualization (different visualizations may differently affect the amount of recall). Finally, we will also try to predict whether the conditions affect the degree of user interactivity with the visualizations.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

1. We will exclude participants who fail to answer our attention check question
2. We will exclude participants who answer True to all the questions
3. We will exclude participants who answer False to all the questions

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We will collect 100 respondents for each condition; thus, a total of 400 respondents for the entire study

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)