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Webpage link: https://lcc234.github.io/narrative-vis/default.html

Narrative Visualisation Essay – The Climate Change Dashboard

My webpage is a presentation of a Climate Change Dashboard, illustrating the statistics of climate change factors around the world, on a per-country basis. The purpose of this narrative visualisation is to create awareness of the climate change conditions across the years, globally and nationally. It illustrates a message to the audience about the effects of climate change factors and how they correlate to one another. More specifically, the message relates to how the emission of CO_2 induce the rise of surface temperature and frequencies of natural disasters, both on the global and national scale, though the effects might be more apparent from a global perspective. (2)

The structure of the narrative visualisation follows that of a Martini Glass (3), with an author-driven introductory slideshow on start up to present the contexts, ideas and purpose of the visualisation. Guiding along the thin stem of the martini glass, the audience are only able to move forward linearly onto the next slide where the webpage will reveal further details on the author's observations and ideas. This section, being message-focused, brings the audience into an understanding of the context and expectation of the visualisation.

At the end of the slides, the audience will be led to the mouth of the martini glass, a wider and open area where they will be free to engage in a more user-driven explorations. They will be able to play with the interactive parameter controls, drilldowns using tooltip hovering and clicking of countries on the map (4).

The visual structure of visualisation adapts to an aerial view of the global map (5) to give audience a visual overview of the geographic distributions across countries, allowing them to easily compare the relative values between country and zero in on those with higher or lower values (6). The visual comparison is set up using colour gradient, red for Surface Temperature Rise and blue for CO_2 Emissions. Countries with higher values are highlighted with a darker colour while those with lower values are highlighted with a lighter one. This colouring scale produces highlighting in the scene, allowing audience to focus on the more important portions of the visualisation (7). The map can be transitioned to 8 different scenes (4 different years and 2 different scales) (9). During each transition, the orientation of the map stays intact, keeping the users oriented. The transition of colour scale is animated to allow the users to visualise and note the change. The annotation colours are consistent with that of the map, based on the scale selected. A scale of temperature rise will induce the usage of red colour scale across the map and annotations, regardless of the year picked. This goes the same for the CO_2 emission scale too. This colour consistency keeps the users oriented and aware of how the data relate and connect with each other between scenes (8). The visualisation also has a stacked bar chart scene for most countries in the map (9). As usual, the colour scale selected are consistent throughout all the stacked bar charts for every country, enabling viewers to relate and compare the data in different chart. The transition between the map and this stacked bar chart is through smooth scrolling on clicking of the countries. This smooth scrolling keeps the viewer oriented in terms of their orientation in the webpage, allowing them to scroll back to the original map when needed (8).

The ordering of the map scene is in a form of random access. Audience can pick the scene, by selecting the year or scale, in any other they wish. The values of each country are represent by their highlight fills using a colour gradient (11). The ordering of the map scene to the stacked bar chart scene is, however, more user-directed. The stacked-bar chart scene can only be accessed upon clicking the country as this scene act as a drilldown for each country (11). Within the stacked bar chart, the data are ordered in a time series fashion, from the earliest year to the latest, this allows the audience to be able to visually

deduce the trend of the disasters frequencies and thus, the effects of climate change on that country (11). As for the introductory slides, the scene ordering is linear as user can only progress forward (10). The charts used in the introductory slides are also arranged in a time linear fashion similarly for users to easily observe trends and correlations between the data (11).

Annotations are utilise in this map chart, coloured similarly with the map for easy viewing. They are useful in pointing out important parts of the chart and bringing audience's attention to those areas (12). The template used for these annotations are precise point labelling, indicating the country with the highest value at every scene (13). All 8 map scenes have annotations in them, pointing the highest, darkest coloured country, with consistent formats, text and colourings (based on the map scale). They are, thus, effective in bringing users' attention to important details quickly. This is also mainly because colour scale alone is not adequate for identifying the highest value due to closely similar colours around them (14).

There are, in total, 2 parameters in this visualisation, namely 'year' and 'scale' (15). Each parameter change induces several state changes in the chart, such as the annotations, map title on the top left, label of the legend and the labelling in the map tooltip (16). The both parameters controls the state of the map title, the tooltip and legend details accordingly to indicate the year and scale chosen. For example, a parameter selection of year 2019 and scale of temperature rise will determine the state of the map label to be "2019 Global Warming Distribution" and legend to be "Temperature". Tooltip and the annotation will indicate the year 2019 as well. As for the scene, this parameter selection will determine a colour scale of red on the map chart with a dataset dated 2019 (17).

The visualisation allows for triggers to change the parameter and thus, change in states through user actions event such as button click. Users can click on the parameter selection section on the sidebar to alter the parameters and indirectly change the states of the visualisation (20). Various affordances are presented to the audience to hint at what functionalities are available for them to use and engage. In the parameter control sidebar, hovering over the button renders a clickable finger cursor which indicates clickable functionality. Clicked parameters are also highlight in darker colour with a tick at the end to show that its selected. This conveys to the user that they can select parameters from the list at the sidebar. Apart from that, with the hints in the textbox at the upper right corner and clickable cursors on the map, audience can be aware of the hovering tooltip and clickable functionalities of the map for further drilldowns (21).

END

* Answers to each question in the grading reference are marked by the question number with brackets throughout the essay.

Grading Reference

A. What is the URL of your narrative visualization?

1. **[1 point]** Does the URL connect to a functioning web page?

B. Upload a PDF file essay describing your narrative visualization as required by the assignment instructions.

2. **[5 points]** Does the essay state what messaging was intended by the narrative visualization?

C. Narrative Structure

3. **[2 points]** Does the essay indicate which structure the narrative visualization was designed to follow (martini glass, interactive slide show or drop-down story)?
4. **[3 points]** Does the narrative visualization follow that structure?

D. Visual Structure

5. **[2 points]** Does the essay indicate what visual structure is used for each scene?
6. **[1 point]** Does the essay indicate how the visual structure ensures the viewer can understand the data?
7. **[1 point]** Does the essay indicate how highlighting is used to get the viewer to focus on the important parts of the data in each scene?
8. **[1 point]** Does the essay indicate how the visual structure helps the viewer transition to other scenes, to understand how the data connects to the data in other scenes?

E. Scenes and Visual Ordering

9. **[2 points]** Does the essay identify the scenes of the narrative visualization?
10. **[1 point]** Does the essay discuss ordering (e.g. the order of elements in a chart or the ordering of scenes)?
11. **[2 point]** Do the charts used as scenes effectively present the data?

F. Annotations

12. **[2 points]** Does the essay discuss annotations?
13. **[1 point]** Does the essay discuss a template for the annotations?
14. **[2 points]** Are the annotations in the narrative visualization effective and consistent?

G. Parameters and States

15. **[1 point]** Does the essay identify the parameters of the narrative visualization?
16. **[1 point]** Does the essay identify the states of the narrative visualization?
17. **[1 point]** Does the essay indicate how are the parameters are used to define the state and each scene?
18. **[1 point]** Does the narrative visualization use parameters to control its state?
19. **[1 point]** Does the narrative visualization use parameters to control each scene?

H. Triggers

20. **[2 points]** Does the essay indicate the triggers that connect user actions to changes of state in the narrative visualization?
21. **[1 point]** Does the essay indicate what affordances are provided to the user to communicate to them what options are available to them in the narrative visualization?
22. **[1 point]** Does the narrative visualization implement and respond to user events properly?
23. **[1 point]** Does the narrative visualization make any effort at all to communicate what options are available to the user?