CS 416 Data Visualization Final Project

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Data Visualization for World Happiness Report

- ● Messaging

The message conveyed by the narrative visualization is to showcase the happiness trends and comparisons among different regions worldwide over the years. The visualization is based on data sourced from the World Happiness Report utilizing responses from the Gallup World Poll, with happiness score on a scale from 0 to 10, from the worst to the best. The trendlines and annotations in the chart aim to illustrate the change over time and correlation between a region's economy and its happiness levels, and they showcase how economic changes can influence people's perceptions of their lives.

- ● Narrative Structure

The narrative visualization follows the structure of an interactive slide show, where users can click on buttons to transition between different scenes, each focusing on a trend for a specific region, with an overview of trends among regions in the background. In each slideshow, the viewer can access region-specific charts, delve into trends, and gain insights for individual areas.

- ● Visual Structure

The visual structure used for each scene consists of a chart displaying a consistent x-axis representing the year range 2005-2022 and a y-axis representing the happiness score. This consistency ensures that the viewer can easily understand the time frame and happiness measurement across all scenes.
  - Understanding and highlighting important data: The charts present happiness trendlines for selected regions, which are highlighted in purple, allowing the viewer to focus on the specific happiness trends for those regions. Also, in each scene, a red highlighted point on the trendline represents significant external or economic changes that potentially impacted happiness levels in those regions. This way, the viewer is directed to pay attention to key events that might have influenced happiness scores.
  - Connecting data across scenes: While the trendline of the selected region is emphasized in purple, the trendlines of other regions that can be further explored in other scenes are subtly grayed out in the background to provide comparative global context without overwhelming the visual experience.
  - Enhanced focus and on-demand exploration: When the cursor hovers over a grayed-out trendline, it becomes visible, helping the viewer focus on other regions' happiness trends. Furthermore, on-hover, the line becomes thicker and marked with yellow, providing an additional visual cue for the viewer's focus.

● Scenes

The narrative visualization consists of five scenes, each dedicated to representing different trends for specific regions. The scenes are deliberately ordered in alphabetical order based on the region names, implying that no region receives preferential treatment in terms of presentation order. In this case, alphabetical ordering simplifies navigation, making it easier for users to locate specific regions of interest and compare trends across the different scenes.

● Annotations

The annotation in each scene follows a consistent template, comprising a red highlighted dot placed on the trendline at the corresponding year on the x-axis, and a text appearing underneath the dot to provide a context. The annotations draw attention to critical data points, facilitating a deeper understanding of the relationship between economic events and happiness trends within each region.

In each scene, a single annotation is used to illustrate an economic change in the region that could potentially impact the trend. The annotations are cleared between scenes and vary across different scenes, highlighting different economic changes in various regions at distinct historical points.

● Parameters

The main parameter for narrative visualization is the region name as indicated in the button and it is the key variable in the JavaScript code to control which region's data to be shown. By clicking the button, the respective region name is passed as the value to the parameter of the main function that filters the data for the selected region in the dataset to set up each scene.

● Triggers

Buttons for regions with onclick events are triggers to update the "region" parameter, thereby reflecting the region-specific trendline in the display. Subsequently, changing the "region" name parameter also triggers updates in the annotation part, which includes parameter "annotationData" consisting of the year value on the x-axis and its respective happiness value on the y-axis and parameter "annotationText" that contains region-specific information. Adjusting the region name prompts alterations in the "annotationData" and "annotationText" parameters to suit the selected region, ensuring that the annotations accurately represent the data for each specific area.

The change in button color serves as an affordance, indicating a pressed effect upon hover, to urge the user to click the button to navigate to the selected region.

Reference:

Multi-line chart:
https://datawanderings.com/2019/11/01/tutorial-making-an-interactive-line-chart-in-d3-js-v-5/

Data source:
https://www.kaggle.com/datasets/usamabuttar/world-happiness-report-2005-present