Choropleth Data Visualization

Introduction

The graphical display of information and data is referred to as data visualization. It is considered to be one of the most effective tools that allow people to comprehend and understand complex data, spot anomalies, trends, and connections that may be challenging to spot in raw data. Simple charts and graphs, more complex interactive dashboards, and 3D visualizations are just a few examples of the various ways that data can be presented [1].

Effective data visualization relies on following a set of principles that make the communication of information clear, accurate and easily understood. To make sure the visualizations are useful, one principle is to keep the audience in mind, for example their background, hobbies, and level of experience. Another principle is to make it brief and simple, eliminating unnecessary details and clutter to produce visuals that are easy to understand. Moreover, the proper visual encoding must be chosen, such as line graphs or bar charts, to appropriately portray the data and make it easier to identify patterns and trends. Additionally, visualizations should be made visually appealing and interesting by using appropriate color schemes, typography, and design elements. Lastly, it is really important to provide annotation, including data sources and labeling axes, to make sure the viewer can understand and interpret the data. By following these principles, data visualizations can effectively communicate complex information, help decision-making and promote understanding in a range of industries and fields.

With the rise of big data and the increasing availability of data analytics tools, data visualization has become an essential part of the data analysis process. It can help governments and organizations to make more informed decisions, improve communication and collaboration, and drive innovation and growth, and in summary, data visualization is essential for anyone working with data.

Choropleth Map Visualization

In this blog, we will be analyzing a Choropleth map, a type of thematic map used to represent data by shading or coloring regions based on a specific attribute or variable. Choropleth maps are a type of thematic map used to represent data by shading or coloring regions, such as countries, states, or provinces. They are intended to show how a particular trait or variable varies geographically. In order to create choropleth maps, a geographic area is divided into regions, with each region then being colored or shaded in accordance with the value of the variable being mapped. Usually, the higher the value of the variable, the darker or brighter the hue. Choropleth maps are commonly used to depict spatial patterns of data, such as population density, unemployment rates, or election results, in disciplines including geography, demography, economics, and politics. They can assist in discovering trends and patterns and are an effective tool for displaying and interpreting spatial data. [2]

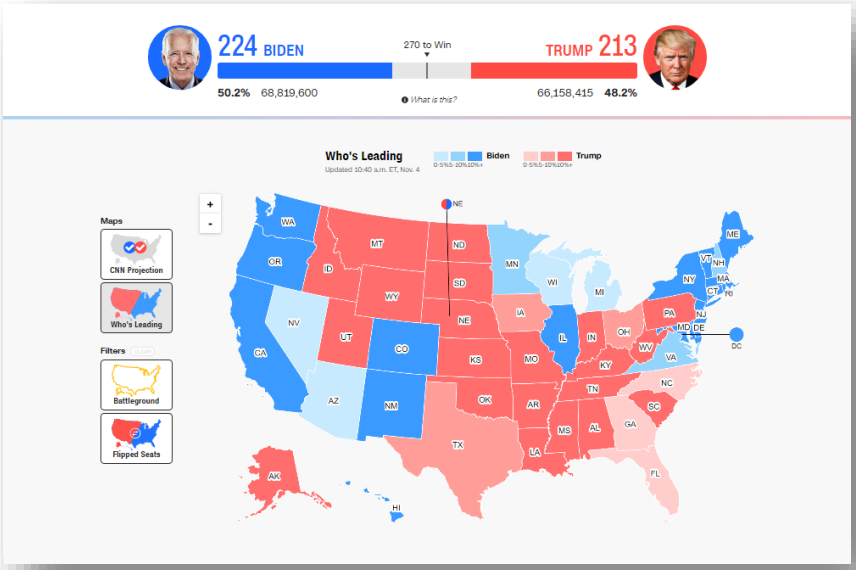

Figure 1: CNN 2020 US presidential election visualisation

The figure above was produced by CNN for the outcomes of the 2020 US presidential election. The visualization shows a choropleth map of the United States, with the colors blue or red denoting which candidate won each state in the elections. States won by Donald Trump are shaded in red, while those won by Joseph Biden are shaded in blue. The darker the shade of the color, the larger the margin of victory for the winning candidate. The map also includes a legend that explains the color scheme and provides context for the data being visualized. Overall, this Choropleth map provides a clear and intuitive representation of the election results, allowing viewers to easily see which states were won by each candidate and the relative margins of victory in each state.

Effectiveness of the Choropleth Map Visualization

The Choropleth map of the 2020 United States presidential election results by CNN is an excellent example of effective data visualization due to several factors. First, the map is designed with the audience in mind, which is the general public interested in the election results. It presents the information in a way that is easily understandable by people without much knowledge in geography and politics. Second, the map keeps it simple and concise by removing clutter and irrelevant information, so the viewer can quickly grasp the key information being presented. Third, the map uses an appropriate visual encoding method, which is color shading, to accurately represent the data and make it easier to spot patterns and trends. The use of blue and red color shading clearly represents the two major political parties, with blue representing the Democrats and red representing the Republicans. Fourth, the map uses an appropriate color scheme that is both visually appealing and easily recognizable to represent the political parties. The use of these colors is an accepted convention in U.S. politics, which makes the map easy to interpret for those familiar with U.S. politics. Finally, the map provides contextual information through labeling and a legend, which helps the viewer understand the data being presented and how to interpret it.

Concluding, the Choropleth map of the 2020 United States presidential election results by CNN follows the principles of effective data visualization, resulting in a clear, intuitive, and visually appealing representation of the election results. By following these principles, the map effectively communicates complex information in a simple, intuitive, and visually appealing way, making it a powerful tool for communicating the results of the election to a wide audience.

Potential Improvements

There are several potential improvements that could be made to the above choropleth map visualization. For instance, more detailed and accurate state borders, the name of the winning candidate, and their percentage of the vote in each state could be included. Demographic information, such as race and age distribution, could be added as additional layers to provide more context. Additionally, the current visualization presents the number of votes won by each candidate in each state. However, the total population and the number of registered voters in each state can vary greatly, leading to potentially misleading comparisons between states. Normalizing the data by presenting the percentage of votes won by each candidate would provide a more accurate representation of the results and make it easier for someone to compare and analyze the data. Lastly, the map could also be made interactive for example by allowing the viewer to hover over each state to see more detailed information or by providing different color palette options for individuals with color blindness. Including a legend or a scale to indicate the range of values represented by the color scale, using different representations like bar graphs or pie charts, adding annotations, and providing the viewer with the ability to customize the map could all improve the viewer's experience.

References

[1]. Tableau (n.d.) 'Data Visualization', [online] Available at: https://www.tableau.com/en-gb/learn/articles/data-visualization (Accessed: 16 February 2023).

[2]. Andrienko, G., Andrienko, N., and Savinov, A. (2007) 'Choropleth Maps: Classification Revisited', Cartographica, 42(4), http://geoanalytics.net/and/papers/ica01.pdf (Accessed: 17 February 2023)

[3]. AnyChart 'CNN Election Results Map Data Visualization', [online] Available at: https://www.anychart.com/blog/wp-content/uploads/2020/11/cnn-election-results-map-data-visualization.png Accessed: [13 February 2023]

[4]. Midway, S.R. (2018) 'Principles of Effective Data Visualization', Journal of Chemical Information and Modeling, 58(1), https://www.cell.com/action/showPdf?pii=S2666-3899%2820%2930189-6 (Accessed: 20 February 2023)