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CS 416-Narrative Visualization

Topic: A Study on Happiness Scores of various countries in the year 2021 and how certain variables affect Happiness score.

URL: https://kavisus64.github.io/index.html
Dataset source: https://www.kaggle.com/datasets/ajaypalsinghlo/world-happiness-report-2021

The story telling form of this narrative visualization is based on Drill Down Structure. The story has been structured into 3 scenes . Story is anchored around the question and information on effect of GDP per capita and Healthy life expectancy on Happiness scores of countries in the year 2021.

Messaging:

The message conveyed in the visualization is how Happiness score is correlated with Healthy life expectancy and GDP per capita. The visualization depicts the data set collected from all countries in year 2021

The message conveyed to viewer from eye of the author showing the overview of Happiness score for all countries in dataset in "home" scene. Followed by providing different drill down options to viewer with different scene showing scatter plots of effect of Healthy life expectancy and GDP per capita on Happiness score of countries. The user can interact with drop down in the scenes to see trends of Healthy life expectancy and GDP per capita on happiness score for various regions of world. For example, in scene "GDP per capita vs Happiness score" user can select region "North America and ANZ" from the drop down menu to view the trend in this region which consist of countries "United States, Canada, Australia and New Zealand".

Narrative Structure:

The narrative structure follows Drill Down style of visualization. In Drill-Down structure, author first presents an overview. In all other scenes, allows user to interact to explore different details and backstories in each scene. The story has been structured into 3 scenes anchored around the question and information on the effect of few variables on the Happiness Score.

The narration starts with "Home" scene where author provides an overview of Happiness scores of various countries to its readers . The author provides general information about Happiness score 2021 dataset in the text below the circular chart.

The author then let's reader navigate to next scene "GDP per capita vs Happiness score“. The reader is presented with a scatter plot that represents impact of GDP per Capita on Happiness score. Reader can interact with this scene with the help of drop down list to get insights in a particular region of world. For example, in scene “GDP per capita vs Happiness score” user can select region “East Asia” from the drop down menu to view trend in this region which consist of countries “China, Hong kong, South Korea, Japan, Mongolia, Taiwan”.

The reader then navigates to next scene “Healthy life expectancy vs Happiness score “, reader is presented with impacts of Healthy life expectancy on the Happiness score in the form of a scatter plot. The reader can interact with this scene with the help of drop down list to get insights of a particular region of world and can study impact of Healthy life expectancy on Happiness score in selected region.

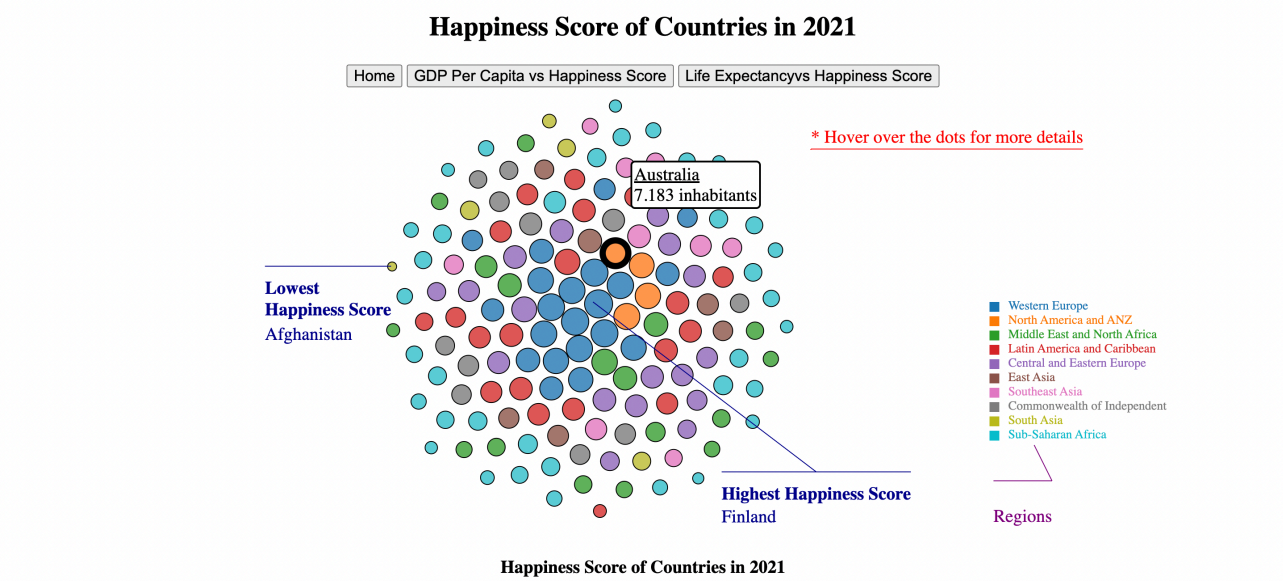
Visual Structure:

The visual structure in building each scene includes simple charts with data and chart headers. In the first scene “Home”, viewer views an overview of Happiness scores of all countries with a circular packing chart. Circular packing chart gives good overview of large data sets and clear representation of groupings. The color legend of the circles shows region that country belong. Second and Third scene has scatter charts to show correlation between Healthy life expectancy and GDP per capita on happiness score. The scatter plot provides range of data flow, like maximum and minimum value. And patterns are easy to observe for viewer.

The visual highlights provided by author are color legends for circles to highlight regions of each country. And color legends have been standardized across all three scenes to increase user familiarity. Tooltip info on “Mouse Hover” is provided for all three charts to highlight values each data represented in the charts. In the “Home” scene, the circle that viewer hovers is highlighted with a black ring around the circle. Chart headers are highlighted with bold colors . The text describing user interactions points are highlighted in red color. Another highlighting is provided by annotations. Annotations that highlight data points, data outliers are created for viewer. Highlighting lowest and highest score is provided to user with annotations that are highlighted with blue color. Important parts of the scenes are highlighted with bold text.

Viewer can transitions with the help of top navigation buttons to jump around story scene . The buttons are labeled with variables used in the charts in corresponding scenes, giving viewer more details about the scene viewer would like to select. Another transition in the second and third scene is drop down box . This transition can be used by viewer to change the data .

Below are the visual elements of the scenes



Happiness Score of Countries in 2021

The World Happiness Report is a landmark survey of the state of global happiness .The World Happiness 2021, which ranks 155 countries by their happiness levels, was released at the United Nations. The report describes how measurements of well-being can be used effectively to assess the progress of nations. The reports review the state of happiness in the world today and show how the new science of happiness explains personal and national variations in happiness. The following columns: GDP per Capita, Family, Life Expectancy, Freedom, Generosity, Trust Government Corruption describe the extent to which these factors contribute in evaluating the happiness in each country.

Scenes:

The story consists of three scenes. First scene is “Home”, followed by two more scenes “GDP Per Capita vs Happiness Score” and “Life expectancy vs Happiness score”. The ordering used is “User-directed” where user gets to select the path designed by author. All three scenes follow a consistent template that displays a single chart and with data highlighted .

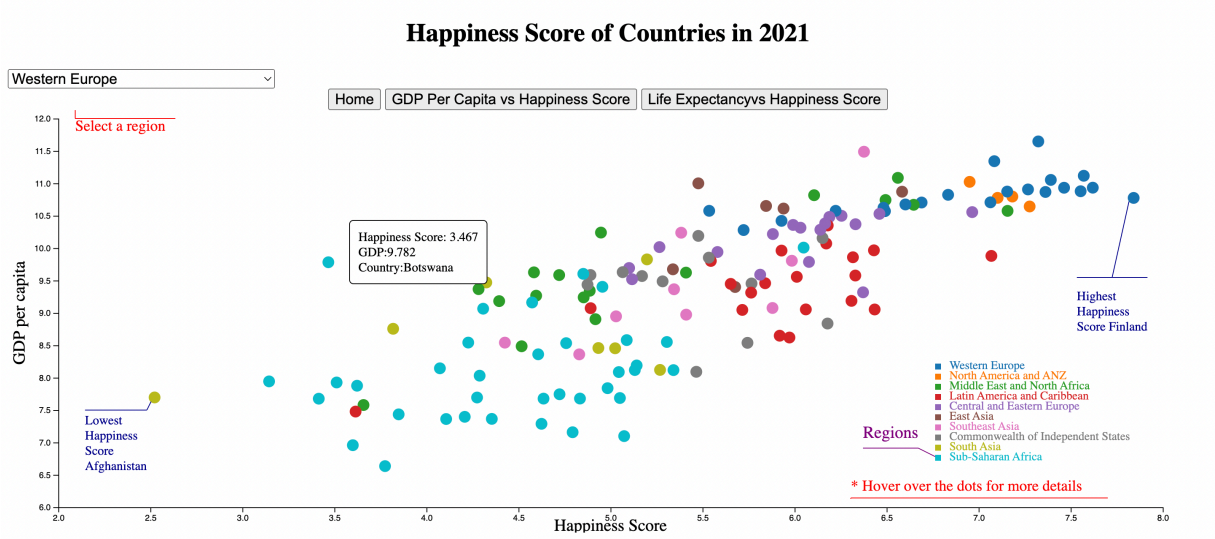
The first scene is Home page. In this scene, circular packing chart is used to draw viewers attentions. The data in this scene represent Happiness scores of all countries in data set. Highest Happiness score is packed in the center and countries with lower scores are placed away from the center using force simulation.

The user can navigate to second scene which is “GDP Per Capita vs Happiness Score” in the navigation button at the top . In this scene viewer can see the correlation between GDP per capita vs Happiness Score of the countries in the dataset. Viewer can drill down to different scenarios by selecting different regions in the dropdown. Each option in dropdown will provide different stories for user. For example, if user selects “South Asia” from drop down the data points in scatter plot will change to countries only belonging to this region like India, Srilanka, Pakistan etc.

Third Scene is the "Life expectancy vs Happiness score”. Similar to second scene user can interact with the scene to explore different stories.User will be able to study the correlation between Life expectancy and Happiness score for countries .

Annotations:

The major part of annotations have been provided by tooltips which shows minimal details, data descriptions and regions explanations in various scenes. A basic annotation template which adds a line along the note has been added in all parts of the scene. This template was chosen to highlight the text in annotation using a line. Same font and formatting is also used for all the annotations. To maintain consistency annotations have been standardized in the scene. Two of the annotations display messages to viewer about the points of interactions in the scenes with red font color. Two more annotations displays the maximum and minimum Happiness score in the scene with blue font color. And last annotation is the color legend to describe the regions of all countries in the dataset in purple font color.



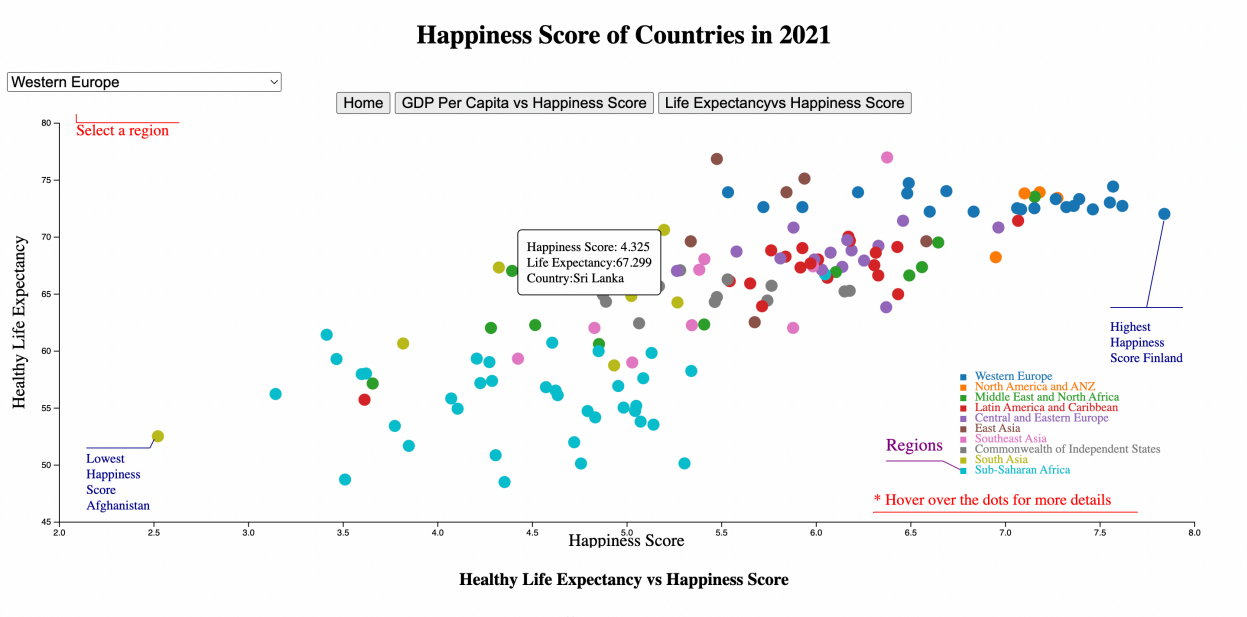
GDP per capita vs Happiness Score

Parameters:

All three scenes have navigation button at the top of web page. These buttons are the parameters. On selecting different buttons, different scenes are displayed to user. When the parameter is not selected, initial state of the chart is displayed as a circular chart . Once the parameter is chosen, the parameter makes a filter to the csv data based on selected variable and changes the state by displaying the corresponding scene.

In the second and third scenes there is an additional parameter “drop down” to select the regions of countries. This provides the capability for user to choose a different regions to understand correlation between 2 variable in the scene for all counties in the chosen region. Before the parameter is selected, the state of the page shows all the data points in the scatter plot corresponding to all countries in the dataset. Once the parameter is selected, the

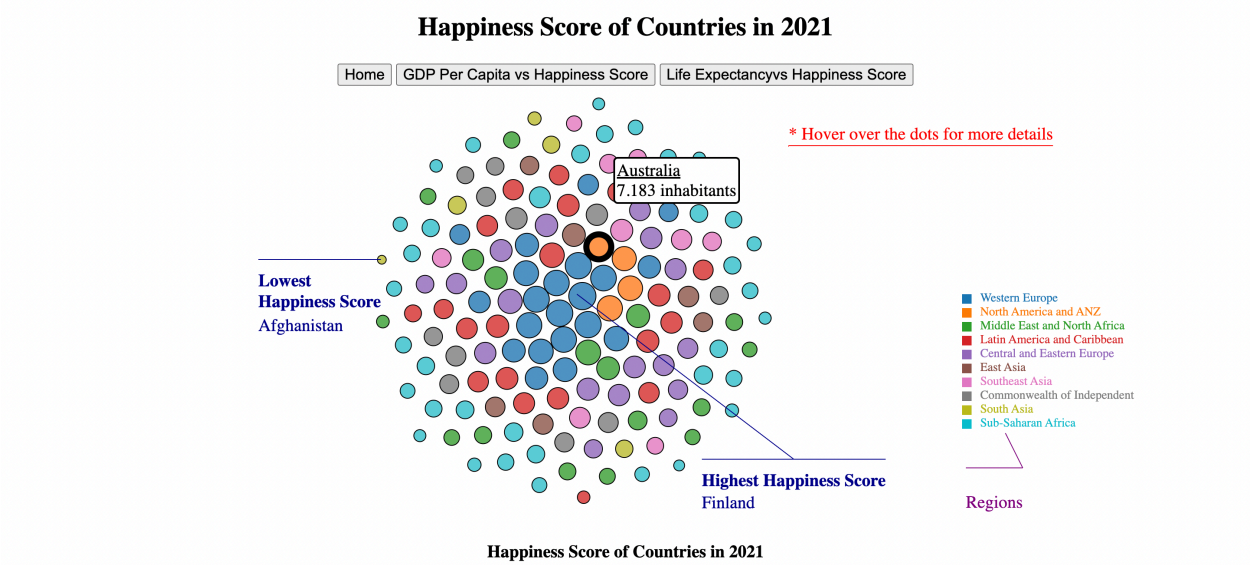
parameter makes a filter to the csv data based on the region variable . And changes the state of the chart to display only the data points based on the selection in the drop down.



Triggers:

Triggers that connect the first parameter is change in the scene. For the second parameter the trigger is change in the data points displayed in the scatter plot. The affordance used in the second trigger to provide the user the changes is by showing the text “Selected Region” in the second and third scene . This text is placed at the top of the chart and highlighted in dark red so as to give a better view of seeing the trigger. User interaction points are displayed with annotations with red font color

The “d3.csv” callback has been used to read and process the csv files. All the scenes with chart has “d3.csv” callbacks. “Data.filter” callback is used to filter the Variables values based on the region selected by the user from the drop down .



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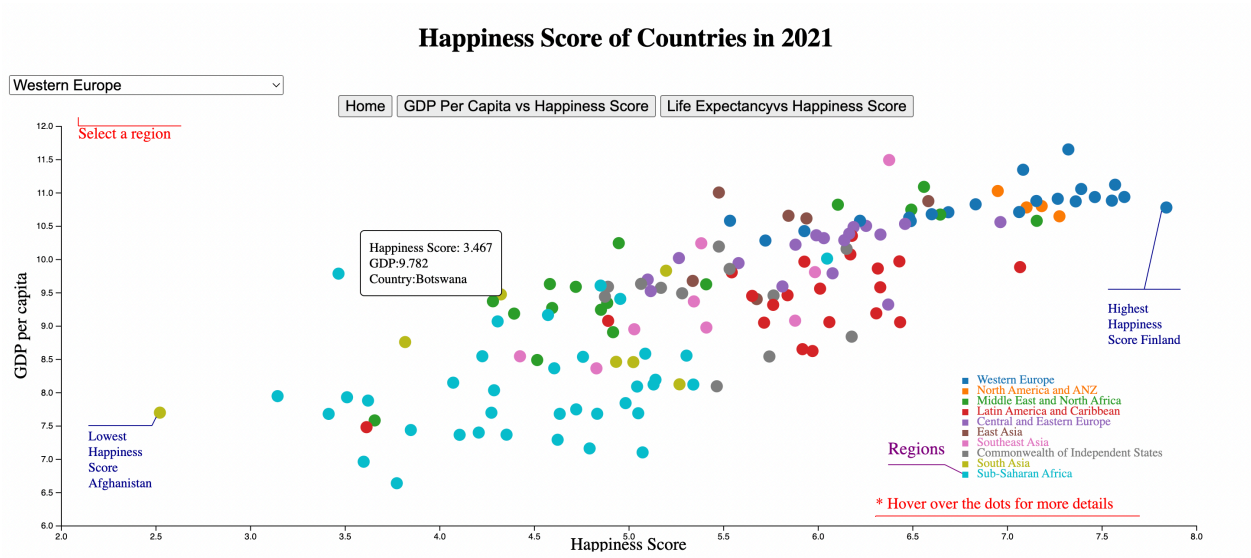
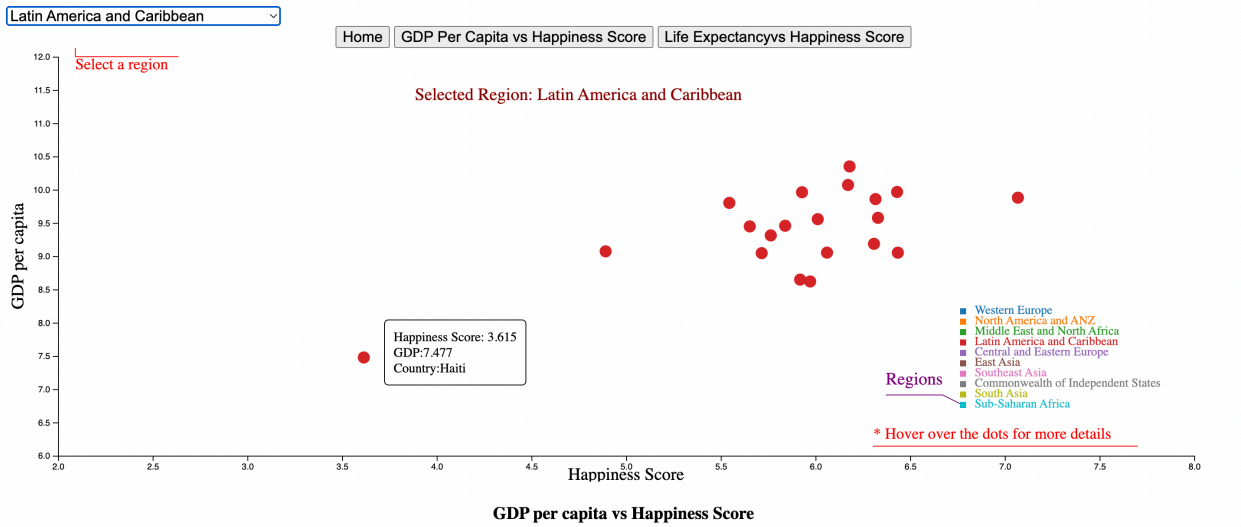


GDP per capita vs Happiness Score

Happiness Score of Countries in 2021



GDP per capita vs Happiness Score