



Data Visualization Final Project

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Bowen Ma
USF MSDS622

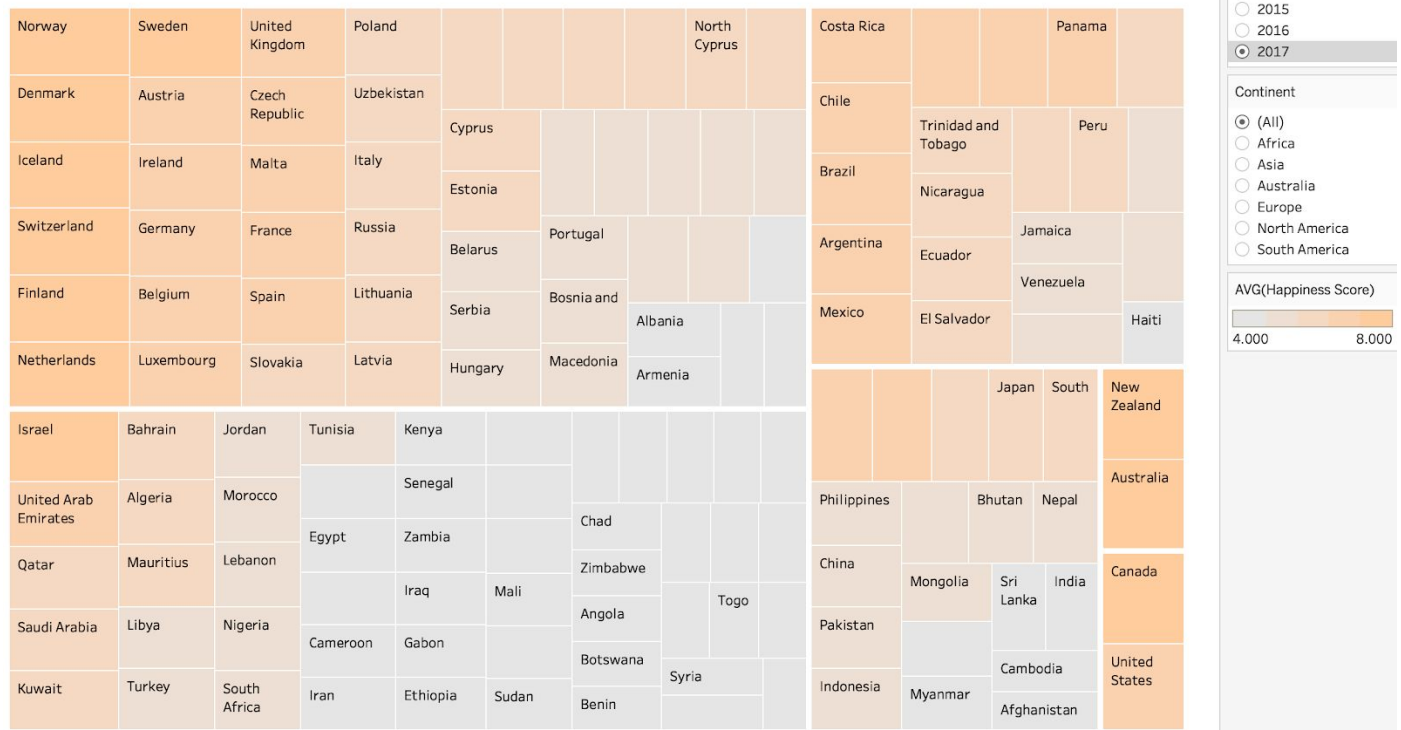
Introduction

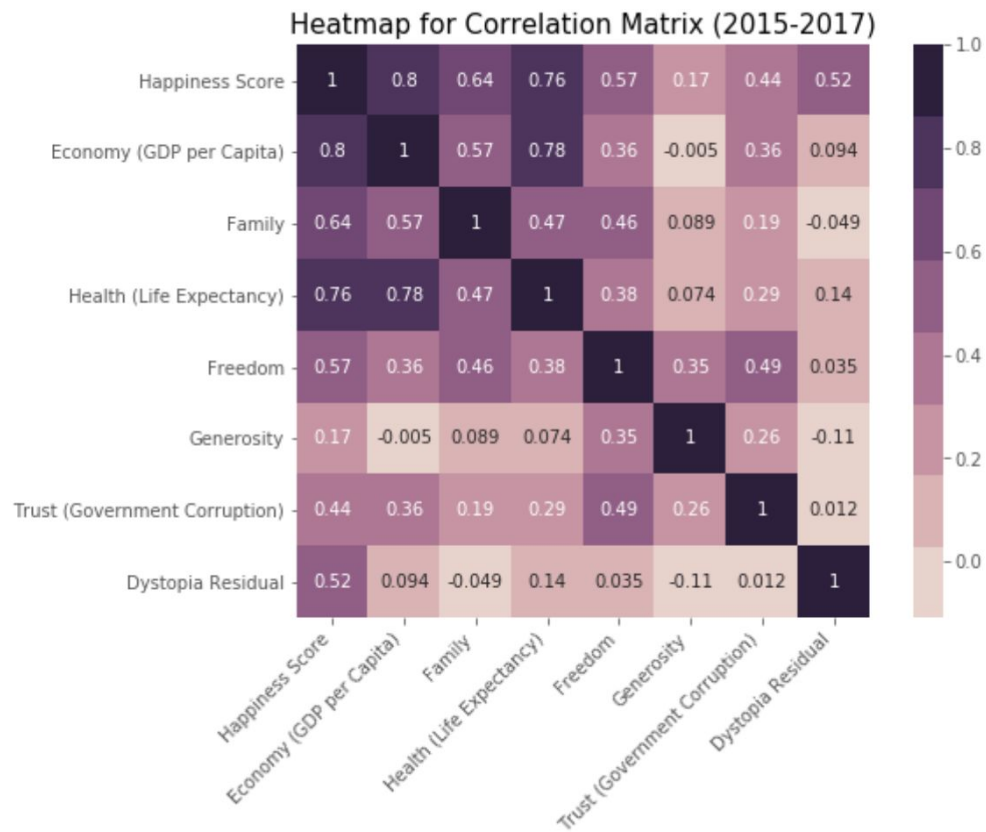
My dataset is World Happiness Report for three years 2015 to 2017 from Kaggle website. It is about happiness ranking for around 150 countries all over the world and the data contains features that might affect the happiness scores such as GDP per capita, life expectancy, family, freedom, generosity, trust in government, etc. I chose this dataset because the dataset provides global information with many aspects. I'm personally interested in learning more about people's happiness in different countries and what might have affected a country's happiness overall. I'm looking forward to find interesting insights about this dataset through data visualization.

In this project, I used a second dataset from Kaggle which contains worldwide GDP per capita information from 1955 to 2005. The reason for bringing in this data is to develop a better understanding of different continents' economic growths.

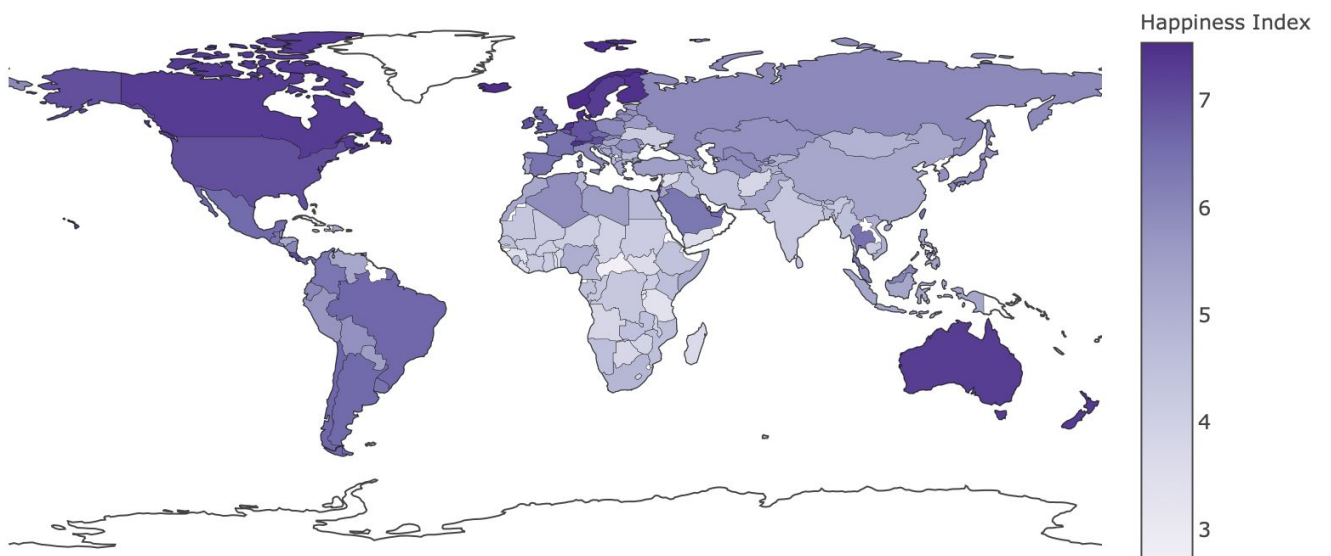
Summary of Data

Happiness Index Breakdown by Continent and Country 2015-2017

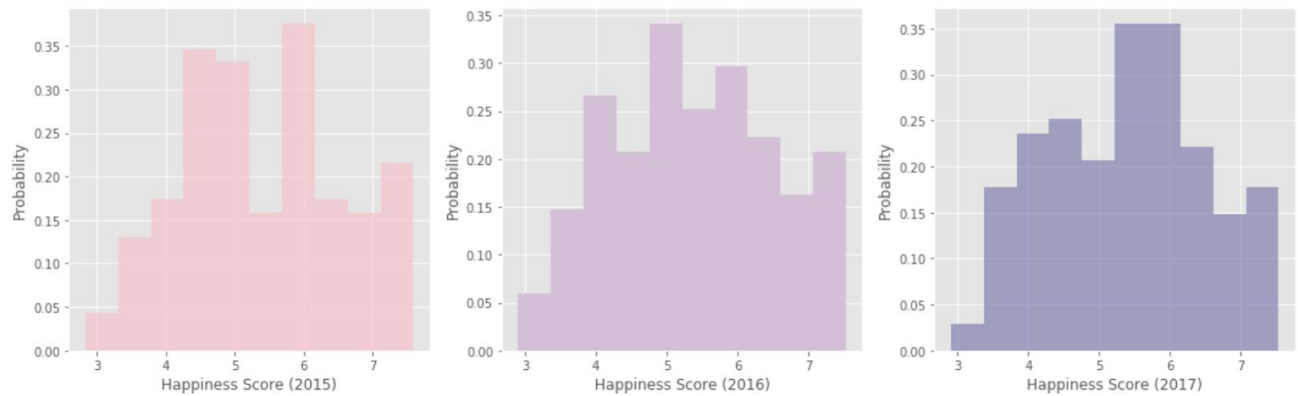




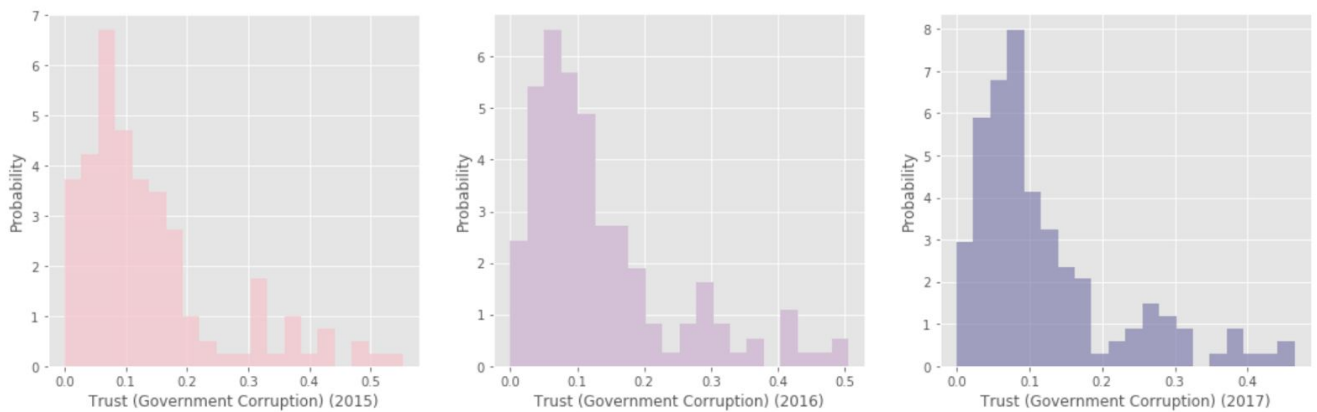
Happiness Index 2017



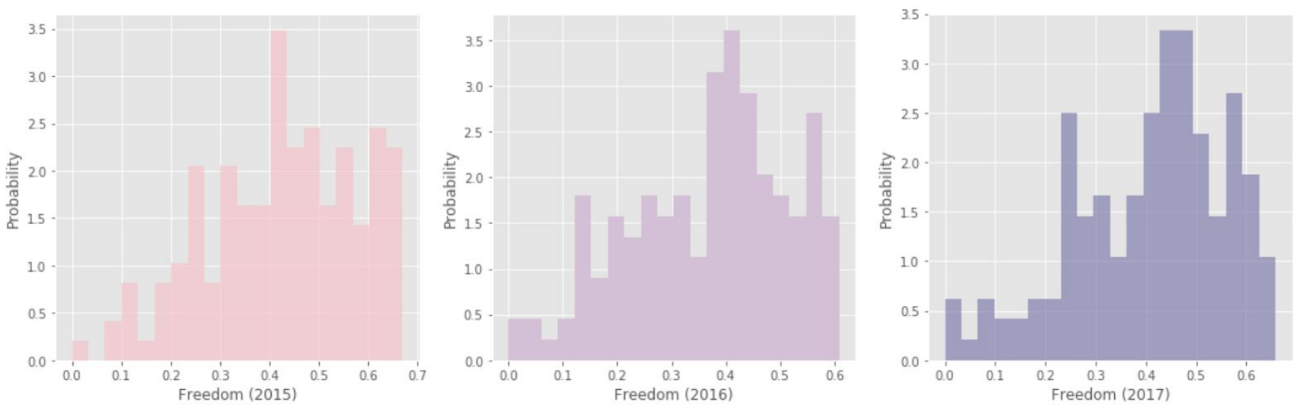
Distribution of Happiness Score Worldwide 2015-2017



Distribution of Trust (Government Corruption) Index Worldwide 2015-2017

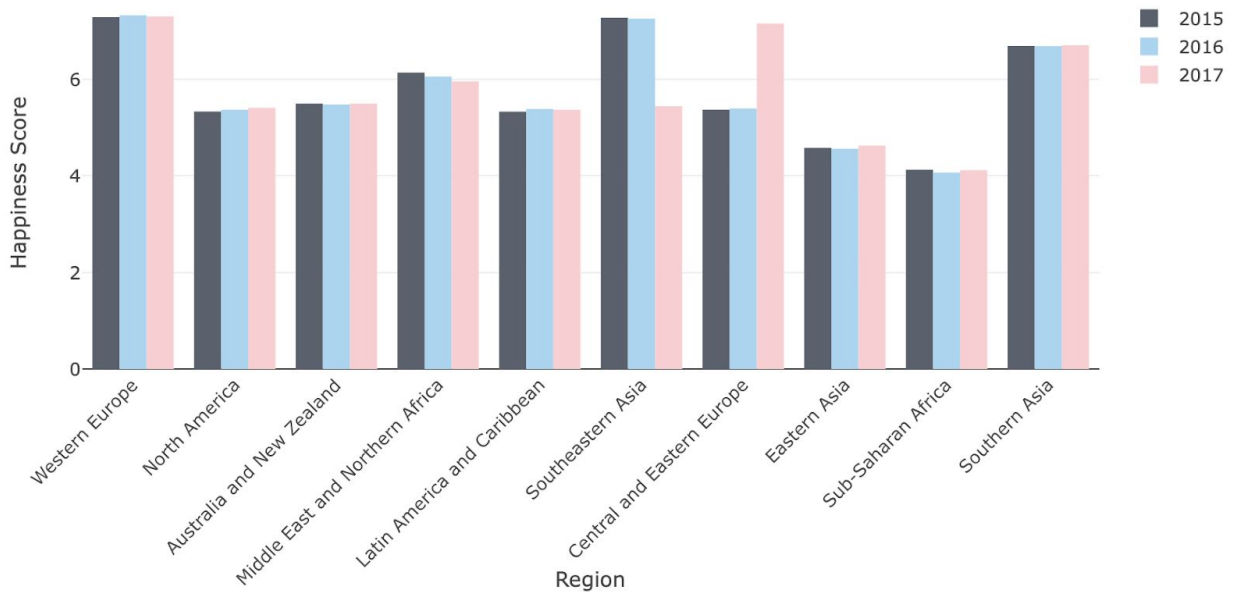


Distribution of Freedom Index Worldwide 2015-2017

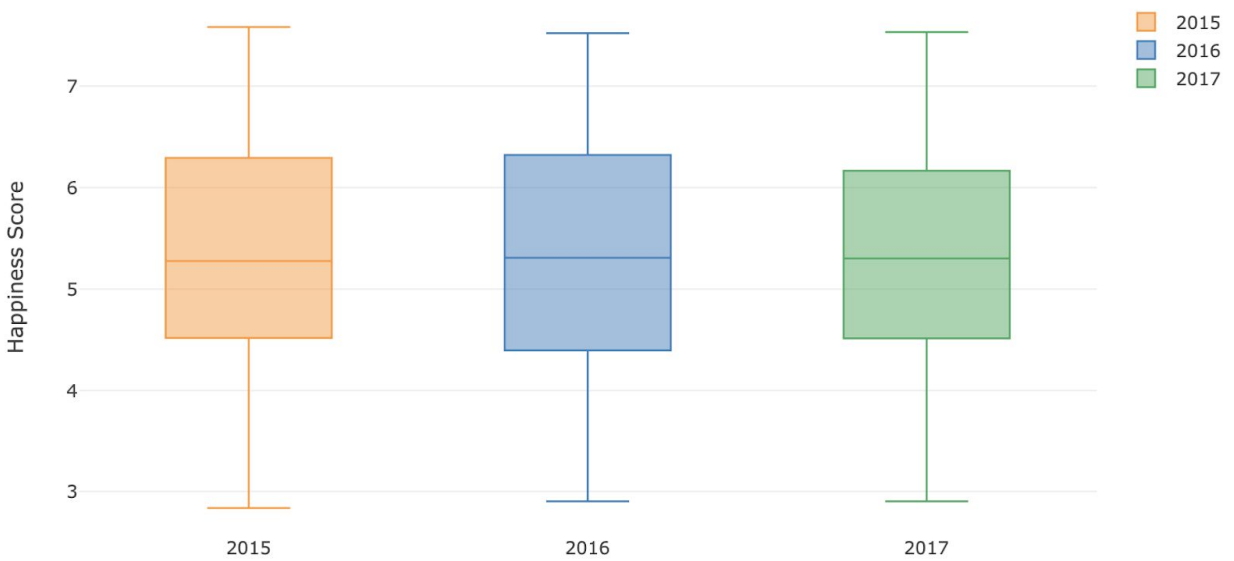




Average Happiness Score by Region 2015-2017

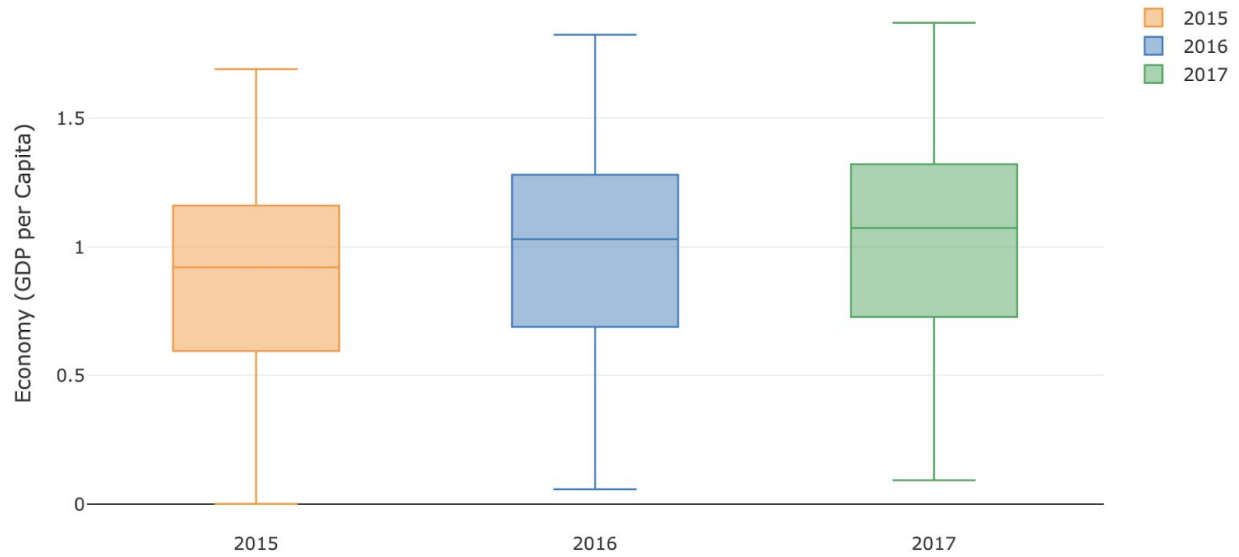


Box Plot of Worldwide Happiness Scores by Year

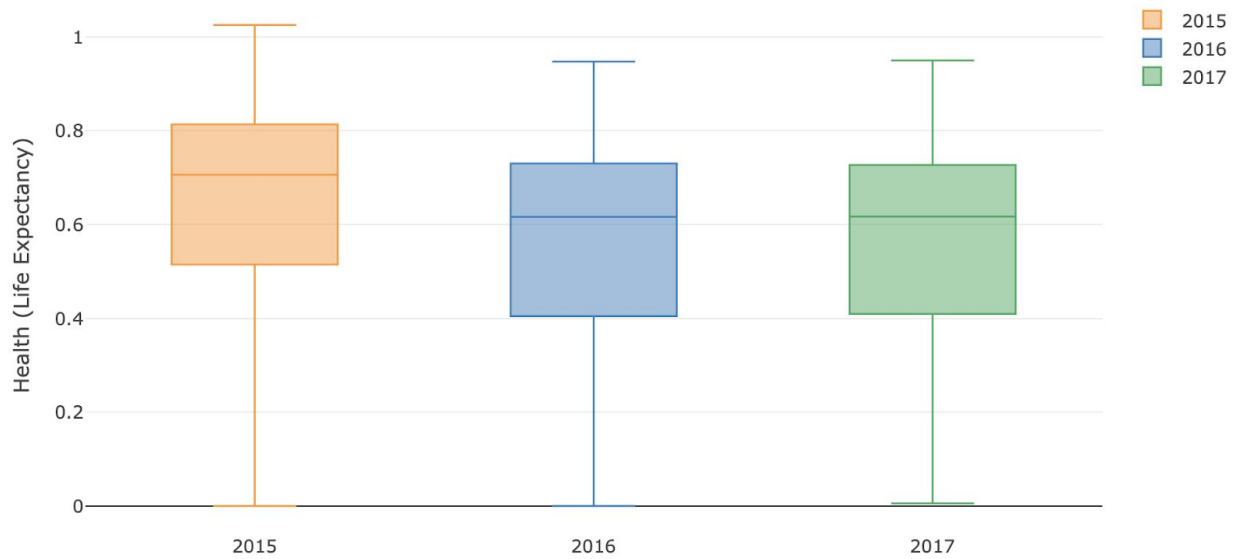


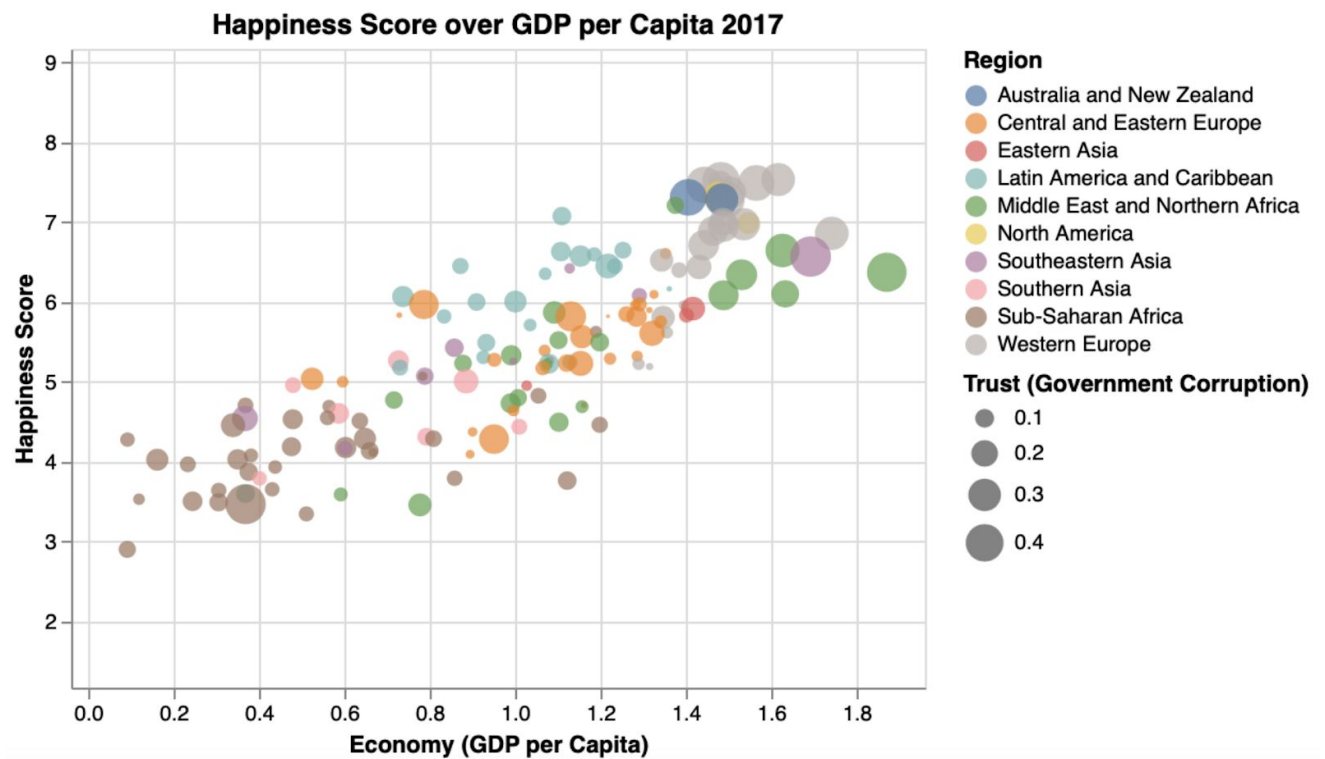
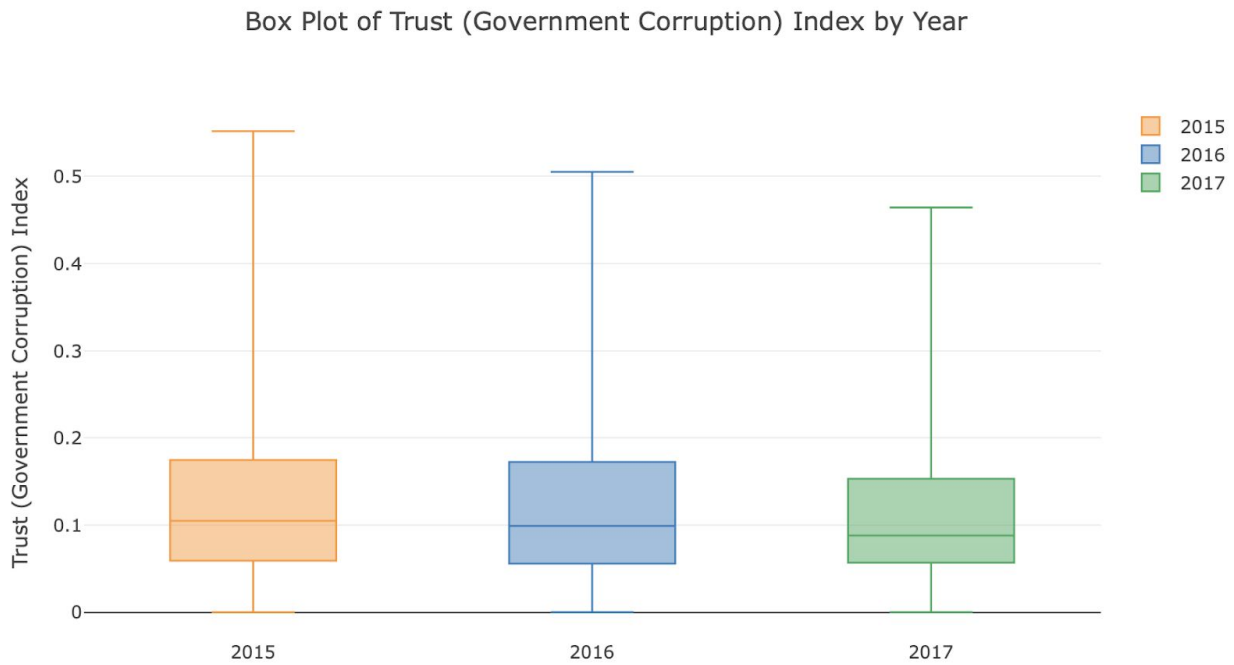


Box Plot of Economy (GDP per Capita) by Year

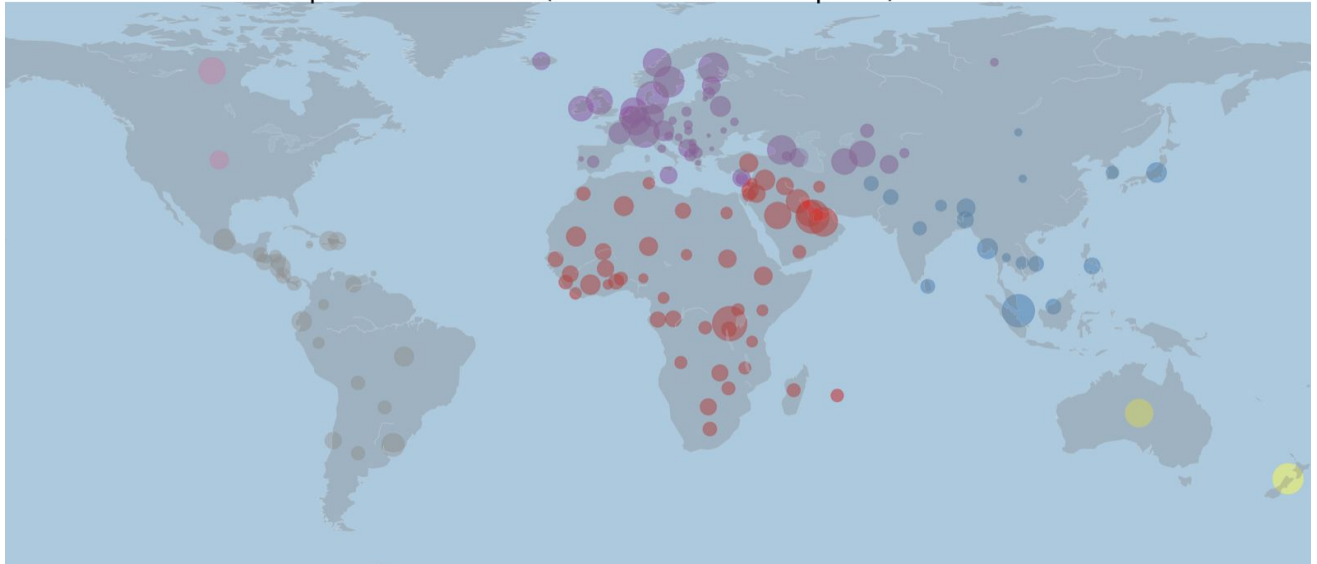


Box Plot of Health (Life Expectancy) by Year

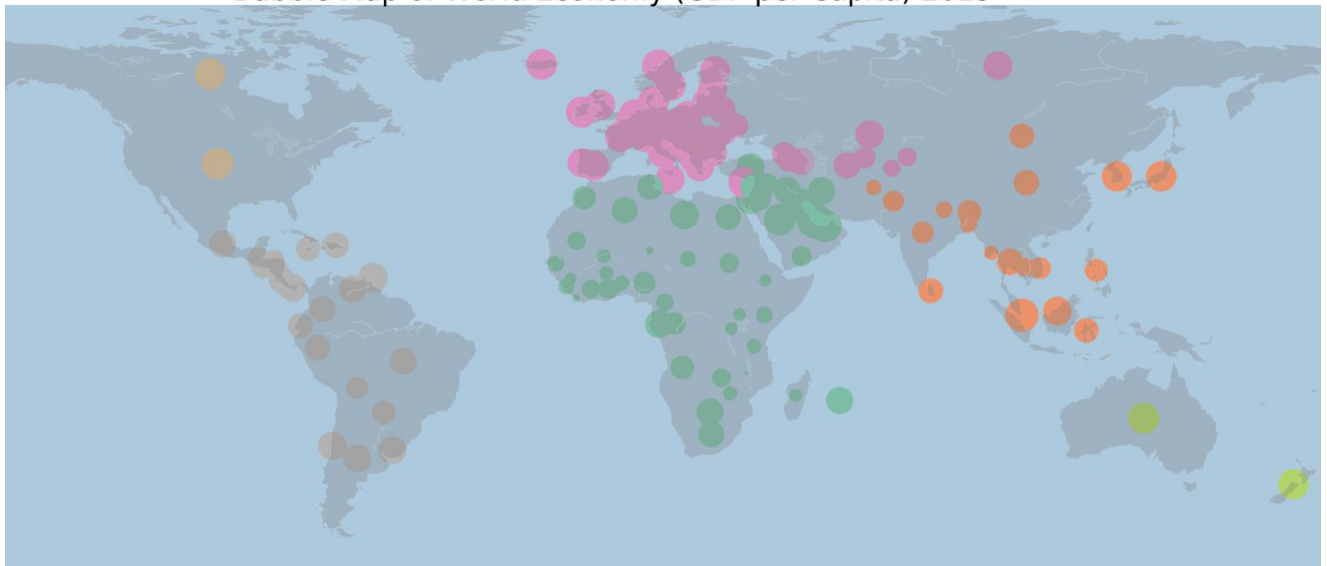




Bubble Map of World Trust (Government Corruption) Index 2015



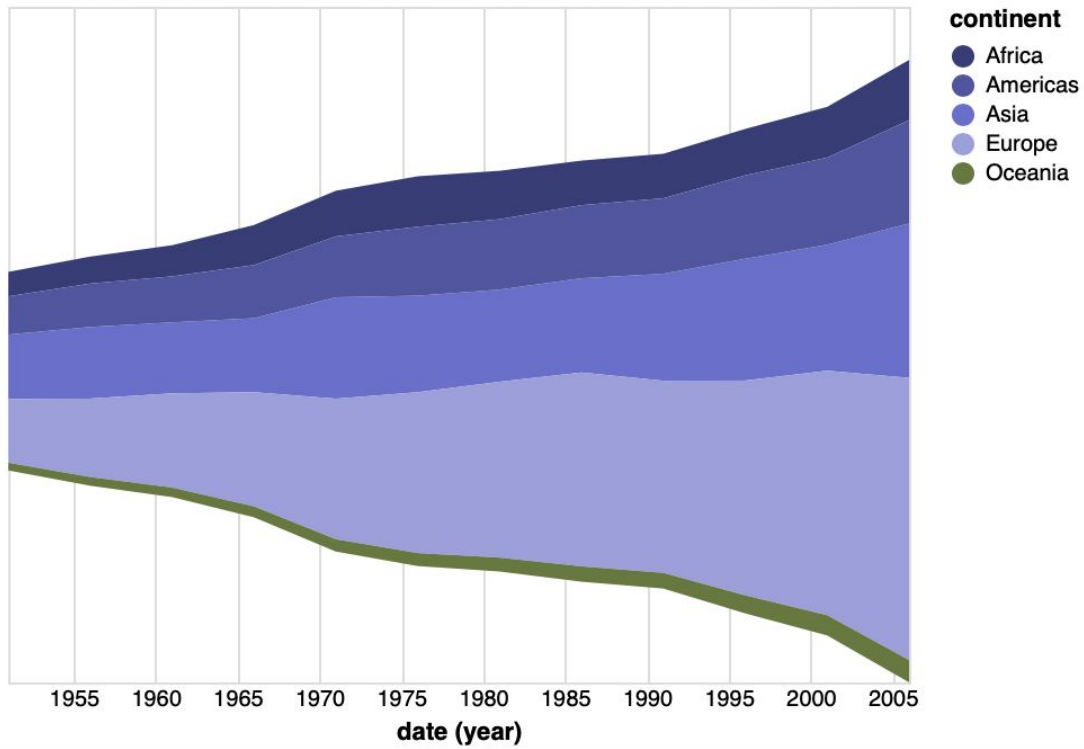
Bubble Map of World Economy (GDP per Capita) 2015



Trading Paths among Top GDP Countries in Each Continent 2015
(Hover for country names)



Streamgraph for GDP per Capita by Continent 1955-2005



Storyline:

The treemap provides a good idea of countries' happiness rankings in different continents. As expected, Europe has the happiest country in the world. Next comes Canada and United States. Rankings change slightly every year but the general trend does not vary much. As is also proved by the Box Plot of World Happiness Score by Year. In addition, treemap also tells proportion of happy countries versus unhappy countries within each continent. Australia and North America are the happiest continents. Europe and South America has more happy countries than unhappy countries. Most African countries are not very happy. Asian countries are neutral.

The heatmap tells us that Economy (GDP per Capita), Health (Life Expectancy) and Family are most correlated with a country's happiness score/index. It is surprising to see that Generosity is negatively correlated with Economy. As one might expect rich people be more generous, the fact is actually the opposite; same could apply to countries.

The barplot of Average happiness Score by Region 2015 - 2017 gives insight on the overall change in happiness index at regional level. Central and Eastern Europe has made a large jump, whereas Southeastern Asia has a significant drop. Perhaps because of economy growth and political events during the period.

The histograms and boxplots are helpful in understanding the worldwide distribution of happiness scores and other indicators. Most countries fall into average and above average happiness level. Distribution of country's trust in government indicators are very right skewed, indicating most people have low trust in government. Surprisingly, the box plot of Trust (Government Corruption) demonstrates a very different pattern from those of other indicators. It seems that people's trust in government has been decreasing as time goes regardless of any other factors.

Conclusion:

How can we make a happier world? With just fast growing economy is definitely not enough. As shown in Happiness Score over GDP per Capita 2017 plot, even though countries in Middle East and Northern Africa have highest GDP per capita, they are not the happiest countries.

In conclusion, a country not only need to have healthy economic growth, but also healthy political environment, sound social and cultural environment... To be happy is not easy, but people all over the world are making great effort. Nowadays, with big data and powerful data visualization tools, we can learn from the past and make our future better!

Link to GitHub:

<https://github.com/bowema/data-visualization>

Appendix:

1. Please see final_project jupyter notebook in the github for all the code.
2. For interactive plots in Tableau dashboard:
https://public.tableau.com/profile/bowen.ma#!/vizhome/final_project_treemap/tree_map2
https://public.tableau.com/profile/bowen.ma#!/vizhome/hw7_15567762835420/Dashboard1