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World Happiness Report

A landmark survey of the state
of global happiness of 156
countries



World Happiness Report

The quality of people's lives can be coherently, reliably, and validly assessed by a variety of subjective well-being measures, collectively referred to then and in subsequent reports as "happiness."

Well-being Measures

1. **Economy/GDP per capita** is in terms of Purchasing Power Parity (PPP) taken from the World Development Indicators (WDI) released by the World Bank on November 14, 2018
2. **Health life expectancy** data is from the World Health Organization (WHO) Global Health Observatory
3. **Family/Social support** – answers the question *"If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?"*
4. **Freedom** – answers the question *"Are you satisfied or dissatisfied with your freedom to choose what you do with your life?"*
5. **Generosity** – answers the question *"Have you donated money to a charity in the past month?"*
6. **Trust or perceptions of corruption** – answers the question *"Is corruption widespread throughout the government or not?"* and *"Is corruption widespread within businesses or not?"*

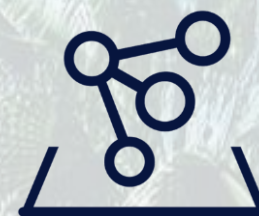




What are the factors affecting a country's happiness?



Which years are the happiest for all countries?
Which countries are the happiest in the happiest year?



How does each factor affect each other?

Data Cleaning

World Happiness Dataset

```
Overall rank, Country or region, Score, GDP per capita, Social supp
1, Finland, 7.769, 1.340, 1.587, 0.986, 0.596, 0.153, 0.393
2, Denmark, 7.600, 1.383, 1.573, 0.996, 0.592, 0.252, 0.410
3, Norway, 7.554, 1.488, 1.582, 1.028, 0.603, 0.271, 0.341
4, Iceland, 7.494, 1.380, 1.624, 1.026, 0.591, 0.354, 0.118
5, Netherlands, 7.488, 1.396, 1.522, 0.999, 0.557, 0.322, 0.298
6, Switzerland, 7.480, 1.452, 1.526, 1.052, 0.572, 0.263, 0.343
7, Sweden, 7.343, 1.387, 1.487, 1.009, 0.574, 0.267, 0.373
8, New Zealand, 7.307, 1.303, 1.557, 1.026, 0.585, 0.330, 0.380
9, Canada, 7.278, 1.365, 1.505, 1.039, 0.584, 0.285, 0.308
10, Austria, 7.246, 1.376, 1.475, 1.016, 0.532, 0.244, 0.226
11, Australia, 7.228, 1.372, 1.548, 1.036, 0.557, 0.332, 0.290
12, Costa Rica, 7.167, 1.034, 1.441, 0.963, 0.558, 0.144, 0.093
13, Israel, 7.139, 1.276, 1.455, 1.029, 0.371, 0.261, 0.082
14, Luxembourg, 7.090, 1.609, 1.479, 1.012, 0.526, 0.194, 0.316
15, United Kingdom, 7.054, 1.333, 1.538, 0.996, 0.450, 0.348, 0.278
16, Ireland, 7.021, 1.499, 1.553, 0.999, 0.516, 0.298, 0.310
17, Germany, 6.985, 1.373, 1.454, 0.987, 0.495, 0.261, 0.265
18, Belgium, 6.923, 1.356, 1.504, 0.986, 0.473, 0.160, 0.210
19, United States, 6.892, 1.433, 1.457, 0.874, 0.454, 0.280, 0.128
20, Czech Republic, 6.852, 1.269, 1.487, 0.920, 0.457, 0.046, 0.036
```

Project Dataframe

```
1 import pandas as pd

1 df_2015_raw = pd.read_csv('Resources/2015_raw.csv')
2 df_2016_raw = pd.read_csv('Resources/2016_raw.csv')
3 df_2017_raw = pd.read_csv('Resources/2017_raw.csv')
4 df_2018_raw = pd.read_csv('Resources/2018_raw.csv')
5 df_2019_raw = pd.read_csv('Resources/2019_raw.csv')

1 df_2015_raw = df_2015_raw[["Country", "Happiness Rank", "Happiness Score", "E
2 df_2015_raw["Year"] = "2015"
3 df_2015_raw = df_2015_raw.rename(columns={"Family": "Family/Social Support"})
4 df_2015 = df_2015_raw[["Country", "Year", "Happiness Rank", "Happiness Score"
5 df_2015

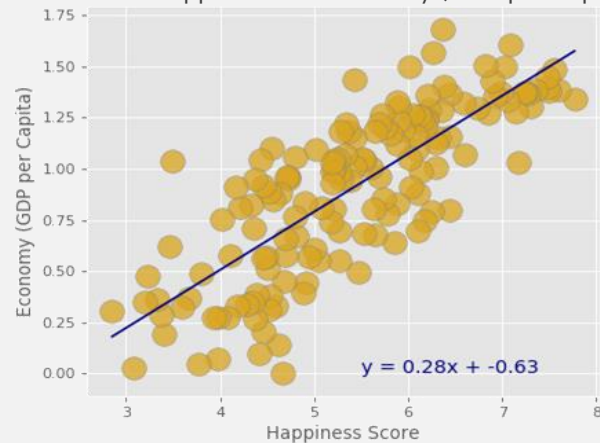
1 df_2015.to_csv("Resources/2015.csv")
```

Reading csv
files and
organizing
important
data

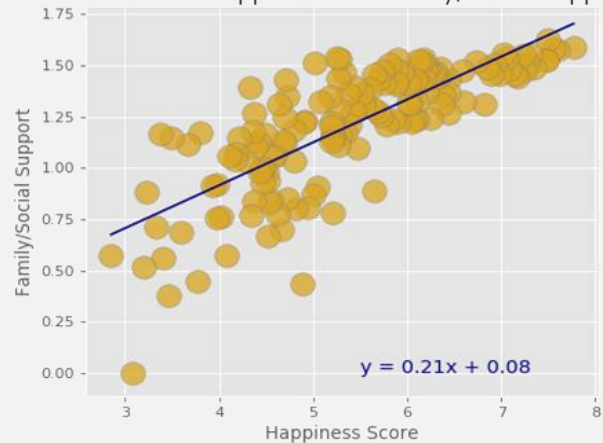
	Country	Year	Happiness Rank	Happiness Score	Economy (GDP per Capita)	Family/Social Support	Health (Life Expectancy)	Freedom	Trust (Government Corruption)	Generosity
0	Finland	2019	1	7.769	1.340	1.587	0.986	0.596	0.393	0.153
1	Denmark	2019	2	7.600	1.383	1.573	0.996	0.592	0.410	0.252
2	Norway	2019	3	7.554	1.488	1.582	1.028	0.603	0.341	0.271
3	Iceland	2019	4	7.494	1.380	1.624	1.026	0.591	0.118	0.354
4	Netherlands	2019	5	7.488	1.396	1.522	0.999	0.557	0.298	0.322

Factors affecting happiness

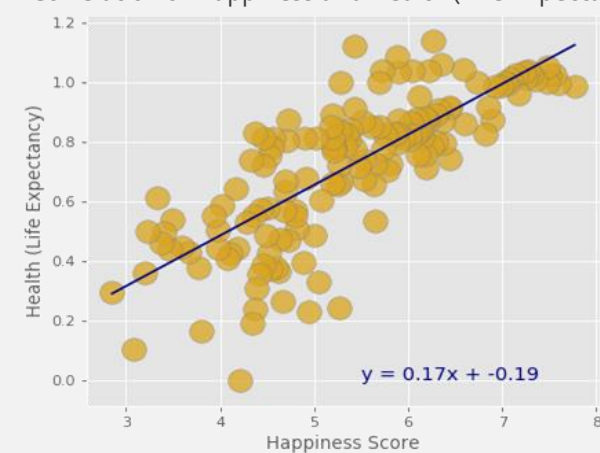
Correlation of Happiness and Economy (GDP per Capita)



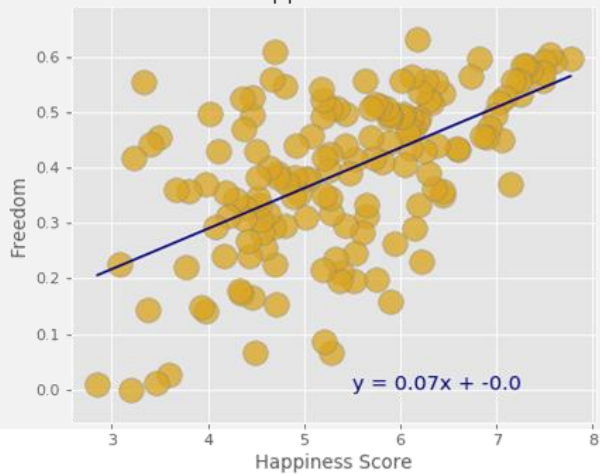
Correlation of Happiness and Family/Social Support



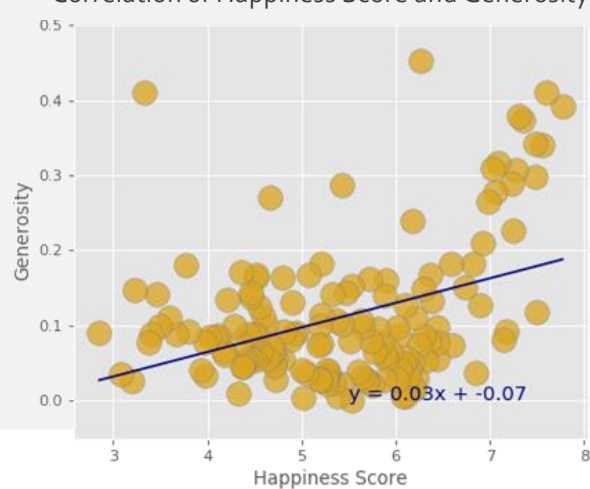
Correlation of Happiness and Health (Life Expectancy)



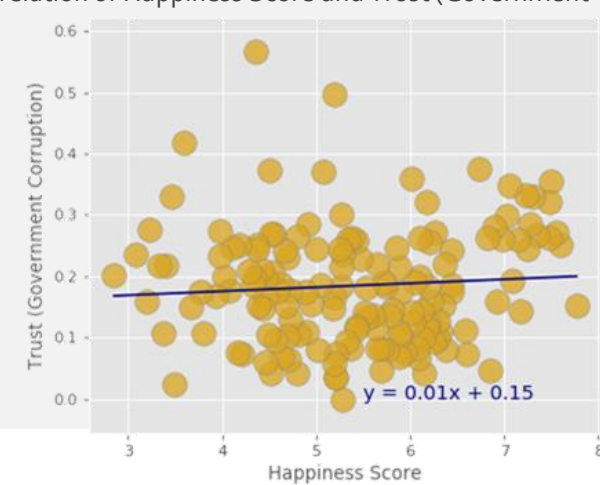
Correlation of Happiness Score and Freedom



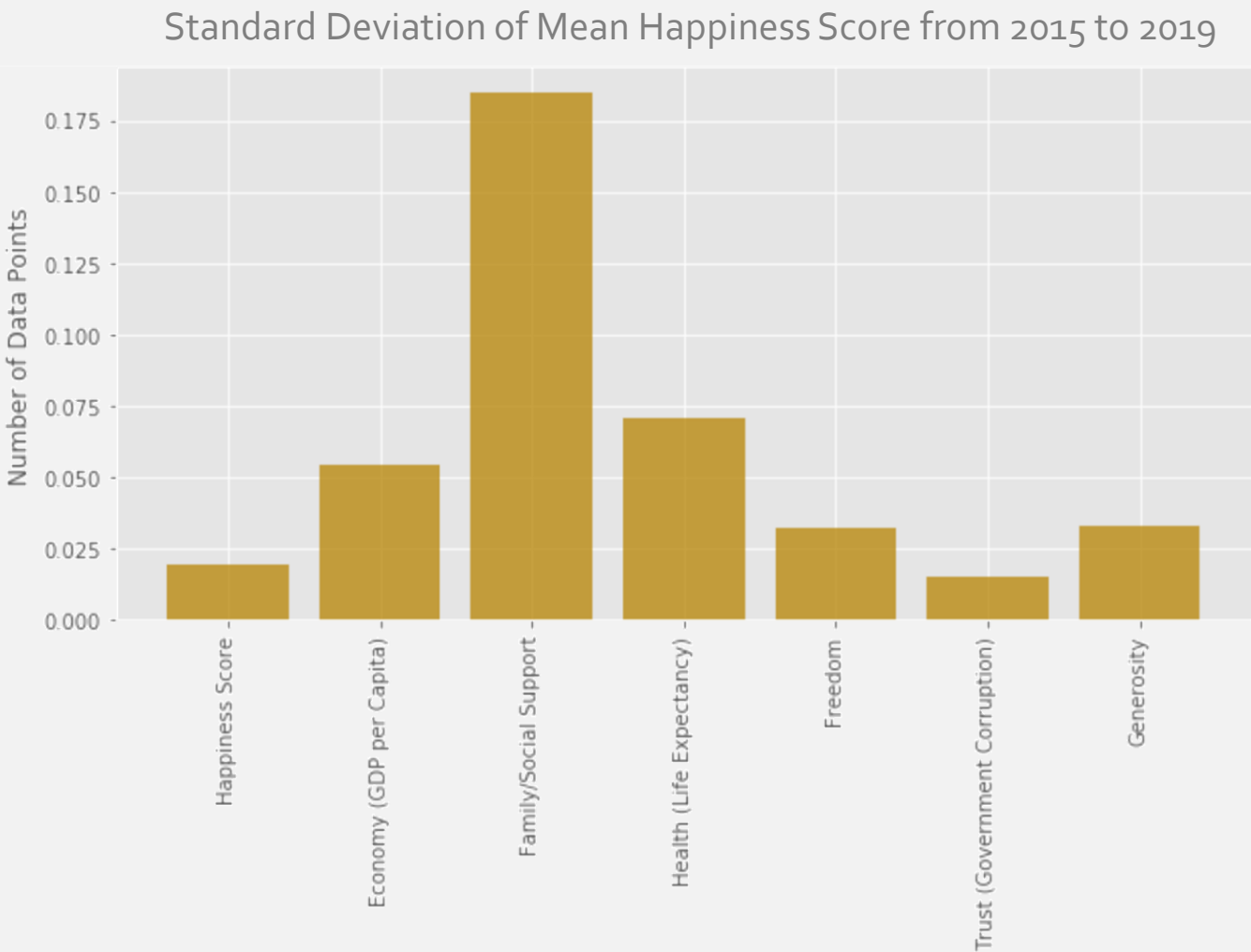
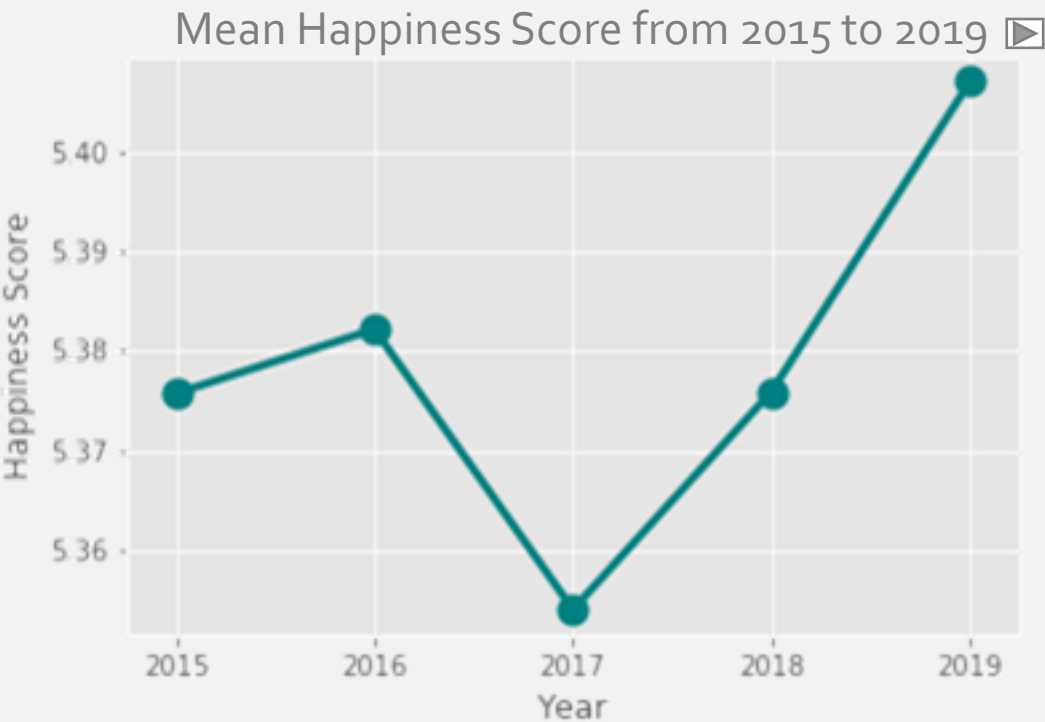
Correlation of Happiness Score and Generosity



Correlation of Happiness Score and Trust (Government Corruption)



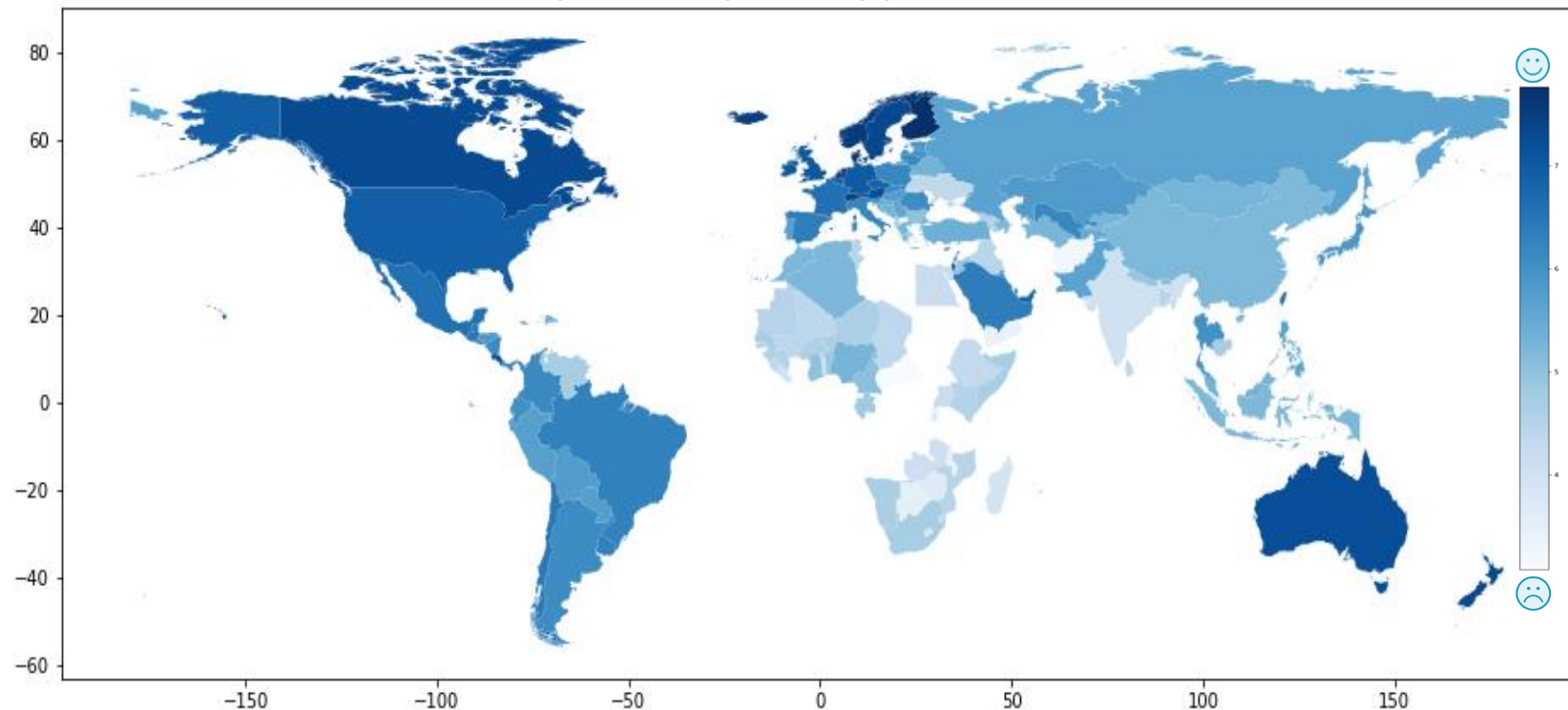
Factors affecting happiness



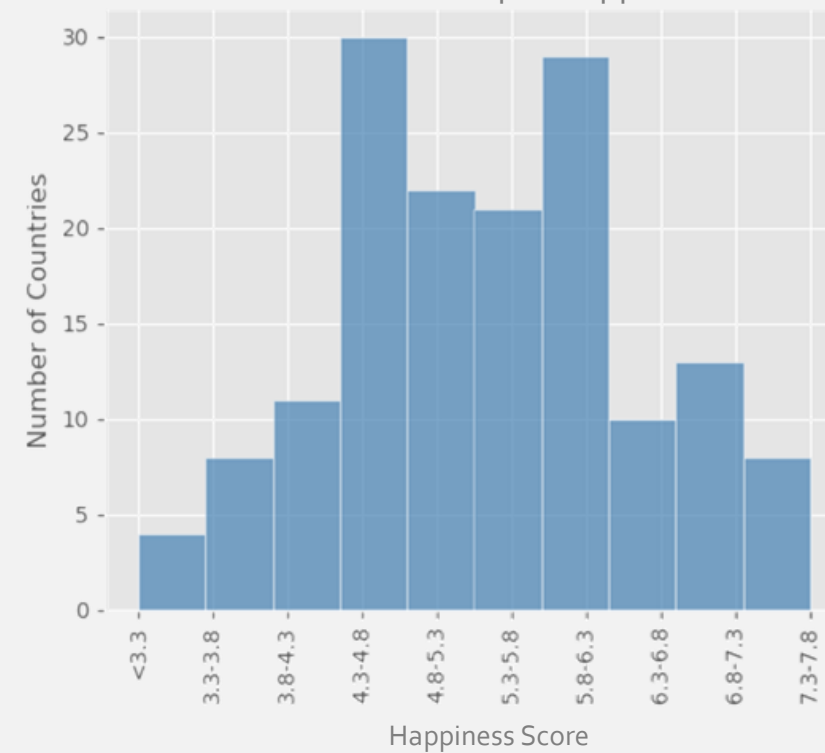
Data Exploration

Happiest Countries











Choropleth Map of Happiness Score (2019)



Number of Countries per Happiness Score



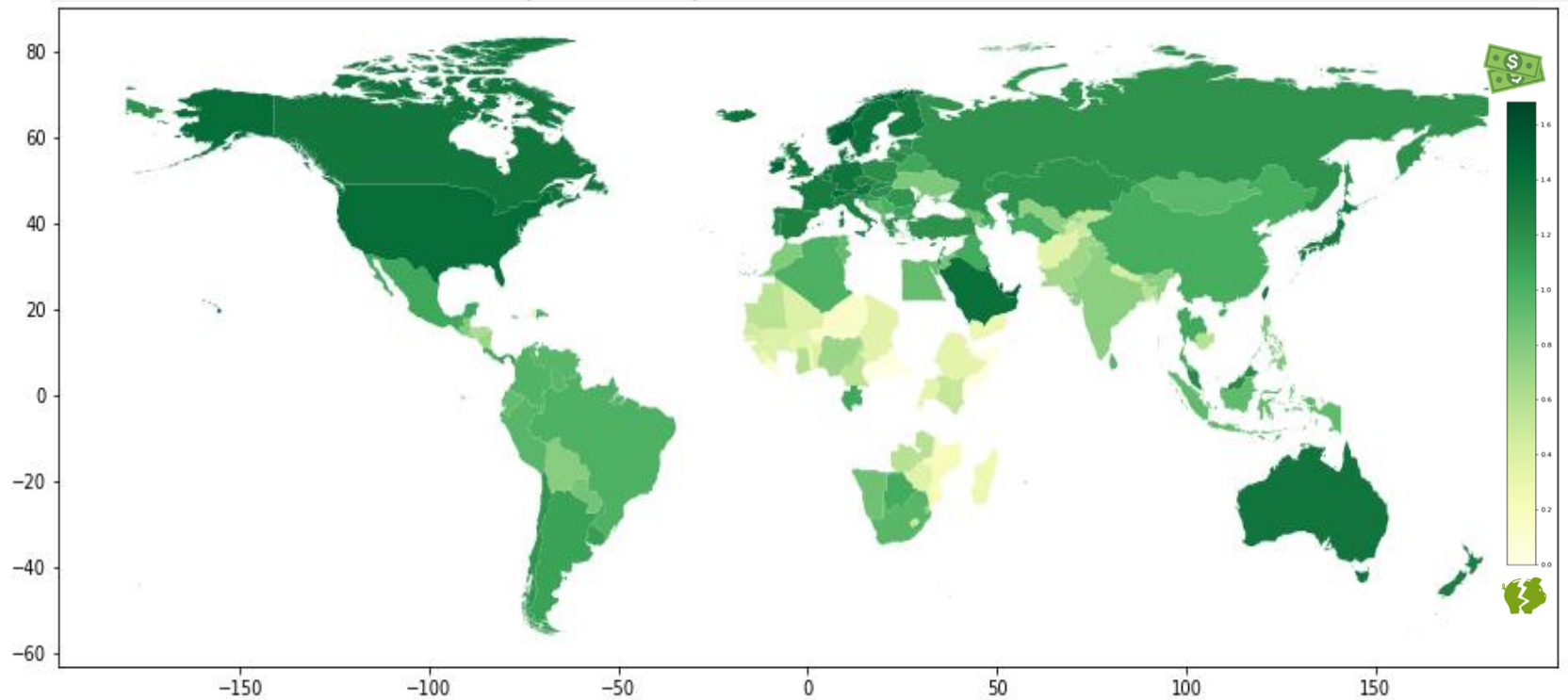
Top 10 Happiest Countries

- | | | | |
|---|--|---|--|
|  1 Finland |  4 Iceland |  7 Sweden |  10 Austria |
|  2 Denmark |  5 Netherlands |  8 New Zealand | |
|  3 Norway |  6 Switzerland |  9 Canada | |

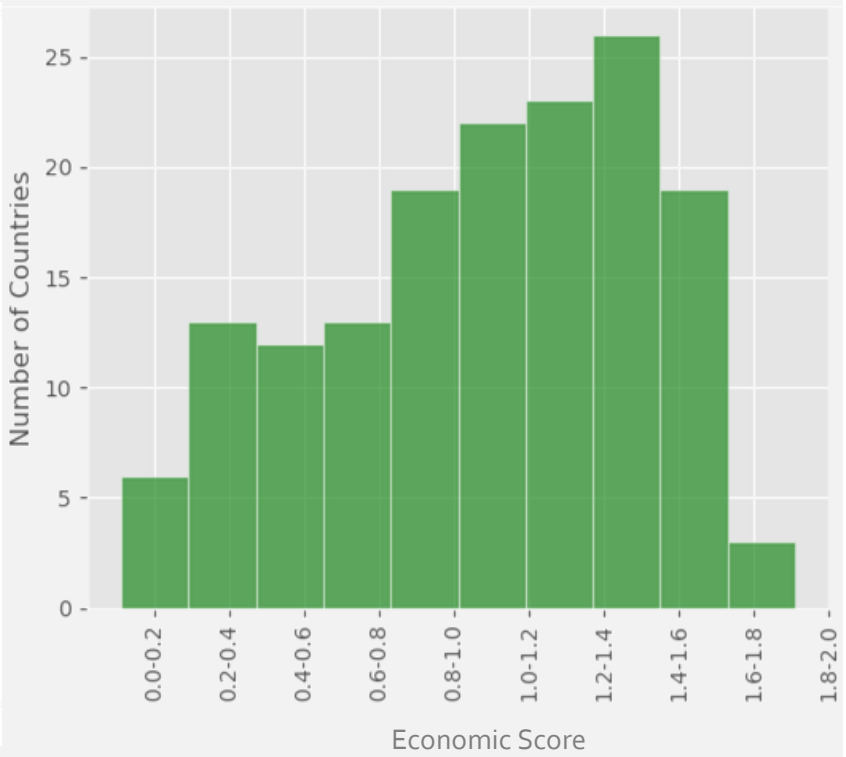
Data Exploration

High Economy Countries

Choropleth Map of Economic Score (2019)



Number of Countries per Economic Score



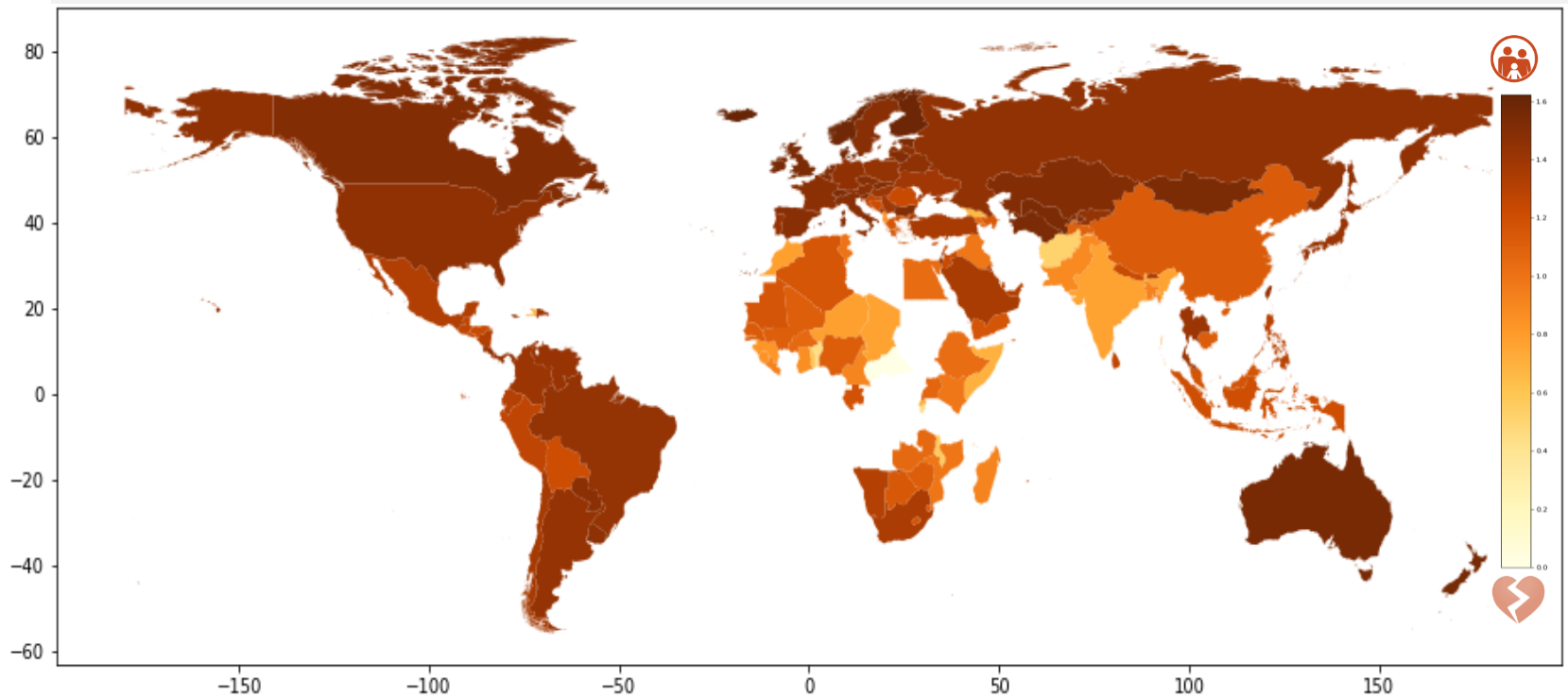
Top 10 High Economy Countries

- | | | | |
|--|---|---|--|
|  1 Qatar |  4 United Arab Emirates |  7 Norway 😊 |  10 United States |
|  2 Luxembourg |  5 Kuwait |  8 Switzerland 😊 | |
|  3 Singapore |  6 Ireland |  9 Hong Kong | |

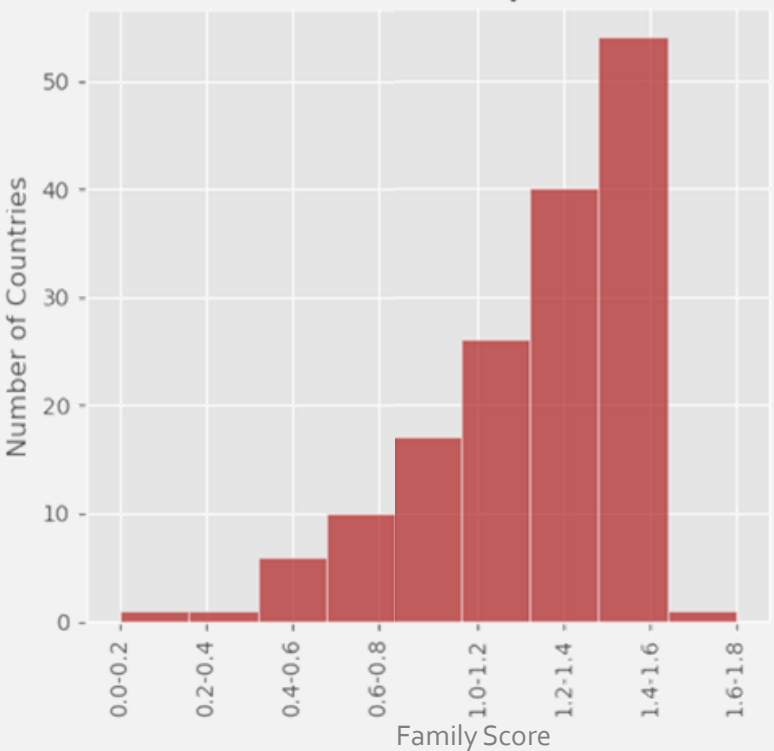
Data Exploration

High Family/Social Support Score Countries











Choropleth Map of Family/Social Support Score(2019)



Number of Countries per Family Score



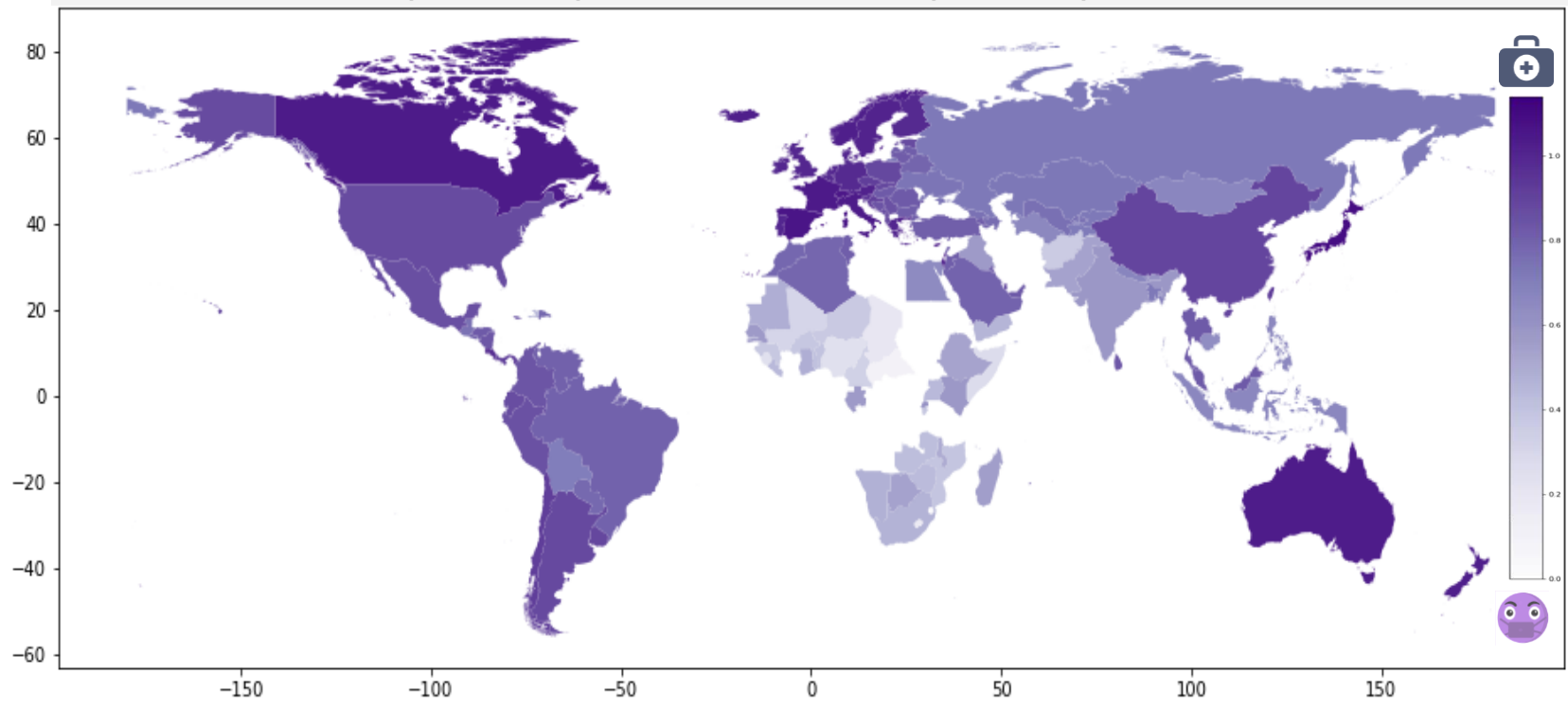
Top 10 High Family Countries

- | | | | |
|---|--|--|---|
|  1 Iceland 😊 |  4 Denmark 😊 |  7 Australia |  10 Mongolia |
|  2 Finland 😊 |  5 New Zealand 😊 |  8 United Kingdom | |
|  3 Norway 😊 |  6 Ireland |  9 Turkmenistan | |

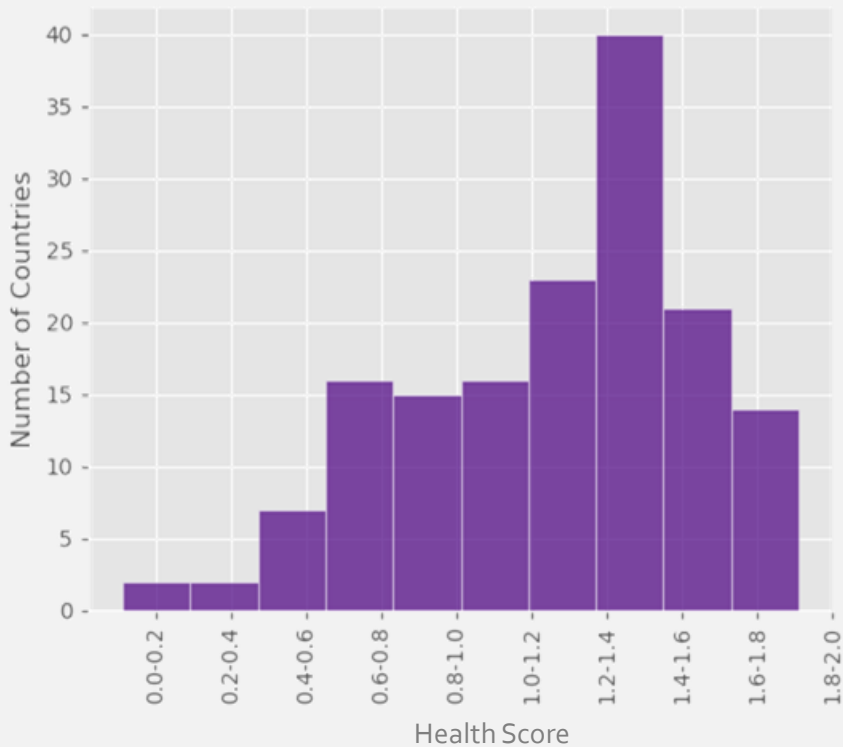
Data Exploration

Highest Health Score Countries

Choropleth Map of Health (Life Expectancy) Score (2019)



Number of Countries per Health Score



Top 10 High Health Countries



1 Singapore



2 Hong Kong



3 Japan



4 Spain



5 Switzerland 😊



6 France



7 Northern Cyprus



8 Cyprus



9 Canada 😊

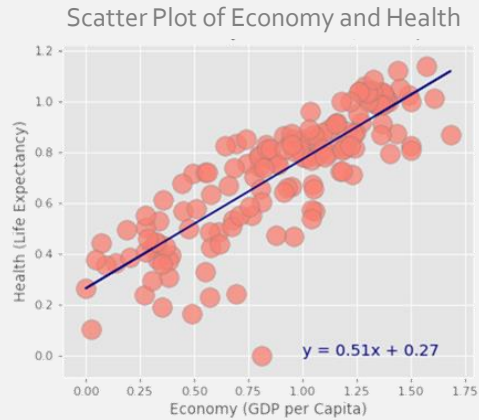


10 Italy

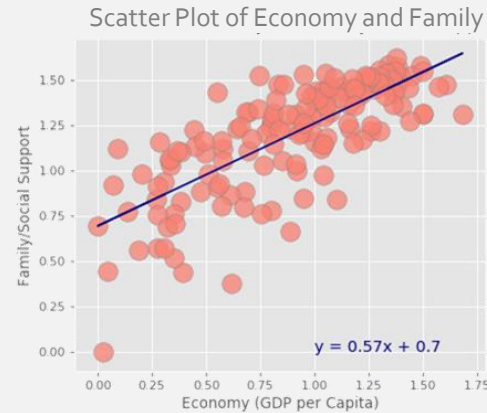
Data Exploration

How does the factors affect each other?

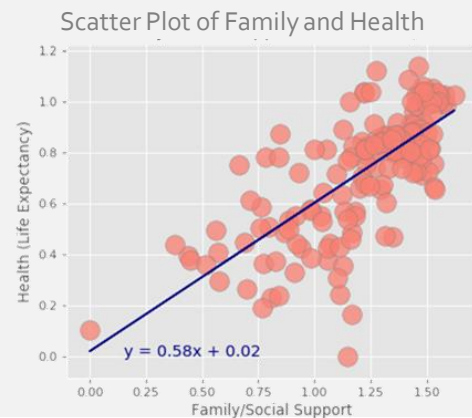
Limitations of the Study



Correlation coefficient: 0.84



Correlation coefficient: 0.75



Correlation coefficient: 0.72

Correlation Matrix of All Factors



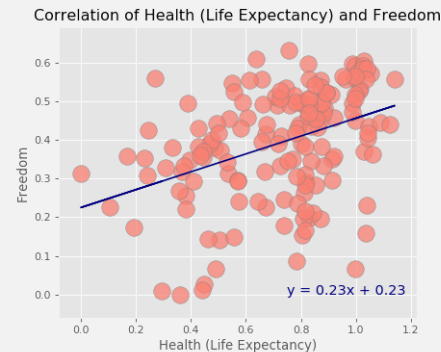
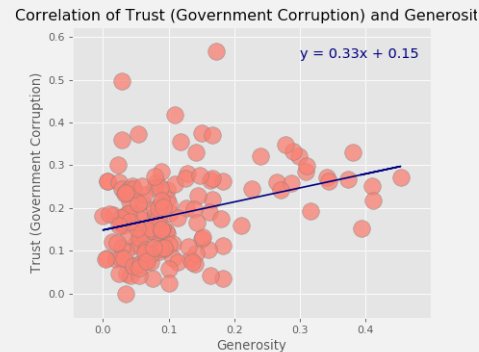
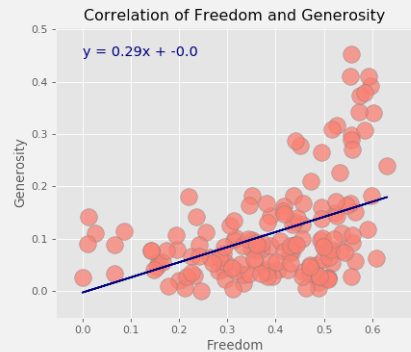
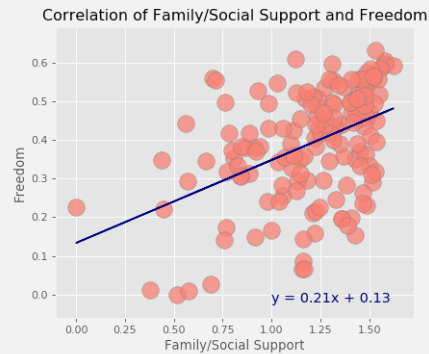
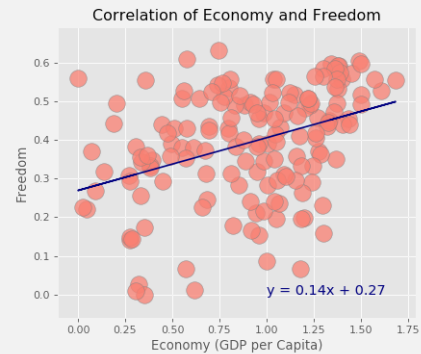
Strongly Correlated Factors

- Economy
- Family/Social Support
- Health

Data Exploration

How does the factors affect each other?

Limitations of the Study



Correlation Matrix of All Factors



Moderately Correlated Factors

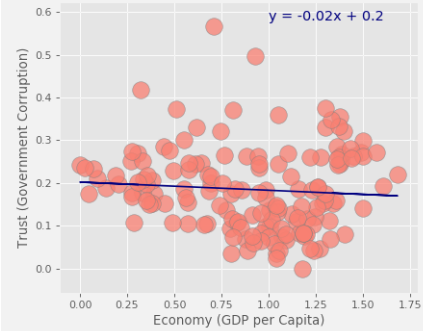
- Freedom
- Trust and Generosity

Data Exploration

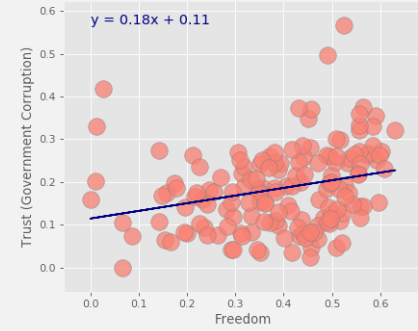
How does the factors affect each other?

Limitations of the Study

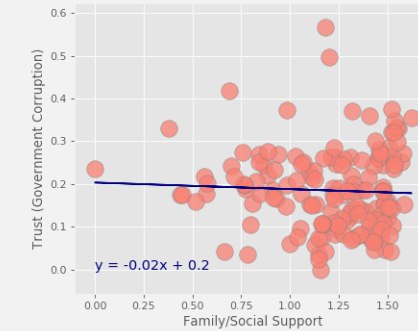
Correlation of Economy and Trust (Government Corruption)



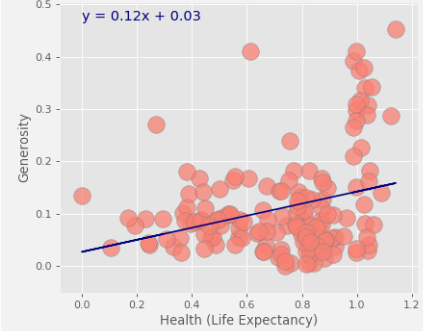
Correlation of Freedom and Trust (Government Corruption)



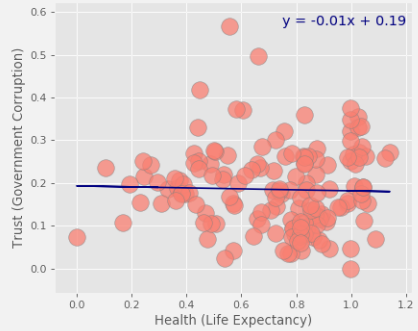
Correlation of Family/Social Support and Trust (Government Corruption)



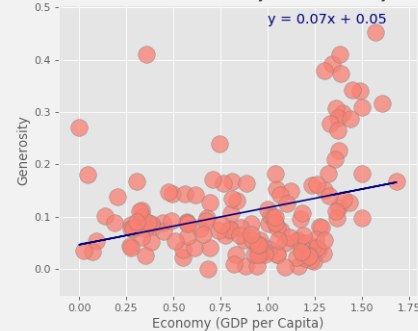
Correlation of Health (Life Expectancy) and Generosity



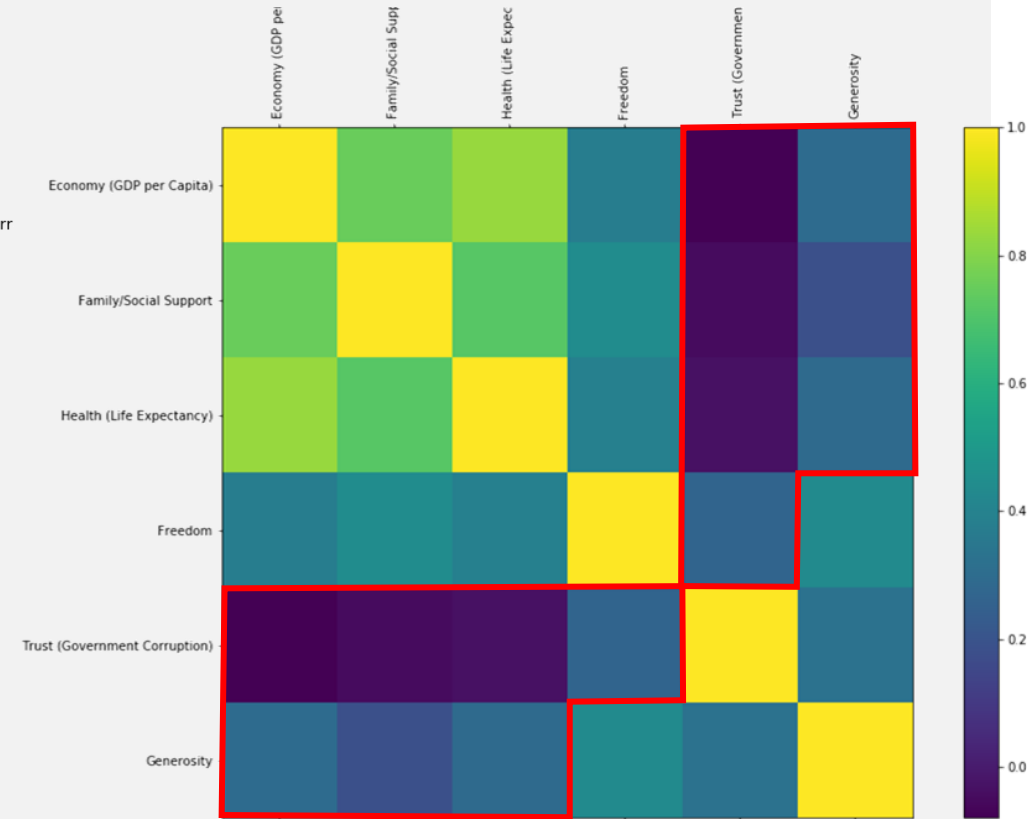
Correlation of Health (Life Expectancy) and Trust (Government Corruption)



Correlation of Economy and Generosity



Correlation Matrix of All Factors



Linearly Independent Factors

- Trust
- Generosity

Conclusion

- 😊 Happiness Score is a measure of general satisfaction with life and, more important, the confidence that one lives in a place where people take care of one another. There are six well being measures equated in computing for the Happiness Score: Economy, Family/Social Support, Health, Freedom, Trust and Generosity.
- 😊 Year 2019 has the highest average Happiness Score from all 156 countries.
- 😊 European countries dominates the top ten Happiest Countries in the last five years. Year 2019 ended with Finland, Denmark and Norway as the top three.
- 😊 Comparing all the measures, Economy, Family/Social Support and Health are strong contributors to the Happiness Score but among these three, it appears that having high **Family/Social Support score** tend to enhance the well being of individuals more compared to having high economic or health status.



The best way to multiply
happiness is to share it
with others

WORLD HAPPINESS REPORT 2019

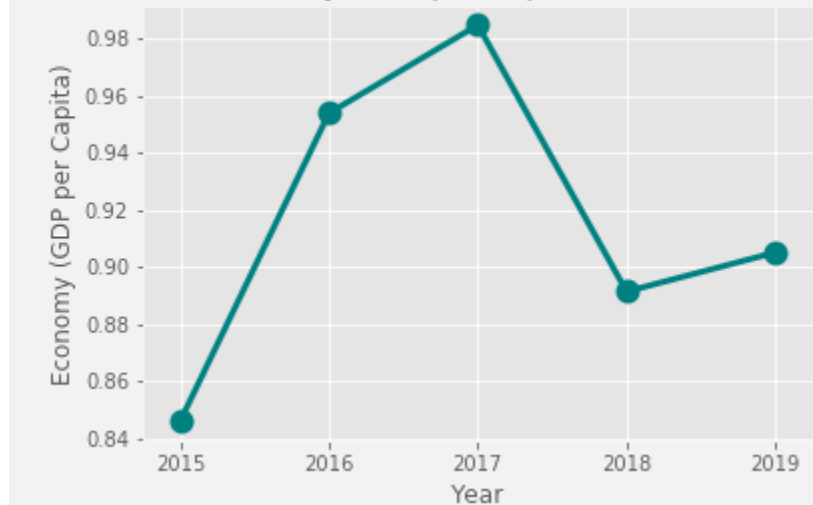


Back up Slides

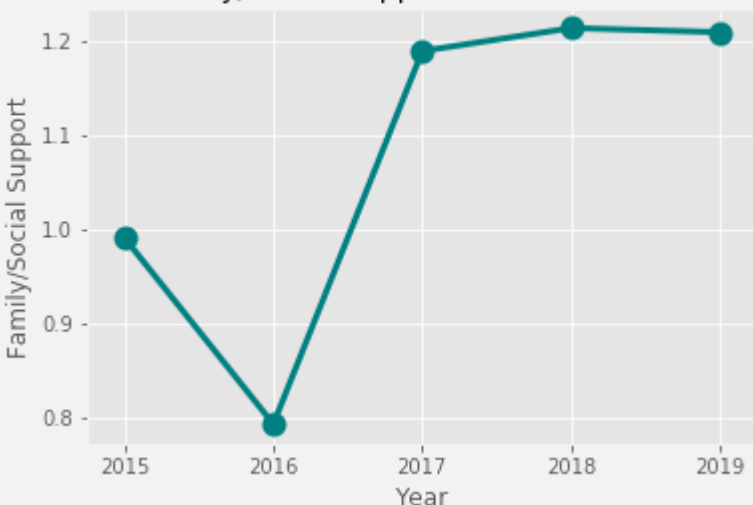
Data Exploration

Factor Average

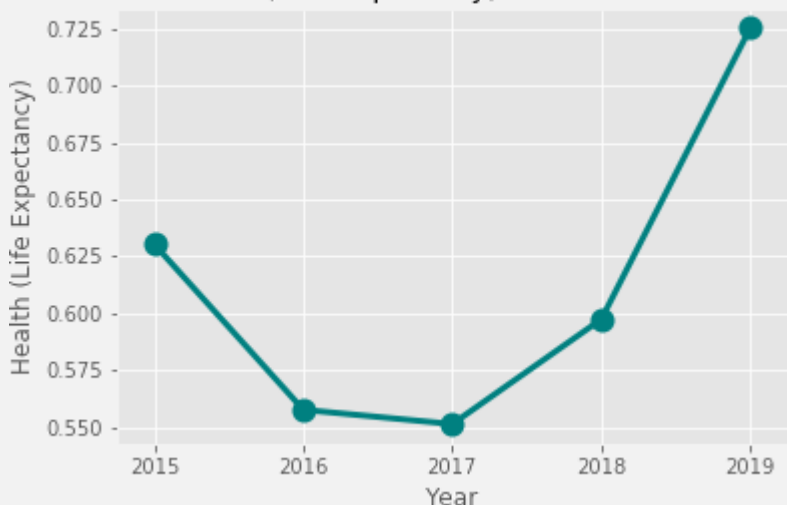
Mean Economy (GDP per Capita) from 2015-2019



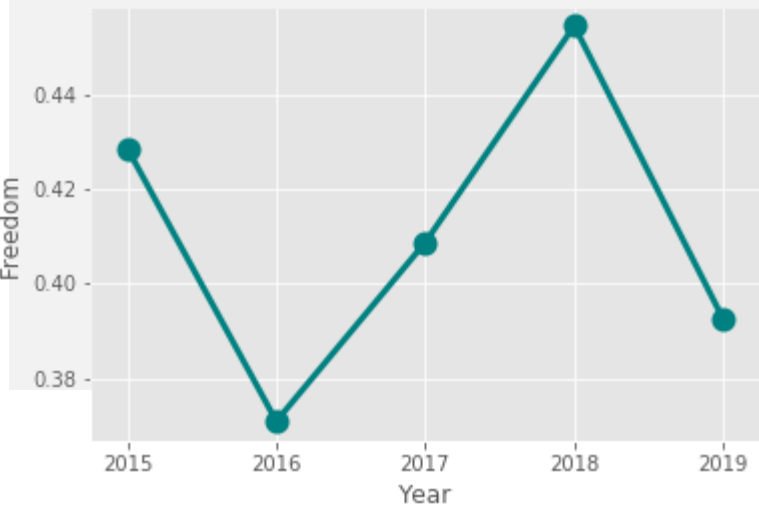
Mean Family/Social Support Score from 2015-2019



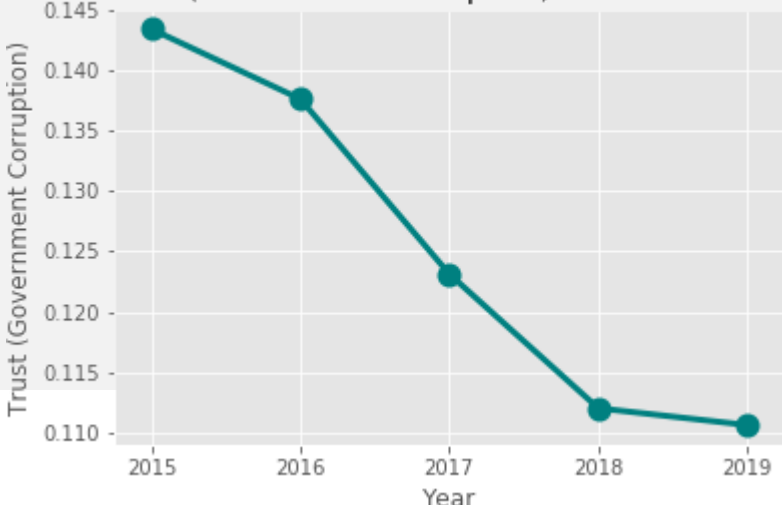
Mean Health (Life Expetancy) Score from 2015-2019



Mean Freedom Score from 2015-2019



Mean Trust (Government Corruption) Score from 2015-2019



Mean Generosity Score from 2015-2019

