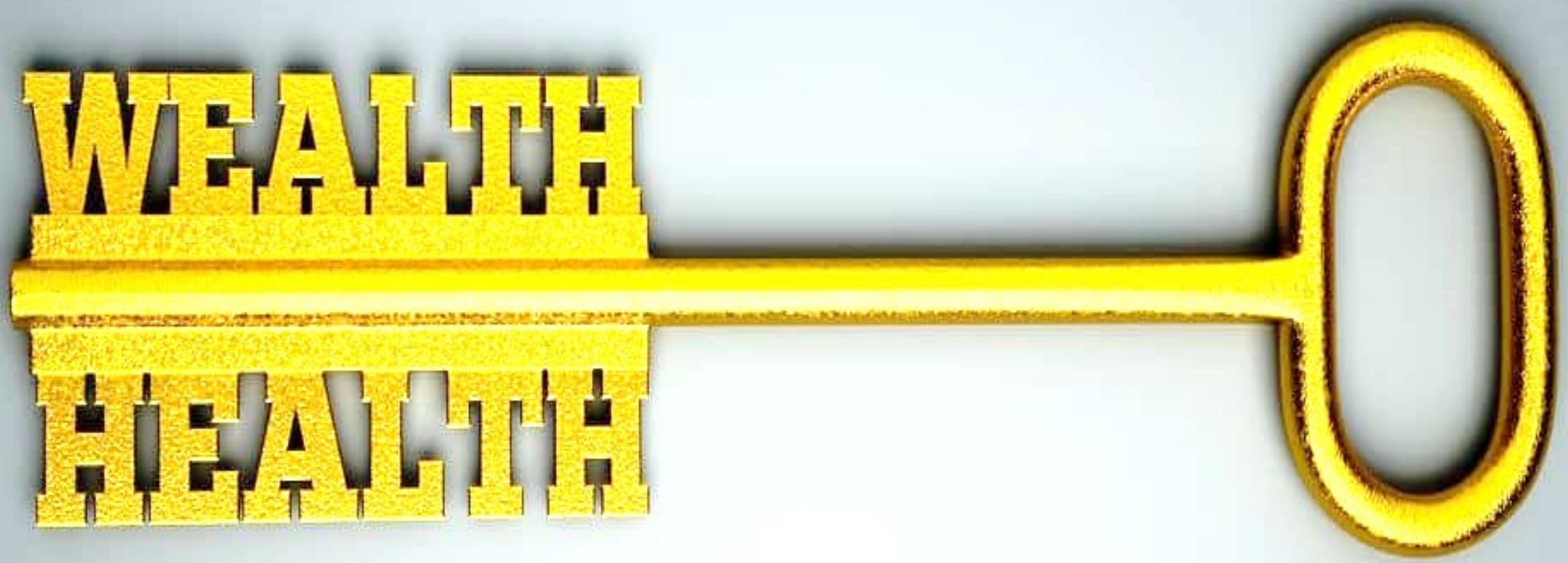
THE WORLD HAPPINESS REPORT

2015-2019

The world happiness report examines the following characteristics contributing to a subjective happiness score of a country:

- GDP per Capita
- Family quality
- Health (Life Expectancy)
- Freedom
- Generosity of citizens
- Trust in government

How much does GDP per Capita and Life expectancy contribute towards happiness score?



Contribution of GDP per Capita and health (life expectancy) on happiness score over 5 years, 2015-2019 for 141 countries.

Data Cleaning

```
# ADD YEAR COLUMNS

df_2015.insert(2, "Year", "2015", True)
df_2016.insert(2, "Year", "2016", True)
df_2017.insert(2, "Year", "2017", True)
df_2018.insert(2, "Year", "2018", True)
df_2019.insert(2, "Year", "2019", True)
```

```
# REINDEX COLUMNS

df_2015 = df_2015.reindex(columns= ['Country', 'Region', 'Year', 'Overall rank','Happiness Score','GDP per capita', 'Life Expectancy'])
df_2016 = df_2016.reindex(columns= ['Country', 'Region','Year', 'Overall rank','Happiness Score','GDP per capita', 'Life Expectancy'])
df_2017 = df_2017.reindex(columns= ['Country', 'Region','Year', 'Overall rank','Happiness Score','GDP per capita', 'Life Expectancy'])
df_2018 = df_2018.reindex(columns= ['Country', 'Region','Year', 'Overall rank','Happiness Score','GDP per capita', 'Life Expectancy'])
df_2019 = df_2019.reindex(columns= ['Country', 'Region','Year', 'Overall rank','Happiness Score','GDP per capita', 'Life Expectancy'])
```

```
# decapitalise and underscore spaces

df_2015.columns = df_2015.columns.str.lower().str.replace(" ", "_")
df_2016.columns = df_2016.columns.str.lower().str.replace(" ", "_")
df_2017.columns = df_2017.columns.str.lower().str.replace(" ", "_")
df_2018.columns = df_2018.columns.str.lower().str.replace(" ", "_")
df_2019.columns = df_2019.columns.str.lower().str.replace(" ", "_")
```

```
# create a dictionary of country and region key pairs

country_region_dict = dict(zip(df_2015.country, df_2015.region))
```

```
df_2015.rename(columns = {
    'Happiness Rank':'Overall rank',
    "Happiness Score":"Happiness Score",
    "Health (Life Expectancy)":"Life Expectancy",
    "Economy (GDP per Capita)":"GDP per capita"
}, inplace = True)

df_2016.rename(columns = {
    'Happiness Rank':'Overall rank',
    "Happiness Score":"Happiness Score",
    "Health (Life Expectancy)":"Life Expectancy",
    "Economy (GDP per Capita)":"GDP per capita"
}, inplace = True)

df_2017.rename(columns = {
    'Happiness.Rank':'Overall rank',
    "Happiness.Score":"Happiness Score",
    "Health..Life.Expectancy.":"Life Expectancy",
    "Economy..GDP.per.Capita.":"GDP per capita"
}, inplace = True)

df_2018.rename(columns = {
    'Country or region':'Country',
    'Happiness Rank':'Overall rank',
    "Score":"Happiness Score",
    "Healthy life expectancy":"Life Expectancy"}, inplace = Tru

df_2019.rename(columns = {
    'Country or region':'Country',
    'Happiness Rank':'Overall rank',
    "Score":"Happiness Score",
    "Healthy life expectancy":"Life Expectancy"}, inplace = Tru
```

```
# apply function to assign region values

df_2015["region"] = df_2015.apply(lambda row: country_region_dict.get(row["country"]), axis=1)
df_2016["region"] = df_2016.apply(lambda row: country_region_dict.get(row["country"]), axis=1)
df_2017["region"] = df_2017.apply(lambda row: country_region_dict.get(row["country"]), axis=1)
df_2018["region"] = df_2018.apply(lambda row: country_region_dict.get(row["country"]), axis=1)
df_2019["region"] = df_2019.apply(lambda row: country_region_dict.get(row["country"]), axis=1)
```

```
# concatenate dataframes

final_df = pd.concat([df_2015,df_2016,df_2017,df_2018,df_2019])
```

```
# identify and remove countries that do no feature in each dataset

counts = final_df['country'].value_counts()
counts[counts > 4]
final_df = final_df[final_df['country'].isin(counts[counts > 4].index)]
final_df['country'].value_counts()
```

```
Jordan          5
Zimbabwe        5
Lebanon         5
Netherlands     5
Chad            5
               ..
Togo            5
Burkina Faso    5
Argentina       5
Kazakhstan      5
Jamaica         5
Name: country, Length: 141, dtype: int64
```

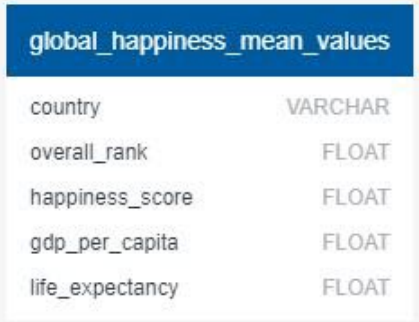
```
# export to csv

final_df.to_csv(r'C:\Users\Jtc\Desktop\visulisation_project_3\global_happiness_data.csv', index=False)
```

Database Setup

```
global_happiness_data
--
country VARCHAR
region VARCHAR
year INTEGER
overall_rank FLOAT
happiness_score FLOAT
gdp_per_capita FLOAT
life_expectancy FLOAT

global_happiness_mean_values
--
country VARCHAR
overall_rank FLOAT
happiness_score FLOAT
gdp_per_capita FLOAT
life_expectancy FLOAT
```




```
CREATE TABLE "global_happiness_data" (
    "country" VARCHAR   NOT NULL,
    "region" VARCHAR   NOT NULL,
    "year" INTEGER   NOT NULL,
    "overall_rank" FLOAT   NOT NULL,
    "happiness_score" FLOAT   NOT NULL,
    "gdp_per_capita" FLOAT   NOT NULL,
    "life_expectancy" FLOAT   NOT NULL
);

CREATE TABLE "global_happiness_mean_values" (
    "country" VARCHAR   NOT NULL,
    "overall_rank" FLOAT   NOT NULL,
    "happiness_score" FLOAT   NOT NULL,
    "gdp_per_capita" FLOAT   NOT NULL,
    "life_expectancy" FLOAT   NOT NULL
);
```

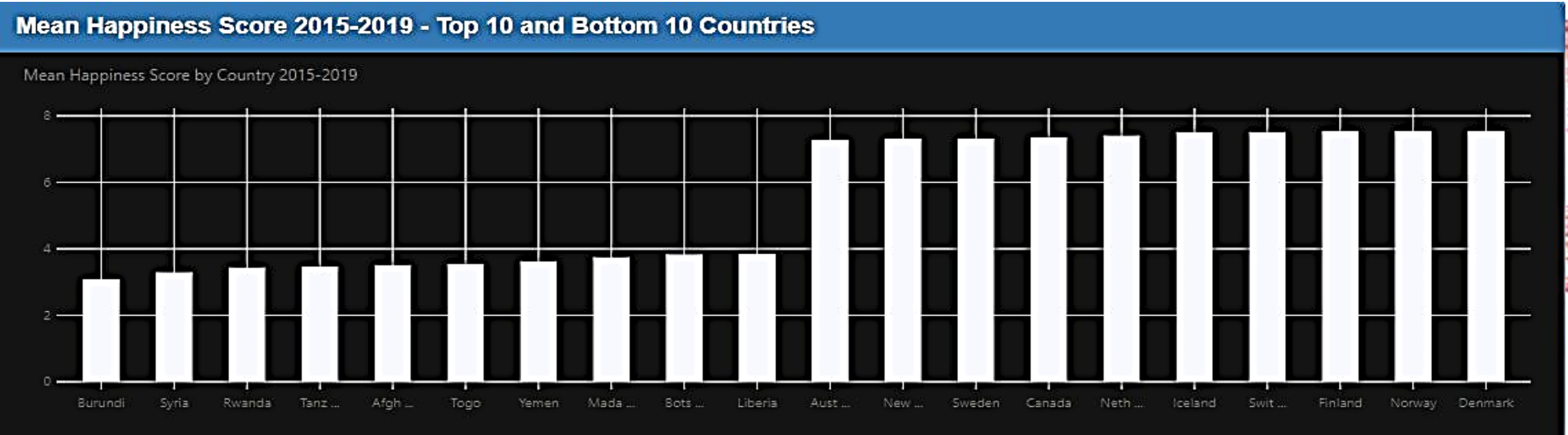
Mean happiness Score by country 2015-2019

10 countries with the highest happiest score:

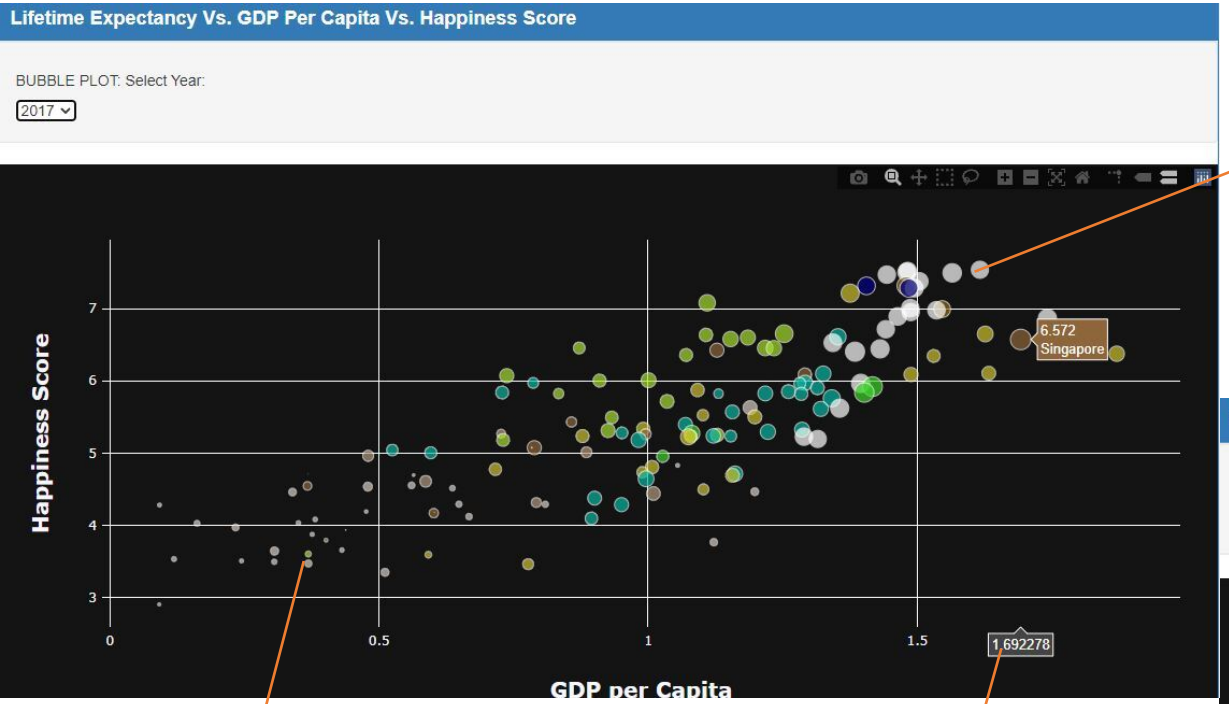
- Australia
- Canada
- Denmark
- Finland
- Iceland
- New Zealand
- Norway
- Sweden
- Switzerland
- Netherlands

10 countries with the lowest happiness score:

- Afghanistan
- Botswana
- Burundi
- Liberia
- Madagascar
- Rwanda
- Syria
- Tanzania
- Togo
- Yemen

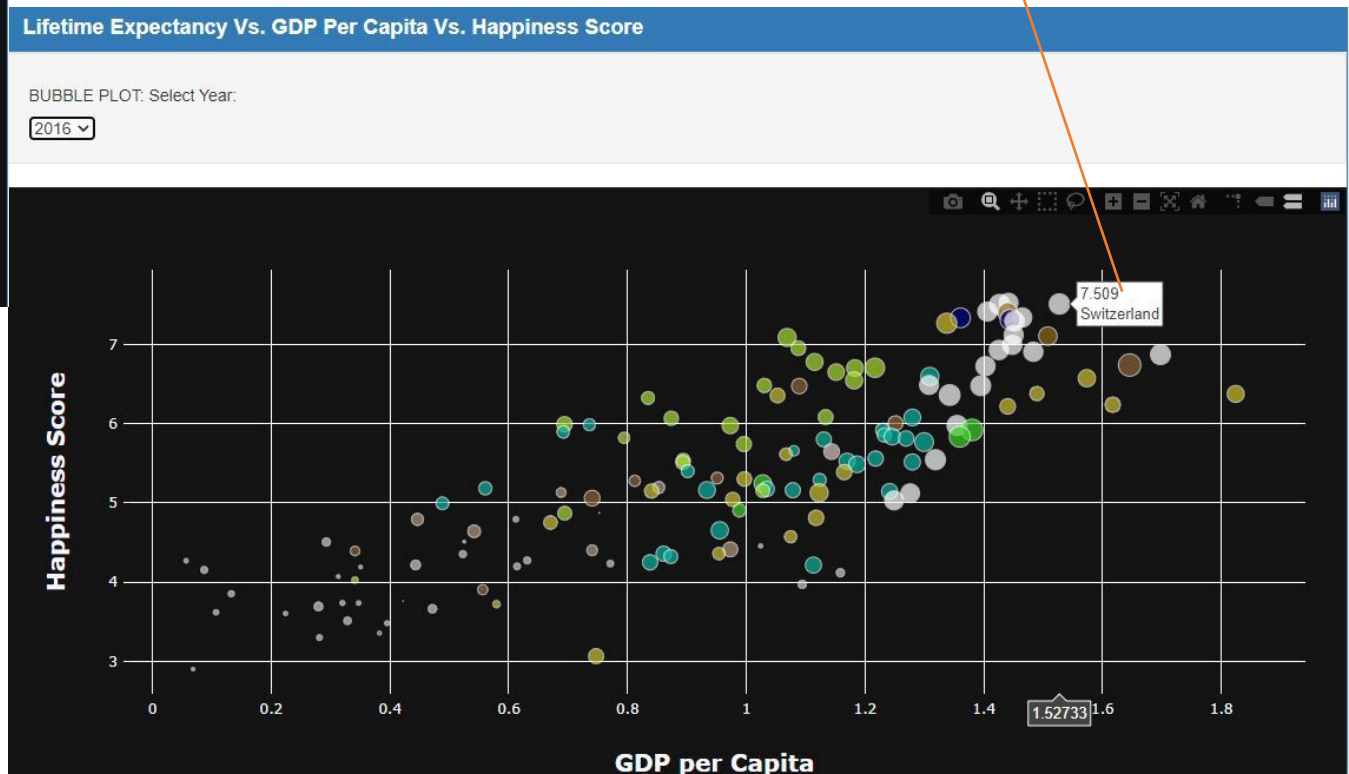


GDP per Capita and life expectancy contribution to happiness score



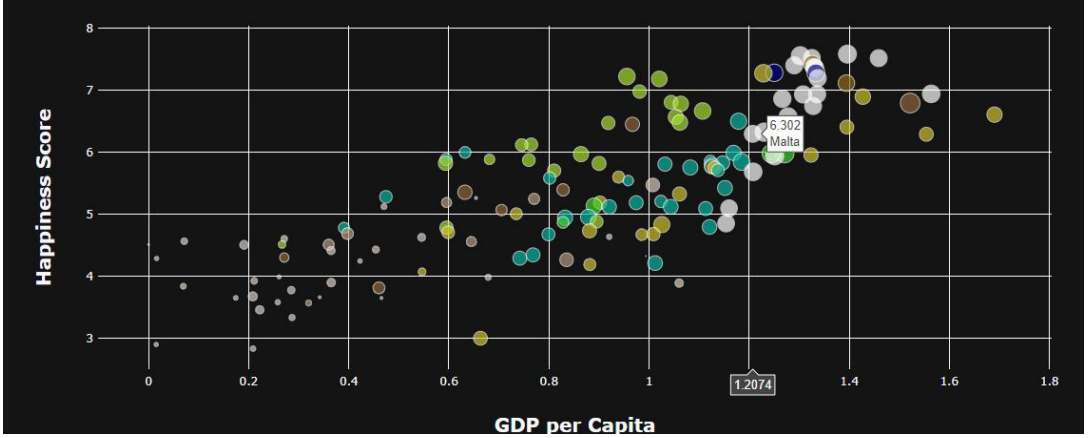
Bubble colour corresponds to different regions of each country

Happiness score and country



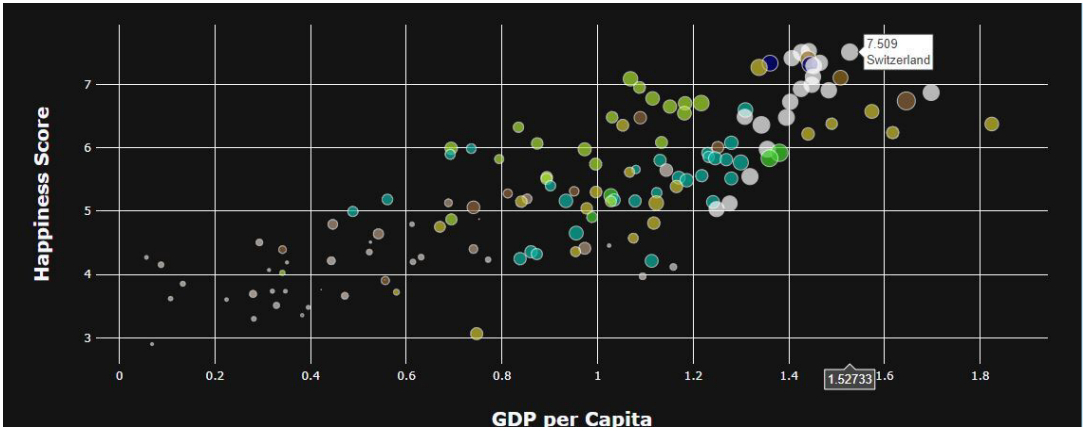
Bubble size set to life expectancy contribution to happiness score

GDP per Capita

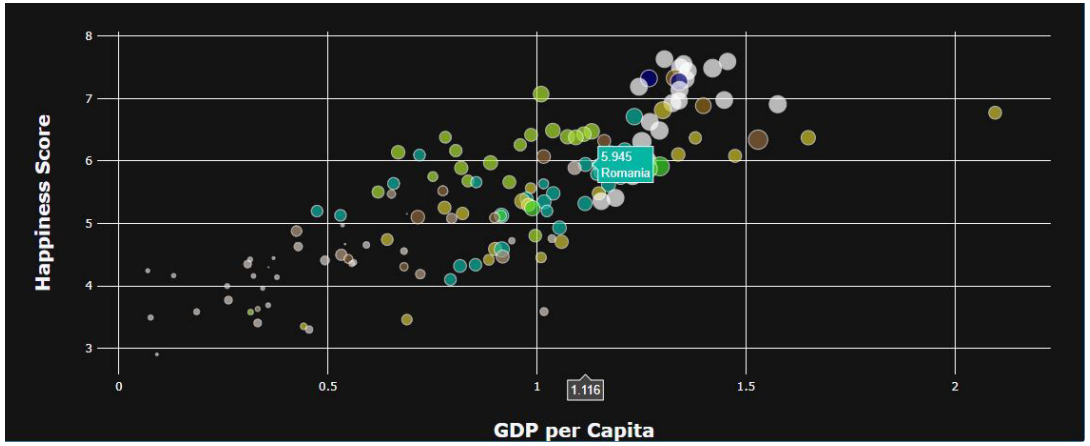


2015

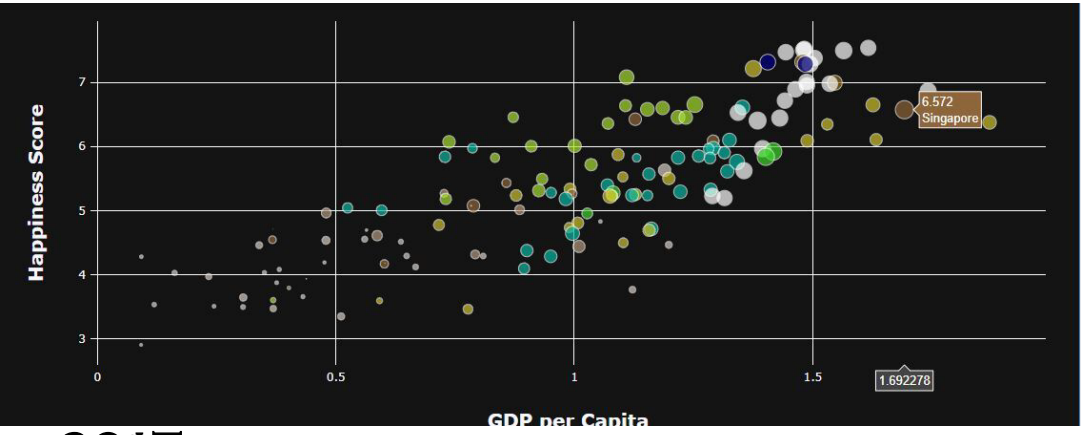
- Smaller life expectancy contribution to happiness score = lower happiness score
- Smaller GDP per Capita contribution to happiness score = lower happiness score



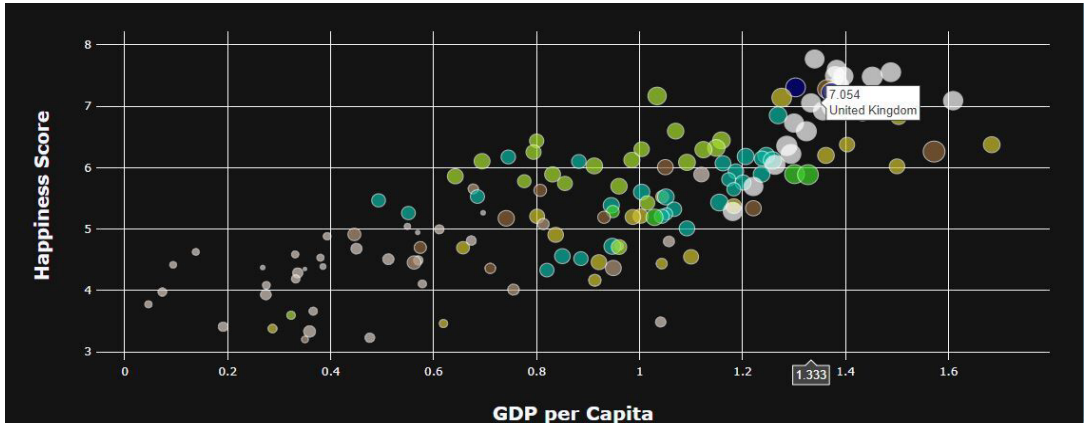
2016



2018



2017

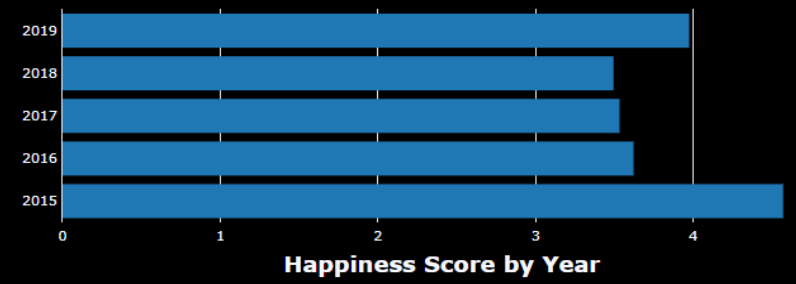


2019

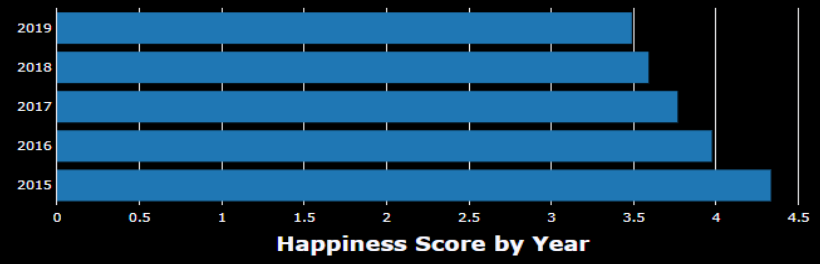
Countries Happiness score by year

Countries with the lowest happiness scores:

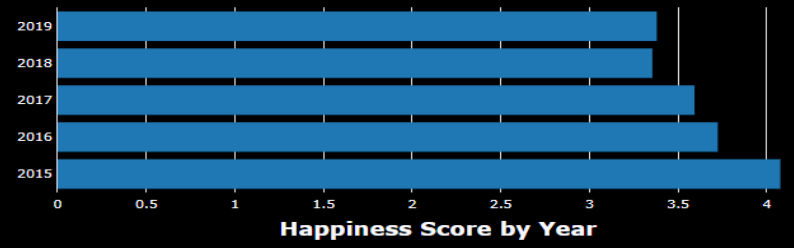
BAR PLOT: Select Country:
Liberia



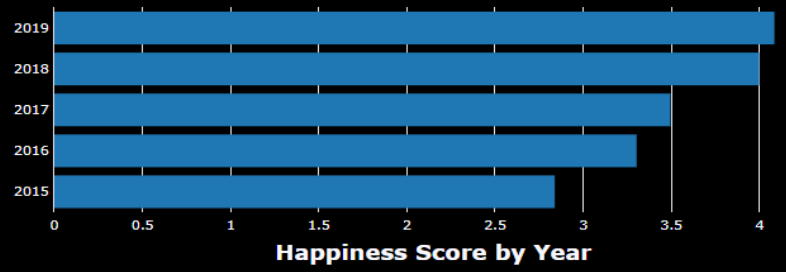
BAR PLOT: Select Country:
Botswana



BAR PLOT: Select Country:
Yemen

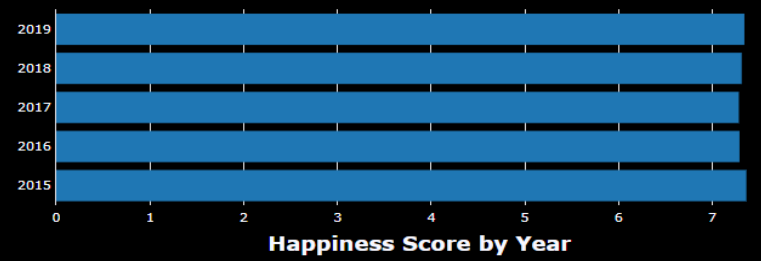


BAR PLOT: Select Country:
Togo

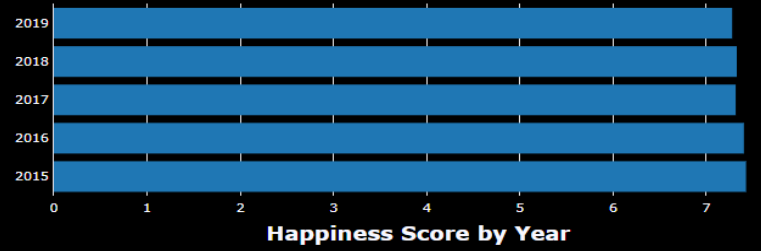


Countries with the highest happiness scores:

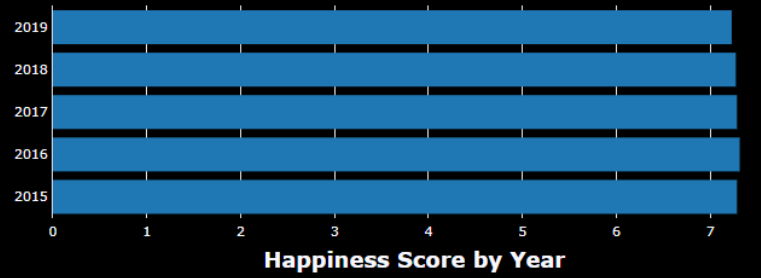
BAR PLOT: Select Country:
Sweden



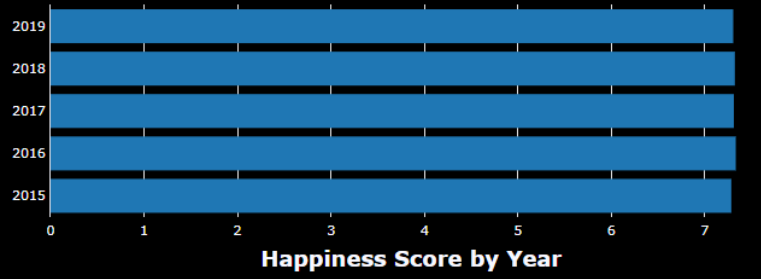
BAR PLOT: Select Country:
Canada



BAR PLOT: Select Country:
Australia



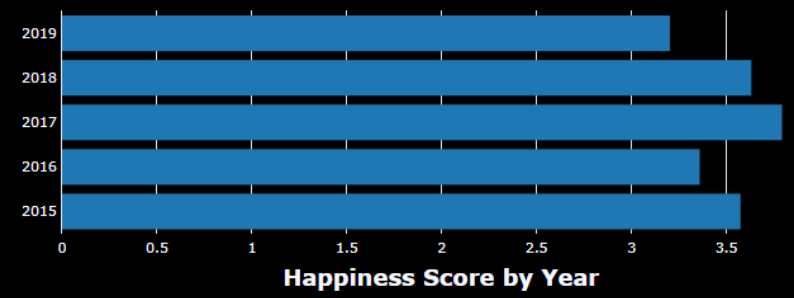
BAR PLOT: Select Country:
New Zealand



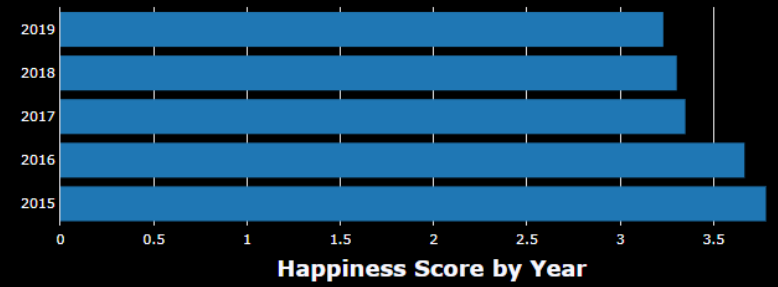
Countries Happiness score by year

Countries with the lowest happiness scores:

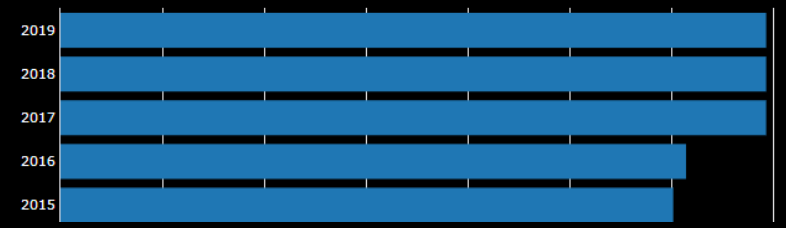
BAR PLOT: Select Country:
Afghanistan



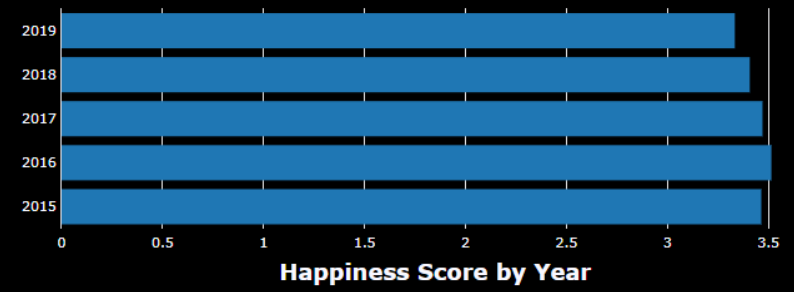
BAR PLOT: Select Country:
Tanzania



BAR PLOT: Select Country:
Syria

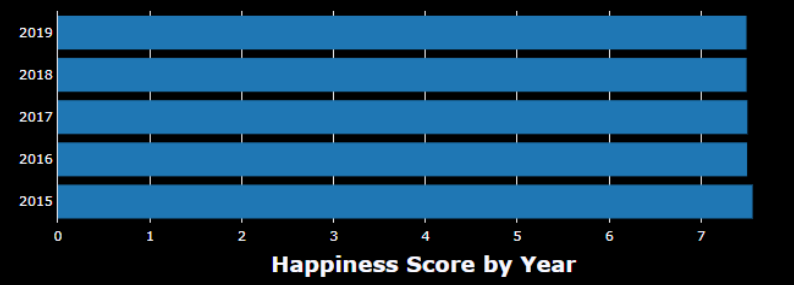


BAR PLOT: Select Country:
Rwanda

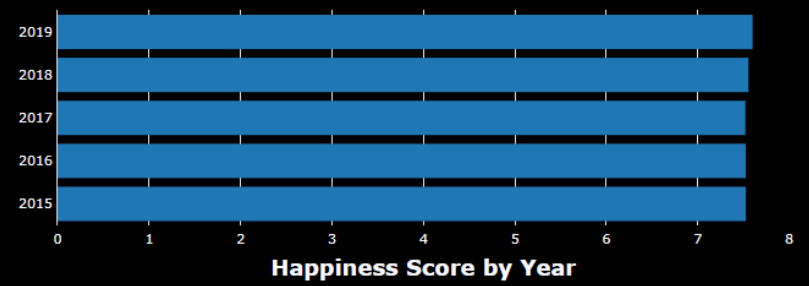


Countries with the highest happiness scores:

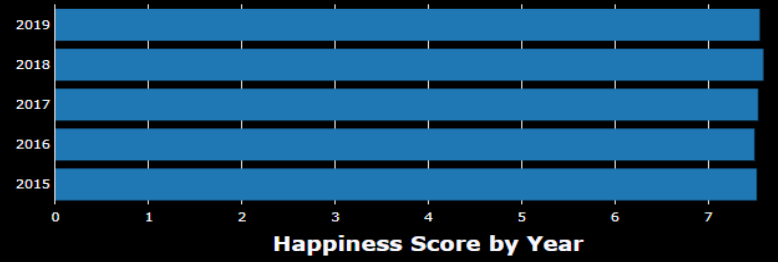
BAR PLOT: Select Country:
Iceland



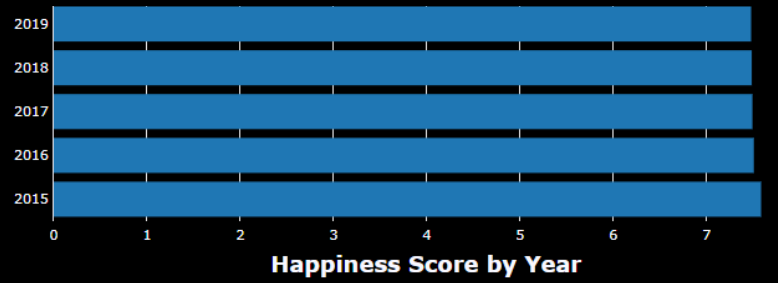
BAR PLOT: Select Country:
Denmark

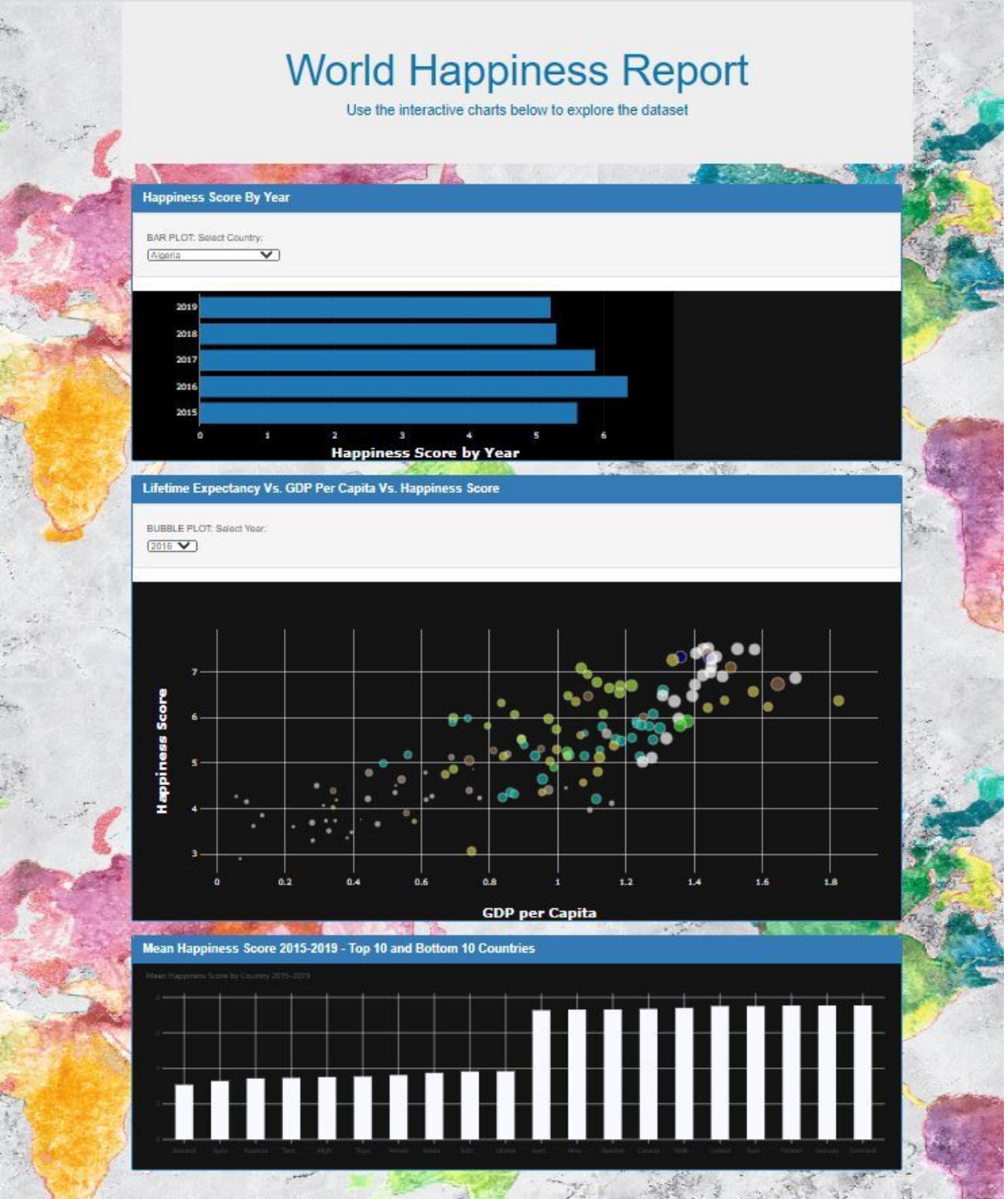


BAR PLOT: Select Country:
Norway



BAR PLOT: Select Country:
Switzerland





Visiting the dashboard