World Happiness Report

Project Team 4:
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Project Motivation

The idea of exploring happiness led to many questions like:

- Which countries are the happiest? Which are the unhappiest?
- Which countries have the best life expectancy? The most corruption?
- Do some factors have a bigger weight on happiness than others?

Our team decided to create an interactive dashboard that allowed for exploring individual countries along with the five specific factors.

About The Data

The World Happiness Report is a landmark survey of the state of global happiness. The first report was published in 2012. The report ranks 155 countries by their happiness levels. The dataset was found on Kaggle and contained five years of data (2015-2019).

The focus of this project was the overall happiness rank and score along with five distinct factors: economy, health, freedom, generosity, and corruption.

data > 2019.csv

```
country,happiness_rank,happiness_score,economy,health,freedom,generosity,corruption
Afghanistan,154,3.203,0.35,0.361,0,0.158,0.025
Albania,107,4.719,0.947,0.874,0.383,0.178,0.027
Algeria,88,5.211,1.002,0.785,0.086,0.073,0.114
Argentina,47,6.086,1.092,0.881,0.471,0.066,0.05
```

Data Cleanup

Data Cleanup

We established a connection with postgreSQL and imported the data from the CSV into the database.

```
conn = psycopg2.connect(database="world_happiness_index", user = "postgres", password = "password", host = "127.0.0.1", port =
"5432")
```

```
cur = conn.cursor()
cur.execute('''CREATE TABLE IF NOT EXISTS year_2015 (
        country VARCHAR(255),
        happiness_rank INT,
        happiness_score FLOAT,
        economy FLOAT,
        health FLOAT,
        freedom FLOAT,
        corruption FLOAT,
        generosity FLOAT

);''')
```

```
file_names = ["data/2015.csv","data/2016.csv","data/2017.csv","data/2018.csv","data/2019.csv"]
table_names = ["year_2015","year_2016","year_2017","year_2018","year_2019"]


for file_name, table_name in zip(file_names,table_names ):
    cur = conn.cursor()
    with open(file_name, 'r') as f:
        # Notice that we don't need the `csv` module.
        next(f) # Skip the header row.
        cur.copy_from(f, table_name, sep=',')
    conn.commit()
```

Data Cleanup (cont.)

We then set up a flask API to print the data from the postgreSQL database in JSON format to create the visualizations.

```
@app.route("/api/v1.0/year2015")
def year2015():

    cur = conn.cursor()
    cur.execute('''SELECT * FROM year_2015;''')

    columns = cur.description

    results = [{columns[index][0]:column for index, column in enumerate(value)} for value in cur.fetchall()]

    year2015 = list(np.ravel(results))

    print(year2015)
    with open("year2015.json", "w") as outfile:
        json.dump(year2015, outfile)

    return jsonify(year2015)
```

Visualization Demo

Highs & Lows View

Top 5 Map Code

```
// Create a map object
var myMap = L.map("map", {
  center: [15.5994, -28.6731],
  zoom: 3
});

var initLayer = L.tileLayer("https://api.mapbox.com/styles/v1/{id}/tiles/{z}/{x}/{y}?access_token={ac
  attribution: "© <a href='https://www.mapbox.com/about/maps/'>Mapbox</a> © <a href='http://www.opens
  tileSize: 512,
  maxZoom: 18,
  zoomOffset: -1,
  id: "mapbox/streets-v11",
  accessToken: API_KEY
}).addTo(myMap);
```

```
// pulling Country data for 2019
var countries2019 = (function () {
  var testData = null;
  $.ajax({
      'async': false,
      'global': false,
      'url': 'data_2019.json',
      'dataType': "json",
      'success': function (data) {
          testData = data;
      }
  });
  return testData;
  })();

// Test index into happiness rank
// console.log(countries2019);
console.log(countries2019[0]["happiness_rank"]);
```

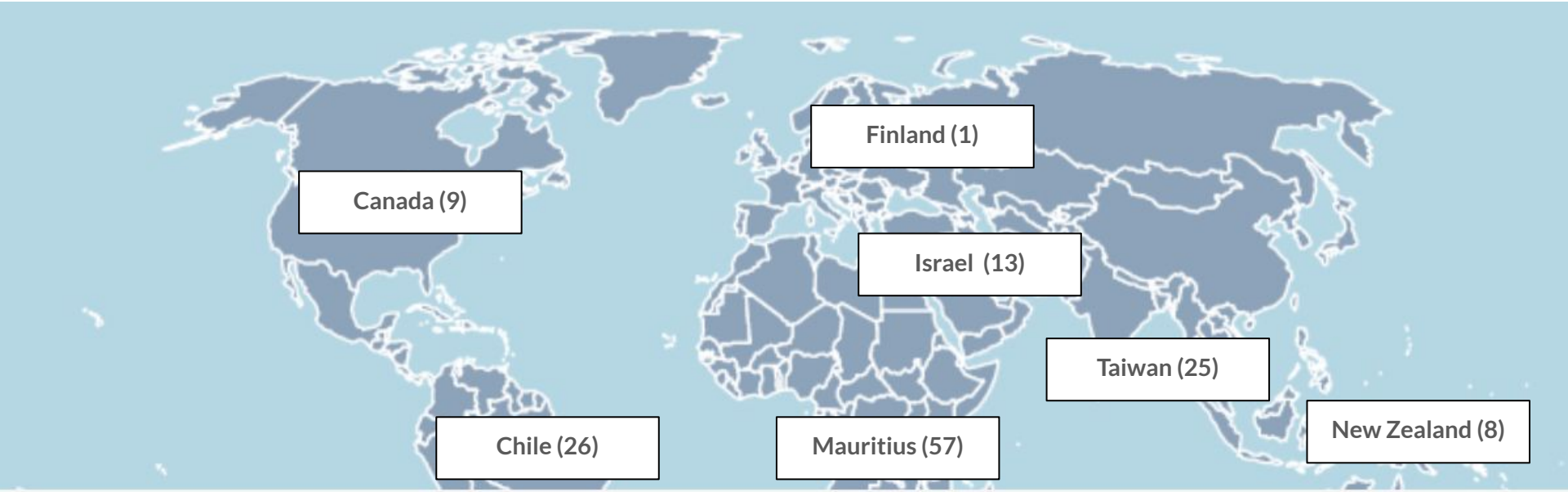
Top 5 Map Code Continued

```
// adding markers for top 5 2019


var den19 = L.marker([top5_2019[0]["lat"],
top5_2019[0]["lng"]]).bindPopup("<h1>" + top5_2019[0]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + top5_2019[0]["happiness_rank"] + "</h3>")

var neth19 = L.marker([top5_2019[1]["lat"],
top5_2019[1]["lng"]]).bindPopup("<h1>" + top5_2019[1]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + top5_2019[1]["happiness_rank"] + "</h3>")

var ice19 = L.marker([top5_2019[2]["lat"],
top5_2019[2]["lng"]]).bindPopup("<h1>" + top5_2019[2]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + top5_2019[2]["happiness_rank"] + "</h3>")

var nor19 = L.marker([top5_2019[3]["lat"],
top5_2019[3]["lng"]]).bindPopup("<h1>" + top5_2019[3]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + top5_2019[3]["happiness_rank"] + "</h3>")

var fin19 = L.marker([top5_2019[4]["lat"],
top5_2019[4]["lng"]]).bindPopup("<h1>" + top5_2019[4]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + top5_2019[4]["happiness_rank"] + "</h3>")

// var c15 = L.layerGroup([switz15, ice15, den15, nor15, can15]);


/ ##############################################################################

/ adding markers for bottom 5 2019

var tan19 = L.marker([bottom5_2019[0]["lat"],
bottom5_2019[0]["lng"]]).bindPopup("<h1>" + bottom5_2019[0]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + bottom5_2019[0]["happiness_rank"] + "</h3>")

var rwa19 = L.marker([bottom5_2019[1]["lat"],
bottom5_2019[1]["lng"]]).bindPopup("<h1>" + bottom5_2019[1]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + bottom5_2019[1]["happiness_rank"] + "</h3>")

var yem19 = L.marker([bottom5_2019[2]["lat"],
bottom5_2019[2]["lng"]]).bindPopup("<h1>" + bottom5_2019[2]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + bottom5_2019[2]["happiness_rank"] + "</h3>")

var mal19 = L.marker([bottom5_2019[3]["lat"],
bottom5_2019[3]["lng"]]).bindPopup("<h1>" + bottom5_2019[3]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + bottom5_2019[3]["happiness_rank"] + "</h3>")

var afg19 = L.marker([bottom5_2019[4]["lat"],
bottom5_2019[4]["lng"]]).bindPopup("<h1>" + bottom5_2019[4]["country"] + "</h1> <hr> <h3>Happiness_Rank: " + bottom5_2019[4]["happiness_rank"] + "</h3>")

var c19 = L.layerGroup([neth19, ice19, den19, nor19, fin19, tan19, rwa19, yem19, mal19, afg19]);
```

Discussion & Findings

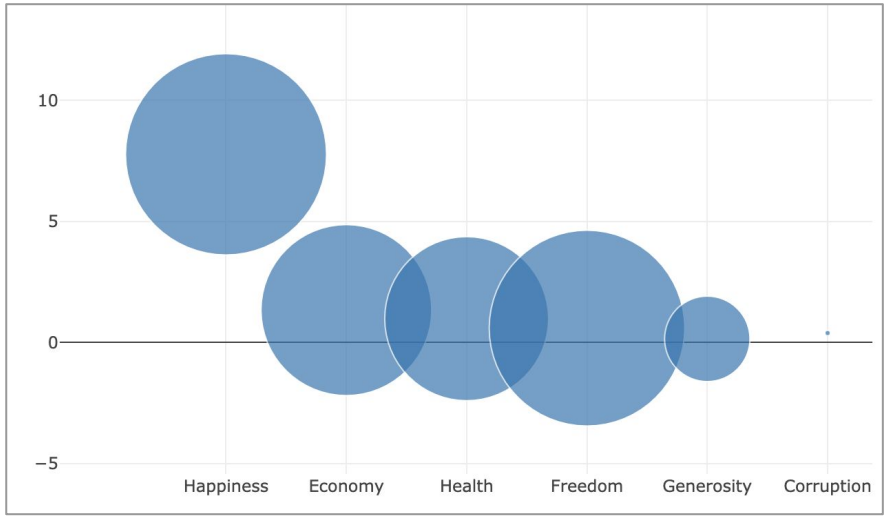
2019 Happiest by Region

Finding #1: Europe is the happiest region (8 out of the top 10 happiest countries are in Europe



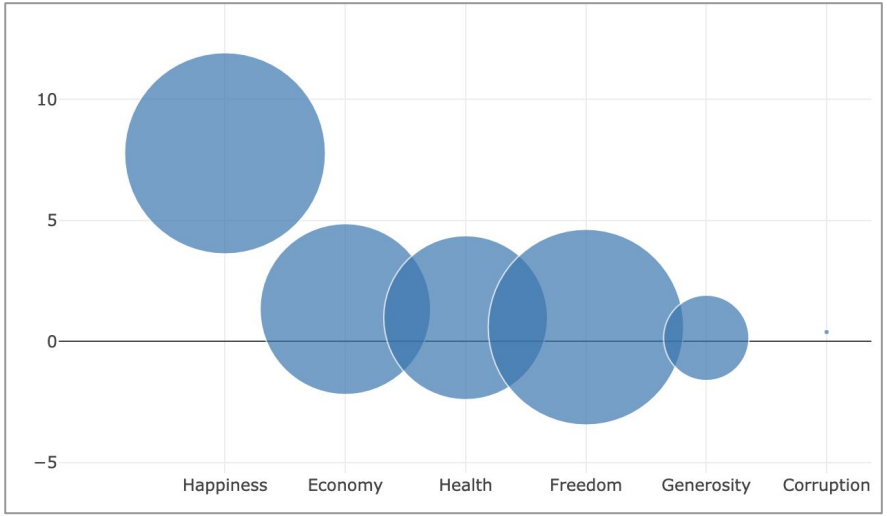
2019 Happiest Country

Finland - Happiest

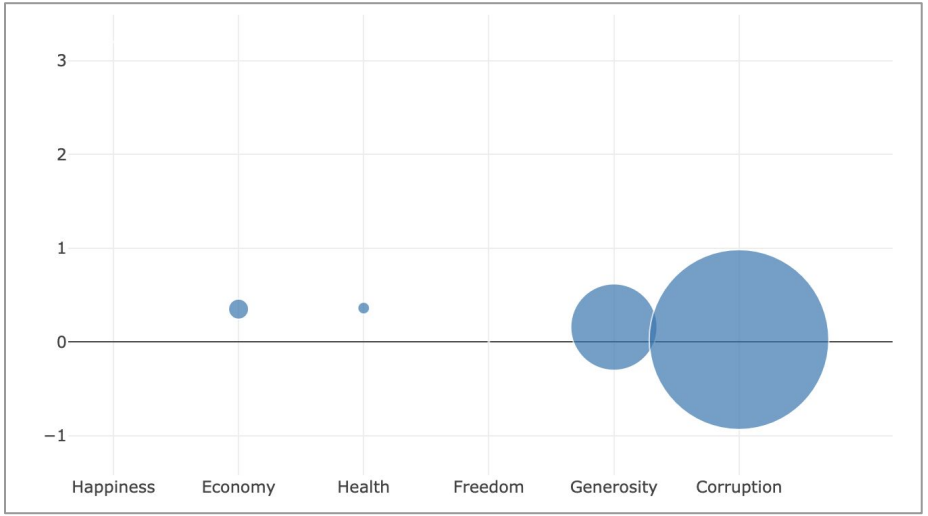


2019 Happiest Country vs. Unhappiness

Finland - Happiest



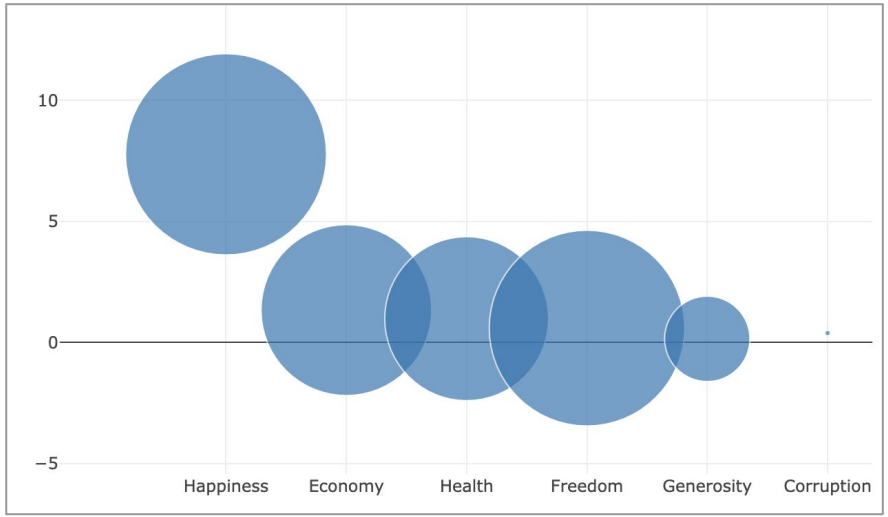
Afghanistan - Unhappiest



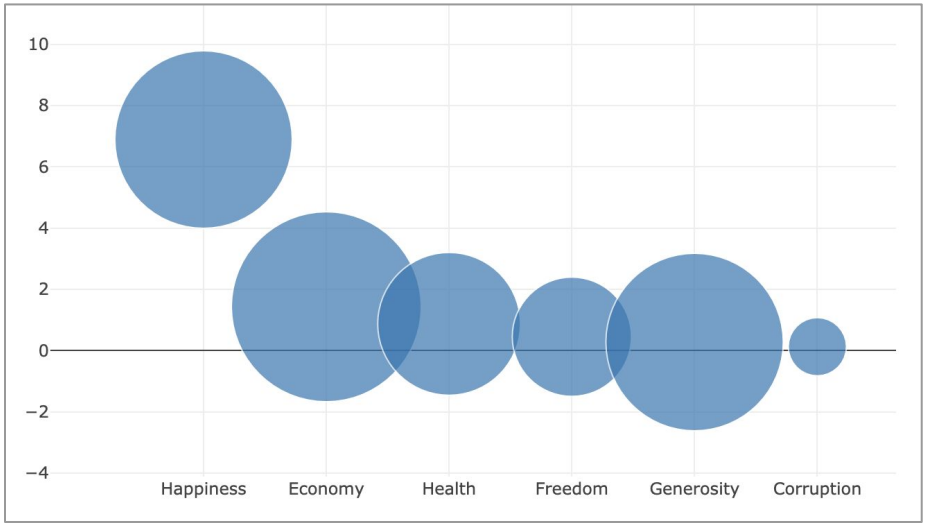
2019 Happiest vs. America

Finding #2: The US is a happy country, but slipping

Finland - Happiest



United States - 19th



US Happiness has declined from 13th in 2015 to 19th in 2019

Post Mortem

Questions for Further Research

- Is this information accurate?
  - What are ways to test this?
- Is the analysis comprehensive? What factors are missing?
- How do major events impact happiness?
  - Map changes in happiness to natural or economic disasters?
- How will COVID impact next year’s reports?

Questions?

Appendix

Visualizations

What countries or regions rank the highest in overall happiness and each of the five factors contributing to happiness in 2019?

How did country ranks or scores change between the 2015 to 2019 reports?

Did any country experience a significant increase or decrease in happiness?

World Map View

Visualization 1:

Country Deep Dive View

Visualization 3