

# Happiness Analysis

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## Project goal

By taking the World Happiness Index into account we are planning to analyze how the happiness of people vary across the different regions of the world. Which places are happiest and unhappiest. How different factors contribute to happiness and satisfaction of people. Using the temporal aspect of the data, happiness index is compared over time. Happiness of individuals is subjective and effected by a number of factors through this project we aim to analyze these factors and how they contribute to the overall happiness of a country/region. The project also aims to visualize the effect of political factors on the life satisfaction of the people.

## Data Set

The Source of dataset is : <http://worldhappiness.report/ed/2018/>

The Data can be explained as follows

Attributes	Range	Attribute Type	Brief Description
Country		Categorical	Name of the Country
AVG Happiness Foreign	0-10	Quantitative	Avg. Happiness of immigrants in a country
AVG Happiness Local	0-10	Quantitative	Avg. Happiness of locals in a country
Happiness Index	0-10	Quantitative	Happiness index for the year 2018

GDP Per Capita	0-10	Quantitative	Amount of Happiness Index Explained by GDP per Capita
Social Supp	0-10	Quantitative	Amount of Happiness Index Explained by Social Support
Life Exp	0-10	Quantitative	Amount of Happiness Index Explained by Life Expectancy
Freedom	0-10	Quantitative	Amount of Happiness Index Explained by Freedom
Corruption	0-10	Quantitative	Amount of Happiness Index Explained by Perception of Corruption
Region Indicator		Categorical, Spatial	Region or Group the country belongs to
Life ladder, 2015-2017	0-10	Quantitative	Life Ladder for the time period between 2015 - 2017
Democratic Quality	-10-10	Quantitative	Measures of governance are based on worldwide Governance indicators : Voice and accountability, Political Stability, and absence of violence.
Confidence in National Government	0-10	Quantitative	National AVG of responses to the GWP question: "Do you have confidence in each of the following, or not? How about the national government?"

### Analytical Questions and Proxy Tasks

1. Which are the happiest and the unhappiest countries in 2018

- a. Which are the top 10 countries and bottom 10 countries based upon happiness index? Proxy values - Country, Happiness index 2018
2. How has the happiness of the happiest and the unhappiest countries changes as compared to what it was earlier?
  - a. Compare the happiness index of top 10 and bottom 10 countries based on happiness index in 2018 as compared to what it was in 2010? Proxy values Country, Happiness index 2010
3. Which countries are the most and least immigrant friendly?
  - a. Top 10 and bottom 10 countries based upon foreign happiness index. Proxy values - Country, Avg happiness foreign
4. Which are the happiest region in the world in 2018?
  - a. The top 3 regions with the highest average happiness index - Proxy values - Region indicator, Happiness index 2018
5. How does a person's wellbeing affect his satisfaction with life and how does this vary?
  - a. Compare the Life Ladder across regions by taking into consideration the life expectancy and gdp per person. Proxy Values -Regions, Life Ladder 2015-2017, GDP per capita 2015-2017
6. How satisfaction towards life is dependent on political state of a country?
  - a. Compare the life ladder with Confidence in national government, and Democratic Quality of a country. Proxy values - life ladder, national government, and Democratic Quality

## Story Design

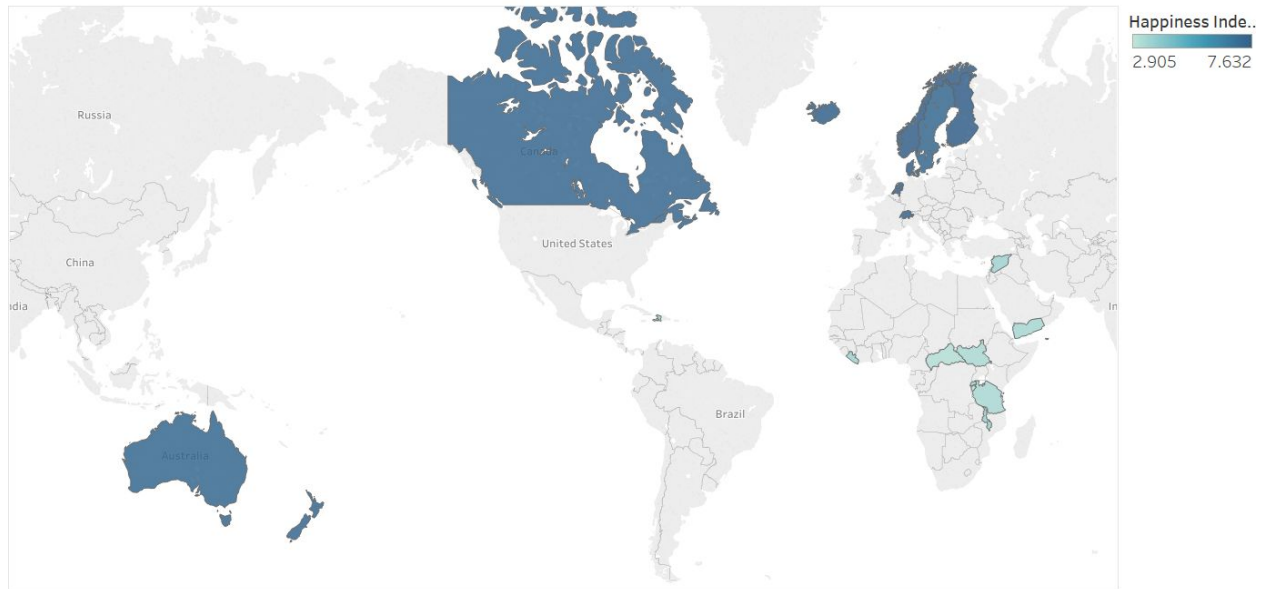
## Data Analysis

1.Which are the happiest and the unhappiest countries/regions in 2018?

Ans: The top 10 and bottom 10 countries based on the feature 'Happiness\_Index\_2018' which is the happiness index for the year 2018 for that country has been extracted out of the data and than the top 1 region and bottom 1 region which are marked by the feature '[Region indicator]' were queried out of the data.

Top 10/Bottom 10 Countries (Dark blue top 10 and light blue bottom 10):

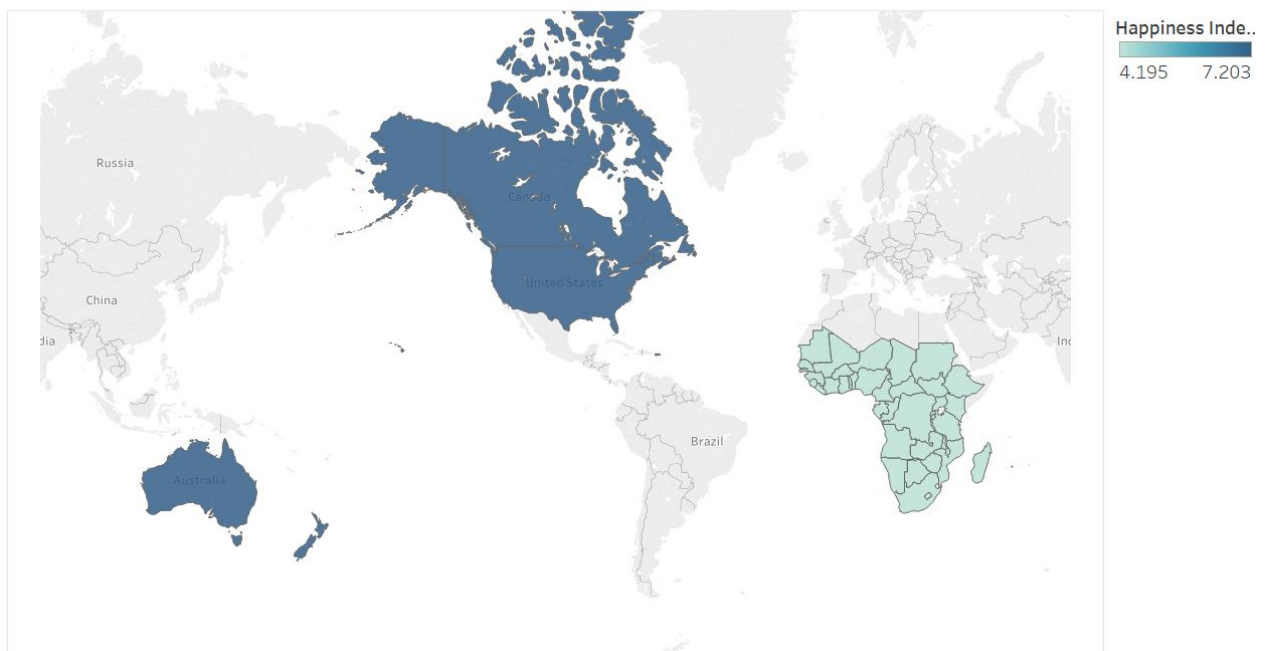
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Happiness Index 2018. Details are shown for Country.

Top/Bottom Region (Dark blue for top and light blue for bottom):

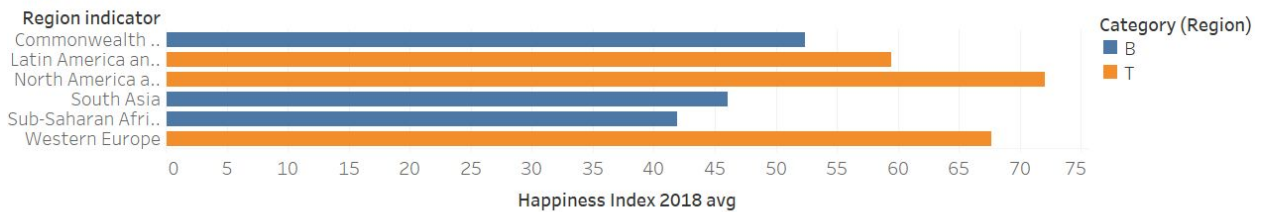
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Happiness Index 2018 avg. Details are shown for Country.

Alternatively we have also tried to get top3/bottom3 regions but the maps were covering a very large number of countries. Since the countries are distributed in total 10 regions. It can be viewed as a bar graph though.

Sheet 2



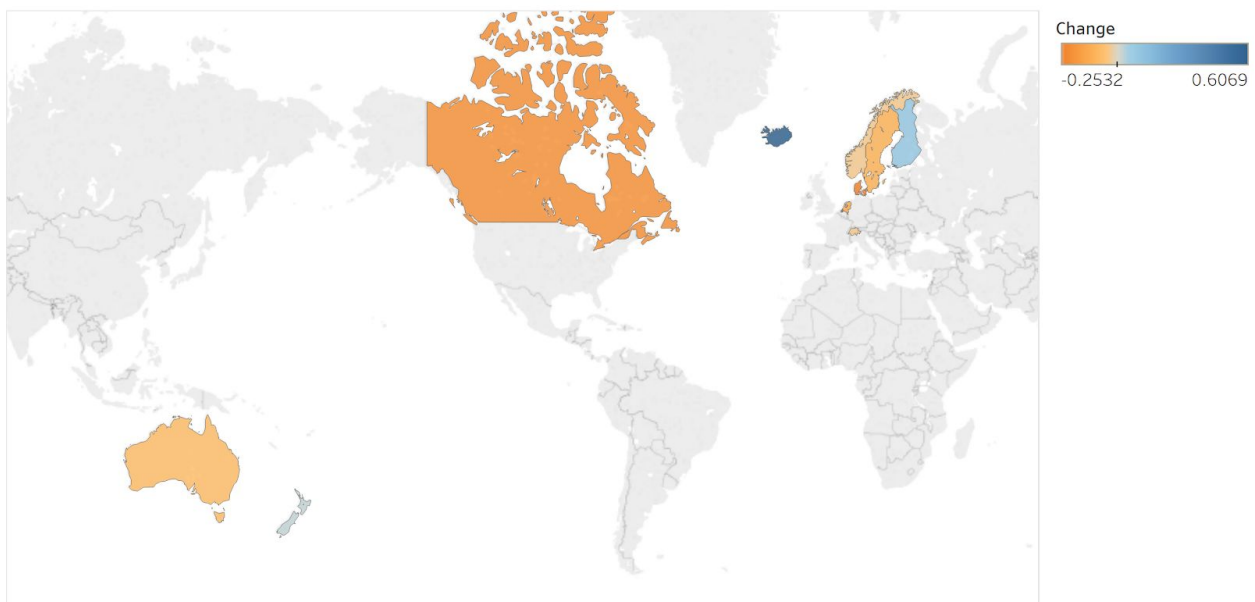
Sum of Happiness Index 2018 avg for each Region indicator. Color shows details about Category (Region).

2. How has the happiness of the happiest and the unhappiest countries changes as compared to what it was earlier?

Ans: In this section the change in the happiness is taken into account for the top 10 and the bottom 10 countries which were identified in the first question. The difference in there happiness index now and what it was in 2010 has been visualized here. This difference can be positive or negative depending upon the value of the happiness index in the given years. The maximum change is 0.607 and min is -1.561. The values on both side of zero are shown in different colors hues.

### Top 10 Countries:

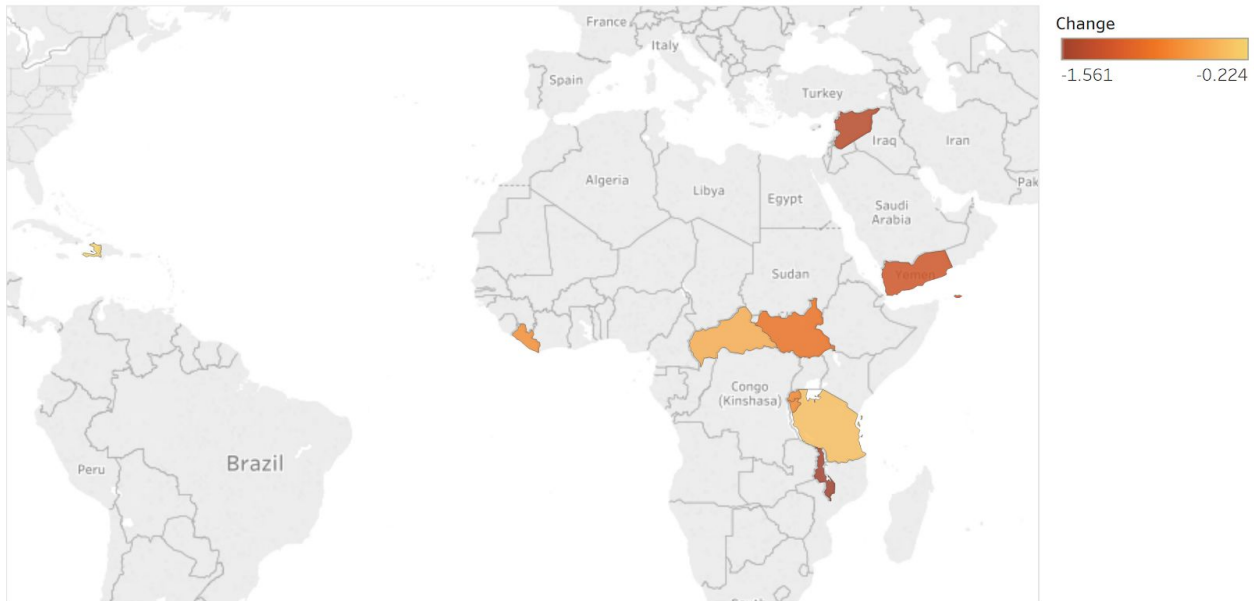
Sheet 1



Map based on Longitude (generated) and Latitude (generated). Color shows sum of Change. Details are shown for Country1 and Country1.

### Bottom 10 Countries:

Sheet 1



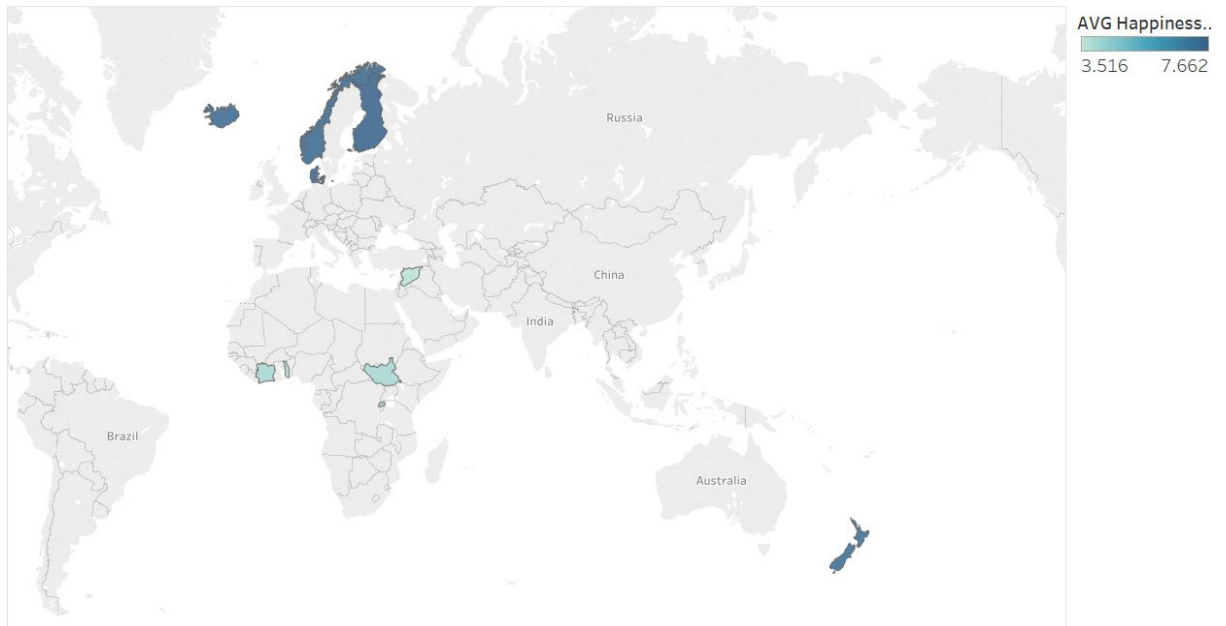
Map based on Longitude (generated) and Latitude (generated). Color shows sum of Change. Details are shown for Country1 and Country1.

3. Which countries are the most and least immigrant friendly?

Ans: In this question the top 5 and the bottom 5 countries based on the feature 'AVG\_Happiness\_Foreign' were extracted and then visualized. There were NULL values in the data which were ignored.

Top 5/Bottom 5 Countries:

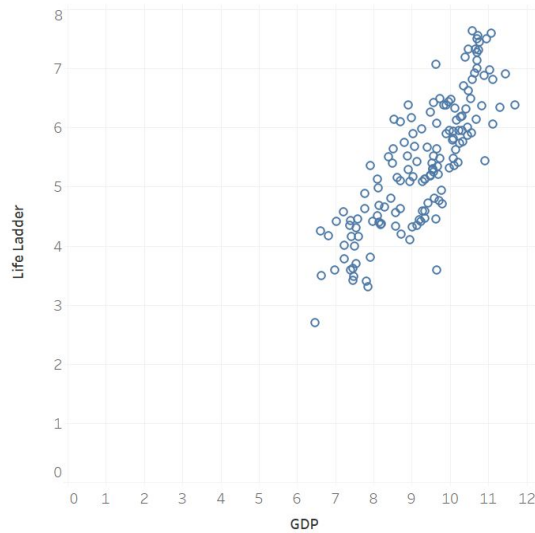
## Sheet 1



4. How does a person's wellbeing affect his satisfaction with life and how does this vary?

Ans: In this section a comparison between the feature 'Life Ladder' and 'Log GDP per capita' has been made. The data for the years 2015-2017 has been taken into consideration for this part. The trend is observed using a scatter plot.

## Sheet 1

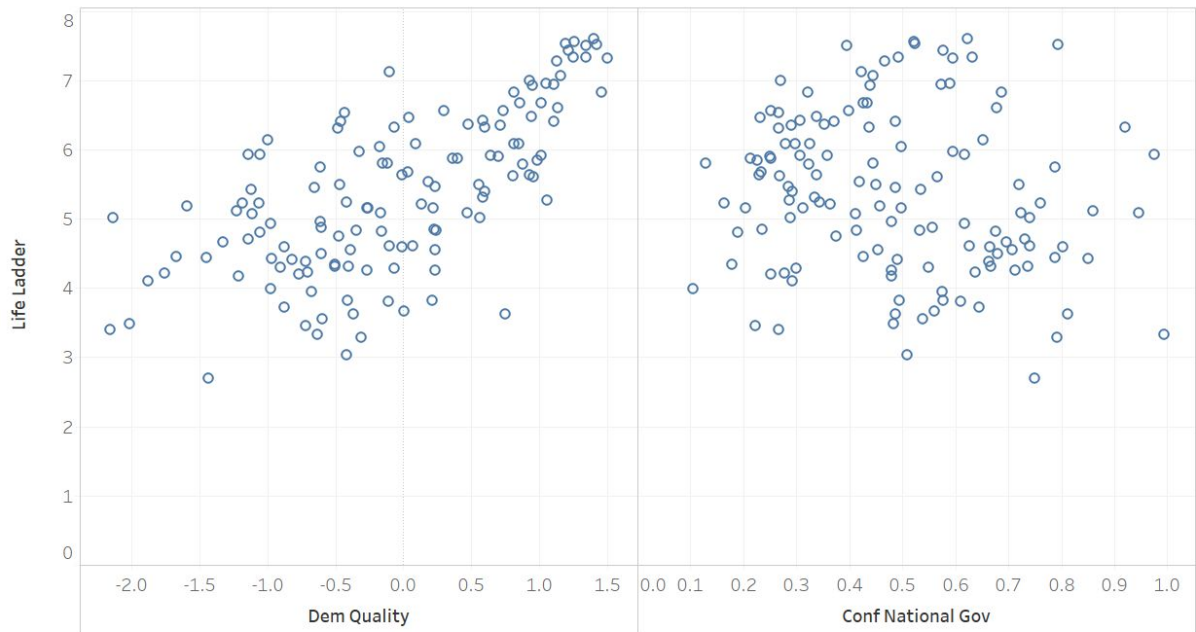


Sum of GDP vs. sum of Life Ladder. Details are shown for Country.

5. How satisfaction towards life is dependent on political state of a country?

Ans: In this the relationship between different features - 'Life Ladder', 'Democratic Quality' and 'Confidence in national government' is visualized. The data for the years 2015-2017 has been taken into consideration for this part. The trend is observed using a scatter plots.

Sheet 1



Sum of Dem Quality and sum of Conf National Gov vs. sum of Life Ladder. Details are shown for Country.

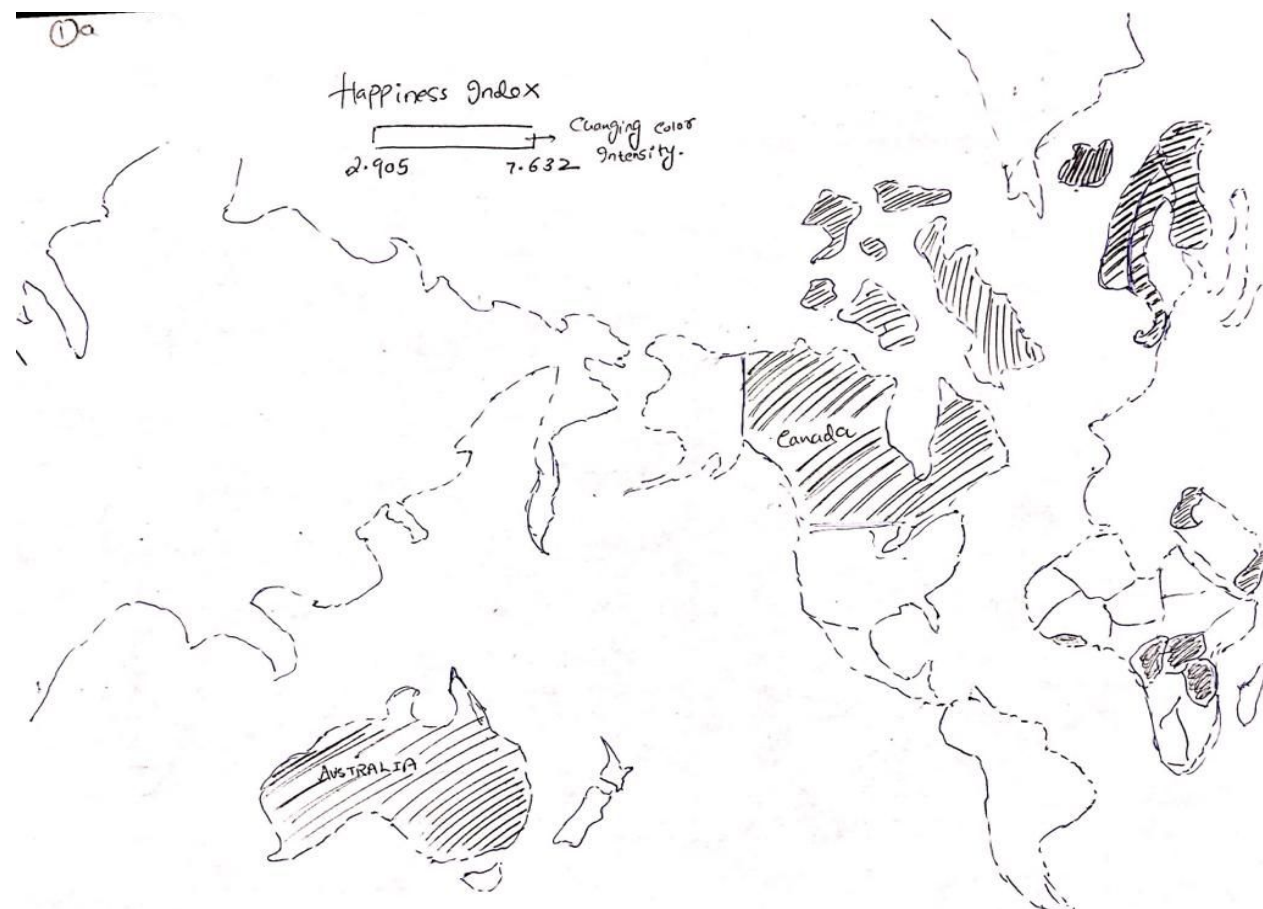


# Story

## **Happiness is difficult to try and quantify.**

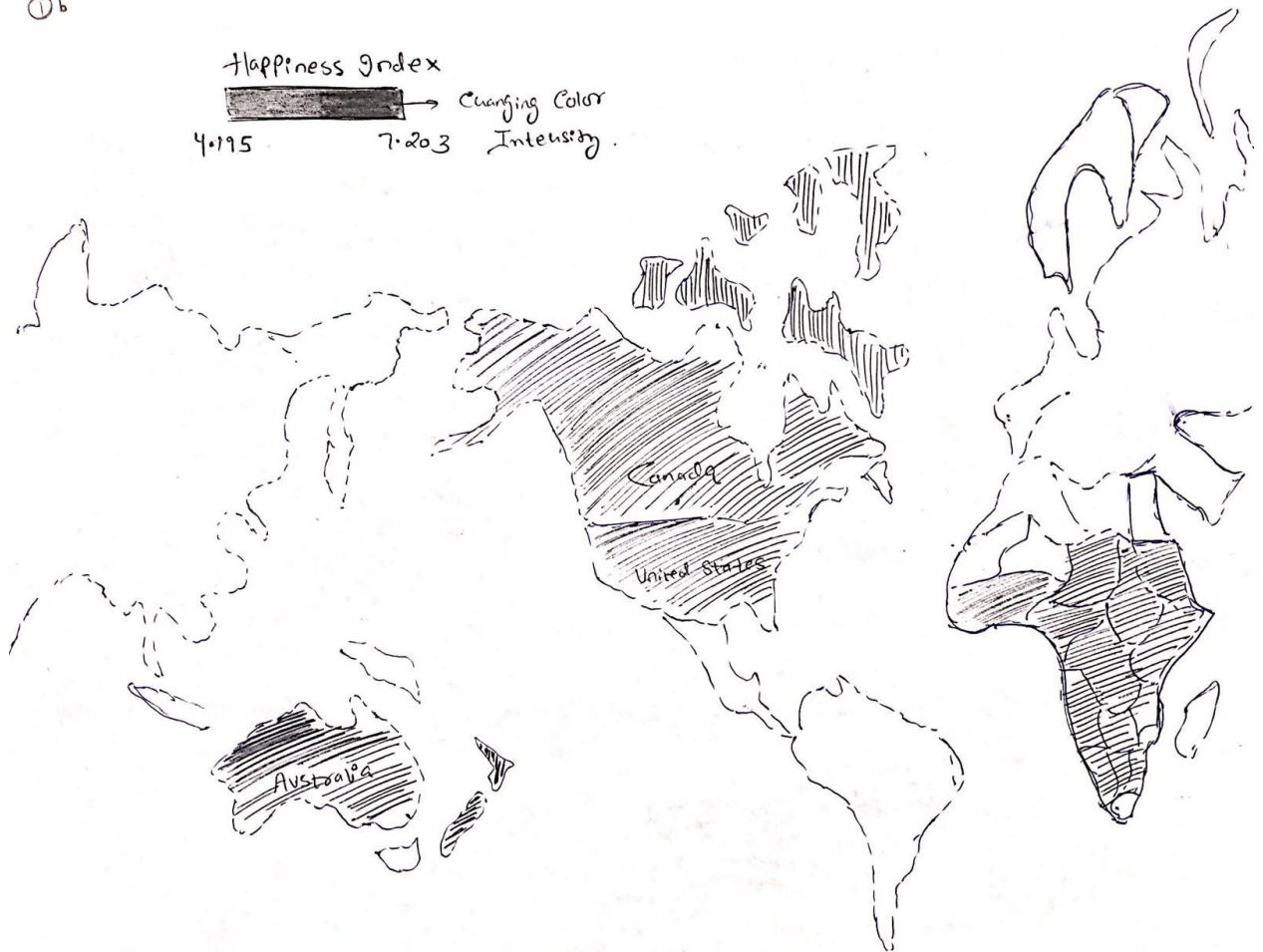
Wikipedia defines happiness as: Happiness in its broad sense is the label for a family of pleasant emotional states, such as joy, amusement, satisfaction, gratification, euphoria, and triumph. Many factors play a role in the happiness of an individual, when defining the happiness index across countries many attributes play a factor like Democratic Quality, GDP Per Capita, Social Support for an individual, Life Expectancy, Freedom, Corruption, Confidence in National Government. With these many factors into play, Scandinavian Countries, Northern America top the chart for happiness. The Scandinavian countries like Finland followed by Norway seem to dominate the world happiness charts whereas Burundi followed by the Central African Republic are the least happy countries

## Countries:



## Regions:

① b



### Life Changes and so does Happiness

Happiness is a state of well-being that encompasses living a good life. Happiness is subjective and can change over time or due to certain conditions as well. When you ask an individual about his happiness at a particular time his answer will depend on the recent happenings in life, with that being said it may happen that his answer will change after a given period of time. For most of the countries, the happiness index has only increased over time from 2010 to 2018 for countries like Iceland, Finland Which were in the top happy to begin with in 2010. Malawi and Syria have a maximum deficit in happiness from 2010 to 2018 and these countries were part of bottom happy countries.

Top 10 Countries:



Bottom 10 Countries:



### **Moving to a happy Country can make you happier ??**

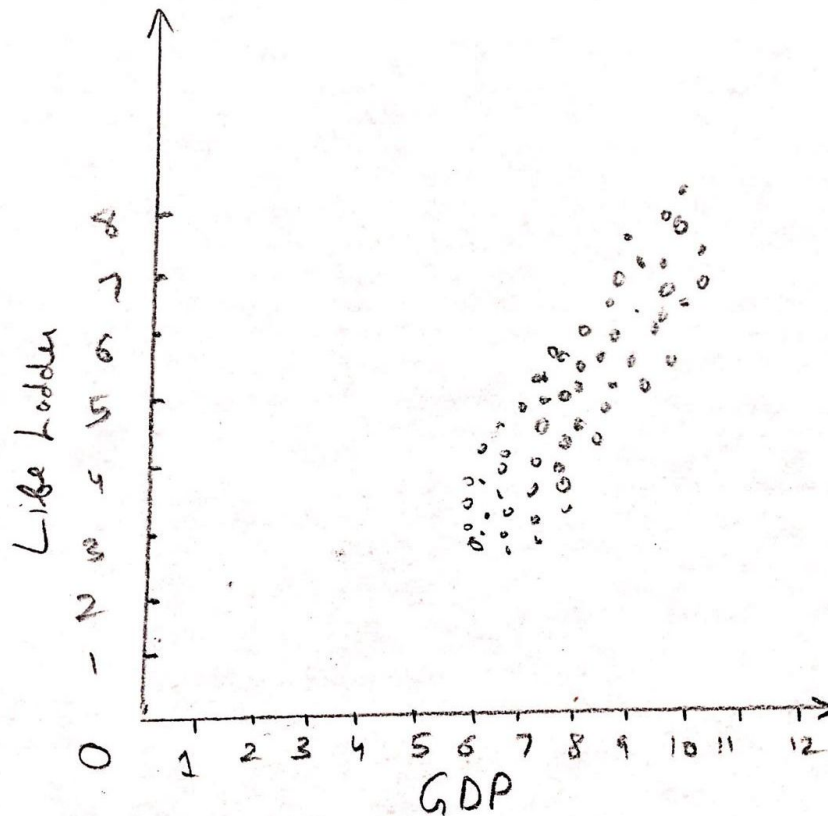
Moving Countries is a difficult situation for anybody be it a personal decision or due to conditions where one is forced to move. Moving to a happy country can make an individual happy. Happiness is heavily influenced by surroundings and the quality of life that a country can offer. In general the countries that are happier in terms of happiness index are also high with their immigrant happiness i.e how happy are immigrants in that country.



### **Money plays a key role in an individual's life satisfaction.**

When you ask an individual whether or not they are satisfied with their life there are a variety of factors that are evaluated. An individual may rate their life according to what has happened recently in their life whether they have lost a job, moved to a new place, got a promotion etc. Some may evaluate their life according to their life goals as to what age they are on and what have they achieved. Now most of the people might evaluate their life satisfaction by how much money they earn i.e. Their income. The higher the income of a person, he evaluates himself to

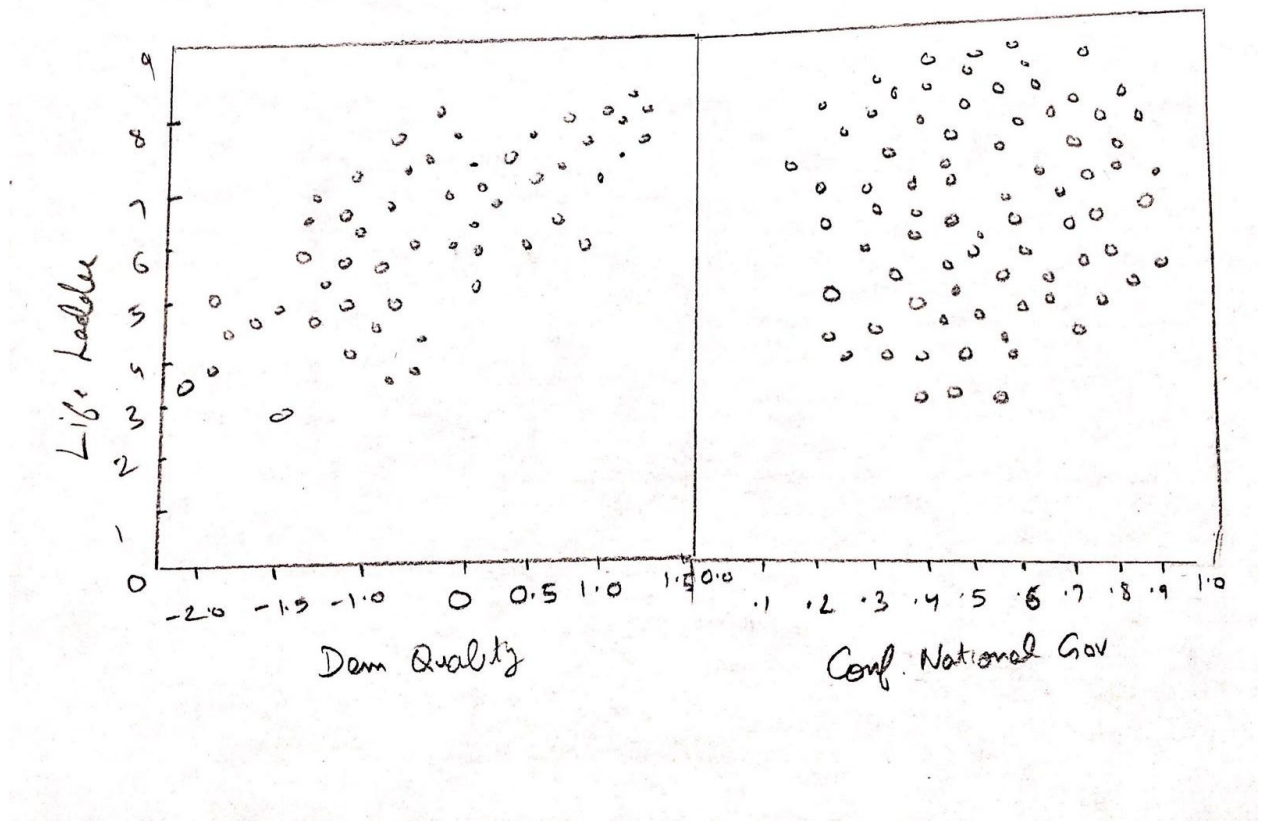
be more satisfied with life. Indeed, citizens' satisfaction is related to how much money they make.



### Life satisfaction based on political state

Democratic Quality is how substantive a democracy is. A person may feel like his life depends on the political state of the country. Unfair politics, rising prices of goods, violence across the country has a very subjective effect on a person. Sometimes a person may have some personal experience with the distraught in a country. The person may lose confidence in the government. The democratic quality of a country does affect the life satisfaction of a person. But it is found that a person's life satisfaction is oblivious to its citizens confidence in the government.





## Implementation:

Github Repo: <https://github.com/NYU-VIS-FALL2018/storytelling-group-21>

Demo Page: <https://nyu-vis-fall2018.github.io/storytelling-group-21/>

## Change Log

### Changes suggested in Phase 1:

1. As per our discussion with professor we have merged our question 1 and question 4 together into one. Q1 was to identify which are the happiest and the unhappiest countries and Q4 was to identify the happiest and unhappiest regions. Now we merged these two questions and we are showing both of this info in the same question 1.

Rephrased Question 1: Which are the happiest and the unhappiest countries/regions in 2018?

As per the Final feedback from professor Bertini in the feedback session:

### Changes suggested:

1. In question 1 and 2 the team was asked to remove borders from the map, make maps smaller to fit the screen, show all countries on the map and no need to show regions

2. In question 3 the team was asked create two graphs - a map on the left and a horizontal bar graph on the right showing top 5 and bottom 5 countries based on their foreign happiness index instead of a single geographical map which was being shown earlier
3. In question 4 a suggestion to label the countries on the scatter plot based on their region was made
4. There was no change suggested in question 5's implementation

The changes made in the implementation as compared to previous submission and after our final discussion with professor bertini:

1. For question 1 in which the happiest and the unhappiest countries are being identified following changes have been made:
  - a. The borders have been removed for the maps
  - b. The size of the maps have been reduced
  - c. The map showing happiness index for all of the countries is shown first
  - d. After showing the the happiness index for all of the countries the map having top 10/bottom 10 countries based on their happiness index are being shown
  - e. We are showing maps only for countries and not for regions
2. For question 2 which is - How has the happiness of the happiest and the unhappiest countries changes as compared to what it was earlier?:
  - a. This question has been changed to how the happiness of the countries changed as compared to what it was earlier?
  - b. The borders have been removed for the maps
  - c. The size of the maps have been reduced
  - d. The map showing happiness index for all of the countries is shown first
3. For question 3 which is - Which countries are the most and least immigrant friendly?:
  - a. We are now making two charts for this one
  - b. One map on the left showing top 5 and bottom 5 countries based on 'average happiness foreign'
  - c. Second - a horizontal bar graph on the right showing the values of these countries
4. For question 4 which is - How does a person's wellbeing affect his satisfaction with life and how does this vary?:
  - a. Labeling has been done on the scatter plot to show countries according to region - ex: yellow color for sub saharan countries, green for asian etc.
5. For question 4 which is - How satisfaction towards life is dependent on political state of a country?:
  - a. There was no change suggested in this question
6. As compared to the previous submission in which we only implemented question 1 and question 4, now we have implemented all the questions that we wanted to address. We keeping in mind the guidance and feedback that we received from professor Bertini and



the TAs and we have tried our best to address and implement the solution according to their feedback.