

# World Happiness Analysis

Group 8

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# Topics

- Dataset
- Related Work
- Methodology
  - Preprocessing of data
  - Normalization
  - PCA
- Visualizations
- Analysis
- Future Work
- Demo

# Dataset – Overview

- The World Happiness Report
  - Released annually
  - Publication by Wellbeing Research Centre at the University of Oxford, UK
- Downloaded from Kaggle (“World Happiness Report- 2024, by Jaina) [1]
- 9 numerical columns (+ 2 categorical) \* 2358 rows  $\approx$  21 000



[1] - <https://www.kaggle.com/datasets/jainaru/world-happiness-report-2024-yearly-updated>

# Dataset – Columns

- **Country name:** The name of the country.
- **Year:** The year of data collection.
- **Life Ladder:** A subjective measure of happiness from 0-10.
- **Log GDP per capita:** A measure of economic performance.
- **Social support:** A measure of societal support.
- **Healthy life expectancy at birth:** A proxy for public health.
- **Freedom to make life choices:** A measure of individual freedom.
- **Generosity:** A measure of societal generosity.
- **Perceptions of corruption:** A proxy for trust in institutions.
- **Positive affect:** Indicators of emotional state.
- **Negative affect:** Indicators of emotional state.

# Related Work



# World Happiness Report

Select a report  
2024

Select a country  
Ingen

Select a country for comparison  
Ingen



◀ 1 av 143 ▶

## Finland in 2024

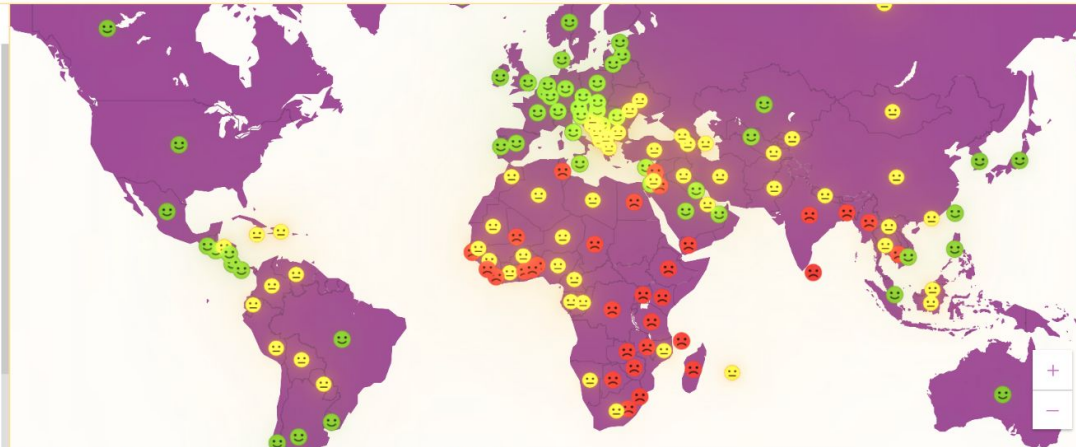
Happiness Score: 7,74

### Happiness Score by Age

If blank, there is no age breakdown for this year.



Average Life Evaluation



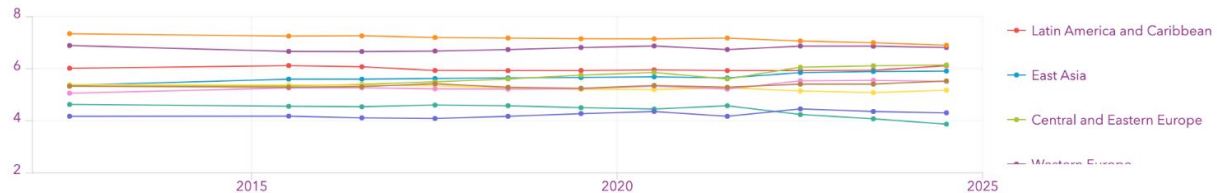
### Average Life Evaluation

(3-year average)

- 😊 > 6 - 8
- 😐 > 4.5 - 6
- 😞 1 - 4.5

Powered by Esri

### Average Life Evaluation

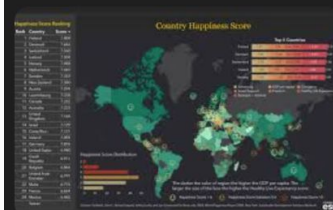


Map

Compare Countries

Credits

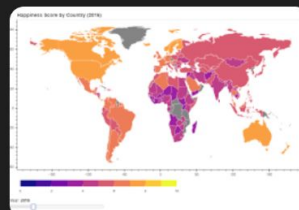
Related work – Official site of World Happiness Report



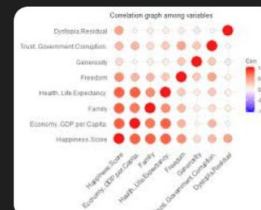
SAS Blogs - SAS Institute  
Analyzing happiness data in 2020 - SA...



LinkedIn  
World Happiness Report: Power BI Visual...



Towards Data Science  
Visualizing World Happiness With A...



NYC Data Science Academy  
Data Visualization on World Ha...



Nature  
These are the happiest countries in the...



Towards Data Science  
World Happiness Dashboard in Tabl...



LinkedIn  
Visualizing the world happiness score u...



Student Work - School of Information  
Map of World Happiness Report 2020...



Medium  
World happiness dashboard with Powe...



Center for Data Innovation  
Visualizing Happiness in the World ...



Nature  
These are the happiest countries in the world | Ne...



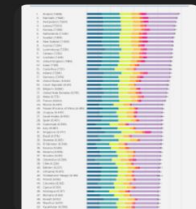
DataDrivenInvestor  
Insights from the World Happiness Repor...



Reddit  
OCJ Results From the World ...



Medium  
Visualizing Happiness: A Data-Driven Explora...



The World Happiness ...  
Social Environments f...

Related work - Google search

# Methodology

- Dataset was downloaded as .csv-file from Kaggle
- Missing value in a row is replaced with average-value in the column
- Missing rows (year) is skipped
- Numerical values are normalized with gaussian scaling (z-index)
  - Added as unique columns
- Continent-label added (6 continents, Europe, Asia, Oceania, Africa, South & North America)
- PCA applied on the normalized values
  - Reduced to two columns, PCA1 and PCA2
- Converted to .json-format for easier and faster integration with javascript



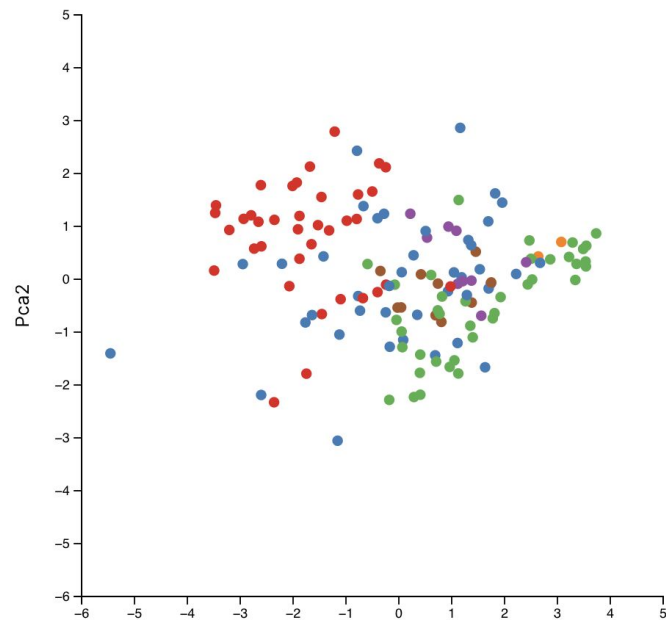
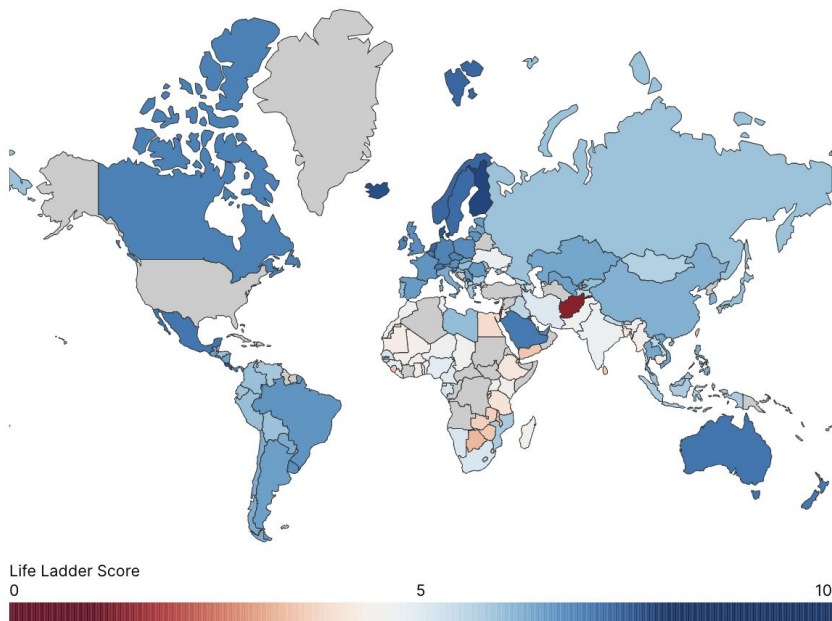
# Methodology

Example of json object

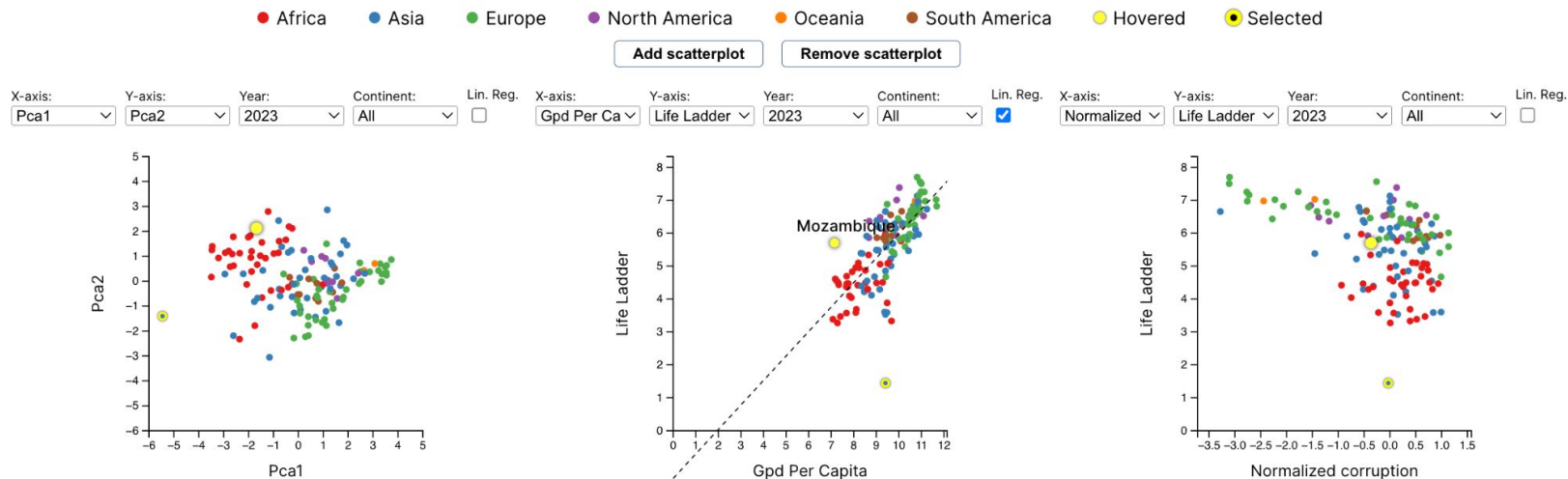
```
1  {
2    "countryName": "Afghanistan",
3    "year": 2008,
4    "lifeLadder": 3.724,
5    "gpdPerCapita": 7.35,
6    "socialSupport": 0.451,
7    "healthyLifeExpectancyAtBirth": 50.5,
8    "freedomToMakeLifeChoices": 0.718,
9    "generosity": 0.164,
10   "corruption": 0.882,
11   "positiveAffect": 0.414,
12   "negativeAffect": 0.258,
13   "continent": "Asia",
14   "gpdPerCapita_z": -1.8021344521299614,
15   "socialSupport_z": -3.0076635857109135,
16   "healthyLifeExpectancyAtBirth_z": -1.9342383928735658,
17   "freedomToMakeLifeChoices_z": -0.2344259374613323,
18   "generosity_z": 1.0330728243189573,
19   "corruption_z": 0.7680655505887676,
20   "positiveAffect_z": -2.254035857892238,
21   "negativeAffect_z": -0.17219330178713496,
22   "pca1": -3.73505831506763,
23   "pca2": 1.724232860159137
24 },
```

# Visualizations

To be described further in the demo



# Visualizations



## Selected Countries

Table showing the data for the selected countries for the selected year.

Country	Year	Continent	Life Ladder Score	GDP	Social Support	Healthy Life Expectancy	Freedom	Generosity	Corruption	Positive Affect	Negative Affect
Afghanistan	2023	Asia	1.45	9.41	0.37	55	0.23	0.00	0.74	0.26	0.46

# Analysis

Useful insights from usage of the application

- Afghanistan is clearly the least happy country in the world
  - Especially since 2021
- Asia has a really big variety in performance across countries
- Haiti has managed to improve significantly through the years
  - Healthy life expectancy of 7 years in 2006 to 63 in 2018
- Canada, Australia, New Zealand, Singapore and Kuwait is really equal to the Norther-European countries
- Generosity isn't correlating with life happiness in either ways
- GDP and Social Support is the most important areas for improved life happiness

# Future Work

- Try other types of normalization
- Order by region instead of continent for deeper insight in an area
  - Western Asia compared to middle east
- Select columns to colorize the map
- Line chart for data for a given country
  - Comparison between multiple countries

# DEMO

