**Quantifying Happiness:** 

## **Exploring Factors Affecting Country Happiness Score**





# Crime overall vs. Happiness score

### Happiness Score vs. Crime rate - Base Questions

- Questions that you found interesting and what motivated you to answer them:
  - a. Does the crime rate affect the overall happiness of a country?
  - b. Which crime index scores are more frequent with each happiness score?
  - c. Does the resilience show any effect on the happiness of a country?
- 2. Where and how you found the data you used to answer these questions:
  - a. The organized crime index: https://ocindex.net/
- 3. The data exploration and cleanup process (Jupiter notebook)
  - a. <a href="https://github.com/Isakn2/Project\_1.git">https://github.com/Isakn2/Project\_1.git</a>



### **Crime Index vs Happiness**

**Crime rate** is the result of the analysis obtained with the scores of the <u>Crime Index</u> and the <u>Resilience</u> Index

**Crime index** is the score assigned to the influence crime has on each country both economically and socially.

Crime index p\_value : 1.84e-78 Correlation coefficient: -0.3

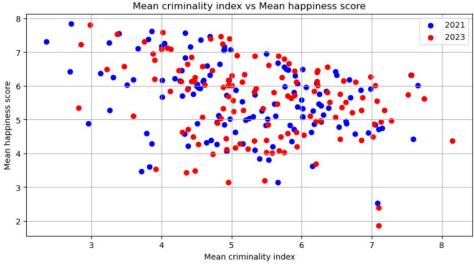


Figure.1

Figure 1. Shows the comparison between the resilience index of two years and the average happiness score of those years.

### Resilience index vs Happiness

**Resilience index** is score assigned to the mechanisms each country has in place to <u>prevent</u> and <u>control</u> crime

Resilience index p\_valuevalue : 1.37e-15

Correlation coefficient: 0.7

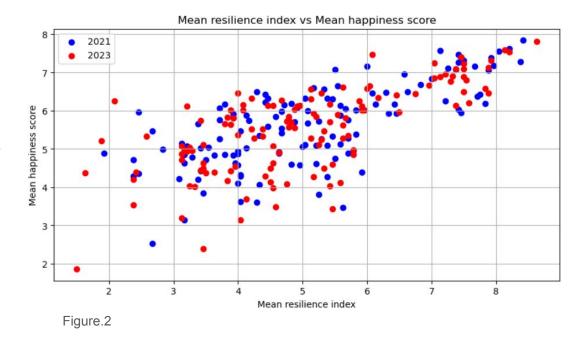


Figure.2 Shows the comparison between the average crime index of the same two years the average happiness score of those years.

### Crime Thresholds per Happy Score Threshold

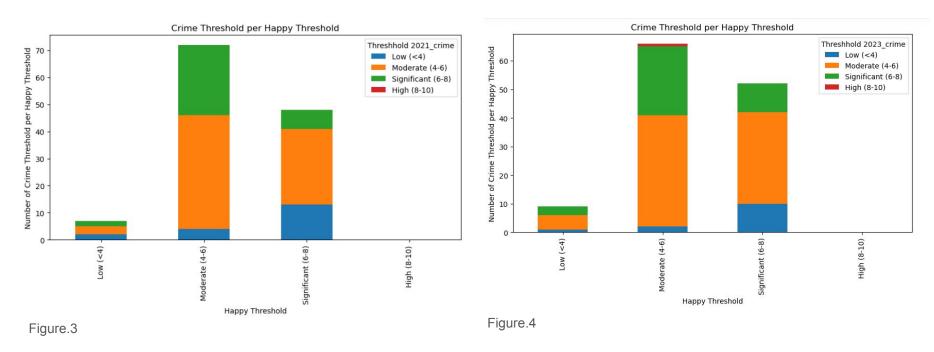


Figure 3. Shows the comparison between the threshold of the crime index and the threshold of the happiness score threshold of 2021

Figure.2 Shows the same comparison considering values of the year 2023.

### Conclusions

- Crime rate does affect the overall happiness score of each country.
  - The crime index, which describe the influence of crime actors and markets have, shares a negative relationship with the happiness score, however a weak one with a correlation coefficient of -0.33
- On the other hand the resilience index, which describes how the measures set in place to prevent and control the crime influence over the country. This index shows a positive relationship and a stronger one with a correlation coefficient of 0.8
- The most frequent values observed of crime rates are the same as the happiness score with Moderate values followed by Significant values

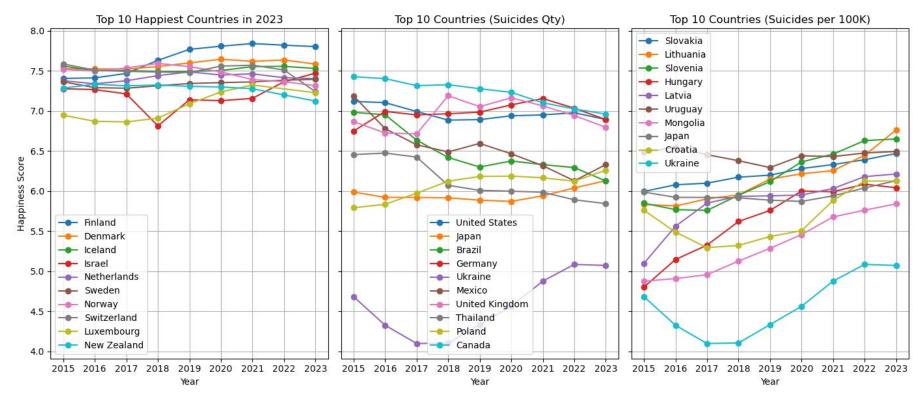


### Happiness Score vs. Suicides - Base Questions

- Questions that you found interesting and what motivated you to answer them:
  - a. Is the WHR really accurate?
  - b. Why does norwegian countries are top if they report (on news or social media) overall sadness?
  - c. Why poor people seem to be happier?
- 2. Where and how you found the data you used to answer these questions:
  - a. Kaggle
- 3. The data cleanup process (Jupiter notebook)
  - a. <a href="https://github.com/lsakn2/Project\_1.git">https://github.com/lsakn2/Project\_1.git</a>

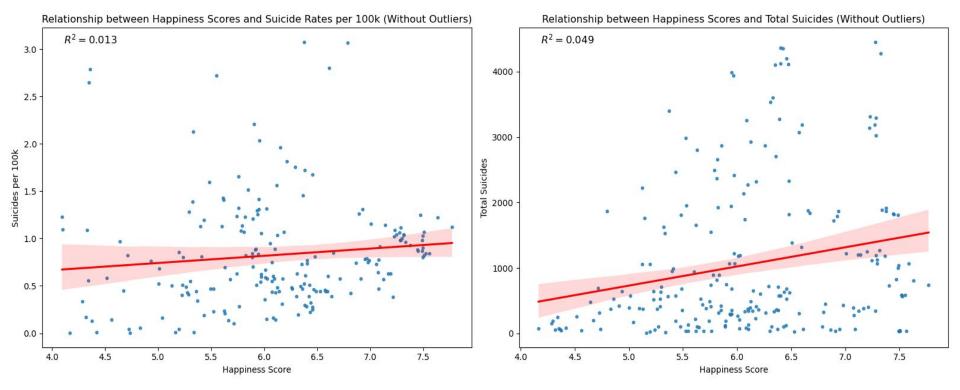


### World Happiness Report (WHR) Analysis



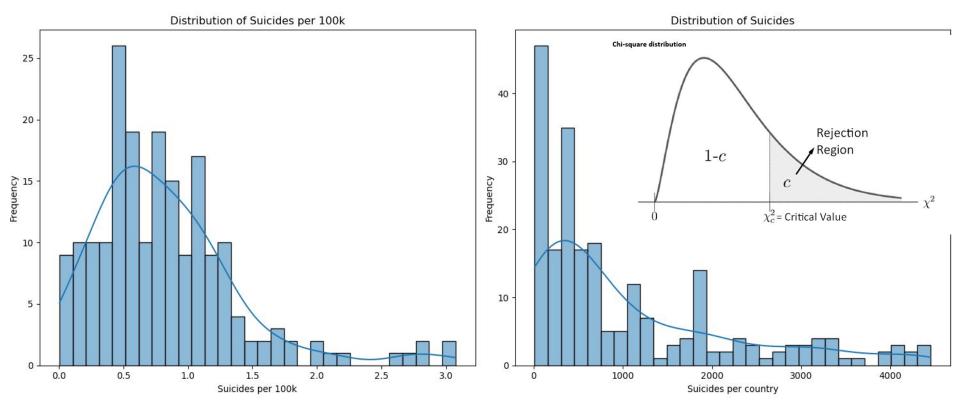
This plot shows (1) The happiest countries on WHR, (2) The ten countries with the higher number of suicides and (3) The ten countries with the higher suicide per 100K hab.

### Suicide data (2015-2020) Suicides per 100K vs. Total Suicides



We can observe no linear correlation on R<sup>2</sup> values on our scatter plots

### Suicides per 100K and Total Suicides Histograms



We removed zeros and outliers. And we have a Chi-square distribution resemblance.

### **Correlation tests**

Correlation Type	Variable	Correlation Coefficient	p-value	Statistically significant	Summary
Pearson	Happiness Score vs. Suicides per 100k	0.115	0.109	NO	Weak positive correlation; not strongly associated with higher suicide rates per 100k.
	Happiness Score vs. Total Suicides	0.222	0.00079	YES	Weak positive correlation; higher happiness scores are associated with more total suicides.
Spearman	Happiness Score vs. Suicides per 100k	0.193	0.007		Weak positive correlation; higher happiness scores are associated with higher suicide rates per 100k.
	Happiness Score vs. Suicides no	0.238	0.00031		Weak positive correlation; higher happiness scores are associated with more total suicides.

### Conclusions

#### a. Is the WHR really accurate?

Not really, is a great indicator which summarizes wellness on a country (GDP, social support, heath, are variables included) but happiness is a complex/subjective variable.

### b. Why does norwegian countries are top if they report (on news or social media) overall sadness?

 The weak positive correlation between happiness scores and suicide rates might indicate that while happiness scores are high, they do not fully reflect all aspects of mental health.

### c. Why do poorer people sometimes report higher levels of happiness compared to wealthier individuals?

- Social Connections: In poorer communities, strong social bonds and community support can contribute to higher reported happiness.
- ii. The correlation data suggests that while there is a weak positive association between happiness and total suicides, other factors like community support and personal resilience might play a significant role in perceived happiness.

### **Population using the Internet** VS.

**World Happiness Score** 

### Having access to the internet is a double-edged sword,

it can empower you for good or bad, how does it correlates to the World Happiness Score

### Population using the Internet - Base Questions

1. Questions that you found interesting and what motivated you to answer them:

Having access to the internet is a double-edged sword, it can empower you for good or bad, how does it correlates to the WHS

- Does having access to the internet affects in some way the country WHR??
- 2. Where and how you found the data you used to answer these questions:

"Data Page: Share of the population using the Internet", part of the following publication: Hannah Ritchie, Edouard Mathieu, Max Roser and Esteban Ortiz-Ospina (2023) - "Internet". Data adapted from World Bank. Retrieved from https://ourworldindata.org/grapher/share-of-individuals-using-the-internet [online resource]

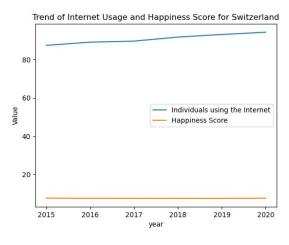
3. The data exploration and cleanup process (Jupiter notebook)

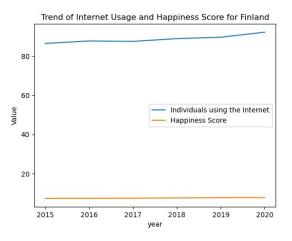
https://github.com/Isakn2/Project 1/tree/989ef5ce7743fbd9b71326f09146b4f72eb8de40/Internet%20Happy

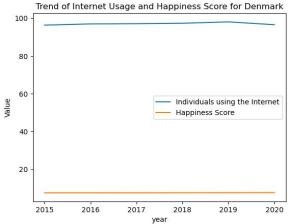
### TOP 10 Countries (Happiness Trend VS. Internet Trend)

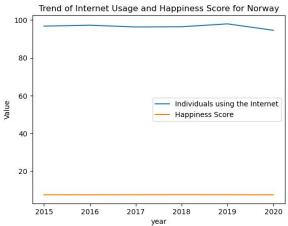
Country

Finland
Finland
Denmark
Finland
Denmark
Norway
Switzerland
Iceland
Switzerland
Denmark



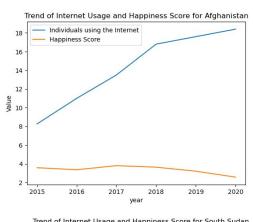


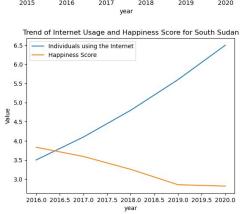


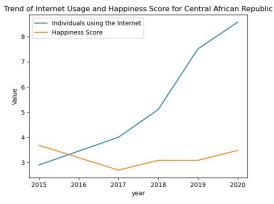


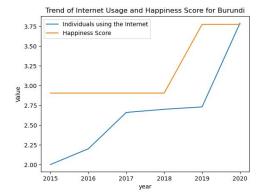
### LOWEST 10 Countries (Happiness Trend VS. Internet Trend)

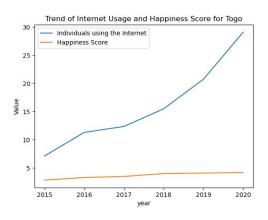


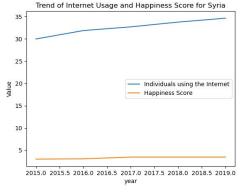








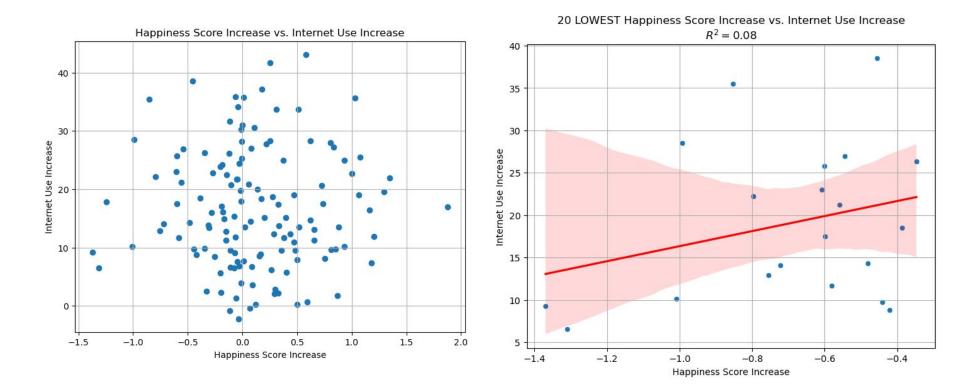




Does Internet usage can

help saddest countries?

### Happiness Score Increase VS. Internet Usage Increase



### If you are doing bad, Internet won't make you happier



### Summary

#### TOP 10 Countries (Happiness VS. Internet)

- There is nothing interesting happening, happiness vs internet stays the same

#### LOWEST 10 Countries (Happiness VS. Internet)

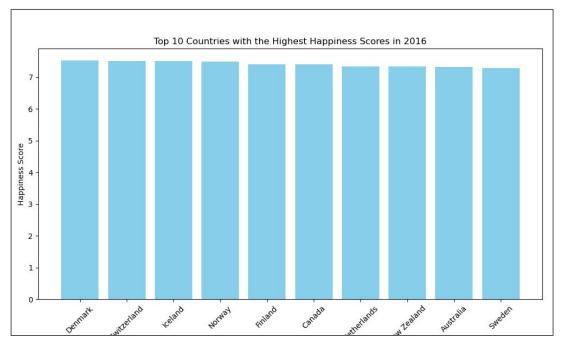
- Even when People's access and usage of internet increase, there is no overall happiness increase, except for Burundi

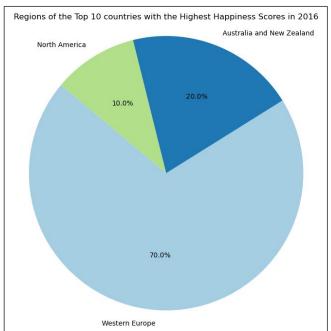
### Happiness Score Increase VS. Internet Usage Increase

- The World HS vs Int does not show a special trend
- Internet usage does internet help countries in decrease



### How is alcohol consumption for the countries with a higher happiness score?





**Chart 1.** Top 10.

Chart 2. Region distribution for Top 10.

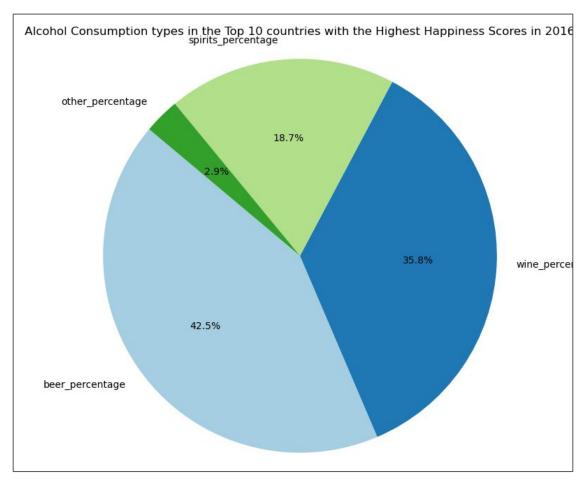
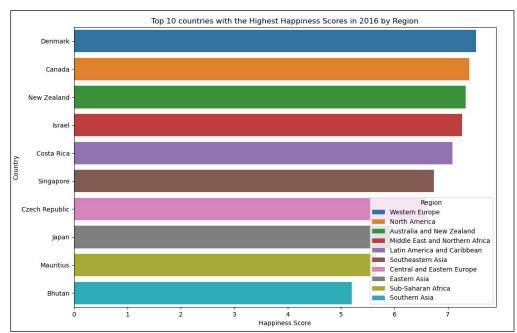


Chart 3. Alcohol consumption per type (Top 10 countries)

### What would happen if we consider a different sampling selecting the highest happiness score per region?



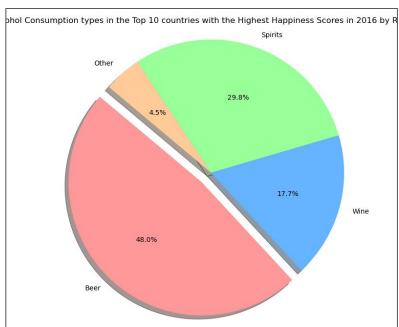
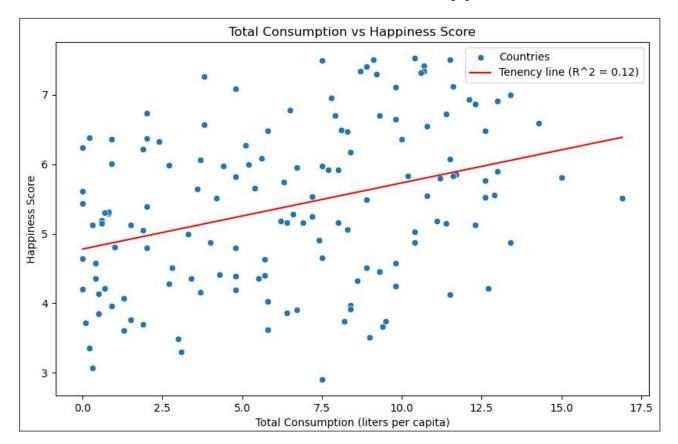


Chart 4. Happiest country per region.

**Chart 5.** Distribution of consumption.

### Is alcohol a relevant factor for the happiness score?

After cleaning outliers



**Chart 6.** Correlation Happiness vs.Consumption

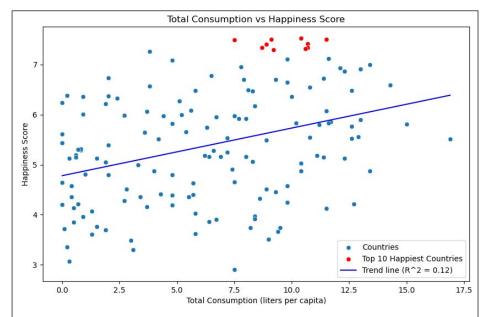
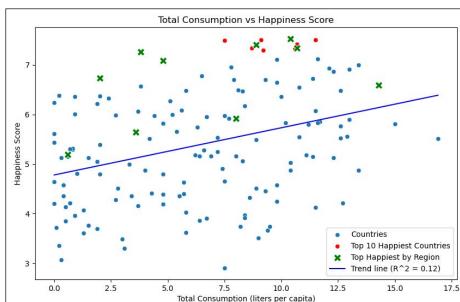


Chart 7. Identifying top 10 countries.





**Chart 8.** Identifying top 10 countries per region.

- 70% of the most happiest countries are in Western Europe.
- According to the consumption of those countries, the most popular beverages are **Beer and Wine** in a range of **7.5 up** to 11.5 liters per capita.
- Considering a sampling of the most happiest countries per region, Beer has a notable popularity.
- Even when there's **not a positive correlation** (R2 = 0.12) between alcohol consumption and happiness score it is interesting to notice that there's a **pattern of consumption** for the countries in the top 10.