



Happy Almana

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INTRO



01

EDA



02

MODELS



03

BONUS



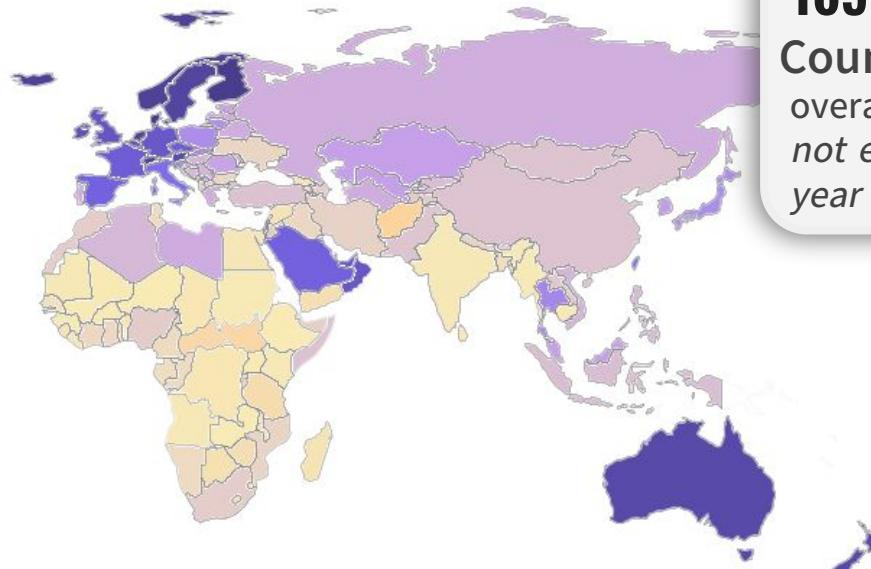
04

OUTLOOK



05

Intro: World Happiness Report



165
Countries
overall
*not each
year*

Aiming & Framing: World Happiness Report



INDIVIDUAL



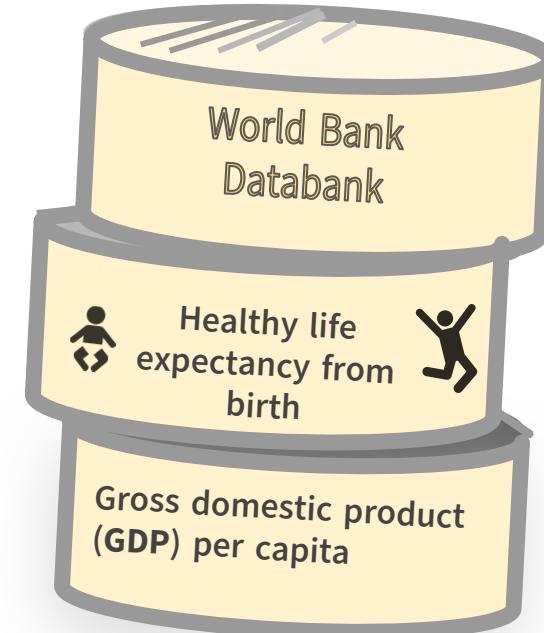
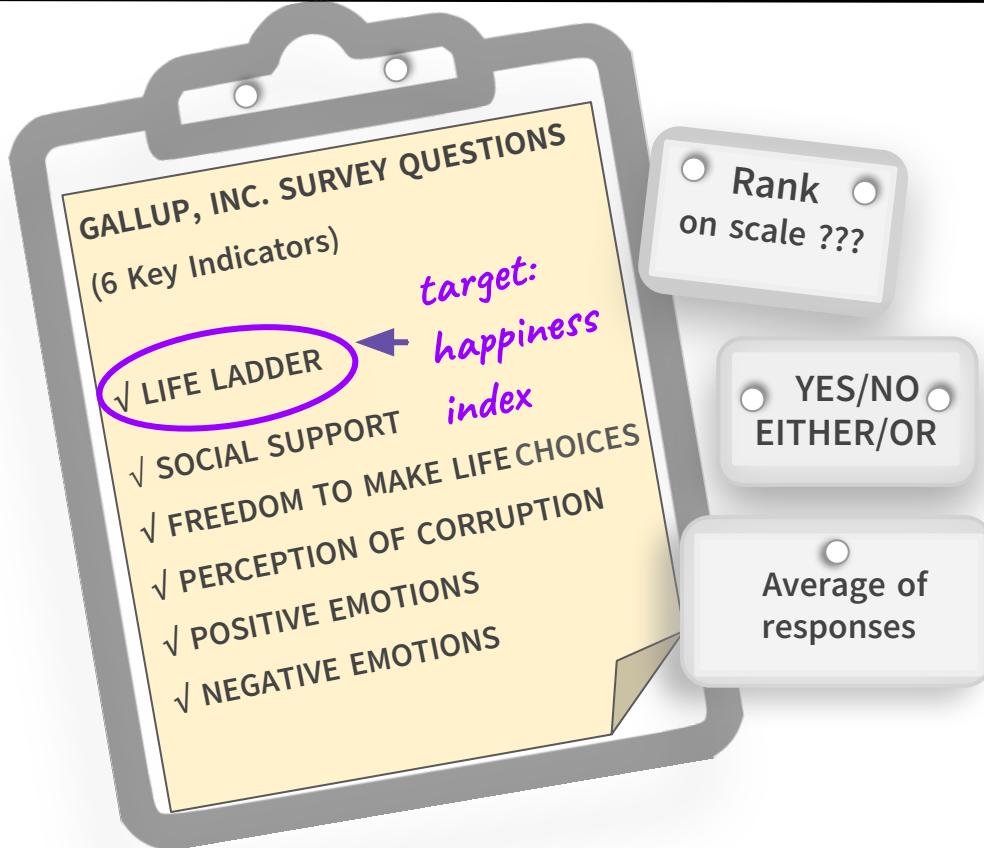
Create
Predictive
Happiness Index
Model



POLICY
MAKERS



Features: World Happiness Report



Happiness Index a.k.a. “Life Ladder”



Question Asked:

Please imagine a ladder

with steps ↗↗

numbered from 0 at the bottom

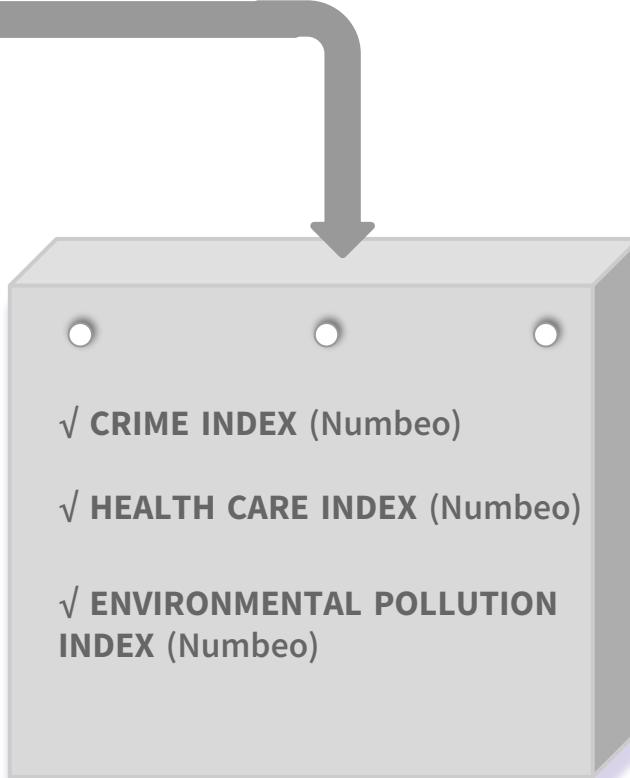
to 10 at the top.



Further Features Considered



- ✓ POPULATION DENSITY (Kaggle)
- ✓ AVERAGE YEARS OF SCHOOLING (UN Development Index)
- ✓ COST OF LIVING *in USD* (Numbeo)
- ✓ GINI INDEX *Wealth Distribution* (World Health Report)



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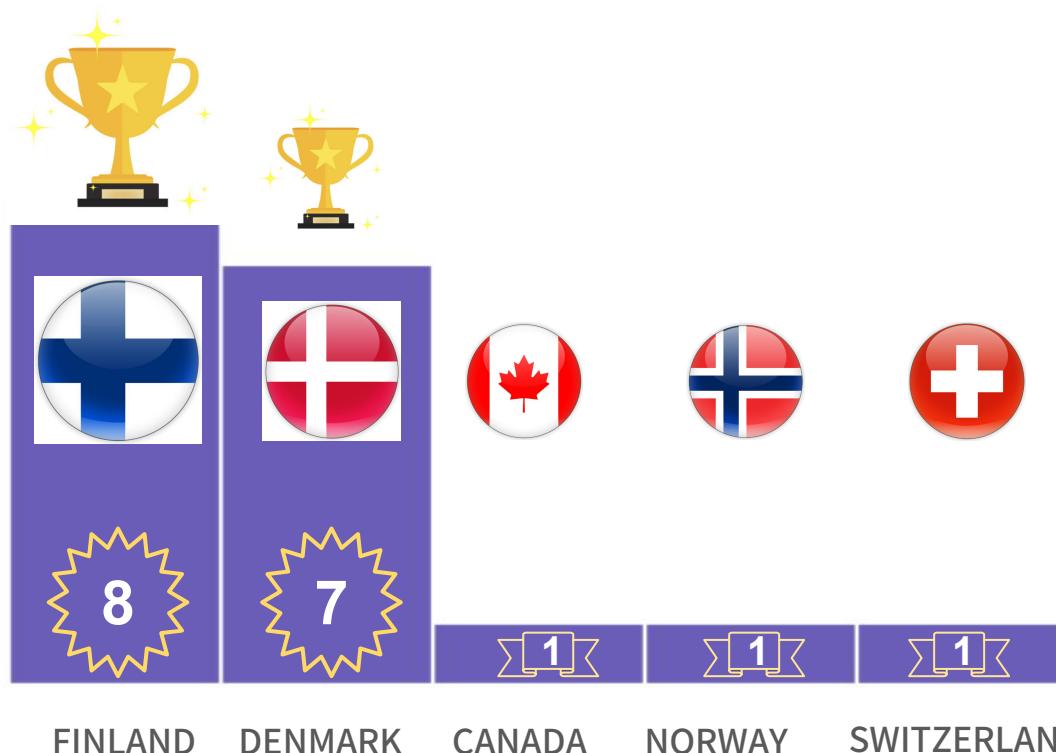
04

OUTLOOK

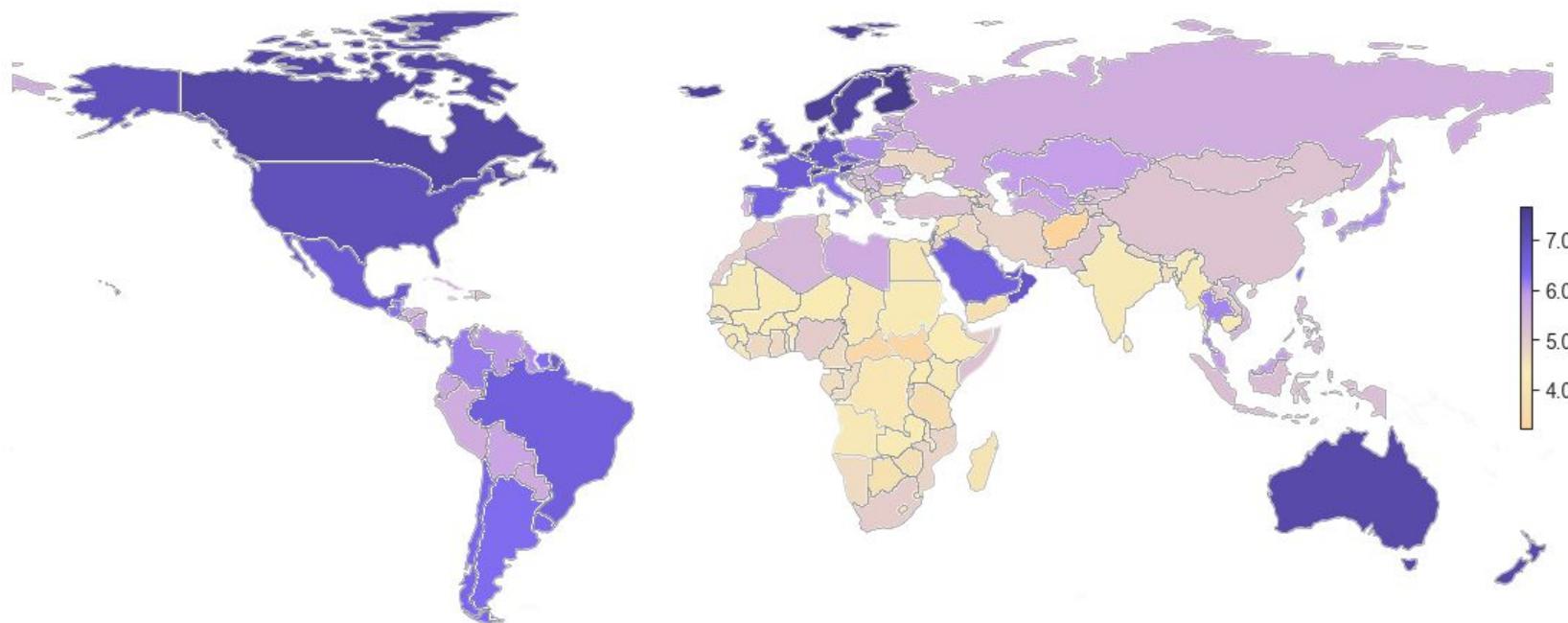


05

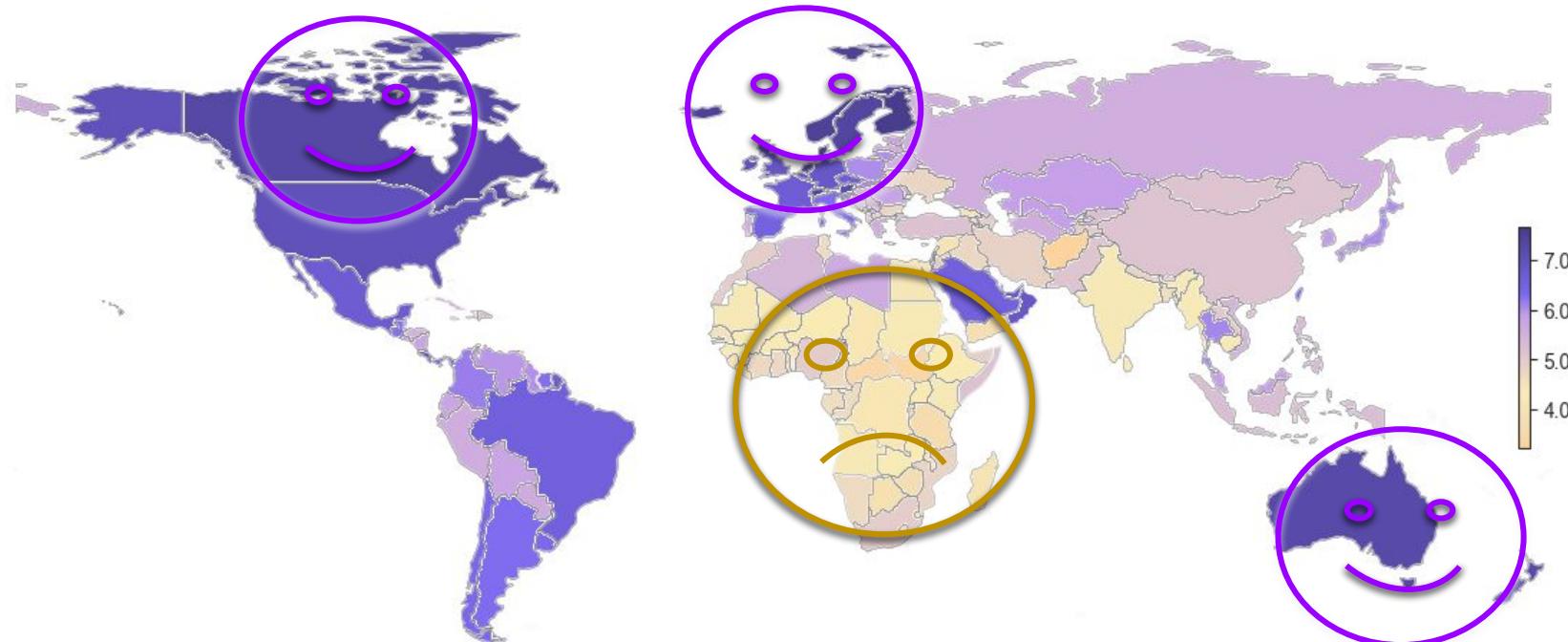
Happiest Countries, 1st Place Winners (2005-2022)



Average Level of Happiness (2005-2022)

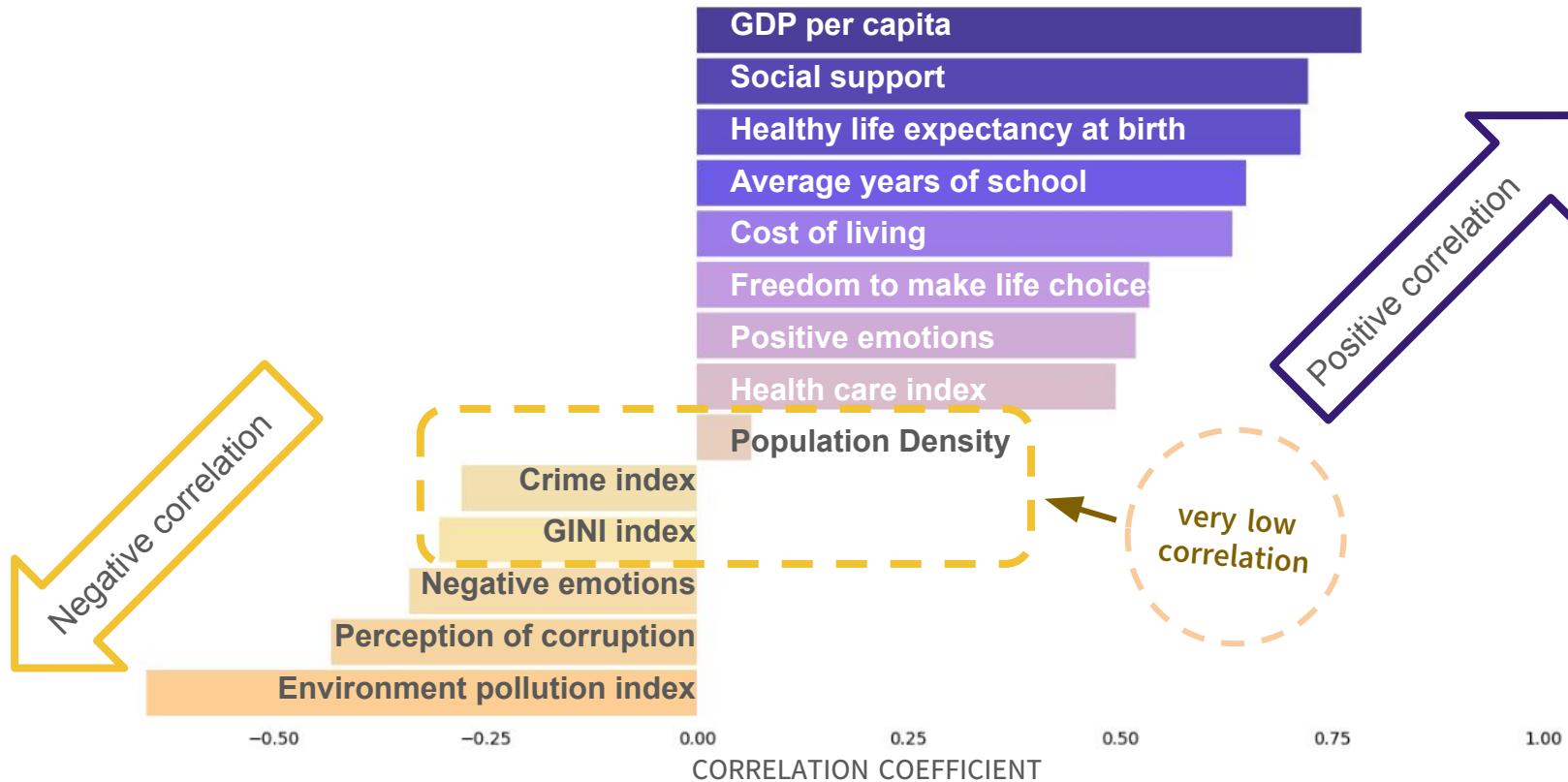


Average Level of Happiness





Correlation to Life Ladder



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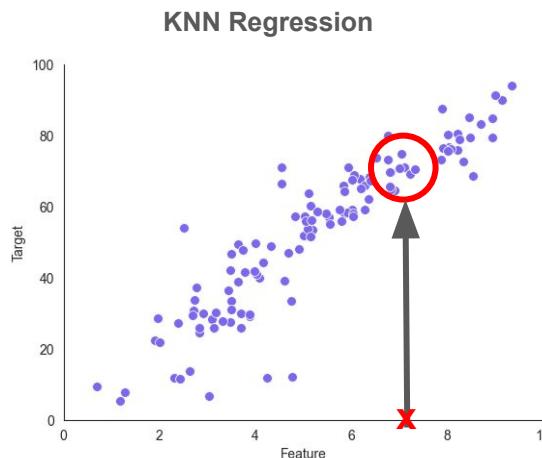
05



Baseline Model

Variable: **GDP per Capita**

Algorithm: **K-Nearest-Neighbors (KNN)**



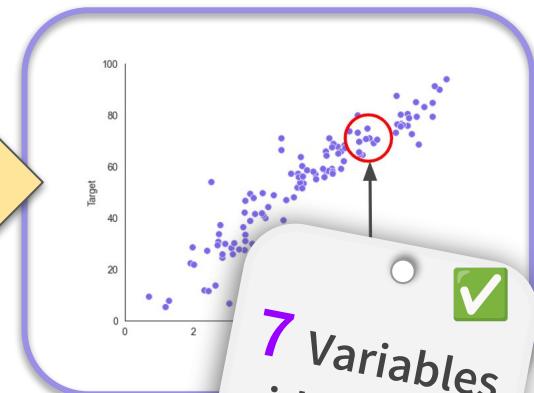
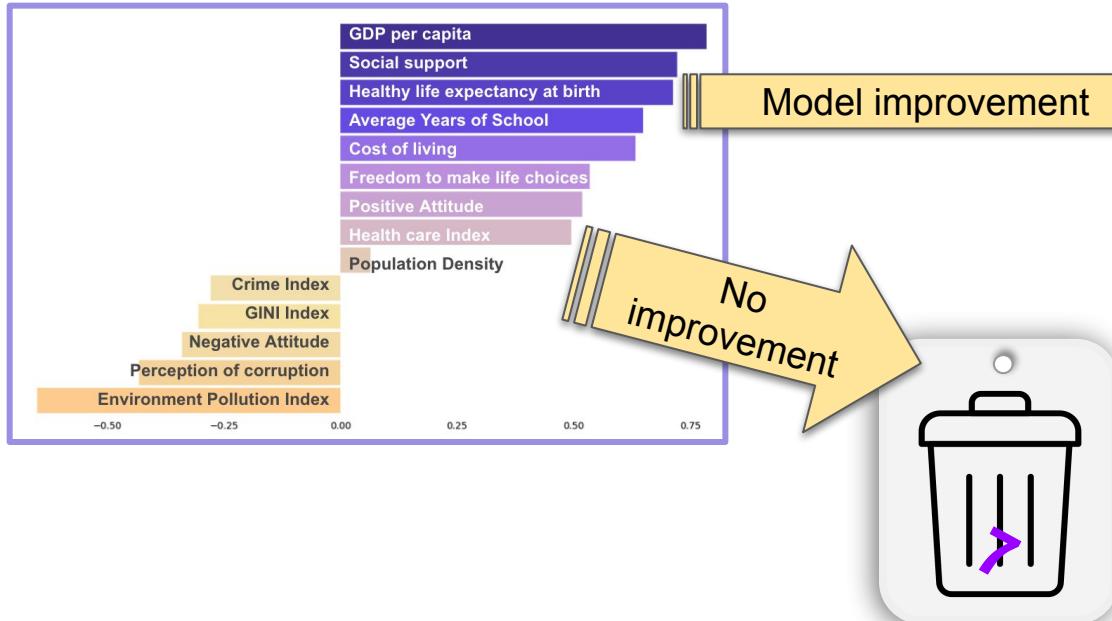
Model Performance

Average Errors	Base-model	Best Model
Absolute	0.52	
Percentage	10.2%	

Sort Out the Variables ...



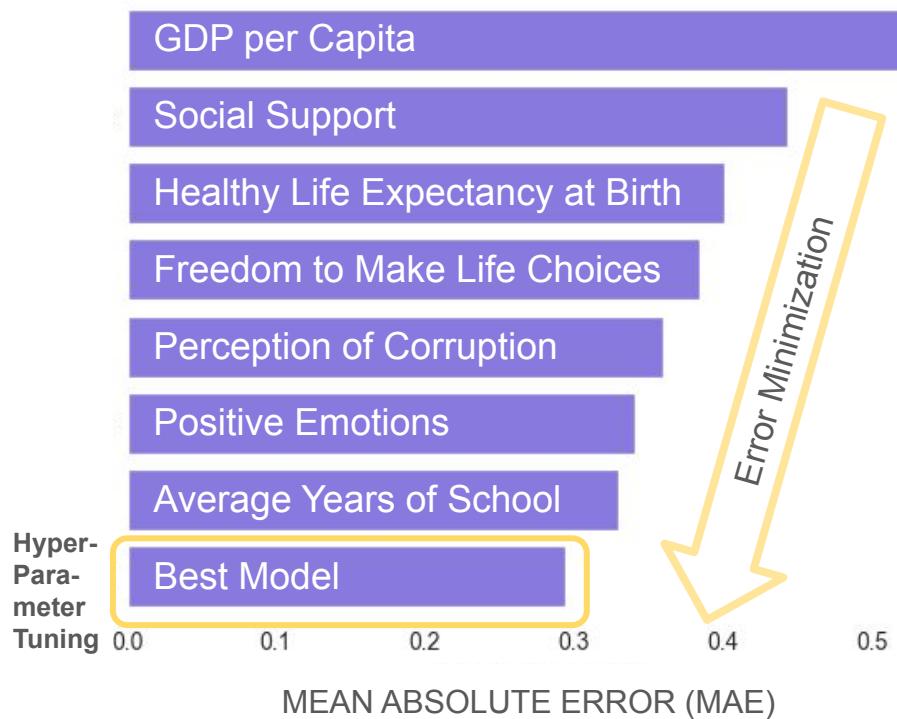
... separate the good from the bad





Best Performance Model

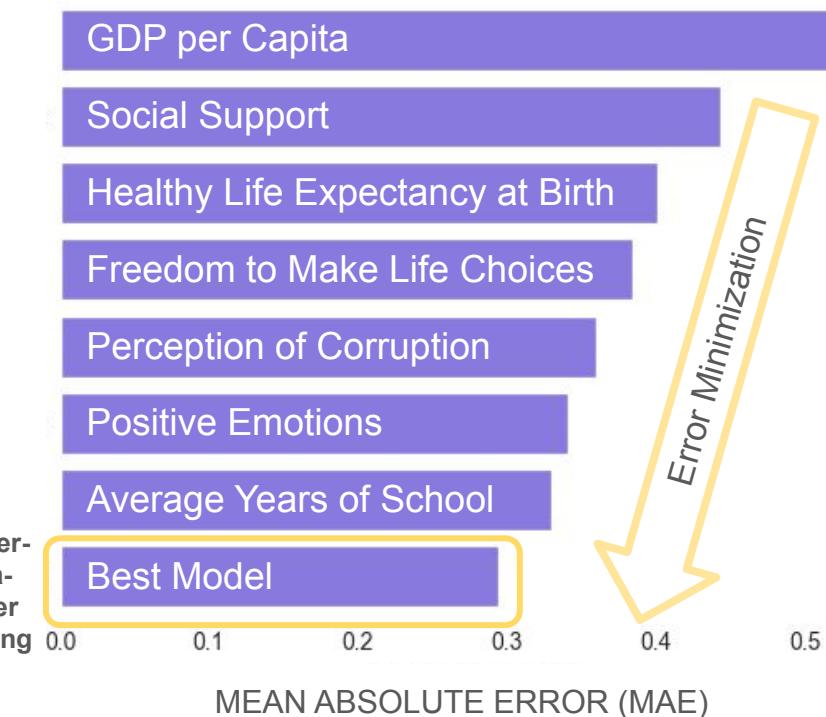
Variables added one-by-one:





Best Performance Model

Variables added one-by-one:



Algorithm: KNN

Model Performance:

Average Errors	Base-model	Best Model
Absolut	0.52	0.29
Percentage	10.2%	5,9%

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And then, while we were working...



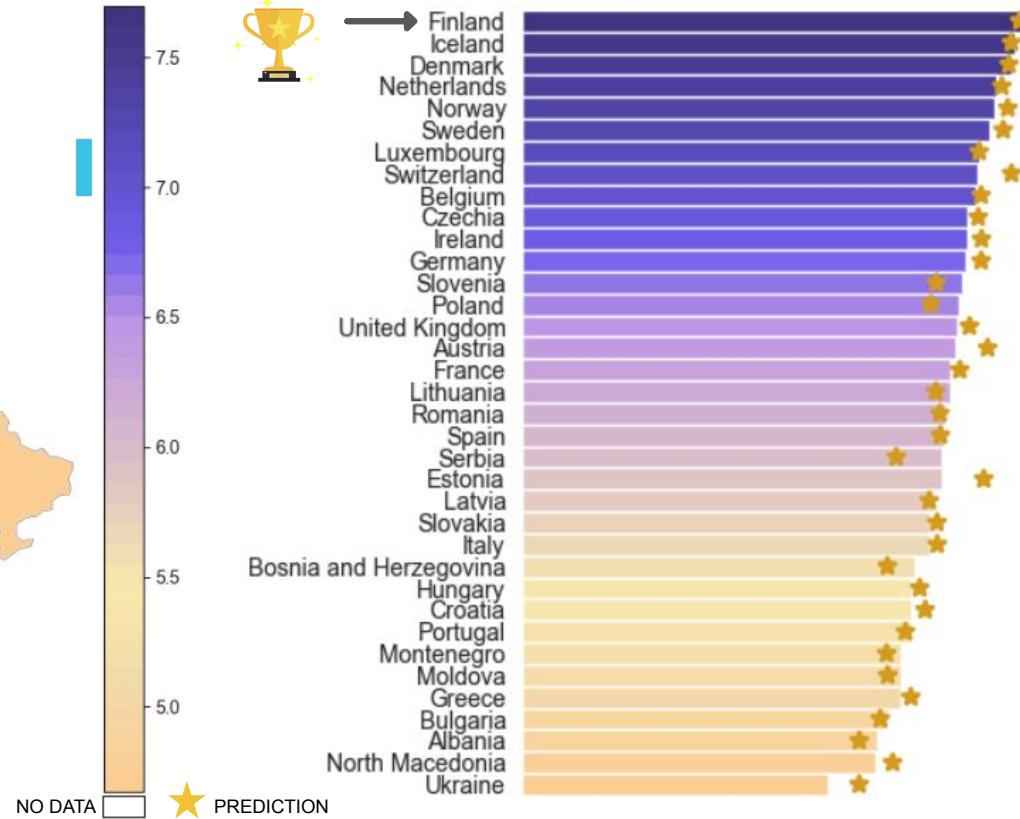
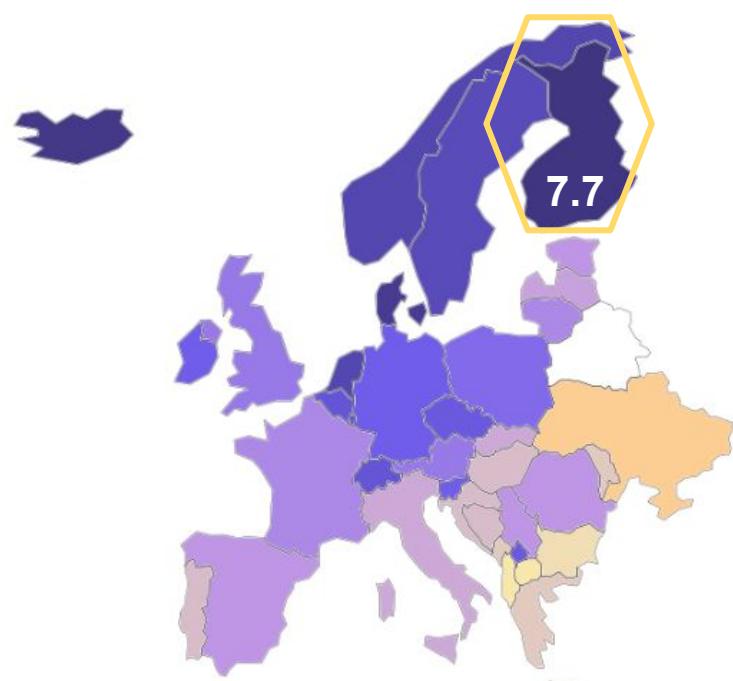
...on World Happiness Day, March 20th, 2024

... the Happiness Report for 2023 was released





Happiness Index in Europe, 2023



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OUTLOOK



Summary

Europe's Happiest Countries

DENMARK 

FINLAND 

Rest of the World's Happiest Countries

CANADA 

ISRAEL 

NEW ZEALAND 

7 Variables Enhancing Model Performance

GDP PER CAPITA

SOCIAL SUPPORT

HEALTHY LIFE EXPECTANCY AT BIRTH

FREEDOM TO MAKE LIFE CHOICES

PERCEPTION OF CORRUPTION

POSITIVE EMOTIONS

AVERAGE YEARS OF SCHOOL



Outlook: Dive Deeper



- EXPAND INSIGHTS...

DENMARK, FINLAND, EUROPE, ... THE WEST ...

got it “right” 

BLUEPRINT... uncover more factors... better
predictors...

- FURTHER UNDERSTANDING

BIAS ... western ideals, phrasing

HAPPINESS ... correct metric or not?



THANKS FOR YOUR ATTENTION!



Happy AI MaNa

Introduction- Why?- The pursuit of Happiness is shared by all humans. Where could you go to maximize the likelihood of being happy? A brief description of data, contents, time, collection methods?

Goal is to test our hypothesis- The higher the GDP, social support , and the lower the perception of corruption, the happier country

E D A- dataset more detailed description.

Table of

- Out target= Life Ladder,
- Features= log of GDP per capita, Social Support, Healthy Life Expectancy at Birth, Freedom to Make Life Choices,, Perceptions of Corruption, Gini Index,
- no of observations= 2199
- what's missing, top/bottom ranking 5 for each feature?, changes over time for particular country)

Visuals - Features at a Glance

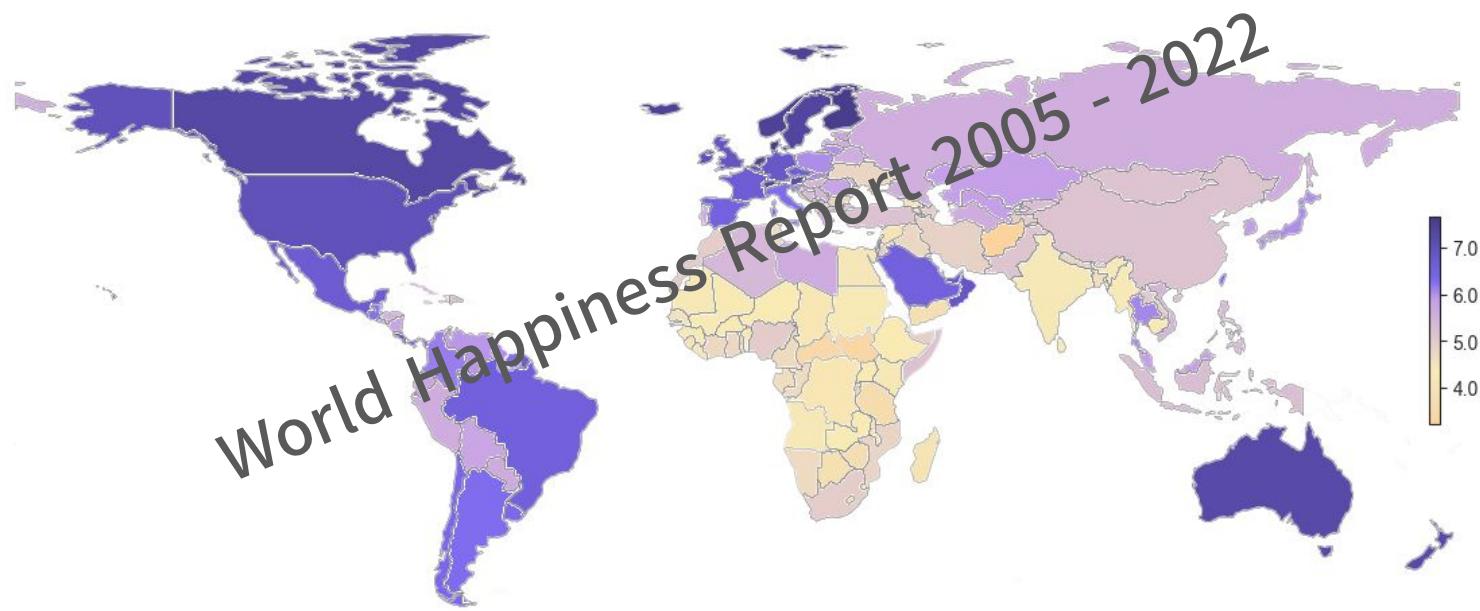
1. Histogram w/ top 10, bottom 10 (life ladder, across all years) 2. Life ladder, (Improved the most, deteriorated most) 3. Life Ladder vs. GDP 4. Social Support 5. Healthy Life expectancy 6. Feature importance

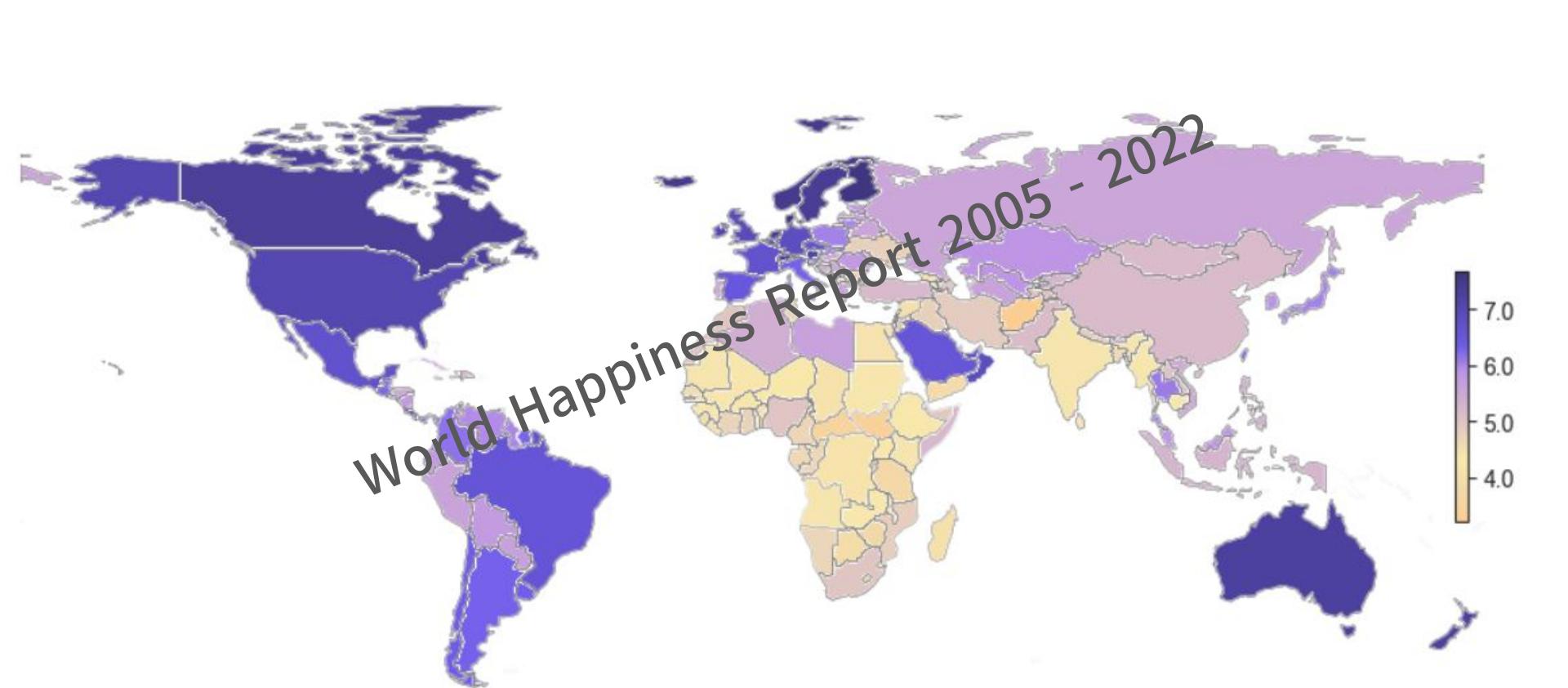
hypothesis/baseline model

model selection

optimization

results, possible improvements, future prospects- Bias European/Western Perspective





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SUMMARY



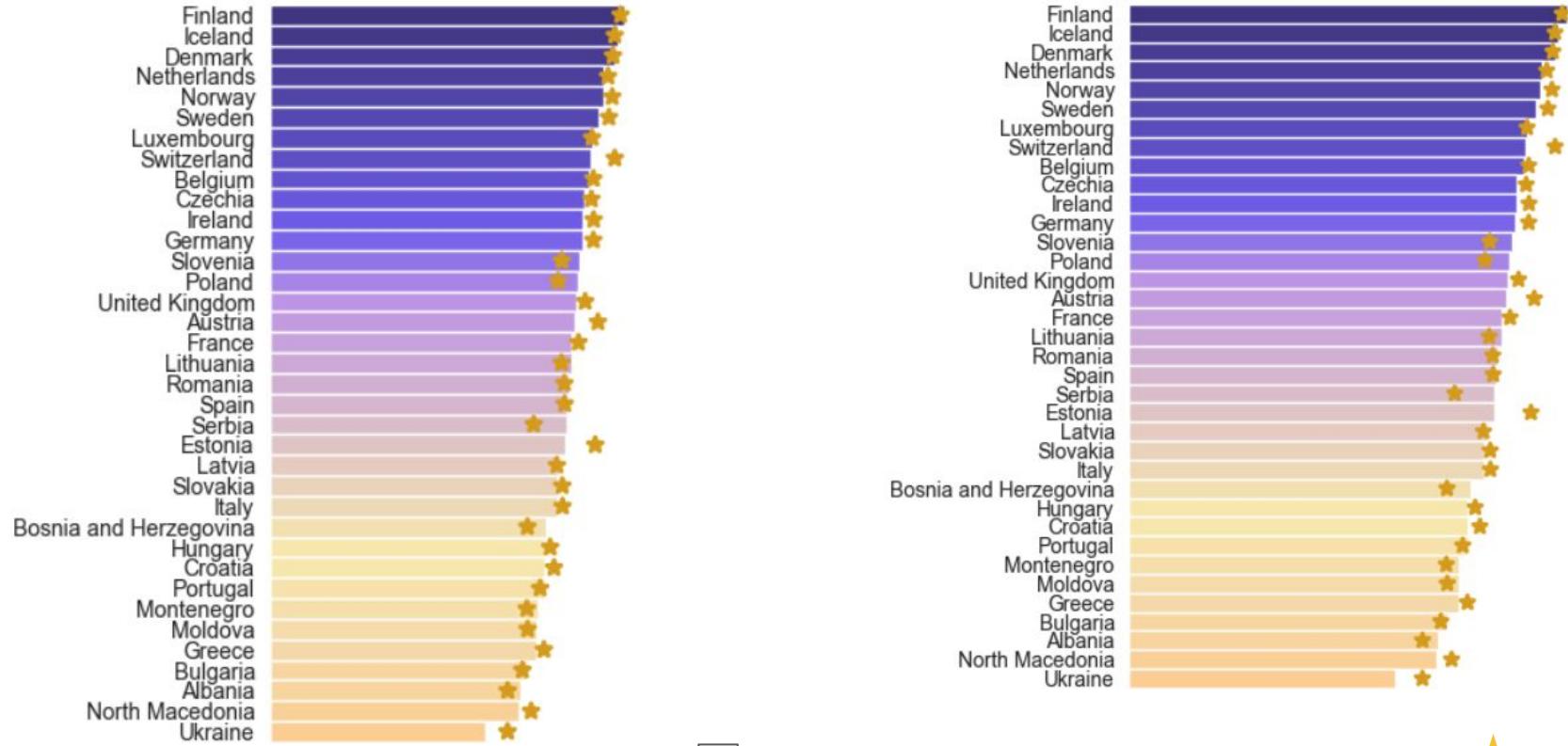
05

OUTLOOK





Happiness Index in Europe, 2023

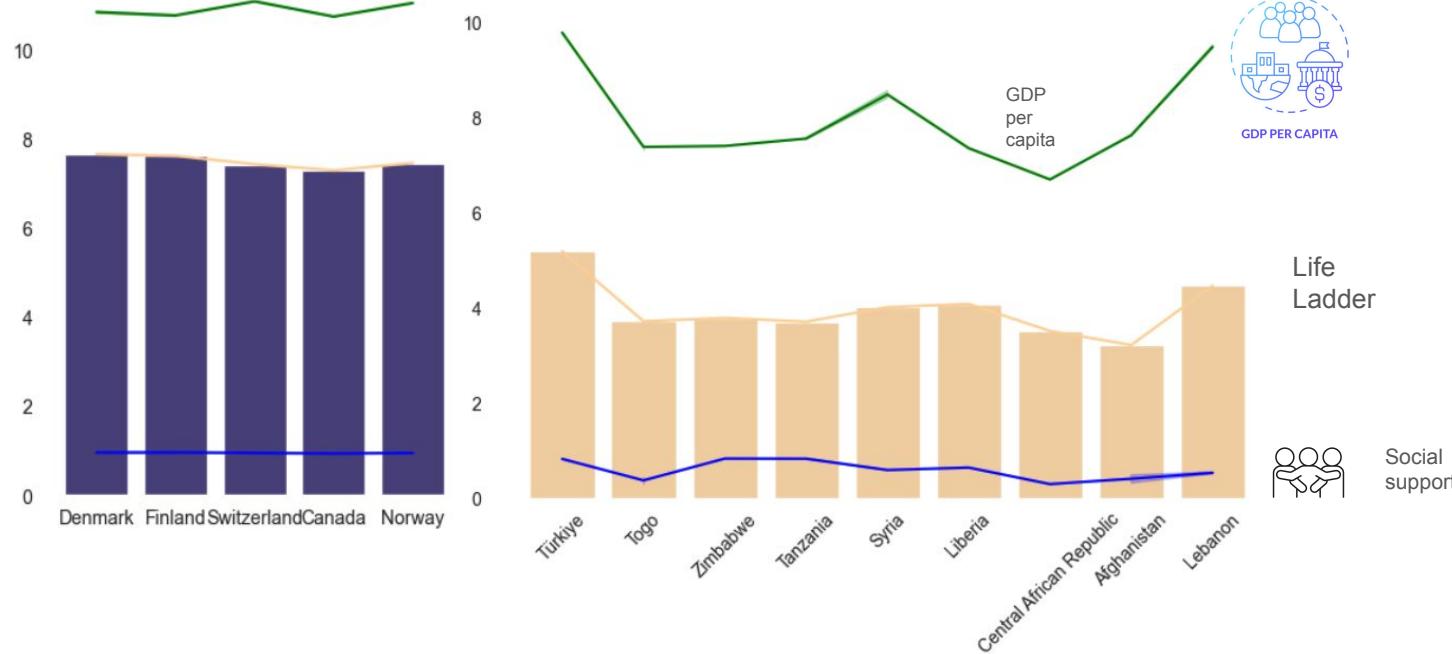


★ Prediction



Similar Traits found in Happiest/Unhappiest

Similar traits found in both the happiest and least happy nations



More Datasets...

Our consideration was that values such as

- (Chance of) Education
- income
- population density
- Criminality (safe live)
- inequality
- environmental impact

have an influence on the Happiness index.

We therefore looked for other data sets that evaluate these topics.

World Happiness Report

- Yearly Reports on Happiness for 17 Years (2005 - 2022)
- 165 Participating Countries in Total
- Perception Data from Surveys conducted by Gallup, Inc.
- Key Indicators based on Questionnaire (incl. 'yes/no' Questions)
 - Life Ladder
 - Social Support
 - Freedom to Make Life Choices
- Country Data from World Bank
 - GDP per Capita
 - Healthy life expectancy at birth

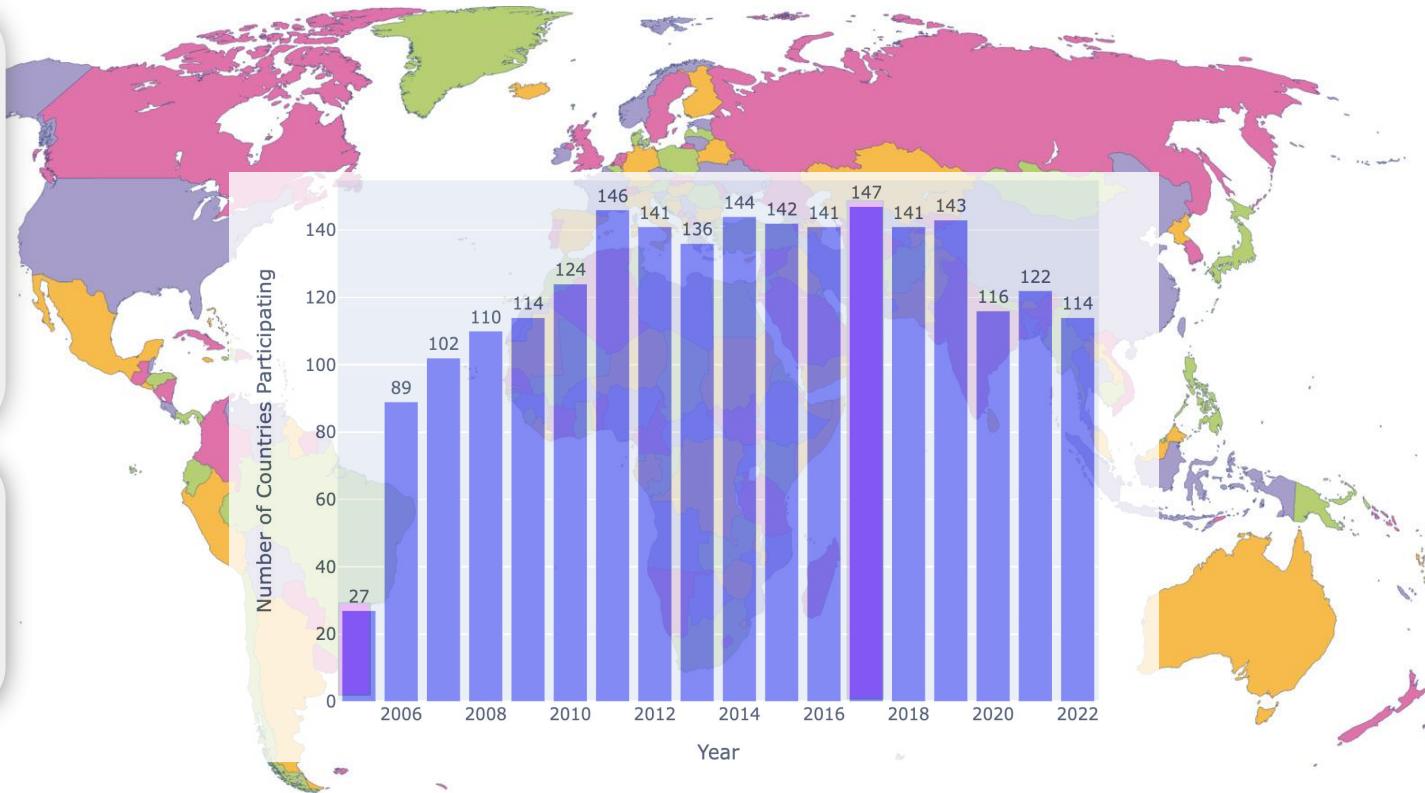
World Happiness Report

17

Annual
World
Happiness
Reports
(2005 – 2022)

165

Countries
in total
not every year





Happiest Countries, Winners



Finland



Denmark



Canada



Norway

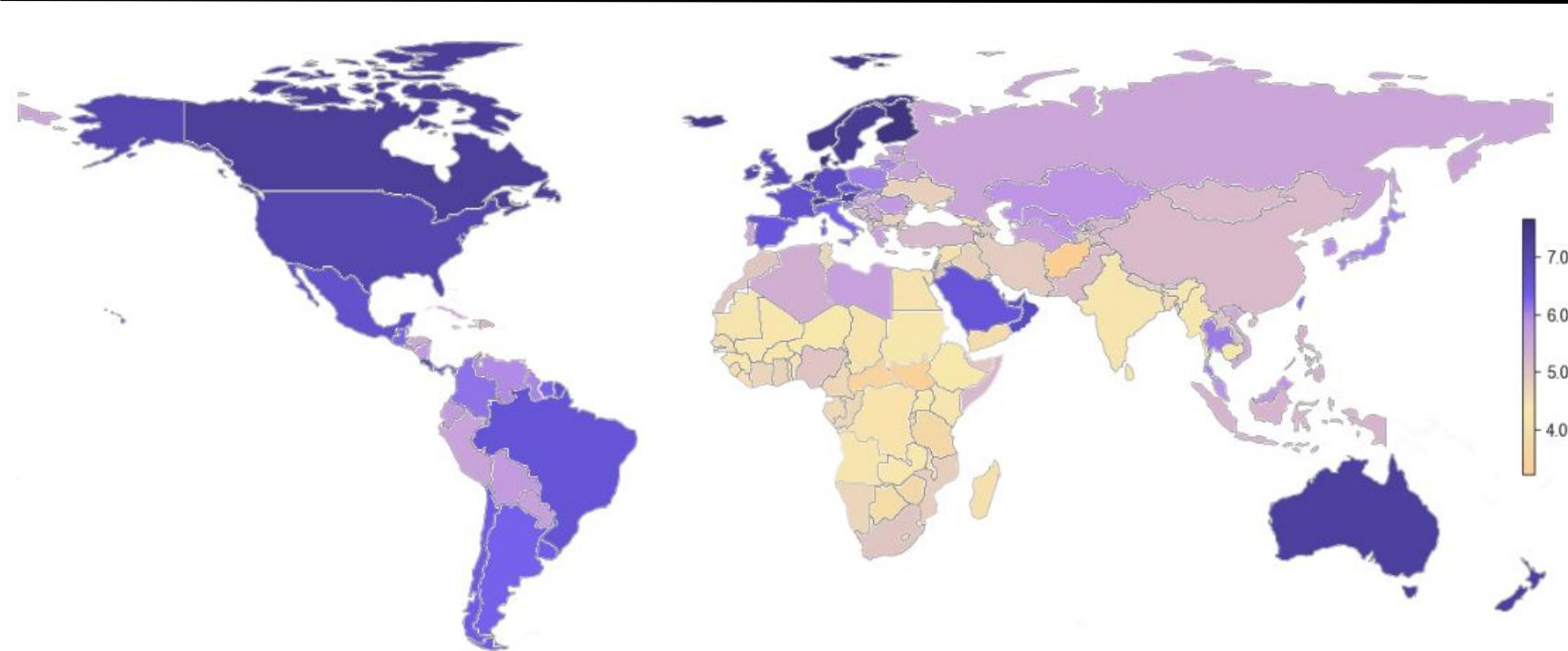


Switzerland



World Happiness Report

- Write how many years explicitly
- Make easier to read somehow
- Perhaps 2 slides or diagram
- 2 Slides



- show only winners
- Winner Europe/winner rest of world
- Get rid of title, get rid of graph borders

Happiest Countries



Finland



Canada



Denmark



Israel



Norway



New Zealand



Switzerland



Costa Rica



Australia

0 2 4 6 8 0 1 2 3 4 5 6

Happiest Countries



Denmark



Finland



Norway



Switzerland



Canada



Israel



New Zealand



Costa Rica



Australia

More Datasets...

Zu
Intro???

- Population density (calculated)
- Gini index (gallup/World Bank)
- Quality of life index (numbeo):
 - Purchasing_power_index
 - Health_care_index
 - Cost_of_living_index
 - Pollution_index
 - Crime index
- Human development index
 - Expected years of school (chance of education)