

## **TERM PROJECT 2:**

### **FACTORS CONTRIBUTING TO A NATION'S HAPPINESS**

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# AGENDA

Analytic Background & Goals

ETL Pipeline

KNIME Workflow

Visualization

Analysis

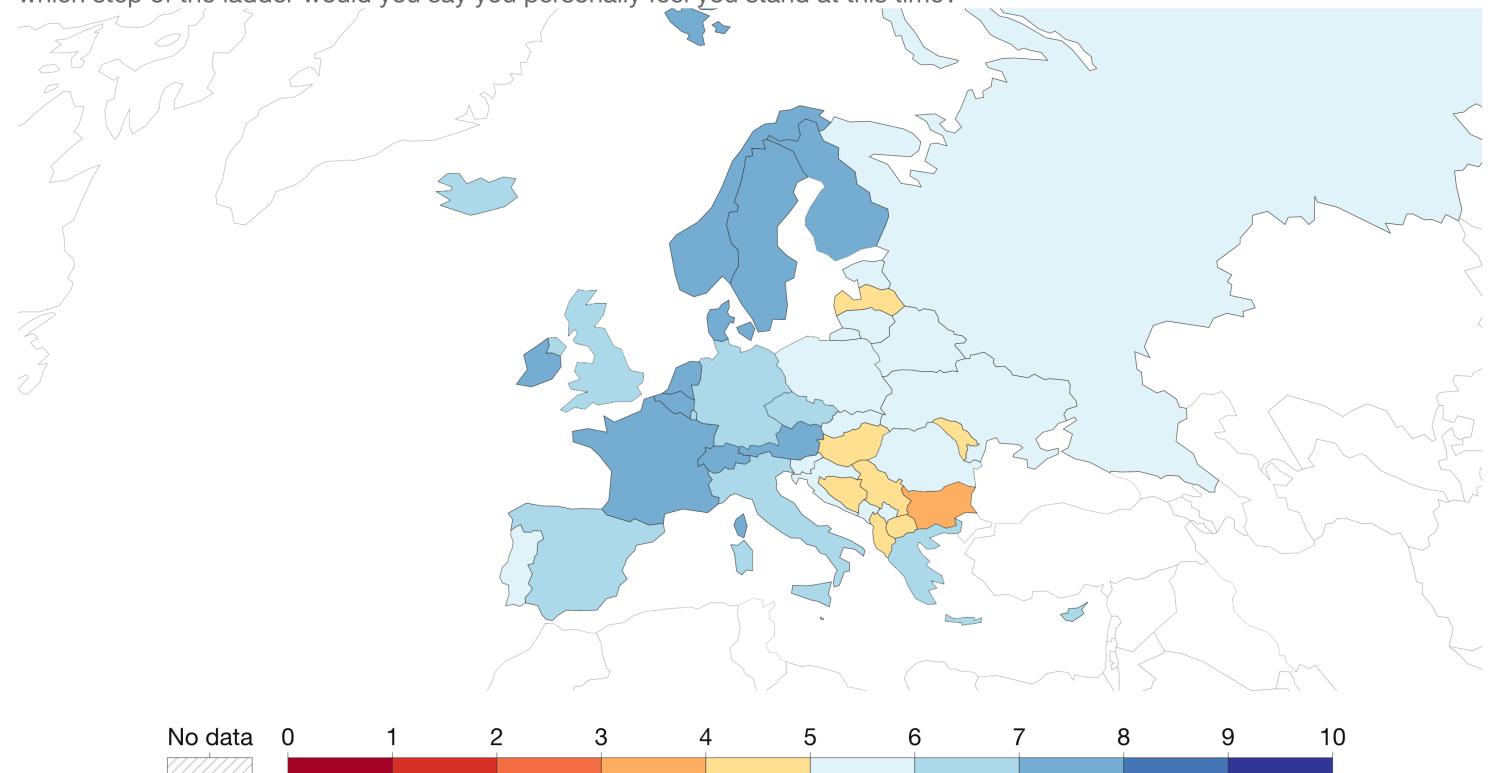
Results / Summary

# ARE PEOPLE HAPPIER THEN EVER?

## Self-reported life satisfaction, 2005

Our World  
in Data

"Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"



Source: World Happiness Report (2022)

Note: The value shown in a given year is the average of that year, the previous year and the following year.

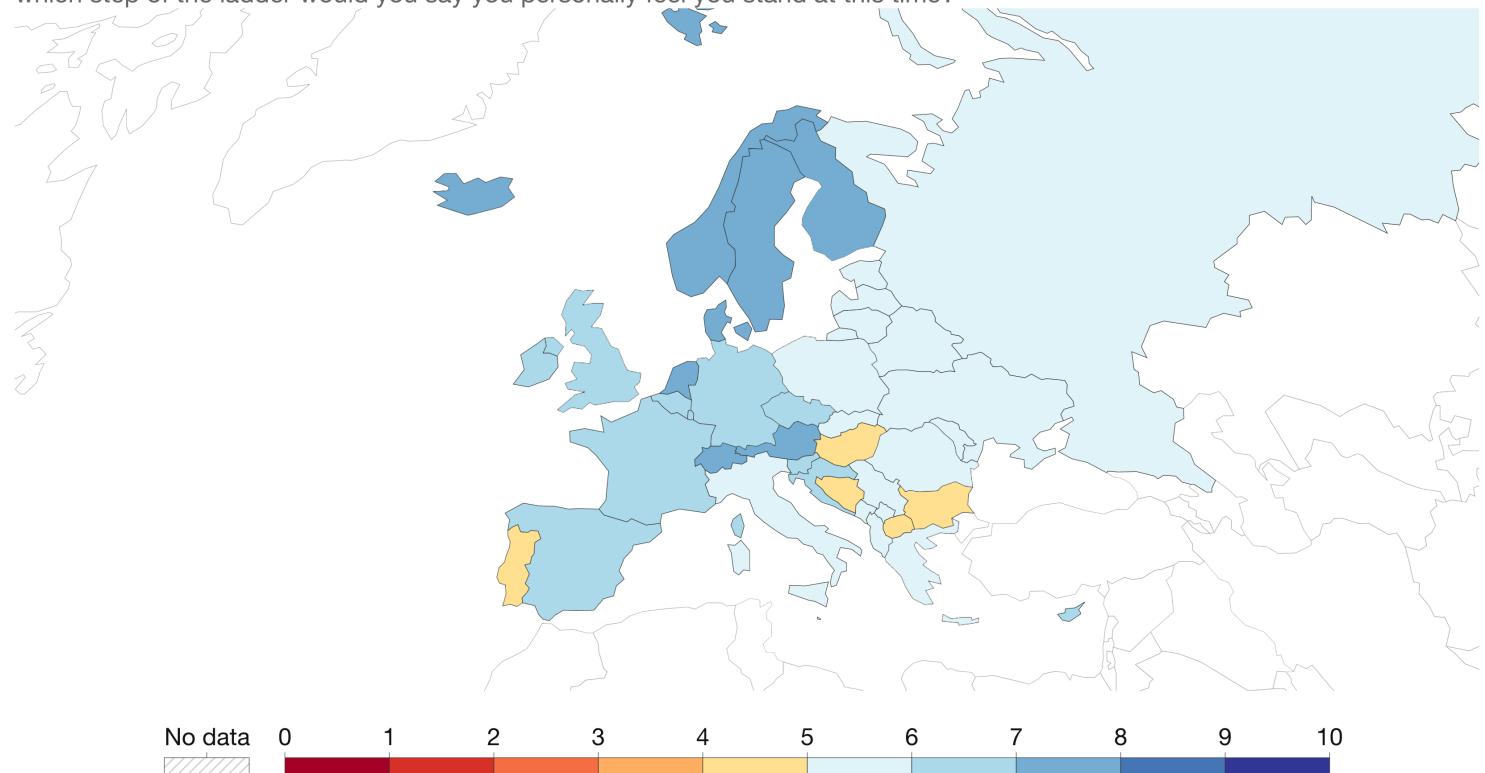
[OurWorldInData.org/happiness-and-life-satisfaction/](https://OurWorldInData.org/happiness-and-life-satisfaction/) • CC BY

# ARE PEOPLE HAPPIER THEN EVER?

## Self-reported life satisfaction, 2010

Our World  
in Data

"Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"



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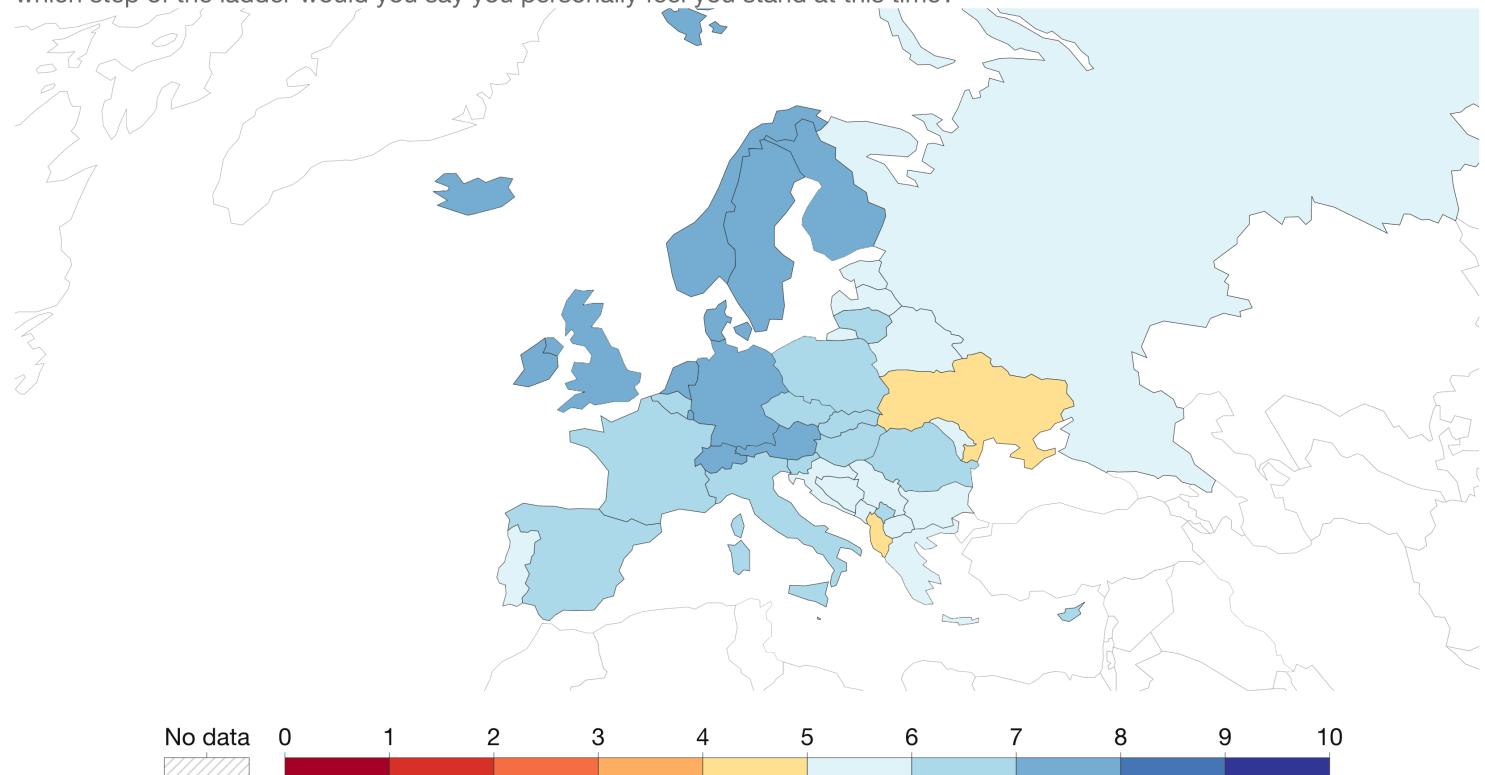
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# ARE PEOPLE HAPPIER THEN EVER?

## Self-reported life satisfaction, 2015

Our World  
in Data

"Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"



Source: World Happiness Report (2022)

Note: The value shown in a given year is the average of that year, the previous year and the following year.

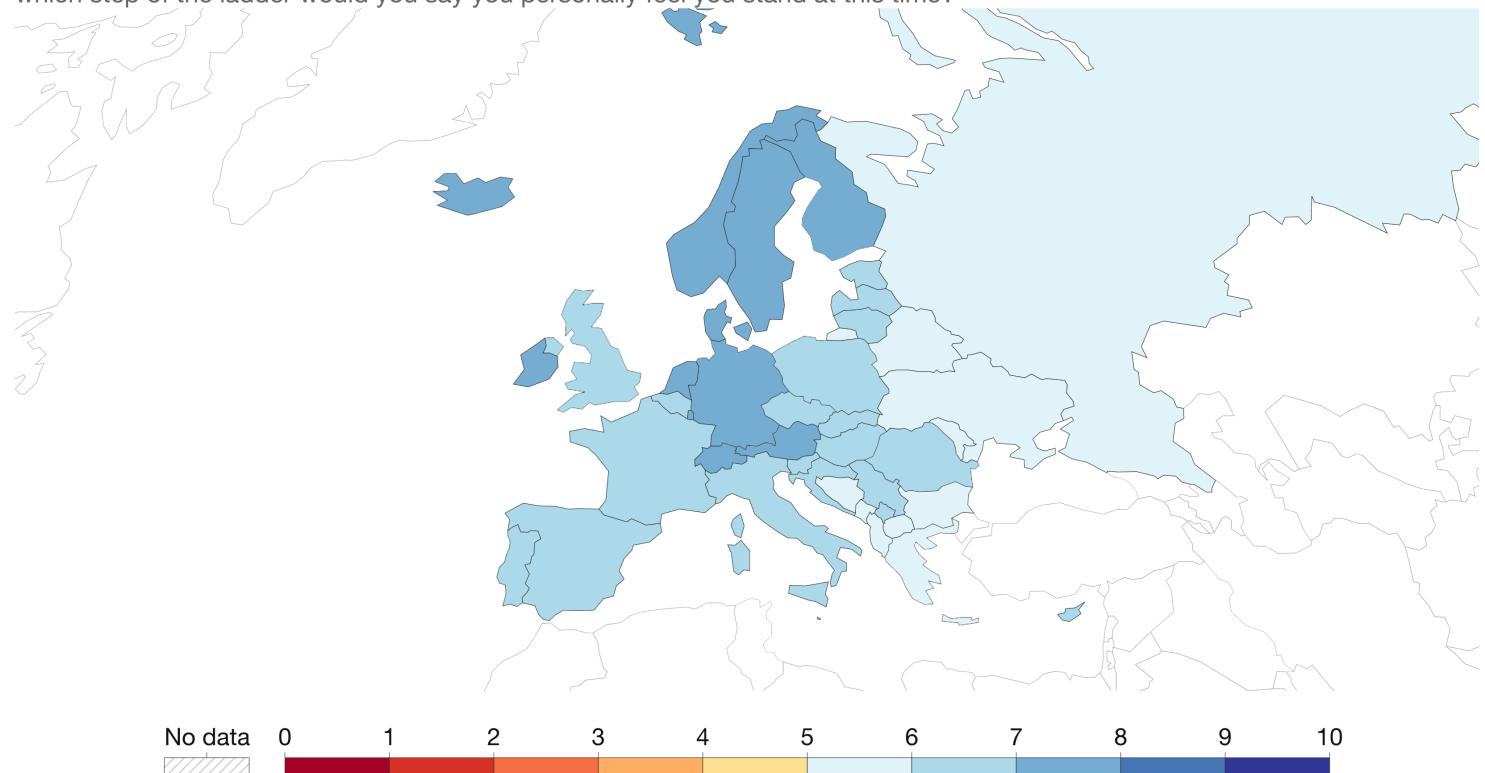
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# ARE PEOPLE HAPPIER THEN EVER?

## Self-reported life satisfaction, 2020

Our World  
in Data

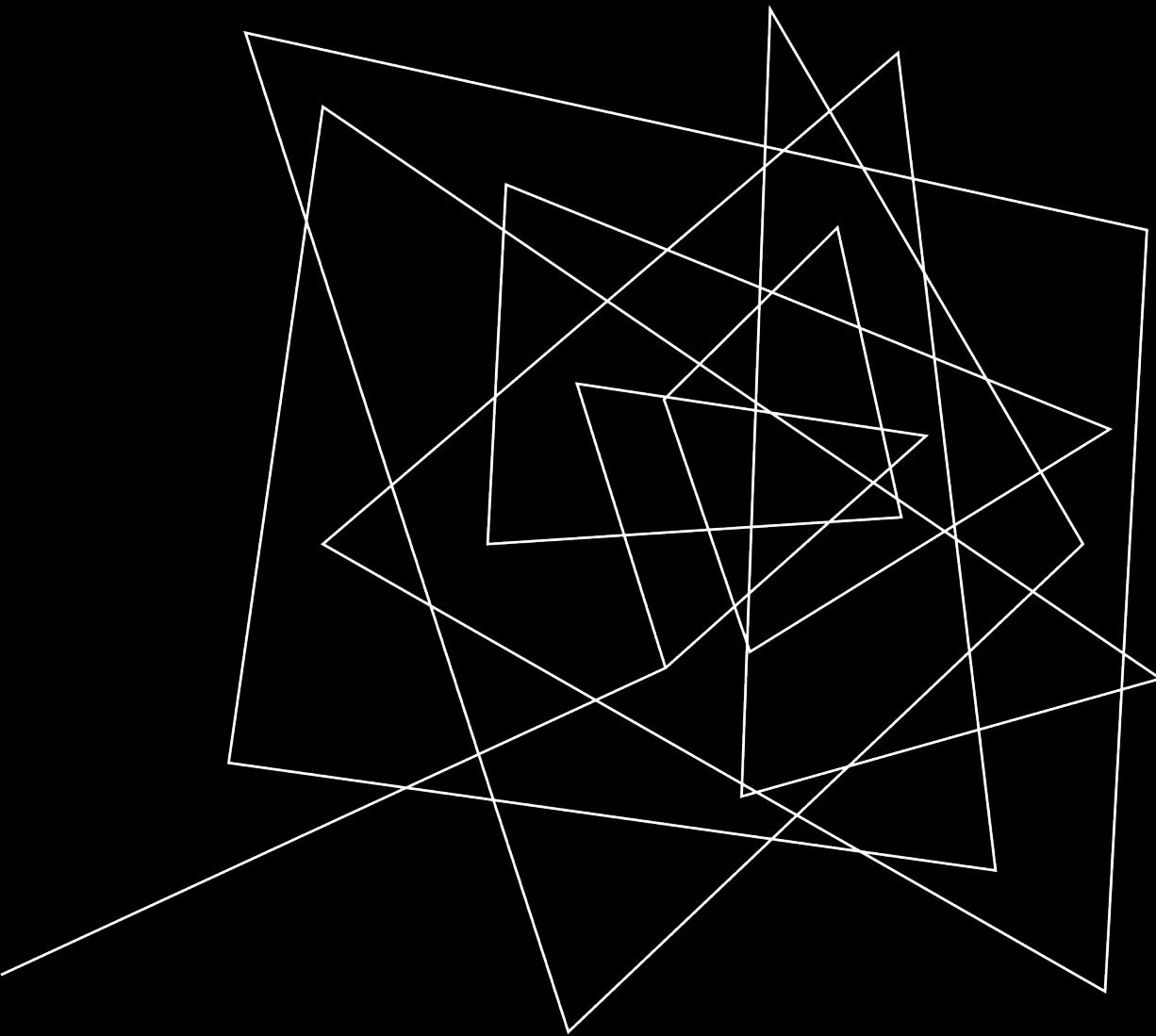
"Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"



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[OurWorldInData.org/happiness-and-life-satisfaction/](https://OurWorldInData.org/happiness-and-life-satisfaction/) • CC BY



# ANALYTIC GOALS

What make Europeans happy?

# WE ARE INTERESTED IN...

Aspect 1

Economic (*GDP per capita*)

Aspect 2

Freedom of Press (*Press freedom score*)

Aspect 3

Education (*Percentage of people having tertiary education level*)

Aspect 4

Population Density (*Population density per square km*)

*Happiness - a combination of positive feelings that provide a general sense of satisfaction.*

## ANALYTICS QUESTIONS

- Which European country has the highest / lowest happiness level?
- How does each of the social aspects affect people's happiness?
- Is there any correlation between the education level, GDP per capita, press freedom, population density and corruption within the country?

*Happiness - a combination of positive feelings that provide a general sense of satisfaction.*

## DATA SOURCES

[Happiness Data](#)

From Kaggle.com

[World Press index](#)

From Kaggle.com

[Country Code](#)

From Kaggle.com

[Population Stat](#)

From Kaggle.com

[Percentage of Education level](#)

From Eurostat API requesting (JSONs)

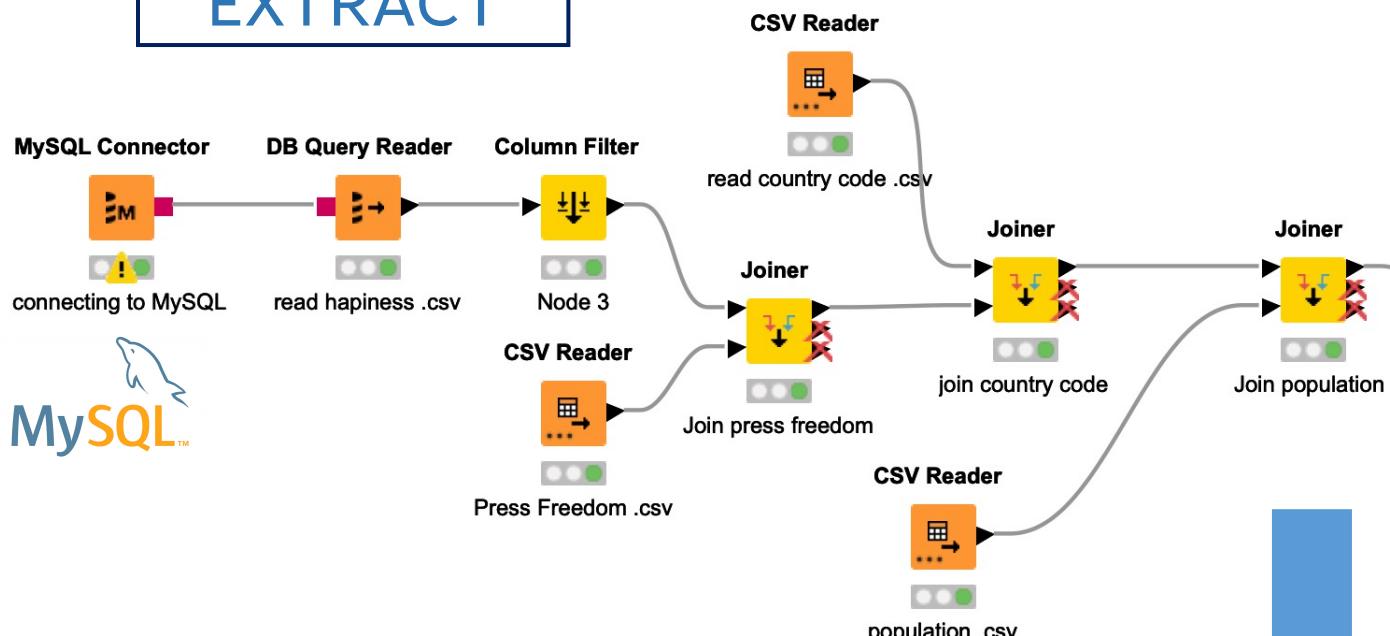
# TOOLS

PRESENTATION TITLE

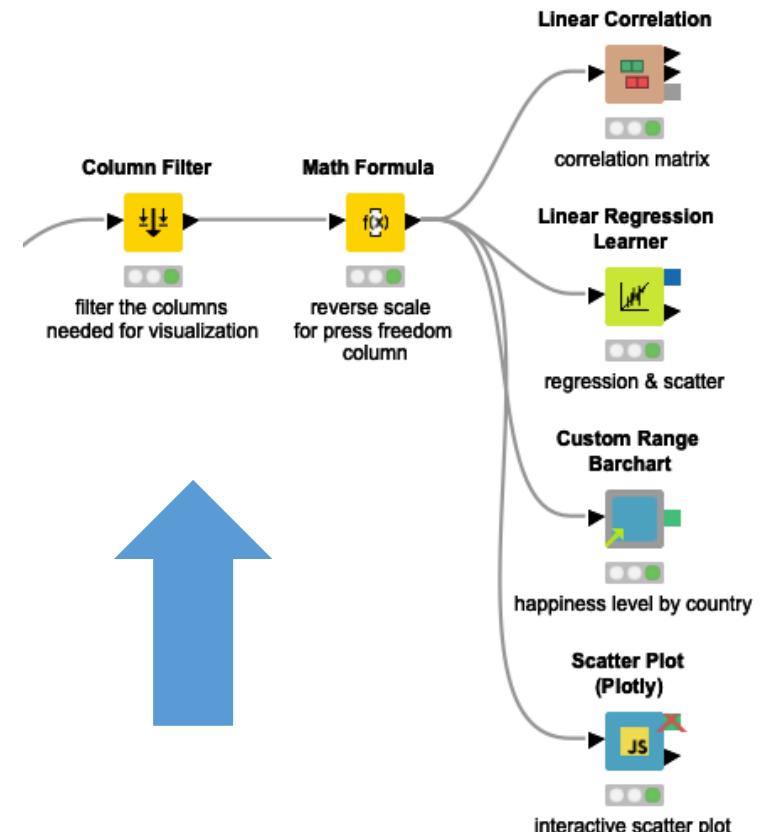


# ETL PIPELINE

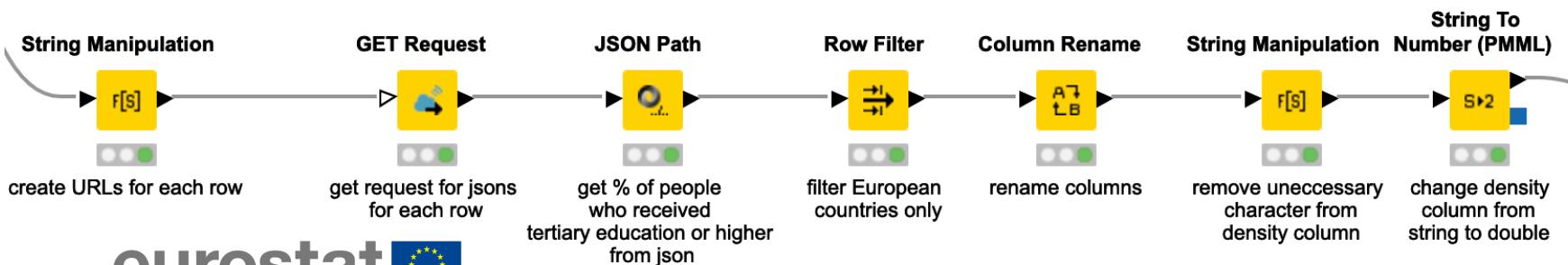
## EXTRACT



## LOAD

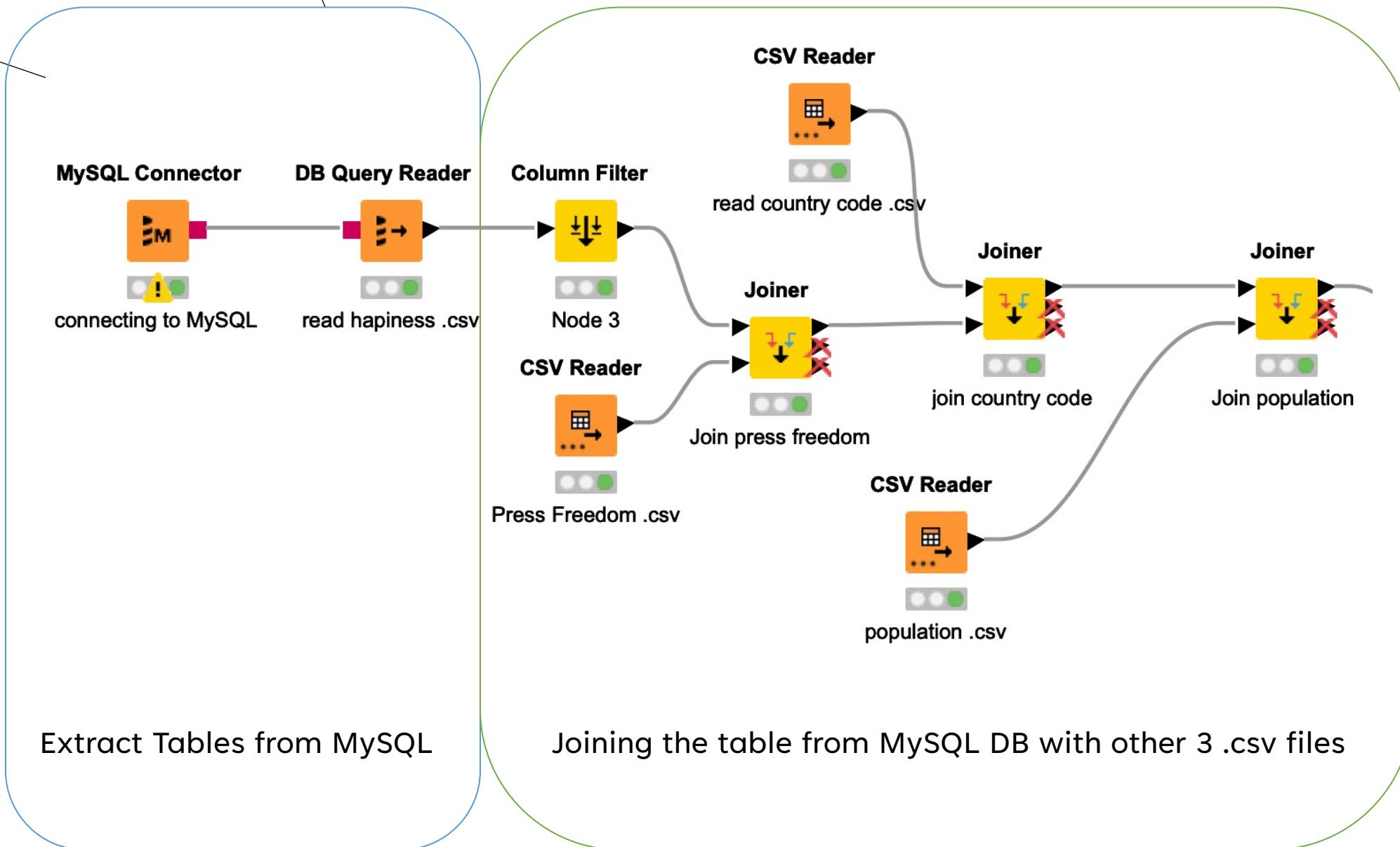


## TRANSFORM

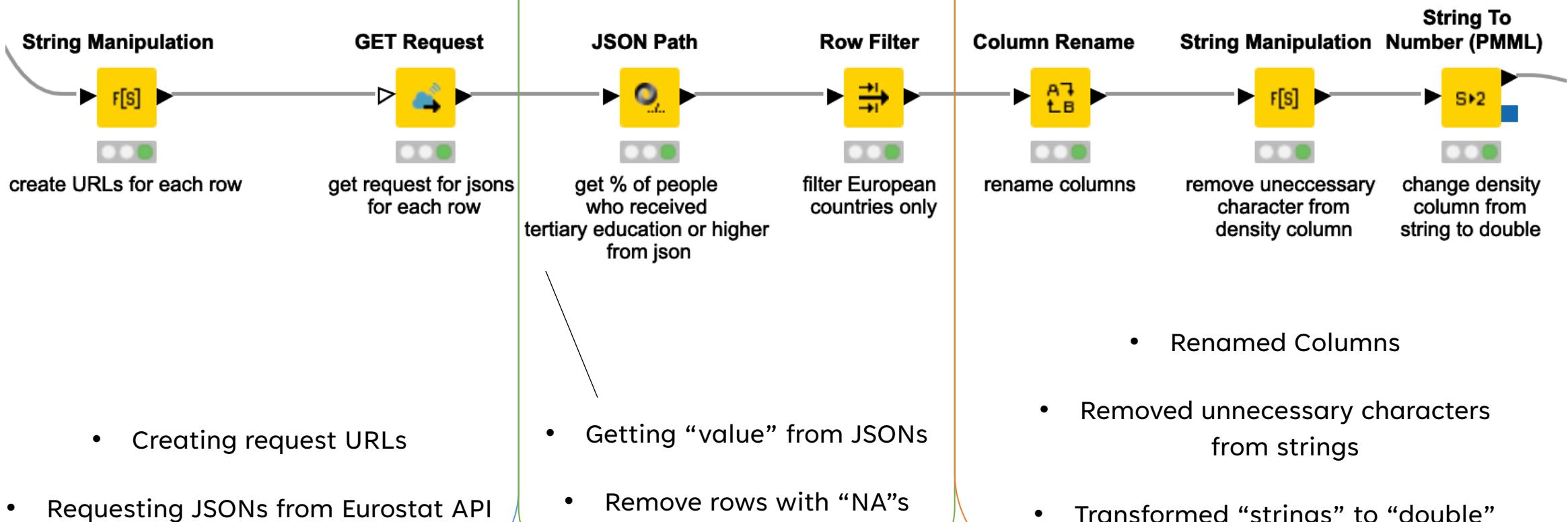


eurostat

# KNIME WORKFLOW - EXTRACT

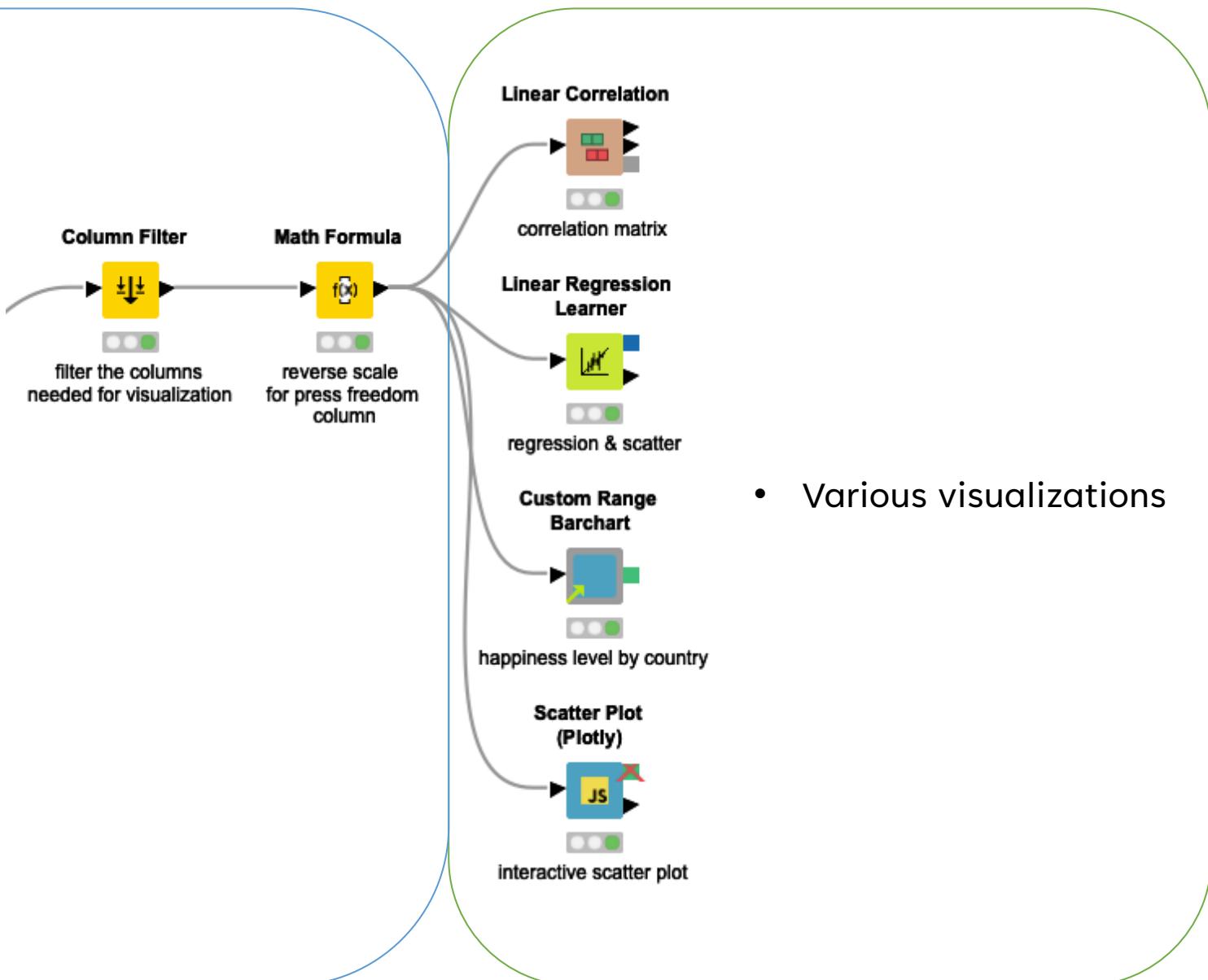


# KNIME WORKFLOW - TRANSFORM



# KNIME WORKFLOW - LOAD

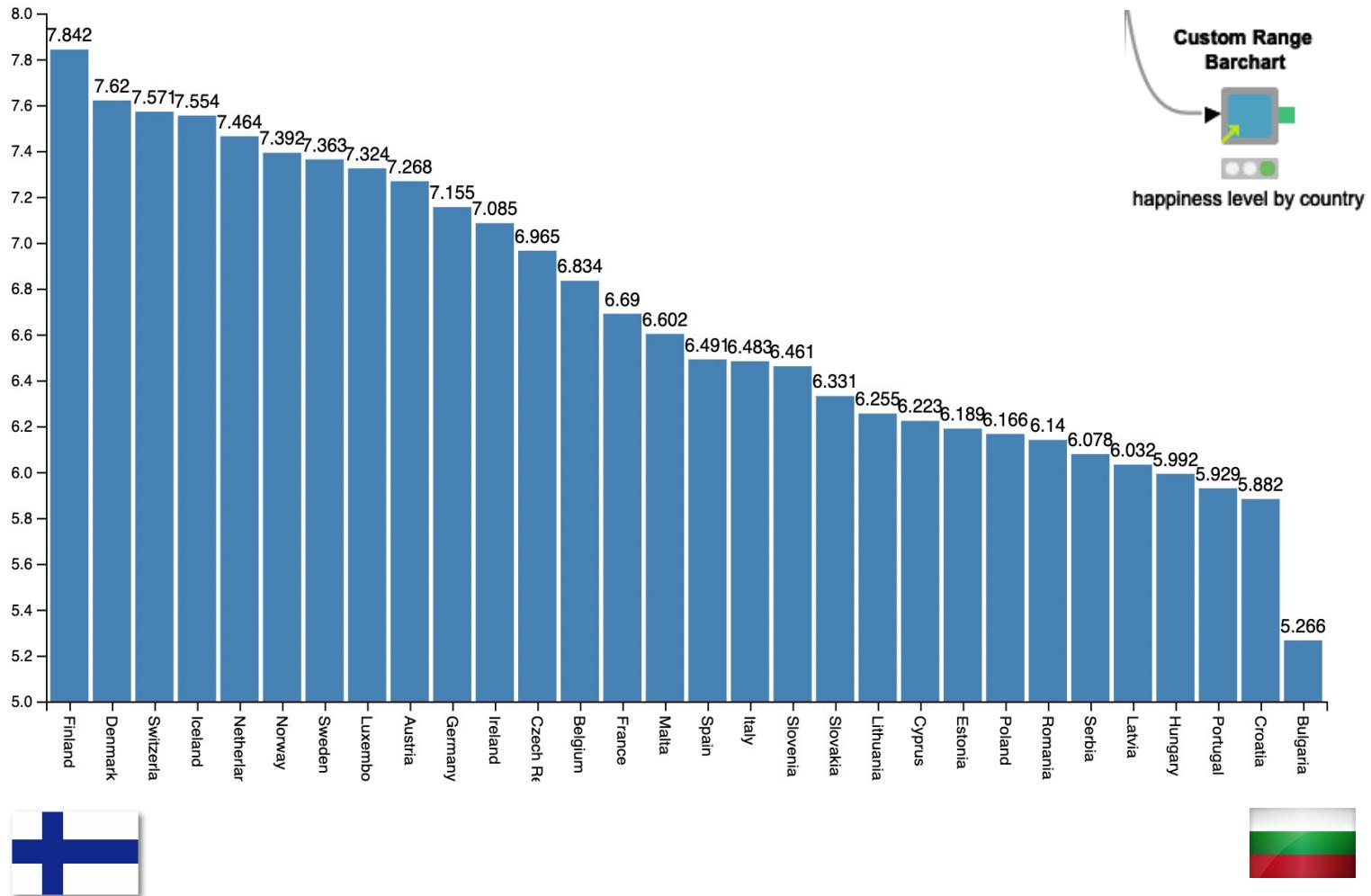
- Loading necessary columns into data warehouse
- Reverse Column Scale to facilitate visualization





# FINDINGS

# WHICH EUROPEAN COUNTRY HAVE THE HAPPIEST PEOPLE IN 2021?



From 30 European countries:

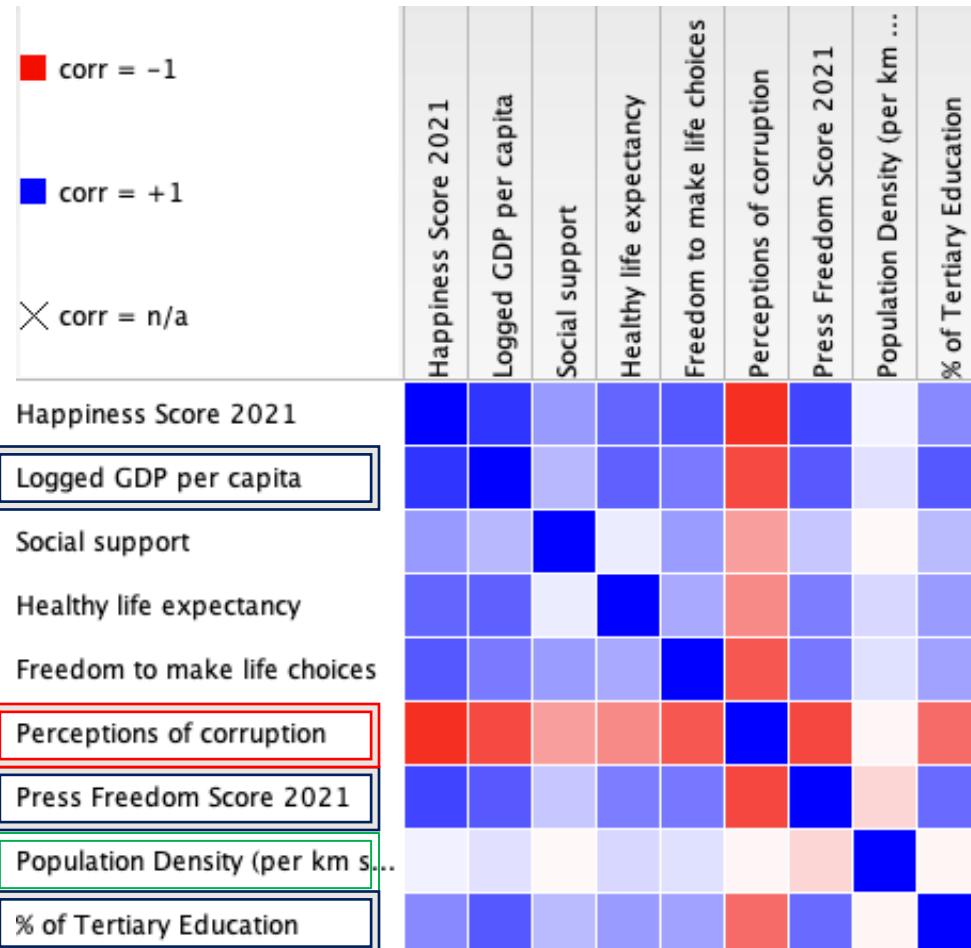
- Finland is the happiest in Europe.
- Bulgaria is the least happy country in Europe.

Linear Correlation



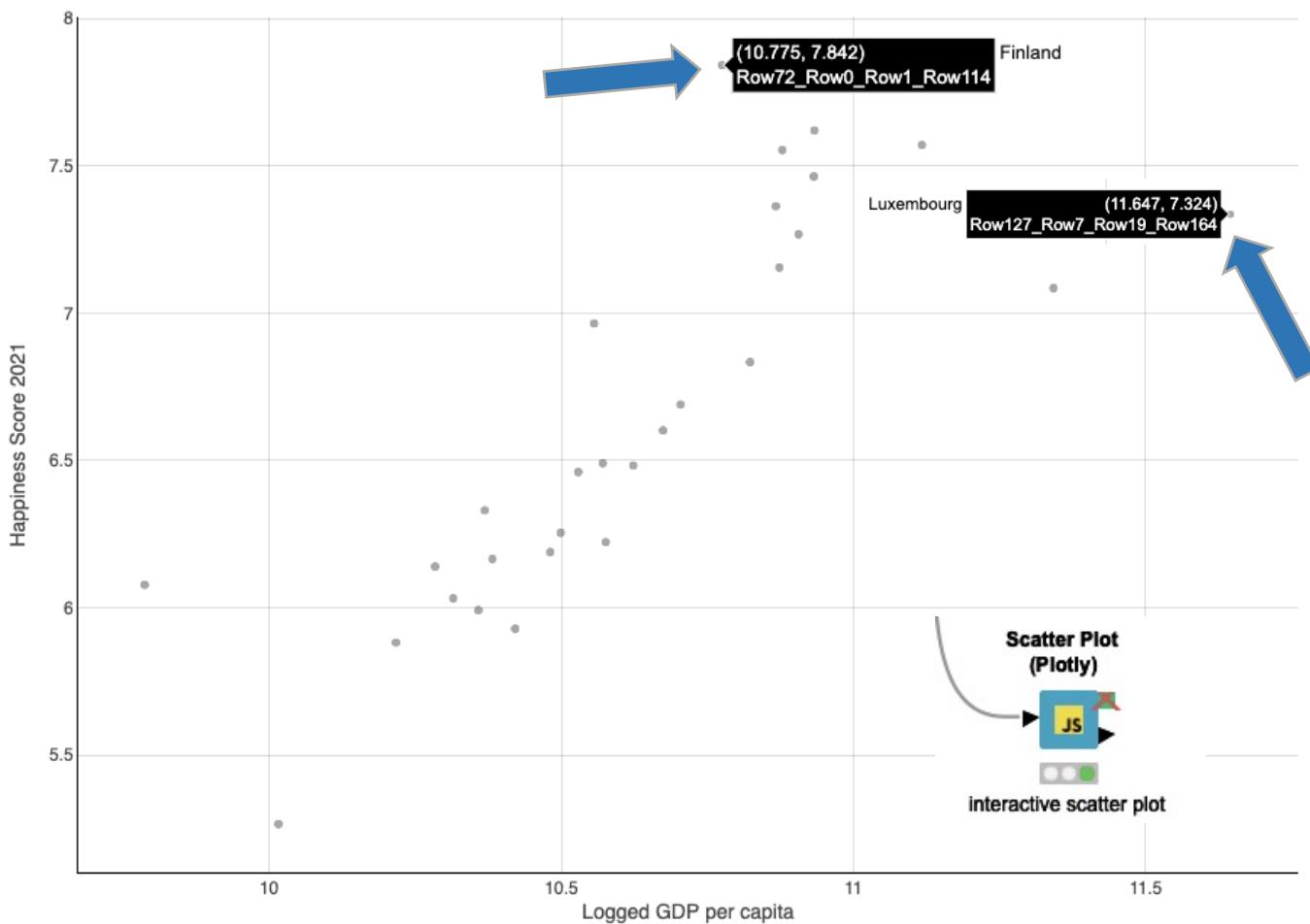
correlation matrix

## CORRELATIONS BETWEEN INDICATORS



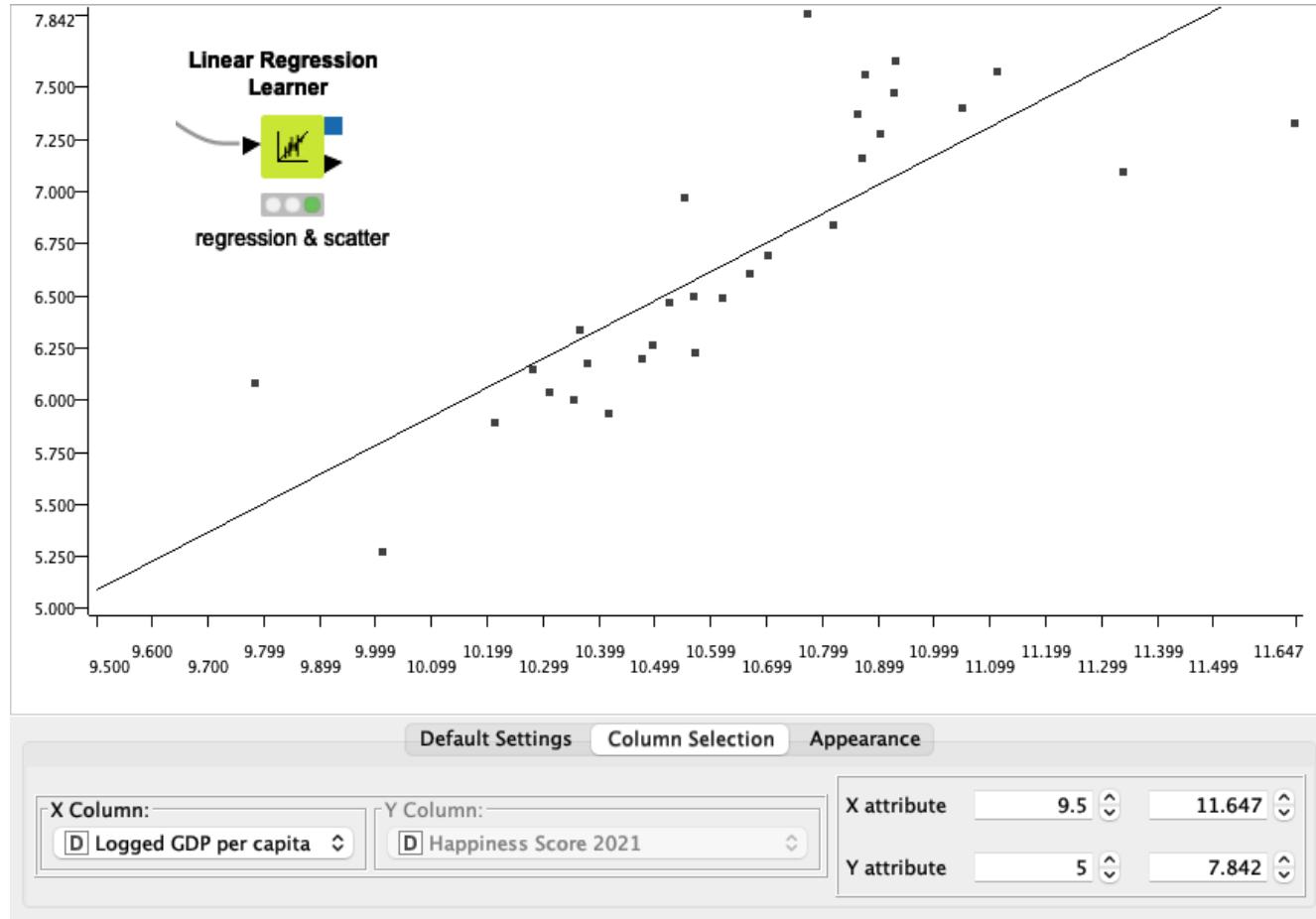
- Strong positive correlation between GDP per capita and happiness score (corr. coeff = 0.81)
- Strong positive correlation between Freedom of Press and happiness score (corr. coeff = 0.75)
- Strong negative correlation between Corruption and happiness score (corr. coeff = -0.85)
- Weak correlation between Population Density and happiness score (corr. coeff = 0.06)
- Mild positive correlation between percentage of tertiary education level and happiness score (corr. coeff = 0.50), but not as strong as other factors

# SCATTER PLOT OF EUROPEAN COUNTRIES BY HAPPINESS SCORE AND GDP PER CAPITA.



- Luxembourg has the highest GDP per capita in Europe however, it is not the happiest country in Europe.
- Finland's GDP per capita is not the highest but its scores of happiness are the highest.
- To see insight, we run the regression between GDP per capita and happiness score.

# LINEAR REGRESSION BETWEEN GDP PER CAPITA AND HAPPINESS SCORE



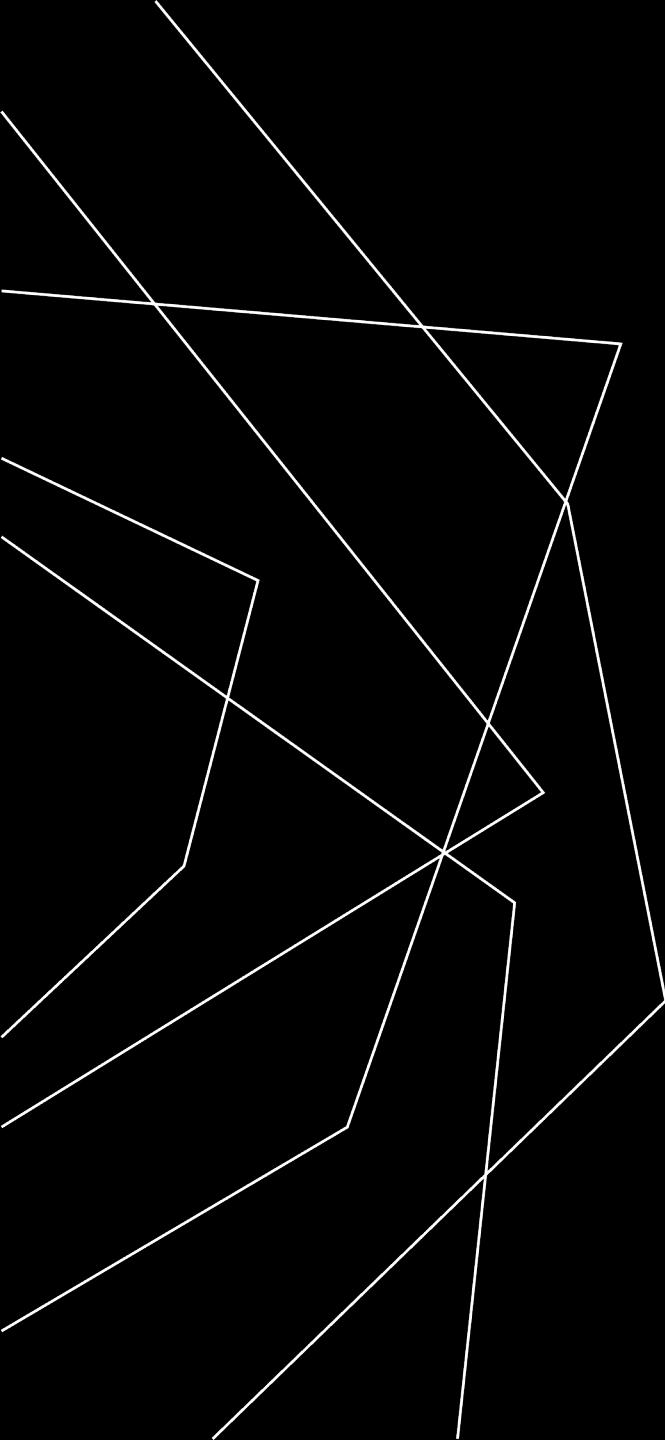
- The higher GDP per capita it is more likely to be happier in the country.
- Countries on the left have other social aspects which make them happier than the expected happiness as estimated by the regression line
- Countries on the right have other social aspects which make them less happy than the expected happiness as estimated by the regression line

X= GDP PER CAPITA BY COUNTRY  
Y= HAPPINESS SCORE BY COUNTRY

# PROJECT SUMMARY

Positively Correlated Aspects	Negatively Correlated Aspect
Socio-Economic (+0.8)	Corruptions (-0.85)
Freedom of Press (+0.75)	
Freedom to make life choice (+0.68)	
Health (+0.64)	
Education (+0.50)	
Social Support (+0.43)	
Population Density (+0.06)	

- Finland is the happiest country in Europe, while Bulgaria is the least happy.
- Socio-Economic status of a country is one of the aspects which have the highest positive correlation to the people's happiness level.
- Population Density of a country do not have a significant correlation with people's level of happiness.



THANK YOU