Visualization Project

Sonal Lakhotia – 14913835 (sonal.lakhotia@stud.uni-goettingen.de)
Leander Feldmann – (leander.feldmann@stud.uni-goettingen.de)

Topic:

Impact and Consequences of Covid-19 around the World - identifying factors that led to high death rates, and estimating how to combat with such a pandemic in the future.

Dataset Source and Format:

- Our world in Data / Covid-19-data (updated daily) –
  https://github.com/owid/covid-19-data/tree/master/public/data

- We used the **CSV** format.

- Dataset shape – (336118, 67)

Dataset Overview:

iso_code	continent	location	date	total_cases	new_cases	new_cases_smoothed	total_deaths
AFG	Asia	Afghanistan	2020-01-03	NaN	0.0	NaN	NaN
AFG	Asia	Afghanistan	2020-01-04	NaN	0.0	NaN	NaN
AFG	Asia	Afghanistan	2020-01-05	NaN	0.0	NaN	NaN
AFG	Asia	Afghanistan	2020-01-06	NaN	0.0	NaN	NaN
AFG	Asia	Afghanistan	2020-01-07	NaN	0.0	NaN	NaN
AFG	Asia	Afghanistan	2020-01-08	NaN	0.0	0.0	NaN
AFG	Asia	Afghanistan	2020-01-09	NaN	0.0	0.0	NaN

```
Index(['iso_code', 'continent', 'Country name', 'date', 'total_cases',
       'new_cases', 'new_cases_smoothed', 'total_deaths', 'new_deaths',
       'new_deaths_smoothed', 'total_cases_per_million',
       'new_cases_per_million', 'new_cases_smoothed_per_million',
       'total_deaths_per_million', 'new_deaths_per_million',
       'new_deaths_smoothed_per_million', 'reproduction_rate', 'icu_patients',
       'icu_patients_per_million', 'hosp_patients',
       'hosp_patients_per_million', 'weekly_icu_admissions',
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       'weekly_hosp_admissions_per_million', 'total_tests', 'new_tests',
       'total_tests_per_thousand', 'new_tests_per_thousand',
       'new_tests_smoothed', 'new_tests_smoothed_per_thousand',
       'positive_rate', 'tests_per_case', 'tests_units', 'total_vaccinations',
       'people_vaccinated', 'people_fully_vaccinated', 'total_boosters',
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       'total_vaccinations_per_hundred', 'people_vaccinated_per_hundred',
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       'new_vaccinations_smoothed_per_million',
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       'new_people_vaccinated_smoothed_per_hundred', 'stringency_index',
       'population_density', 'median_age', 'aged_65_older', 'aged_70_older',
       'gdp_per_capita', 'extreme_poverty', 'cardiovasc_death_rate',
       'diabetes_prevalence', 'female_smokers', 'male_smokers',
       'handwashing_facilities', 'hospital_beds_per_thousand',
       'life_expectancy', 'human_development_index', 'population',
       'excess_mortality_cumulative_absolute', 'excess_mortality_cumulative',
       'excess_mortality', 'excess_mortality_cumulative_per_million'],
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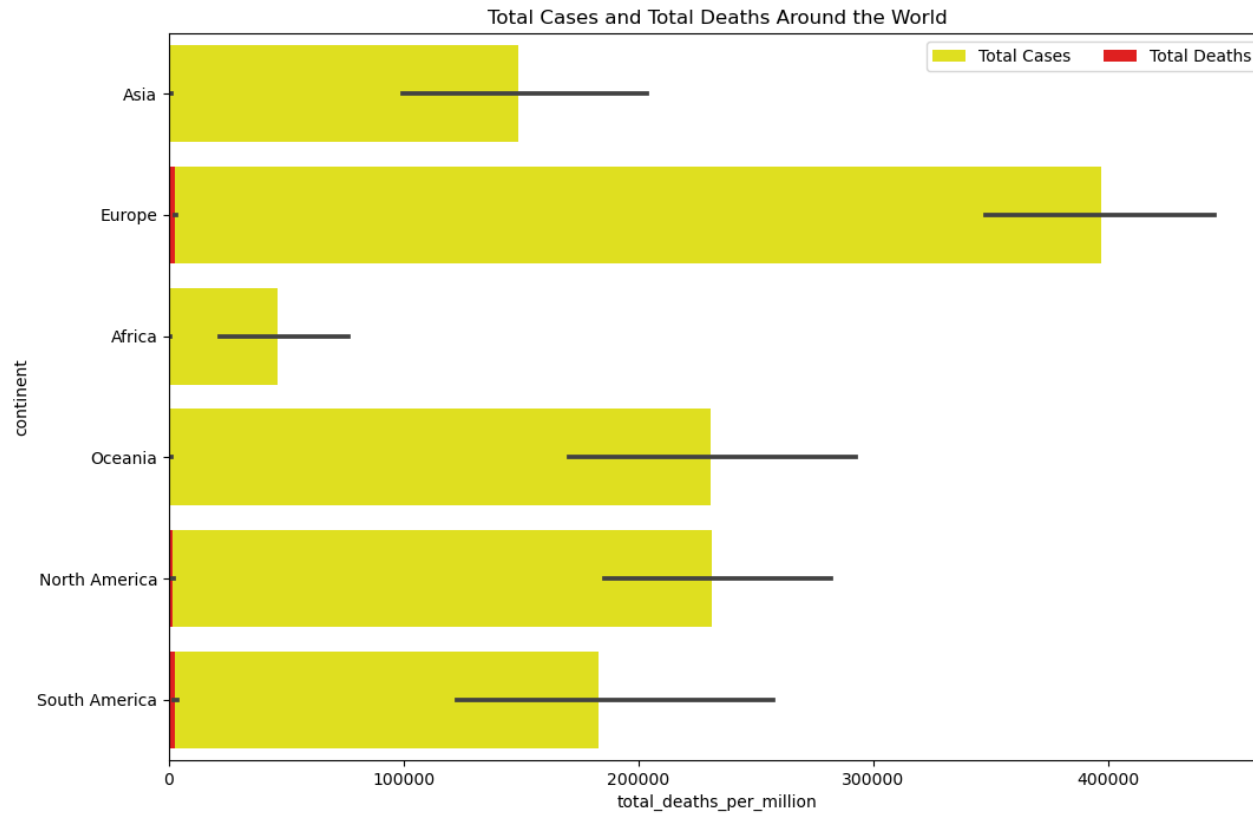
COVID Impacts

- Loss of life

- Disturbances in social and economic well-being
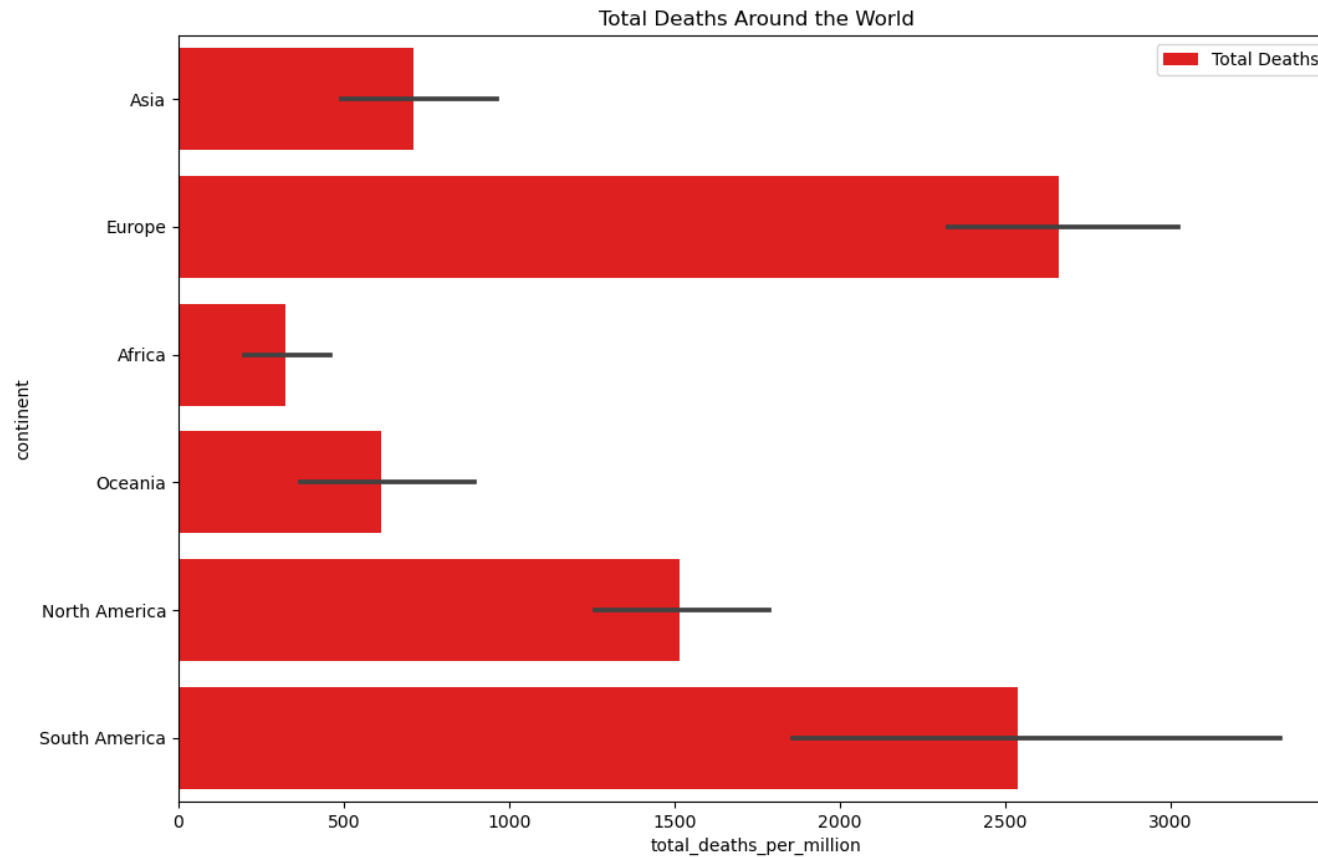
- Health and economic instability

- Stringent constraints

COVID-deaths per million around the World
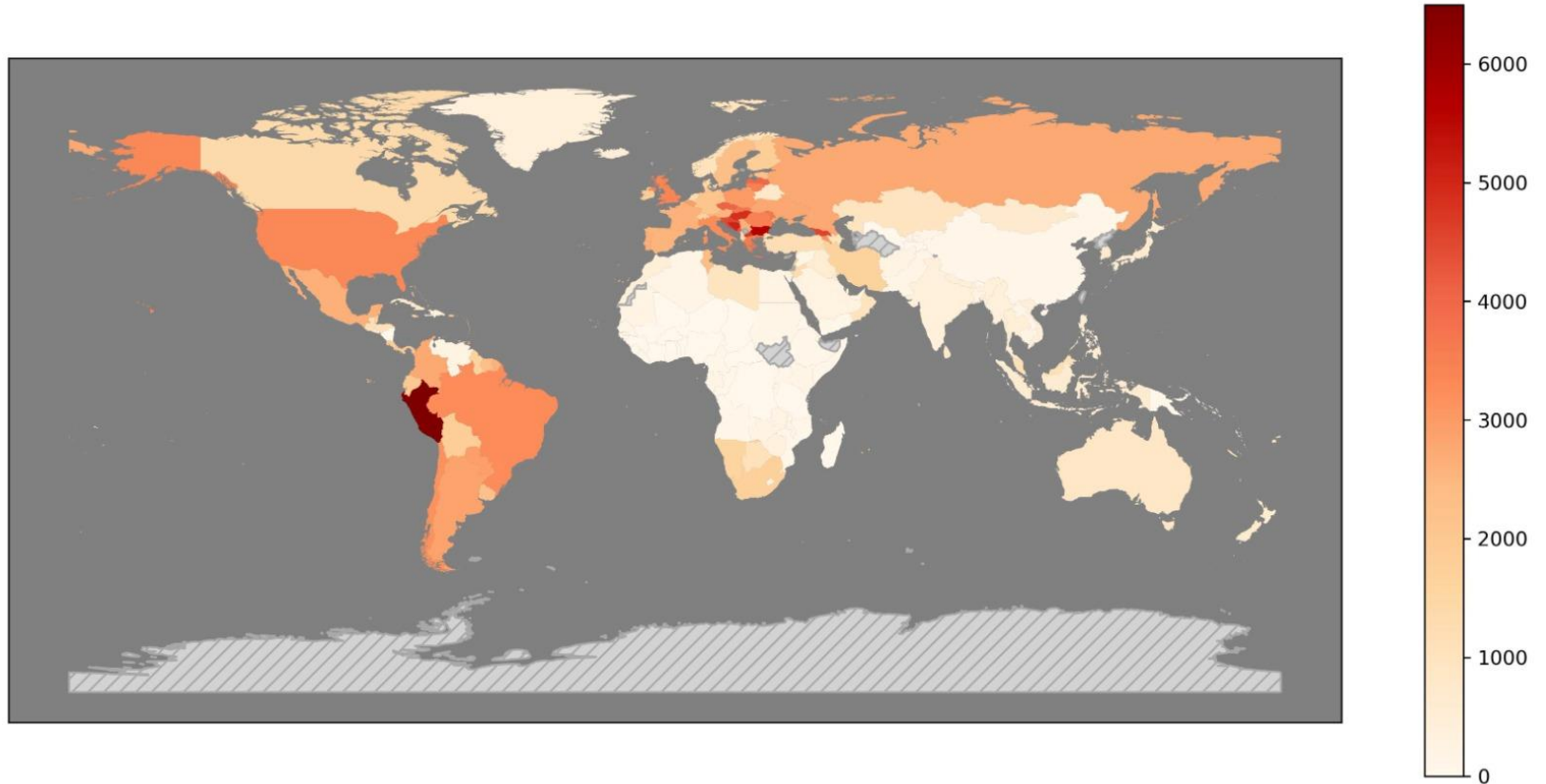
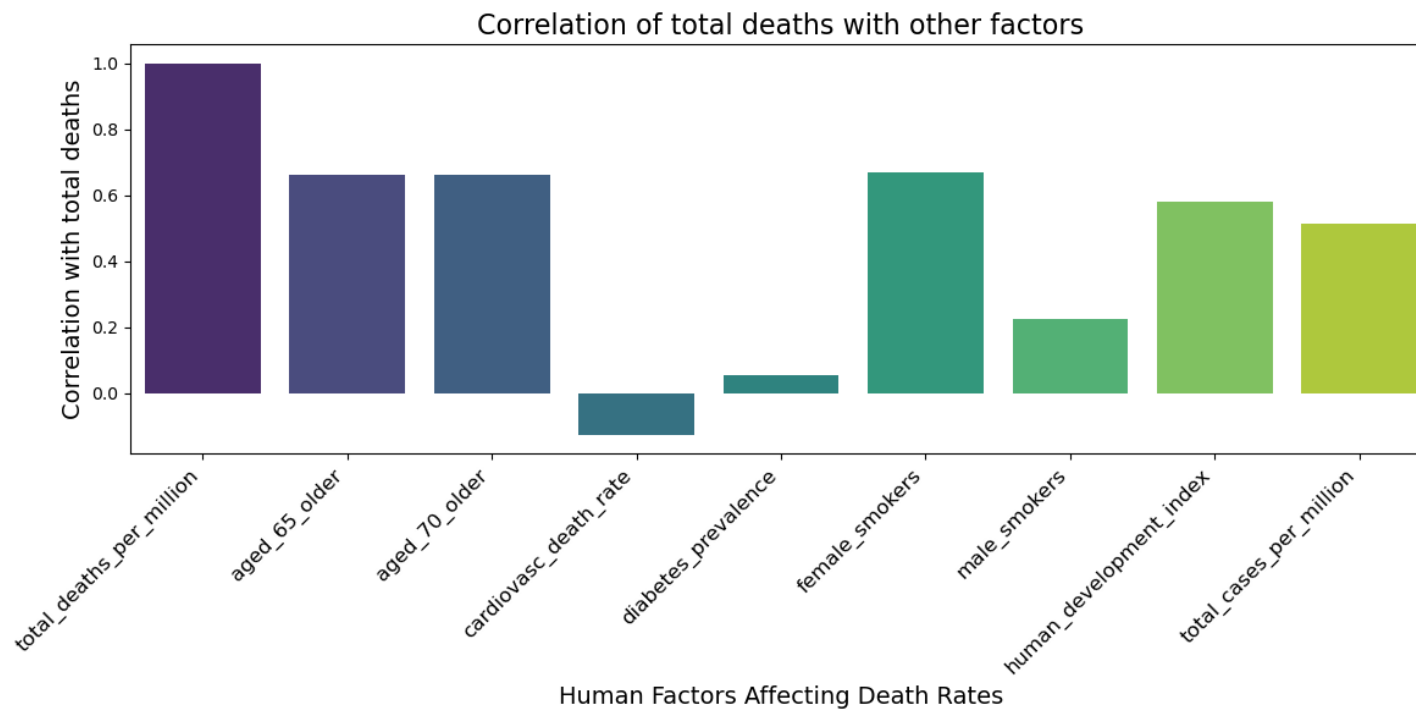# COVID cases and deaths per million, continent wise
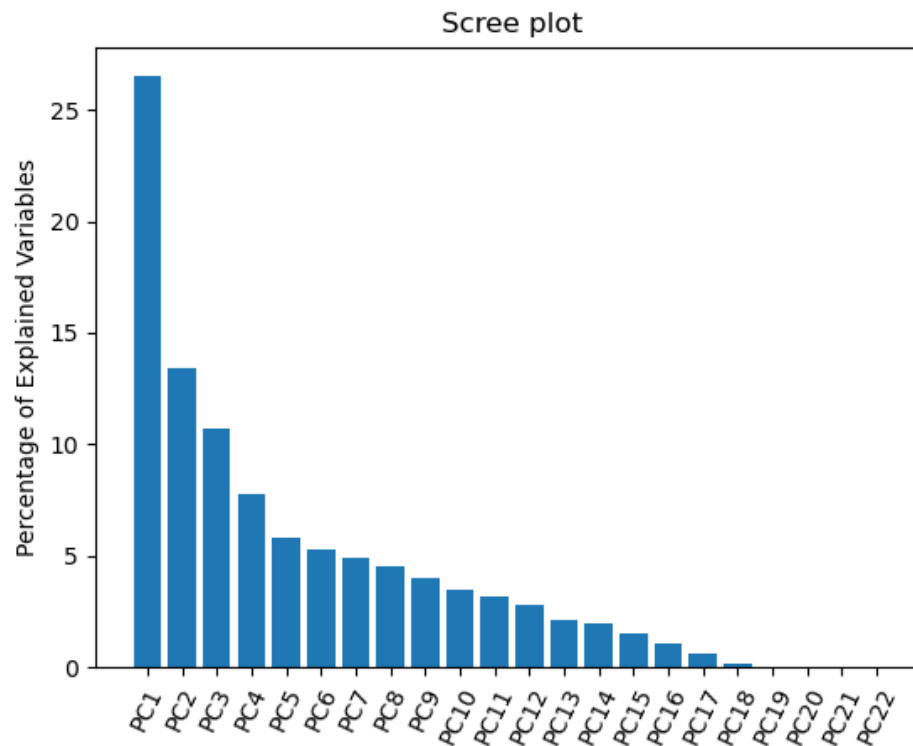
COVID deaths per million, continent wise

What factors affected deaths around the world? Correlation

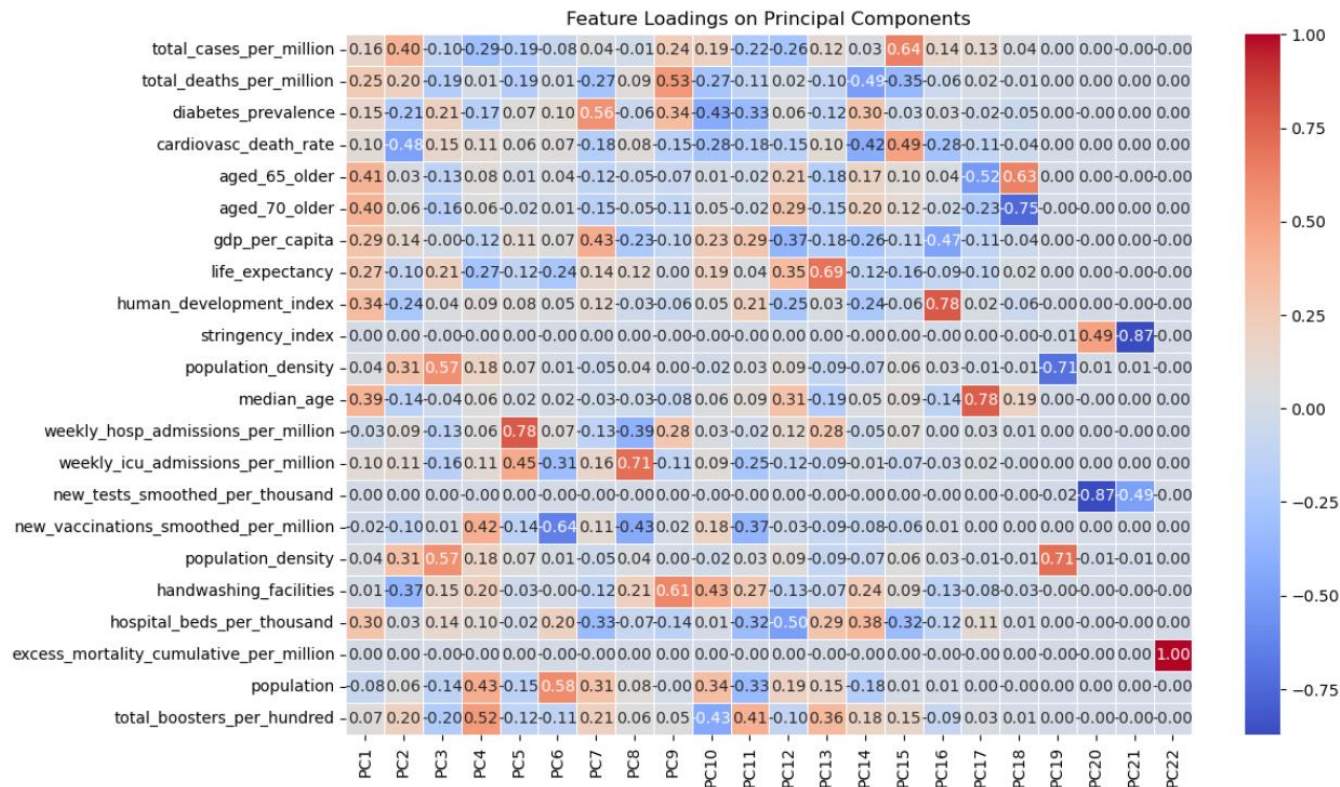- Selected features (9/67) that could be responsible for high deaths

What factors affected deaths around the world? PCA to get an overview

- Selected features (22/67) that could be responsible for high deaths

- Scree plot

What factors affected deaths around the world? PCA to get an overview

A correlation heatmap

What factors affected deaths around the world?

Clustering locations based on deaths due to COVID-19

What factors affected deaths around the world? Performing PCA for each cluster
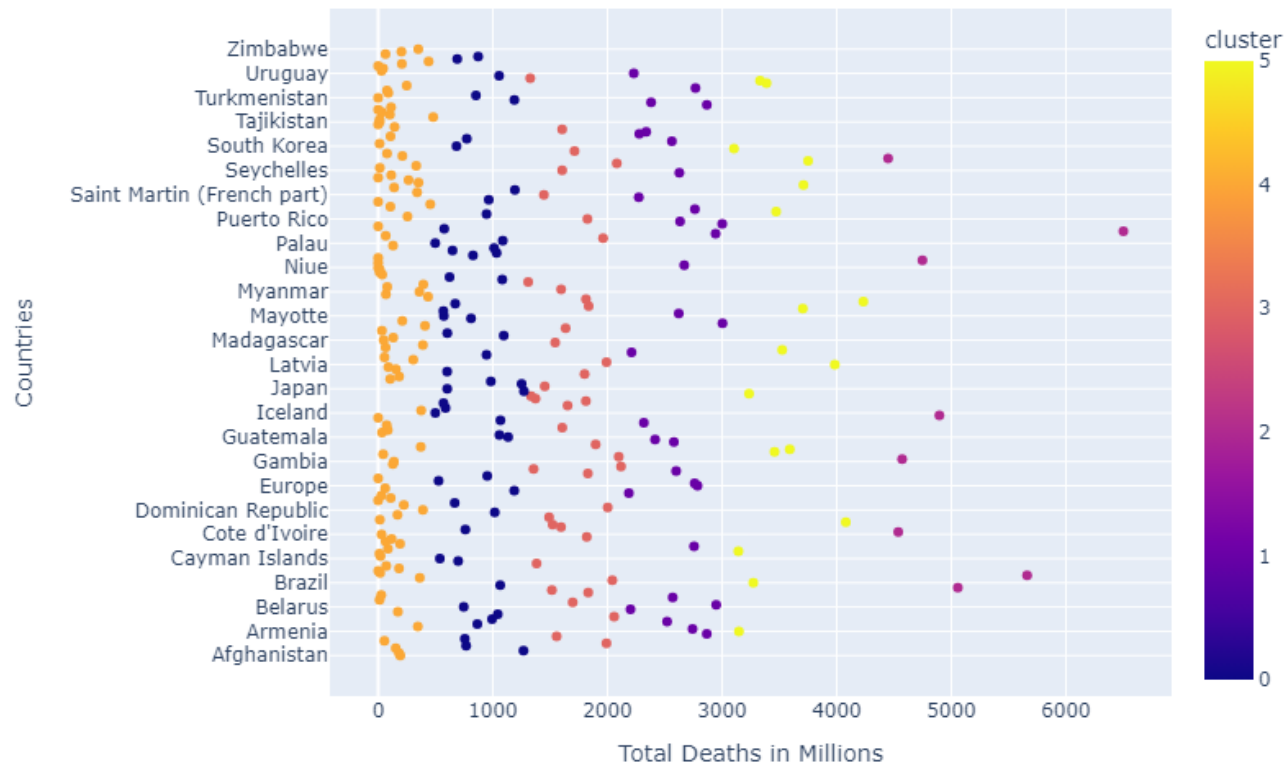
What factors affected deaths around the world? Performing PCA for each cluster

PCA Loadings for Features (Top Contributing Features) for Cluster 3
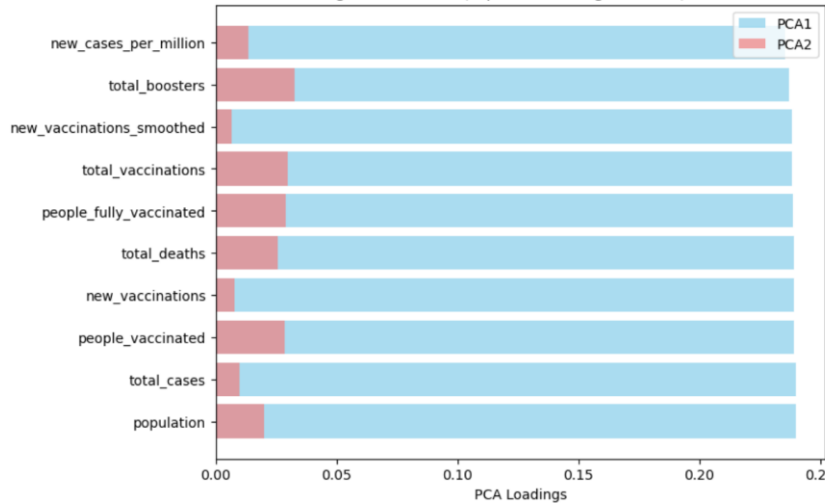
PCA Loadings for Features (Top Contributing Features) for Cluster 4
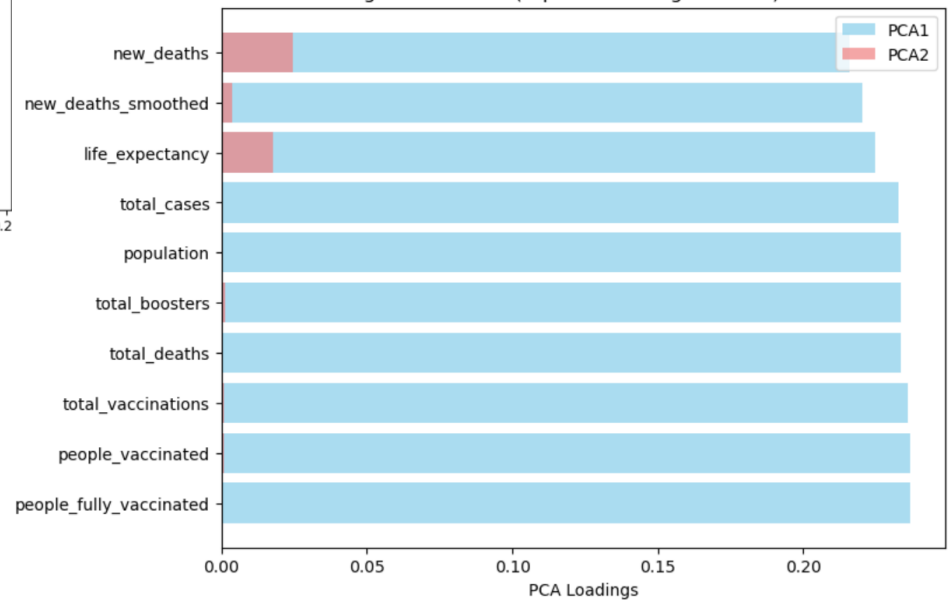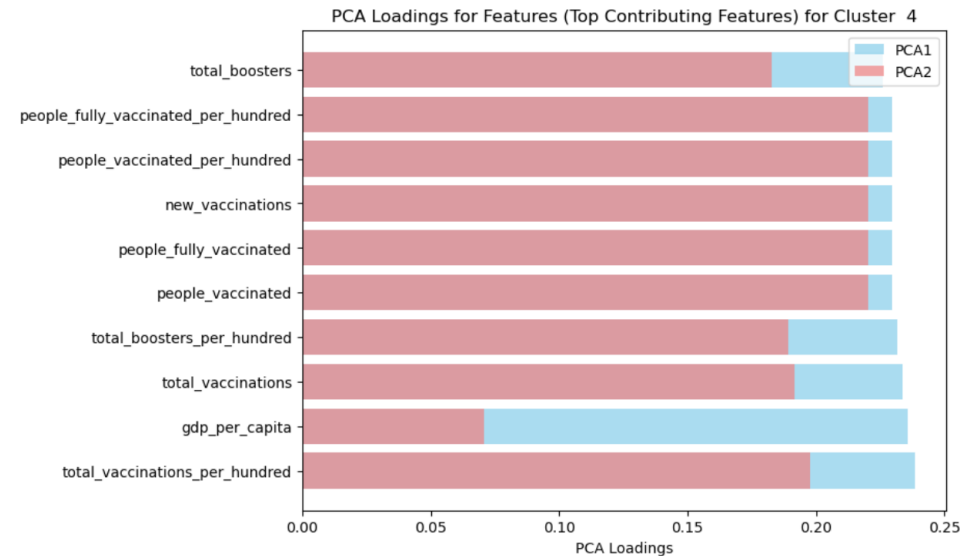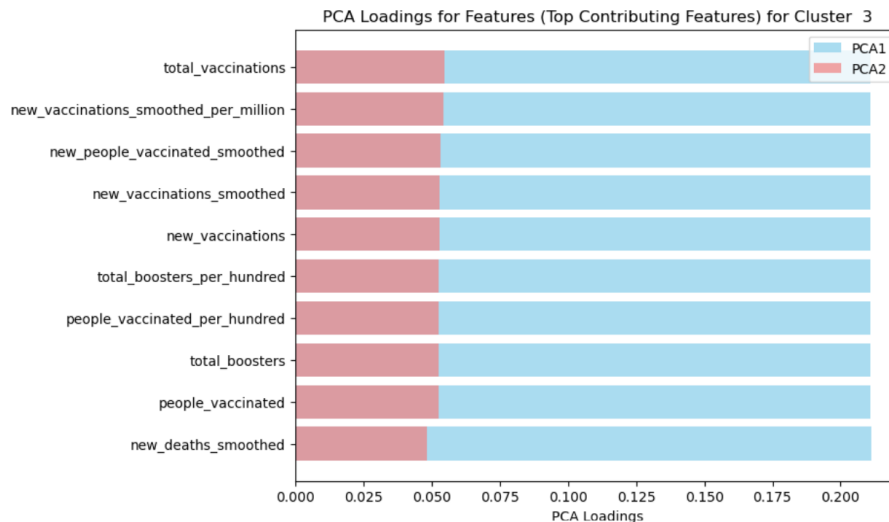
What factors affected deaths around the world? Performing PCA for each cluster
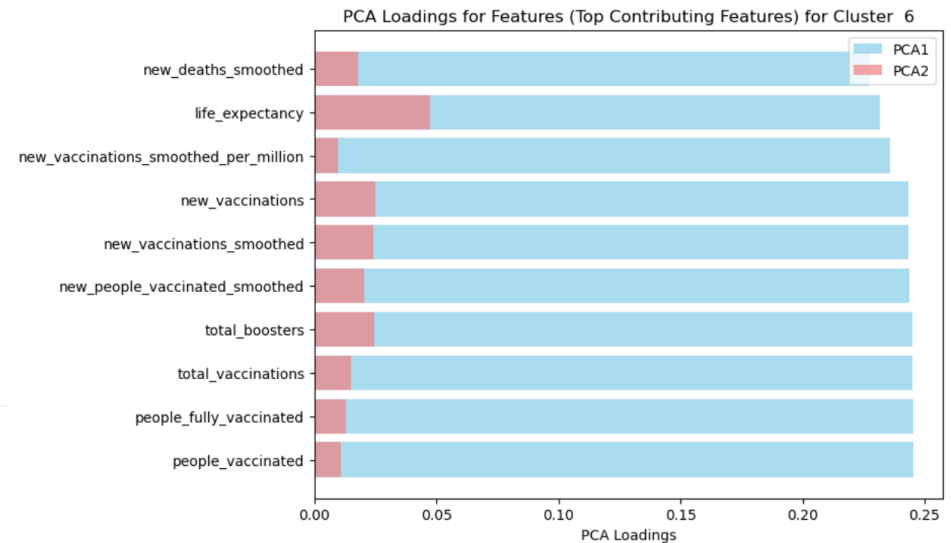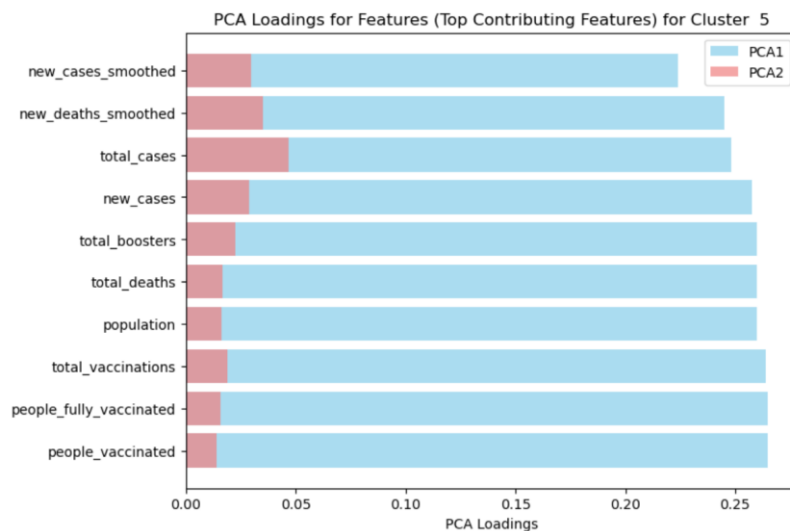
What factors affected deaths around the world? PCA1 and PCA2

Combined PCA Results for Each Cluster
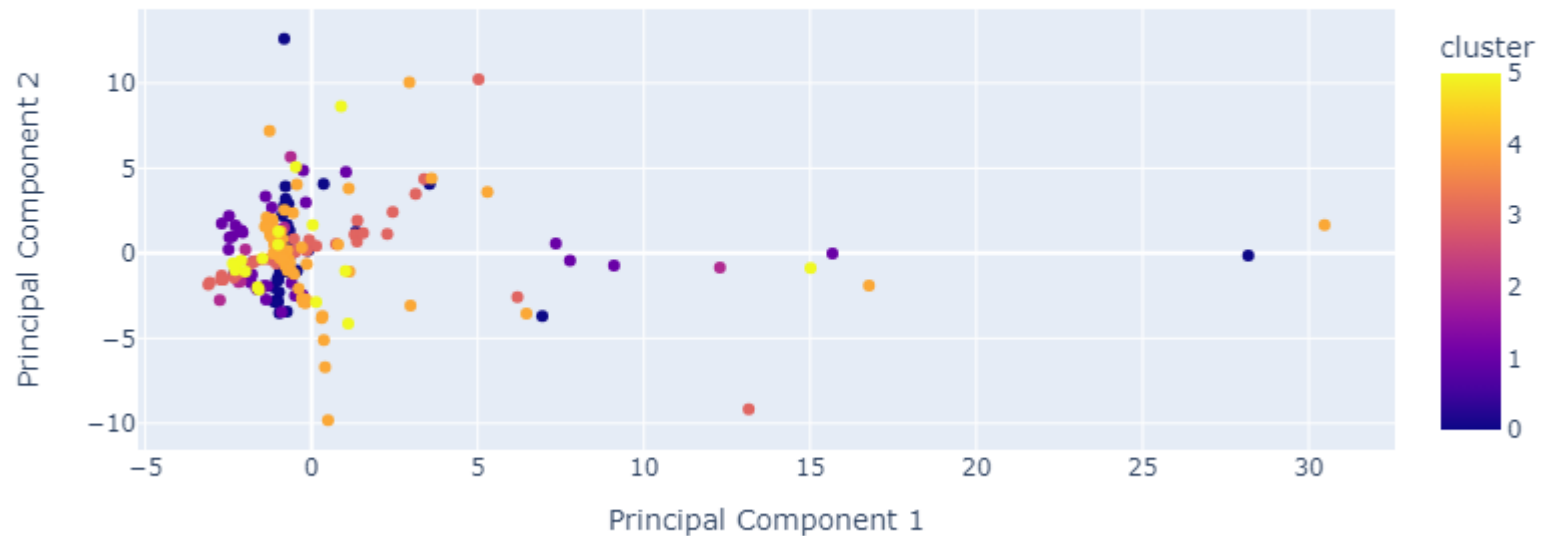
Overview of the countries with the most deaths – Comparing the total deaths, stringency index, and vaccination status of 5 countries with the most deaths per million with the international average

iso_code		location	total_deaths_per_million
231572	PER	Peru	6501.224
44487	BGR	Bulgaria	5661.494
37947	BIH	Bosnia and Herzegovina	5057.012
130721	HUN	Hungary	4895.908
215254	MKD	North Macedonia	4748.267
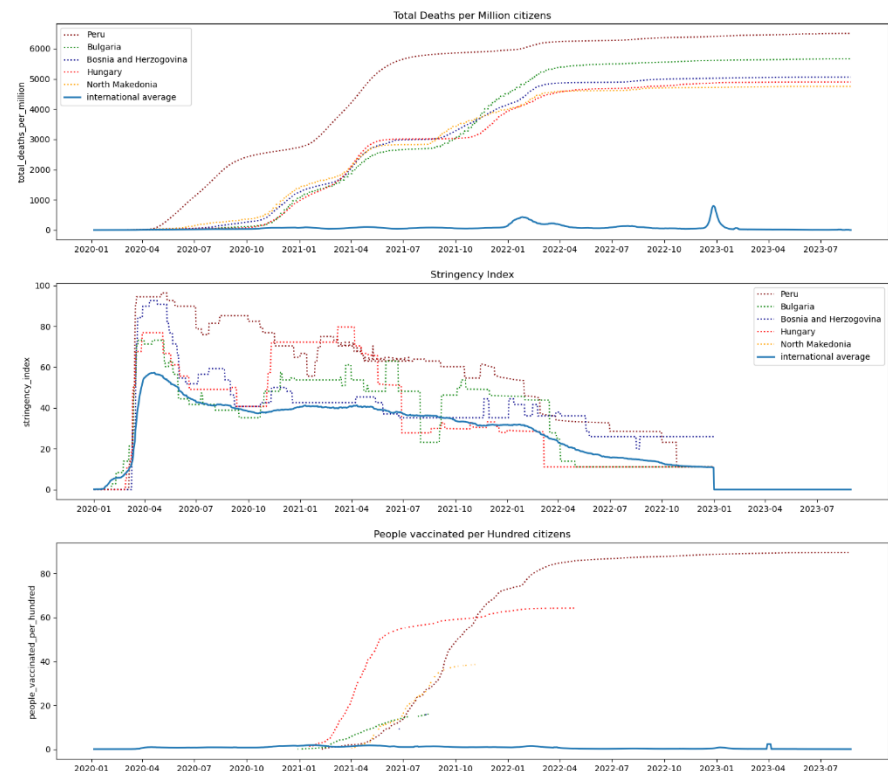
Top correlated human factors among countries with most deaths – (Top 5)

Correlation of total deaths with other factors
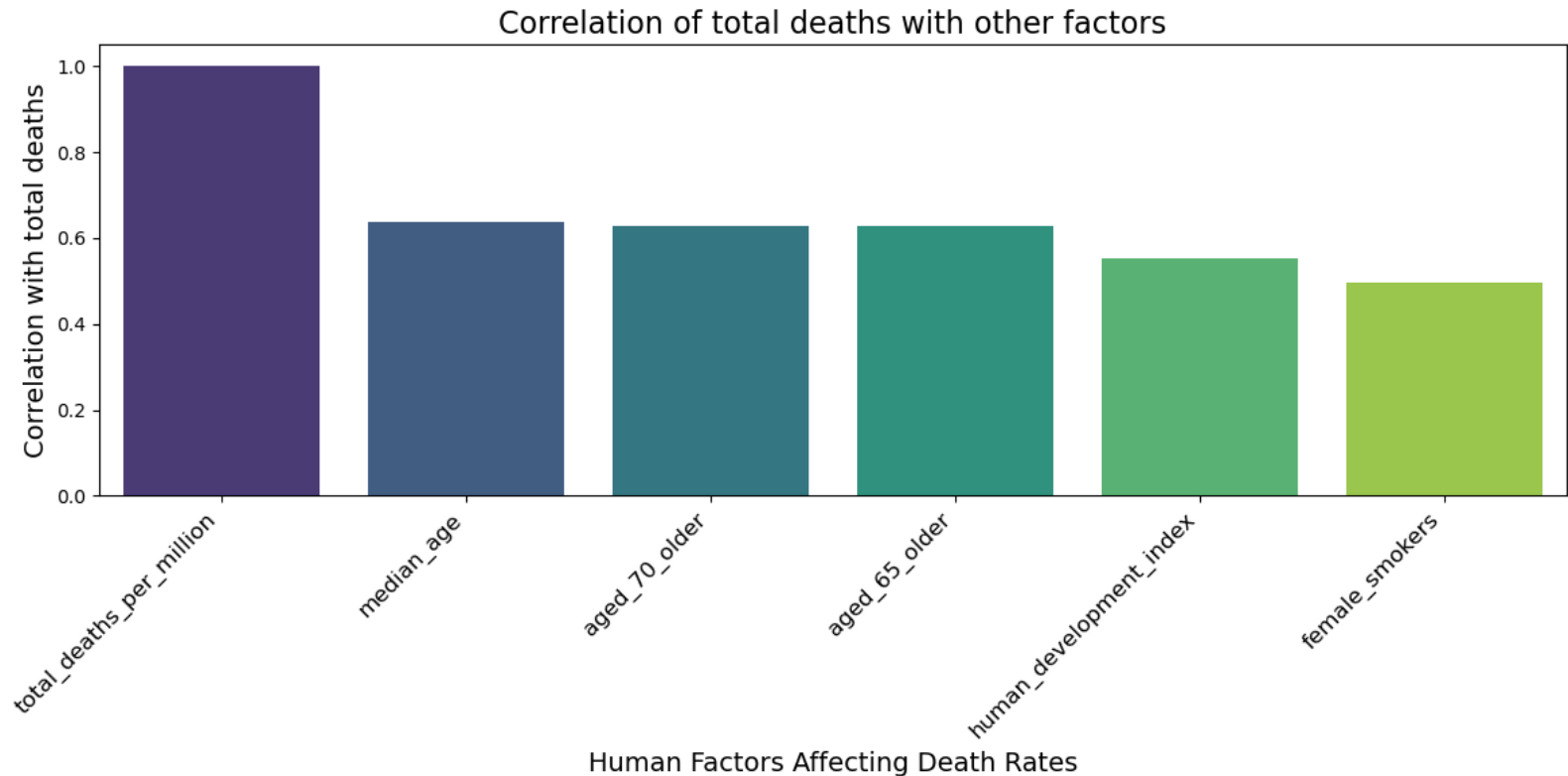
Top 5 Countries in comparison to the world on most correlated parameters
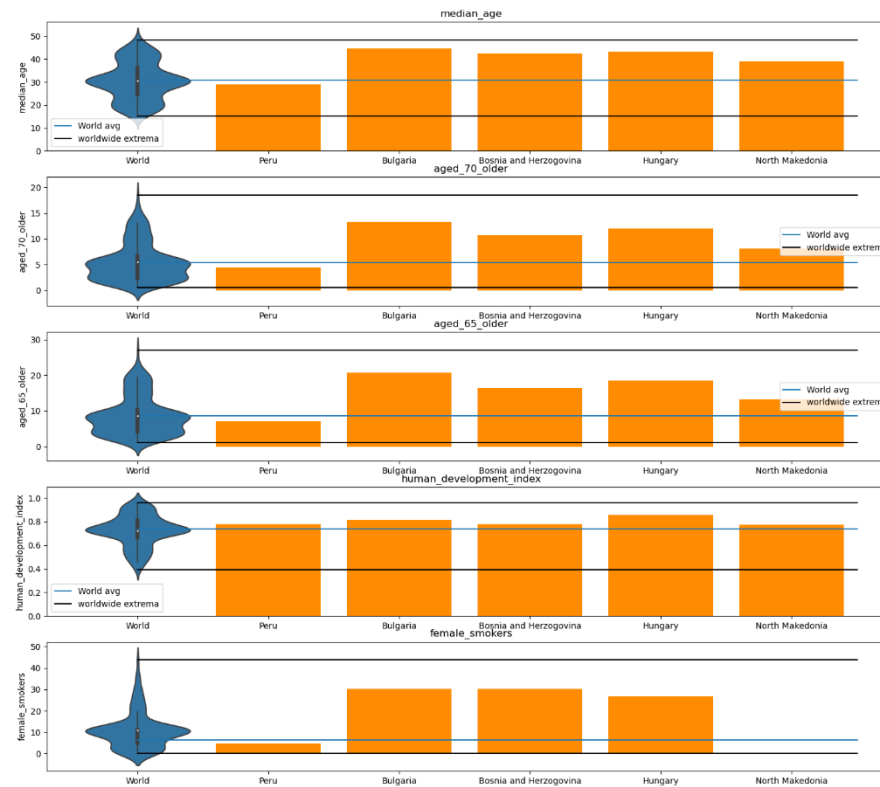
# Analyzing the neighboring countries – South American and European countries
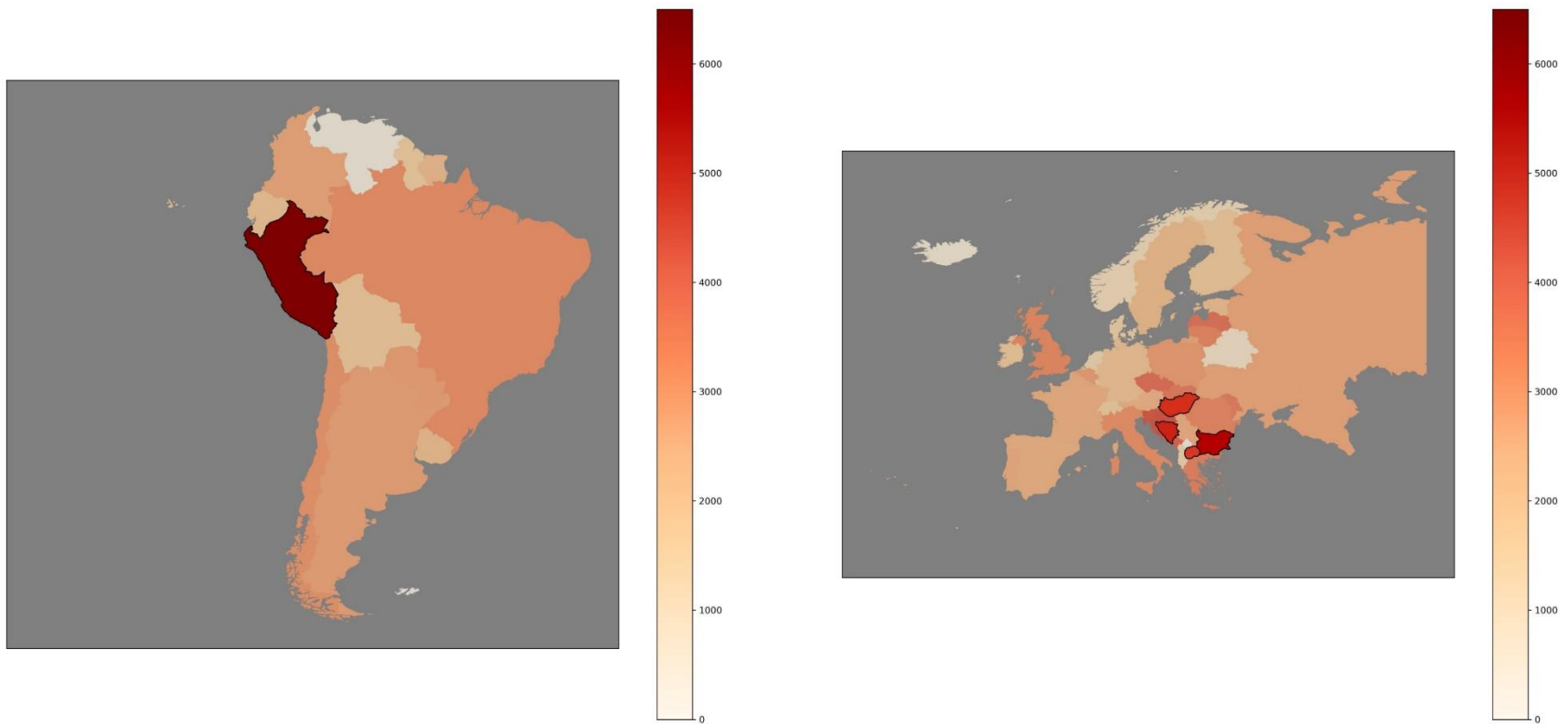
Analyzing the features of European Countries over time
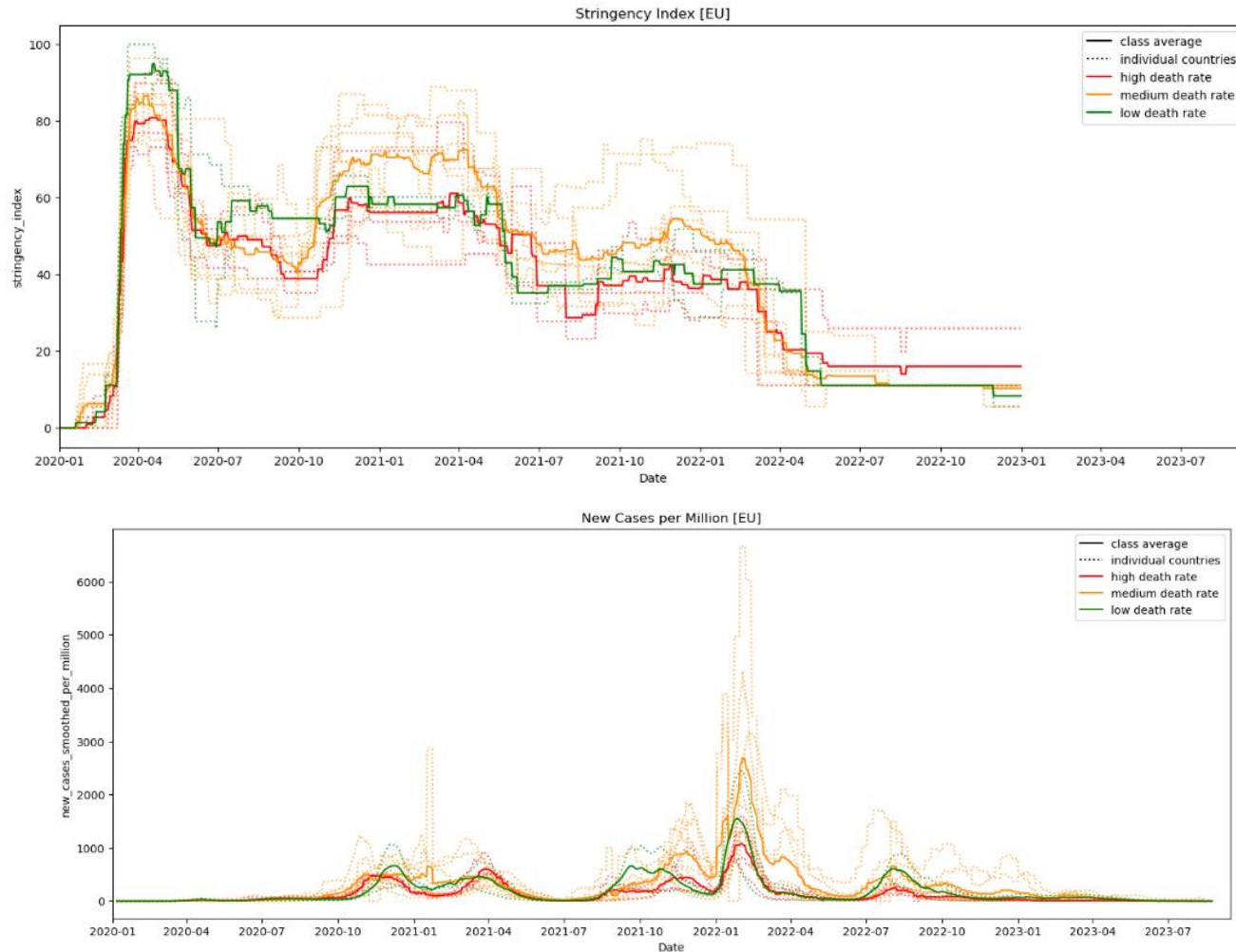
Analyzing the features of European Countries
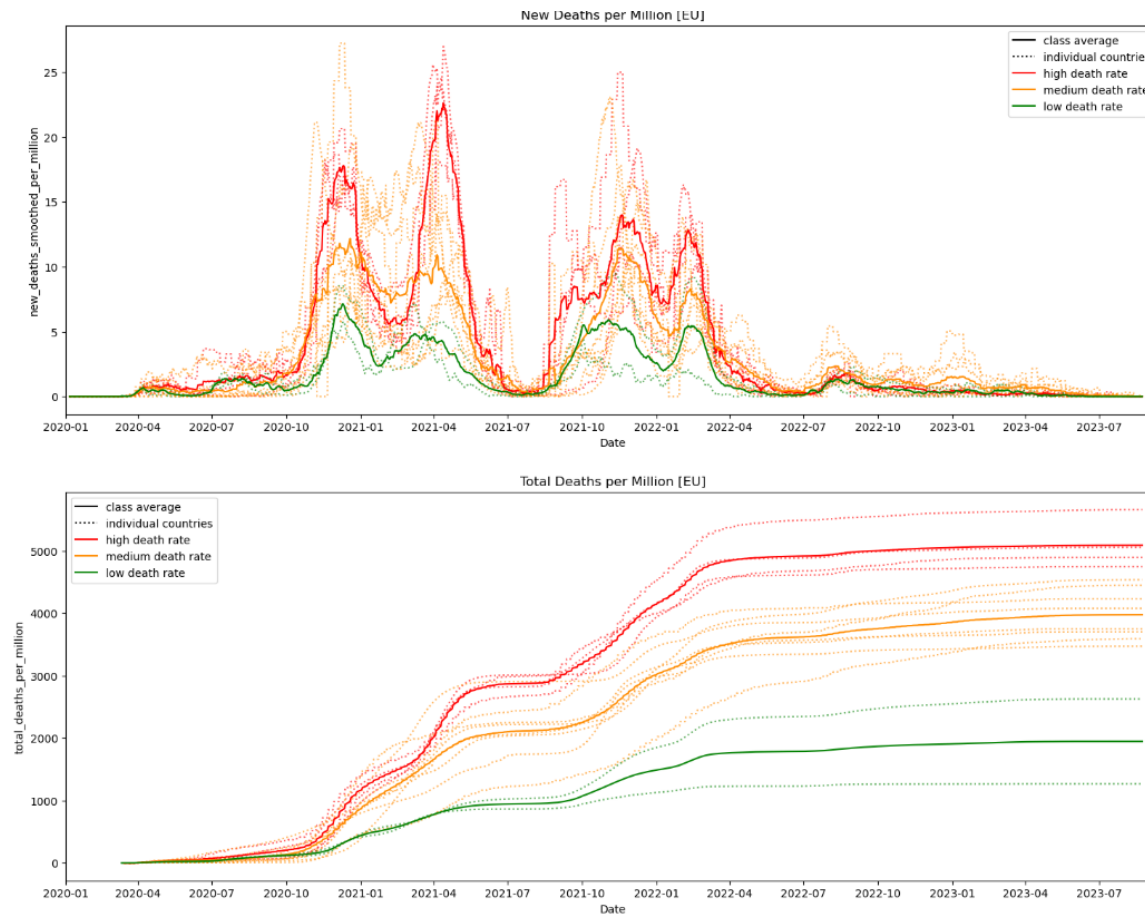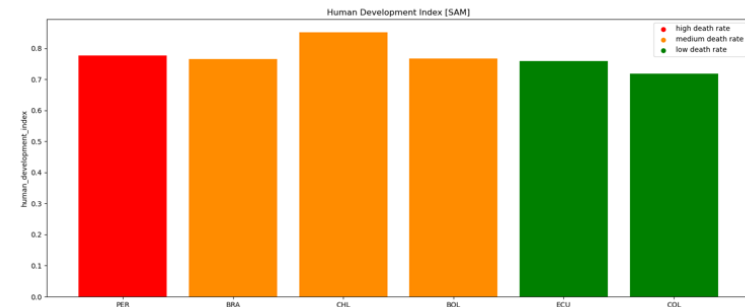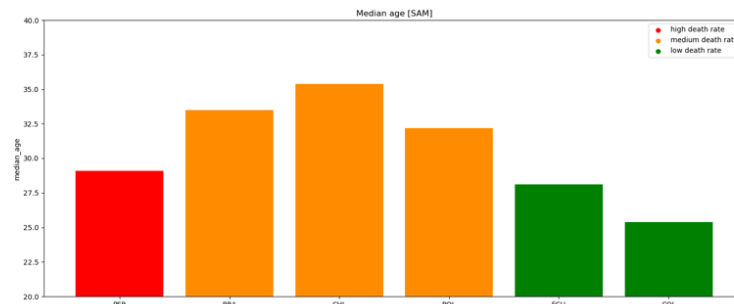
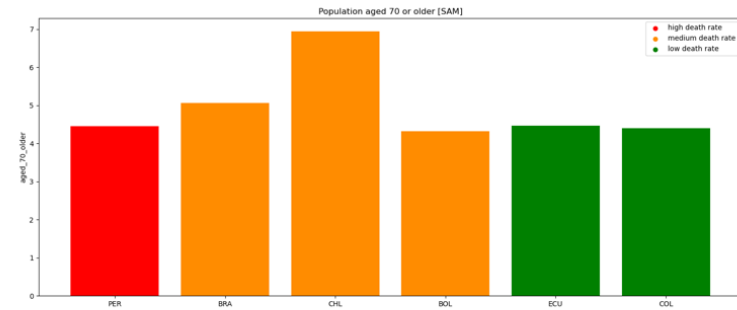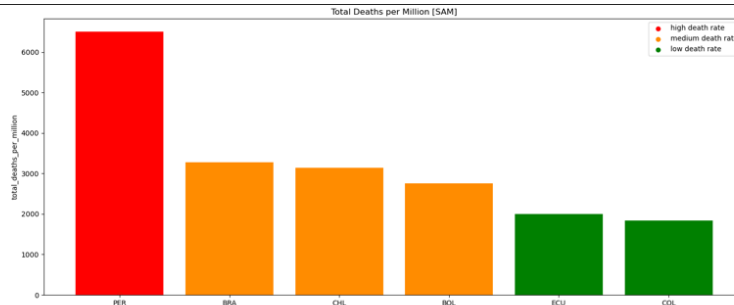# Analyzing the features of European Countries
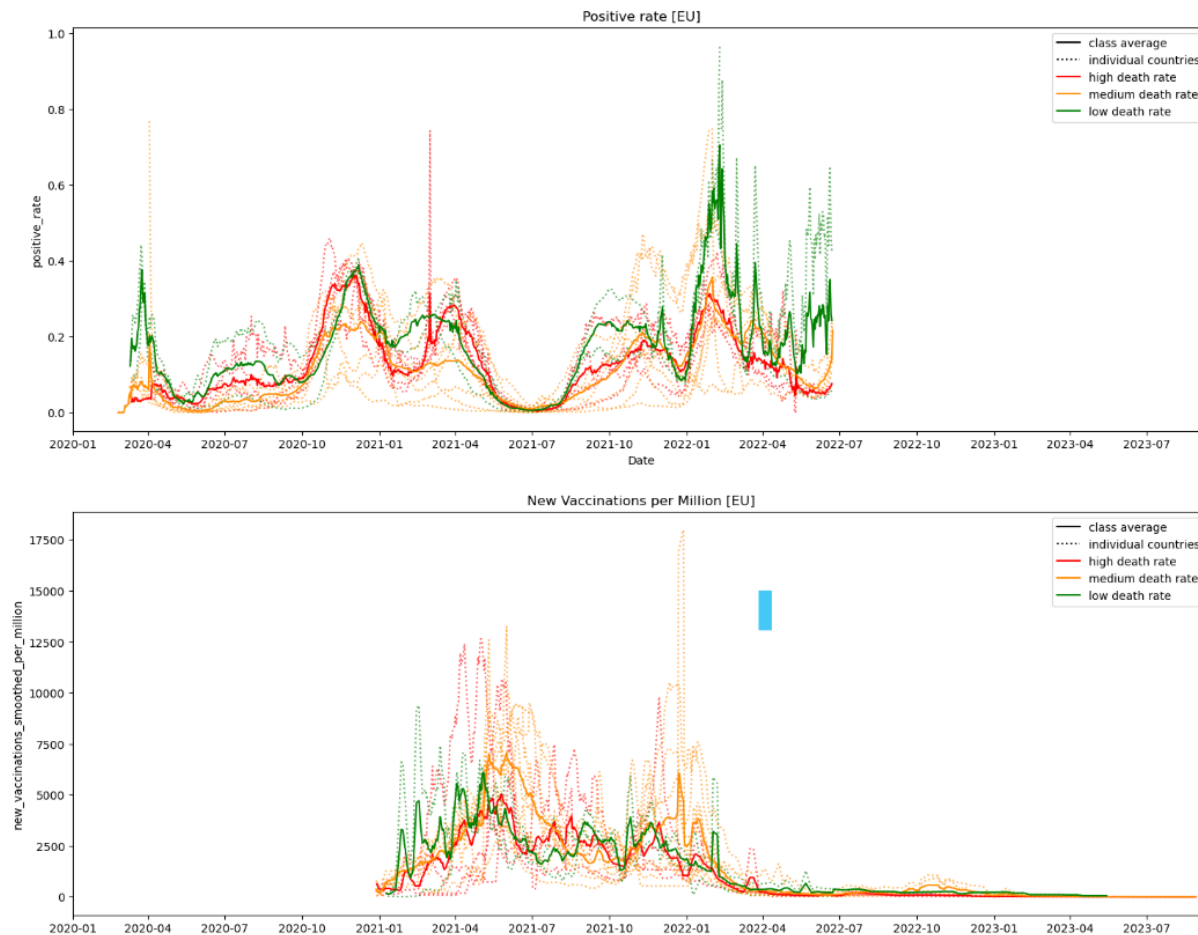
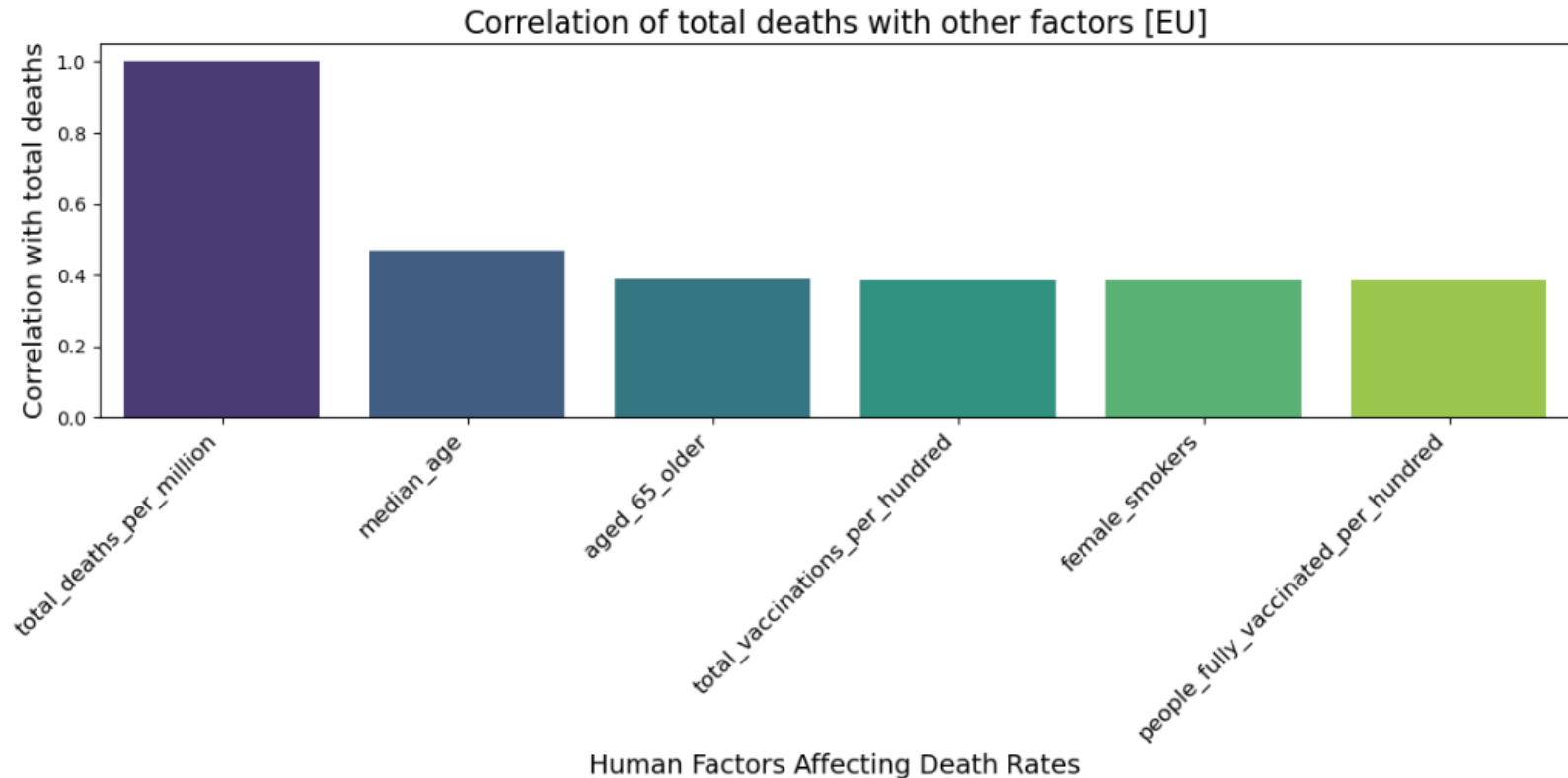# Analyzing high, low and medium date rates in neighboring countries SA and EU
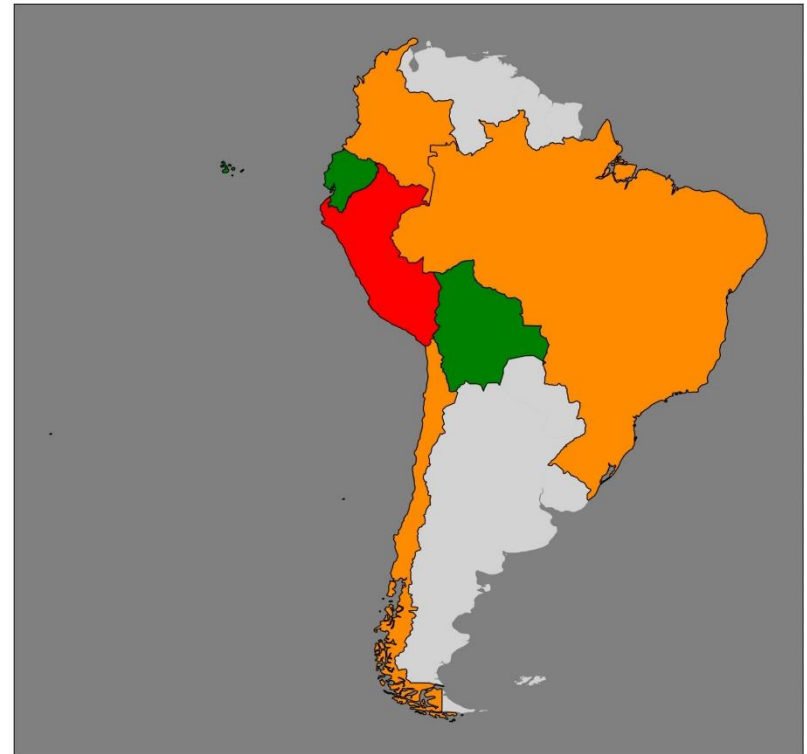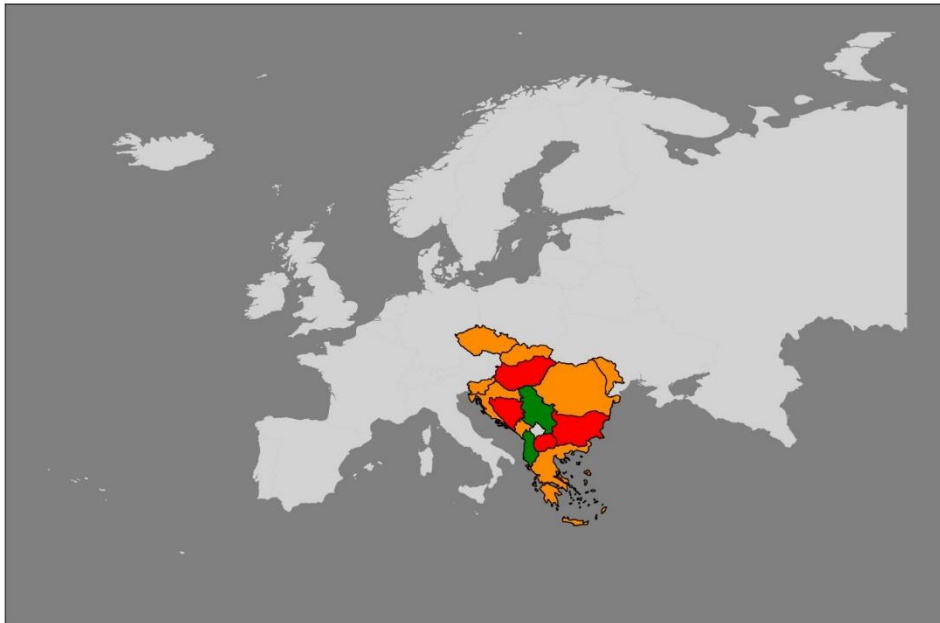
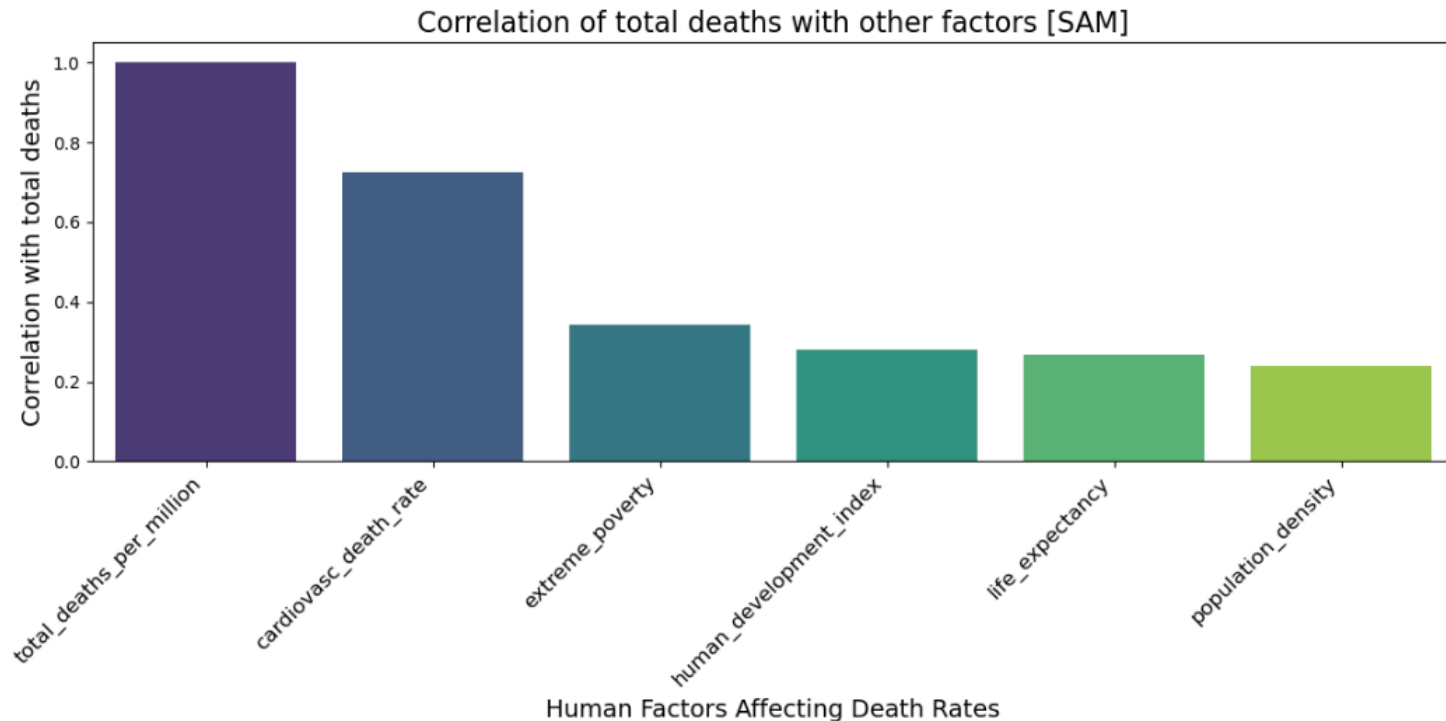# Analyzing features as per death rates in the European Countries
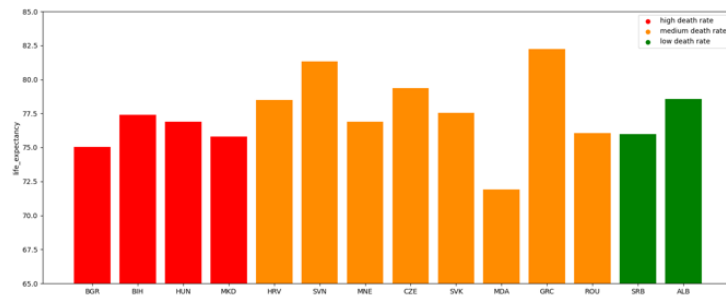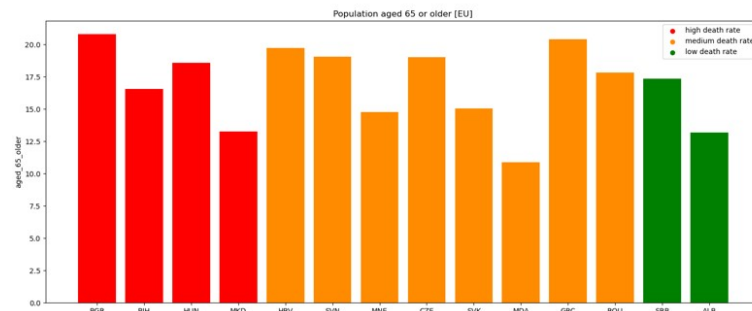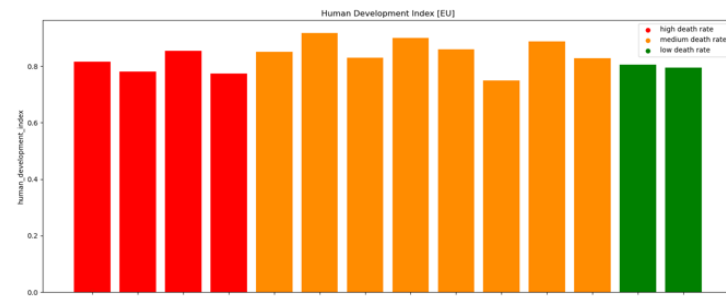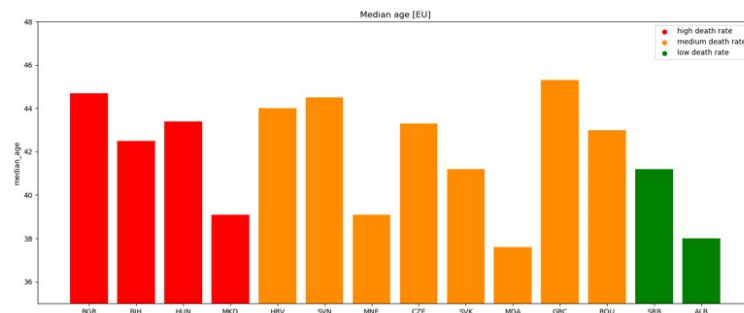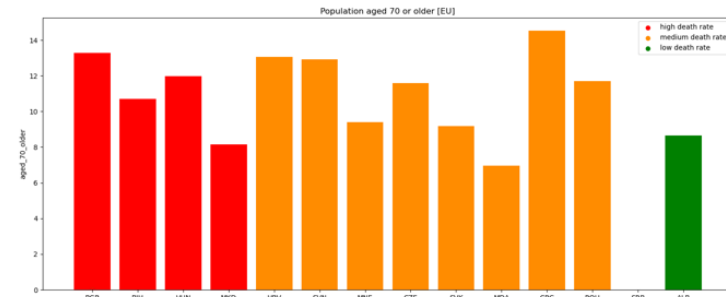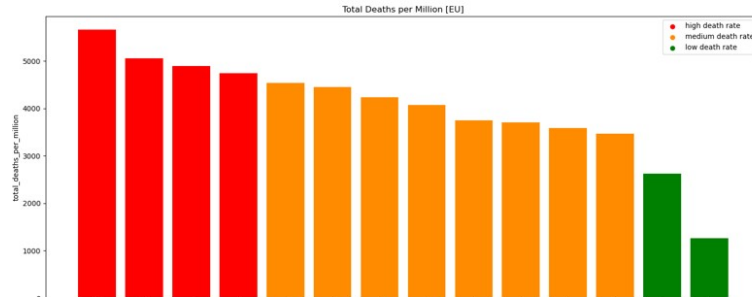
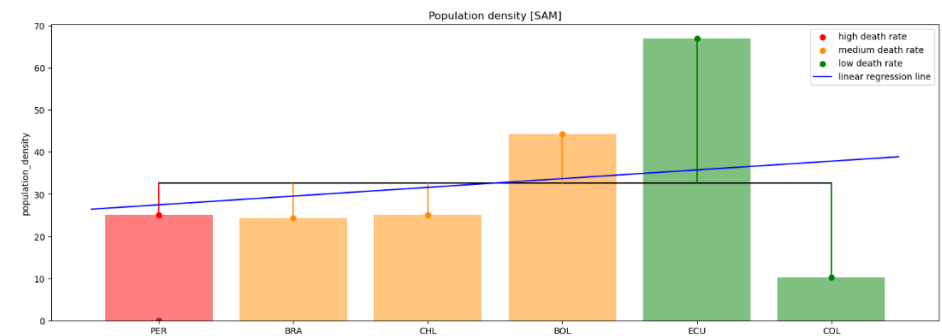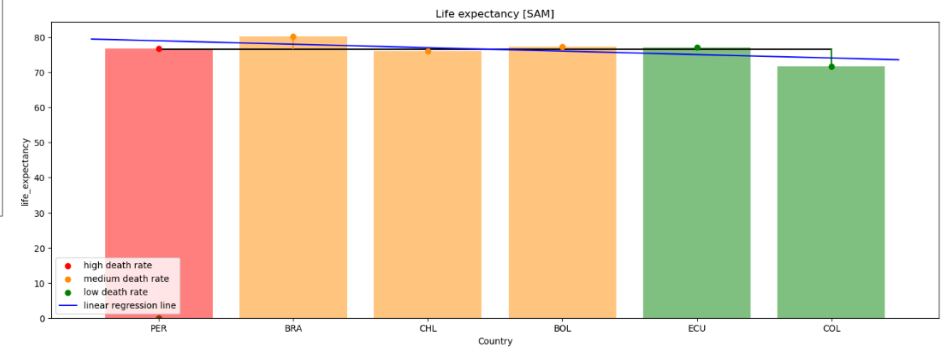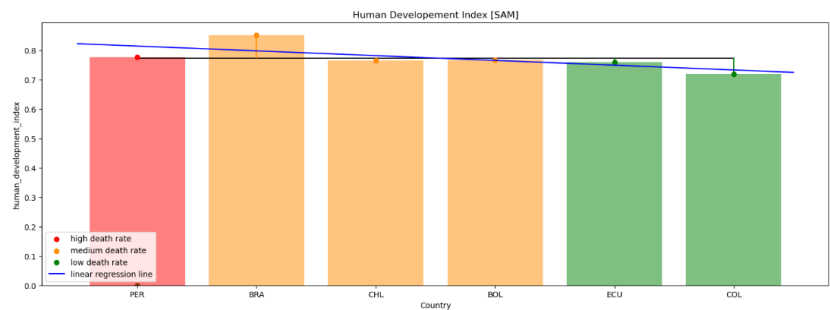# Analyzing features as per death rates in SA Countries
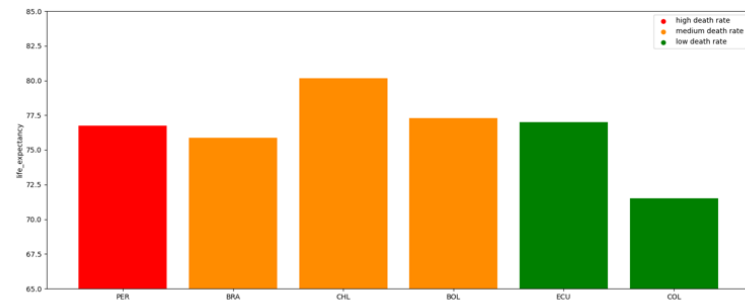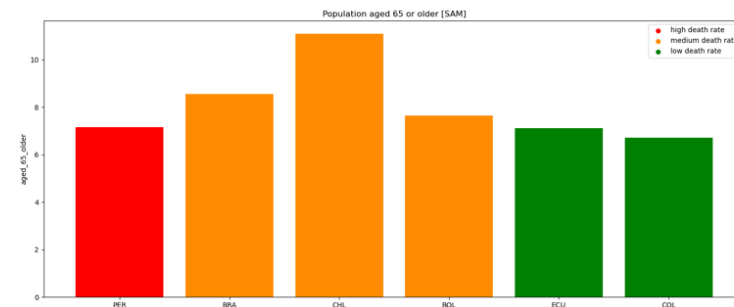
Analyzing Correlation factors with other factors for EU

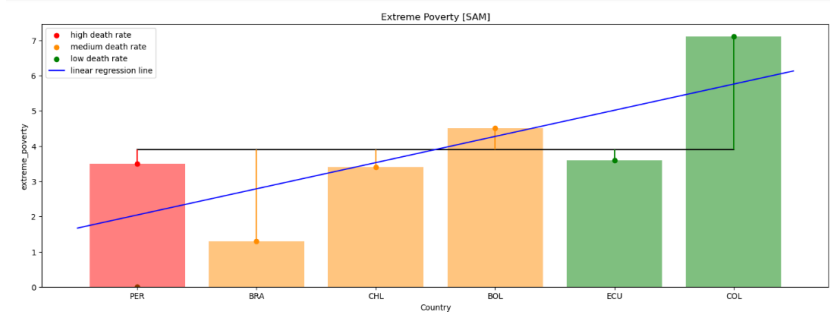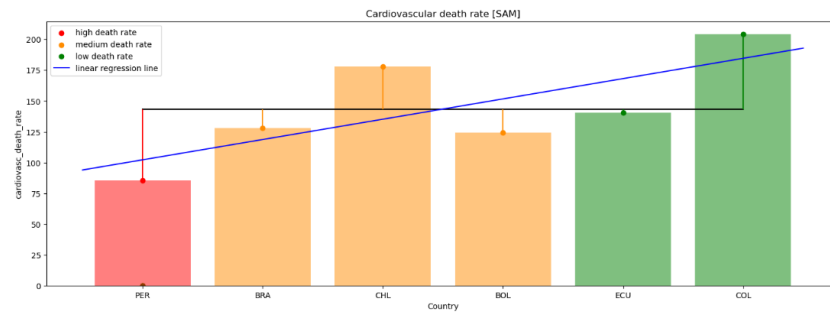
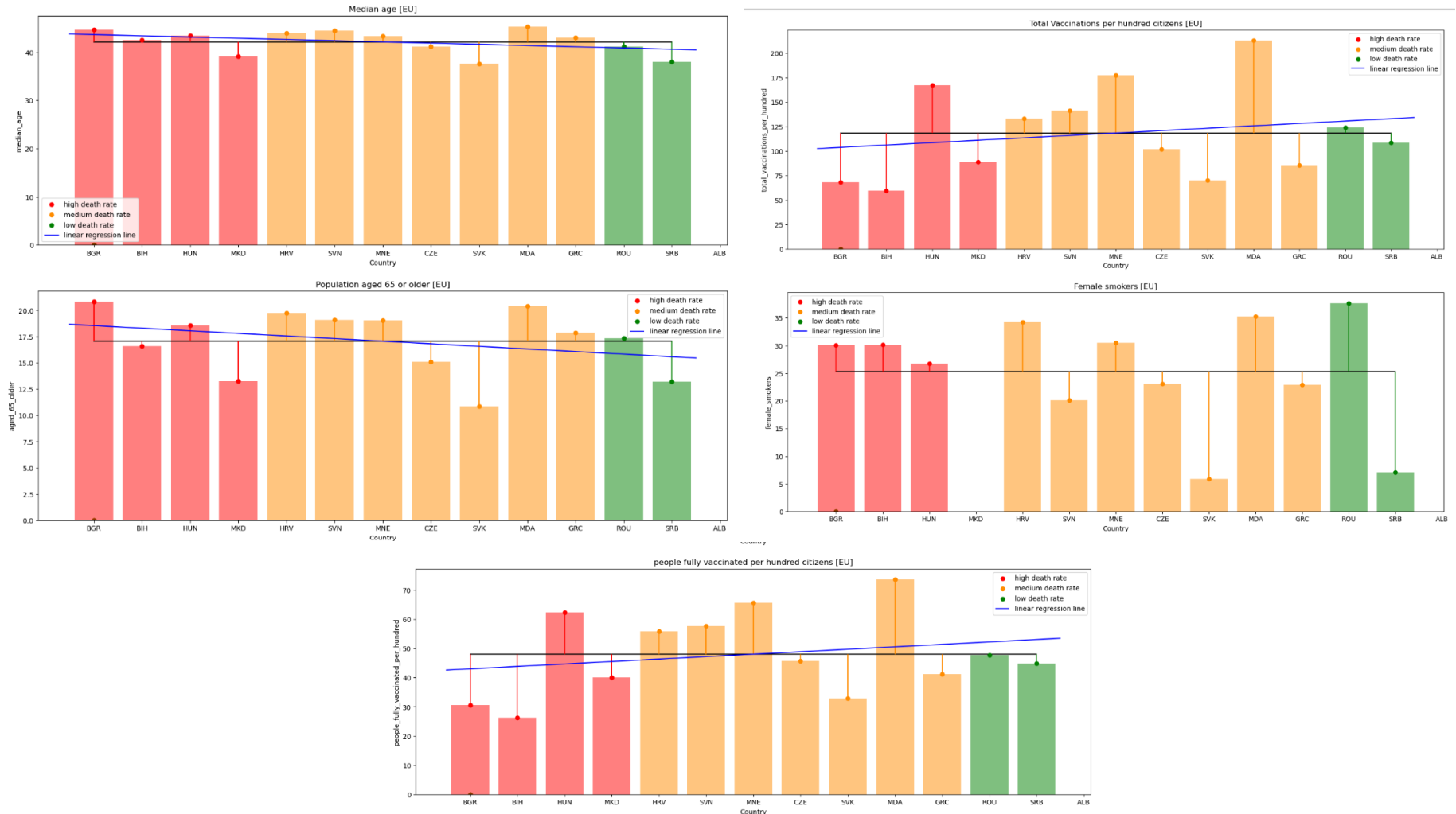Correlation of total deaths with other factors [EU]

Analyzing Correlation factors with other factors for SAM

Correlation of total deaths with other factors [SAM]

Analyzing correlation factors with death rates for SAM

Analyzing correlation factors with death rates for EU

Deductions

- We analyze the countries and their neighbouring countries with the most death rates

- Concluded various features that impact deaths due to COVID-19, around the world

- In EU countries age and lifestyle, such as smoking affected most deaths

- In SAM countries health factors - cardiovascular disease and poverty

- The analysis helps to refactor these attributes in society and prepare the world if there were another pandemic