

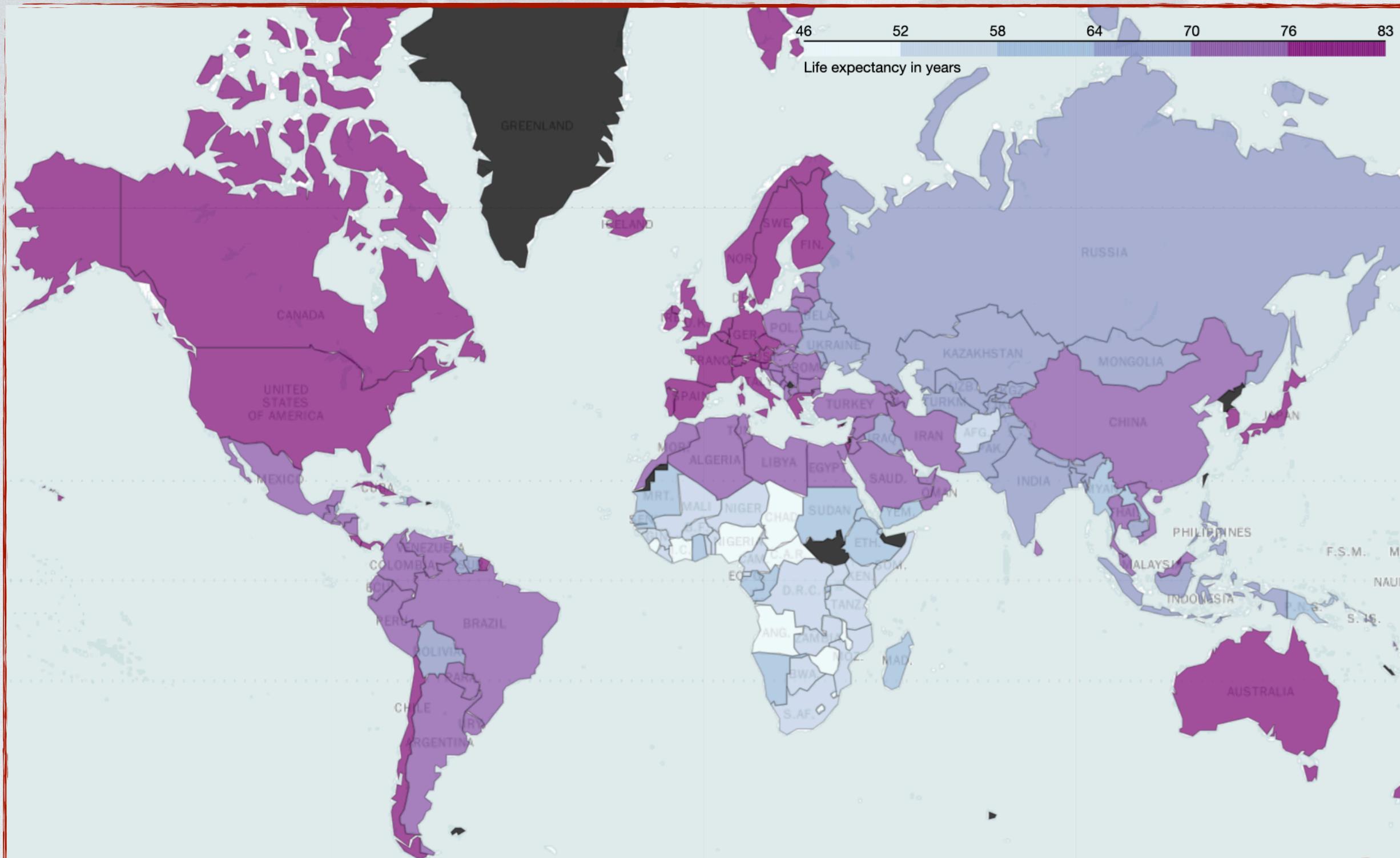


Using Data Science to Increase the Efficiency of ONGs

MGT-415 Data Science in Practice

EPFL

Introduction to Subject



- Inequality in health distribution around the world
- Systematic differences in health outcomes.
- Differences in health status or in distribution of health resources between different population groups arise from the social conditions in which people are born, grow, live and work.
- Lead to very low life expectancy in some parts of the world.
- These health inequalities are unfair and something has to be done to reduce them.

62

Average life expectancy
in low-income countries

81

Average life expectancy
in high-income countries

50

Life expectancy in Sierra Leone

84

Life expectancy in Japan

→ Life expectancy varies by 34 years between countries

Goal

Business Problem into Data Problem

- Business problem: Reduce inequalities in how health is distributed around the world. Increase life expectancy in countries where it is unacceptably low.
- Data problem: Analyse the dataset and design models to advise ONGs on the factors to focus on in order to increase the life expectancy in countries where it is below a certain threshold.

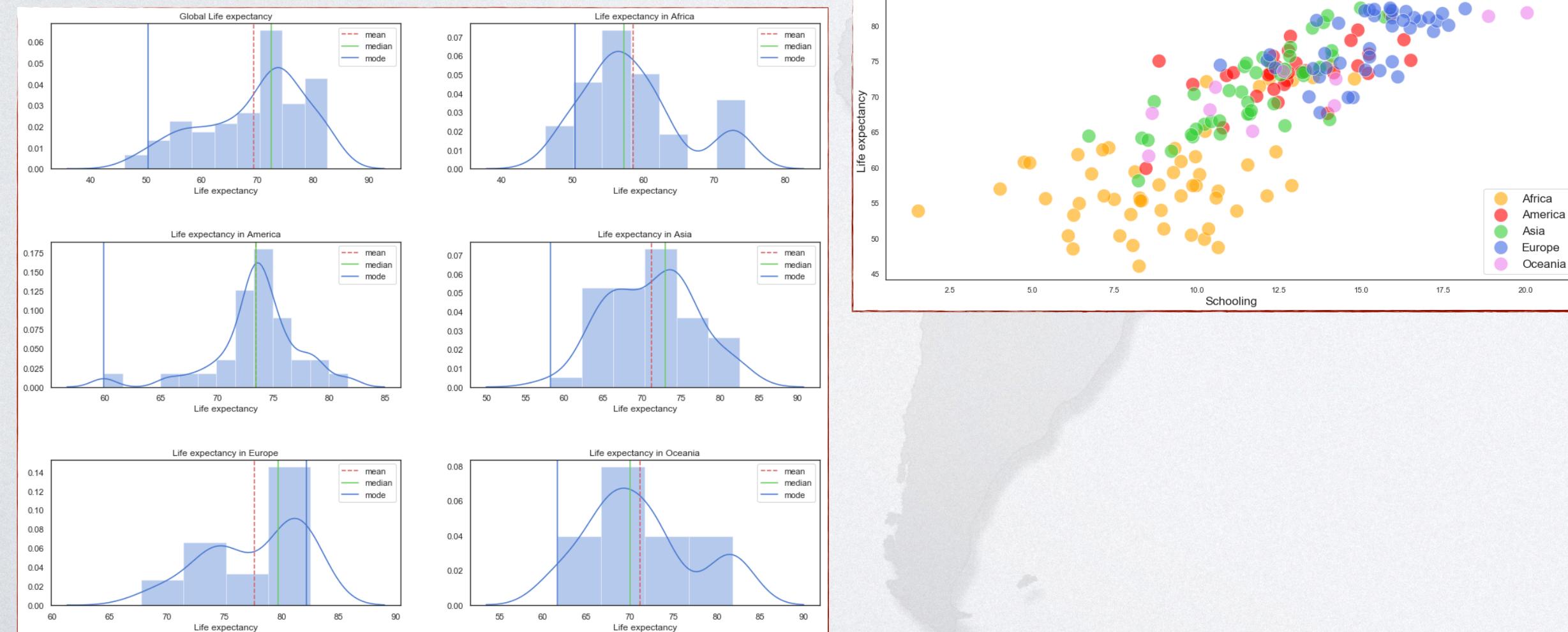
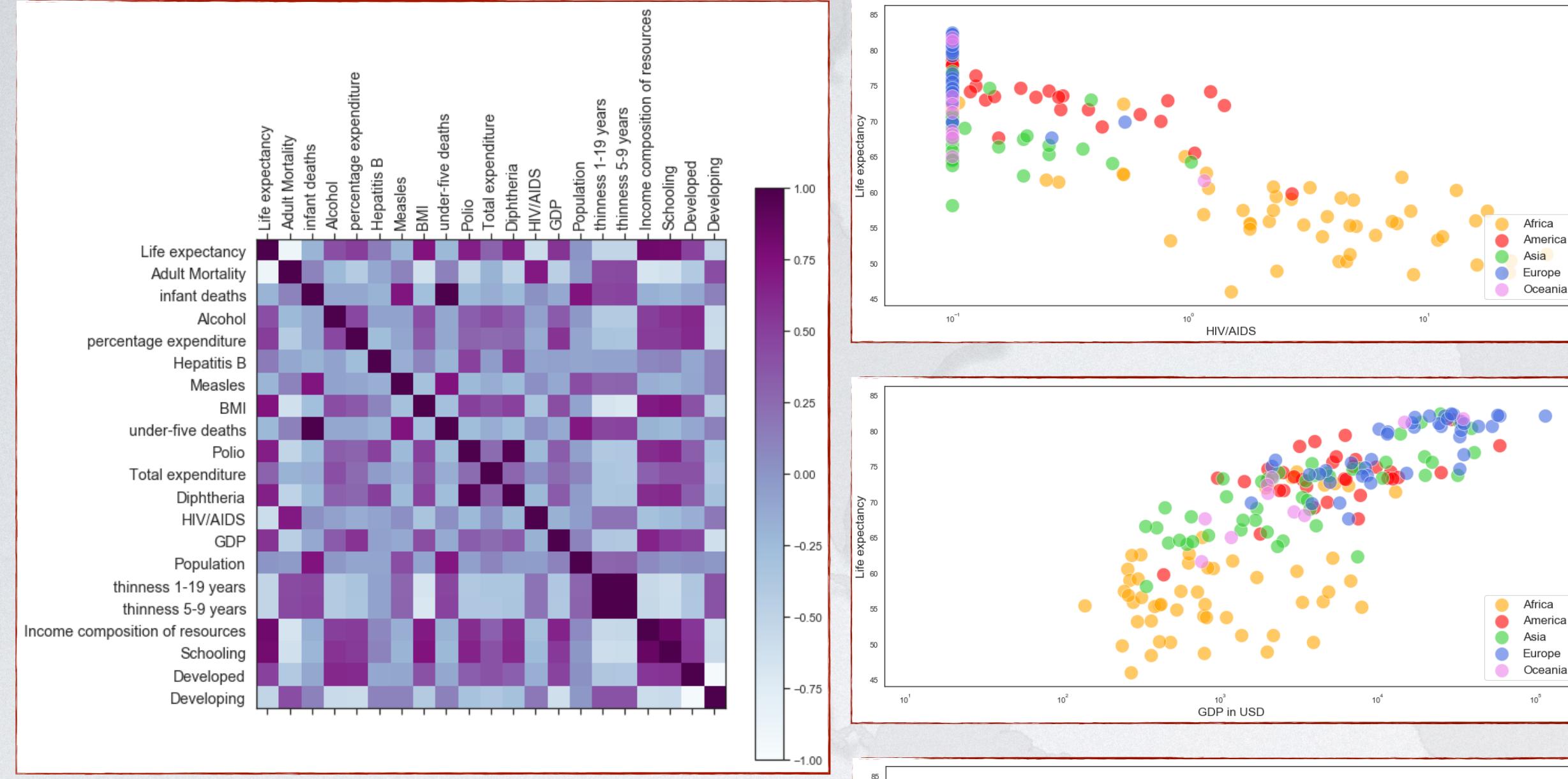
DATASET

- « Life Expectancy (WHO) » from Kaggle, collected by the World Health Organization and made publicly available for health data analysis.
- Observations in 193 countries from 2000 to 2015.

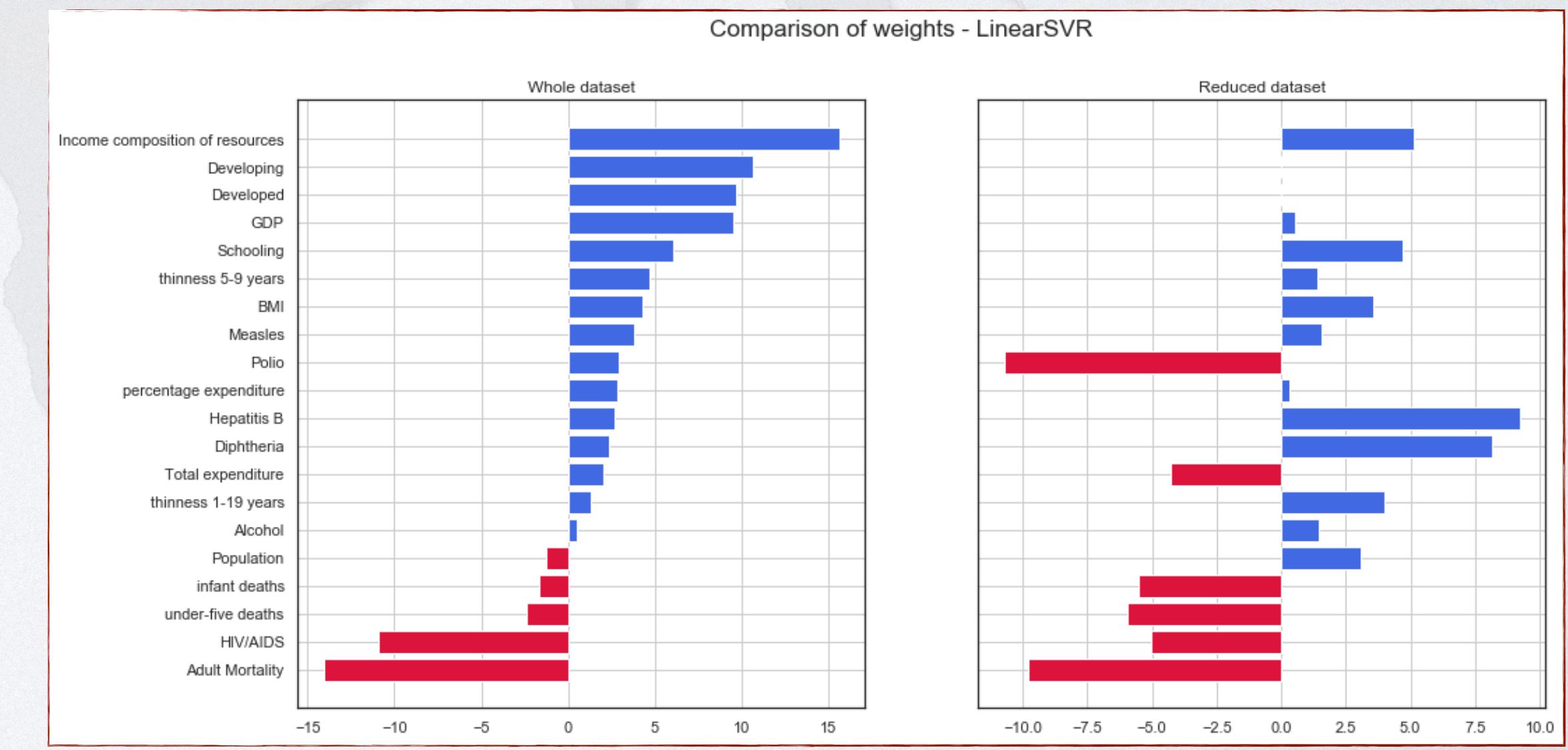
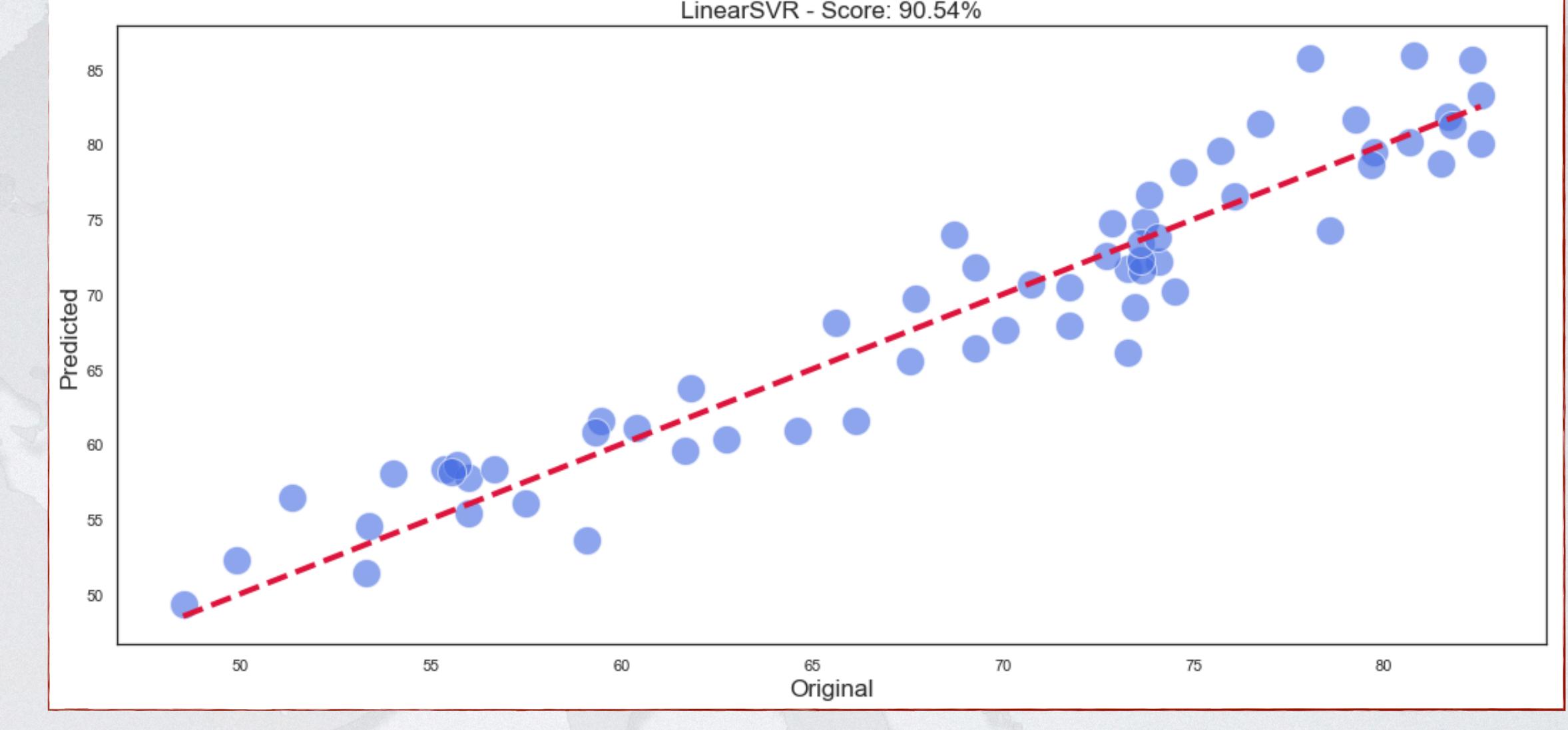


Methodology

Analysis

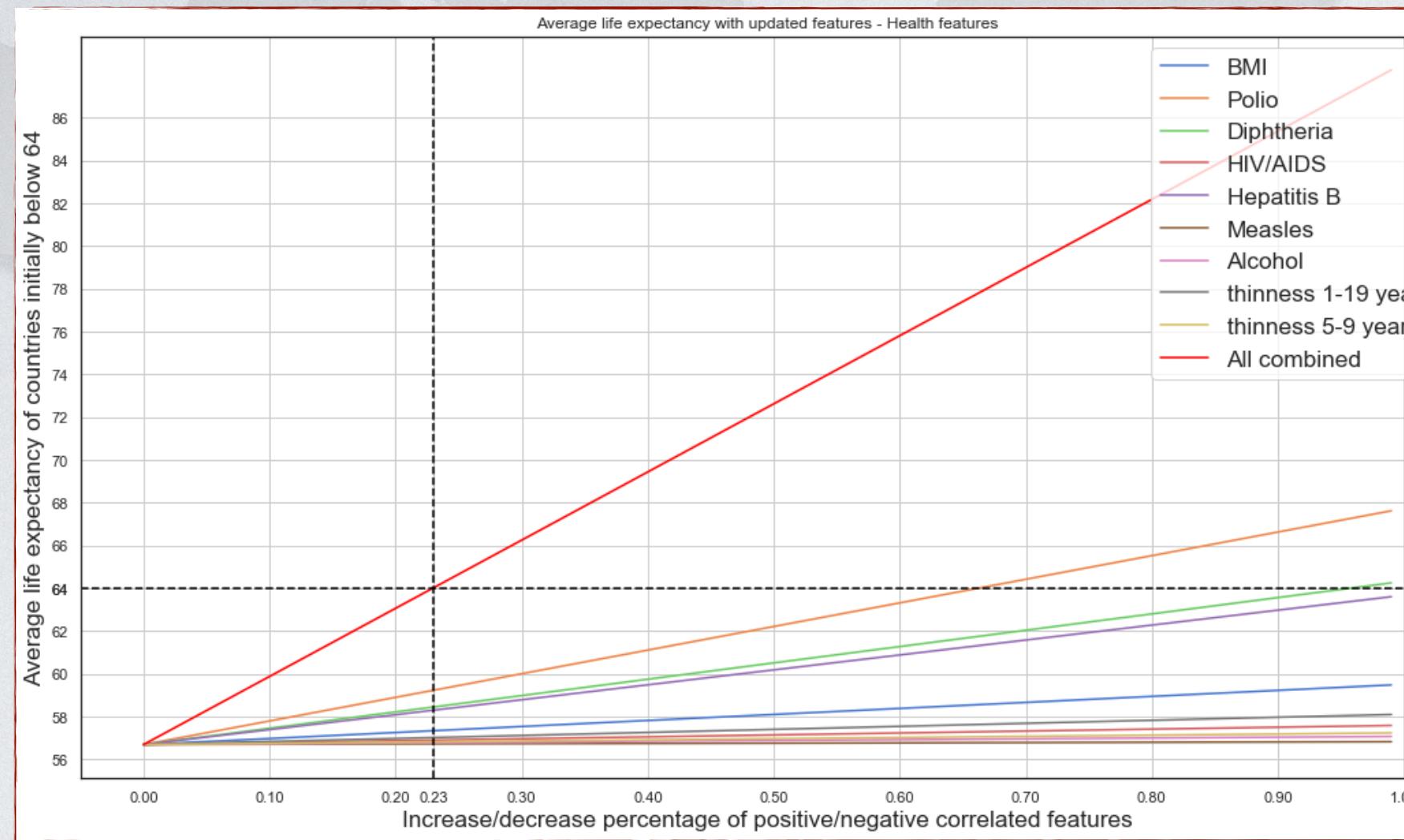


Predictions

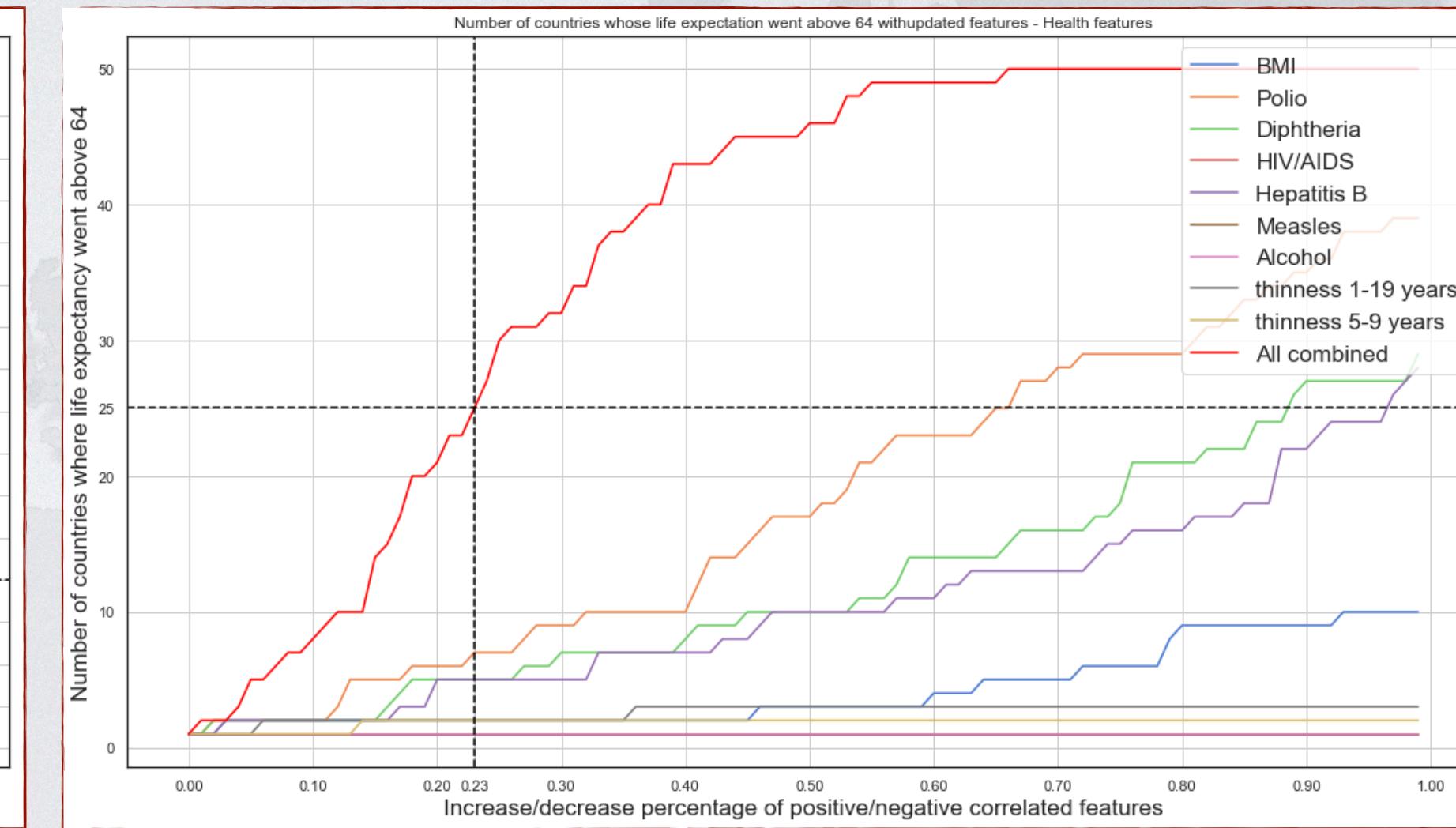


Learnings from analysis

Health Features



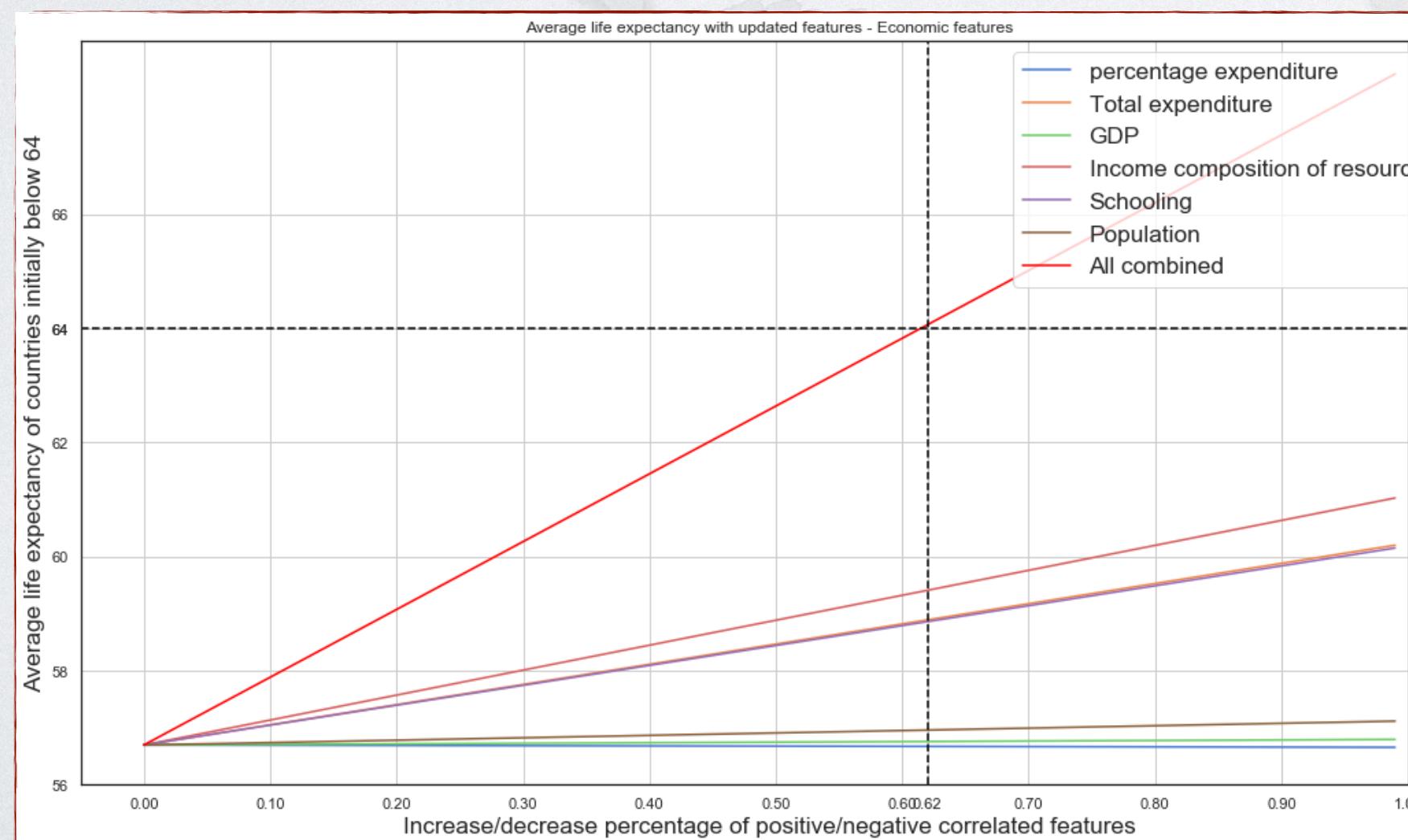
To increase the average life expectancy to a value above 64 years, we would need to improve the combination of all health factors by 23%.



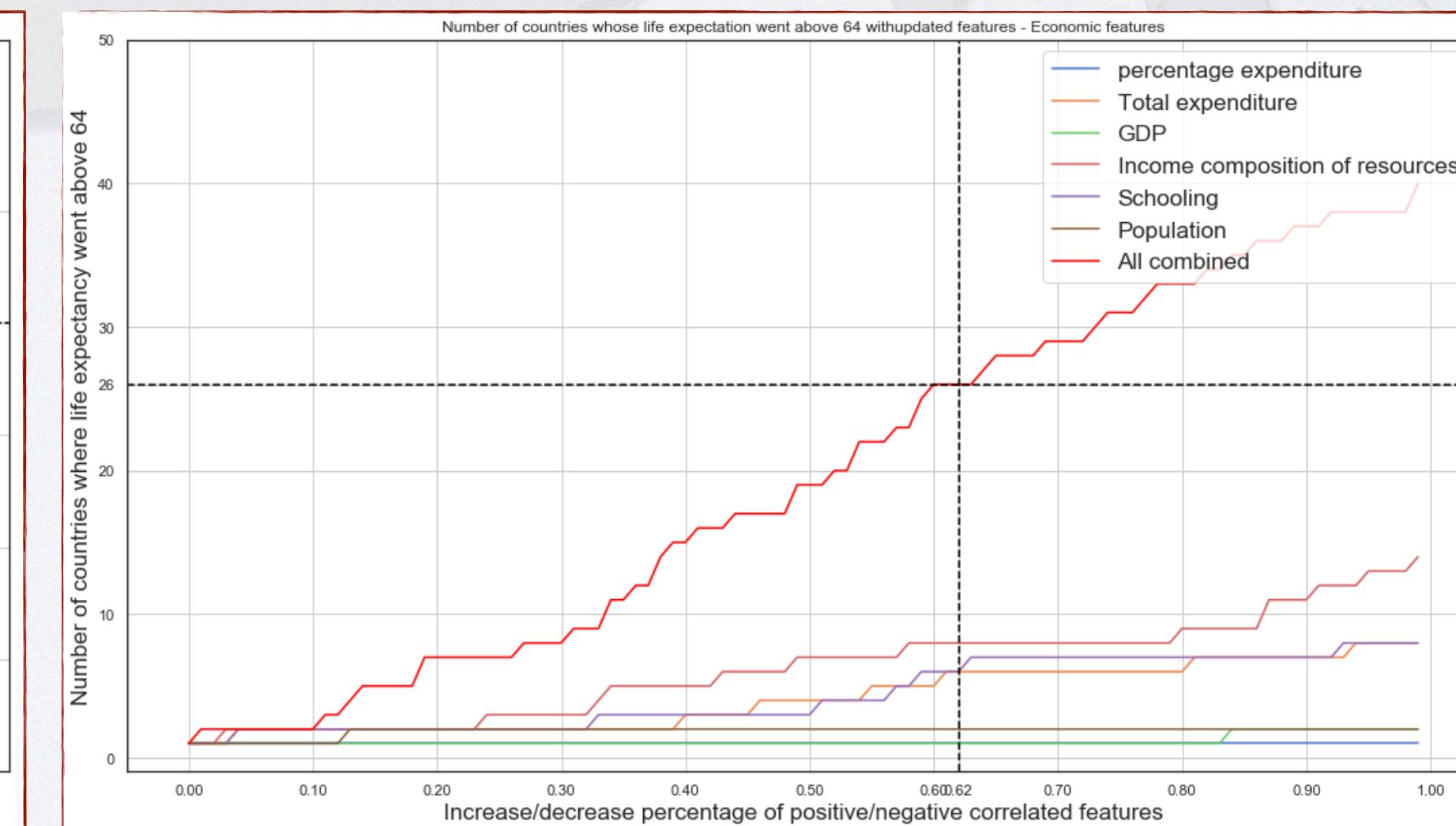
Varying 23% of the combination of all health related factors would lead to 25 countries have their life expectancy exceed 64 years.

Increasing the combination of health factors increases the life expectancy 2.5x more than increasing the combination of economic factors.

Economic Features



To achieve an average life expectancy exceeding 64 years, we would need to increase the combination of economic factors by 62%



Increasing 62% of the combination of the economic features would lead to 26 countries having their life expectancy exceed 64 years.

Conclusion

- Varying a little bit some well chosen factors would result in tangible improvements of the life expectancy.
- Varying factors directly related to health is much more efficient than varying economic factors.
- It is possible to focus on only one disease (Diphtheria, Polio or Hepatitis B) immunization coverage among 1-year-olds to increase considerably the life expectancy.
- Our analysis highlighted that health inequalities is a huge problem with many consequences on society and that action has to be taken to fight them

