

Worldwide Analysis of Impact of Lifestyle Diseases towards Life Expectancy

Analysis of World Health Data for Lifestyle Diseases over a decade and its Impact on Life Expectancy and Probability of Death.

Gabriel Kunkel
Poonam Tashildar
Joyita Roy

What the Project is About

Hypothesis: The levels of tobacco and alcohol use in a population will be visibly correlated with the probability of an early death due to lifestyle diseases such as cancer, cardiovascular disease and diabetes.

We attempted to determine a global relationship over a span of 15 years.

**Lifestyle
Diseases**



CAD/CVD - Coronary Artery Disease/Cardiovascular Disease

Diabetes - Body's Blood Glucose Level is abnormally high

Carcinoma - Cancer (abnormal cell division and invasion into nearby tissues)

Indicators:

Here, we are using “Probability of Death (%)” to refer to:

“Percent of 30-year-old-people who would die before their 70th birthday from any of cardiovascular disease, cancer, diabetes, or chronic respiratory disease, assuming that s/he would experience current mortality rates at every age and s/he would not die from any other cause of death (e.g., injuries or HIV/AIDS)”

-World Health Organization

Tobacco Use

Tobacco use is one of the leading cause of preventable disease, disability, and death.

Method of measurement :
Recorded Tobacco per capita (years - 15+)

Unit of Measure : Amount of use per person per year.



Alcohol Use

Alcohol Use is directly associated with High blood pressure, heart disease, stroke, liver disease

Method of measurement :
Recorded alcohol per capita (years - 15+)

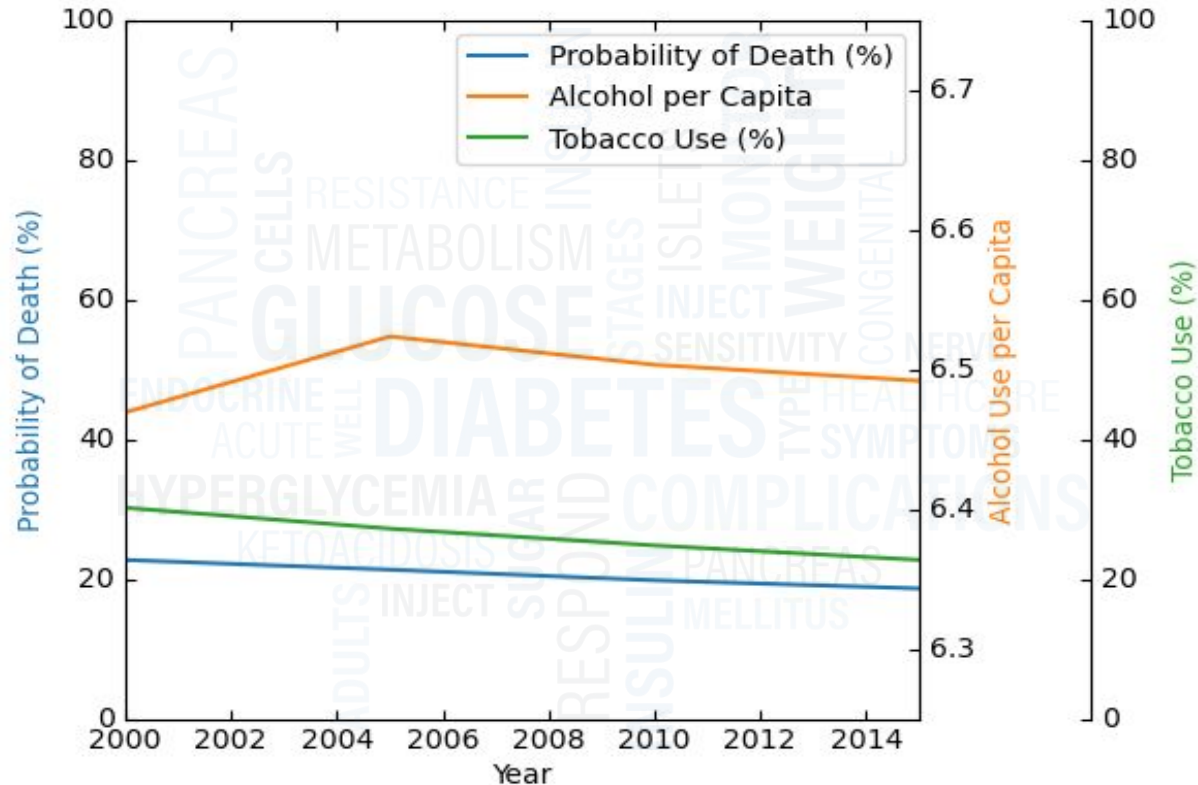
Unit of Measure : Litres of pure alcohol per person per year.

HALE

Healthy Life Expectancy

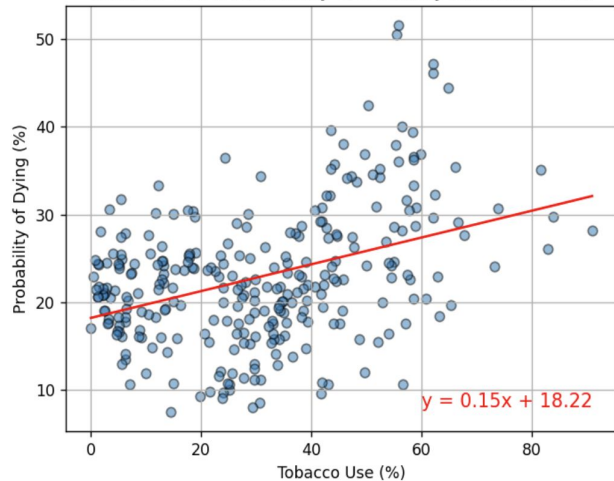
HALE is calculated by subtracting the probable duration of disability or inability to perform important activities from the **life expectancy**

Global year-wise probability of death (cancer, cardiovascular disease, diabetes) and alcohol/tobacco use for 2000, 2005, 2010, 2015

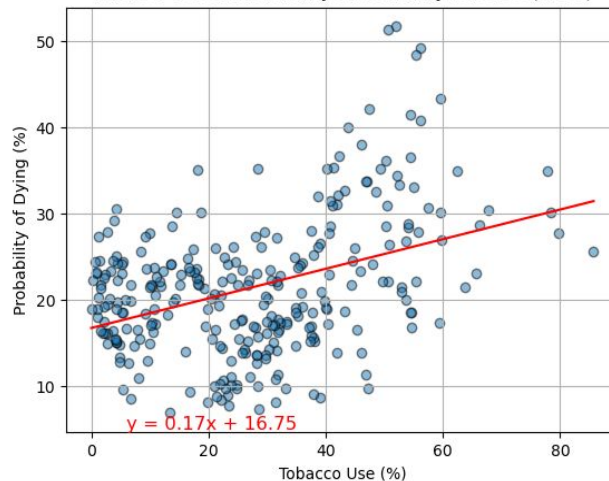


Tobacco use shows a direct correlation, Coefficient of 0.4 with the probability of death and 40% higher chance to influence these lifestyle diseases.

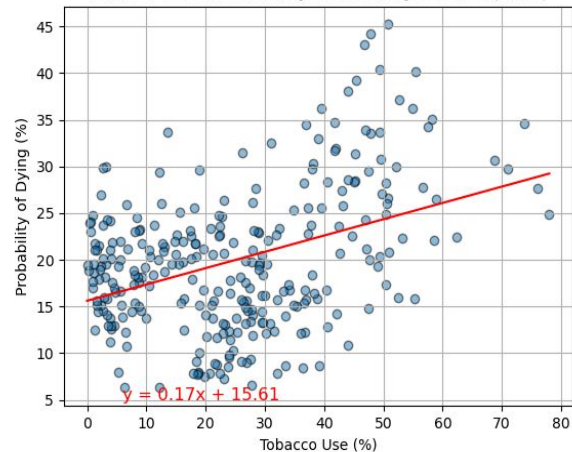
Tobacco Use & Probability of Death by Disease (2000)



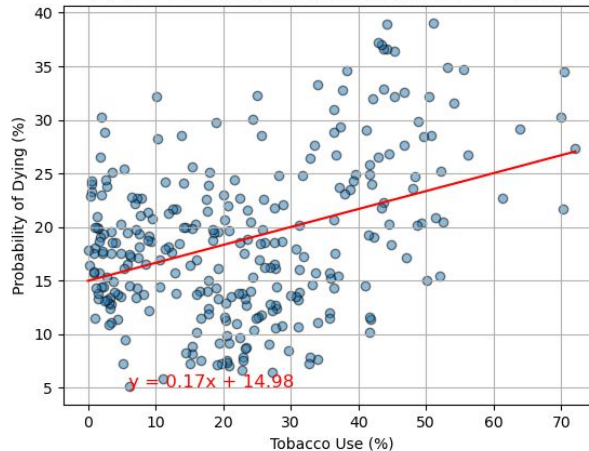
Tobacco Use & Probability of Death by Disease (2005)



Tobacco Use & Probability of Death by Disease (2010)



Tobacco Use & Probability of Death by Disease (2015)



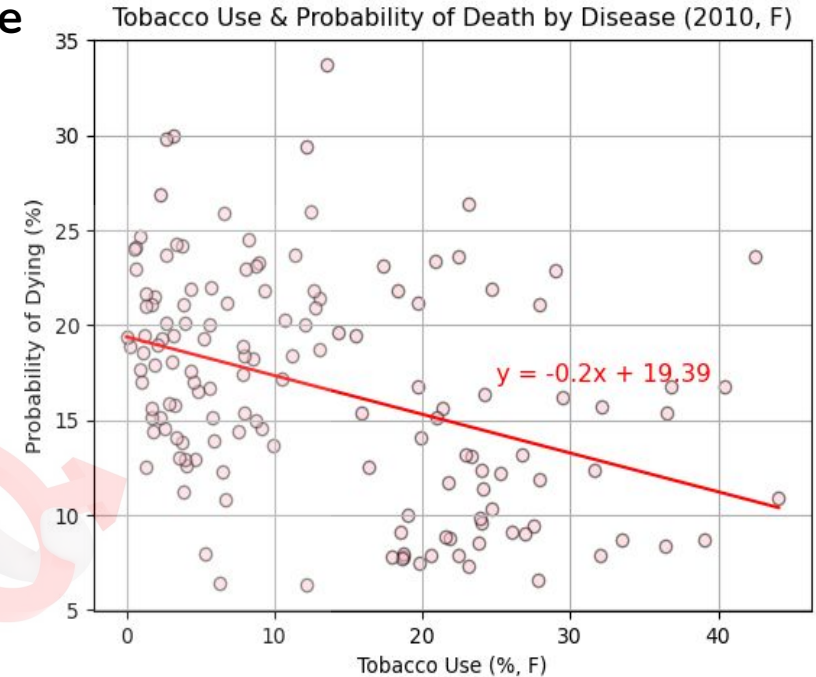
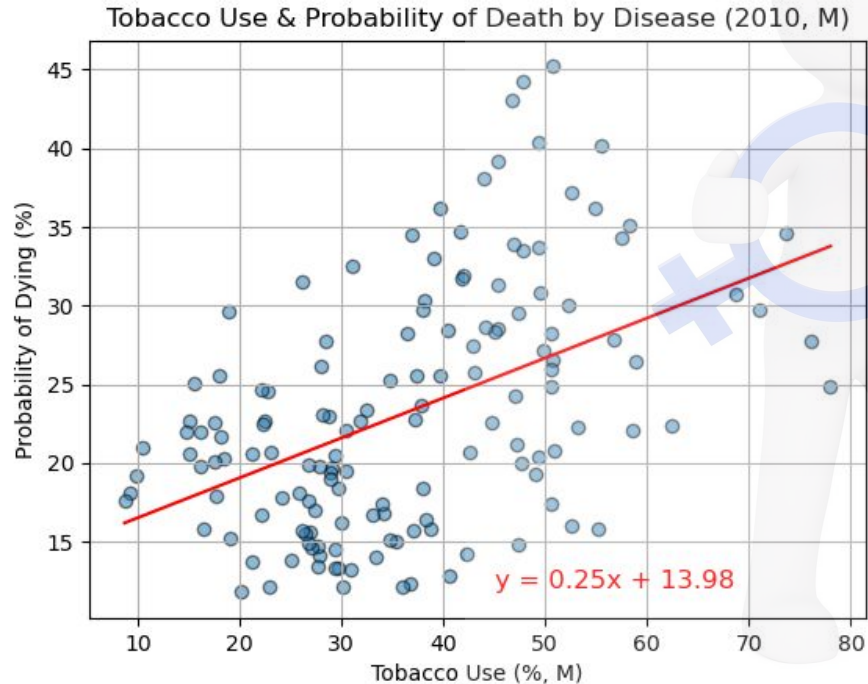
Tobacco Use vs. Probability of Death (%) (2000 - 2015)

Correlation coeff.: 0.39 to 0.40



Gender-wise distribution of Tobacco use and Probability of Death

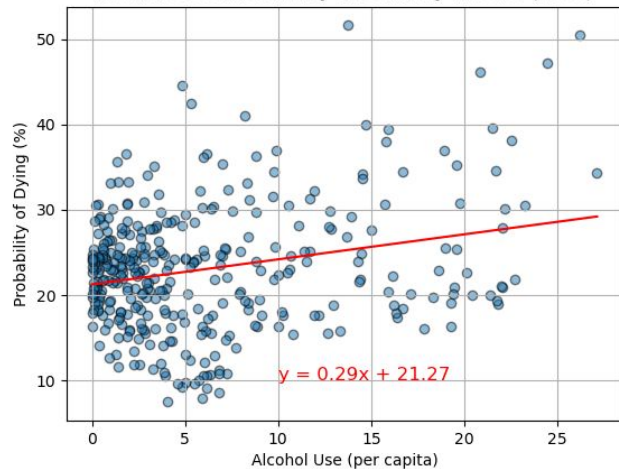
Correlation coeff. = 0.48



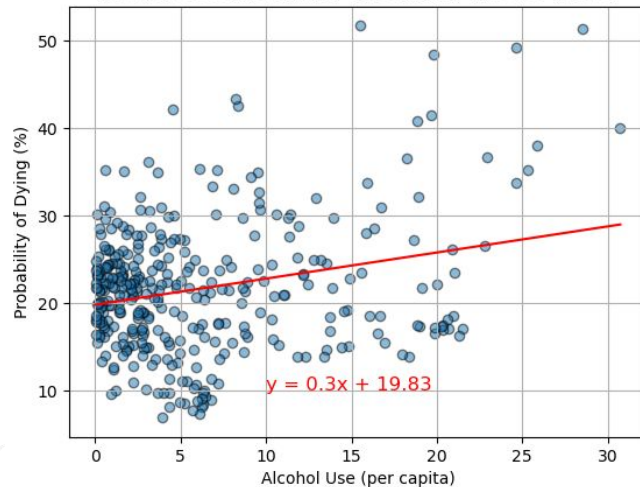
Correlation coeff. = -0.38

Year wise trend for Alcohol Use & Probability of Death

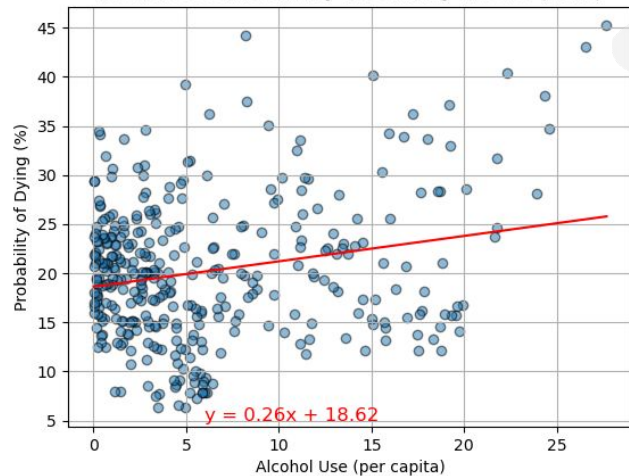
Alcohol Use & Probability of Death by Disease (2000)



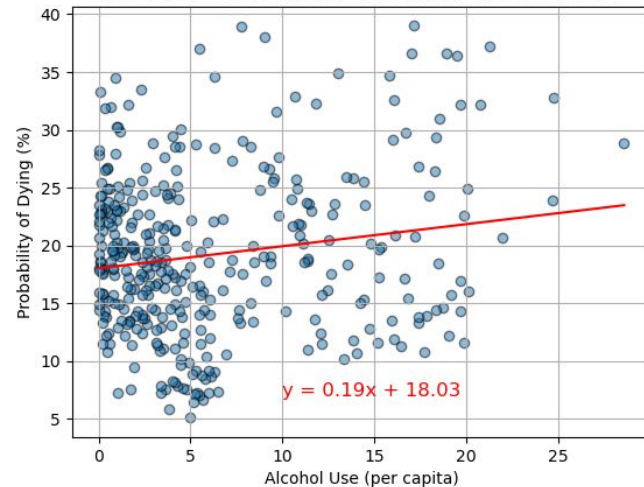
Alcohol Use & Probability of Death by Disease (2005)



Alcohol Use & Probability of Death by Disease (2010)



Alcohol Use & Probability of Death by Disease (2015)

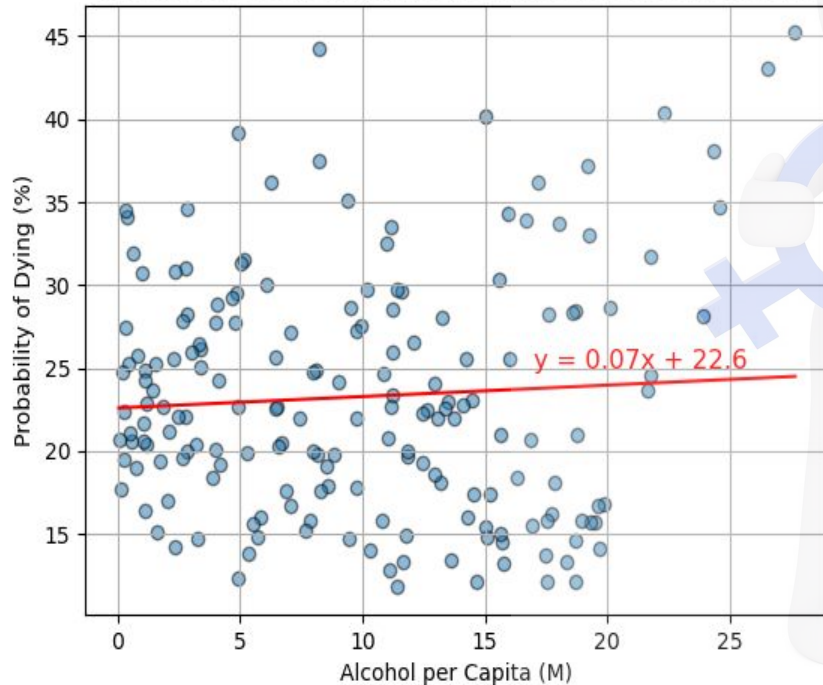


Correlation coeff.: 0.22 to 0.25

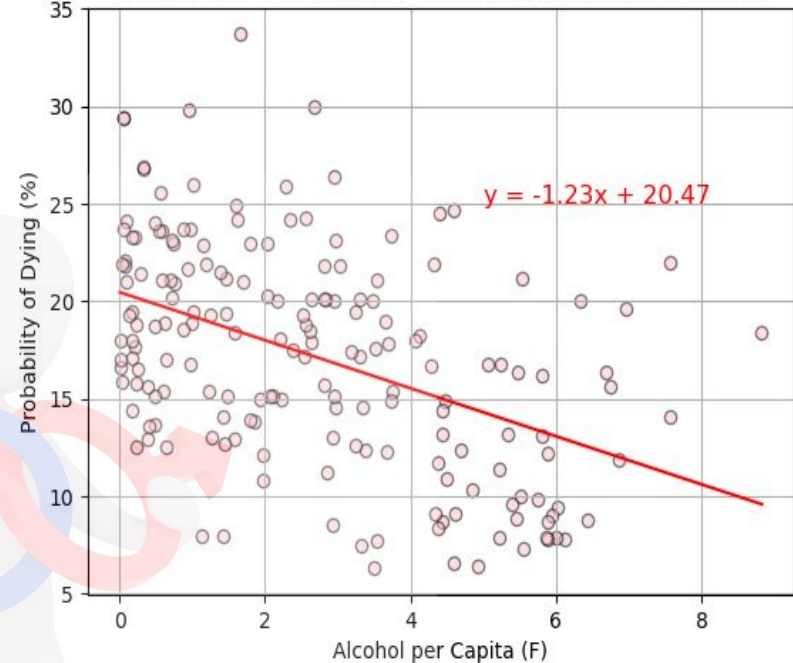
Gender-wise distribution of Alcohol Use and Probability of Death

Correlation coeff. = 0.06

Alcohol Use & Probability of Death by Disease (2010, M)

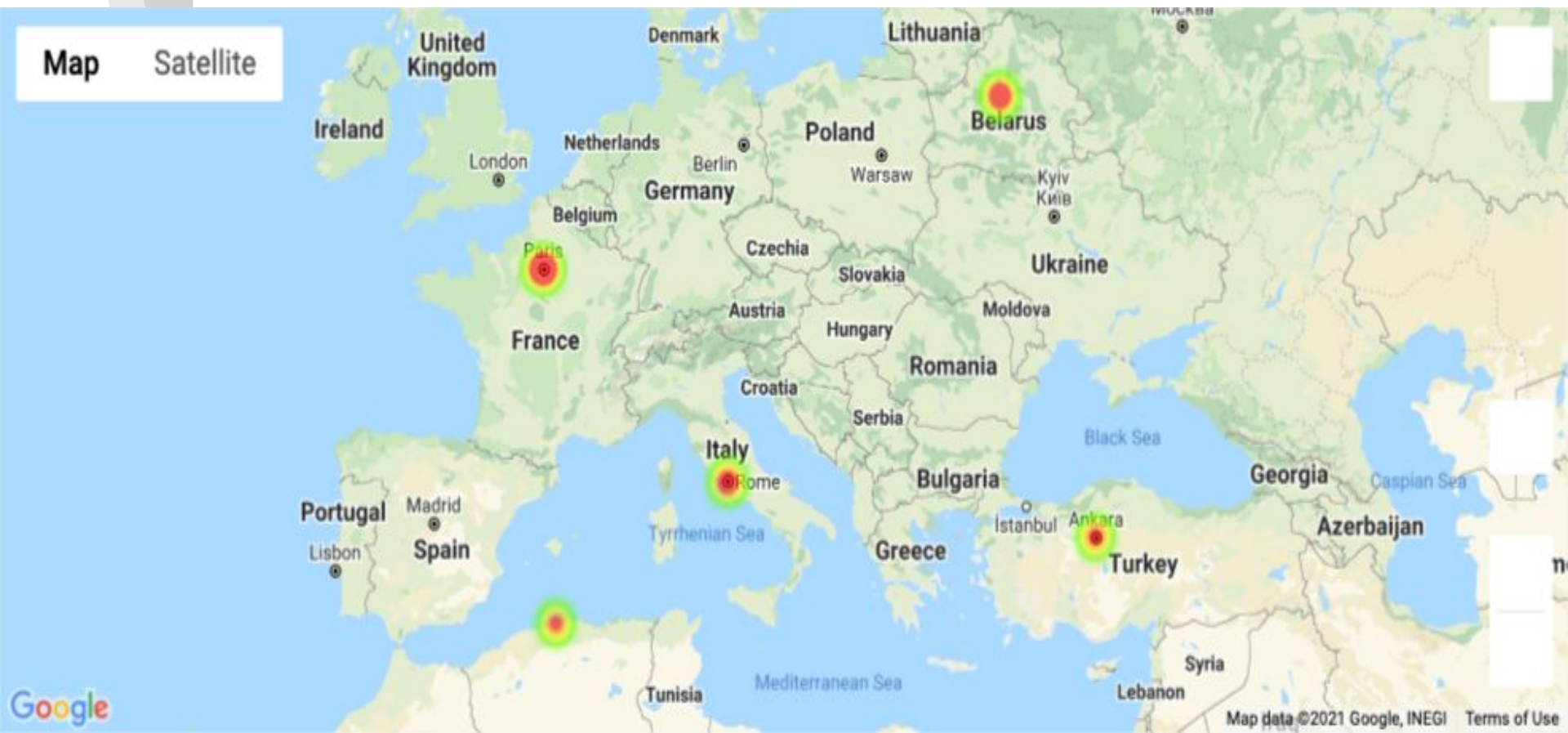


Alcohol Use & Probability of Death by Disease (2010, F)

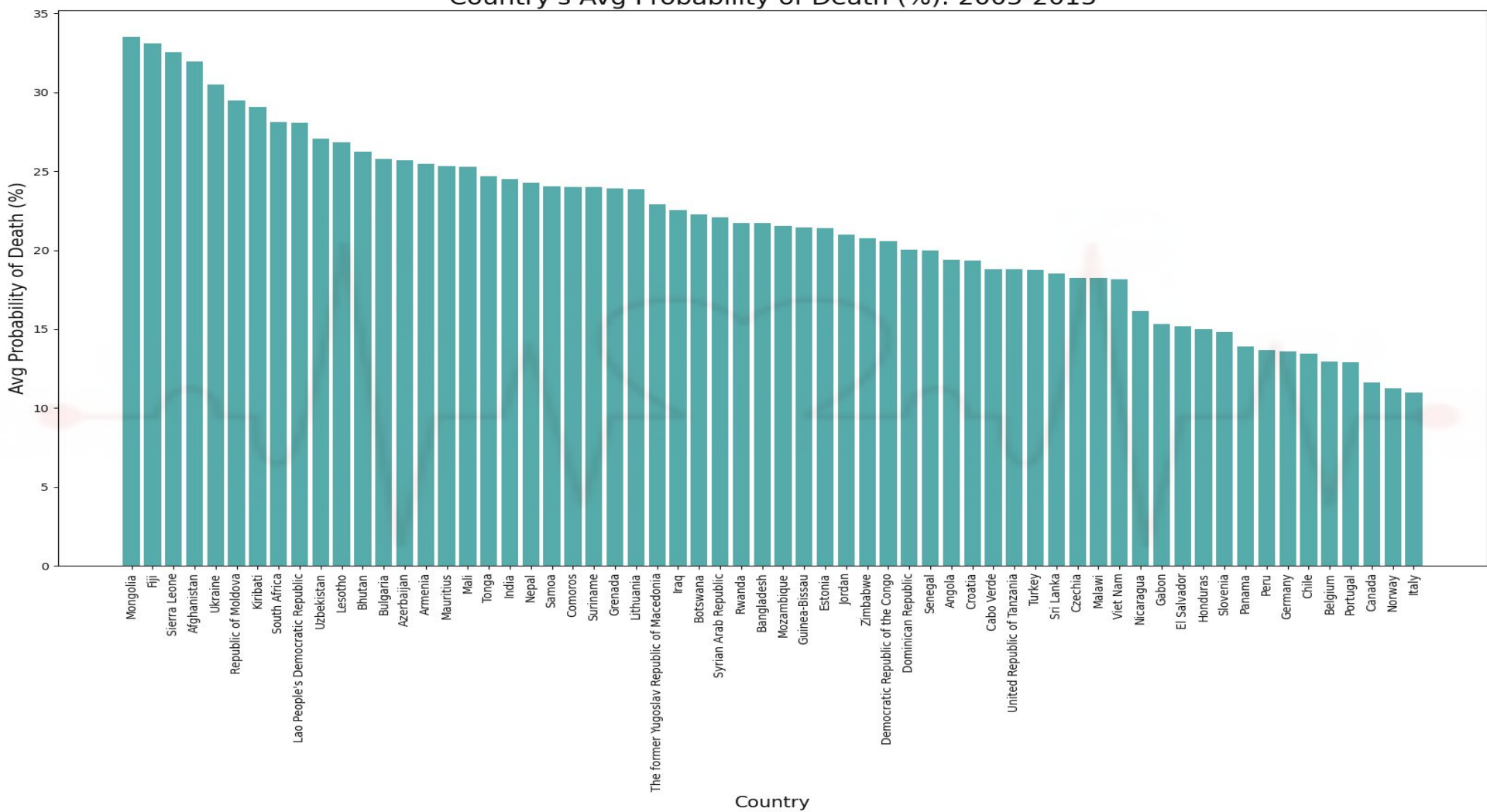


Correlation coeff. = -0.46

Probability of Death (%) in Sample Countries



Country's Avg Probability of Death (%): 2005-2015

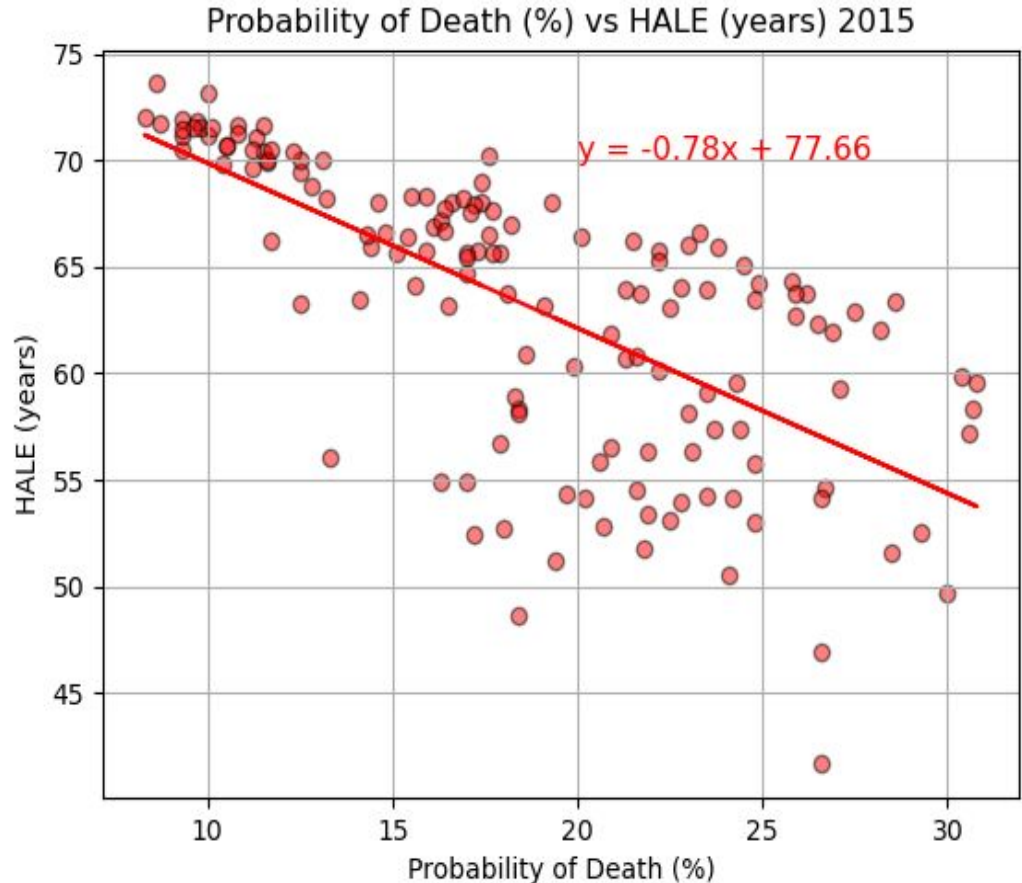


Probability of Death vs. Healthy Life Expectancy

Correlation coeff. = -0.68

This graph depicts a negative correlation between Probability of Death and HALE

- Supports the idea that avoiding preventable lifestyle diseases improves healthy life expectancy



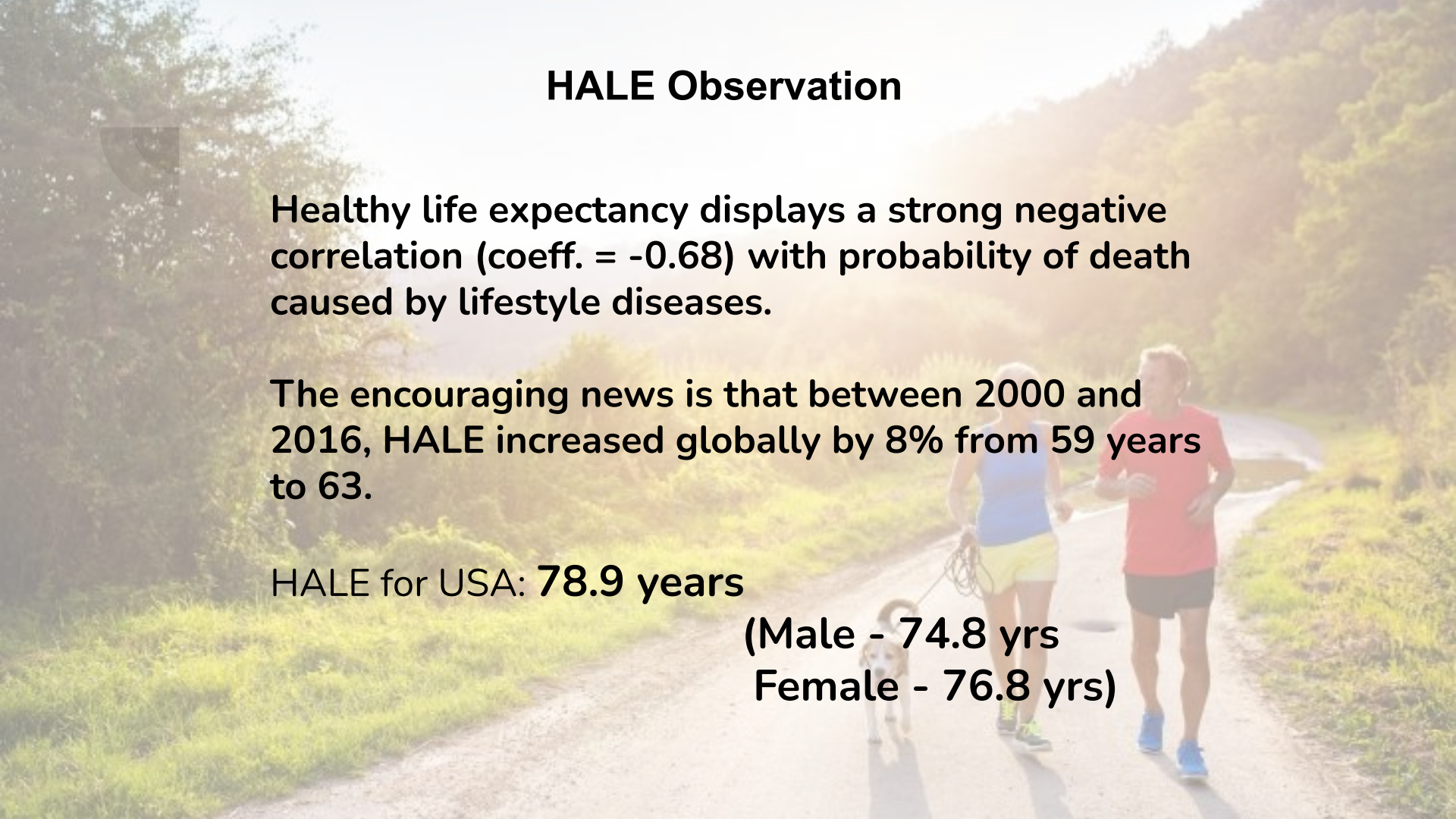
HALE Observation

Healthy life expectancy displays a strong negative correlation (coeff. = -0.68) with probability of death caused by lifestyle diseases.

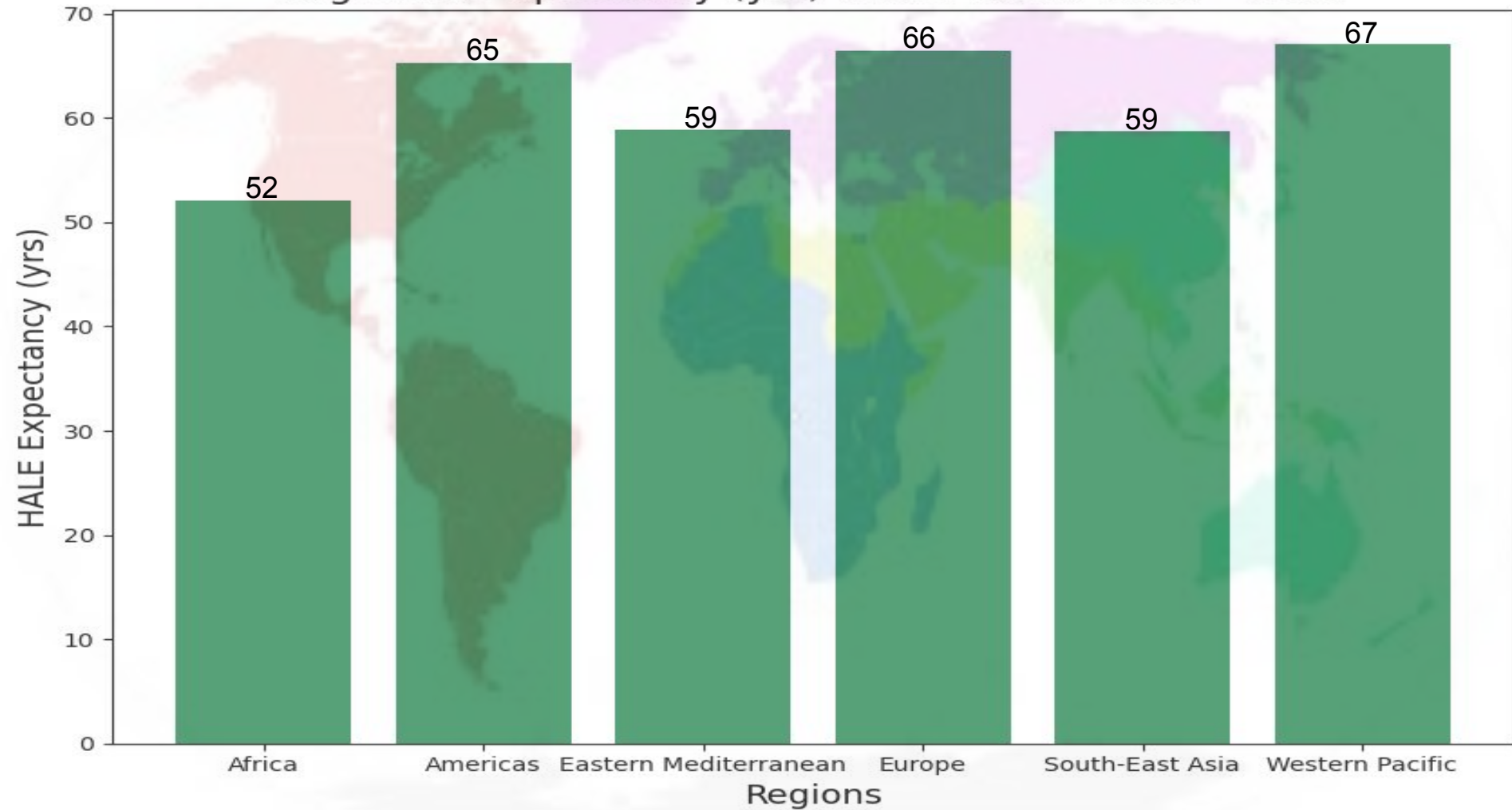
The encouraging news is that between 2000 and 2016, HALE increased globally by 8% from 59 years to 63.

HALE for USA: **78.9 years**

(Male - 74.8 yrs
Female - 76.8 yrs)



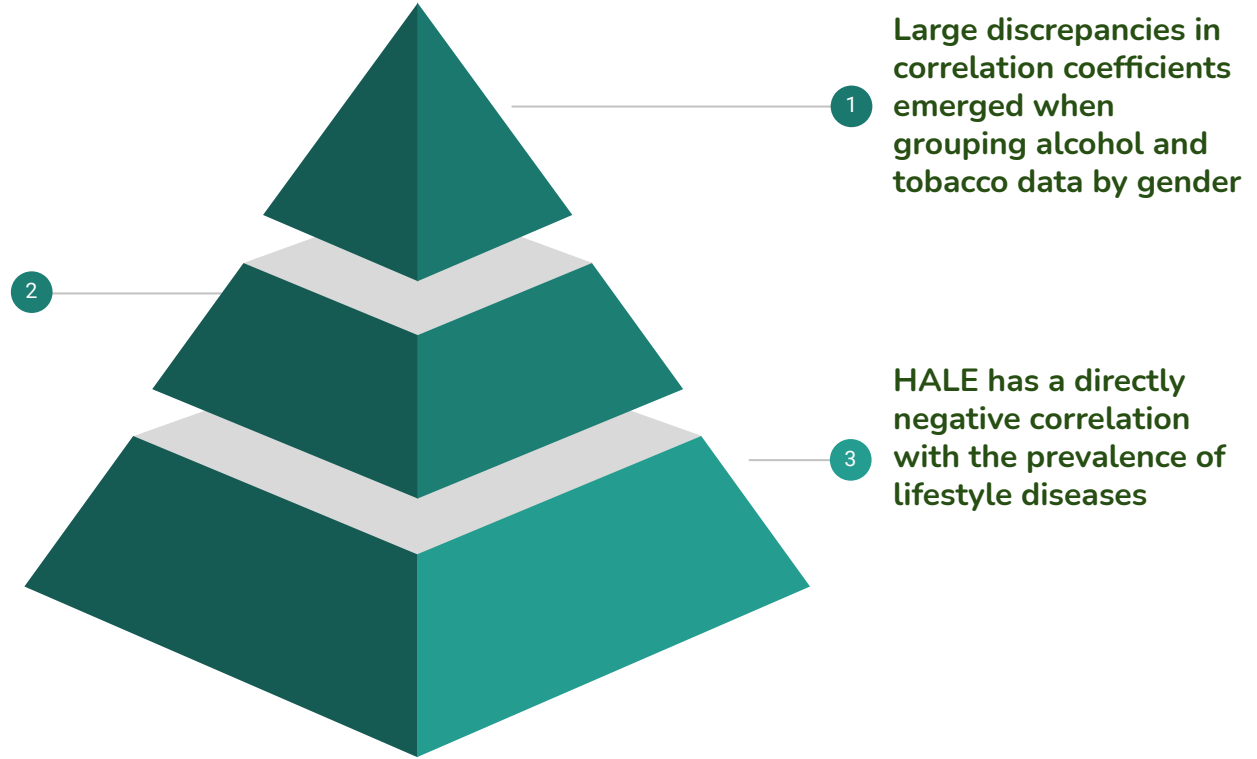
Avg HALE Expectancy (yrs) in the world: 2000 - 2019



Findings



There is a very weak correlation between alcohol use and probability of death (both genders).





The COVID-19 pandemic has underscored the need for global cooperation to improve population health.

As COVID has put the population in the back foot with increased level of anxiety and stress, hence potentially leading to an increased use of alcohol and tobacco. In our analysis we were able to conclude that less use of tobacco and alcohol has the potential to increase the healthy life expectancy for an individual.

Let's go to HALE



Source of our Data :

<https://www.kaggle.com/>

World Health Statistics 2020 | Complete | Geo-Analysis

CSV files:

- 30-70cancerChdEtc.csv
- HALElifeExpectancyAtBirth.csv
- alcoholSubstanceAbuse.csv
- tobaccoAge15.csv
- HALEWHOregionLifeExpectancyAtBirth.csv



