Life Expectancy: A Data-Driven Exploration and Prediction

Milestone: Project Proposal

Group 13

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Problem Statement:

Previous investigations into the determinants of life expectancy have been limited by a lack of consideration for the effects of immunization and the human development index. This project endeavors to address these shortcomings through a comprehensive analysis utilizing mixed-effects models and multiple linear regressions on data spanning the years 2000 to 2015, inclusive of all countries. Key immunizations such as Hepatitis B, Polio, and Diphtheria will be integrated into the study, along with several other critical factors, including mortality, economics, social factors, and overall health. By leveraging data from multiple countries, this study will facilitate the identification of key predictors of life expectancy, providing a foundation for evidence-based interventions to enhance population health outcomes. Ultimately, this research will contribute invaluable insights into the multifaceted nature of life expectancy.

Objective:

- The objective of this study is to conduct a thorough examination of the relationship between selected predictive factors and life expectancy.
- This research aims to delve into the specific predictive variables that have a significant impact on life expectancy.
- The question of whether increased healthcare expenditure is an effective strategy for countries with life expectancy values below 65 will be thoroughly addressed.
- This study will shed light on the crucial role that infant and adult mortality rates play in determining life expectancy.
- An investigation will be carried out to explore the potential correlation between life expectancy and various lifestyle factors such as eating habits, exercise, smoking, and alcohol consumption.
- The impact of education level on life expectancy will be evaluated through a comprehensive analysis.
- The potential correlation between alcohol consumption and life expectancy will be explored through a systematic examination.
- The study will investigate the impact of immunization coverage on life expectancy, with a focus on uncovering any correlations between the two factors.

Data Source: This dataset is taken from kaggle.com
https://www.kaggle.com/code/philbowman212/life-expectancy-exploratory-data-analysis/data

Data Description:

The World Health Organization's Global Health Observatory (GHO) maintains records of the health status and related factors of all countries. The data concerning life expectancy and health factors for 193 countries were obtained from the WHO's Global Health Observatory data repository. It was noted that over the past 15 years, there has been significant progress in the health sector, leading to a significant improvement in human mortality rates, particularly in developing nations compared to the last 30 years. In this project, data from the years 2000 to 2015 for 193 countries were selected for further analysis. In this dataset, we have 22 columns as below (Country, Year, Status, Life expectancy, Adult Mortality, infant deaths, Alcohol, percentage expenditure, Hepatitis B, Measles, BMI, under-five deaths, Polio, Total expenditure, Diphtheria, HIV/AIDS, GDP, Population, thinness 1-19 years, thinness 5-9 years, Income composition of resources, Schooling)