Berra Karayel

0054477

CSSM 502 Advanced Data Analysis with Python

2nd Homework Report

There are various factors that affect life expectancy such as stressors in life, genetic inheritance, nutrition, well-being and happiness. Many studies emphasize the importance of people’s well-being and happiness on their life expectancy. It is shown that people who live a happy life and identify themselves as happy tend to live longer compared to other people. So, I formulate my hypothesis on that.

**Hypothesis:***As the happiness and well-being of people increases, life expectancy is expected to be longer.*

**Methodology**

**Data Set:** I use World Happiness Report Data Set for 2015 from Kaggle.[[1]](#footnote-1) There are 6 factors that have been identified in the data set which are economic production, social support, life expectancy, freedom, absence of corruption, and generosity. These factors can be analyzed for the estimation of the contribution of each one to happiness in each country compared to Dystopia which is a hypothetical country which represents the world’s lowest national averages. I have filtered the data based on my hypothesis and removed redundant ones.

**Methodology:** For this study, I have used linear regression. Before starting analysis, I checked the dataset for missing values (empty and NaN values) and removed them by list-wise deletion. I used test to validate my data input.

**Linear Regression:** I used following equation for my analysis:

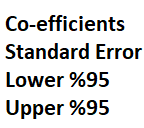
βˆ = (X′X)−1X′y, Var(βˆ) = σ2(X′X)−1,

σ2= e′e , n−k−1

e = y − yˆ ,  
y = Xβ + e.

**Findings:**

My linear regression model yielded the following results:

**Text, letter

Description automatically generated**

According to these results, we can conclude that there is a strong relationship between happiness and health, life expectancy.

Chart, scatter chart

Description automatically generated

Life Expectancy = **-**0.20982016 + 0.15627252 x Happiness

1. https://www.kaggle.com/mathurinache/world-happiness-report-20152021 [↑](#footnote-ref-1)