EXECUTIVE SUMMARY

Happiness And Unemployment

The World Happiness Index is an annual survey published by the United Nations Sustainable Development Solutions Network which ranks 148 countries by how happy their citizens perceive themselves to be. The index is based on a global survey that asks people to rate their own lives on a scale of 0 to 10 and is used to understand how happiness varies across the world and to identify the factors that contribute to it. The current index takes into consideration many factors such as life expectancy, social support, and freedom to make life choices. This project seeks to explore the impact of an additional factor, Unemployment Rate on the World Happiness Index in light of the COVID-19 pandemic, and to answer the question of how unemployment, annual GDP, and life expectancy rate have affected world happiness during this period.

The paper begins by analyzing the correlation between unemployment rate, annual GDP, and life expectancy rate as independent variables with Happiness Index. Both Life expectancy and GDP per capita have positive relation while unemployment rate has weak negative relation. The study uses a linear model on each independent variable to answer our research question at hand which is:

- What effect did life expectancy rate, annual GDP, and unemployment rate have on world happiness during COVID-19?
  We found that unemployment rate has more effect on Happiness Index during covid-19 period than it was before covid-19 period.

We then used independent variables to predict the happiness index scores of all countries with linear models like Linear Regression and Generalized Additive models between the years 2019 and 2021. The predicted happiness index during the COVID-19 period is compared with the original happiness index of all countries. We found that GAM model is a better fit than the lm model

We also implemented a time series model based on the Holt trend method to predict the happiness index of the world from 2019 to 2021 based on the trend from 2010 to 2018. The results showed that the forecasted happiness index between 2019 and 2021 was lower than the actual happiness index of the world during the pandemic. This was not the expected result, but it must be because the mean happiness index used to make the plot is the combination of data from all countries which neutralizes any crucial insight.