Final Project Outline

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Business Questions:

Compared to other OECD countries, how has per capita spending on healthcare affected those countries' growth prospects? What does it say about where those countries are headed? (Brooke)

1. An answer to this question will help gauge how healthcare expenditures are related to overall GDP growth and whether the country's money is being allocated properly. The relationship between healthcare expenditures and GDP can indicate whether there may be too much or too little invested into healthcare, which could impact the overall economic growth of the country. Further, understanding the relationship between healthcare expenditures and GDP growth can help businesses in strategic planning and resource allocation both nationally and internationally.
2. **Model /Dataset:** OECD healthcare data, world bank data, g20 data, FRED data
   https://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_STAT
   https://data.oecd.org/gdp/real-gdp-forecast.htm#indicator-chart
   https://data.oecd.org/gdp/real-gdp-forecast.htm#indicator-chart
3. **Statistical/Predictive methods:** Multiple Linear Regression
4. **Variables: Target:** GDP Growth **Independent:** OECD Country, Year, Health Expenditures and Financing, Gross Fixed Capital formation of the healthcare system, Monetary conversion rates, Healthcare employment, Government/compulsory Health Insurance Coverage, Revenues of healthcare financing schemes

Over recent years Japan has stood on the global stage with the third largest economy, albeit considerably behind the USA and China. That being said, in recent years numerous factors have been impacting the decline of the value of the Japanese Yen (JPY). My question is whether or not it is feasible to effectively predict the real value or exchange rate of the JPY to USD with historical data, then use that to ideally buy low and sell high.

1. This historical data consists of factors that will be represented in datasets: USD to JPY exchange rate, GDP, Population Growth, GDP per employed person, Central Government Debt, % of Foreign Investment in GDP, Japan GNI, Japan net trade in goods and services (BoP), Japan % of Population above age 65. There is also a plan to include datasets on countries that Japan trades most with, including China, The United States, ASEAN, and EU.
2. **Model, Target, & Group Members:** The model I am looking to use is a random forest. The value I am trying to predict is the exchange rate. This can be used to hopefully buy at a low value to sell for a higher value.

Using international crypto exchange data and the US dollar, can you predict whether the US dollar (or any currency you want) will rise or fall in relation to the data to present arbitrage opportunities? (Marc)

1. Using international cryptocurrency data to predict the directional movement of the US dollar provides valuable insights to investors and financial institutions. The statistical models that will be used to answer this question will show the fluctuations in the US dollar's value, allowing stakeholders to explore arbitrage opportunities. The potential limitations and risks associated with cryptocurrency include its inherent volatility, uncertain market and regulatory environments prompt us to interpret the findings with caution. However, refining the model through continuously monitoring the market landscape and other economic indicators will help to provide an accurate and robust analysis.
2. **Model /Dataset:** Coin metrics historical data, FRED exchange data
3. **Statistical/Predictive methods:** Linear regression model
4. **Variables:**
   a. Target: directional movement of the US Dollar (rise, fall, or remain stable) against selected fiat currencies.
   b. Independent: Historical exchange rates of the US Dollar, trading volume, volatility, interest rates, GDP growth, reference rates (the price of an asset quoted in BTC, ETH, EUR, USD)