CS 216 Project Proposal

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Introduction to topic:

The COVID-19 pandemic's impact on the global stock market has been drastic and ongoing. With this project, we hope to analyze if certain pandemic metrics can directly predict reactions from the stock market, represented by key stocks and indices from the worldwide market. We intend to make some conclusions on the stocks and indices most strongly affected by the pandemic, as well as make predictions in the event of a future pandemic.

Research questions:

- How has the COVID-19 pandemic impacted the stock market (i.e. what is the correlation), on regional and global levels?
- How can we use the impacts from these outbreaks to predict the impact of pandemics in the event of a future outbreak**?**

For these research questions, we plan to analyze the trends in the progression of the outbreaks against the timelines of stock market trends using the key indices we mention below. Since these outbreaks impacted different areas at varying times and severity, looking at different regional markets will be useful. We believe this is feasible as we have chosen a specific research question from obtainable data which we can analyze several different aspects of, using different methods of analysis such as exploratory data analysis, multiple regression, etc. These research questions are important as the volatility of pandemics has made severe and widespread impacts on the global market. Being able to better predict and react accordingly will be essential in minimizing these impacts.

Datasets:

First, we have a dataset from kaggle, containing data from the Covid 19 pandemic. Our intention is to use this data, which tracks the progression of the pandemic (new cases, deaths, recoveries, etc.), to make predictions on the performance of the stock market.

1. https://www.kaggle.com/imdevskp/corona-virus-report

Next, we intend to obtain historical returns data using the Bloomberg terminals available in the Perkins Library. Some key indices we have identified that we intend to explore are:

1. VIX (volatility index)
2. S&P
3. Nikkei (Japan)
4. SSE 50 (Shanghai)

5. KOSPI (Korea)
6. STOXX50E (Eurozone)

As these datasets are readily available either online or using resources available at Duke, we believe that our data collection plan and research questions are feasible.

Collaboration plan:

- Division of responsibilities
    - We will meet or talk about what we need to do for the project, and divide responsibilities as we go.
- Expected time spent on the project, per person
    - We expect every group member to do about 2 hours a week, and expect more hours towards the last couple of weeks of the semester.
- Meeting time and platform(s) for communication
    - We will meet every Friday afternoon on Zoom and will be using Facebook Messenger to communicate between meetings
- Storage of data, and link to the repository
    - We will be using Github to store and edit the files for our project
    - Github link: https://github.com/JustinLimrh/cs216-final

References:

1. Avalos, F., & Zakrajšek, E. (2020). Covid-19 and SARS: what do stock markets tell us?.
2. https://www.kaggle.com/imdevskp/corona-virus-report