Question 1: What people say and how people feel before and after the vaccine news. (60 points)

Please submit your R code along with your answers to the following questions.

1. Please generate wordcloud for tweets in the data file “pfizer1107\_1108.csv.” Show the wordcloud. (5 points)

A close-up of words

Description automatically generated

1. Please generate wordcloud for tweets in the data file “pfizer1109\_1110.csv.” Show the wordcloud. (5 points)

A close-up of words

Description automatically generated

1. Please generate two bar plots of top 20 high frequency words using tweets in the data file “pfizer1107\_1108.csv” and the data file “pfizer1109\_1110.csv” respectively. Show the bar plots and conclude any findings by comparing these two bar plots [hint: remove “Pfizer” or “pfizer” or “pfizers”]. (10 points)

A graph of a number of people

Description automatically generated with medium confidenceA graph with a number of different colored bars

Description automatically generated with medium confidence

We can see the average searching number in increasing a lot which mean more people noticed and start looking for it.

1. Please generate two sentimental bar plots using tweets in the data file “pfizer1107\_1108.csv” and the data file “pfizer1109\_1110.csv” respectively. Show the sentimental bar plots and conclude any findings by comparing these two sentimental bar plots. (10 points)

A graph of different colored bars

Description automatically generatedA graph of different colored bars

Description automatically generated

We can see the most did not change but have more surprise mean these event did not affect people’s emotion but just make them have more surprise based the these things being happened.

1. Please generate two histograms of people’s feeling using the tweets in the data file “pfizer1107\_1108.csv” and the data file “pfizer1109\_1110.csv” respectively. Show the histograms. (10 points)

A graph with a bar graph

Description automatically generatedA graph with a bar graph

Description automatically generated

1. Please calculate the averages of feeling using the tweets in the data file “pfizer1107\_1108.csv” and the data file “pfizer1109\_1110.csv” respectively. Show the averages and conclude the findings by comparing the averages. Please provide an explanation for the findings. (10 points)

pfizer1107\_1108.csv: 0.3998353

pfizer1109\_1110.csv : 0.3154083

Average feeling score being dropped which mean people might because happened thing start question Pfizer and have less trust than before.

1. Please calculate the average feeling using the tweets in the data file “pfizer1111.csv.” Show the average and conclude the findings by comparing this average with the averages in f). Please provide an explanation for the findings. (10 points)

0.1592167

This number being changed a lot which mean what ceo’s action increase more people’s fear and let them even have much less trust then before.

Question 2: The stock return before and after the vaccine news (40 points)

Peter is also interested in how the stock market responded to the vaccine news. He chooses Nov 6th to Nov 10th in 2020 as the event window to evaluate the impact. [Hint: the time range of stock price is different from event window. Please recall what I covered in the class]

Please submit your R code along with your answers for the following questions.

1. Use index SP500 as the reference group and calculate the cumulative abnormal return during the event window. (15 points)

0.05392021

1. Use Bristol Myers Squibb, Merck & Co., and Novartis as the reference group and calculate the average abnormal return during the event window. (15 points)

0.05712542

1. Generate plots with the daily returns of Pfizer, Bristol Myers Squibb, Merck & Co., and Novartis. (10 points)

A graph with lines and numbers

Description automatically generated