



# Impact of COVID-19 Pandemic on U.S. Airline Industry

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# Concerns

There are three main concerns that we identified regarding the airline industry due to the recent pandemic.

**1**

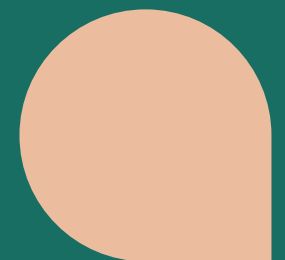
How are people's attitude towards airlines and flying?

**2**

How has the stock market been affected by the change in flight numbers?

**3**

How have flight numbers been affected by the increase of COVID-19 cases?



# Twitter sentiment analysis

Using Twitter data from Kaggle.

# Stock market vs. flight analysis

Using flight data from Flightradar24 and stock market data from Yahoo! Finance.

# COVID-19 cases vs. flight analysis

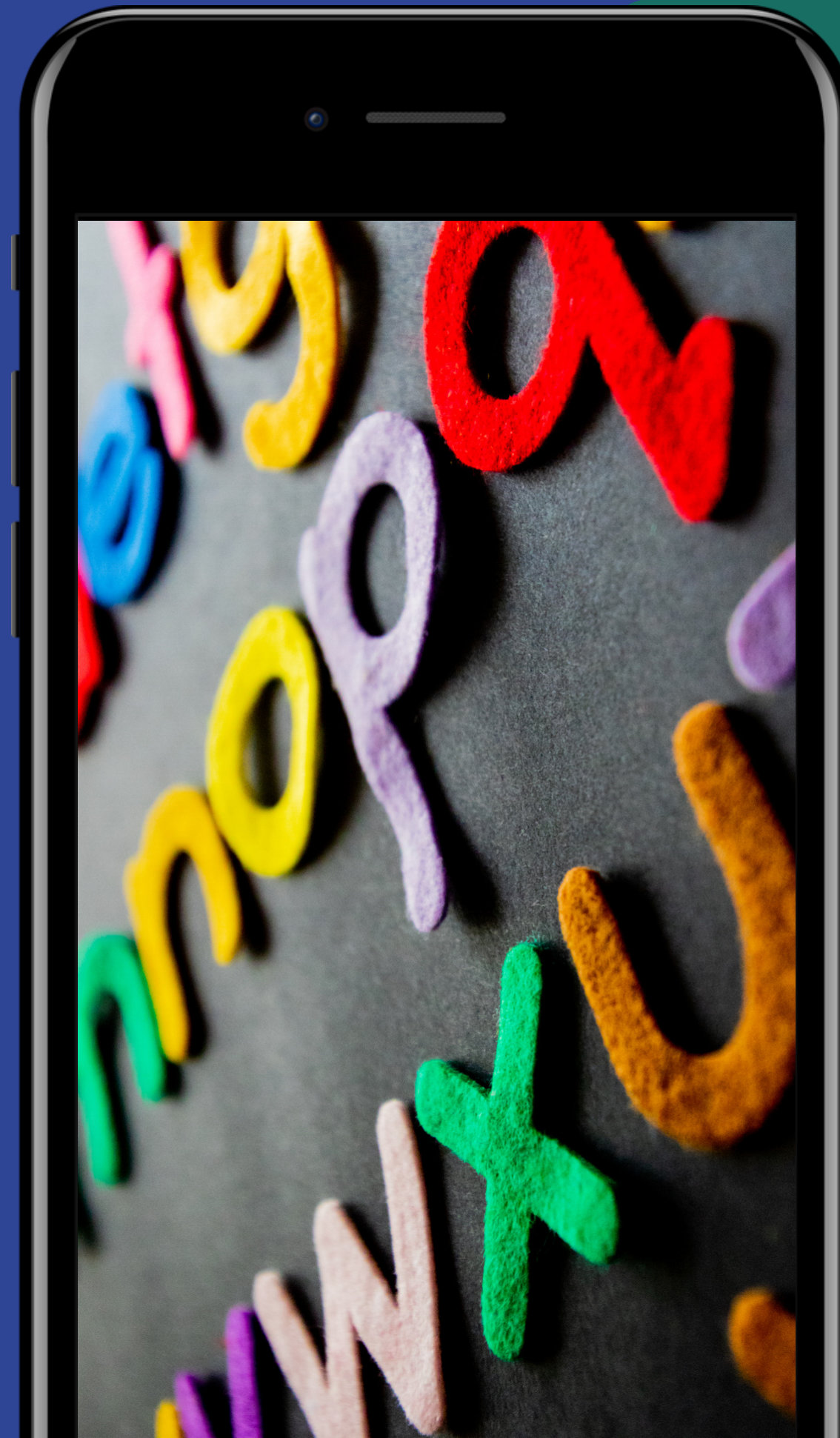
Using COVID-19 data from Github and flight data from Flightradar24.

## Solutions

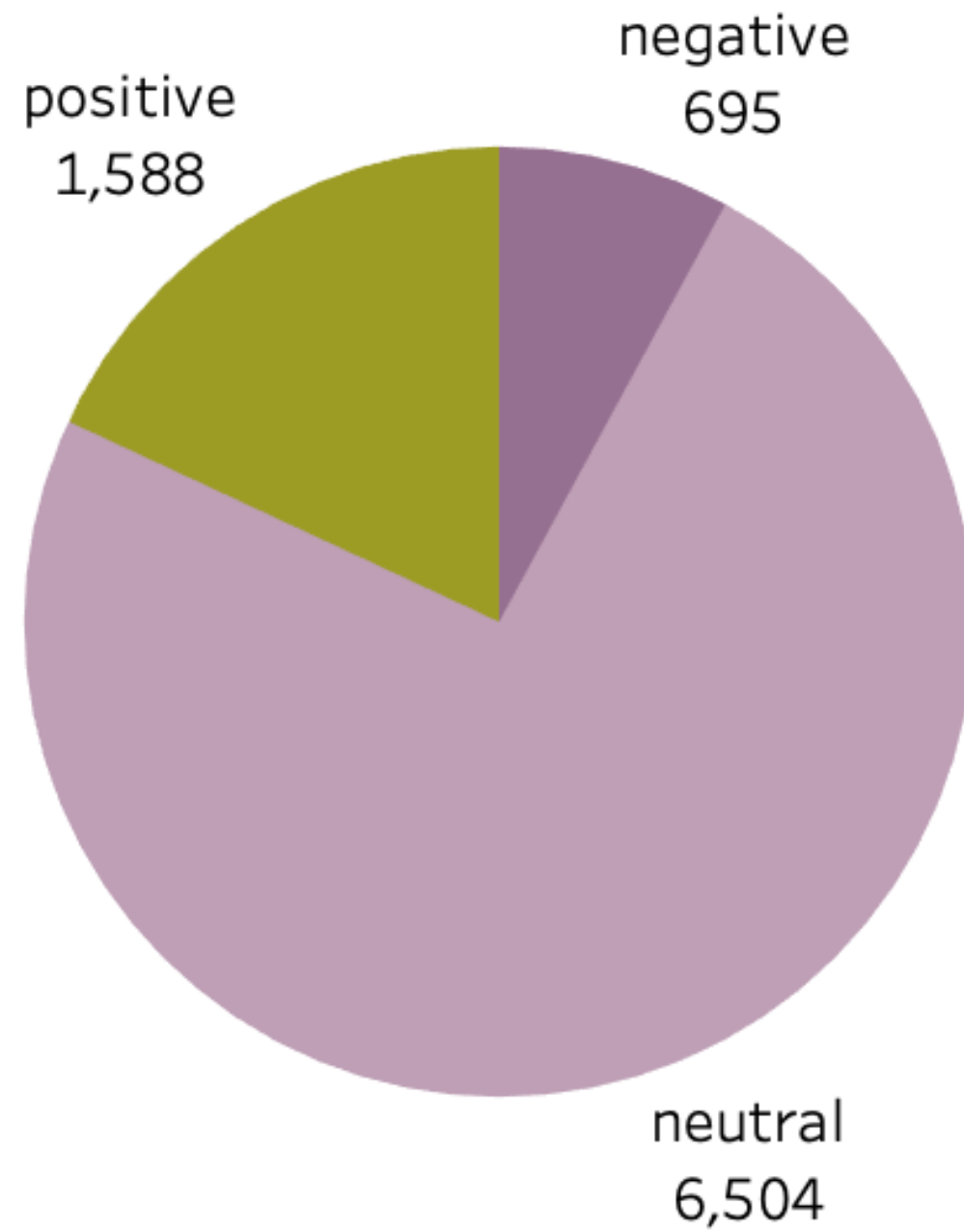
Here are the analyses we have produced to answer those questions and concerns.

# Sentiment Analysis

To understand people's sentiment towards the airline industry during the pandemic, we analyzed Twitter tweets that included airline-related hashtags. In this investigation, we first looked at how people's sentiment is distributed, and then generated word clouds to visualize the most frequent words.



## Sentiment Distribution



### Category

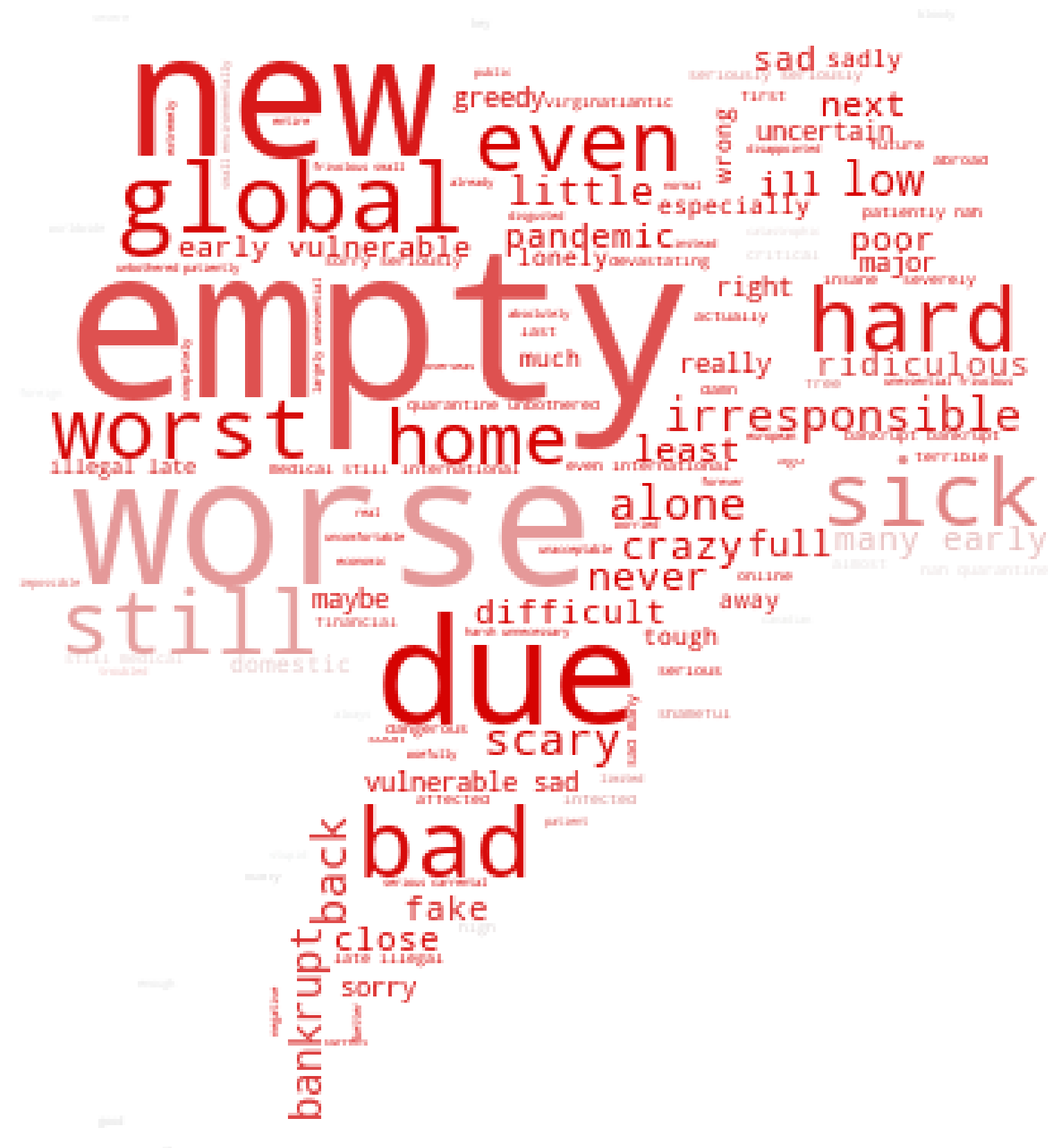
- negative
- neutral
- positive

### Number of Records







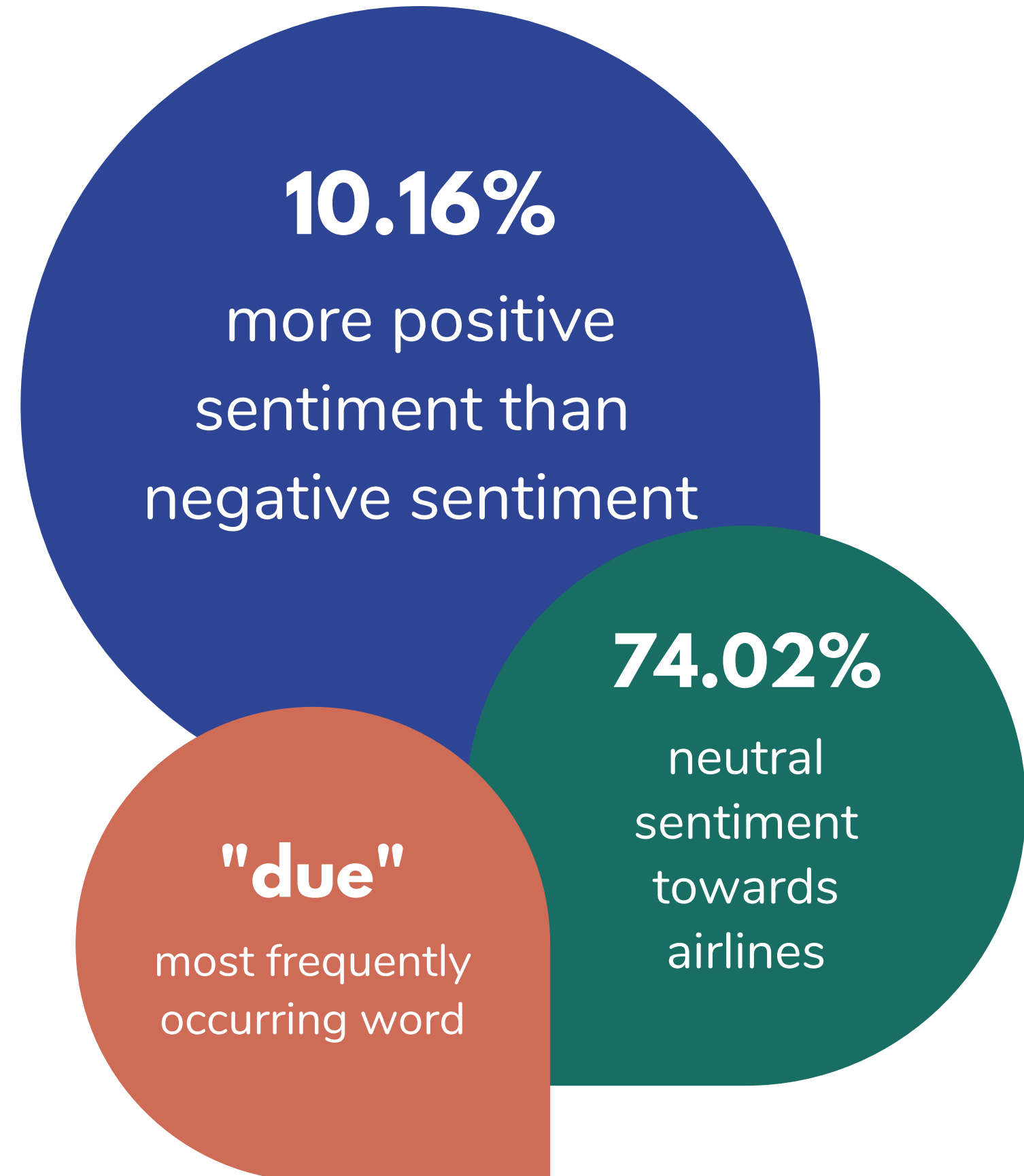






# Interpretation

- Public sentiment towards the airline industry is more positive than negative, which is counter-intuitive to what we expect.
- Public sentiment towards airlines is largely neutral.

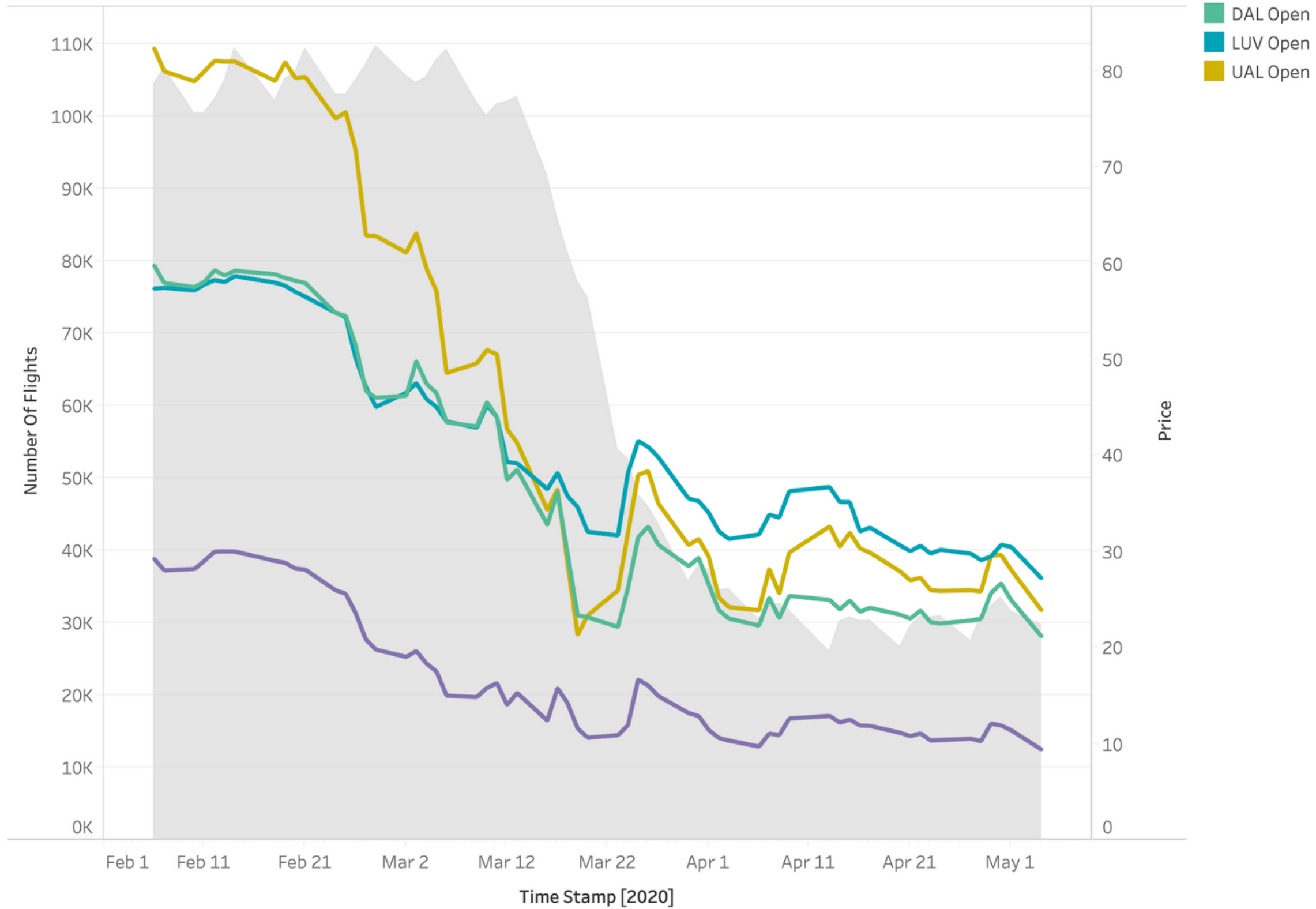


# Stock Market Analysis

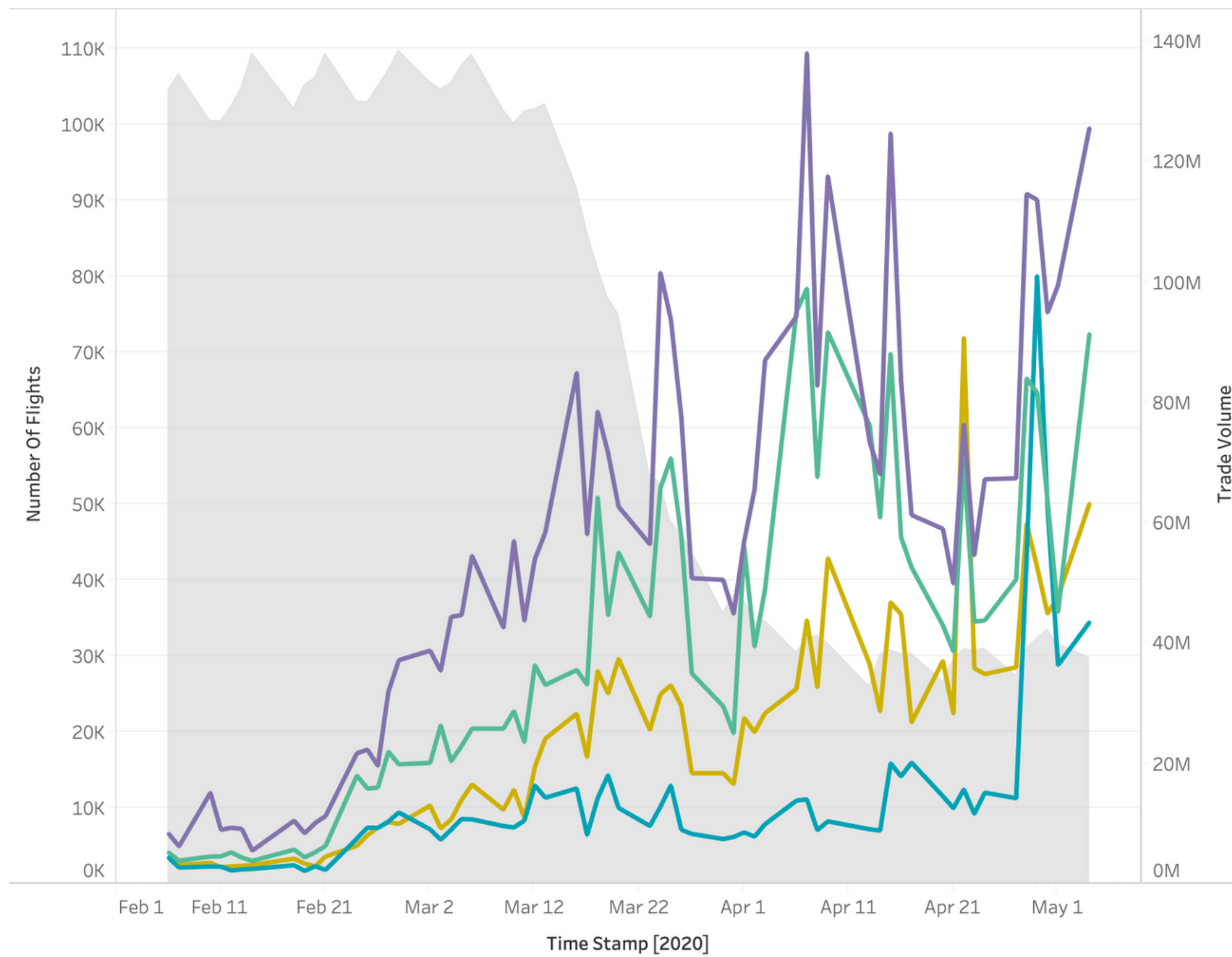
We then did a stock market analysis on how the drop in flight numbers affected the four biggest US stocks. This analysis is performed by looking from a price and volume perspective.



# Number of Flights vs. Stock Prices



# Number of Flights vs. Trading Volume





# Interpretation

## **Direct relationship** **between flights offered** **and stock prices.**

From the first graph, we see that as the number of flights offered decreases, stock prices plummeted.

## **Inverse relationship** **between flights offered** **and trading volume.**

From the second graph, we see that as the number of flights offered decreases, trading volume shot up.



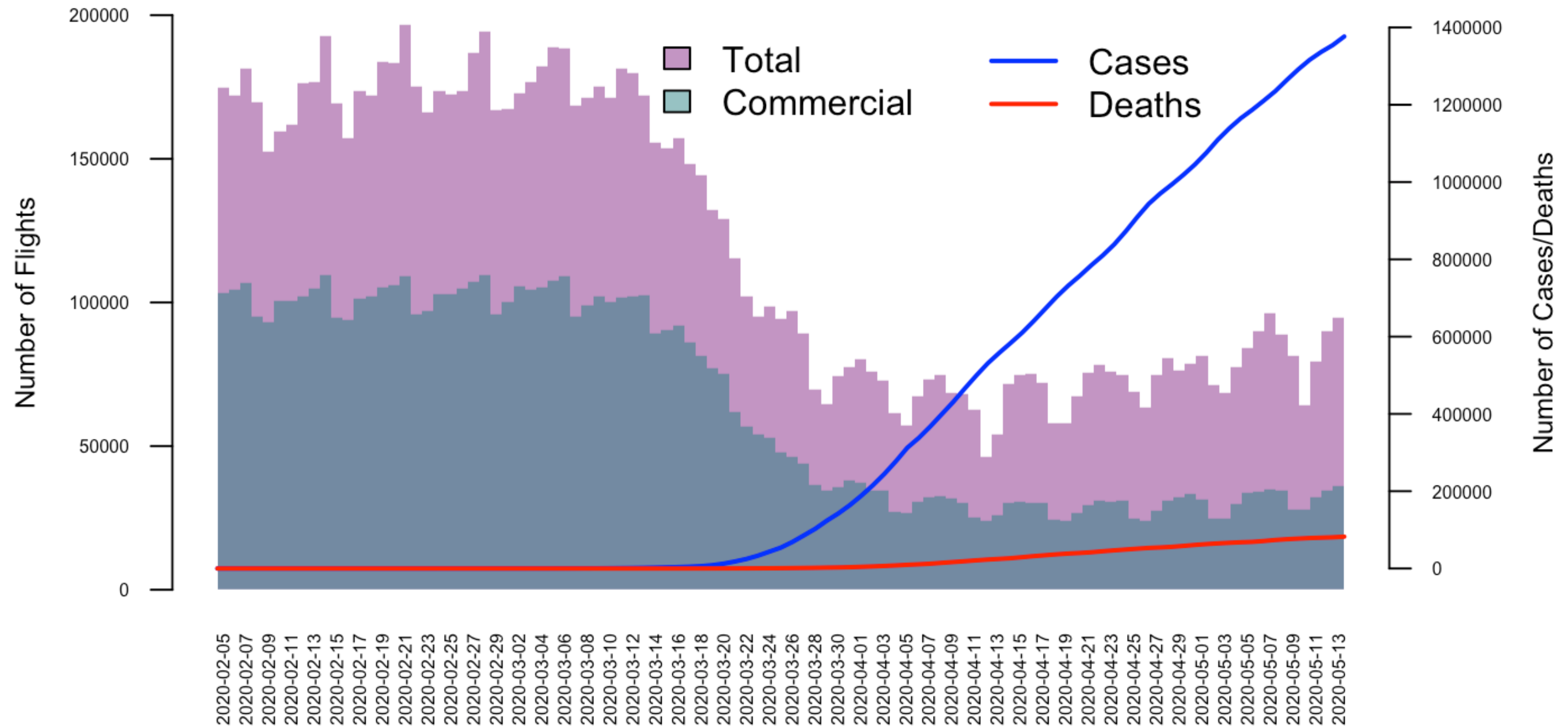
# Flights Offered vs. COVID-19 Analysis

Then, we did a flights offered vs. COVID-19 cases and deaths analysis to see if there is an association between the two variables. I.e., whether the increase of COVID-19 cases and deaths affect the number of flights offered over time.





# Flights in the United States



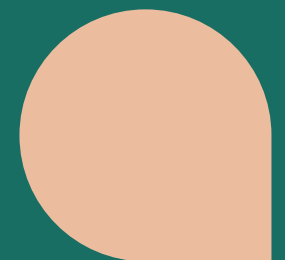
# Interpretation

**Inverse relationship between COVID-19 cases and commercial flights offered.**

As the number of cases increases, the number of commercial flights offered decreases.

**Inverse relationship between COVID-19 deaths and total flights offered.**

As the death toll from SARS-CoV-2 increases, the total number of flights offered decreases.



# Takeaways

What implications do these insights carry?

Public sentiment on the U.S. airline industry is relatively resistant to COVID-19.

The number of flights offered has a direct relationship with stock prices.

The number of flights offered has an inverse relationship with trading volume.

The number of COVID-19 cases has an inverse relationship with the number of flights offered.



# Thank you

Team Orange Juice

