

Data Visualization

Big Tech Company Stocks

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TIMELINE



Introduction

Briefly introduce about the dataset



Question 1

Should we buy Apple stocks?



Question 2

How did COVID 19 affect companies stock price?



Conclusion

Key takeaways and insights

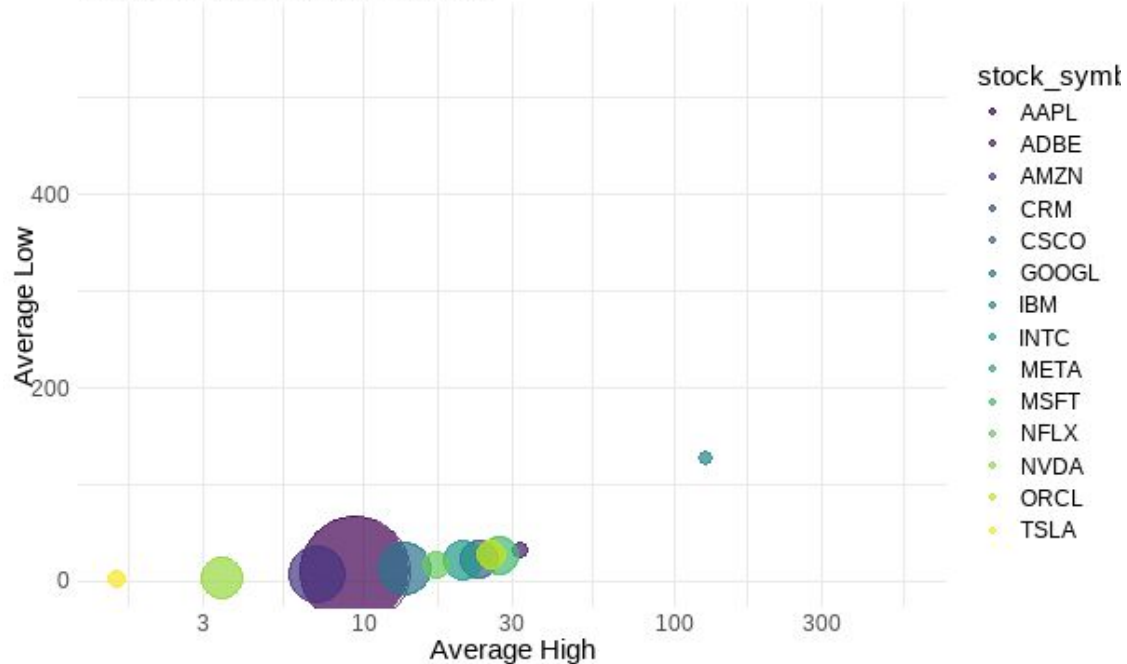
Overview of Dataset

What datasets did we use?

- **Big Tech Stock Price:** Contain dataset about historical stock price of several technology companies from 2010 to 2023. (Meta and Tesla missing some value in 2022 - 2023, doesn't matter)
- **Covid 19 Cases:** Contain dataset about global number of Covid 19 cases (total, new case, etc.) from Jan 2020 to July 2020
- **Walmart Historical Stock Price:** Contain dataset about historical stock price of Walmart from Jan 2020 to July 2020
- **Pfizer Historical Stock Price:** Contain dataset about historical stock price of Pfizer from Jan 2020 to July 2020

An overview of the big tech stock market

Average High vs. Low Stock Prices for Big Tech Companies in 2010
Size based on total traded volume



01

QUESTION 1

Apple stock's potential long-term investment and assesses the inherent risks in its short-term fluctuations

Why we want to answer this question ?

- **Stock Performance:** Recognizing patterns of growth and fluctuations is key to forecasting the stock's future movements.
- **Market Behavior:** The behavior of AAPL in the market can reveal insights into broader economic impacts, sector trends, and investor sentiments.
- **Sector Influence:** Apple's stock movements often mirror wider sector trends and can significantly sway market dynamics.

Volume Examination

stock_symbol <chr>	TotalVolume <dbl>
AAPL	838440829600
TSLA	294389834000
AMZN	288960091100
GOOGL	196869939896
NVDA	166186840100
MSFT	124351871200
INTC	117990516000
CSCO	106950448600
META	83806858300
NFLX	60234987900

- Volume in the stock market is the amount of stocks traded per period.
- Volume can indicate market strength, as rising markets on increasing volume are typically viewed as strong and healthy.

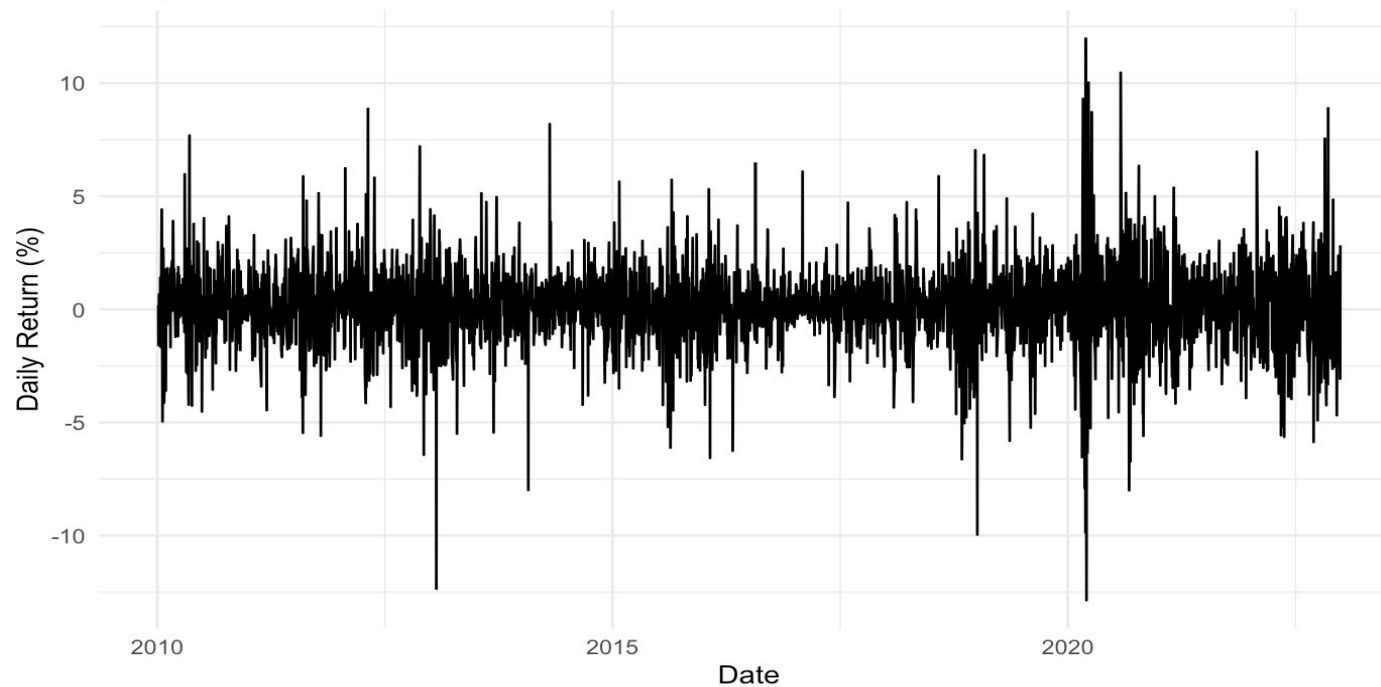
AAPL Stock Adjusted Close Price Over Time



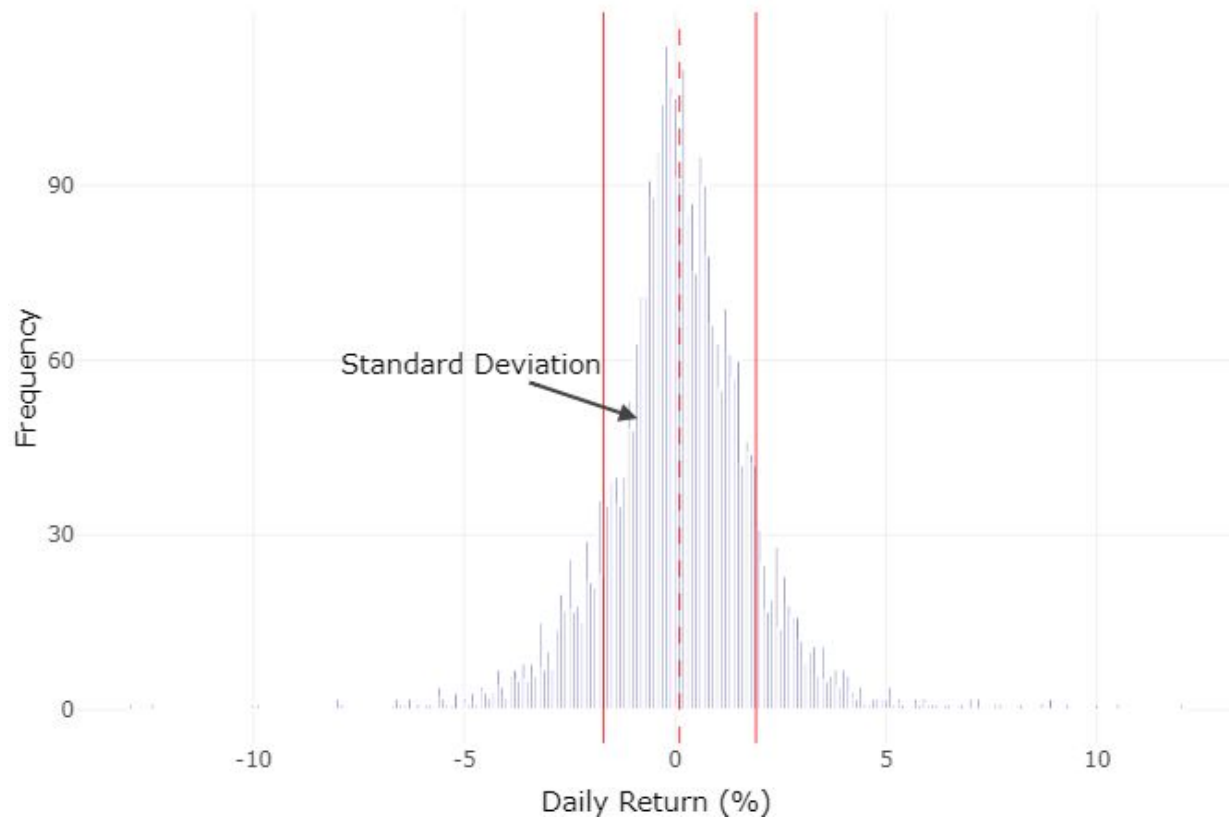
- **Close Price:** The last price at which a security traded during the regular trading day
- Data spans **3,271 trading days**, offering a robust foundation for analyzing trends.
=> The upward movement reflects Apple's **resilience and growth**
- We also include more interactive candle stick chart in our code



Daily Returns of AAPL Stock

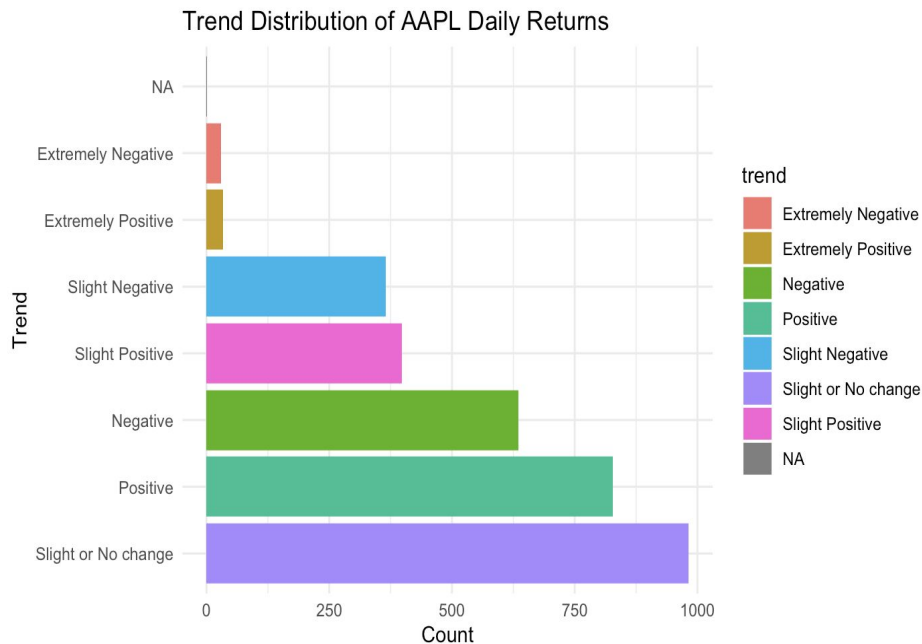


Histogram of Daily Returns of AAPL Stock



- **Positive vs. Negative Days:** With 1,721 days (52.61%) recording positive returns and 1,544 days (47.20%) showing negative return
- **Standard deviation:** Approximately 1.81%, emphasizing the stock's short-term volatility
- **Range of daily returns:** Maximum of 11.98% to a minimum of -12.86%

=> Clear depiction of AAPL's volatility, characterized by fluctuations around a central tendency with occasional spikes



- **Slight or No change: 30.03%** of the days which highlights an underlying stability
 - **Positive outperform negative** in each segmentation
 - **Ex:**
 - **Positive: 26.33%**
 - **Negative: 20.31%**
- => Could translate into profit in long term.

Conclusion

- **Long-term Growth:** AAPL shows promising growth prospects, supported by its historical price increases.
- **Short-term Volatility:** Investors must navigate short-term volatility, evident in daily returns and volume spikes, which reflect the stock's sensitivity to market sentiments and news.

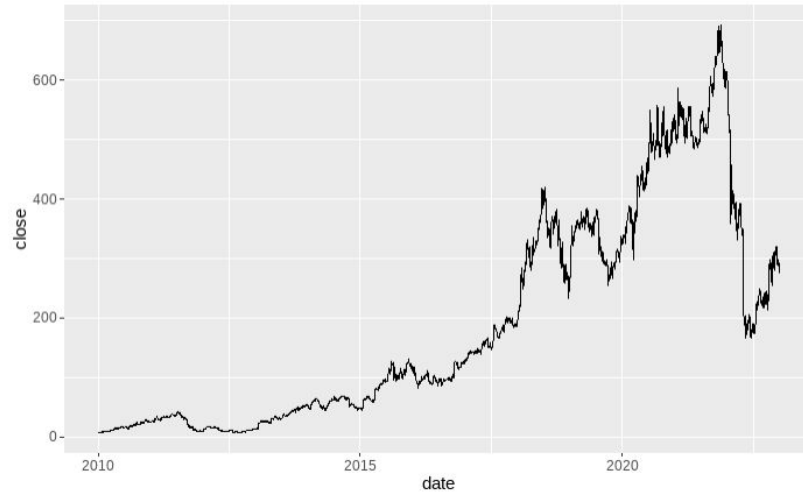
=> Suitable for investors seeking growth with manageable risks due to AAPL having a **stable long-term trend** accompanied by **moderate daily fluctuations**

02

QUESTION 2

How did the COVID-19 Pandemic affect the stock prices of Big Tech Companies?

Why we want to answer this question ?



Why we want to answer this question ?

A significant decrease in every company in 2020



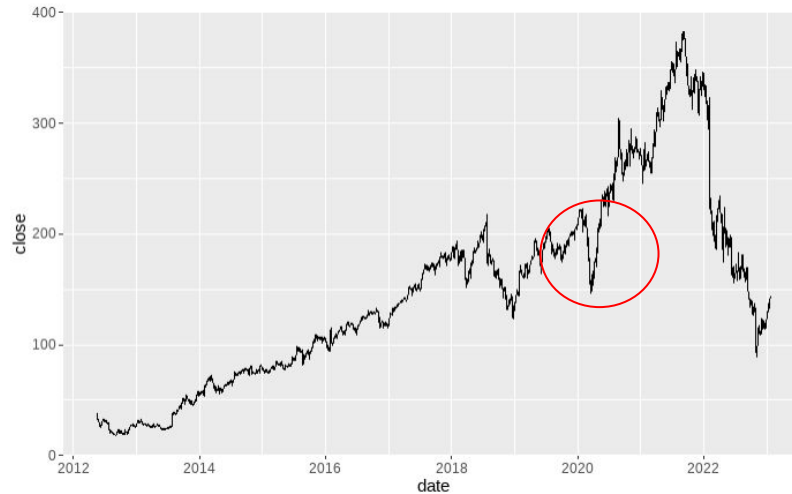
Why we want to answer this question ?

A significant decrease in every company in 2020



Why we want to answer this question ?

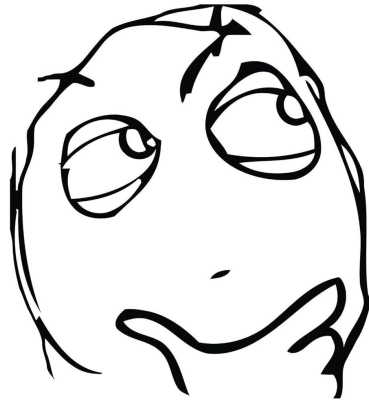
A significant decrease in every company in 2020



Why we want to answer this question ?

By answering this question, we can **see differences** in influence of
COVID 19 on companies
→ **Learn from good ones**

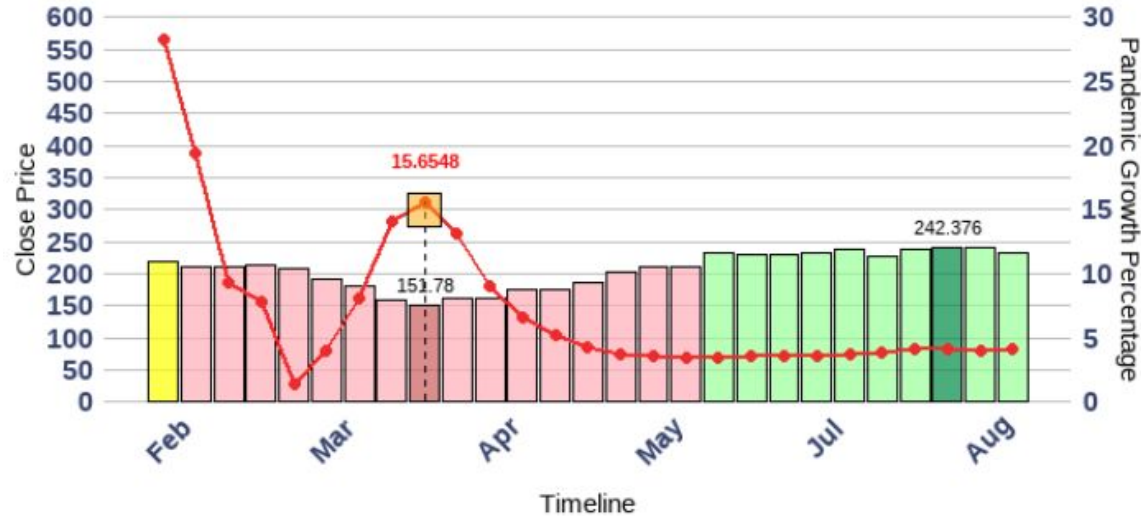
Wait, Did Covid 19 **actually affect stock price?**



Let's plot their correlation !!

Changes in Meta Platforms, Inc. 's stock price vs Covid 19 spread speed

Jan 2020 to July 2020



Compared to Before Covid 19



Before Covid



Decrease



Increase

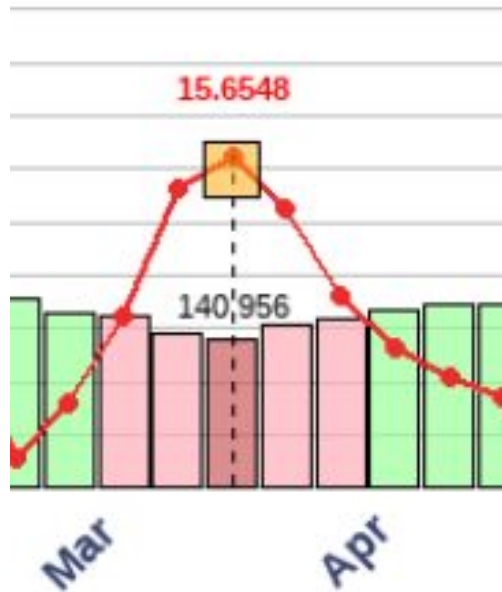


Max



Min

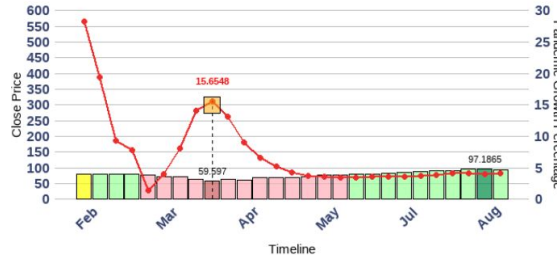
Look a bit closer



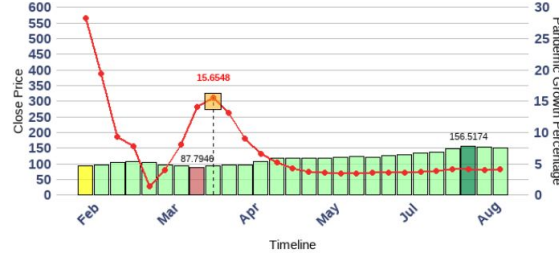
- From the vertical lines starting from the peak of COVID-19 growing speed, **this point corresponds to the lowest stock price week in most companies**

A bigger picture

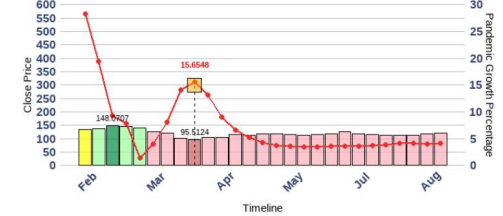
Changes in Apple Inc. 's stock price vs Covid 19 spread speed
Jan 2020 to July 2020



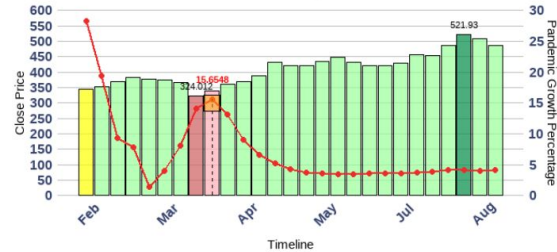
Changes in Amazon.com, Inc. 's stock price vs Covid 19 spread speed
Jan 2020 to July 2020



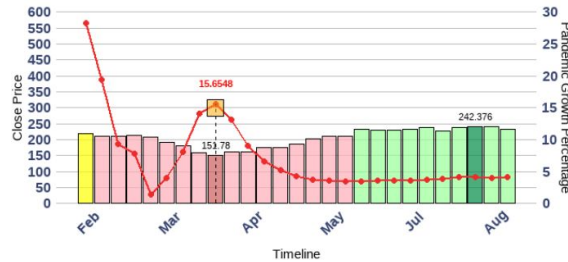
Changes in International Business Machines Corporation 's stock price vs Covid 19 spread speed
Jan 2020 to July 2020



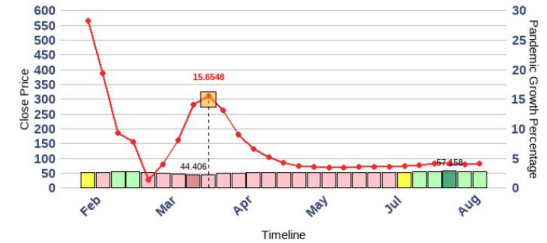
Changes in Netflix, Inc. 's stock price vs Covid 19 spread speed
Jan 2020 to July 2020



Changes in Meta Platforms, Inc. 's stock price vs Covid 19 spread speed
Jan 2020 to July 2020



Changes in Oracle Corporation 's stock price vs Covid 19 spread speed
Jan 2020 to July 2020



Ok, so the impact is confirmed.

**But among those companies, which one
suffer the most ?**

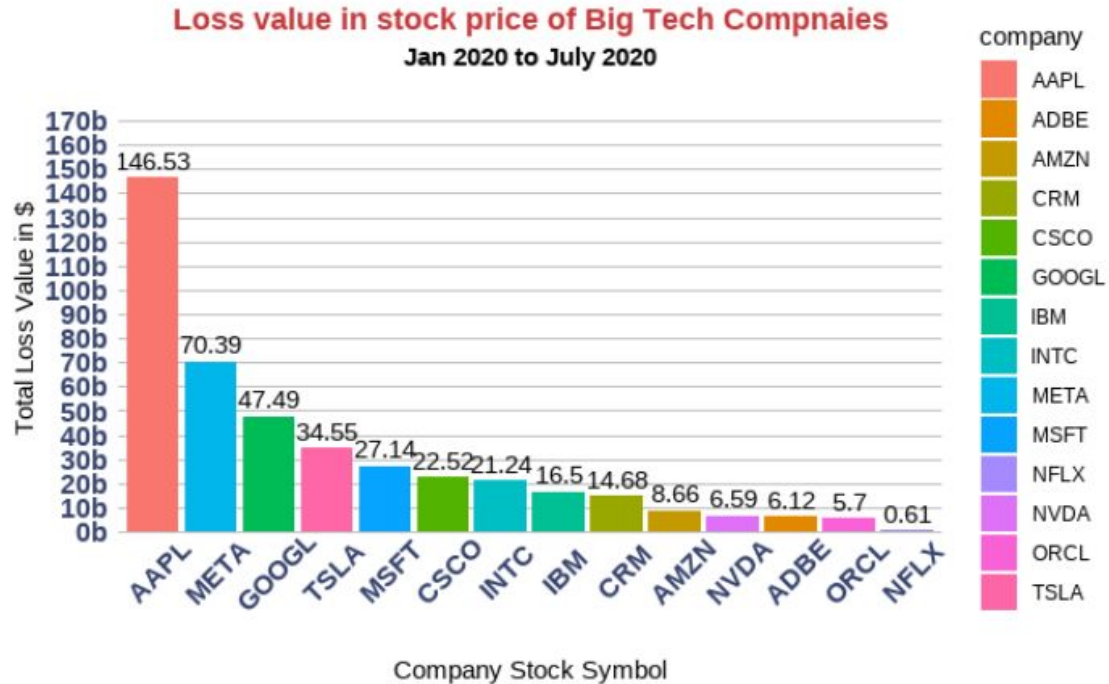
OUR METRIC of **LOSS** value

Base price = Price at 22 - 1 - 2020

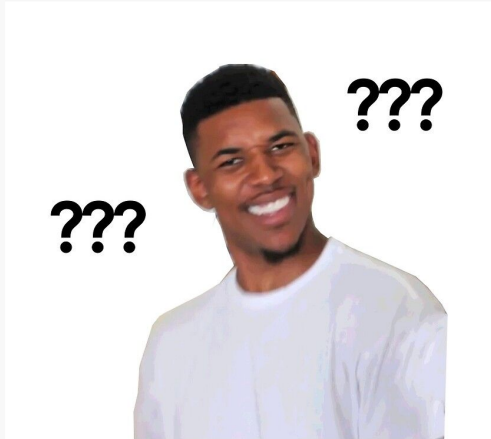
```
if (price < base_price) {  
  loss <- loss + (base_price - price) * volume  
  transactions <- transactions + volume  
}
```

loss = (expected price - actual price) * volume)

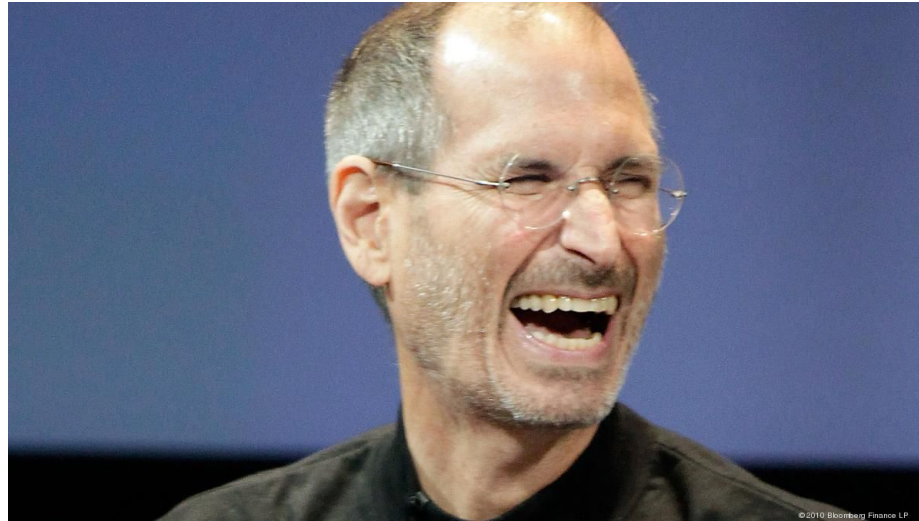
What company perform worst ?



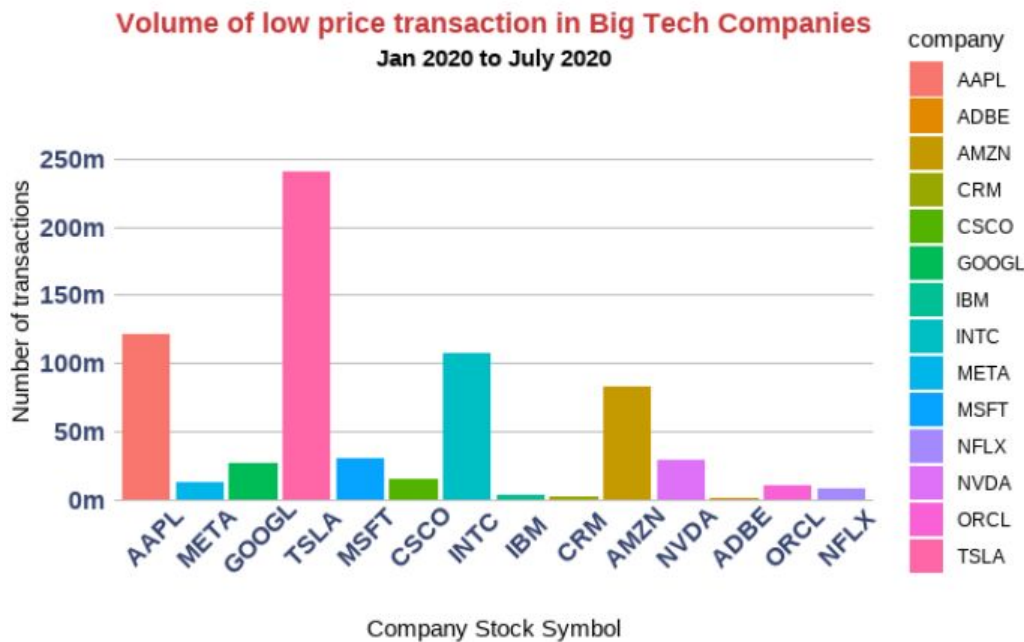
But why ? Apple Stock Price drop insanely ?



NAH ! Another reason



Large volume of AAPL stock transactions



Compare Tech companies to other sectors

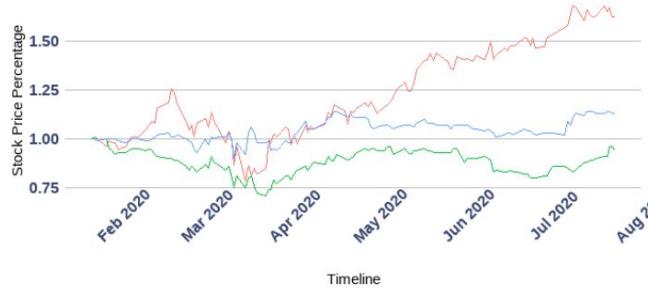
Comparison of stock price between NVIDIA Corporation and other field:

Jan 2020 to July 2020

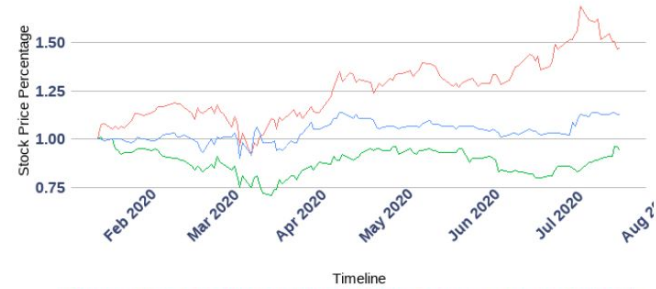


Compare Tech companies to other sectors

Comparison of stock price between NVIDIA Corporation and other field:
Jan 2020 to July 2020



Comparison of stock price between Netflix, Inc. and other fields
Jan 2020 to July 2020



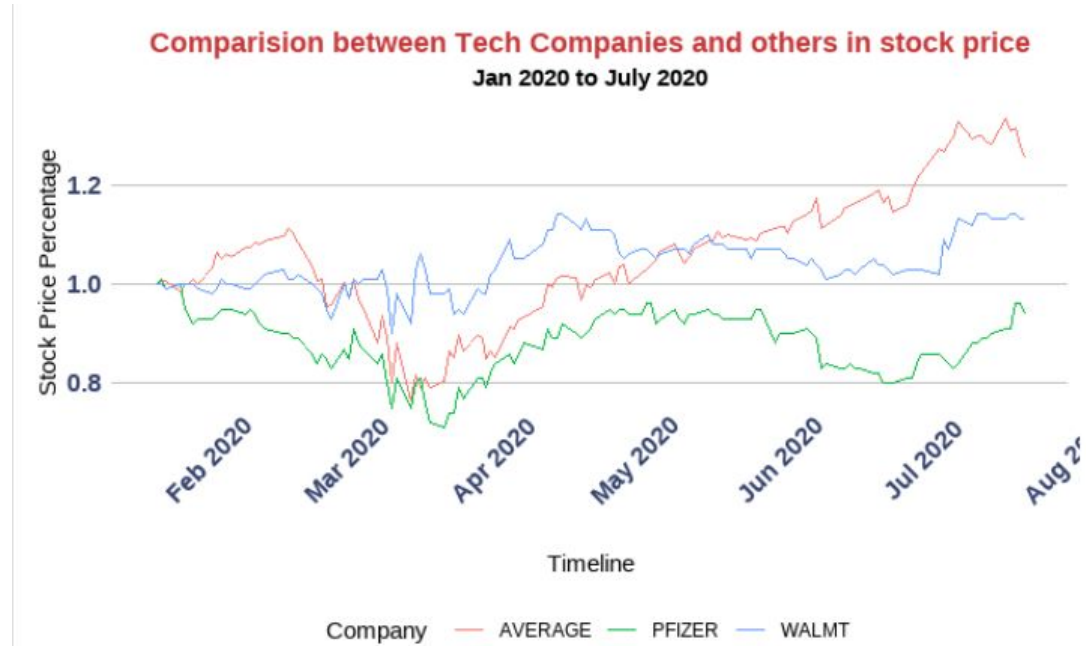
Comparison of stock price between Meta Platforms, Inc. and other fields:
Jan 2020 to July 2020



Comparison of stock price between Microsoft Corporation and other field
Jan 2020 to July 2020



In Average,.....



Answer for the question:

- Yes, COVID 19 did have strong impact on tech companies' stock prices, but its influence varies among those giants.
- The **young, entertaining** or **online shopping** companies tended to **perform better** due to the high demand for their products from customer in lockdown situation.
- In general, tech companies suffer more critical damages compared to groceries or medical sectors. However, the recovery speed is **much faster**. **Therefore, their stock prices are greater than other after the pandemic**

Further research:

- Need larger and more reliable datasets about COVID 19 cases
- Other small tech companies data is also necessary if we want to see how COVID 19 affect the technology industry in general.

THANKS!

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