Project #1

boolean-autocrats:
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Questions Asked

1. How traumatic was Covid-19 to the airline industry?

2. How did the ‘end’ of Covid19 affect overall market share for the four major U.S. carriers?

3. If market shares did adjust, will they be maintained in the post-pandemic environment?

Data Collection

Examined the ‘Big 4 Airlines’ in the United States

- Southwest Airlines
- Delta Airlines
- United Airlines
- American Airlines

Chose to use market capitalization as our metric

- The number of outstanding shares multiplied by the latest traded price
- Investors consider multiple factors which dictate market cap
- There is not one true approach to valuation of competitors

Yahoo Finance Api

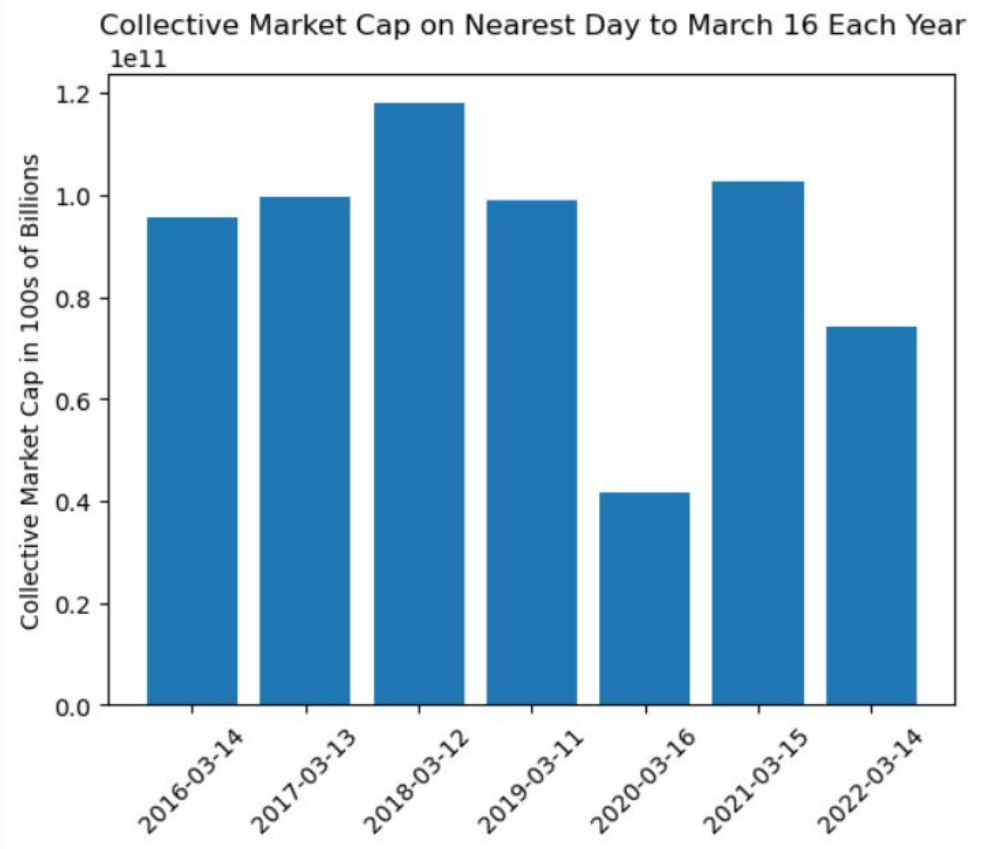
```
time_start = int(time.mktime(datetime.datetime(2020,
time_end = int(time.mktime(datetime.datetime(2023, 1,
interval = "1wk"
stock_ls = []
ticker_list=[]

for ticker in ticker_list:
    query_string = f"https://query1.finance.yahoo.com
    loop_df= pd.read_csv(query_string)
    loop_df = loop_df [["Date","Close","Volume"]]
    loop_df ['Ticker'] = ticker
    stock_ls.append(loop_df)
stock_df = pd.concat(stock_ls)
display(stock_df)
```

	Date	Close	Volume	Ticker
0	2020-01-01	71.879845	6822242	0
1	2020-01-08	72.635658	9712875	0
2	2020-01-15	75.310081	7252071	0
3	2020-01-22	75.707367	8654456	0
4	2020-01-29	75.891472	15706936	0
..	...	...	...	...
152	2022-11-30	62.709999	24978000	0
153	2022-12-07	64.959999	22670800	0
154	2022-12-14	63.110001	28305600	0
155	2022-12-21	64.110001	12972000	0
156	2022-12-28	63.430000	7992200	0

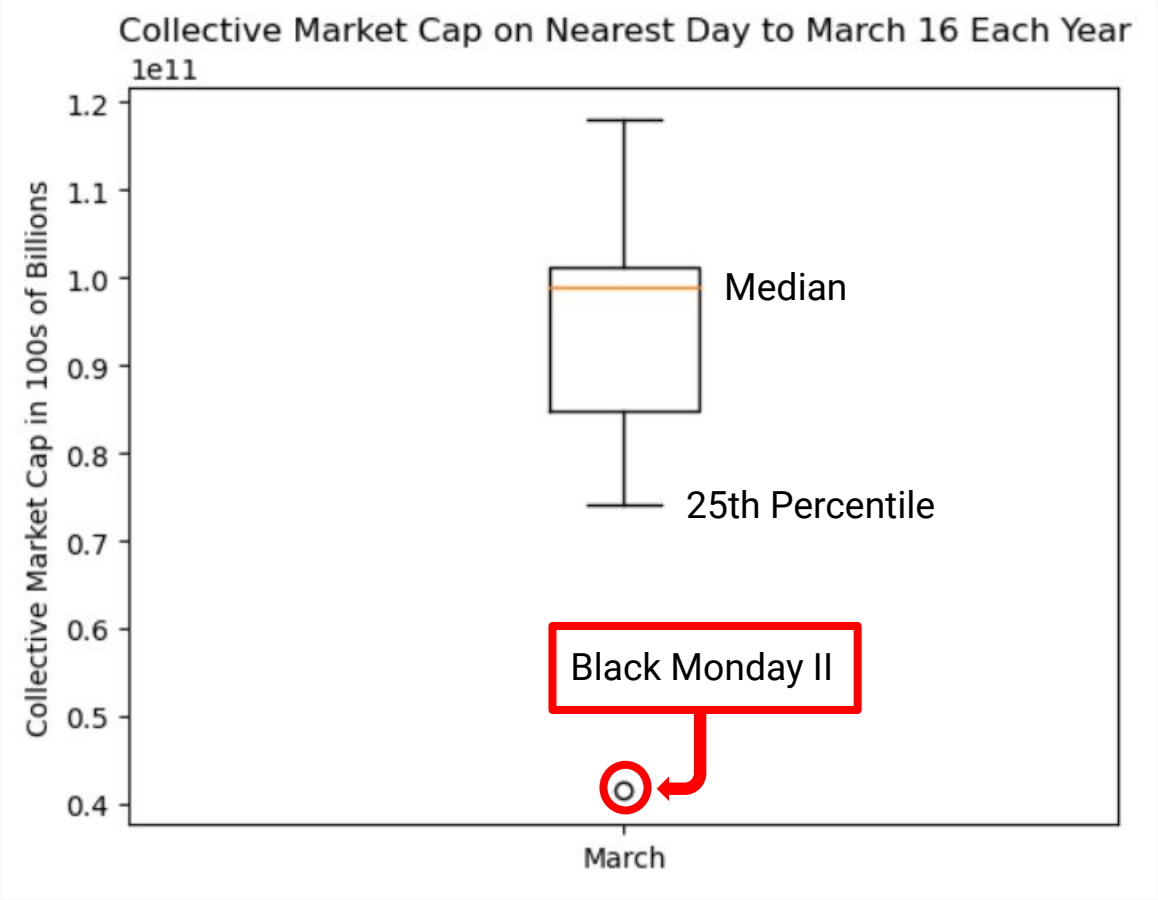
March 16, 2020 - Black Monday II

- Height of $126B
- Reduced by 73%
- Great Depression initial drop was 75%

Historical Comparisons of Black Monday II



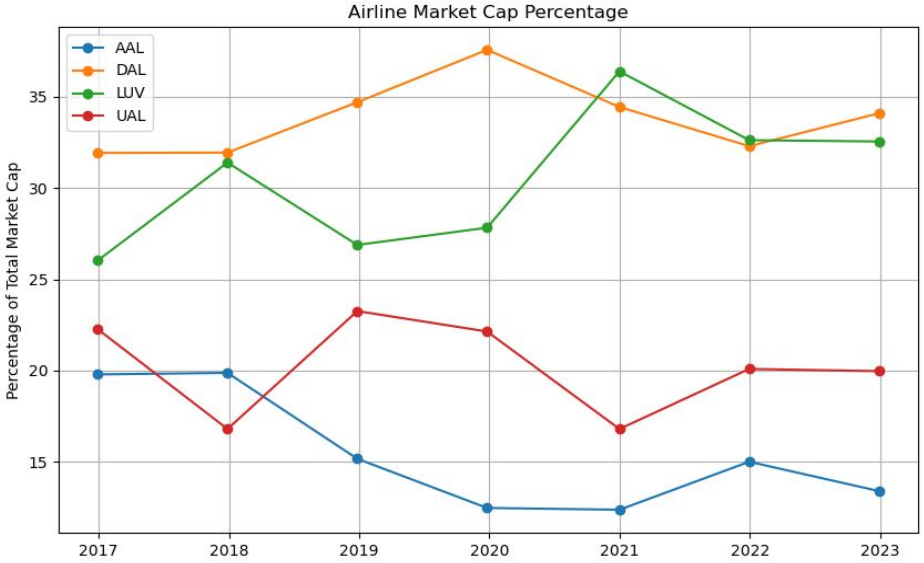
Historical Comparisons of Black Monday II



2. How was Market Capital Affected?

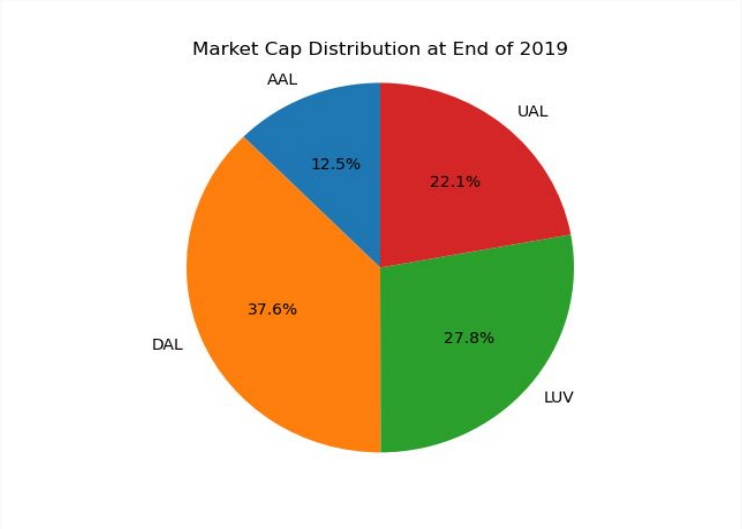
Market Capital In Billions of Dollars

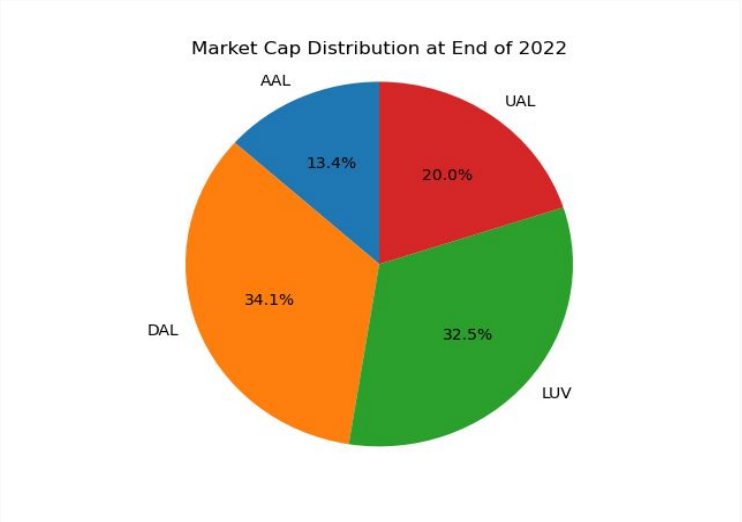
	Ticker	Precovid Cap	Black Monday 2	Current Cap	Prediction Jan 24
0	UAL	22.40	6.07	17.40	18.60
1	DAL	37.87	13.93	29.68	33.17
2	AAL	12.11	4.44	10.54	11.02
3	LUV	29.01	17.05	20.32	19.64
-1	sum	101.39	41.50	77.94	82.43



Pie Charts of Market Cap distribution

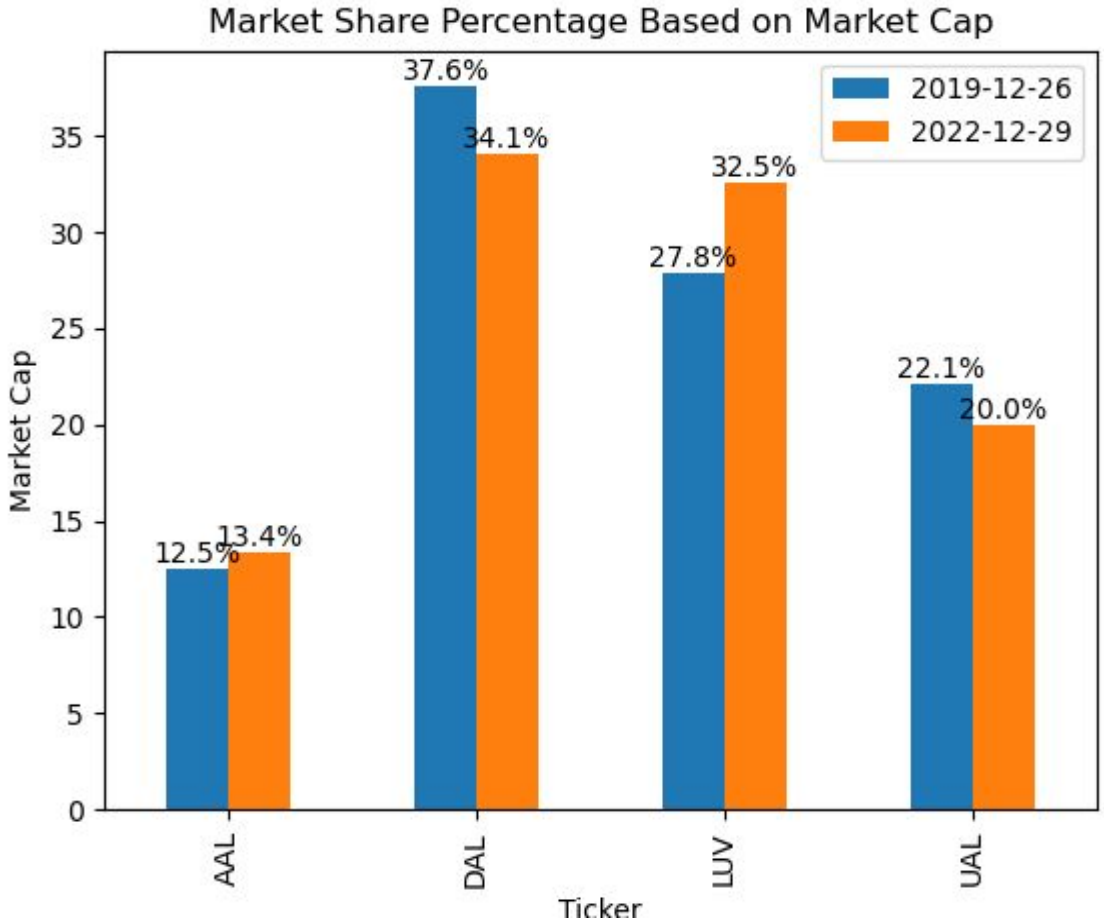
- At a glance change in the industry doesn't seem significant
- LUV grabs more of the industry





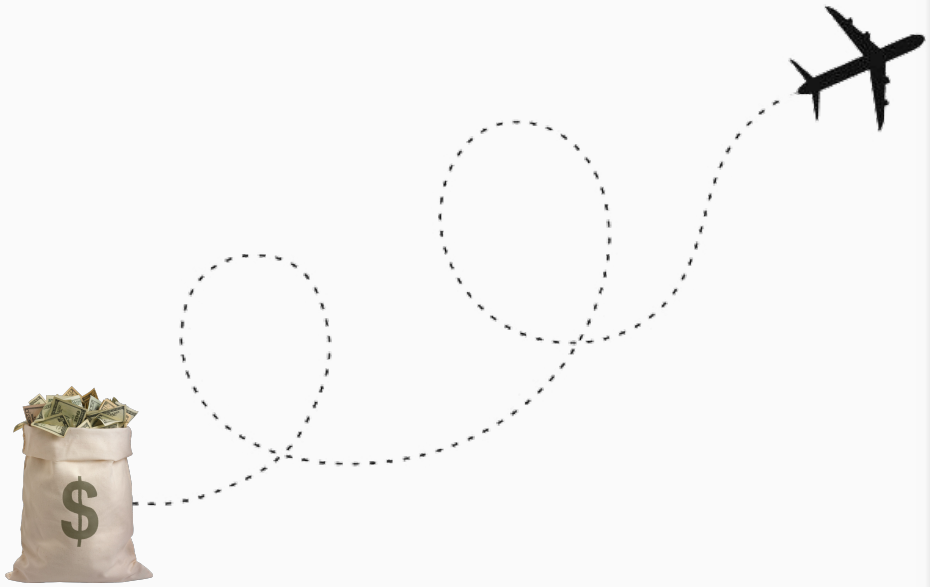
3. Market Shares Post Pandemic

5% LUV



```
#Define a function for making scatter plot pre-cvoid
def precovid(x_values, y_values, ticker, title=''):
    (slope, intercept, r_value, p_value, std_err) = linregress(x_values, y_values)

    regress_values = x_values * slope + intercept

    plt.scatter(x_values, y_values, alpha=0.3)
    plt.grid(which='both', axis='both')

    plt.plot(x_values, regress_values, color='r')

    plt.annotate(f"y={slope: .2f}x + {intercept: .2f}", (0,10), color='r')

    plt.xticks([])

    plt.xlabel('2016 to March 2020')
    plt.ylabel('Market Cap in 10s Billions')
    plt.title(title)

    plt.savefig(f"output_data/PreCovid_{ticker}.png")
    plt.show()

    print(f"The r-value is: {r_value}")
    print(f"The slope value is: {slope}")
```

Defined function for both PreCovid and PostCovid Linear Regression Scatter Plots

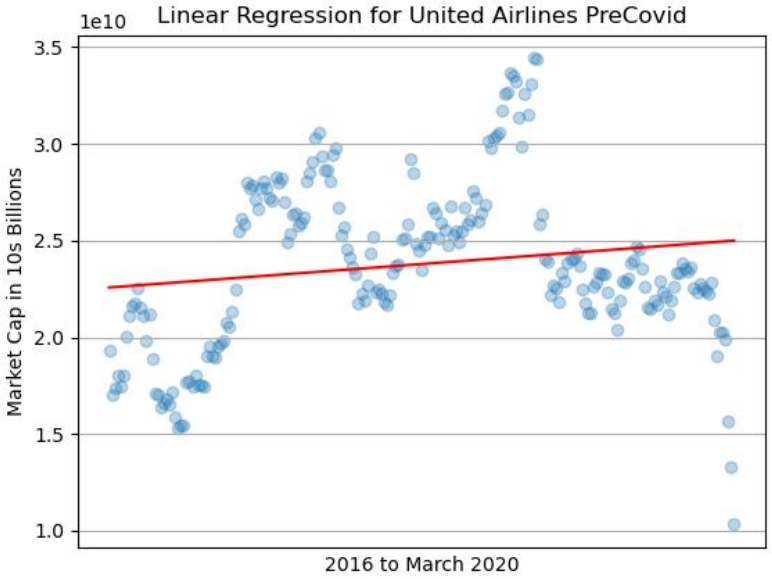


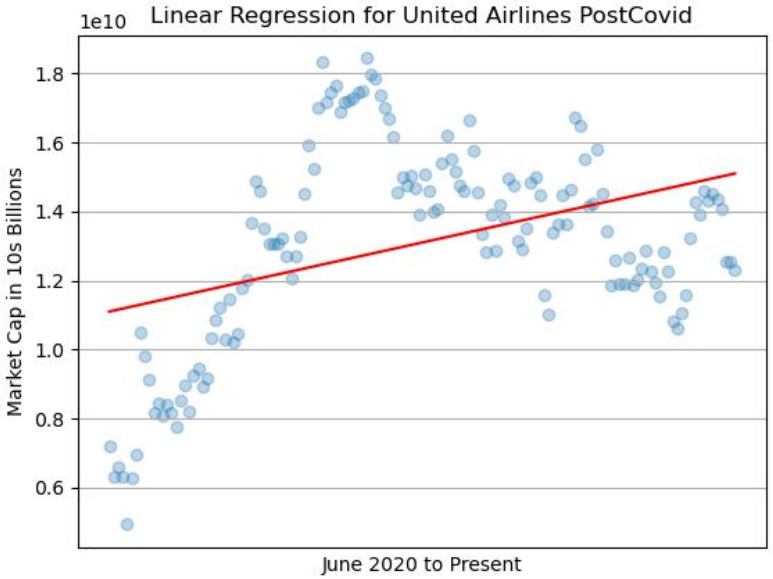
Slope Value

How long with Southwest have the biggest Market Share?

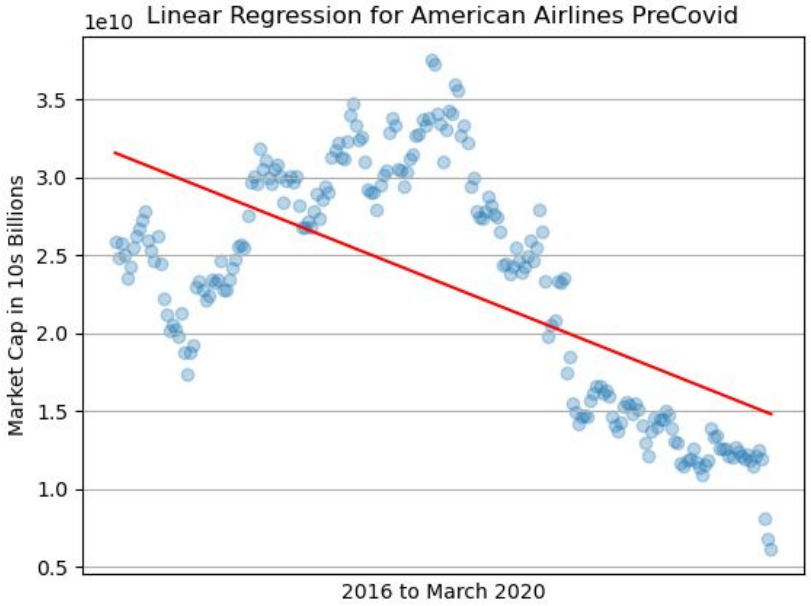
	PreCovid	PostCovid
Southwest	1.00	1.36
United	1.84	4.66
American	-1.27	3.86
Delta	2.17	1.36

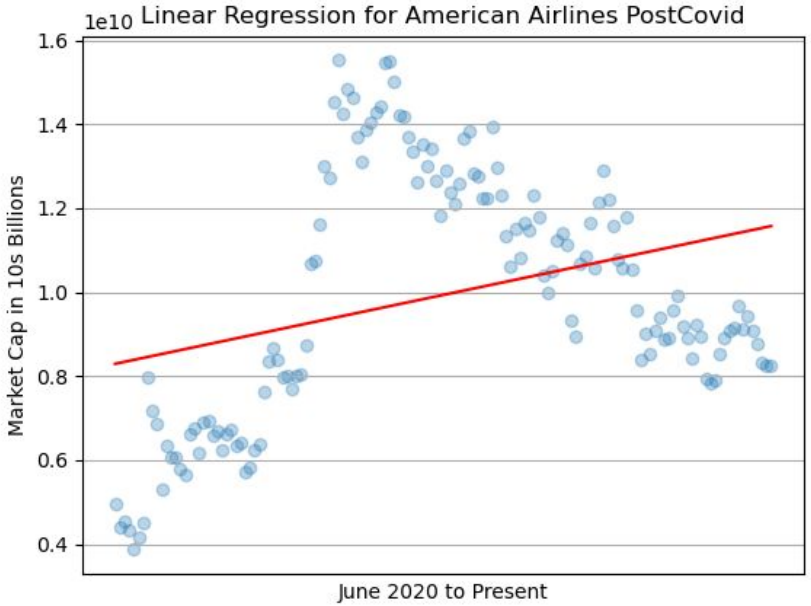
UNITED

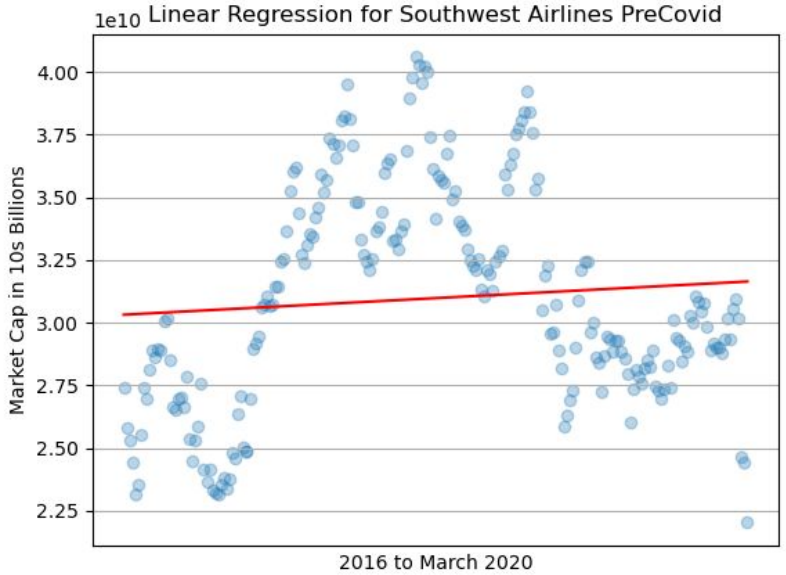

Linear Regression for United Airlines PreCovid
1e10
3.5
3.0
2.5
2.0
1.5
1.0
Market Cap in 10s Billions
2016 to March 2020

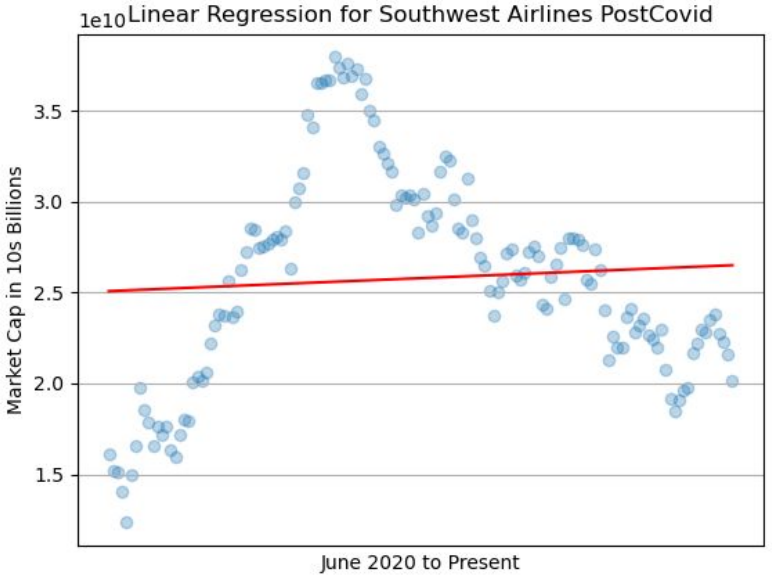

Linear Regression for United Airlines PostCovid
1e10
1.8
1.6
1.4
1.2
1.0
0.8
0.6
Market Cap in 10s Billions
June 2020 to Present

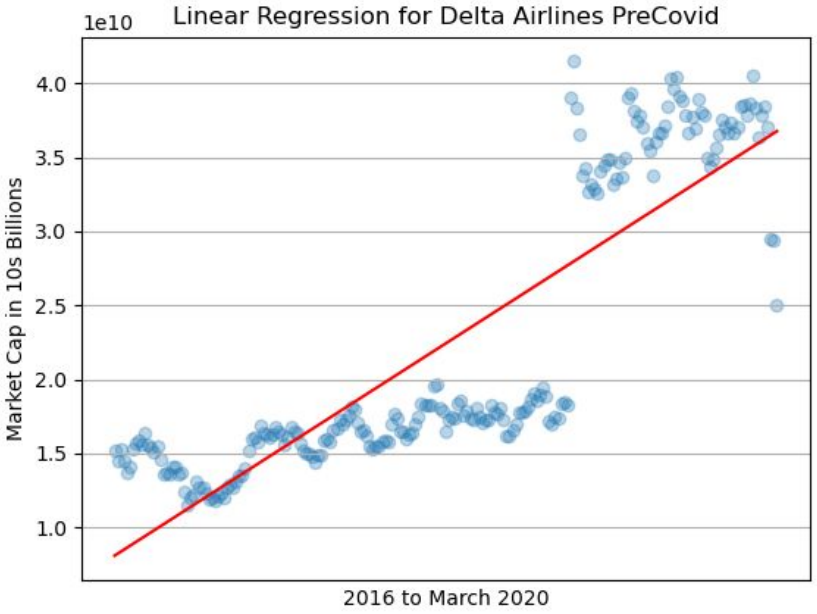
American Airlines

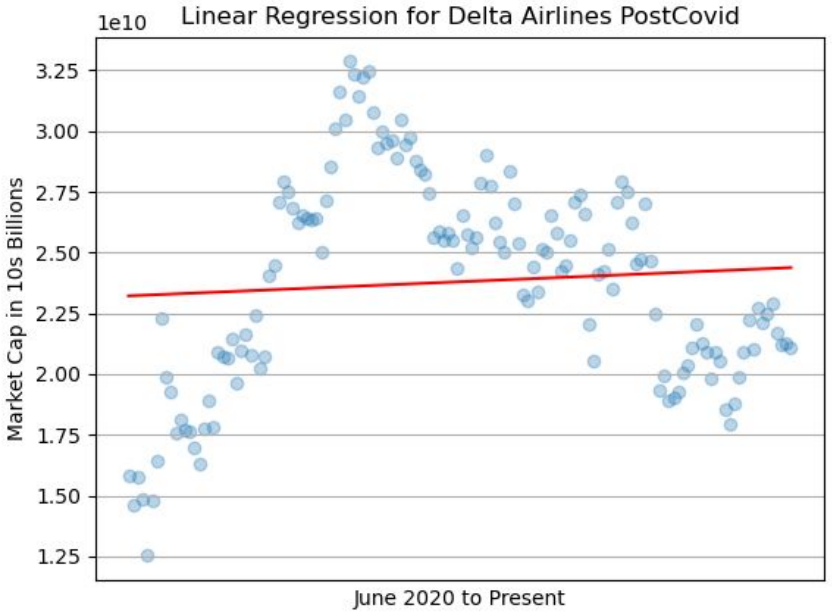





1e10
Linear Regression for Southwest Airlines PreCovid
4.00
3.75
3.50
3.25
3.00
2.75
2.50
2.25
Market Cap in 10s Billions
2016 to March 2020


1e10
Linear Regression for Southwest Airlines PostCovid
3.5
3.0
2.5
2.0
1.5
Market Cap in 10s Billions
June 2020 to Present


Linear Regression for Delta Airlines PreCovid
1e10
Market Cap in 10s Billions
4.0
3.5
3.0
2.5
2.0
1.5
1.0
2016 to March 2020


Linear Regression for Delta Airlines PostCovid
1e10
Market Cap in 10s Billions
3.25
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
June 2020 to Present

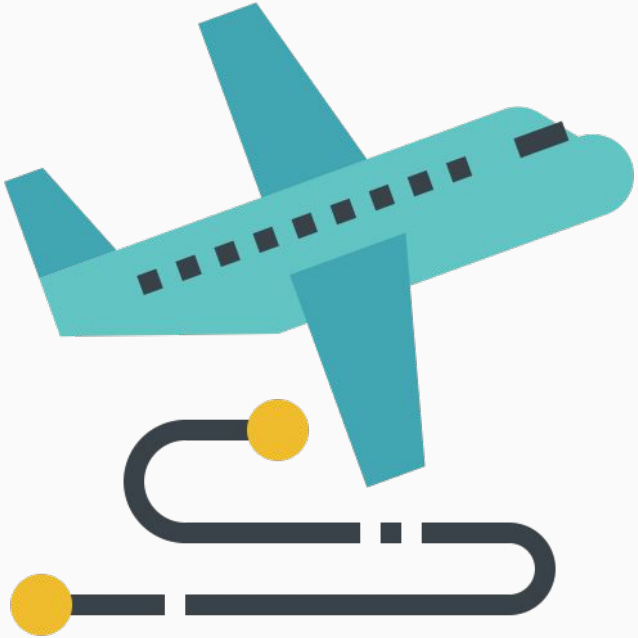
Conclusion

Significant Impact

- Losing 73% collective market capitalization
- The change of market share
- The projected growth

Where are we going?

With Southwest's jump in market cap what does this mean for the future?

What does it mean for Delta and business class?

What does it say about the future of the aviation industry?