

# Project Print Money

Final Analysis

# Raw Data

ticker	type	start	end	sales	estimate	est_low	est_high	advan_forecast	correct_beat_or_miss
A	FACILITY	2/1/18	4/30/18	12060000000	1209490000	1203454000	1215526000	1226723770	0
AAP		12/31/17	4/21/18	2873848000	2905770000	2863338000	2948202000	2922547704	0
AAPL		12/31/17	3/31/18	61137000000	61104770000	60392246000	61817294000	62605849368	1
AEO		2/4/18	5/5/18	822961000	803030000	794570000	811490000	823875367	1
AFI	FACILITY	1/1/18	3/31/18	257900000	263750000	256706000	270794000	266994059	0
AFI		1/1/18	3/31/18	257900000	263750000	256706000	270794000	266997065	0
AIV		1/1/18	3/31/18	247720000	243710000	235790000	251630000	247155919	1
ALSN		1/1/18	3/31/18	663000000	565690000	548326000	583054000	573988546	1
AMC		1/1/18	3/31/18	1383600000	1330480000	1307236000	1353724000	1349368456	1
AMTD		1/1/18	3/31/18	1415000000	1360680000	1344528000	1376832000	1378756874	1
ANF		2/4/18	5/5/18	730899000	698260000	683968000	712552000	719018946	1
APD	FACILITY	1/1/18	3/31/18	2155700000	2190150000	2118246000	2262054000	2220484915	0
ARE		1/1/18	3/31/18	320139000	318950000	318530000	319370000	322348187	1

- “sales” column is the company’s actual revenue for that quarter
- “estimate” is consensus Wall Street analyst estimates
- “advan\_forecast” is Advan’s prediction from X-Mode data
- If advan\_forecast predicted revenue in the right direction (above or below estimates), then the prediction was counted as a “beat”

# Accuracy Table

	Beats	Misses	Total
+ Returns	458	157	615 (57%)
- Returns	277	184	461 (43%)
Total	735 (68%)	341 (32%)	1076

- This table shows that even if the Advan prediction is a “beat”, it is still possible that the returns are negative (38% of the time)
- Similarly, even if the Advan prediction is a “miss”, it is still possible to have positive returns

# Portfolio Weighting Strategies

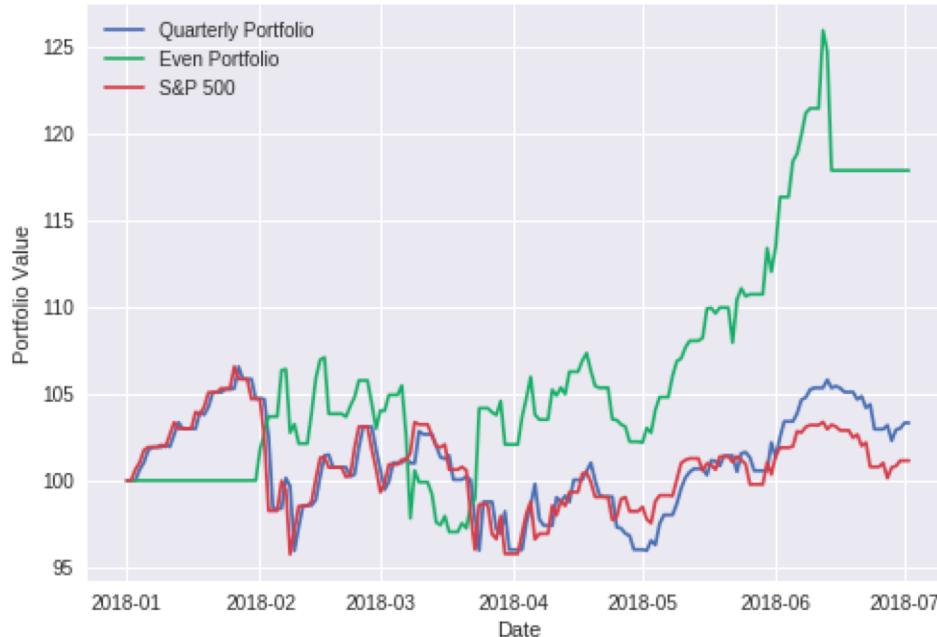
- Quarterly Portfolio
  - Divide total money by the max number of trades in each quarter
  - While a trade is not occurring, put that portion of money into the S&P
- Even Portfolio
  - Divide money evenly into the stocks being traded on each day
  - There are periods with high volatility between quarters due to a small number of stocks being held in the portfolio



# Entire Dataset Analysis

- Using all the predictions given by Advan, returns were 2% for the quarterly portfolio and 17% for the even portfolio above the S&P500

Total Number of Trades: 184



Quarterly Portfolio Return: 3.33%

S&P Return: 1.15%

Percent Points above S&P for Quarterly Portfolio: 2.18%

Even Portfolio Return: 17.88%

S&P Return: 1.15%

Percent Points above S&P for Even Portfolio: 16.74%

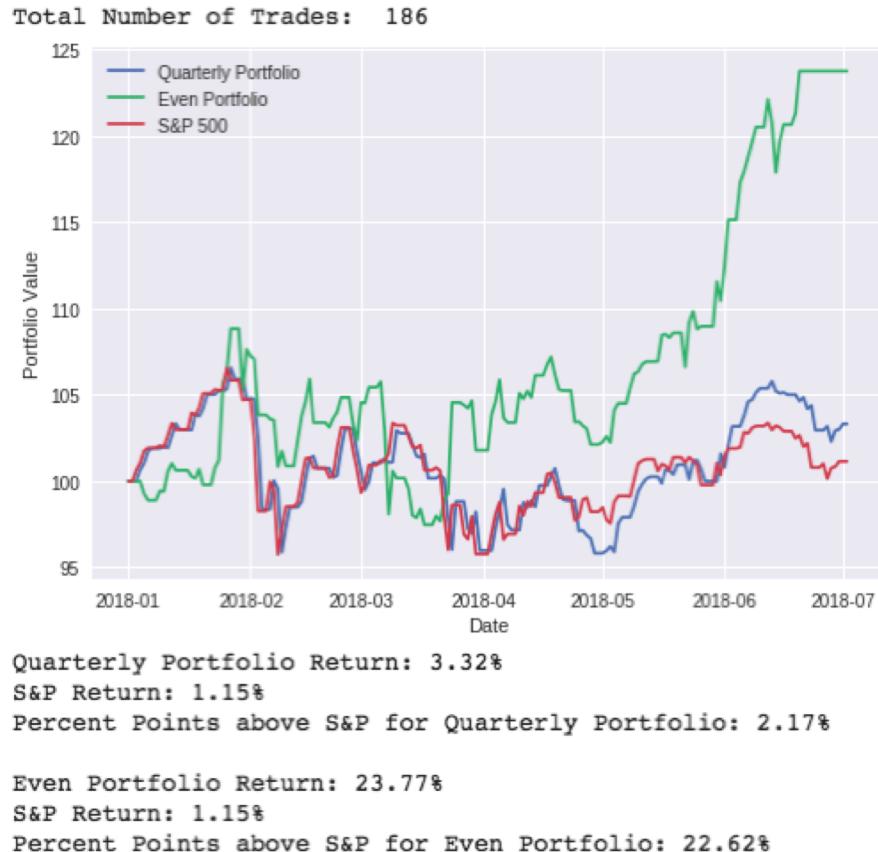
# Stock Picking Strategies

- Date Change Strategy
- Percent Difference Strategy
- Historical Forecast Strategy
- Sector Strategy
- Long Strategy
- Facility Strategy

all dates and returns are from  
1/1/18 - 7/1/2018

# Date Change Strategy

- Questions: Which days should we buy and sell?
- Tried a range of 10 days and discovered that to get the highest returns:
- buy 6 days after the quarter ends
- sell 4 days after the revenue report



# Percent Difference / Confidence Strategy

- Do higher differences between Advan forecasts and analyst forecasts result in higher degrees of confidence in trades?
- Returns trend upward to the top 20th percentile, then becomes overly volatile due to few stocks being traded
- We chose the top 60th percentile of greatest percent change
- This is the strategy with the most consistent returns, and shows that Advan's more confident predictions are correlated with higher returns



Quarterly Portfolio Return: 9.26%

S&P Return: 1.15%

Percent Points above S&P for Quarterly Portfolio: 8.11%

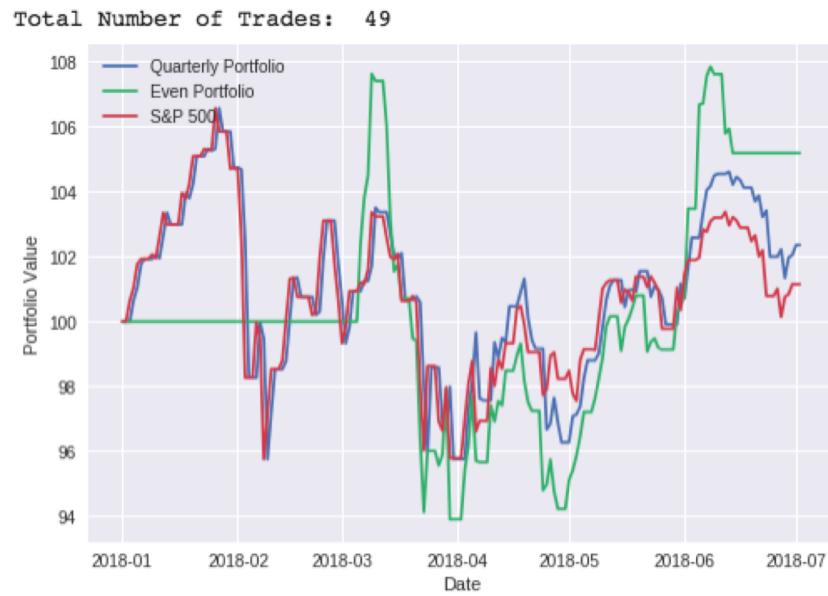
Even Portfolio Return: 11.45%

S&P Return: 1.15%

Percent Points above S&P for Even Portfolio: 10.31%

# Trading on Historical Beats

- Picked stocks with many “beats” in the “correct\_beat\_or\_miss” column
- Best stocks were ones with at least 80% beats over 2 years
- Only traded on those stocks



Quarterly Portfolio Return: 2.36%

S&P Return: 1.15%

Percent Points above S&P for Quarterly Portfolio: 1.21%

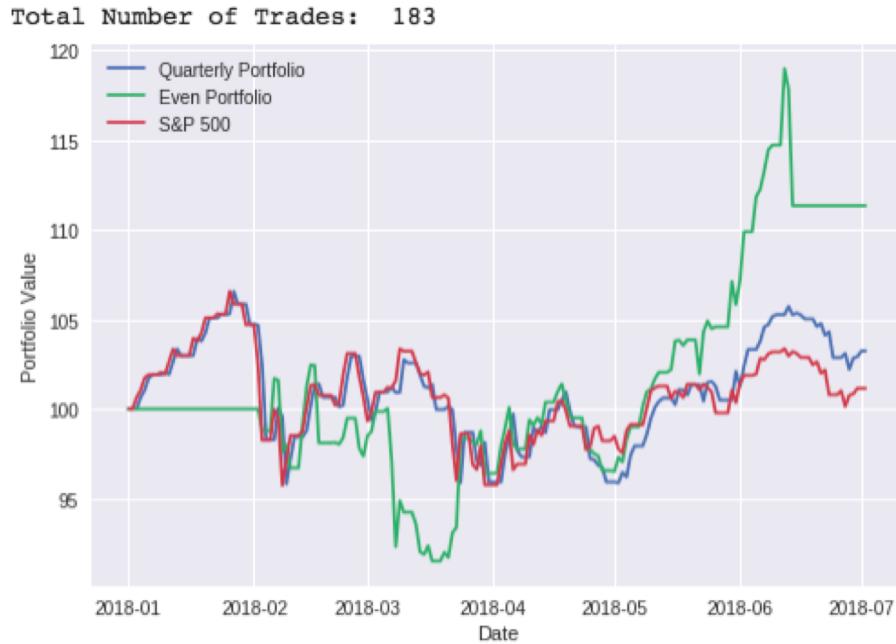
Even Portfolio Return: 5.19%

S&P Return: 1.15%

Percent Points above S&P for Even Portfolio: 4.04%

# Long Strategy

- We took all of the stocks that were longs, meaning that Advan's forecast exceeded analysts' forecast
- Only 1 revenue prediction was a short in this quarter



Quarterly Portfolio Return: 3.25%

S&P Return: 1.15%

Percent Points above S&P for Quarterly Portfolio: 2.10%

Even Portfolio Return: 11.34%

S&P Return: 1.15%

Percent Points above S&P for Even Portfolio: 10.19%

# Sector Strategy

- Historically, location data performed well for Basic Materials, Industrials, and Technology sectors
- This quarter, Energy and Technology are doing well, so we only traded on the stocks in those sectors

Total Number of Trades: 27



Quarterly Portfolio Return: 10.05%

S&P Return: 1.15%

Percent Points above S&P for Quarterly Portfolio: 8.90%

Even Portfolio Return: 15.93%

S&P Return: 1.15%

Percent Points above S&P for Even Portfolio: 14.78%

# Facility Strategy

- Although non-facility had very high returns, this strategy is not consistent across historical data sets, so this strategy should be tested more thoroughly

Non-facility:



Even Strategy Return: 23.07%  
S&P Return: 1.15%  
Percent Points above S&P for Even Strategy: 21.92%

Facility:

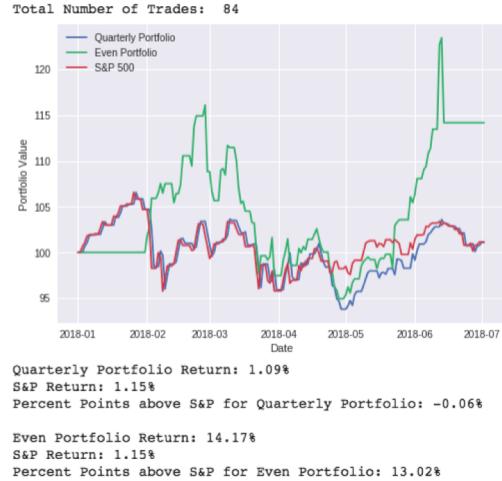


Even Portfolio Return: -4.67%  
S&P Return: 1.15%  
Percent Points above S&P for Even Portfolio: -5.81%

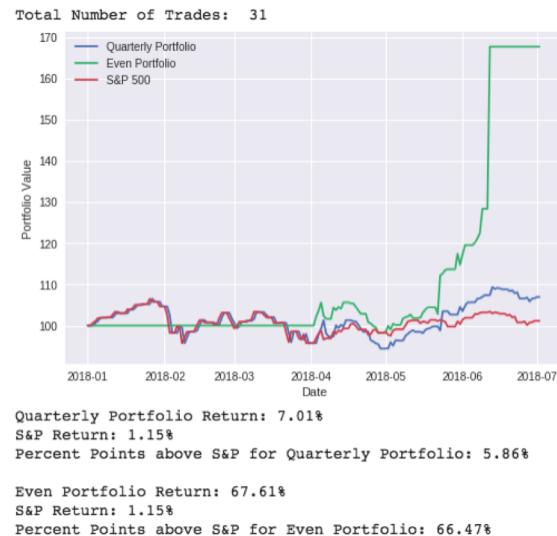
# Beta Strategy

- Took betas over 1 as well as beta over 1.5
- **Definition:** A beta of less than 1 means that the stock is theoretically less volatile than the market. A beta of greater than 1 indicates that the security's price is theoretically more volatile than the market. For example, if a stock's beta is 1.2, it's theoretically 20% more volatile than the market.
- Very high returns, but could just be amplifying the S&P500

Beta  
1.0



Beta  
1.5

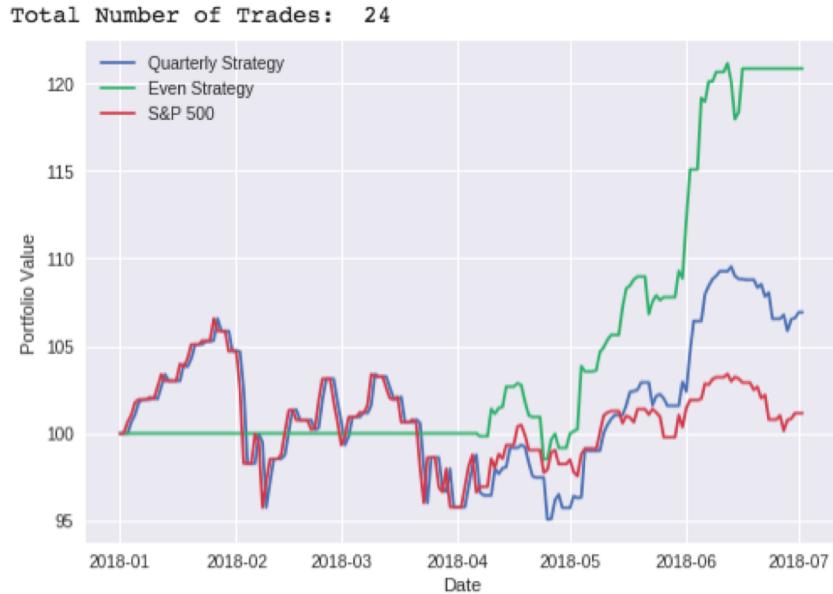


# Strategy Analysis

- The more stocks the strategy filtered out, the more volatile the portfolio became
- These strategies typically amplify the effect of the market. Given that the market was a bull market for the majority of this time, stocks that we long did exceedingly well.
- We will only long stocks in this market, but could pivot to only short if the market takes a downturn

# Combining Strategies

- Tried many different combinations of strategies and discovered that this combination is the best: historical beats, percent change, date change, long, and non-facility strategies
- Again because the number of trades is so few, further validation is needed



Quarterly Strategy Return: 6.93%

S&P Return: 1.15%

Percent Points above S&P for Quarterly Strategy: 5.78%

Even Strategy Return: 20.83%

S&P Return: 1.15%

Percent Points above S&P for Even Strategy: 19.68%

# Comparison Between X-Mode and Other Location Data Predictions

# Strategies

	Date Change	Percent Difference / Confidence	Historical Beats
X-Mode	<p>Total Number of Trades: 188</p> <p>Portfolio Value</p> <p>2018-01 2018-02 2018-03 2018-04 2018-05 2018-06 2018-07</p> <p>Date</p>	<p>Total Number of Trades: 83</p> <p>Portfolio Value</p> <p>2018-01 2018-02 2018-03 2018-04 2018-05 2018-06 2018-07</p> <p>Date</p>	<p>Total Number of Trades: 49</p> <p>Portfolio Value</p> <p>2018-01 2018-02 2018-03 2018-04 2018-05 2018-06 2018-07</p> <p>Date</p>
Others	<p>Total Number of Trades: 259</p> <p>Portfolio Value</p> <p>2018-01 2018-02 2018-03 2018-04 2018-05 2018-06 2018-07</p> <p>Date</p>	<p>Total Number of Trades: 66</p> <p>Portfolio Value</p> <p>2018-01 2018-02 2018-03 2018-04 2018-05 2018-06 2018-07</p> <p>Date</p>	<p>Total Number of Trades: 42</p> <p>Portfolio Value</p> <p>2018-01 2018-02 2018-03 2018-04 2018-05 2018-06 2018-07</p> <p>Date</p>

# Strategies

X-Mode

Sectors

Total Number of Trades: 66



Long

Total Number of Trades: 187



Facility

Total Number of Trades: 82



Others

Total Number of Trades: 50



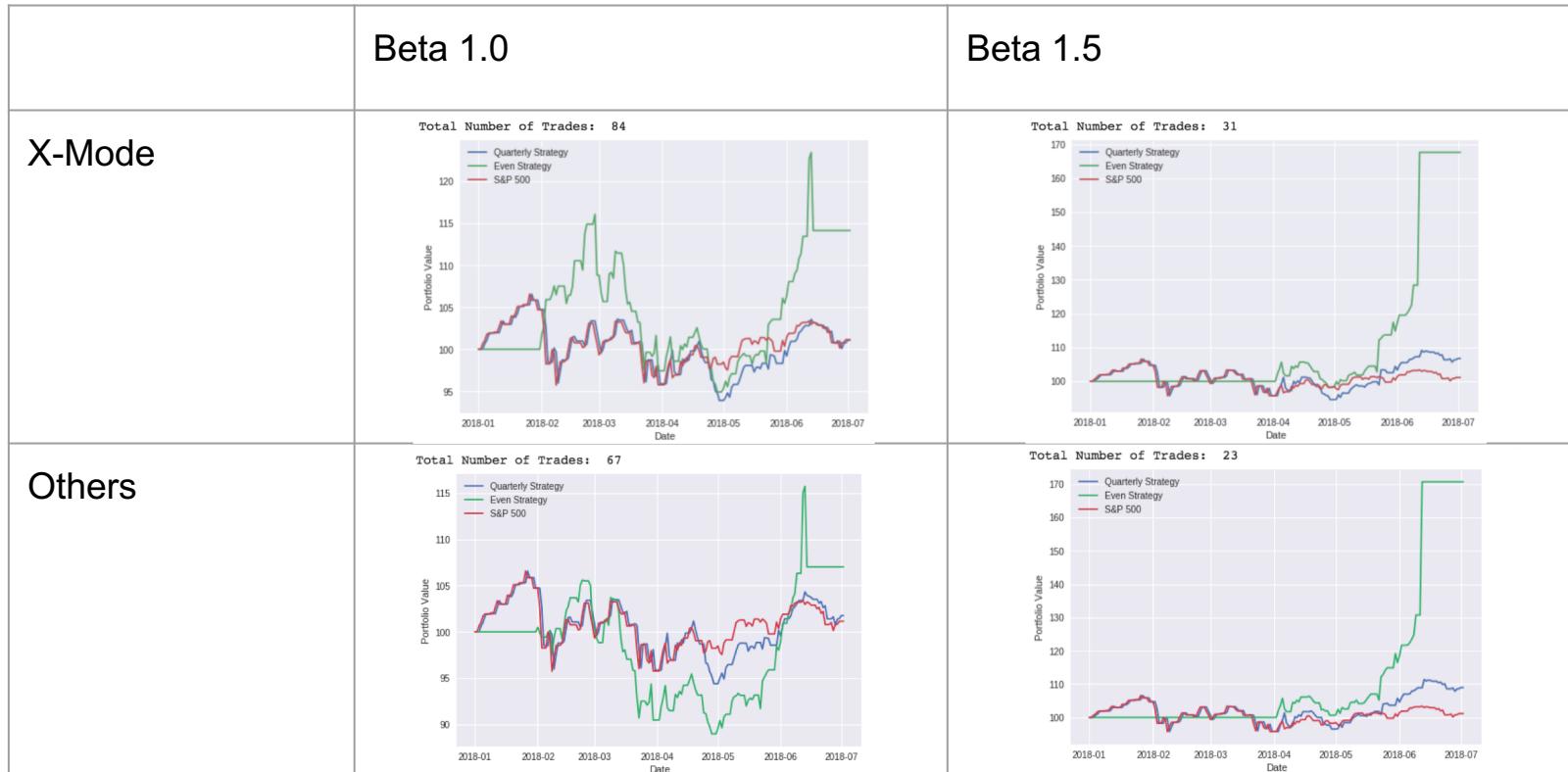
Total Number of Trades: 150



Total Number of Trades: 62



# Strategies



# X-Mode vs Non-X-Mode Data Results

Strategy	Date Change (4, 6)	Percent Difference	Historical Beats	Sector	Long	Facility	Beta 1.0	Beta 1.5
X-Mode Data Returns above S&P 500 (Quarterly)	1.97%	7.16%	1.18%	-3.9%	1.81%	-1.15%	-0.06%	5.6%
Non-X-Mode Data Returns above S&P 500 (Quarterly)	0.54%	9.47%	2.58%	-2.77%	3.89%	-0.58%	0.61%	7.80%
X-Mode Data Returns above S&P 500 (Even)	22.62%	10.31%	4.04%	-2.42%	10.19%	-5.81%	13.02%	66.47%
Non-X-Mode Data Returns above S&P 500 (Even)	15.26%	8.76%	12.96%	-2.96%	17.05%	-12.68%	5.87%	69.47%

# Comparative Analysis

- Tested all strategies on both data sets: one with X-Mode data based revenue predictions and one with non-X-Mode data based revenue predictions by Advan (See chart in previous slide)
- Can conclude that there is not a significant difference between any of the strategies, meaning that X-Mode data is just as good as other data aggregators' data, even when we have less historical data

# Discussion and Conclusion

- X-Mode location data, paired up with Advan's POI database and algorithm, can generate stock returns that beat the S&P, with results just as good as other location data companies with more historical data
- Much more analysis can be done on returns
  - Money is split evenly between all stocks hypothetically, but when trading with limited money in real life, it might affect the returns as stock prices don't split evenly
  - Need to add other market factors

# Future Work

- Implement momentum trading to reduce losses
- Incorporate independent variables such as public sentiment to improve returns
- Add more qualitative results to portfolio strategies such as variance, beta, sharpe ratio, etc.
- Live paper trade and combine with other tested trading strategies