The Viability of Trading Tesla, Bitcoin, and Dogecoin by Analyzing Elon Musk's Tweets

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Abstract

This paper will show the thought process and journey of how we try to determine whether it is beneficial for investors to use Elon Musk’s tweets for the purpose of trading securities. This is achieved by explaining four main experiments in this paper. Through the use of basic sentiment analysis on Musk's tweets, the first experiment's program was able to achieve a 12.67% annual return rate for the year 2021 in a trade simulation. The second experiment attempted to visualize the impact of Musk's tweets hours after they were posted. The third experiment compares these results with other small twitter accounts that give investment advice and shows how similar methods used for their tweets yield a negligible 0.95% rate of return for the year 2021. The fourth experiment attempts to more precisely measure Musk's impact by manually labeling his tweets and then performing the trade simulation on different time intervals ranging from 1 to 200 days. The results of this last experiment, allows us to draw the conclusion that it may indeed be viable to trade certain securities in certain time intervals based on Elon Musk's positive tweets about topics related to those securities.

1. Introduction

Over the past few years, Elon Musk's public influence has steadily increased, with Time magazine even awarding him the Person of the year 2021 award last year. This public influence can be seen with how his sentiment regarding some stocks and cryptocurrency can significantly move their prices in the public exchange markets. With Elon Musk recently buying Twitter, his ability to influence markets with his opinion on twitter has regained attention from many. So, we thought that it might be interesting to see if it is viable to use Elon Musk's tweets for trading.

2. First Experiment: Sentiment Analysis and Trade Simulation

The first idea is to completely automate the entire process by using sentiment analysis on specific past tweets and then trading based on those sentiments.

The two major components for this experiment are selecting the tweets and trading stocks based on the sentiment of those tweets. Based on historical data it is evident that Elon Musk's influence on stock and crypto markets was at its peak from 2019 to 2021 when he intentionally or unintentionally influenced his own company, Tesla's stock ($TSLA), and the prices of both Bitcoin compared to the US dollar ($BTC-USD) & Dogecoin compared to the US dollar ($DOGE-USD). This is the reason why this research was aimed at focussing on Musk's Twitter feed timeline from 2019 to 2021 and the short-term trading of $TSLA, $BTC-USD, and $DOGE-USD.

To fetch the tweets of Elon Musk from Twitter, the 'snscrape' python library [1] was used to scrape all of the tweets from the Twitter account '@elonmusk' between the interval of "2019-01-01" to "2021-12-31". Evidently, there are thousands of tweets from the '@elonmusk' account and only an insignificant percentage of these tweets actually talk about the security and commodities this research is focussing on. Hence, the algorithm for selecting the tweets is necessary. It has two filters it uses to find significant tweets that influenced markets in the past. The first filter is a minimum count number on the past tweets from Musk. Musk had around 25 million followers at the start of 2019 and this number has steadily increased since, today having more than 80 million followers, so based on

this and observing Musk's past tweets, the number of 100,000 was arbitrarily chosen for the minimum like tweet count for initial testing. The second filter was based on only selecting those tweets which contained keywords from a custom-made "bag of words". This 'bag of words' listed out keywords related to $TSLA, $BTC-USD, and $DOGE-USD in a python dictionary all linking back to these three stocks or cryptocurrencies.

```
s_dict = {      #KEYWORDS
        "BTC-USD": ["BTC-USD","bitcoin", "BTC", "Bitcoin", "crypto", "Crypto"],
        "DOGE-USD": ["DOGE-USD","dogecoin", "doge", "Doge", "Dogecoin", "crypto", "Crypto"],
        "TSLA":["TSLA", "tesla", "Tesla", "stock", "Stock", "EV", "electric"],
        } #ALWAYS HAVE TSLA LAST SO THAT NO TWO KEYWORDS MATCH
```

Figure 1: Bag of words used to select tweets

If a keyword in this python dictionary was there in any of Musk's tweets that were above the like count of 100 thousand, it would be selected for the sentiment analysis algorithm to decide whether the tweet's sentiment was strong enough to influence the market. The order in which the three keyword lists are stored in the python dictionary was also important. If Musk's tweets contained both the keywords from Bitcoin and Tesla it is reasonable to assume that this may have an impact on the cryptocurrency only. This is the same with Dogecoin, both cryptocurrencies' prices are influenced by what Musk tweets his company, Tesla, will use them for or his own opinion on them. Hence, when a tweet contains keywords from multiple values in the dictionary, the program would only select the first keyword value to decide if it will be profitable to trade-in. Hence the order of priority for the three would be: Bitcoin > Dogecoin > Tesla.

Once the tweets are filtered, sentiment analysis needs to be done to decide automatically whether the program should "invest" (stimulate investment) based on the tweet. We used the NLTK [2], Vader [3], and TextBlob [4] libraries for the tweet's sentiment analysis. The compound polarity scores of NLTK and Vader libraries and the polarity score given by the TextBlob library all lie between the range of -1 and 1, with -1 being the most negative tweet and 1 being the most positive tweet. For our purpose, we take the average of the three scores given by these libraries. This average is the final sentiment polarity score we use to decide whether we should "trade" based on this tweet and if so, what action we should

take. The absolute value of the average score decides whether a tweet is intense enough or not, and the positive or negative sign of the average tells us if we should buy or sell the stock or cryptocurrency being mentioned in that tweet respectively. The minimum absolute value of the average score is a controlled variable we can use to see what is the most profitable minimum score for starting a trade. From our testing, having a minimum average sentiment polarity score of 0.3 or 0.4 is the most profitable.

Trade results from 2019-2021:

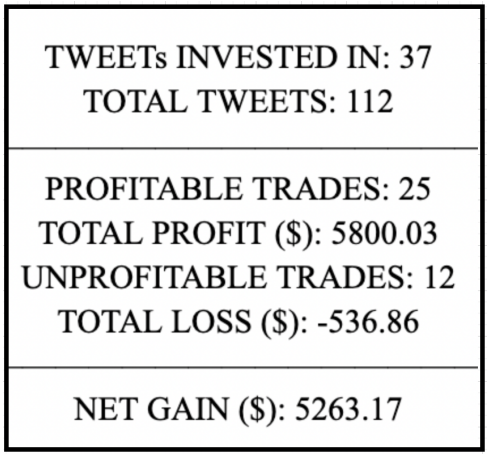


Figure 2: Minimum sentiment abs. score of 0.3 in trade simulation

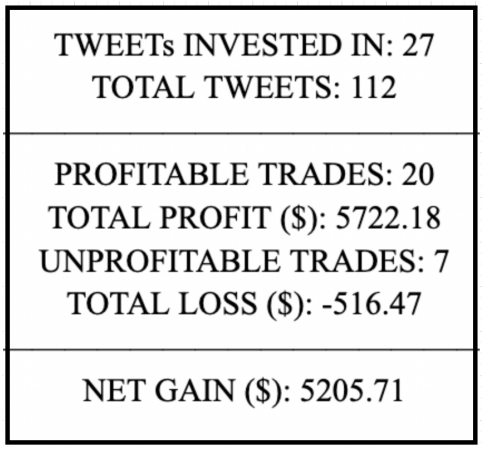


Figure 3: Minimum sentiment abs. score of 0.4 in trade simulation

The stock simulation is performed with data provided from the ‘yfinance’ [5] python library. The simulation is essentially fetching the opening price of the stock or cryptocurrency on the date when the tweet was posted. If this price data is

unavailable due to reasons like that day being a US holiday, the algorithm checks the following date, until the date when the price data is available. This is the starting price of the trade. Then we fetch the opening price of that stock or cryptocurrency on the following tradeable day from when this starting price was fetched. This is the ending price of the trade. The profit is calculated by the difference between the starting and the ending price of the trade.

This entire process is shown in the pseudocode on the following page. The input parameters in the pseudocode are described as follows:

- **tweets:** the list of tweets which have been selected through the minimum like count and keywords filter
- **stock:** the stock or crypto mentioned in the tweet
- **avg_score:** The average sentiment polarity score of a tweet calculated from the three python NLP (Natural Language Processing) libraries
- **min_score:** The minimum absolute sentiment score which determines if the algorithm should start a trade

```
invested = 0
num_profits = 0
num_losses = 0
profits = 0
losses = 0
for each tweet in tweets:
        if abs(avg_score) > min_score:
             invested += 1
             start_date = tweet.date
             while stock.open_price(start_date) unavailable:
                  start_date = start_date + 1
             start_price = stock.open_price(start_date)
             end_date = start.date + 1
             while stock.open_price(end_date) unavailable:
                  end_date = end_date + 1
             end_price = stock.open_price(end_date)

             if avg_score > 0:
                  if start_price > end_price:
                       num_profits += 1
                       profits += start_price - end_price
                  elif start_price < end_price:
                       num_losses += 1
                       losses += start_price - end_price
             if avg_score < 0:
                  if start_price < end_price:
                       num_profits += 1
                       profits += end_price - start_price
                  elif start_price > end_price:
                       num_losses += 1
                       losses += end_price - start_price
output("Number of tweets invested in: ", invested)
output("Total tweets: ", len(tweets))
output("Profits: ", num_profits)
output("Total: ", profits)
output("Losses: ", num_losses)
output("Total: ", losses)
net = profits - losses
output("Net Gain: ", net)
```

This algorithm was later improved to get the profit percentage from the total amount of money invested, to get data points like the annual return rate. In line with this, the simulation part of the algorithm was also changed so that instead of buying just 1 stock or cryptocurrency for every trade, the trade quantity would either be 1, 100, or 1000000 if the trade was for $BTC-USD, $TSLA or $DOGE-USD respectively since the price of the three is multiple orders of magnitude different from each other. This allowed the profits gained from trades of $TSLA and particularly $DOGE-USD to significantly affect the final percentage and profit amount. Moreover, instead of starting from 2019, the tweets will be selected starting from 2018 as further research suggested that the peak of Musk's Twitter influence started in 2018 instead of 2019.

Another improvement was the change of the arbitrary minimum like count filter number. With some statistical analysis, we calculated that the average number of like counts for every tweet and reply to the account "@elonmusk" posted in the years 2018 to 2021 was 6,200 likes with a standard deviation of approximately 3,386 likes, which was surprising due to his immense numbers of followers. Considering the mean was significantly lower than his tens of millions of followers, we decided to set the minimum number of like counts to be 20 standard deviations above the average like counts which turned out to be 73,917 likes.

With the variable trade quantity and other changes, we were able to get the following results for the year 2021:

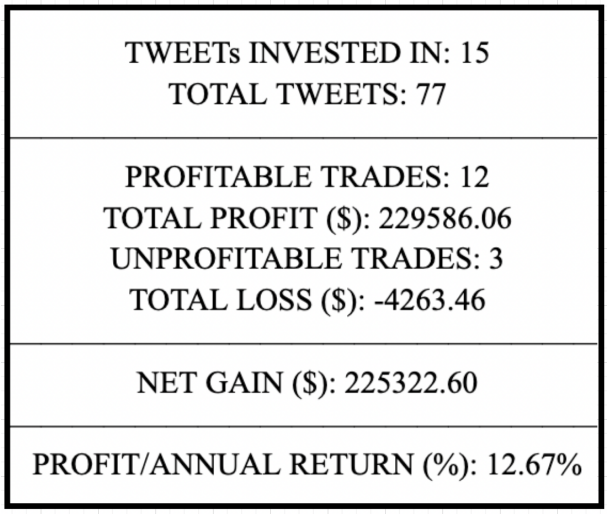


Figure 4: Annual return (%) for 2021 in trade simulation with minimum abs. score of 0.4

The last value of "PROFIT/ANNUAL RETURN (%)" shows that the algorithm got a 12.67% annual return rate by just investing according to the tweets it calculated as having significant market influence in the year 2021. The value of 0.4 for the controlled variable minimum sentiment value resulted in the highest percentage return rate in our testing.

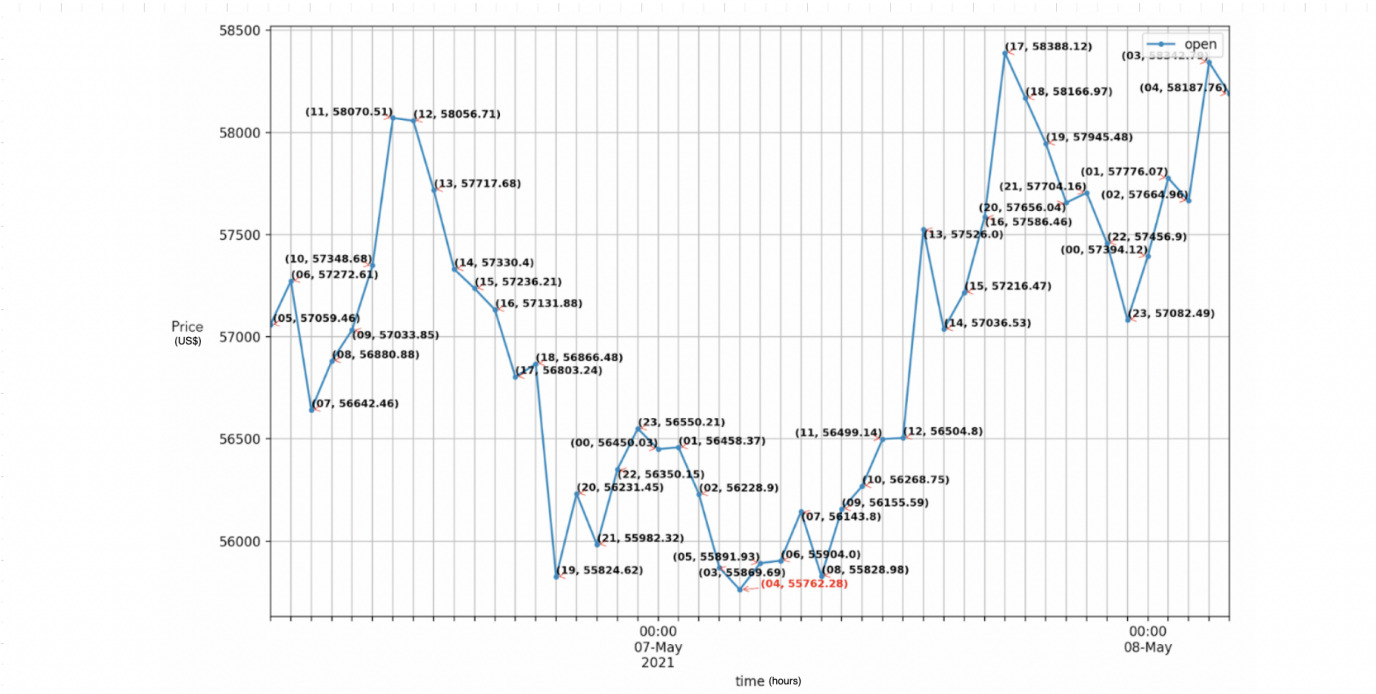
3. Second Experiment: Graphical Analysis

There were still some limitations in the previous experiment, one of which was the decision of when exactly to start the trade once a tweet was deemed to be significantly influential. In the previous algorithm, no matter at what time of the day a tweet was posted, the program was designed to just focus on the date and not the hour. Hence, even if there was a tweet that was posted at a time when the market had already closed for the day, the simulation would buy the stock or cryptocurrency at the price before the tweet was even posted that day. Keeping this limitation in mind, we decided to explore Elon musk's Twitter account's influence on the market with a different approach. Instead of simulating a trade for each significant tweet that met all criteria mentioned previously, we decided on plotting charts of the stock or cryptocurrency price in the span of one following tradeable day since when the tweet was posted. This chart has hourly intervals of when the market was open on the day the tweet was posted and the following day. The aim

of this experiment was to see what is the best average time period in hours to buy/sell the stock or cryptocurrency after an influential Elon Musk tweet about it.

Since the 'yfinance' python library did not provide hourly data for stocks or cryptocurrencies beyond 2 months, we decided to use the Alpha Vantage API [6] which made the intraday 60-minute interval price data available for any stock or cryptocurrency within 2 years. With this, even though we were not able to get the data for the years 2018, 2019, and the first half of 2020 the data we did get was still intriguing.

For this experiment, the initial components of the algorithm for selecting the tweets with the filters and the sentiment analysis remained the same, however instead of simulating investments for each tweet, we plotted a graph like the following one:



Tweet: "Cryptocurrency is promising, but please invest with caution! https://t.co/A4kplcP8Vq" - Elon Musk on 2021-05-07 04:24:20

Figure 5: Hourly price change line graph for BTC-USD before and after a tweet from Elon Musk

In these graphs, the coordinates for each point contain the hour of the day and the exact price of the stock or cryptocurrency. The red data point (04, 55762.28)

indicates exactly at what hour the tweet from Musk was posted. For this graph, the tweet was posted on 2021-05-07 at 04:00:00 at which point the price of bitcoin was 55,762.28 USD.

Along with a graph for each significant tweet, we also calculated the length of all the streaks caused following the time of the tweet. By "streak" we mean the number of hours after Musk's tweets that the price of the stock or cryptocurrency continued to go in the direction of the sentiment of the tweet. For example, if the tweet by musk was positive in sentiment, for how many hours did the price of that stock or cryptocurrency go up continuously. In the end, the streak frequency for the different number of hours was also shown. The output for this can be seen below for all the tweets determined significantly by the algorithm between the dates 16/03/2020 to 31/12/2021 as 16th March 2020 was the latest intraday hourly data the Alphavantage API was able to provide:

```
TWEETs INVESTED IN:  27
TOTAL TWEETS:  114
BUY STREAKS: {'0': 8, '1': 7, '2': 4, '3': 6}
SELL STREAKS: {'0': 1, '1': 1}
```

Figure 6: Hourly price streak count

Here the python dictionaries "BUY STREAKS" and "SELL STREAKS" have streak number as the dictionary 'key' and the frequency of that particular streak as the dictionary 'value'. For example, out of the 27 tweets the algorithm classified as significant, 6 of the tweets resulted in 3 hours of continuous increase in the price of the stock or cryptocurrency the tweet was about.

Currently, the algorithm only counts continuous streaks meaning that even if there is just one hour in between of a very long streak that goes in the direction opposite to the sentiment of the tweet, the streak breaks. One improvement to this method can be adding a buffer control variable which allows a certain number of immediate following hours to not break the streak even if they do not follow the direction of the sentiment of the tweet. This would eliminate the volatility of the short-term market, where even if the general trend of the stock or cryptocurrency

price is upwards or downwards, there are always outliers. Of course, there is a possibility that these streaks are in no way actually related to the tweets but just a random day trading behavior, but we believe this data is still worthwhile.

4. Third Experiment: Sentiment Analysis on Small Twitter Accounts

Inspired by the results from using sentiment analysis on the Twitter account of Elon Musk, we saw an opportunity in testing the viability of following the investment advice of some small Twitter accounts that are solely created for the purpose of sharing their opinions and advice on investment. This would also allow us to compare the results of the previous experiments with other twitter accounts. Some examples of such Twitter accounts are “@pakpakchicken”, “@garyblack00”, and “@saxena_puru”. For our testing purposes, we chose the Twitter account “@saxena_puru”.

Our aim was to use the same algorithm we used for Elon Musk’s tweets on these Twitter accounts to see whether following their investment advice in their past tweets was profitable or not. However, there were some major differences in the case of these accounts. In Musk's case, we know that he usually only talks about and has a great influence on Tesla, Bitcoin, and Dogecoin so those are the only stocks and cryptocurrencies we want to observe a reaction in. This is not the case for these other Twitter accounts. They have no specific stock they talk about, from the first tweet from “@saxena_puru” in 2019, he has talked about tens or maybe even hundreds of different stocks in the account’s tens of thousands of tweets. So, it is hard to filter his tweets based on specific keywords as we did with Musk.

In many of the tweets from “@saxena_puru” directly stating whether he is optimistic or pessimistic about a stock, the ticker of the stock is included with a '$' sign (Example: I am long $TSLA). Observing this, we decided that filtering out the tweets based on whether a tweet has a ‘$’ in it is a good starting point for this experiment even though this may mean that we will miss some tweets where he also gave his investment opinion without including the '$'. In addition to this, further cleaning of the tweets was needed for this filter to work.

Another major difference is that usually when Musk tweets about either $TSLA, Bitcoin, or Dogecoin he only talks about one of them. However, @saxena_puru may give his opinion on 5 different stocks at the same time (example: "Current portfolio holdings -\n\n$ALGN $AMZN $BABA $BZUN $DOCU $EDU $FB $FND $HDB $IQ $MELI $NFLX $PYPL $SHOP $SQ $STNE $TCEHY $TME $WB $ZUO ..."). For now, we take the average sentiment of the whole tweet and make a unified decision on whether to buy or sell all the stocks mentioned in that tweet.

The variable trade quantity which was added later in the initial testing algorithm as an improvement is also used in this testing with slightly adjusted conditions. Instead of specifying the trade quantity of just $TSLA, $DOGE-USD, and $BTC-USD the trade quantity of any stock selected by the algorithm to “invest” in was chosen based on its price at the time. If the price of the security at the start is less than $0.01, the trade quantity would be set to 1000000. If the price at the start of the trade was less than $1000, the trade quantity would be set to 100. In any other case, the trade quantity for one transaction would remain 1.

These small Twitter accounts do not have any personal influence on the stock or crypto market, they just provide their own thoughts about prospects of a security on the internet. Hence, there should be no direct influence of their tweets on the market. This is why we added a new controlled variable for the number of days to hold the stock or cryptocurrency to hold instead of the default of one day.

In our testing, we have not yet seen any significant profitability in using sentiment analysis to make the program follow the advice given by the twitter account. It is entirely possible that because of the accuracy of the sentiment analysis, there are some issues in following every tweet’s advice, however we believe if the tweets had advice which were significantly profitable, then this would have been shown in the results.

Trade results in the year 2021:

TWEETs INVESTED IN: 326 TOTAL TWEETS: 1026
PROFITABLE TRADES: 197 TOTAL PROFIT ($): 81828.79 UNPROFITABLE TRADES: 129 TOTAL LOSS ($): -43309.54
NET GAIN ($): 38519.26
PROFIT/ANNUAL RETURN (%): 0.95%

Figure 7: Investment interval of 1 day & minimum sentiment abs. score of 0.4 in trade simulation

5. Fourth Experiment: Elon Musk's Twitter Influence Quantified

After looking at the promising results of the initial testing of using sentiment analysis for Musk's Twitter for short-term trading, we decided to find out if Musk's tweets can also have an influence on the market for more than just one day. The selection of tweets for this experiment was the same. The tweets were selected if:

- posted from 1 January 2018 to 31 December 2021
- had more than 73,917 likes (20 standard deviations above the mean)
- contains any keyword from the "bag of words".

There were a total of 155 such tweets. However, for this particular experiment, we decided to entirely remove the sentiment analysis libraries used to decide whether the tweets were significant enough to trade in stock or cryptocurrency. Instead, we decided to monitor the stock or cryptocurrency mentioned by all 155 of these tweets at the time they were posted. The stock/crypto currencies' performance was recorded as a percentage increase or decrease in the intervals of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 25, 50, 100, 200 days. To make this as accurate as possible, we manually labeled all 155 of these tweets' sentiments as either positive, neutral, or negative. This labeling can be seen for all 155 tweets in Appendix 1, in the column "Sentiment".

The percentage change was calculated in a similar way to the stock simulation explained in the initial testing, but all the time intervals just mentioned were used instead of just 1 day. The process for determining the "start date for the trade" was also improved. Since, we only use the daily price data in this algorithm, if the tweet was made on a US holiday, instead of incrementing the start date, we instead go back to the previous tradeable day and use that day's closing price as the buy price. This is viable in this experiment because we are trying to get the best possible numerical representation of Elon Musk's tweets' implied impact instead of simulating a trade where we can only buy the stock or cryptocurrency after the tweet has been made.

The output of the program below shows the individual change in percentage of the stock or cryptocurrency mentioned in each tweet starting from their post date and also the overall mean, median, mode, variance, and standard deviation for all the positive tweets, all the negative tweets, all tweets, and the individual positive & negative tweets about a singular stock or cryptocurrency. The tables with the mean median, etc also have the sample size mentioned in the title (e.g. "n = 139" means this data was calculated from 139 tweets implied impact). When calculating the statistical data for the positive tweets, we also include the data of the tweets labeled as neutral since a mention of them to Elon Musk's millions of followers can be seen as a promotion to that stock or cryptocurrency unless it is specifically negative. The final output of this program is as follows[1]:

[1] This is just the first 21 tweets of the 155 total, the entire table can be seen in Appendix 1.

	ID	Tweet	Sentiment	Ticker	1 Day (%)	2 Days (%)	3 Days (%)	4 Days (%)	5 Days (%)	6 Days (%)	7 Days (%)	8 Days (%)	9 Days (%)	10 Days (%)	25 Days (%)	50 Days (%)	100 Days (%)	200 Days (%)
0	link	Tesla holiday software update goes to wide release today!	Positive	TSLA	0.63	0.63	0.63	3.98	2.97	-0.53	0.60	7.57	7.57	7.57	-3.79	-19.25	2.10	FUTURE
1	link	Lots of Tesla cars to deliver before year end! Your support in taking delivery is much appreciated. \n\nThanks also to the Tesla team working hard during the holidays!	Positive	TSLA	6.64	6.64	6.64	6.64	10.20	9.12	5.42	6.62	14.00	14.00	1.97	-9.65	8.20	FUTURE
2	link	Tesla holiday software release being tested with internal owners today. Broader rollout starts tomorrow evening.	Positive	TSLA	4.26	11.19	11.19	11.19	11.19	14.89	13.77	9.91	11.16	18.86	6.31	-5.93	11.96	FUTURE
3	link	Tesla will make some merch buyable with Doge & see how it goes	Positive	DOGE-USD	21.24	15.16	10.44	7.57	9.37	7.79	6.87	9.17	10.30	16.70	-1.55	-9.43	-17.85	FUTURE
4	link	@teslaownersSV Did it myself 😉	Neutral	TSLA	0.81	1.57	-3.39	-4.13	-4.13	-4.13	-9.50	-8.71	-4.76	-12.40	9.92	-8.79	-20.42	FUTURE
5	link	As always, Tesla is looking for hardcore AI engineers who care about solving problems that directly affect people's lives in a major way.\nhttps://t.co/0B5toOOHcj	Positive	TSLA	4.26	5.11	5.90	0.72	-0.04	-0.04	-0.04	-5.64	-4.82	-0.70	7.18	-8.72	-19.22	FUTURE
6	link	Blow the whistle on Tesla!\nhttps://t.co/c86hLA0iQK	Positive	TSLA	-5.31	-6.54	-13.71	-13.71	-13.71	-10.04	-9.30	-8.62	-13.09	-13.75	-7.50	-13.01	-27.61	FUTURE
7	link	@SenSanders Want me to sell more stock, Bernie? Just say the word …	Negative	TSLA	-1.53	-2.91	2.91	7.08	6.33	12.47	12.47	12.47	12.98	4.55	2.63	11.06	-19.28	FUTURE
8	link	Note, I do not take a cash salary or bonus from anywhere. I only have stock, thus the only way for me to pay taxes personally is to sell stock.	Negative	TSLA	-5.92	-5.92	-3.97	-17.32	-9.76	-14.29	-16.73	-16.73	-16.73	-17.90	-5.02	-12.14	-29.50	FUTURE
9	link	Much is made lately of unrealized gains being a means of tax avoidance, so I propose selling 10% of my Tesla stock.\n\nDo you support this?	Negative	TSLA	-5.92	-5.92	-3.97	-17.32	-9.76	-14.29	-16.73	-16.73	-16.73	-17.90	-5.02	-12.14	-29.50	FUTURE
10	link	Trial program for opening Tesla Superchargers to other EVs has begun https://t.co/g4HpgRGl7d	Positive	TSLA	1.25	2.82	7.81	7.25	0.42	0.42	0.42	2.50	-11.75	-3.69	-3.98	-19.92	-18.34	FUTURE
11	link	Tuition is in Dogecoin & u get a discount if u have a dog	Positive	DOGE-USD	4.27	1.41	2.08	0.52	-1.75	-2.42	-2.16	-0.64	5.21	2.19	-18.64	-36.64	-38.21	FUTURE
12	link	@DrEliDavid If WFP can describe on this Twitter thread exactly how $6B will solve world hunger, I will sell Tesla stock right now and do it.	Neutral	TSLA	2.78	4.07	5.68	10.81	10.23	3.21	3.21	3.21	5.35	-9.30	-1.30	-18.25	-18.71	FUTURE
13	link	Pop music has both literal & figurative Stockholm Syndrome	Neutral	TSLA	4.49	12.64	14.29	17.44	18.93	25.87	25.87	25.87	27.45	29.42	21.64	10.05	2.81	FUTURE
14	link	Please consider joining Tesla AI software or hardware teams! https://t.co/HgigdtenKN	Positive	TSLA	-1.08	-1.08	-1.08	0.59	1.79	2.42	3.46	6.98	6.98	6.98	45.61	38.28	28.94	FUTURE
15	link	Tesla Model S Plaid just set official world speed record for a production electric car at Nurburgring. Completely unmodified, directly from factory. https://t.co/AaiFtfW5Ht	Positive	TSLA	0.82	-1.75	-1.75	-1.75	-1.44	-1.12	-0.08	0.50	-2.50	-2.50	5.72	43.60	20.88	41.37
16	link	If you're curious about Tesla, SpaceX & my general goings on, @WalterIsaacson is writing a biography	Neutral	TSLA	-0.57	-0.81	-0.81	-0.81	-0.28	-0.46	-1.35	1.08	-1.53	-1.53	-0.18	4.17	42.13	16.5
17	link	Tesla AI Day August 19th	Positive	TSLA	3.38	7.73	7.73	7.73	10.65	9.42	10.19	9.56	9.29	9.29	5.49	16.52	76.95	32.59
18	link	Congrats Tesla Team on over 200,000 car built & delivered in Q2, despite many challenges!!	Positive	TSLA	0.40	0.40	0.40	0.40	-2.17	-7.45	-3.80	-2.47	-2.47	-2.47	-2.29	0.95	16.00	51.2
19	link	Baby Doge, doo, doo, doo, doo, doo,\nBaby Doge, doo, doo, doo, doo, doo,\nBaby Doge, doo, doo, doo, doo, doo,\nBaby Doge	Positive	DOGE-USD	-3.10	-3.19	-2.54	-2.69	-8.21	-7.76	-11.28	-18.75	-13.66	-16.51	-20.23	23.77	-4.20	-29.96
20	link	Release the Doge! https://t.co/9bXCWQLIhu	Positive	DOGE-USD	-3.10	-3.19	-2.54	-2.69	-8.21	-7.76	-11.28	-18.75	-13.66	-16.51	-20.23	23.77	-4.20	-29.96
21	link	How many Bitcoin maxis does it take to screw in a lightbulb?	Negative	BTC-USD	-8.85	-6.96	0.06	-0.53	3.38	1.07	-3.23	-2.44	0.24	1.84	-11.04	37.94	37.52	20.68

Figure 8: Last 21 tweets by Musk used in this experiment. The "FUTURE" in it means the assessment would occur beyond the date of this study

For some tweets which have been posted before a certain time interval has passed, the value of change is just outputted as "FUTURE". These values are not considered in the statistical calculations whose results are shown below. For example, the first positive tweet in the above table has been posted within 200 days from when this experiment was done, so even though the "FOR POSITIVE TWEETS" table below shows a sample size of "n=139" that is not true for the 200 days calculation shown in that table since this "FUTURE" value is not taken into account.

FOR POSITIVE TWEETS: n = 139

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	3.583525	[-3.63, 0.32, 12.7]	1.080	84.380165	9.185868
2 Days	4.436619	[-5.53, -3.44, 2.94, 5.74]	1.390	362.539907	19.040481
3 Days	4.413525	[-3.01, 0.78, 3.13]	1.540	237.430833	15.408791
4 Days	5.074676	[-12.62, 2.31, 5.88]	2.200	456.546780	21.366955
5 Days	5.670791	[4.13]	2.800	660.465381	25.699521
6 Days	5.772446	[-15.58, 3.66, 5.56]	3.660	438.796274	20.947465
7 Days	5.629065	[-17.07, 4.71, 5.35, 7.71]	4.270	491.449701	22.168665
8 Days	6.085324	[-17.34, 6.53, 7.71, 9.56]	4.770	494.119571	22.228800
9 Days	5.669065	[-19.2, 3.44, 8.02]	3.440	441.832551	21.019813
10 Days	6.681583	[-11.23, -0.74, 8.57]	3.090	530.610292	23.034980
25 Days	13.709928	[1.68, 10.95, 16.44]	5.720	2391.005883	48.897913
50 Days	56.738849	[-9.09, 7.08, 606.53]	9.370	43877.743393	209.470149
100 Days	84.934348	[-38.68, -36.2, 407.04]	17.395	53912.365215	232.190364
200 Days	145.270866	[-16.21, 0.44, 255.86]	48.150	260468.544805	510.361191

Figure 9: Percentage change statistics for all selected positive tweets

FOR NEGATIVE TWEETS: n = 16

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	-3.405625	[-5.92, -3.71]	-3.710	22.211693	4.712928
2 Days	-3.161875	[-5.92, 1.39]	-3.690	39.040963	6.248277
3 Days	-3.802500	[-5.02, -3.97]	-3.970	39.095473	6.252637
4 Days	-4.051875	[-17.32, 8.72]	-1.220	123.461336	11.111316
5 Days	-1.806875	[-9.76, 13.1]	-0.005	93.787903	9.684415
6 Days	-2.573125	[-14.29, 12.87]	2.015	136.379036	11.678144
7 Days	-3.484375	[-16.73, 12.87]	0.465	190.342733	13.796475
8 Days	-3.758750	[-16.73, 12.87]	-1.985	202.987292	14.247361
9 Days	-3.868125	[-16.73, 12.34]	-0.560	223.321176	14.943934
10 Days	-4.746875	[-17.9, 13.0]	0.615	273.201103	16.528796
25 Days	-3.020000	[-5.02, 4.74]	-5.020	529.567773	23.012340
50 Days	4.822500	[-12.14, 5.71]	-3.215	1284.766073	35.843634
100 Days	41.590625	[-29.5, 21.96]	7.380	14040.982460	118.494652
200 Days	66.533077	[1.19]	15.190	13516.716440	116.261414

Figure 10: Percentage change statistics for all selected negative tweets

FOR ALL TWEETS: n = 155

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	2.862065	[-3.63, 0.32, 12.7]	0.720	82.328126	9.073485
2 Days	3.652258	[-5.53, -3.44, 1.39, 2.94, 5.74]	1.230	334.055558	18.277187
3 Days	3.565419	[-3.01, 0.78, 3.13]	0.830	222.860047	14.928498
4 Days	4.132581	[-12.62, 2.31, 5.88]	1.880	428.899411	20.709887
5 Days	4.898903	[4.13]	2.260	606.190509	24.620936
6 Days	4.910968	[-15.58, 3.66, 5.56]	3.210	412.979972	20.321909
7 Days	4.688323	[-17.07, 4.71, 5.35, 7.71]	4.130	466.668195	21.602504
8 Days	5.069161	[-17.34, 6.53, 7.71, 9.56]	4.360	471.582805	21.715957
9 Days	4.684581	[-19.2, 3.44, 8.02, 13.49]	3.440	426.154611	20.643513
10 Days	5.501871	[-11.23, -0.74, 8.57]	2.880	514.261523	22.677335
25 Days	11.982968	[1.68, 10.95, 16.44]	4.840	2220.248738	47.119515
50 Days	51.379742	[-9.09, 7.08, 606.53]	8.070	39695.281764	199.236748
100 Days	80.431104	[-38.68, -36.2, 407.04]	16.395	49827.089062	223.219822
200 Days	137.959500	[-16.21, 0.44, 255.86]	41.695	237801.069821	487.648511

Figure 11: Percentage change statistics for all selected tweets

FOR TESLA POSITIVE TWEETS: n = 97

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	1.066907	[-2.93, -1.68, -1.34, -0.85, 1.93, 4.26, 9.89, 10.08]	0.72	16.173453	4.021623
2 Days	1.770000	[-3.26, -1.59, -0.22, -0.07, 9.23, 14.27]	0.99	40.011325	6.325451
3 Days	1.804021	[-2.14, -0.07, 0.5, 0.83, 2.61, 9.23, 14.27]	0.83	38.037014	6.167415
4 Days	2.134227	[-2.14, -1.36, -0.07, 0.09, 2.61, 9.23, 14.27]	1.80	47.232123	6.872563
5 Days	2.359175	[-3.17, -2.14, 0.09, 3.01, 6.14, 6.86, 10.2]	2.80	52.243958	7.227998
6 Days	3.679485	[-6.08, -4.0, 0.09, 4.05, 9.66, 10.71]	3.18	99.810007	9.990496
7 Days	4.199897	[4.71]	3.46	112.253951	10.594997
8 Days	4.429072	[9.56]	3.93	128.327211	11.328160
9 Days	4.403918	[-5.08, -1.24, 0.83, 2.34, 7.74, 19.48]	3.09	141.884903	11.911545
10 Days	5.190000	[-5.08, -2.5, -2.07, 0.07, 2.34, 7.74, 19.48]	3.22	149.471790	12.225866
25 Days	10.505567	[-22.38, -9.33, 2.37, 4.71, 8.64]	6.31	458.569344	21.414232
50 Days	16.362474	[-17.7, -11.86, -9.98, 15.58, 23.61, 25.87]	10.05	1062.593254	32.597442
100 Days	29.426392	[-39.19, -7.46, -5.6, 61.83, 103.98]	19.90	2279.546380	47.744595
200 Days	92.536322	[-24.44, -16.29, 55.06, 61.38, 218.76]	55.06	11143.389928	105.562256

FOR TESLA NEGATIVE TWEETS: n = 8

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	-2.37500	[-5.92, -3.71]	-3.710	23.199286	4.816564
2 Days	-1.11125	[-5.92, 1.39]	-0.760	25.550155	5.054716
3 Days	-1.91875	[-5.02, -3.97]	-3.970	19.447041	4.409880
4 Days	0.64500	[-17.32, 8.72]	5.335	125.314629	11.194402
5 Days	3.12750	[-9.76, 13.1]	4.580	78.004907	8.832039
6 Days	2.71625	[-14.29, 12.87]	4.580	126.737170	11.257760
7 Days	2.28375	[-16.73, 12.87]	4.695	152.339341	12.342582
8 Days	0.90500	[-16.73, 12.87]	2.070	152.162057	12.335399
9 Days	1.35625	[-16.73, 12.34]	3.895	150.148541	12.253511
10 Days	-0.42250	[-17.9, 13.0]	3.820	152.111279	12.333340
25 Days	2.77875	[-5.02, 4.74]	3.685	125.557812	11.205258
50 Days	13.14375	[-12.14, 5.71]	5.710	1116.866484	33.419552
100 Days	9.92375	[-29.5, 21.96]	10.760	1602.316113	40.028941
200 Days	86.55800	[1.19]	1.190	15443.251970	124.270881

Figure 12: Percentage change statistics for selected positive & negative tweets about Tesla

FOR BTC-USD POSITIVE TWEETS: n = 15

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	-0.056000	[-3.64, -0.03]	-1.00	26.310983	5.129423
2 Days	-0.448667	[-5.51, 2.71]	1.73	50.960270	7.138646
3 Days	-0.494667	[-3.23, 1.33]	1.33	72.041184	8.487708
4 Days	-3.936000	[-12.54, 2.85]	-2.48	101.531326	10.076275
5 Days	-2.054000	[-11.13, 2.68]	-0.48	184.989869	13.601098
6 Days	-1.803333	[-16.08, 6.09]	1.91	211.908895	14.557091
7 Days	-2.904000	[-17.15, 8.22]	2.66	271.310926	16.471519
8 Days	-2.052000	[-17.5, 8.2]	7.41	346.466046	18.613598
9 Days	-2.816667	[-19.24, 8.12]	5.67	324.686095	18.019048
10 Days	-0.698000	[-11.31, 8.59]	8.17	298.987803	17.291264
25 Days	3.552000	[1.74, 10.56]	2.36	466.794017	21.605416
50 Days	-0.919333	[-9.04, 6.89]	-4.65	661.386007	25.717426
100 Days	-8.225333	[-38.24, -36.26]	-22.04	2336.681441	48.339233
200 Days	5.446000	[-16.36, 1.17]	1.17	746.609983	27.324165

FOR BTC-USD NEGATIVE TWEETS: n = 7

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	-4.198571	[-12.87, -8.85, -6.0, -2.37, -1.55, 0.62, 1.63]	-2.37	27.937348	5.285579
2 Days	-3.790000	[-12.33, -9.37, -6.96, -4.67, 0.89, 1.6, 4.31]	-4.67	38.575967	6.210955
3 Days	-3.622857	[-12.09, -8.61, -5.4, -2.48, -0.1, 0.06, 3.26]	-2.48	29.062690	5.390982
4 Days	-6.221429	[-17.58, -14.33, -6.02, -2.48, -1.61, -1.0, -0.53]	-2.48	48.287648	6.948931
5 Days	-6.112857	[-18.12, -14.81, -11.86, -1.4, -0.48, 0.5, 3.38]	-1.40	73.437624	8.569575
6 Days	-6.557143	[-23.21, -13.16, -12.43, -4.63, 1.07, 2.81, 3.65]	-4.63	101.537024	10.076558
7 Days	-7.868571	[-25.69, -24.33, -11.89, -6.47, -3.23, 5.56, 10.97]	-6.47	193.907414	13.925064
8 Days	-7.298571	[-35.26, -17.79, -11.65, -4.74, -2.44, 10.13, 10.66]	-4.74	261.210648	16.162012
9 Days	-7.597143	[-28.37, -24.51, -17.16, -9.5, 0.24, 12.61, 13.51]	-9.50	287.981057	16.970005
10 Days	-6.190000	[-34.22, -24.19, -17.7, -0.43, 1.84, 14.81, 16.56]	-0.43	383.063667	19.572012
25 Days	-7.721429	[-37.35, -33.89, -27.5, -12.03, -11.04, 10.97, 56.79]	-12.03	1082.418148	32.900124
50 Days	-1.972857	[-44.0, -38.21, -32.1, -14.27, 13.88, 37.94, 62.95]	-14.27	1699.600390	41.226210
100 Days	19.364286	[-24.64, -17.53, -16.54, -0.14, 15.24, 37.52, 141.64]	-0.14	3377.515062	58.116392
200 Days	12.865714	[-4.66, -3.42, -0.19, 15.97, 19.67, 20.68, 42.01]	15.97	284.869029	16.878064

Figure 13: Percentage change statistics for selected positive & negative tweets about Bitcoin

FOR DOGE-USD POSITIVE TWEETS: n = 27

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	14.360370	[12.37]	12.37	2.232502e+02	14.941561
2 Days	16.765185	[6.75]	6.75	1.672089e+03	40.891183
3 Days	16.231481	[3.21]	5.22	9.038084e+02	30.063407
4 Days	20.682593	[6.47]	6.47	1.891344e+03	43.489584
5 Days	21.814074	[5.91]	5.91	2.930646e+03	54.135445
6 Days	17.327037	[4.6]	4.60	1.756782e+03	41.913986
7 Days	15.505556	[6.04]	6.04	1.962223e+03	44.296988
8 Days	16.280741	[7.34]	7.19	1.851930e+03	43.034060
9 Days	14.591481	[4.12]	4.12	1.509607e+03	38.853667
10 Days	15.981481	[0.86]	0.86	1.991187e+03	44.622723
25 Days	30.922593	[17.28]	3.92	1.043536e+04	102.153618
50 Days	234.414444	[613.84]	23.77	1.908805e+05	436.898732
100 Days	332.610370	[412.69]	222.05	1.975820e+05	444.501989
200 Days	412.638000	[256.83]	256.83	1.237816e+06	1112.571690

FOR DOGE-USD NEGATIVE TWEETS: n = 1

	Mean (%)	Mode (%)	Median (%)	Variance	Standard Deviation (%)
1 Day	-7.24	[-7.24]	-7.24	NaN	NaN
2 Days	-14.90	[-14.9]	-14.90	NaN	NaN
3 Days	-19.13	[-19.13]	-19.13	NaN	NaN
4 Days	-26.52	[-26.52]	-26.52	NaN	NaN
5 Days	-10.00	[-10.0]	-10.00	NaN	NaN
6 Days	-17.01	[-17.01]	-17.01	NaN	NaN
7 Days	-17.55	[-17.55]	-17.55	NaN	NaN
8 Days	-15.34	[-15.34]	-15.34	NaN	NaN
9 Days	-19.95	[-19.95]	-19.95	NaN	NaN
10 Days	-28.97	[-28.97]	-28.97	NaN	NaN
25 Days	-15.96	[-15.96]	-15.96	NaN	NaN
50 Days	-13.42	[-13.42]	-13.42	NaN	NaN
100 Days	442.92	[442.92]	442.92	NaN	NaN
200 Days	338.79	[338.79]	338.79	NaN	NaN

Figure 14: Percentage change statistics for selected positive & negative tweets about Dogecoin

These results seem significant, especially the statistical data for intervals equal to or greater than 50 days, however, it can be argued that this result is biased as for the last few years since the start of the pandemic, the overall market in the United States has performed very well due to different circumstances, so it is hard to say that the data shown above is only because of Elon Musk's tweets' influence.

Hence, a better and more conclusive way to look at these results would be to compare the performance of the stock or cryptocurrency mentioned in the tweet after the tweet and the average change of their price since they were available on public exchanges in the corresponding time intervals. This was achieved by another algorithm which was also similar to the simulated trading algorithm mentioned before. However, “yfinance” was not able to provide full historical data for the prices of both $BTC-USD and $DOGE-USD since their launch in public exchanges. Hence, for this algorithm, I used the historical data from the websites “Investing.com” [7] for $BTC-USD and “CoinGecko” [8] for $DOGE-USD. The above results for the tweets’ implied impact was also calculated with this data. The source for the historical data of $TSLA remained ‘yfinance’.

The different part about this algorithm was that instead of determining the “start date for the trade” with the date of the twitter post, all the available dates in the historical data were taken as the “start date for the trade” and the “end date” was determined by adding the time interval amount of calendar days to the “start date”. If the “end date” was a US holiday, then the first tradeable day after this “end date” was chosen as the new “end date”. The percentage difference between the opening price on both dates was then calculated to find the change after a time interval on that specific date. The algorithm calculates the average of this change percentage for all the dates available in the historical data for all the time intervals mentioned above if the “end date” does not exceed the date of 13th April 2022, the day on which this experiment was done.

Below, these averages are compared with the mean impact of tweets shown previously in line graph formats. For obvious reasons, the change percentage in higher intervals is significantly higher than the change percentage for smaller intervals, and so there is a “close up” chart below the original charts that shows the data till the 25 days interval to better display those data points.

5.1 Results for Tesla

(For positive tweets: n= 97 & For negative tweets: n=8)

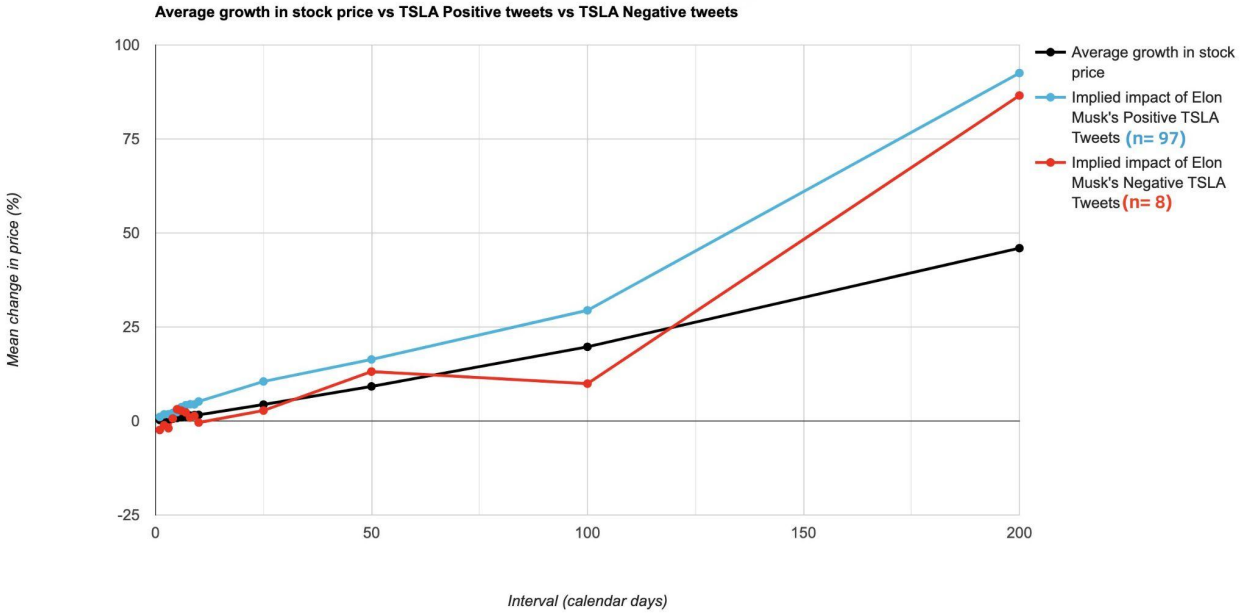


Figure 15: Line chart for average Tesla stock price growth vs implied impact of tweets on that price

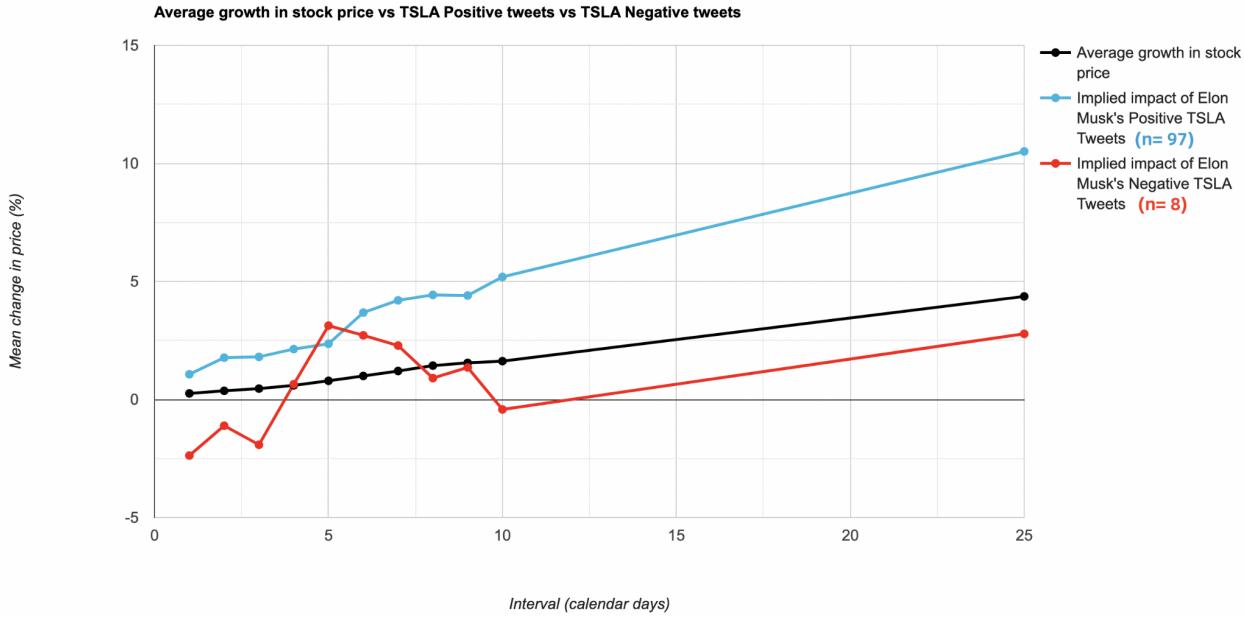


Figure 16: Line chart "close up" for average Tesla stock price growth vs implied impact of tweets on that price, day intervals between 1 and 25 days

For $TSLA, even intervals till 200 days show a noticeable difference for positive tweets. Although, the implied impact does not seem to be that strong for negative tweets related to Tesla, since after three days from a negative tweet on average, the change percentage is positive again.

5.2 Results for Bitcoin

(For positive tweets: n= 15 & For negative tweets: n=7)

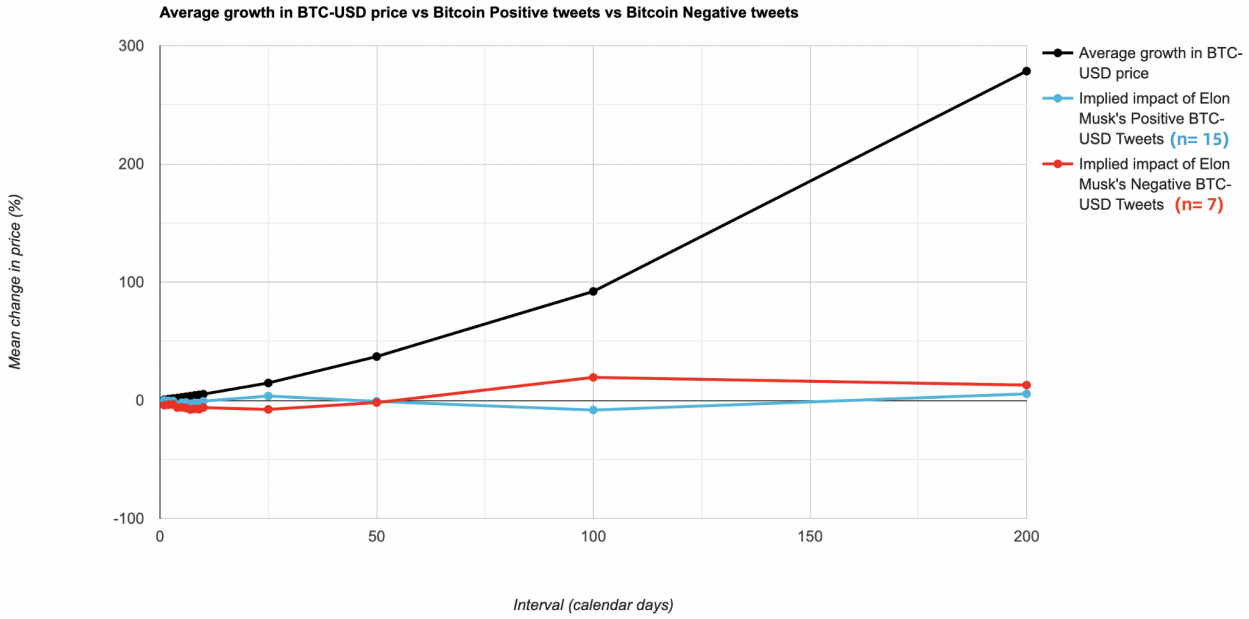


Figure 17: Line chart for average Bitcoin price growth vs implied impact of tweets on that price

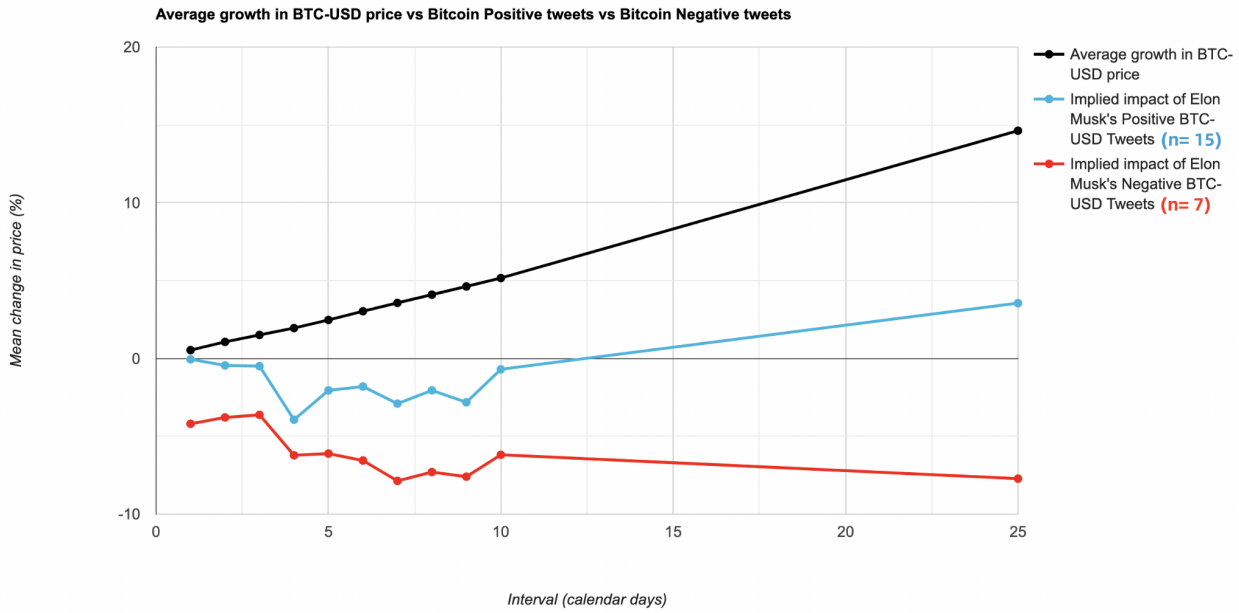


Figure 18: Line chart "close up" for average Bitcoin price growth vs implied impact of tweets on that price with day intervals between 1 and 25 days

The implied impact from Elon Musk's positive tweets on $BTC-USD seems to be negligible or opposite to the sentiment of the tweets in every interval. In every interval, the average percentage change since $BTC-USD was publicly traded is higher than after Elon Musk's tweet. Although, there is a significant negative change percentage in its price after a negative tweet within a time interval of 25 days.

5.3 Results for Dogecoin

(For positive tweets: n= 27 & For negative tweets: n=1)

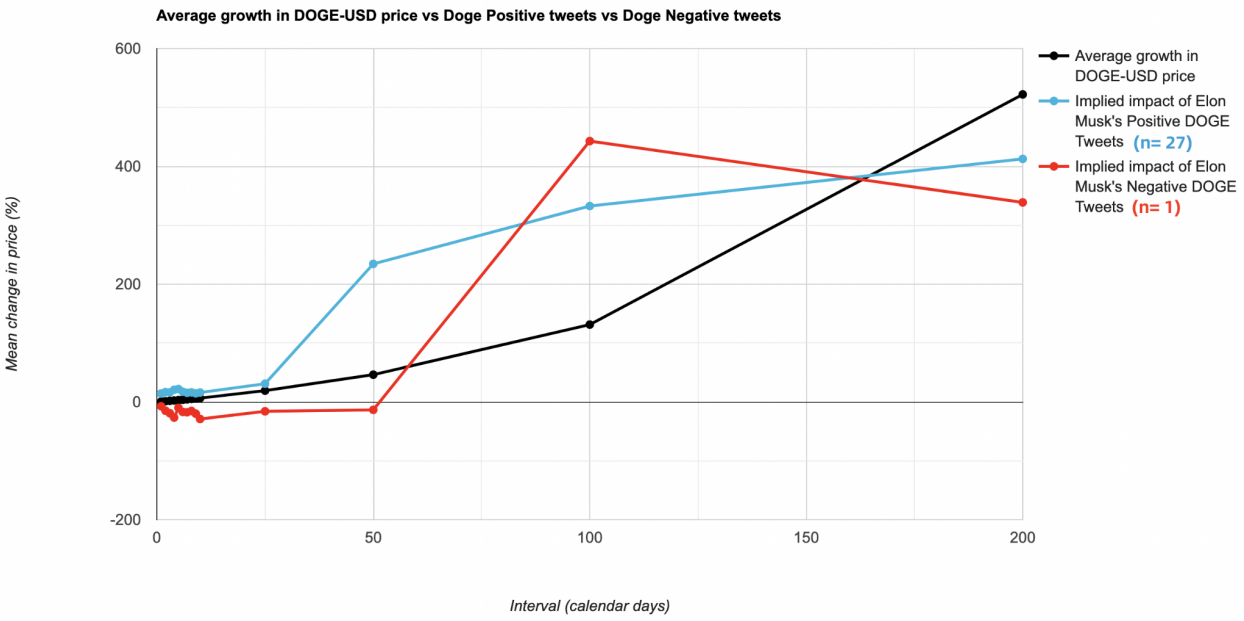


Figure 19: Line chart for average Dogecoin price growth vs implied impact of tweets on that price

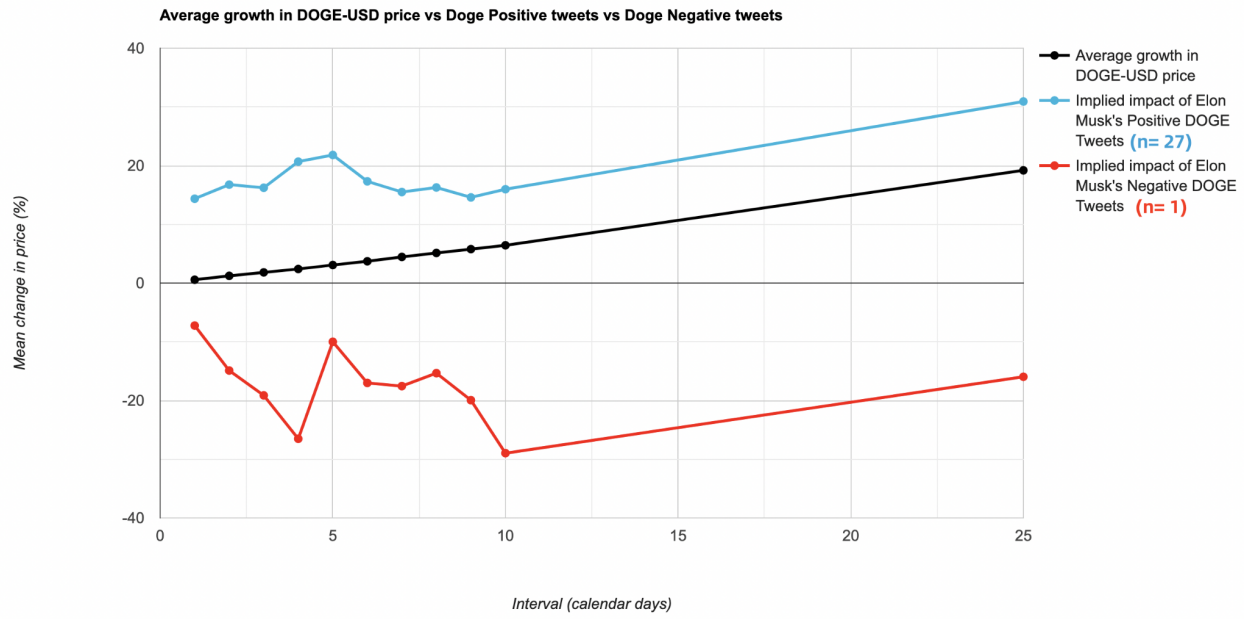


Figure 20: Line chart "close up" for average Dogecoin price growth vs implied impact of tweets on that price, day intervals between 1 and 25 days

$DOGE-USD price seems to be impacted by both positive and negative tweets in the graph, however, in our dataset there was only a single negative tweet about Dogecoin, which makes this comparison between the implied impact of negative tweets on $DOGE-USD and its average growth inconclusive.

The graphs for Tesla and Dogecoin definitely show a distinct difference in the mean change after a tweet and the average percentage change since launch of the stock or cryptocurrency. Apart from a few outliers, all the percentage changes in the graphs for both of them show that whenever Musk has posted a positive tweet about Tesla or Dogecoin (selected with the mentioned filters), there is a noticeably higher increase in the price of $TSLA or $DOGE-USD when compared to the average change percentage. For $BTC-USD however, it seems that only Musk's negative tweets have a significant impact on its price.

6. Conclusion

This paper used various experiments to determine the viability of trading on the basis of Elon Musk's tweets. Initially it tried using sentiment analysis from premade python libraries such as NLTK, Txtblob, and Vader to see if a program could be used to trade automatically when Elon Musk's tweets. In a certain set of parameters, the program achieved positive results of 12% annual return for the year 2021 by trading $TSLA, $BTC-USD, and $DOGE-USD on the basis of Elon Musk's tweets. These results were not significant enough to determine the viability of this method since in the same time period, the US market outperformed it. We believe this was due to the inaccuracy of the program in determining the informal tweets' sentiment.

Hence, while experimenting with other approaches, this paper decided to quantify the implied impact of Elon Musk's tweets on the stock and cryptocurrency market with manual labeling of his tweets' sentiment. This was achieved by comparing the changes in the prices of the securities mentioned earlier ($TSLA, $BTC-USD, $DOGE-USD) after certain time intervals of Musk's tweets and their average price change in those time intervals since they were launched to public exchanges. In the case of Musk's positive tweets (n=97) about Tesla, the price change of $TSLA after his tweets was significantly higher compared to the average price change since

$TSLA started publicly trading in those time intervals. The same was true for the case of Musk's positive tweets about Dogecoin (n=27), where the price change after his tweets was significantly higher than the average price change since $DOGE-USD started publicly trading in most of the mentioned time intervals. This pattern was not observed after the positive tweets from Musk about Bitcoin (n=15). The negative tweets by Musk about Tesla (n=8), Bitcoin (n=7), and Dogecoin (n=1) do not provide enough data for this paper to draw any concrete conclusion. However, according to this limited data, it seems that Musk's negative tweets about Bitcoin have a significant negative influence on the price change of $BTC-USD upto 25 days since the tweet is first posted. Based on all these observations, this paper concludes that it may be viable to trade $TSLA & $DOGE-USD based on specifically the positive tweets from Elon Musk about Tesla and Dogecoin respectively.

7. References

[1] JustAnotherArchivist, “JustAnotherArchivist/snscrape: A social networking service scraper in Python,” GitHub, Apr. 03, 2022. https://github.com/JustAnotherArchivist/snscrape.

[2] “NLTK :: Natural Language Toolkit,” Nltk.org, 2022. https://www.nltk.org/.

[3] cjhutto, “cjhutto/vaderSentiment: VADER Sentiment Analysis. VADER (Valence Aware Dictionary and sEntiment Reasoner) is a lexicon and rule-based sentiment analysis tool that is specifically attuned to sentiments expressed in social media, and works well on texts from other domains.,” GitHub, Apr. 2022. https://github.com/cjhutto/vaderSentiment.

[4] “TextBlob: Simplified Text Processing — TextBlob 0.16.0 documentation,” Readthedocs.io, 2020. https://textblob.readthedocs.io/en/dev/.

[5] ranaroussi, “ranaroussi/yfinance: Download market data from Yahoo! Finance’s API,” GitHub, Jan. 30, 2022. https://github.com/ranaroussi/yfinance.

[6] “API Documentation | Alpha Vantage,” Alphavantage.co, 2013. https://www.alphavantage.co/documentation/#intraday-extended.

[7] “Bitcoin Historical Data - Investing.com India,” Investing.com India, 2022. https://in.investing.com/crypto/bitcoin/historical-data.

[8] “Dogecoin USD Historical Data | CoinGecko,” CoinGecko, 2022. https://www.coingecko.com/en/coins/dogecoin/historical_data#panel.

8. Appendix 1: List of selected tweets about Tesla, Dogecoin, and Bitcoin used in Experiment 4

	ID	Tweet	Sentiment	Ticker	1 Day (%)	2 Days (%)	3 Days (%)	4 Days (%)	5 Days (%)	6 Days (%)	7 Days (%)	8 Days (%)	9 Days (%)	10 Days (%)	25 Days (%)	50 Days (%)	100 Days (%)	200 Days (%)
0	link	Tesla holiday software update goes to wide release today!	Positive	TSLA	0.63	0.63	0.63	3.98	2.97	-0.53	0.60	7.57	7.57	7.57	-3.79	-19.25	2.10	FUTURE
1	link	Lots of Tesla cars to deliver before year end! Your support in taking delivery is much appreciated. \n\nThanks also to the Tesla team working hard during the holidays!	Positive	TSLA	6.64	6.64	6.64	6.64	10.20	9.12	5.42	6.62	14.00	14.00	1.97	-9.65	8.20	FUTURE
2	link	Tesla holiday software release being tested with internal owners today. Broader rollout starts tomorrow evening.	Positive	TSLA	4.26	11.19	11.19	11.19	11.19	14.89	13.77	9.91	11.16	18.86	6.31	-5.93	11.96	FUTURE
3	link	Tesla will make some merch buyable with Doge & see how it goes	Positive	DOGE-USD	21.24	15.16	10.44	7.57	9.37	7.79	6.87	9.17	10.30	16.70	-1.55	-9.43	-17.85	FUTURE
4	link	@teslaownersSV Did it myself 😁	Neutral	TSLA	0.81	1.57	-3.39	-4.13	-4.13	-4.13	-9.50	-8.71	-4.76	-12.40	9.92	-8.79	-20.42	FUTURE
5	link	As always, Tesla is looking for hardcore AI engineers who care about solving problems that directly affect people's lives in a major way.\nhttps://t.co/0B5toOOHcj	Positive	TSLA	4.26	5.11	5.90	0.72	-0.04	-0.04	-0.04	-5.64	-4.82	-0.70	7.18	-8.72	-19.22	FUTURE
6	link	Blow the whistle on Tesla!\nhttps://t.co/c86hLA0iQK	Positive	TSLA	-5.31	-6.54	-13.71	-13.71	-13.71	-10.04	-9.30	-8.62	-13.09	-13.75	-7.50	-13.01	-27.61	FUTURE
7	link	@SenSanders Want me to sell more stock, Bernie? Just say the word …	Negative	TSLA	-1.53	-2.91	2.91	7.08	6.33	12.47	12.47	12.47	12.98	4.55	2.63	11.06	-19.28	FUTURE
8	link	Note, I do not take a cash salary or bonus from anywhere. I only have stock, thus the only way for me to pay taxes personally is to sell stock.	Negative	TSLA	-5.92	-5.92	-3.97	-17.32	-9.76	-14.29	-16.73	-16.73	-16.73	-17.90	-5.02	-12.14	-29.50	FUTURE
9	link	Much is made lately of unrealized gains being a means of tax avoidance, so I propose selling 10% of my Tesla stock.\n\nDo you support this?	Negative	TSLA	-5.92	-5.92	-3.97	-17.32	-9.76	-14.29	-16.73	-16.73	-16.73	-17.90	-5.02	-12.14	-29.50	FUTURE
10	link	Trial program for opening Tesla Superchargers to other EVs has begun https://t.co/g4HpgRGl7d	Positive	TSLA	1.25	2.82	7.81	7.25	0.42	0.42	0.42	2.50	-11.75	-3.69	-3.98	-19.92	-18.34	FUTURE
11	link	Tuition is in Dogecoin & u get a discount if u have a dog	Positive	DOGE-USD	4.27	1.41	2.08	0.52	-1.75	-2.42	-2.16	-0.64	5.21	2.19	-18.64	-36.64	-38.21	FUTURE
12	link	@DrEliDavid If WFP can describe on this Twitter thread exactly how $6B will solve world hunger, I will sell Tesla stock right now and do it.	Neutral	TSLA	2.78	4.07	5.68	10.81	10.23	3.21	3.21	3.21	5.35	-9.30	-1.30	-18.25	-18.71	FUTURE
13	link	Pop music has both literal & figurative Stockholm Syndrome	Neutral	TSLA	4.49	12.64	14.29	17.44	18.93	25.87	25.87	25.87	27.45	29.42	21.64	10.05	2.81	FUTURE
14	link	Please consider joining Tesla AI software or hardware teams! https://t.co/HgigdtenKN	Positive	TSLA	-1.08	-1.08	-1.08	0.59	1.79	2.42	3.46	6.98	6.98	6.98	45.61	38.28	28.94	FUTURE
15	link	Tesla Model S Plaid just set official world speed record for a production electric car at Nurburgring. Completely unmodified, directly from factory. https://t.co/AaiFtfW5Ht	Positive	TSLA	0.82	-1.75	-1.75	-1.75	-1.44	-1.12	-0.08	0.50	-2.50	-2.50	5.72	43.60	20.88	41.37
16	link	If you're curious about Tesla, SpaceX & my general goings on, @WalterIsaacson is writing a biography	Neutral	TSLA	-0.57	-0.81	-0.81	-0.81	-0.28	-0.46	-1.35	1.08	-1.53	-1.53	-0.18	4.17	42.13	16.5
17	link	Tesla AI Day August 19th	Positive	TSLA	3.38	7.73	7.73	7.73	10.65	9.42	10.19	9.56	9.29	9.29	5.49	16.52	76.95	32.59
18	link	Congrats Tesla Team on over 200,000 car built & delivered in Q2, despite many challenges!!	Positive	TSLA	0.40	0.40	0.40	0.40	-2.17	-7.45	-3.80	-2.47	-2.47	-2.47	-2.29	0.95	16.00	51.2
19	link	Baby Doge, doo, doo, doo, doo, doo,\nBaby Doge, doo, doo, doo, doo, doo,\nBaby Doge, doo, doo, doo, doo, doo,\nBaby Doge	Positive	DOGE-USD	-3.10	-3.19	-2.54	-2.69	-8.21	-7.76	-11.28	-18.75	-13.66	-16.51	-20.23	23.77	-4.20	-29.96
20	link	Release the Doge! https://t.co/9bXCWQLIhu	Positive	DOGE-USD	-3.10	-3.19	-2.54	-2.69	-8.21	-7.76	-11.28	-18.75	-13.66	-16.51	-20.23	23.77	-4.20	-29.96
21	link	How many Bitcoin maxis does it take to screw in a lightbulb?	Negative	BTC-USD	-8.85	-6.96	0.06	-0.53	3.38	1.07	-3.23	-2.44	0.24	1.84	-11.04	37.94	37.52	20.68
22	link	Shout out to the awesome Tesla global team. Thanks for working so hard to make Tesla successful!	Positive	TSLA	2.16	-0.50	-0.50	-0.50	1.43	0.71	1.32	0.59	1.00	1.00	-6.68	7.22	18.00	48.15
23	link	Looking at holding Tesla AI Day in about a month or so. Will go over progress with Tesla AI software & hardware, both training & inference. Purpose is recruiting.	Positive	TSLA	-1.00	1.20	8.09	10.42	7.55	7.55	7.55	9.64	8.85	9.52	4.84	14.33	24.87	73.0
24	link	Order Tesla Model S Plaid at https://t.co/LuUhICqQEI	Positive	TSLA	0.33	0.33	0.33	1.06	-2.08	-1.37	0.51	2.34	2.34	2.34	11.71	14.71	20.37	81.82
25	link	#Bitcoin 💔 https://t.co/lNnEfMdtJf	Negative	BTC-USD	-6.00	-9.37	-8.61	-14.33	-14.81	-4.63	-6.47	-4.74	-9.50	-0.43	-12.03	-14.27	15.24	19.67
26	link	Someone suggested changing Dogecoin fees based on phases of the moon, which is pretty awesome haha	Positive	DOGE-USD	17.41	11.53	14.53	7.95	0.72	-2.11	-2.52	5.59	20.70	38.21	-0.51	-32.81	-9.76	-44.8
27	link	If you'd like to help develop Doge, please submit ideas on GitHub & https://t.co/liAPQMFaQB @dogecoin_devs	Positive	DOGE-USD	17.41	11.53	14.53	7.95	0.72	-2.11	-2.52	5.59	20.70	38.21	-0.51	-32.81	-9.76	-44.8
28	link	Spoke with North American Bitcoin miners. They committed to publish current & planned renewable usage & to ask miners WW to do so. Potentially promising.	Positive	BTC-USD	11.62	10.53	13.04	11.01	2.72	-0.38	2.66	7.41	5.67	8.17	9.58	-4.65	35.74	37.07
29	link	@teslaownersSV This will actually be able to fly very briefly. I always laughed at flying cars & now making one. Fate 🖤 irony haha.	Positive	TSLA	-2.43	-2.43	-2.43	1.88	1.92	4.05	5.43	5.32	5.32	5.32	3.45	11.09	19.90	75.17
30	link	How much is that Doge in the window? https://t.co/bxTkWOr50V	Positive	DOGE-USD	17.44	4.01	1.28	-8.71	7.18	1.82	4.55	-1.45	-8.05	-10.64	-4.04	-39.16	-13.29	-49.41
31	link	Tesla Model S Plaid delivery event\nJune 3 at our California factory\n\nFastest production car ever\n0 to 60mph in under 2 secs	Positive	TSLA	3.67	1.15	1.15	1.15	5.62	5.66	7.87	9.30	9.18	9.18	6.47	13.60	24.30	74.18
32	link	Tesla has 💎🙌	Positive	TSLA	4.06	7.88	5.26	5.26	5.26	9.91	9.96	12.25	13.75	13.62	10.80	13.72	27.59	81.25
33	link	@BTC_Archive To clarify speculation, Tesla has not sold any Bitcoin	Positive	BTC-USD	-6.22	-7.59	-20.93	-12.52	-19.67	-19.34	-25.21	-16.52	-17.34	-15.46	-21.04	-27.43	2.76	21.69
34	link	@PeterMcCormack Obnoxious threads like this make me want to go all in on Doge	Positive	DOGE-USD	1.68	-4.27	-5.49	-33.16	-21.51	-30.48	-32.30	-38.98	-28.36	-31.95	-32.02	-51.30	-37.24	-58.66
35	link	Working with Doge devs to improve system transaction efficiency. Potentially promising.	Positive	DOGE-USD	17.76	36.05	22.06	24.12	16.85	15.36	-18.41	-4.19	-15.14	-17.37	-10.28	-40.81	-21.20	-50.01
36	link	To be clear, I strongly believe in crypto, but it can't drive a massive increase in fossil fuel use, especially coal	Negative	BTC-USD	0.62	0.89	-5.40	-6.02	-11.86	-13.16	-25.69	-17.79	-24.51	-24.19	-27.50	-32.10	-0.14	15.97
37	link	Tesla & Bitcoin https://t.co/YSswJmVZhP	Negative	BTC-USD	-12.87	-12.33	-12.09	-17.58	-18.12	-23.21	-24.33	-35.26	-28.37	-34.22	-37.35	-38.21	-17.53	-3.42
38	link	Do you want Tesla to accept Doge?	Positive	DOGE-USD	10.11	-7.97	8.38	25.21	12.34	14.23	7.54	6.17	-24.91	-11.82	-16.27	-41.59	-32.40	-55.13
39	link	SpaceX launching satellite Doge-1 to the moon next year\n\n– Mission paid for in Doge\n– 1st crypto in space\n– 1st meme in space\n\nTo the mooooonnn!!\n\nhttps://t.co/xXfjGZVeUW	Positive	BTC-USD	-1.00	-5.09	-3.65	-16.05	-15.53	-15.30	-20.58	-21.10	-26.01	-27.09	-36.17	-41.06	-21.98	-2.84
40	link	Cryptocurrency is promising, but please invest with caution! https://t.co/A4kplcP8Vq	Negative	BTC-USD	1.63	4.31	3.26	-1.00	0.50	-12.43	-11.89	-11.65	-17.16	-17.70	-33.89	-44.00	-16.54	-0.19
41	link	The Dogefather\nSNL May 8	Positive	DOGE-USD	18.74	12.71	24.67	44.78	39.36	62.44	100.17	141.17	113.86	150.93	26.26	13.08	-26.17	-3.42
42	link	@stoolpresidente No, you do not. I have not sold any of my Bitcoin. Tesla sold 10% of its holdings essentially to prove liquidity of Bitcoin as an alternative to holding cash on balance sheet.	Positive	BTC-USD	10.31	12.40	12.00	9.39	17.88	18.06	15.61	16.76	10.03	17.31	-17.06	-17.24	-22.01	32.31

43	link	Tesla Solar + Powerwall battery enables consumers to be their own utility	Positive	TSLA	-2.93	-0.07	-0.07	-0.07	-3.17	-6.08	-5.66	-9.97	-5.08	-5.08	-22.38	-17.70	-5.60	55.06
44	link	Starting next week, Tesla Solar Panels & Solar Roof will only be sold as an integrated product *with* Tesla Powerwall battery	Positive	TSLA	-2.93	-0.07	-0.07	-0.07	-3.17	-6.08	-5.66	-9.97	-5.08	-5.08	-22.38	-17.70	-5.60	55.06
45	link	@PPathole @Tesla @SpaceX I could get a job, just not at an Internet company (weren't many back then)	Neutral	TSLA	5.21	2.13	5.14	5.14	5.14	1.87	-1.19	-0.75	-5.28	-0.14	-18.34	-14.32	-4.68	63.14
46	link	Tesla with Autopilot engaged now approaching 10 times lower chance of accident than average vehicle https://t.co/6lGy52wVhC	Positive	TSLA	-2.73	-2.73	-3.02	-4.73	0.23	-2.70	0.16	0.16	0.16	-2.95	-18.56	-20.00	-12.00	59.15
47	link	Doge Barking at the Moon https://t.co/QFB81D7zOL	Positive	DOGE-USD	49.67	211.35	137.25	166.31	240.69	171.02	156.64	119.51	107.42	125.08	376.93	231.20	61.11	132.81
48	link	Tesla AI/Autopilot engineering is awesome! Making excellent progress solving real-world AI.	Positive	TSLA	-3.58	-5.46	-6.63	-6.63	-6.63	-6.91	-8.55	-3.79	-6.60	-3.85	-13.73	-21.92	-16.13	48.57
49	link	Thanks Tesla suppliers for providing us with critical parts!	Positive	TSLA	0.06	1.23	1.23	1.23	5.21	13.78	9.70	7.57	6.23	6.23	3.90	-7.22	-7.01	40.32
50	link	SpaceX is going to put a literal Dogecoin on the literal moon	Positive	DOGE-USD	13.26	6.41	3.33	6.47	9.99	18.85	8.42	13.42	13.16	17.47	364.39	631.50	302.66	337.53
51	link	Pay by Bitcoin capability available outside US later this year	Positive	BTC-USD	-3.64	-5.51	1.33	2.85	2.68	6.09	8.22	8.20	8.12	8.59	10.56	-9.04	-38.24	1.17
52	link	Tesla is using only internal & open source software & operates Bitcoin nodes directly.\n\nBitcoin paid to Tesla will be retained as Bitcoin, not converted to fiat currency.	Positive	BTC-USD	-3.64	-5.51	1.33	2.85	2.68	6.09	8.22	8.20	8.12	8.59	10.56	-9.04	-38.24	1.17
53	link	You can now buy a Tesla with Bitcoin	Positive	BTC-USD	-3.64	-5.51	1.33	2.85	2.68	6.09	8.22	8.20	8.12	8.59	10.56	-9.04	-38.24	1.17
54	link	@beeple 420M Doge	Positive	DOGE-USD	-3.31	-0.26	-0.78	-2.01	-0.66	0.56	-2.46	-5.51	-8.60	-11.95	4.85	650.34	222.05	247.91
55	link	Play your favorite song in a Tesla & turn the volume to 11\n\nYou will see. You will feel.	Positive	TSLA	0.05	1.39	-5.31	-1.36	-6.79	-1.32	-1.32	-1.32	-2.59	-3.72	-2.36	1.45	-10.88	12.58
56	link	Why are you so dogematic, they ask	Positive	DOGE-USD	12.37	6.75	3.21	6.47	5.91	4.60	6.04	7.34	4.12	0.86	17.28	613.84	412.69	256.83
57	link	Origin of Doge Day Afternoon:\nThe ancient Romans sacrificed a Dogecoin at the beginning of the Doge Days to appease the rage of Sirius, believing that the star was the cause of the hot, sultry weather.	Positive	DOGE-USD	12.37	6.75	3.21	6.47	5.91	4.60	6.04	7.34	4.12	0.86	17.28	613.84	412.69	256.83
58	link	Doge day afternoon	Positive	DOGE-USD	12.37	6.75	3.21	6.47	5.91	4.60	6.04	7.34	4.12	0.86	17.28	613.84	412.69	256.83
59	link	BTC (Bitcoin) is an anagram of\nTBC(The Boring Company)\nWhat a coincidence!	Positive	BTC-USD	-0.93	5.86	2.27	-3.78	-1.58	1.91	-0.28	0.48	0.50	-0.74	2.36	-0.15	-38.57	-27.05
60	link	Doge spelled backwards is Egod	Positive	DOGE-USD	1.92	3.84	23.56	15.91	12.57	12.07	10.39	24.05	17.84	13.94	9.47	441.82	551.09	299.85
61	link	If you want the Tesla Full Self-Driving Beta downloaded to your car, let us know. Doubling beta program size now with 8.2 & probably 10X size with 8.3. Still be careful, but it's getting mature.	Positive	TSLA	0.43	0.43	1.71	17.12	16.97	12.05	16.08	16.08	16.08	17.63	8.14	23.92	2.39	24.35
62	link	Scammers & crypto should get a room	Negative	BTC-USD	-2.37	1.60	-2.48	-1.61	-1.40	2.81	5.56	10.66	12.61	16.56	10.97	13.88	-24.64	-4.66
63	link	Doge meme shield (legendary item) https://t.co/CeomU9q84c	Positive	DOGE-USD	5.77	4.83	5.22	3.95	3.50	5.49	7.47	27.88	19.97	16.51	5.75	748.77	578.84	402.91
64	link	Do androids dream of electric cars?	Neutral	TSLA	-1.41	-1.41	-1.41	2.61	-1.72	-6.31	-10.56	-14.21	-14.21	-14.21	-3.46	2.80	-15.45	6.08
65	link	Dojo 4 Doge	Positive	DOGE-USD	2.68	-2.91	-13.85	3.49	-8.92	-8.33	-7.74	-12.51	-7.46	-8.28	5.87	35.39	492.24	365.35
66	link	Cryptocurrency explained https://t.co/kUXaXx8a1R	Positive	BTC-USD	-0.03	2.71	-3.23	-12.54	-11.13	-16.08	-17.15	-17.50	-19.24	-11.31	1.74	6.89	-36.26	-16.36
67	link	Heard a rumor some crypto coin was pegging the dollar 🤑🤑	Neutral	BTC-USD	-0.03	2.71	-3.23	-12.54	-11.13	-16.08	-17.15	-17.50	-19.24	-11.31	1.74	6.89	-36.26	-16.36
68	link	@PeterSchiff An email saying you have gold is not the same as having gold. You might as well have crypto.\n\nMoney is just data that allows us to avoid the inconvenience of barter.\n\nThat data, like all data, is subject to latency & error. The system will evolve to that which minimizes both.	Positive	BTC-USD	-0.03	2.71	-3.23	-12.54	-11.13	-16.08	-17.15	-17.50	-19.24	-11.31	1.74	6.89	-36.26	-16.36
69	link	If major Dogecoin holders sell most of their coins, it will get my full support. Too much concentration is the only real issue imo.	Negative	DOGE-USD	-7.24	-14.90	-19.13	-26.52	-10.00	-17.01	-17.55	-15.34	-19.95	-28.97	-15.96	-13.42	442.92	338.79
70	link	Frodo was the underdoge,\nAll thought he would fail,\nHimself most of all. https://t.co/zGxJFDzzrM	Positive	DOGE-USD	-4.43	-4.81	-8.38	-15.01	-22.02	-25.90	-32.68	-17.54	-23.96	-24.46	-28.97	-15.61	382.73	286.05
71	link	Bought some Dogecoin for lil X, so he can be a toddler hodler	Positive	DOGE-USD	4.30	-0.32	-0.72	-4.43	-11.35	-18.67	-22.72	-29.78	-13.99	-20.69	-27.29	-22.29	468.47	308.6
72	link	@SRuhle Everyone at Tesla receives stock. \n\nMy comp is all stock/options, which I do not take off the table. \n\nThat's what you're missing.	Neutral	TSLA	-1.34	-4.99	-6.30	-4.34	-4.34	-4.34	-4.34	-8.89	-8.68	-7.03	-29.77	-24.38	-32.76	-16.42
73	link	🎶 Who let the Doge out 🎶	Positive	DOGE-USD	36.65	36.89	20.91	26.11	20.53	20.04	15.55	7.19	-1.67	-6.56	-12.31	-6.00	738.26	406.38
74	link	Time to tell the story of Tesla & SpaceX	Neutral	TSLA	2.05	2.05	0.34	-1.01	-4.67	-5.98	-4.02	-4.02	-4.02	-4.02	-19.27	-27.76	-32.47	-17.04
75	link	No highs, no lows, only Doge	Positive	DOGE-USD	45.23	25.91	54.83	111.58	111.96	87.21	95.26	86.61	85.87	78.91	29.04	36.46	1411.14	740.38
76	link	Dogecoin is the people's crypto	Positive	BTC-USD	-1.79	1.73	4.20	3.20	23.23	23.53	19.09	27.48	25.83	25.29	19.95	36.31	32.38	30.83
77	link	Doge	Positive	DOGE-USD	45.23	25.91	54.83	111.58	111.96	87.21	95.26	86.61	85.87	78.91	29.04	36.46	1411.14	740.38
78	link	u can't sell houses u don't own\nu can't sell cars u don't own\nbut \nu *can* sell stock u don't own!?\nthis is bs – shorting is a scam\nlegal only for vestigial reasons	Neutral	TSLA	1.22	-0.70	-0.70	-0.70	3.01	6.95	4.27	3.05	6.06	6.06	-7.00	-21.15	-18.91	-14.02
79	link	@teslaownersSV Well, back to work …	Neutral	TSLA	10.08	9.23	9.23	9.23	6.86	9.66	8.46	9.56	7.74	7.74	4.71	-9.98	-7.46	-16.29
80	link	@teslaownersSV How strange	Neutral	TSLA	10.08	9.23	9.23	9.23	6.86	9.66	8.46	9.56	7.74	7.74	4.71	-9.98	-7.46	-16.29
81	link	So proud of the Tesla team for achieving this major milestone! At the start of Tesla, I thought we had (optimistically) a 10% chance of surviving at all. https://t.co/xCqTL5TGlE	Positive	TSLA	1.95	1.95	2.55	7.49	10.20	21.30	20.37	20.37	20.37	17.76	23.34	8.07	-2.83	-6.53
82	link	Try playing Polytopia in your Tesla! Great game. Multiplayer online version coming soon.	Positive	TSLA	1.93	-0.12	1.55	5.78	8.72	8.72	8.72	8.72	9.35	14.62	29.20	23.61	4.31	-0.51
83	link	Change your horn sound to 🐄, 🎷, 🐑 or holiday jingles with latest Tesla software update!	Positive	TSLA	1.93	1.93	1.93	-0.12	1.55	5.78	8.72	8.72	8.72	8.72	26.60	23.61	6.94	3.71
84	link	To Tesla owners taking delivery in the final days of year, your support is super appreciated!!	Positive	TSLA	4.90	4.90	4.90	4.90	2.80	4.51	8.86	11.89	11.89	11.89	30.30	24.61	10.07	2.99
85	link	Thanks to everyone who worked so hard to make Tesla successful. My heart goes out to you	Positive	TSLA	-2.74	-5.11	-3.49	1.24	1.24	1.24	1.24	-0.79	0.86	5.07	27.88	28.35	-2.94	-1.96

86	link	One word: Doge	Positive	DOGE-USD	17.61	22.35	15.51	-2.51	16.87	16.93	15.06	15.98	17.30	14.49	120.40	1914.98	1298.72	5633.1
87	link	Bitcoin is almost as bs as fiat money	Negative	BTC-USD	-1.55	-4.67	-0.10	-2.48	-0.48	3.65	10.97	10.13	13.51	14.81	56.79	62.95	141.64	42.01
88	link	Bitcoin is my safe word	Positive	BTC-USD	-1.55	-4.67	-0.10	-2.48	-0.48	3.65	10.97	10.13	13.51	14.81	56.79	62.95	141.64	42.01
89	link	Tesla holiday software release is 🔥🔥	Positive	TSLA	9.74	11.07	12.30	12.30	12.30	20.53	22.69	29.62	29.62	34.32	38.06	73.44	56.13	32.0
90	link	Recruiting ace engineers for Giga Berlin! Will interview in person tomorrow on site. Send resume to 25Guns@Tesla.com.	Positive	TSLA	1.82	2.61	2.61	2.61	-1.92	-2.77	-3.09	-4.07	-4.52	-4.52	40.60	57.49	90.99	35.79
91	link	Tesla should make 🔥 catgirl robots?	Neutral	TSLA	-0.75	-3.89	-3.89	-3.89	-0.06	5.04	4.47	6.38	7.21	7.21	22.82	63.16	112.14	40.39
92	link	Fallout Shelter is on your Tesla. Tap the Entertainment button.	Positive	TSLA	-5.52	1.83	3.01	3.01	3.01	-2.33	-7.89	-17.29	-10.55	-3.47	0.48	-2.63	53.34	60.89
93	link	Tunnels under cities with self-driving electric cars will feel like warp drive\n\nFirst operational tunnel under Vegas almost done\n\nThe @BoringCompany	Neutral	TSLA	0.76	-4.80	2.61	3.80	3.80	3.80	-1.59	-7.19	-16.67	-9.87	1.25	-1.36	47.29	62.11
94	link	@MonicaLewinsky Try a Tesla & you're welcome to give it back if you decide you prefer a Subaru	Positive	TSLA	-1.11	-1.36	-1.36	-1.36	13.04	13.89	7.61	15.98	17.33	17.33	9.62	5.36	72.51	59.41
95	link	If you bombard Earth with enough photons, eventually it emits a Tesla (AK)	Neutral	TSLA	-14.90	-14.75	-7.68	-8.70	-8.93	-8.93	-8.93	4.36	5.15	-0.65	0.73	1.30	50.18	53.44
96	link	More fun games coming soon to ur Tesla https://t.co/zBdYGOuHsz	Positive	TSLA	9.89	14.27	14.27	14.27	6.14	10.71	17.19	23.35	19.48	19.48	2.37	15.58	61.83	61.38
97	link	New Tesla feature coming that enables your car to play snake jazz or Polynesian elevator music through its outside speakers wherever you go	Positive	TSLA	9.89	14.27	14.27	14.27	6.14	10.71	17.19	23.35	19.48	19.48	2.37	15.58	61.83	61.38
98	link	Tesla is developing a NN training computer called Dojo to process truly vast amounts of video data. It's a beast! Please consider joining our AI or computer/chip teams if this sounds interesting.	Positive	TSLA	0.72	0.72	0.72	14.05	12.01	11.75	22.81	27.71	27.71	27.71	6.91	27.13	51.20	115.7
99	link	@Teslarati https://t.co/kogvN4rMJ8	Neutral	TSLA	-3.44	-3.44	-3.44	-6.90	-1.97	7.43	11.03	11.83	11.83	11.83	67.43	41.58	36.35	120.78
100	link	@realDonaldTrump @Tesla Thank you on behalf of the Tesla team. We look forward to building Giga Texas!	Positive	TSLA	1.34	1.34	1.34	6.21	6.00	5.08	6.99	2.34	2.34	2.34	34.11	34.52	39.12	201.95
101	link	Tesla will make fabulous short shorts in radiant red satin with gold trim	Positive	TSLA	4.52	4.52	4.52	4.52	15.03	15.02	14.37	14.29	35.82	35.82	17.48	67.40	80.93	242.94
102	link	Only a matter of time before someone steals a Tesla while playing GTA on a Tesla	Positive	TSLA	-2.59	-2.59	-2.59	1.18	8.87	22.79	28.34	28.34	28.34	28.34	64.85	68.58	112.79	317.68
103	link	Apologies to Tesla customers for shifting delivery dates. It's a crazy world out there!	Positive	TSLA	4.25	1.54	1.54	1.54	5.47	13.49	28.00	33.79	33.79	33.79	59.18	74.48	121.82	345.05
104	link	Juneteenth is henceforth considered a US holiday at Tesla & SpaceX	Neutral	TSLA	-1.27	-1.27	-1.27	-1.37	-1.84	-5.78	-1.78	-4.32	-4.32	-4.32	53.64	42.97	109.63	257.26
105	link	Tesla Model S now first ever electric vehicle to receive EPA range rating above 400 miles! https://t.co/EOTwVfvHS5	Positive	TSLA	10.25	7.62	9.28	10.35	8.95	8.95	8.95	8.84	8.32	3.97	52.10	62.89	120.73	291.95
106	link	@TeslaTested Probably	Neutral	TSLA	2.75	7.15	6.36	6.57	5.13	10.06	10.06	10.06	12.58	18.79	14.28	81.92	113.17	276.16
107	link	Tesla is restarting production today against Alameda County rules. I will be on the line with everyone else. If anyone is arrested, I ask that it only be me.	Positive	TSLA	4.62	3.84	-1.33	-0.02	4.71	4.71	4.71	3.12	3.79	3.22	11.05	27.32	135.92	267.59
108	link	@flcnhvy @TeslaGong @PPathole @priscillabanana https://t.co/lm30U60OtO	Neutral	TSLA	-1.68	-1.59	0.50	0.09	0.09	0.09	4.71	3.93	-1.24	0.07	8.64	25.87	103.98	218.76
109	link	@TeslaGong @PPathole @priscillabanana https://t.co/chk0Scuixp	Neutral	TSLA	-1.68	-1.59	0.50	0.09	0.09	0.09	4.71	3.93	-1.24	0.07	8.64	25.87	103.98	218.76
110	link	Anyone think they can get a good multiplayer Minecraft working on Teslas? Or maybe create a game that interacts virtually with reality like Pokémon Go while driving safely? Like a complex version of Pac-man or Mario Kart?	Positive	TSLA	-0.05	12.61	10.72	10.82	13.18	12.72	12.72	12.72	17.92	17.04	16.00	42.58	99.05	250.77
111	link	Tesla stock price is too high imo	Negative	TSLA	-7.15	-7.15	-7.15	4.61	2.85	2.94	5.14	4.70	4.70	4.70	10.53	32.44	91.79	204.75
112	link	Partial list of hospitals to which Tesla sent ventilators https://t.co/sfI6yuUbrM	Positive	TSLA	7.72	2.20	2.20	2.20	1.84	-1.81	1.49	-0.86	2.88	2.88	10.26	22.44	100.16	174.78
113	link	We have extra FDA-approved ventilators. Will ship to hospitals worldwide within Tesla delivery regions. Device & shipping cost are free. Only requirement is that the vents are needed immediately for patients, not stored in a warehouse. Please me or @Tesla know.	Positive	TSLA	0.55	-4.03	1.65	1.99	1.99	1.99	8.73	10.56	12.14	17.74	47.15	63.69	178.70	345.13
114	link	Congratulations Tesla team on making our 1,000,000th car!! https://t.co/5M99a9LLQi	Positive	TSLA	-2.92	-11.91	-9.77	-28.80	-28.80	-28.80	-33.27	-41.01	-43.18	-33.55	-22.48	19.83	52.10	221.96
115	link	Tesla will hold a super fun AI party/hackathon at my house with the Tesla AI/autopilot team in about four weeks. Invitations going out soon.	Positive	TSLA	3.55	35.72	26.54	7.59	12.29	22.97	22.97	22.97	18.17	19.57	12.21	-33.35	27.12	186.01
116	link	A friend just sent me this excerpt from a Tesla blog I wrote 14 years ago https://t.co/Hr8w52ithY	Positive	TSLA	9.85	11.17	17.02	17.02	17.02	53.37	43.00	21.58	26.90	38.96	45.74	-34.91	37.88	191.3
117	link	Want to play The Witcher game on your Tesla? (you can already watch the show on Tesla Netflix theater)	Positive	TSLA	-1.34	-0.22	-5.23	-5.23	-5.23	-0.59	0.66	10.58	11.91	17.80	47.16	1.57	32.02	153.2
118	link	Teslas will soon talk to people if you want. This is real. https://t.co/8AJdERX5qa	Positive	TSLA	3.21	13.83	10.79	3.26	6.16	10.90	10.90	10.90	10.90	19.60	46.38	48.75	52.70	211.2
119	link	Bitcoin is *not* my safe word	Positive	BTC-USD	4.40	2.31	4.41	3.43	12.56	12.44	11.27	13.65	13.69	11.01	18.54	10.90	-7.80	39.77
120	link	❤️❤️ Tesla China Team ❤️❤️\n Such amazing progress!!	Positive	TSLA	4.94	1.71	4.18	4.18	4.18	14.90	11.83	4.23	7.16	11.94	42.22	54.11	63.03	202.93
121	link	At Tesla Giga Shanghai NSFW!! https://t.co/1yrPyzJQGZ	Positive	TSLA	2.67	7.74	4.42	6.96	6.96	6.96	17.96	14.82	7.01	10.02	46.01	69.59	55.38	211.01
122	link	Congratulations Tesla & SpaceX on great 2019! You rock!! Looking forward to epic 2020 ❤️🚀🚘🚓🌟	Positive	TSLA	1.47	5.30	5.29	5.29	5.29	10.30	13.24	18.83	15.17	17.97	29.56	118.00	41.08	263.11
123	link	stock art https://t.co/HSWnwK68OV	Positive	TSLA	1.60	3.92	3.92	5.64	4.13	4.13	4.13	-1.65	3.09	3.09	23.27	86.70	22.40	239.02
124	link	Whoa … the stock is so high lol	Negative	TSLA	1.60	3.92	3.92	5.64	4.13	4.13	4.13	-1.65	3.09	3.09	23.27	86.70	22.40	239.02
125	link	If Tesla & SpaceX go bankrupt, so will I. As it should be.	Positive	TSLA	1.53	3.15	5.50	5.50	7.25	5.72	5.72	5.72	-0.15	4.66	21.74	97.24	23.59	244.43
126	link	Tesla Moth Mode (better late than never) https://t.co/Rcu87A8NkO	Positive	TSLA	3.26	3.64	3.64	3.64	5.30	7.70	7.70	9.48	7.92	7.92	24.21	83.87	28.43	221.33
127	link	Tesla Cybertruck (pressurized edition) will be official truck of Mars	Positive	TSLA	-4.05	-2.87	-2.87	-2.87	-5.43	-6.60	-6.60	-6.60	-7.08	-7.08	2.27	35.90	100.63	159.23
128	link	Tesla Solarglass vs 🎃 \nHappy Halloween!! https://t.co/p5tXeJYqne	Positive	TSLA	-0.48	-0.48	-0.48	1.04	0.53	4.05	5.75	8.73	8.73	8.73	5.99	30.18	152.91	157.7
129	link	Three Raptors on a Starship https://t.co/UrRiD62EVk	Neutral	TSLA	5.00	5.35	5.35	5.35	4.70	5.48	0.52	0.41	-0.37	-0.37	12.00	52.02	90.96	155.86
130	link	Ability to stream YouTube & Netflix when car is stopped coming to your Tesla soon! Has an amazingly immersive, cinematic feel due to the comfy seats & surround sound audio.	Positive	TSLA	-0.42	-0.42	2.13	6.56	6.41	1.45	0.68	0.68	0.68	1.68	-2.64	7.88	38.05	241.11
131	link	New Tesla Summon will 🚗 ur 🧠	Positive	TSLA	0.22	0.22	0.22	-2.16	7.34	10.45	10.75	13.59	13.59	13.59	21.23	39.79	24.26	104.75
132	link	Changing Tesla horn sound to 🐄	Positive	TSLA	2.53	2.53	2.53	5.31	1.26	-0.76	-1.69	-4.86	-4.86	-4.86	-21.59	-8.46	-4.46	44.24
133	link	Tesla blows haha	Neutral	TSLA	-3.35	-6.58	-10.61	-10.61	-10.61	-8.26	-9.48	-6.95	-7.58	-5.24	-23.14	-20.27	-12.32	30.36
134	link	Tesla is going to develop a quiet, electric leafblower	Neutral	TSLA	1.42	-1.98	-5.25	-9.34	-9.34	-9.34	-6.95	-8.19	-5.62	-6.26	-22.04	-14.30	-6.73	32.21
135	link	Dogecoin rulz https://t.co/flWWUgAgLU	Positive	DOGE-USD	16.18	29.44	49.51	46.73	39.27	38.55	23.42	16.72	22.87	14.11	3.92	28.58	38.24	10.36
136	link	Tesla Semi delivering Tesla cars https://t.co/ttEpcW5d8G	Positive	TSLA	0.99	0.99	3.02	2.67	-6.42	-3.57	-0.78	-0.78	-0.78	-2.93	-5.72	-27.54	-17.37	-8.03
137	link	@MKBHD @Tesla 😉	Neutral	TSLA	-0.22	-0.22	0.83	-0.08	2.92	-0.22	-2.86	-2.86	-2.86	-5.86	1.12	-16.99	-24.16	-20.97
138	link	Tesla made 0 cars in 2011, but will make around 500k in 2019	Positive	TSLA	-0.85	-3.26	-2.14	-2.14	-2.14	-4.00	-0.86	4.77	0.83	-2.07	-9.33	-11.86	-39.19	-24.44
139	link	4000 Tesla cars loading in SF for Europe https://t.co/BODbSzo3Fr	Positive	TSLA	-0.85	-3.26	-2.14	-2.14	-2.14	-4.00	-0.86	4.77	0.83	-2.07	-9.33	-11.86	-39.19	-24.44
140	link	And now … we dance! https://t.co/2TdS6EVSmi	Positive	TSLA	-1.89	-2.21	0.04	0.12	0.12	0.12	-2.04	0.82	1.24	-5.54	-8.47	-11.75	-20.68	-33.59

141	link	If Tesla can help people in California wildfire, please let us know. Model S & X have hospital grade HEPA filters. Maybe helpful for transporting people.	Positive	TSLA	-0.61	-0.61	-4.95	-2.23	-2.33	-1.52	1.66	1.66	1.66	-2.50	1.57	-3.63	-12.54	-46.62
142	link	Deleted my Tesla titles last week to see what would happen. I'm now the Nothing of Tesla. Seems fine so far.	Positive	TSLA	-2.69	-1.46	0.23	1.86	0.90	0.90	0.90	0.47	1.74	3.27	-0.92	3.87	-5.30	-34.23
143	link	Massive thanks to Tesla owners & supporters. We wouldn't be here without you.	Positive	TSLA	-2.83	6.38	6.38	6.38	3.52	4.83	6.63	8.36	7.34	7.34	12.33	18.21	-1.34	-26.86
144	link	Tesla exists to help reduce risk of catastrophic climate change, which affects all species on Earth. Even if your faith in humanity is faltering, this is worth caring about. Support makes a difference. Thank you.	Positive	TSLA	-0.74	-0.74	-0.74	1.80	8.20	3.18	2.45	-0.12	-0.12	-0.12	29.91	37.93	16.79	-7.26
145	link	Short shorts coming soon to Tesla merch	Positive	TSLA	1.59	1.59	0.83	-3.82	-4.38	-9.00	-17.94	-17.94	-17.94	-12.62	-19.81	-13.99	0.24	-15.11
146	link	Am considering taking Tesla private at $420. Funding secured.	Negative	TSLA	7.34	6.31	2.95	5.03	5.03	5.03	4.25	-0.56	-1.14	-5.92	-13.64	-12.19	-0.44	-13.36
147	link	7000 cars, 7 days\n❤️ Tesla Team ❤️	Positive	TSLA	4.99	-3.27	-8.51	-8.51	-11.08	-9.03	-9.03	-9.03	-5.36	-7.92	-11.11	-14.94	-25.57	0.95
148	link	Just wanted to say thanks to all Tesla supporters. I damn well love you.	Positive	TSLA	-3.48	-3.25	-3.52	-3.21	-3.21	-3.21	-3.21	-1.55	-0.19	-0.66	23.51	9.74	5.04	25.1
149	link	It's super messed up that a Tesla crash resulting in a broken ankle is front page news and the ~40,000 people who died in US auto accidents alone in past year get almost no coverage https://t.co/6gD8MzD6VU	Neutral	TSLA	-6.04	-6.43	-5.74	-6.16	-7.25	-7.25	-7.25	-5.13	-8.43	-8.22	5.17	9.37	5.79	12.7
150	link	Tesla batteries are currently live & delivering power at 662 locations in Puerto Rico. Team is working 24/7 to activate several hundred more. https://t.co/OMu8qKJvLy	Positive	TSLA	0.00	1.41	0.07	0.07	0.07	-2.09	-2.60	-4.24	-1.96	0.87	4.21	8.61	5.56	16.98
151	link	Elon was found passed out against a Tesla Model 3, surrounded by "Teslaquilla" bottles, the tracks of dried tears still visible on his cheeks. \n\nThis is not a forward-looking statement, because, obviously, what's the point?\n\nHappy New Month! https://t.co/YcouvFz6Y1	Negative	TSLA	-3.71	1.39	-5.02	8.72	13.10	12.87	12.87	12.87	12.34	13.00	4.74	5.71	21.96	1.19
152	link	Tesla Goes Bankrupt\nPalo Alto, California, April 1, 2018 -- Despite intense efforts to raise money, including a last-ditch mass sale of Easter Eggs, we are sad to report that Tesla has gone completely and totally bankrupt. So bankrupt, you can't believe it.	Negative	TSLA	-3.71	1.39	-5.02	8.72	13.10	12.87	12.87	12.87	12.34	13.00	4.74	5.71	21.96	1.19
153	link	But wait, there's more: the flamethrower is sentient, its safe word is "cryptocurrency" and it comes with a free blockchain	Positive	BTC-USD	-4.67	-13.81	-12.96	-22.17	-24.59	-21.65	-30.30	-41.17	-34.77	-35.61	-16.57	-26.97	-22.04	-46.53
154	link	Gonna put an old school drive-in, roller skates & rock restaurant at one of the new Tesla Supercharger locations in LA	Neutral	TSLA	-0.18	5.87	4.93	5.89	6.97	6.62	6.62	6.62	6.62	7.55	10.87	11.66	-8.75	-3.71