

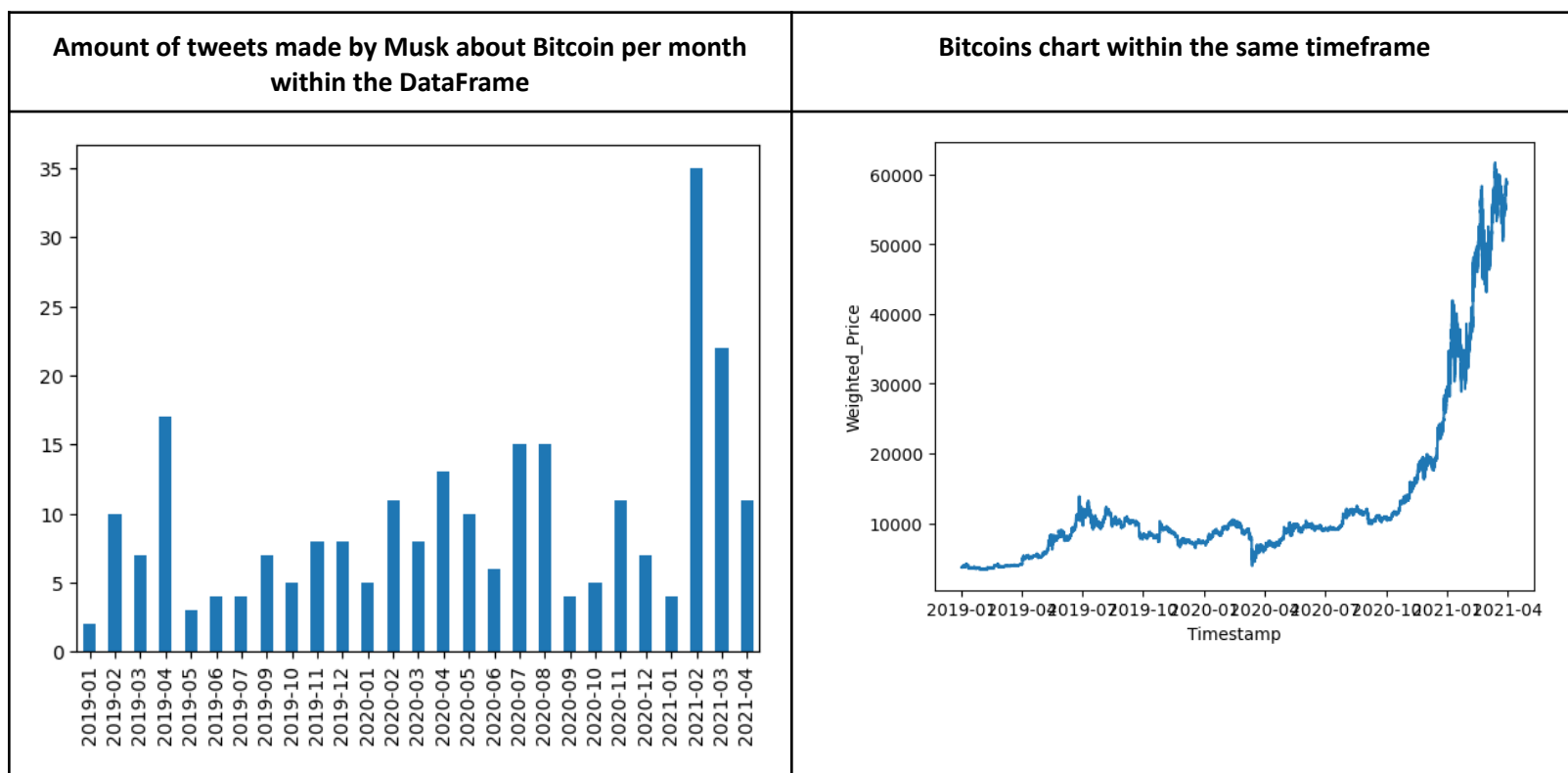
## Learning output: Does Elon Musk influence the cryptocurrency market?

### Introduction:

Throughout the following report Bitcoin visualisations will be displayed that were created using the programming language, Python. However, as Elon Musk mainly tweeted about Dogecoin, an online source was used to get historical data on Dogecoin's price, this was used to compare the Bitcoin visualisations with Dogecoin. For each individual tweet the price activity upon the tweet being made was investigated. Cryptocurrency prices can be influenced by other larger market moves, in order to create a bigger picture of the impact of the tweet, individual graphs were made showcasing Bitcoin's price three days before and after the tweet was posted to see any impacts relative to the market direction at the time.

There are countless external factors that influence the market, hence it will be difficult to determine exactly what causes the price to go up and down. Volatility will be observed when a tweet is made. Also, it is important to note that finding out a tweet did not have an impact is also an outcome, as it displays evidence that Musk does not influence the cryptocurrency market.

Throughout the report I will also consider the psychology behind how the tweet may cause people to buy or sell specific cryptocurrencies. The entire cryptocurrency market generally moves together as a unit, but each coin does fluctuate outside of the market trends. Hence, if Dogecoin is becoming more popular through Musk's tweets, people may think they can get a better return on investment by selling their Bitcoin, and buying Dogecoin ultimately causing Bitcoin to go down, and Dogecoin to rise.



The data presented above highlights the number of tweets Musk made per month about cryptocurrency from January 2019 to April 2021, and the corresponding line chart of Bitcoin's value over the same period. Both graphs exhibit a general uptrend, suggesting a potential correlation. The initial spikes in Musk's tweets, especially in April 2019 may be attributed to Bitcoin beginning to gain traction and increase in price, as observed in the Bitcoin graph. It could also be attributed to Musk's inexperience in the cryptocurrency market as it was relatively new. Interestingly, major surges in price coincided with an increase in tweets made by Musk. Although both graphs experience a dip in the middle, they gradually increase to a significant spike at the end of each graph. It is important to note that correlation does not necessarily indicate causation, and it is possible that Musk tweeted about Bitcoin due to

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its rapid rise. The question of whether Musk influences the crypto currency market cannot be answered from the above visualisations. Instead a detailed examination of individual tweets and their impact on the market may present a better indication.

Individual tweet visualization #1



Price change after:	Price change (%)
One minute	0.40
Five minutes	1.17
Thirty minutes	0.62
One hour	1.79
Two hours	3.19
Six hours	3.85
Twelve hours	1.11

As observed above, Musk’s tweet, “You can now buy a Tesla with Bitcoin” (825.9K likes) is a significant announcement to make over twitter as it provides a real world application for Bitcoin. This tweet is expected to have a considerable impact on the price of Bitcoin, given a multibillion dollar company (Tesla which Musk owns) was now accepting Bitcoin as payment. Observed in the graph, the tweet was made during an overall

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downtrend, upon the tweet Bitcoin was able to break out of this downtrend briefly with a spike of 3.85% after six hours. However, the price corrected itself within a day, and returned to its previous downtrend, suggesting the spike was mainly due to “hype”, rather than actual strength within the market. This spike provides evidence of Musk’s influence on the cryptocurrency market.

## Individual tweet visualization #2



Price change after:	Price change (%)
One minute	0.01
Five minutes	0.10
Thirty minutes	1.14
One hour	-0.48
Two hours	2.70
Six hours	2.81
Twelve hours	5.48

## Dogecoin percentage change over the same timeframe

Date :	Price :	Open :	High :	Low :	Vol. :	Change % :
Feb 11, 2021	0.069611	0.072580	0.074843	0.068152	11.23B	-4.10%
Feb 10, 2021	0.072584	0.070015	0.081396	0.067081	22.67B	3.67%
Feb 09, 2021	0.070012	0.078782	0.083567	0.064053	22.36B	-11.14%
Feb 08, 2021	0.078793	0.077936	0.085037	0.063839	38.11B	0.36%
Feb 07, 2021	0.078508	0.057506	0.086356	0.053464	54.23B	36.62%
Feb 06, 2021	0.057465	0.046788	0.058646	0.044505	26.40B	22.83%
Feb 05, 2021	0.046783	0.052933	0.054033	0.043289	27.11B	-11.64%
Highest: 0.086356    Lowest: 0.043289    Difference: 0.043067    Average: 0.067679    Change %: 31.481985						

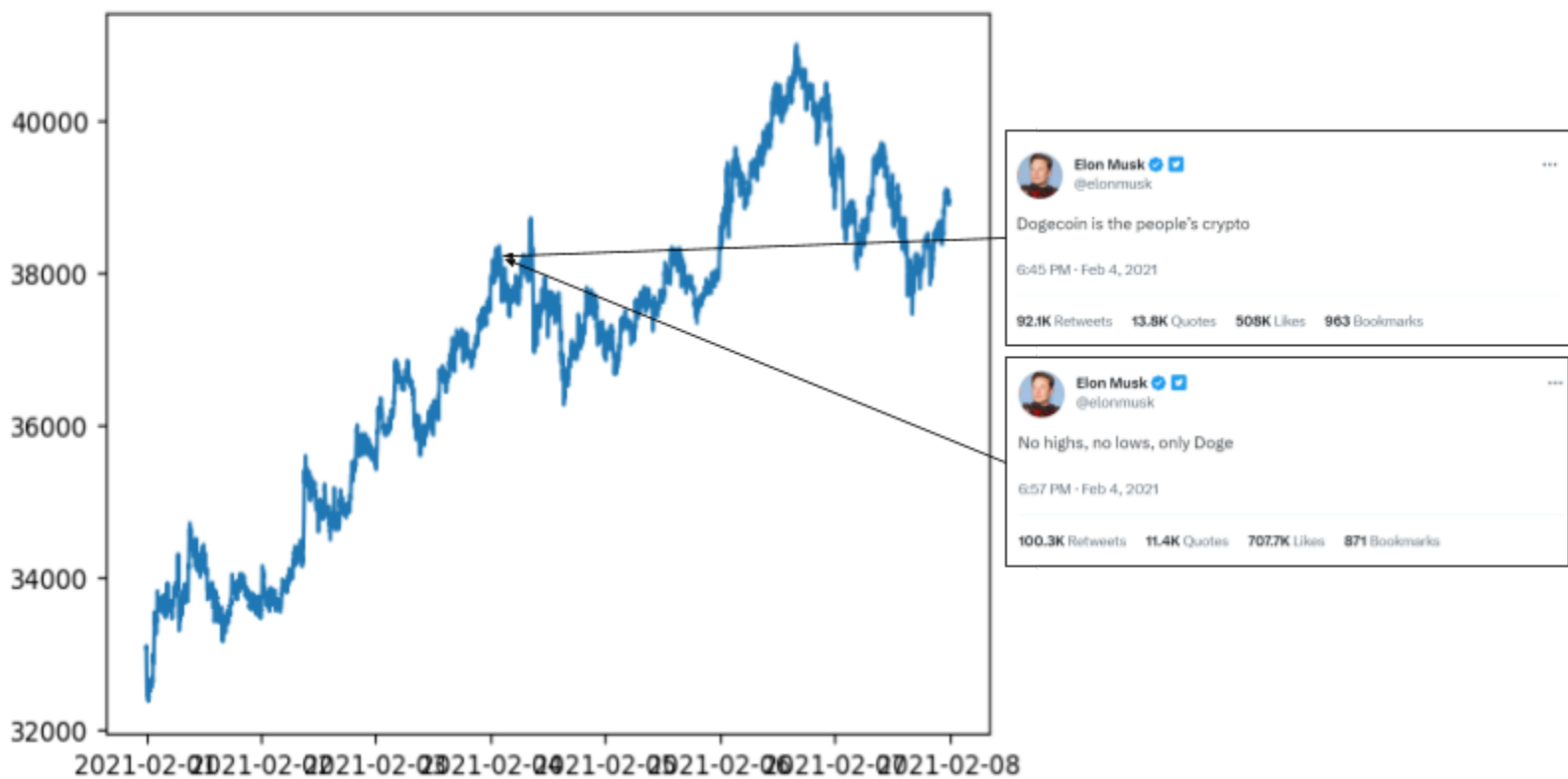
After Musk tweeted about Doge, it reversed and went back down

Musk was tweeting about Dogecoin as it had gone up a considerable amount in the two days before he made the tweet

Musk's tweet "🎵 Who let the Doge out 🎵" (720.9K likes), was made after Dogecoin's price increased significantly (over 36% the day before as indicated above). For Musk's followers who were unaware of Dogecoin's major price change, the tweet would have raised awareness (and possibly got more people investing). Musk made the tweet once Dogecoin stopped increasing and had levelled out, this suggests Musk attempted to continue this surge in price through his tweet.

Did this Dogecoin tweet also impact Bitcoin? From the Bitcoin graph, Bitcoin was already in an uptrend, following this tweet Bitcoin continued on upwards 5.48% after twelve hours. As Bitcoin was already in an uptrend this could be a natural price change. However, It appears the tweet did not impact the price change, but accelerated the existing uptrend. Dogecoin's increase was much higher than Bitcoin's, this could be due to its significantly smaller market cap (\$10 billion compared to \$545 billion respectively), meaning Dogecoin requires less volume of trades to impact the price. Interestingly, Dogecoin stopped increasing upon Musk's tweet, which could be due to people taking profits after making a significant amount of money in the previous days.

## Individual tweet visualization #3 & 4



	"Dogecoin is the people's crypto"	"No highs, now lows, only Doge"
Price change after:	Price change (%)	Price change (%)
One minute	0.11	-0.09
Five minutes	-0.31	0.07
Thirty minutes	-2.36	-0.37
One hour	-3.68	-3.32
Two hours	-3.03	-2.51
Six hours	-2.83	-1.98
Twelve hours	-2.74	-1.90

## Dogecoin percentage change over the same timeframe

Time Frame:

Daily [Download Data](#)

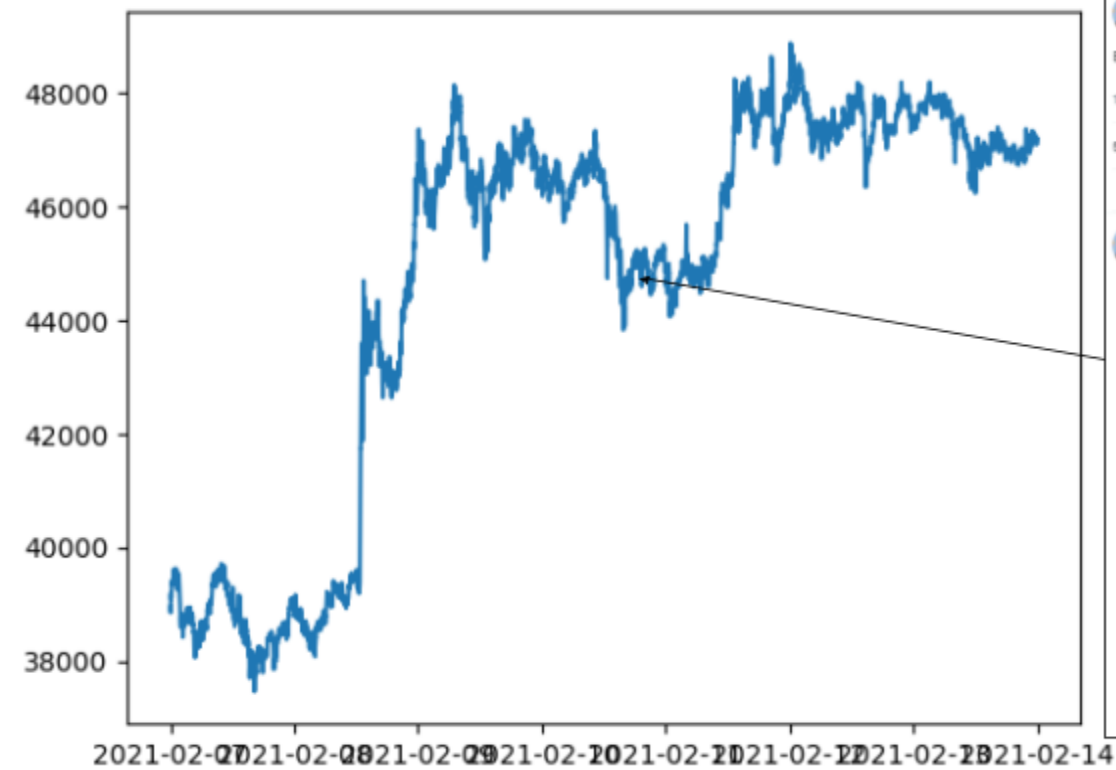
01/02/2021 - 07/02/2021



Date ↕	Price ↕	Open ↕	High ↕	Low ↕	Vol. ↕	Change % ↕
Feb 07, 2021	0.078508	0.057506	0.086356	0.053464	54.23B	36.62%
Feb 06, 2021	0.057465	0.046788	0.058646	0.044505	26.40B	22.83%
Feb 05, 2021	0.046783	0.052933	0.054033	0.043289	27.11B	-11.64%
Feb 04, 2021	0.052944	0.037340	0.059081	0.035919	72.24B	41.77%
Feb 03, 2021	0.037345	0.031297	0.039651	0.031031	20.28B	19.33%
Feb 02, 2021	0.031296	0.034784	0.035142	0.029054	19.70B	-9.82%
Feb 01, 2021	0.034705	0.036826	0.043700	0.033096	39.34B	-5.80%
Highest: 0.086356    Lowest: 0.029054    Difference: 0.057303    Average: 0.048435    Change %: 113.098469						

The graph above depicts three days before, and three days after Musk's two tweets: "Dogecoin is the people's crypto" (508K likes), and "No highs, no lows, only Doge" (707.7K likes). The latter tweet was made twelve minutes after the first tweet, hence they share the same graph. The tweets were made in an overall uptrend, and were positioned at the top of a spike. Following the tweet there was a minor drawback, which is expected when a cryptocurrency increases as people start to take profits. Musk may have contributed to the drawback by prompting people to sell their Bitcoin to gain capital and invest in Dogecoin which is supported by Dogecoin's 40% price increase on the day of the tweet (04/01/2021), which provides evidence of Musk's influence on the cryptocurrency market.

## Individual tweet visualization #5



Price change after:	Price change (%)
One minute	-0.34
Five minutes	0.42
Thirty minutes	-1.17
One hour	-1.32
Two hours	-0.60
Six hours	-0.92
Twelve hours	0.06

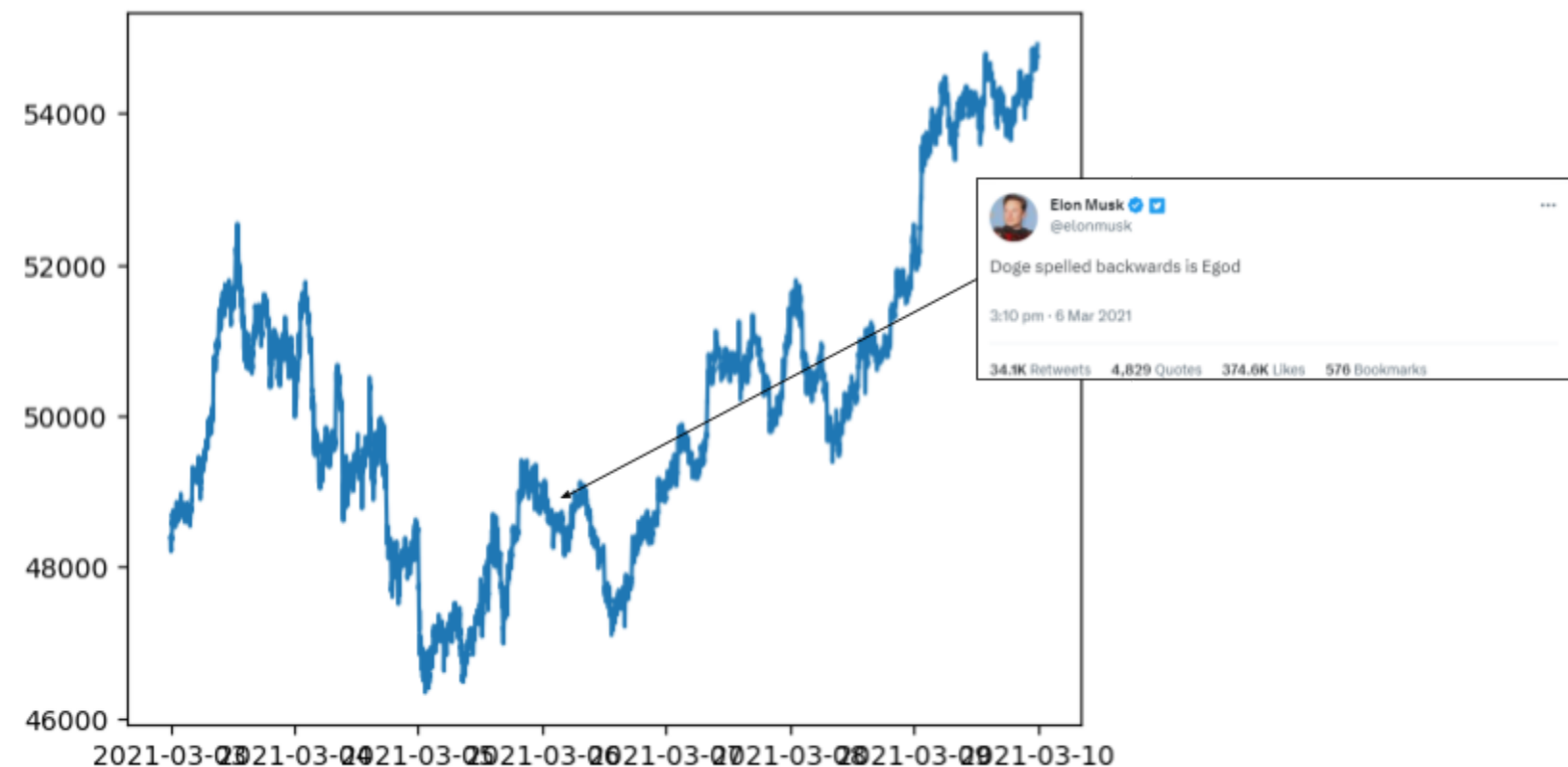
## Dogecoin percentage change over the same timeframe

Date ↕	Price ↕	Open ↕	High ↕	Low ↕	Vol. ↕	Change % ↕
Feb 14, 2021	0.062639	0.066244	0.066392	0.055785	13.80B	-5.45%
Feb 13, 2021	0.066249	0.069815	0.071703	0.065915	7.32B	-5.07%
Feb 12, 2021	0.069791	0.069780	0.072720	0.061285	13.24B	0.26%
Feb 11, 2021	0.069611	0.072580	0.074843	0.068152	11.23B	-4.10%
Feb 10, 2021	0.072584	0.070015	0.081396	0.067081	22.67B	3.67%
Feb 09, 2021	0.070012	0.078782	0.083567	0.064053	22.36B	-11.14%
Feb 08, 2021	0.078793	0.077936	0.085037	0.063839	38.11B	0.36%
Highest: 0.085037    Lowest: 0.055785    Difference: 0.029252    Average: 0.069954    Change %: -20.212969						

The above tweet was made about Dogecoin again, “Bought some Dogecoin for lil X, so he can be a toddler Hodler” (502.8K likes). There was also a short clip of Musk’s son attached, “Lil x” refers to his son's nickname. Although Bitcoin was in an uptrend, the tweet was posted during a slight drawback. Upon Musk’s tweet, Bitcoin remained relatively steady, with the price dropping -1.32% after one hour, before rebounding to relatively the same price point (+.06%) after twelve hours. As this tweet was about Dogecoin, and not Bitcoin specifically, it’s possible investors sold Bitcoin to free up capital and invest in dogecoin, although this effect does not seem as pronounced as Dogecoin went down (-4.10%). Additionally, mentioning his son in the tweet may have overshadowed the cryptocurrency aspect, leading to less impact overall. From visually analysing the Bitcoin graph the tweet did not significantly impact Bitcoins short or long term price. Despite the tweet being posted during a relatively stagnant period, Bitcoin continued its uptrend, reaching above the initial price after twelve hours.



## Individual tweet visualization #6



## Dogecoin percentage change over the same timeframe

Date ▾	Price ▾	Open ▾	High ▾	Low ▾	Vol. ▾	Change % ▾
Mar 09, 2021	0.057978	0.062851	0.062851	0.056009	8.67B	-7.75%
Mar 08, 2021	0.062848	0.051888	0.062848	0.051622	13.64B	21.14%
Mar 07, 2021	0.051881	0.050924	0.052248	0.050548	3.03B	1.86%
Mar 06, 2021	0.050935	0.049523	0.052453	0.049256	5.28B	2.73%
Mar 05, 2021	0.049584	0.049925	0.050877	0.048026	3.76B	-0.69%
Mar 04, 2021	0.049927	0.050469	0.051118	0.047762	3.65B	-1.08%
Mar 03, 2021	0.050474	0.050343	0.052153	0.050011	3.64B	0.39%
Highest: 0.062851    Lowest: 0.047762    Difference: 0.015089    Average: 0.053375    Change %: 15.313233						

Price change after:	Price change (%)
One minute	-0.07
Five minutes	-0.08

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Thirty minutes	-0.23
One hour	1.01
Two hours	1.02
Six hours	-0.07
Twelve hours	-1.5

The tweet, “Doge spelled bakers is Egod” (374.6K likes ) appeared to have not much impact on Bitcoin’s immediate price change, with the price appearing to only deviate roughly one percent, before finishing down a significant -1.5% after twelve hours. The tweet was made during an uptrend, however during the six day period of the tweet there were many different drawbacks, resulting in the price fluctuating frequently both before and after the tweet. Due to this, the tweet appears to not impact Bitcoin’s price substantially. The price change of Doge was more pronounced on the date the tweet was posted, going up 2.73% on the day. Due to limited activity and natural looking corrections it is concluded that the tweet had a miniscule effect on the Bitcoin, however Dogecoin went up a significant amount.

**Conclusion:**

Musk’s tweets trigger a spike in attention, with certain tweets influencing the market more than others. Depending on what the tweet is about it can cause different cryptocurrencies to go up or down. Musk essentially directs attention to the cryptocurrency market through his tweets, causing an influx of people to buy and sell. Musk influences the immediate price, however his influx of followers do not provide enough volume in continuing the trend of Bitcoin over a longer period of time. However he can influence smaller market cap coins such as Dogecoin to surge in price consistently for multiple days. The people who buy and sell based on his tweets are most likely going to trade cryptocurrency regardless, his tweets trigger them to do it for two reasons: 1) He directs people's attention to the cryptocurrency market, and 2) due to his previous results when influencing the market, people believe they can make money based on what happened in some of the tweets displayed above. To answer the question: Yes, Elon Musk can influence the cryptocurrency market short term, however in the long term the market corrects itself.