How Elon Impacts Tesla's Public Sentiment

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Process Summary

1. Extracting data From Twitter.
2. Performing NRC sentiment analysis.
3. Context of Word Usage: Understand the context in which sentimental words are being used.
4. Remove misleading tweets from dataset.
5. Identify new trends.
6. Remove misleading words from dataset.
7. Conclusion.

Extracting data from Tweeter

The data collected is from tweets posted after January 9 of 2020 with a sample size of 800 words.

Performing NRC Sentiment analysis

The first analysis is conducted using the NRC lexicon. This lexicon is a dictionary containing words and their associated emotions. It contains 8 emotions and positive and negative feelings attributed to words. Words might have multiple emotions. The following chart display the total count of emotions found in twitter's database for Tesla. See Chart #1 to view the frequency of emotions for this Twitter dataset.

Chart #1: NRC Tesla
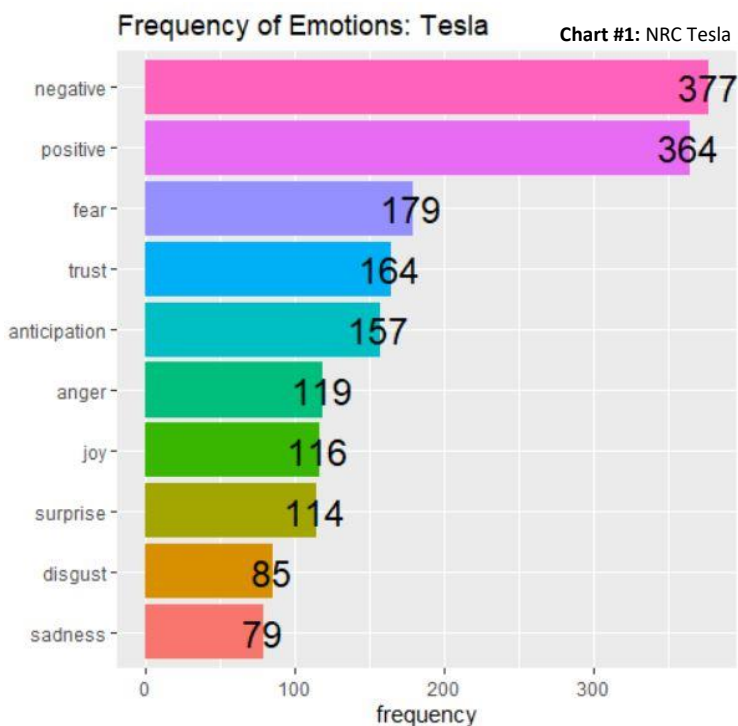
At a first glance, it is noticeable that Tesla has a higher negative score compared to positive. The most frequent emotion is fear, followed by trust and anticipation. See Chart #1.

Context of Word Usage

Chart #2 reveals that many relevant sentiments are unrelated to Tesla as a brand. Instead, the content suggests that Elon Musk is a significant factor in the frequency of sentimental words. For example, he mentions that the corona virus panic has affected Tesla's Stocks.

The NRC lexicon has limitations because some words might have multiple meanings. This is where a Business Analyst is necessary to filter data and bring the appropriate conclusions. A good example is the word battery, which refers to a device, rather than a sentiment of anger or negativity. Also, the word model refers to a vehicle name, instead of a positive emotion.
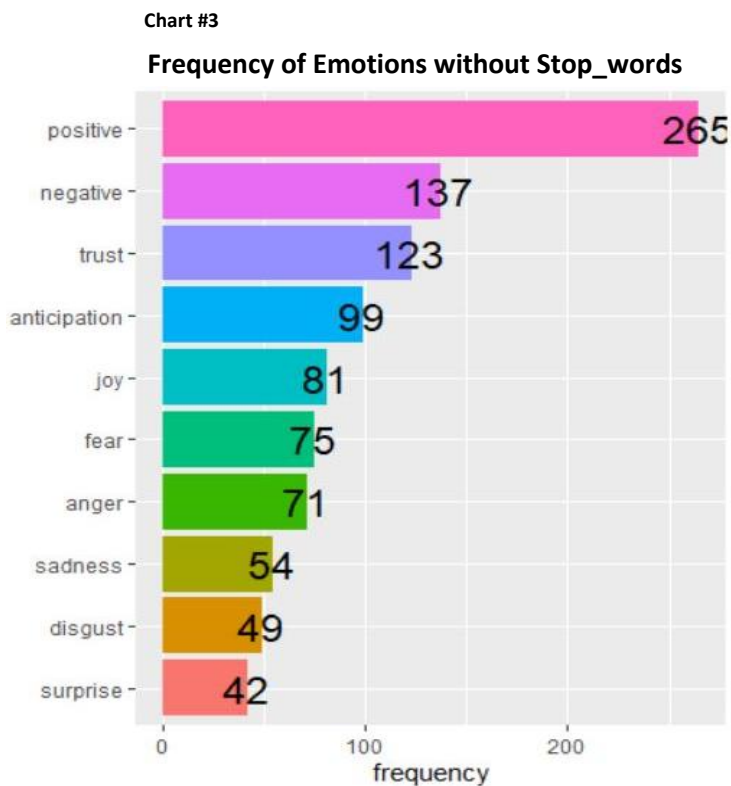
Chart#2: Most frequent words in Tesla NRC and a text sample:

```
    word     sentiment        n    text_sample
 1  panic    fear            77    @elonmusk Has anybody noticed what the corona virus panic has done to Tesla stock?
 2  panic    negative        77
 3  dumb     negative        73    Tesla CEO Elon Musk tweets that 'coronavirus panic is dumb'
 4  trump    surprise        48
 5  model    positive        44    It can match Tesla model S range only if
 6  john     disgust         22    @john_beans I think an increasingly small % of Tesla buyers buy it for environment reason
 7  john     negative        22
 8  battery  anger           21    GM unveils a new electric vehicle platform and battery in bid to take on Tesla
 9  battery  negative        21    Maybe until Tesla announces their new battery technology that they have been secretly developing.
10  time     anticipation    16    Nikola Tesla was known for his brilliant inventions, as well as his interest in time travel
```

Chart #2 shows a few samples that reveal how Elon Musk has a strong impact on twitter's sentiments about Tesla. Panic and dumb are associated with fear, and they are the most frequent terms. Social media has replicated his tweets making this analysis reflect more negative sentiments about Tesla than the actual public sentiment towards this car brand truly is. The word John also has a negative sentiment in the NRC lexicon. To find out Public's sentiment towards Tesla, it is necessary to remove misleading words. All tweets containing Nikola Tesla will also be removed from analysis.

Removing Misleading Tweets

Chart#3 displays the frequency of emotions after removing the following words: john, Elon Musk, @elonmusk, coronavirus, panic, dumb, Nikola.

Chart #3

Frequency of Emotions without Stop_words

Chart #4

Most Frequent Sentimental Words

	word	sentiment	n	
1	model	positive	34	
2	trump	surprise	16	
3	president	positive	10	
4	president	trust	10	
5	worth	positive	10	
6	damn	anger	9	
7	damn	disgust	9	
8	damn	negative	9	
9	dark	sadness	8	
10	hot	anger	7	
11	center	positive	6	
12	center	trust	6	
13	time	anticipation	6	
14	boy	disgust	5	
15	boy	negative	5	
16	don	positive	5	
17	don	trust	5	
18	finally	anticipation	5	
19	finally	disgust	5	
20	finally	joy	5	
21	finally	positive	5	
22	finally	surprise	5	
23	finally	trust	5	
24	genius	positive	5	
25	love	joy	5	
26	love	positive	5	

Identifying New Trends

The new plot shown in Chart#3 reveals an overall positive public sentiment towards Tesla. Positive words are almost double in frequency compared to negative words. From the 8 emotions in the NRC lexicon, trust, anticipation and joy are the most frequent. The table in Chart #4 contains a list of the most frequent words and their corresponding sentiments. There is a total of 253 unique words in this filtered dataset. The most frequent words in Chart#4 are model, trump and president. These words imply an emotion, but they are misleading for the purpose of this analysis.
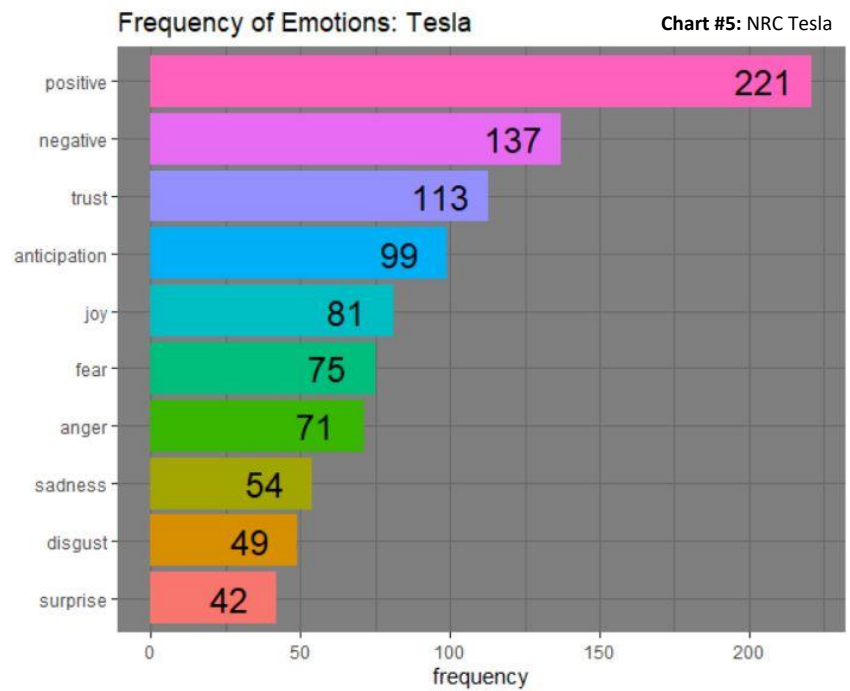
Removing Misleading Words

Removing Elon tweets and tweets mentioning Trump from the dataset provides a more accurate sentiment analysis. See the following chart to view the most relevant emotions.

Frequency of Emotions: Tesla

Chart #5: NRC Tesla

Emotion	Frequency
positive	221
negative	137
trust	113
anticipation	99
joy	81
fear	75
anger	71
sadness	54
disgust	49
surprise	42

Conclusion

Removing Elon Tweets from the analysis reveals a positive public sentiment towards Tesla.

Elon Tweets his thoughts and worries in Tweeter. Because he is the founder of Tesla, he skews the company's public sentiments towards his emotions. During January of 2020, the coronavirus is a global concern and it has impact businesses. Elon claims Tesla's stocks have been affected by this virus. He's Tweets about this subject contain fear and an overall negative sentiments causing Tesla's sentiments to lean in this direction.