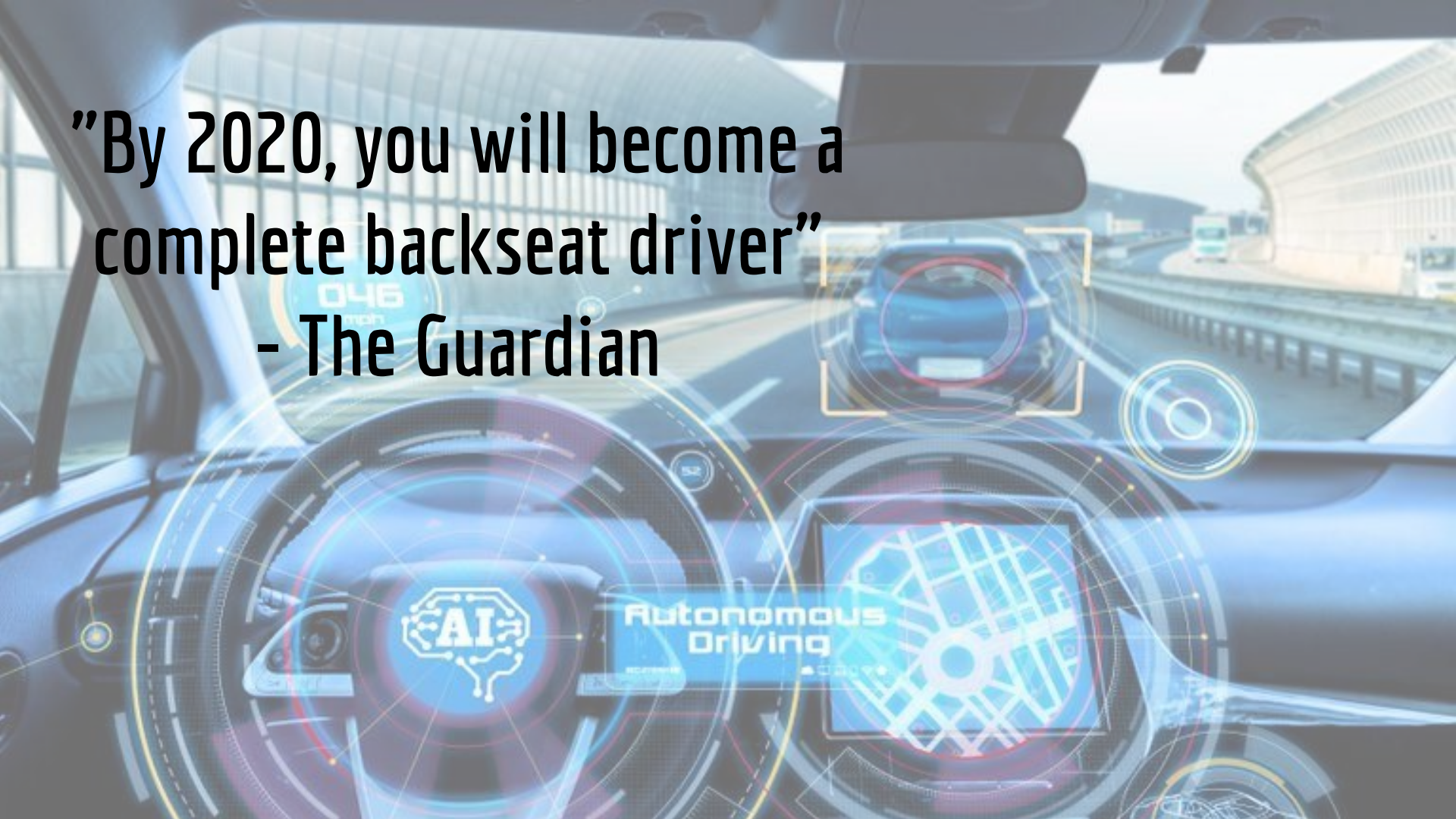"By 2020, you will become a complete backseat driver" - The Guardian

# Twitter Sentiment ~~Analysis~~: Self-driving cars

## DATA 512 Final Presentation
## Deepthi Hegde

# Motivation

- Autonomous driving has created a wave in the society in the past decade.
- Really cool technology, but what does the general public think?
- Goal: To understand the human aspect of self-driving.
- Also wanted to explore Big and Thick data approach out of personal curiosity.

# Dataset

- **Source:** figure-eight.com - "...free for anyone to download."
- **License:** Creative Commons Attribution 4.0 International License
- **Data collection:** Contributors read tweets and classified them as very positive, slightly positive, neutral, slightly negative, or very negative. They were also prompted to mark if the tweet was not relevant to self-driving cars.
- **Ethical considerations:** The dataset does not contain personally identifiable data such as names or Twitter handle.
- ~7k tweets between May 15, 2015 - May 31, 2015.

# Dataset

| Column | Description |
| --- | --- |
| sentiment | sentiment score on a scale of 1 - 5 |
| sentiment:confidence | confidence level between 0 - 1 |
| text | body of the tweet |

**Sentiment Scoring:**

1: Very negative
2: Slightly Negative
3: Neutral
4: Slightly positive        5: Very positive

# Research Directions

- What is the general sentiment of people around self-driving cars?
- What promoted these opinions?
- What are people talking about? Did the happenings around the world sway people in one direction or another?
- Study of the type of words used to express positive and negative sentiment.

# Let's go cherry picking

- **"There is an acceptable level of risk with all new technology, but the reality that people will die in autonomous car is hard to accept."** 😢
- "If Google maps can't keep up with road construction, how am I supposed to trust a driverless car to get around here?" 😟
- "Audi gets first permit to test self-driving cars in California: Think twice next time you tailgate that new Audi..." 😐
- "Google unveils driver-less car...can you see yourself buying an autonomous car?" 😐
- **"Just saw Google self-driving car on I-34. It was painted green and blue."** 😐
- "Google should buy Tesla and Uber, mix a little autonomous car into the mix and solve all transportation problems.  #sentFromTraffic" 😄
- **"Awesome! Google driverless cars will help the blind travel more often."** 😁
- "Autonomous vehicles could reduce traffic fatalities by 90%...I'm in!" 😁

**Legend:** 😢: 1  😟: 2  😐: 3  😄: 4  😁: 5

# Thick Data Approach

- May 7, 2015, NY Times: "Teens probably won't like self driving cars, but their parents probably will."
- May 11, 2015, BBC News: "Four out of the 48 self-driving cars on public roads in California have been involved in accidents in the last eight months, according to the state's Department of Motor Vehicles."
- May 12, 2015, The Economist: "Cars that can drive themselves, a staple of science-fiction, have started to appear on roads in real life."
- May 15, 2015, The Guardian: "Google's prototype self-driving car pods will take to public roads for the first time around its headquarters in Mountain View, California this summer."
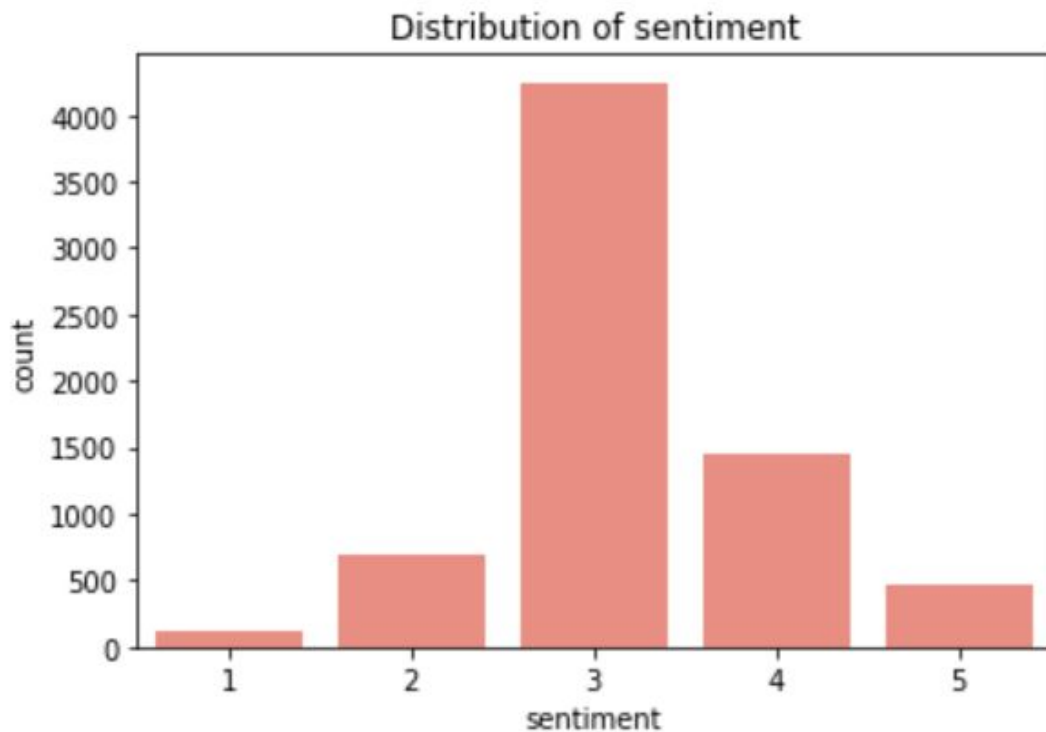
# Correlations?

"In 2015, Google provided "the world's first fully driverless ride on public roads" to a legally blind friend of principal engineer Nathaniel Fairfield. The ride was taken by Steve Mahan, former CEO of the Santa Clara Valley Blind Center, in Austin, Texas. It was the first driverless ride that was on a public road and was not accompanied by a test driver or police escort. The car had no steering wheel or floor pedals." - Wikipedia
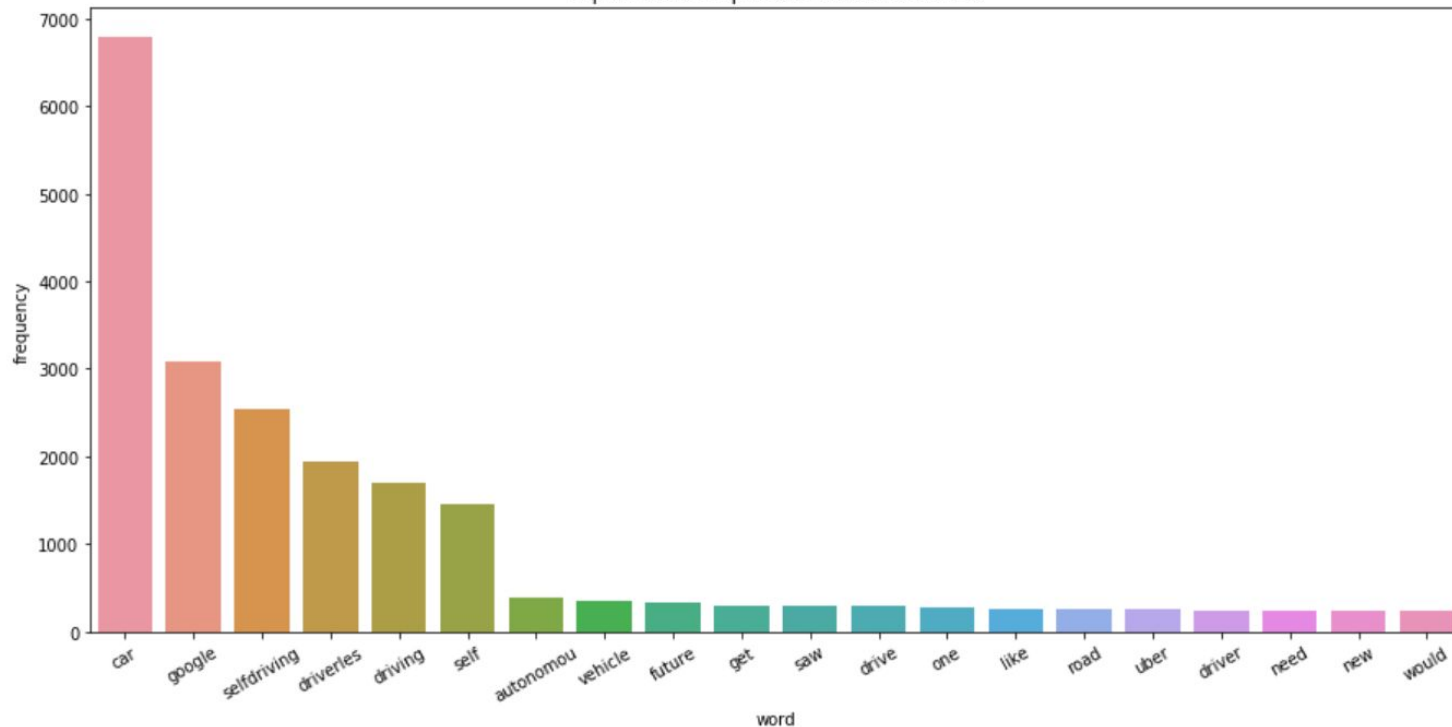
# Big Data Approach

- **Top 5 words:** Car, google, self-driving, driverless, driving
- **Top 5 topics:** Driverless vehicle, Google, autonomous, California, connect
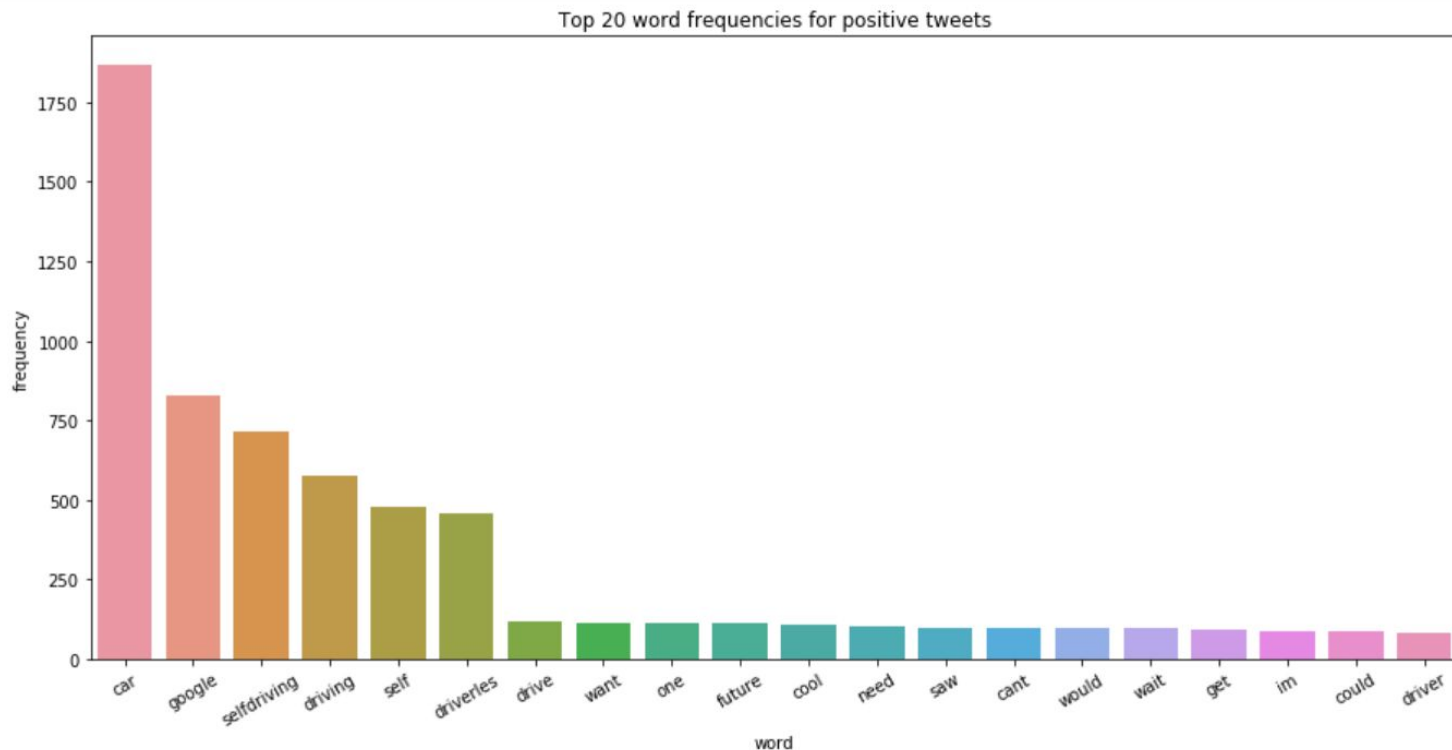
# Sentiment Distribution

# Top 20 words: all tweets



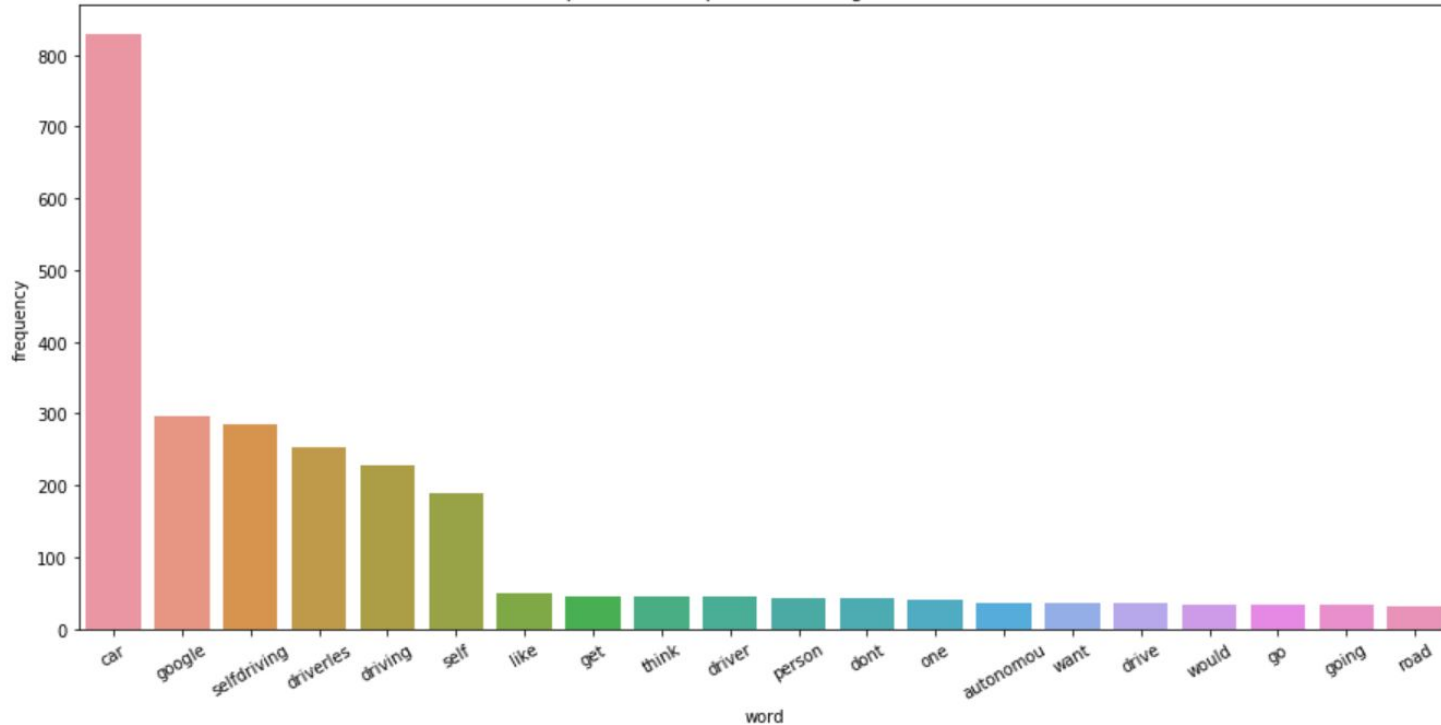Top 20 word frequencies across all tweets

# Top 20 words: positive tweets



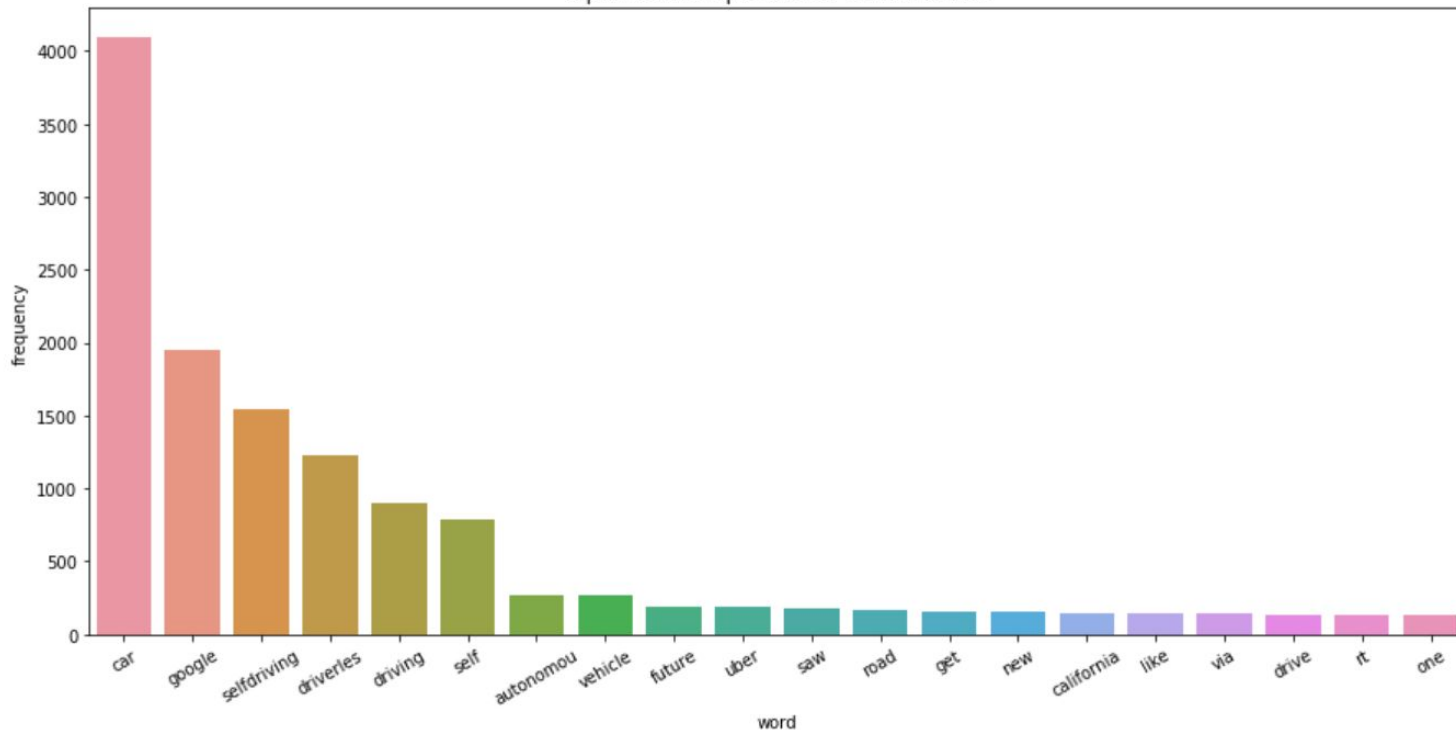Top 20 word frequencies for positive tweets

# Top 20 words: negative tweets



Top 20 word frequencies for negative tweets

# Top 20 words: neutral tweets



Top 20 word frequencies for neutral tweets

# Conclusion

- A drawback of qualitative analysis - we can only speculate. No causal conclusions.
- However, it is a helpful tool in gathering evidence about a hypothesis, especially around complex nuances of the world which are hard to model.
- Answering the questions -
  - What is the general sentiment of people around self-driving cars? **Neutral-Positive**
  - What promoted these opinions? **Google's self-driving test launch and accidents in California (self-certified speculation)**
  - What are people talking about? **Google**

# THANK YOU