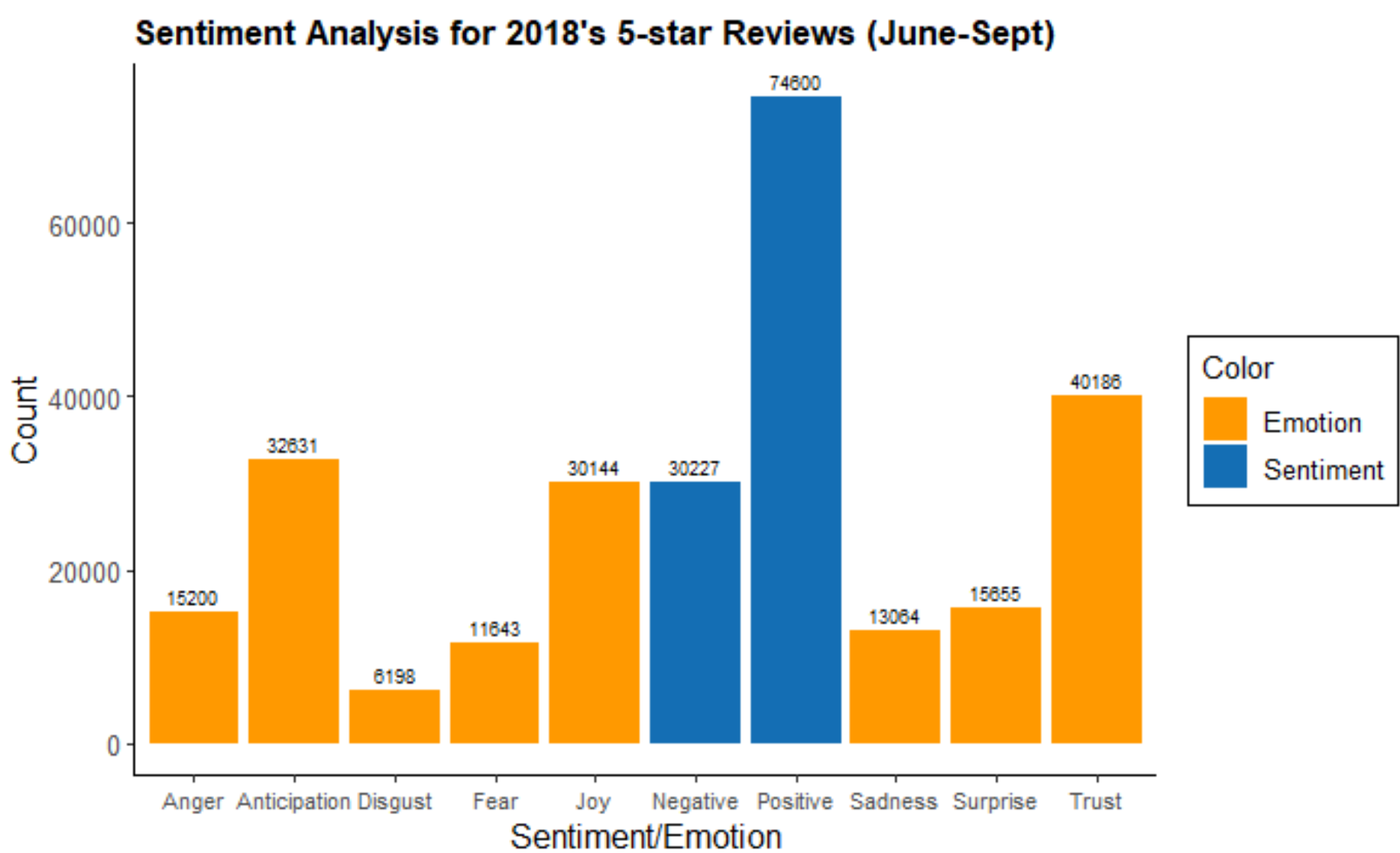
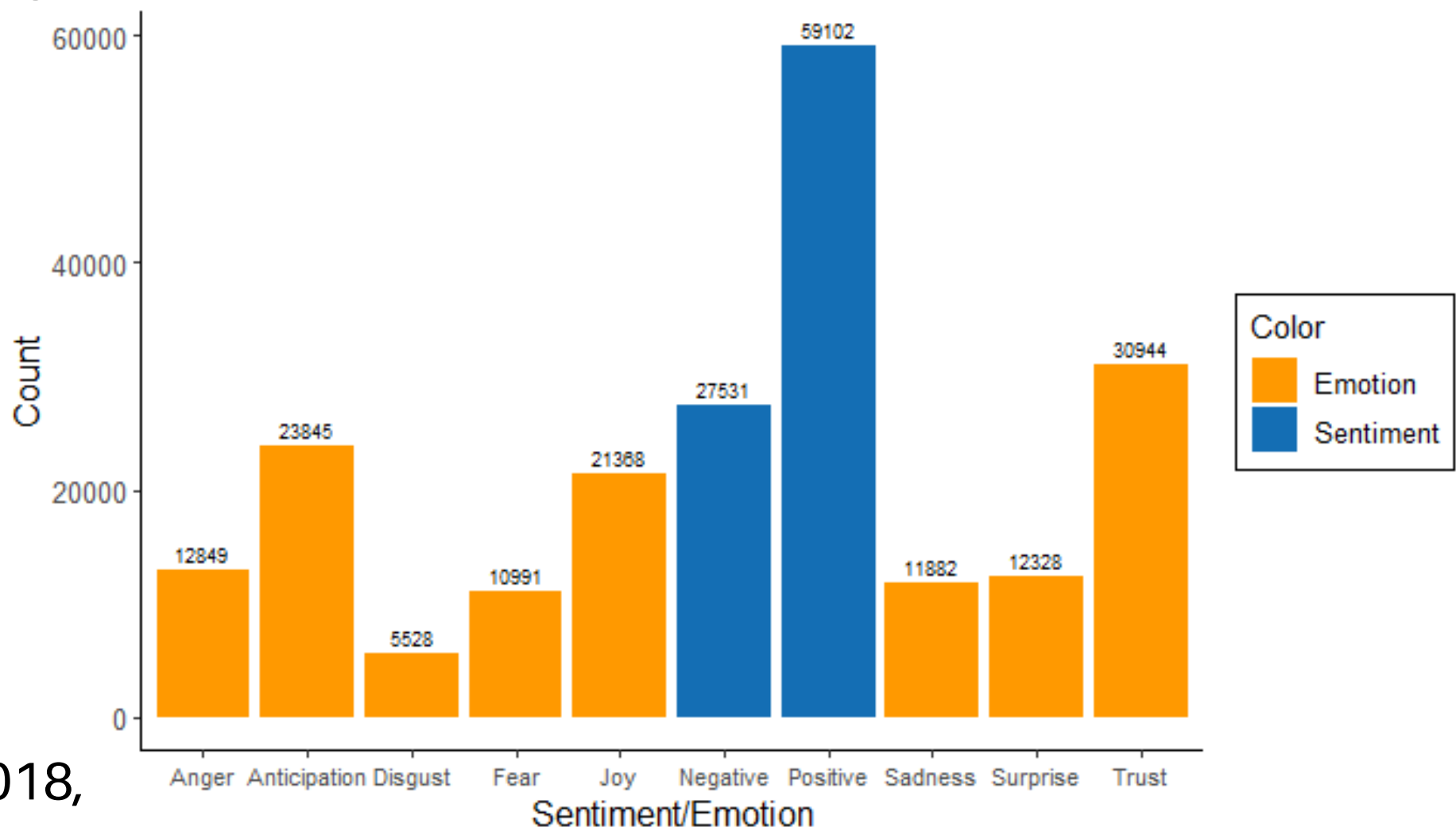




# Sentiment Analysis

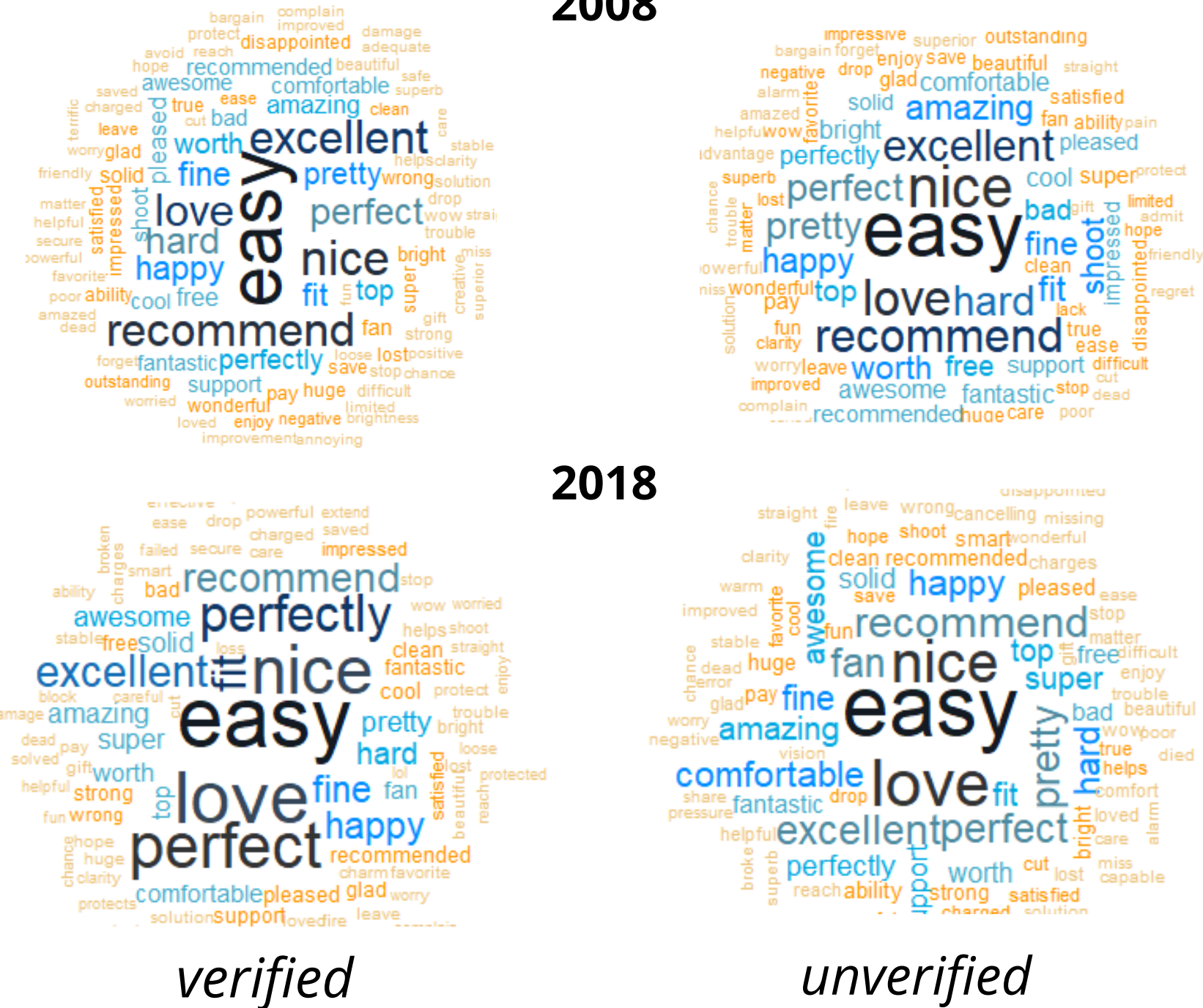
- ### Sentiment Analysis for 2008's 5-star Reviews (June-Sept)



# Text Mining

**Word use in unverified and verified reviews are identical**

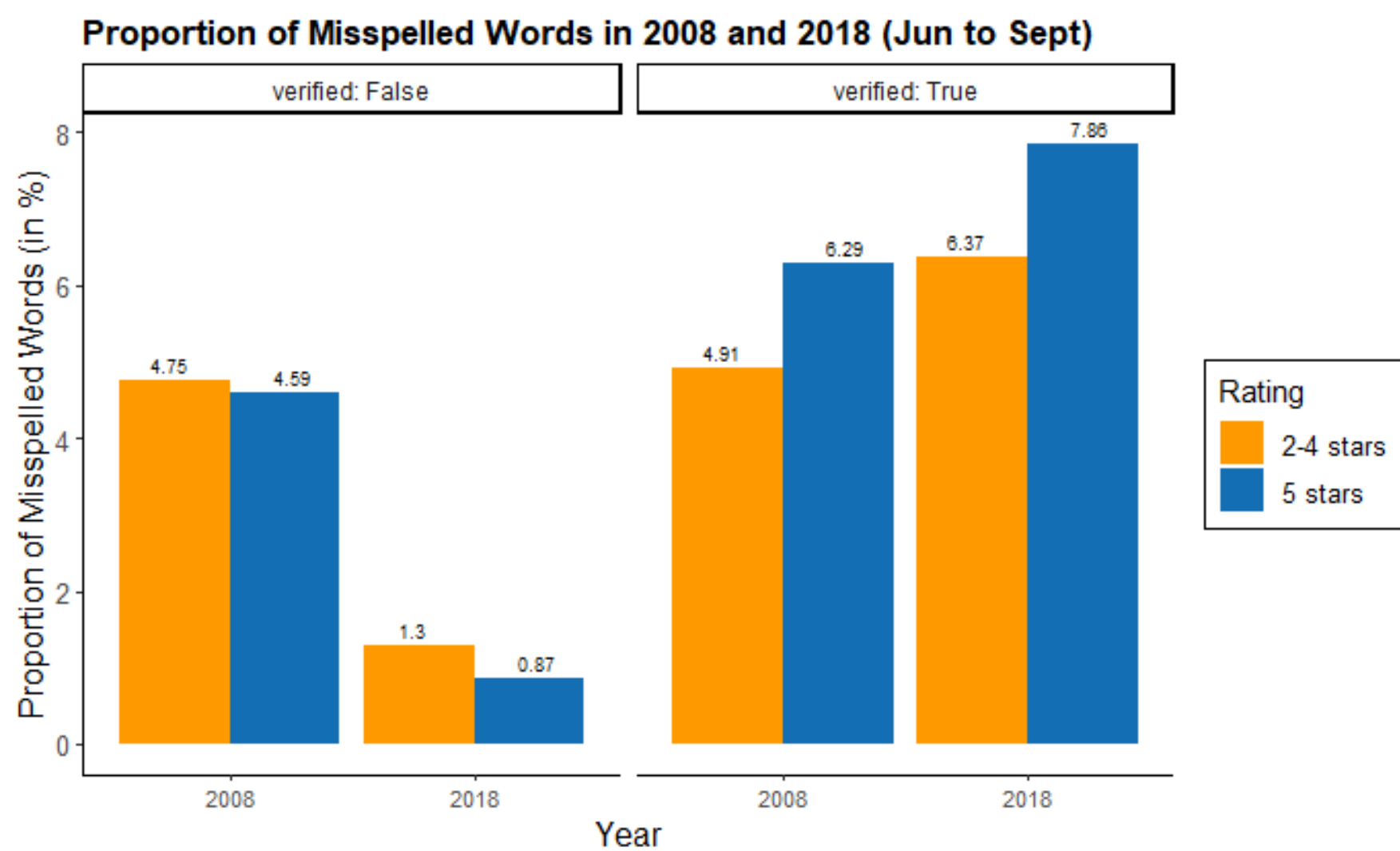
## Most frequent-used words in Electronics product reviews on Amazon



- NLP helps provide an overall summary of the content in the reviews, in other words, how customers think about the products.
- However, as unverified and verified reviews are very much similar. It has become trickier to detect fake or bot reviews.

## Possible methods to detect fake reviews

- Misspelling check
- Similar or very short reviews detection
- A large number of reviews of one product is generated within a short amount of time
- Unusual proportion in the number of 4-5-star vs 1-star reviews. (eg: 70% 5-star vs 30% 1-star)



- Unverified reviews that give 2-4-star rating have higher proportion of misspelling words
- Fake reviews for 5-star rating are more generated more sophisticatedly with less misspelling words

Similar Reviews	Freq
works great	1332
good	834
great	773
ok	396
excellent	193
great product	92
works well	89
perfect	82
works	81
good product	76
love it	74
nice	63
very good	59

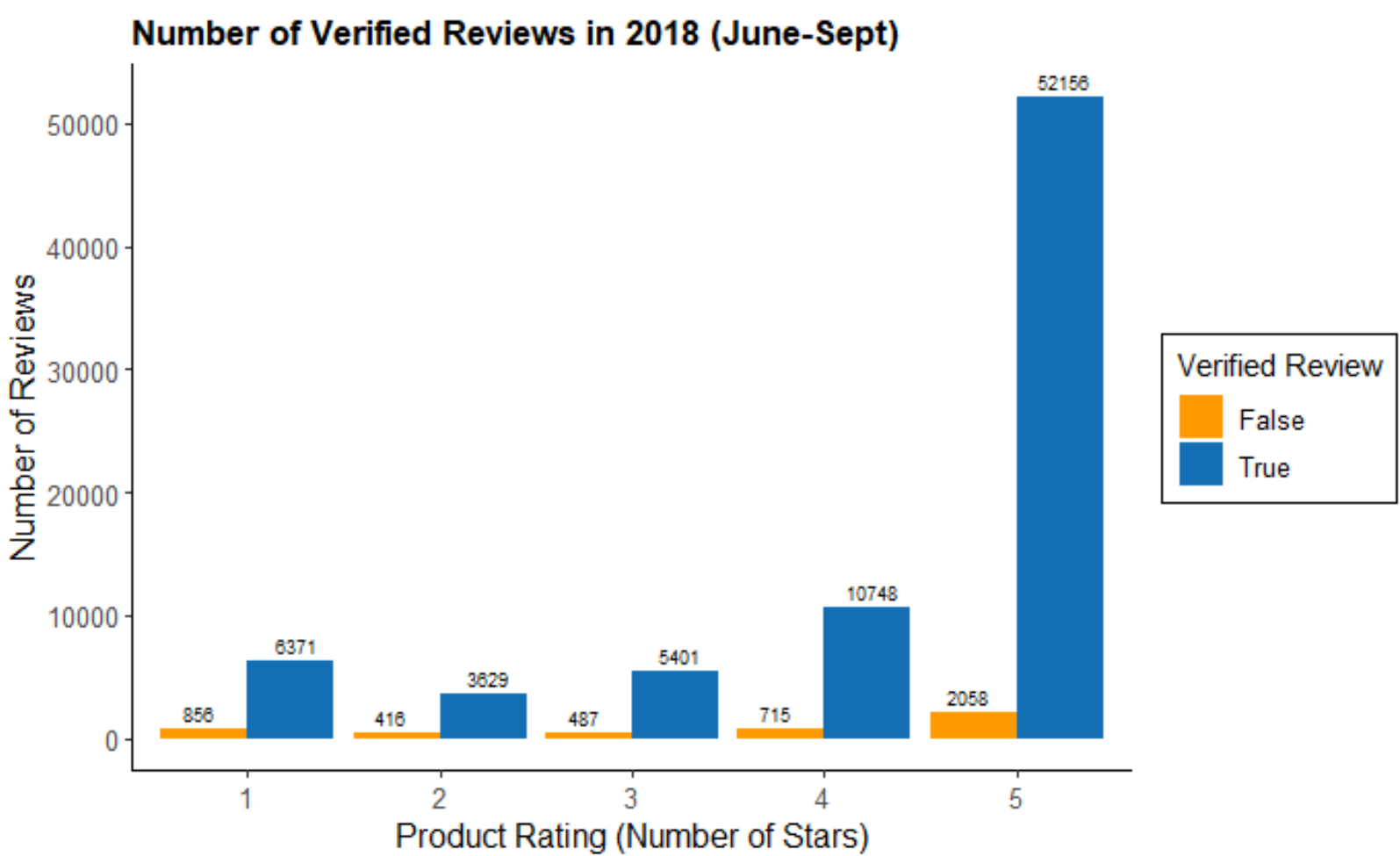
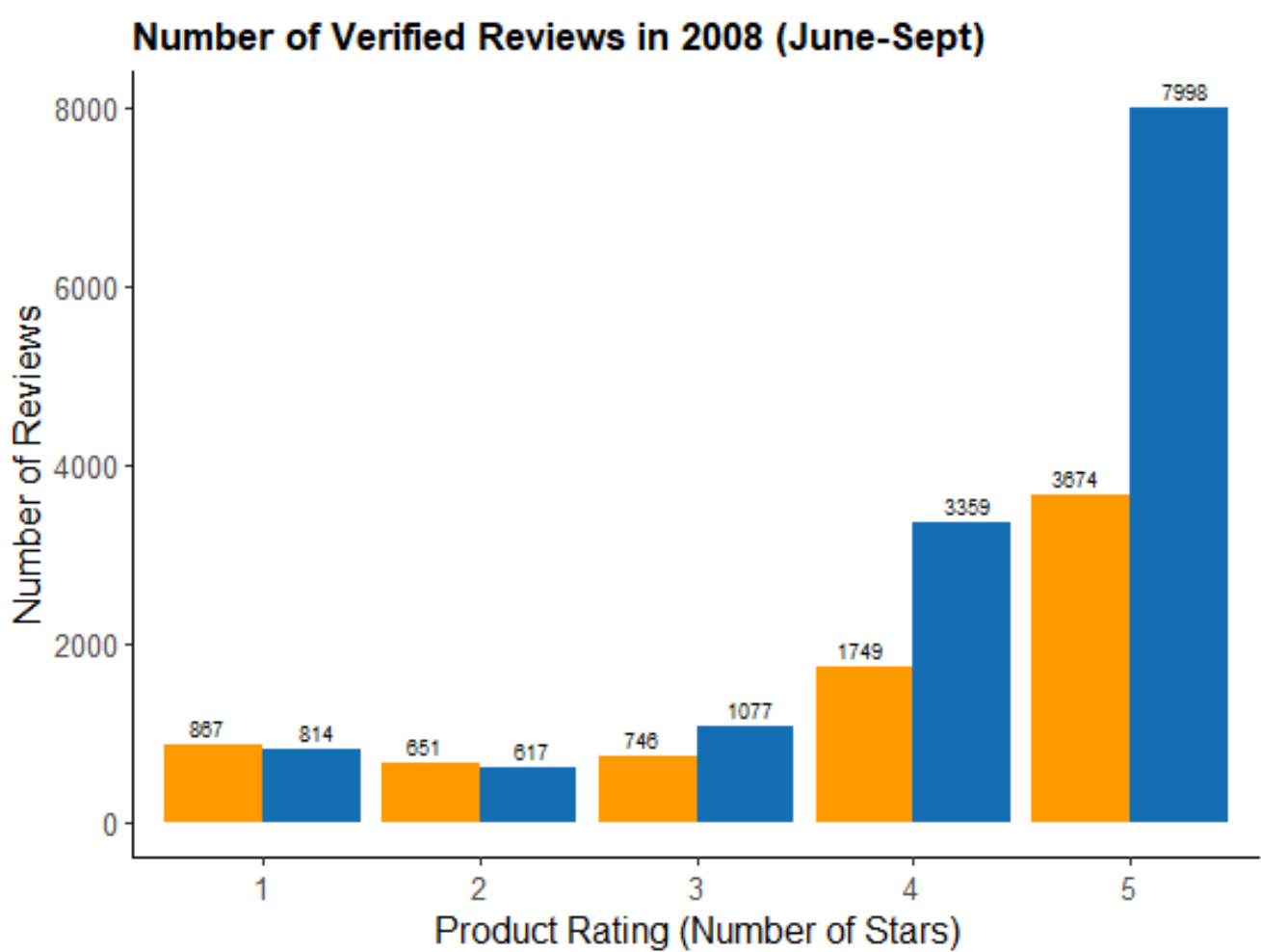


## Investigate similar/ duplicated reviews

- Thousands similar/duplicated reviews from different users and different products are detected.
- Most of them contain generic words such as: great, good, perfect, nice... and either are extremely positive (5-star) or negative (1-star) but don't specify the reasons. These could be the red flags that the review is fabricated or bot-generated.
- Word cloud of similar reviews particularly contains higher frequency of phony/ extreme positive/ negative words

## Amazon took action

- Invested more than \$400M
  - Blocked more than a million bad actor accounts before they published a single listing
  - Blocked more than 3B suspected bad listings before they were published to our stores
  - Prevented more than 13M attempts to leave an inauthentic review
- ## Recommendations
- Build bot chat detecting review trading conversations on Amazon web chat
- Set stricter standards for verified purchases
- Increase account privacy, security and protection



Unverified Reviews on Amazon decreased significantly from 2008 - 2018 thanks to serious effort that Amazon made to address the issue