

Introduction

- Screen media has become an integral part of life for most people in the United States and screen time guidelines were issued to restrict children's screen media use.
- Compliance with these recommendations is low: 49% to 80% of children exceeded the 2-hour limit per day recommendation for screen media use.
- Attitudes and subjective norms related to screen media use on social media platforms could be used to understand and improve monitoring of screen time and content
- Twitter serves as a public square for people to share ideas, seek out opinions. Parents who use social media also post content about their kids on social media.

Objectives

Analyze Twitter data to identify and classify the public sentiments expressed in the text referring to screen media use and screen media parenting.

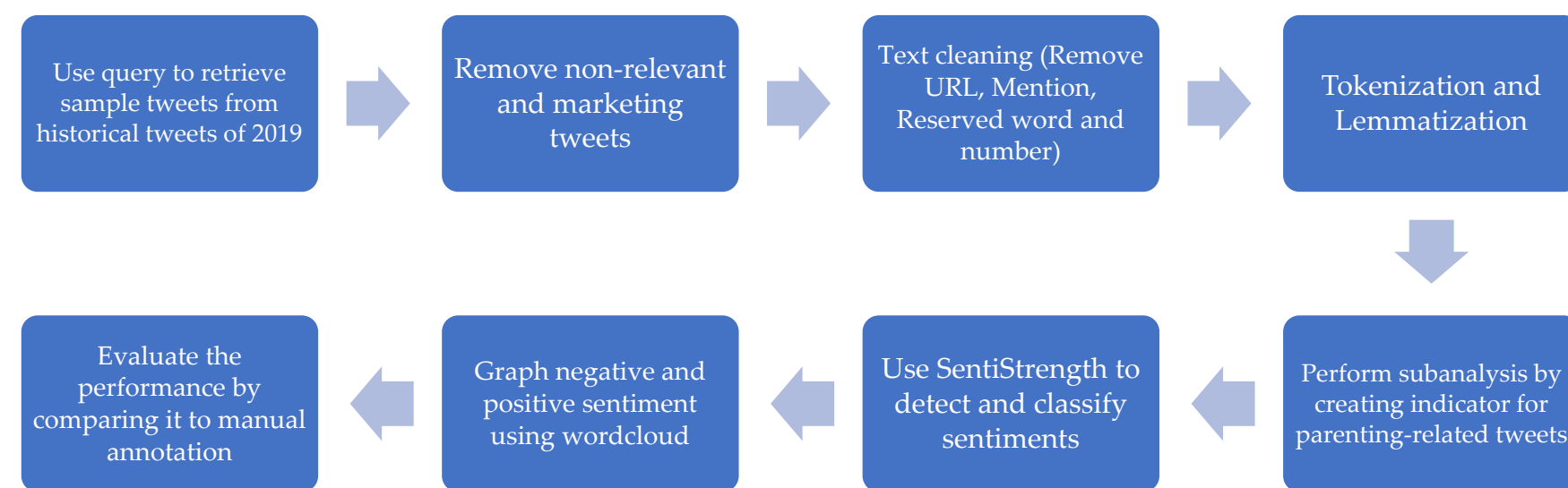
Methods

Data Source: Public tweets generated on Twitter



- For each month in 2019, 20 random days were selected using random sampling without replacement.
- Location was restricted to the United States either by tweet location or profile location
- Tweet language was restricted to English

Software: Python, R, SentiStrength



Results

- A total of 1,148,016 tweets were retrieved, which were tweeted by 748,104 individuals.
- The average number of tweets per day was 4,783 (SD=2,812)
- The average number of individuals tweeting per day was 4,658 (SD=2,735)
- Among this study sample, 9.0% of tweets were generated by 1.0% of all individuals, while the majority (98.0%) tweeted five tweets or less. Retweets made up 54.3% of the total tweets.
- 12.3% of retrieved tweets had at least one hashtag.

Figure: Histogram of number of tweets tweeted by individual on Twitter in 2019

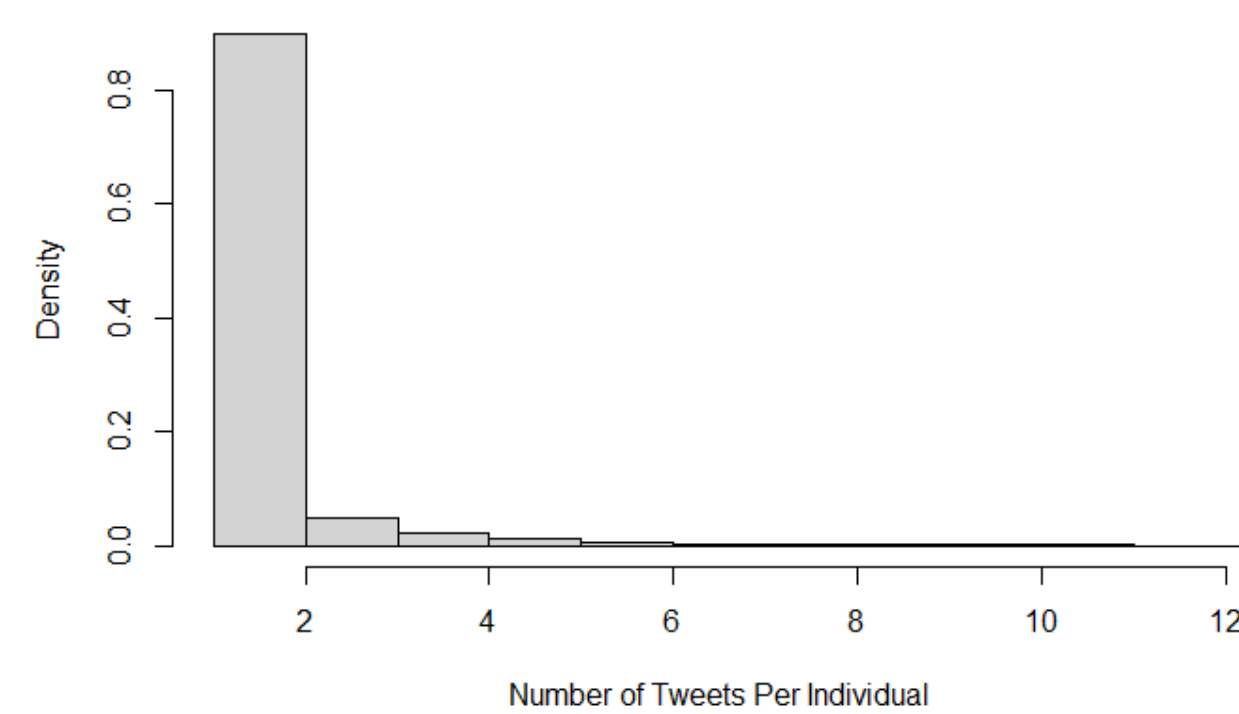


Figure: Number of sample tweets related to screen media use tweeted in the United States, Twitter 2019 and the ratio of the percentage of these tweets and percentage of the population in the United State

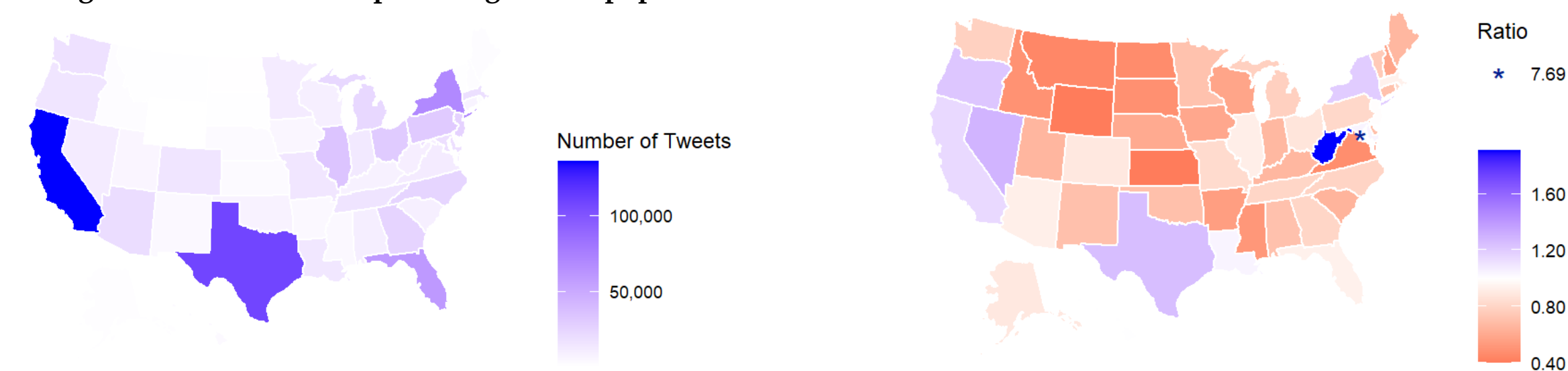
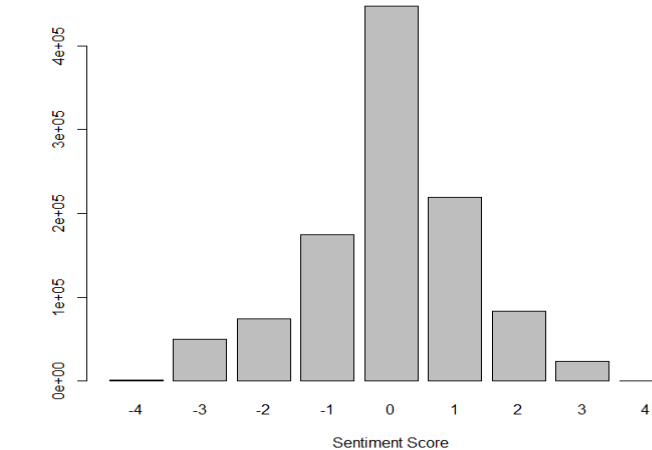


Figure: Distribution of sentiment scores for each tweet



- A total of 1,074,626 tweets were included in the study for sentiment analysis after excluding marketing tweets and irrelevant topics
- There were 326,493 (30.4%) tweets classified as positive, 300,896 (28.0%) tweets as negative and 447,237 (41.6%) tweets as neutral.

Figure: Top 10 most frequent sentimental words in positive tweets and negative tweets related to screen media use

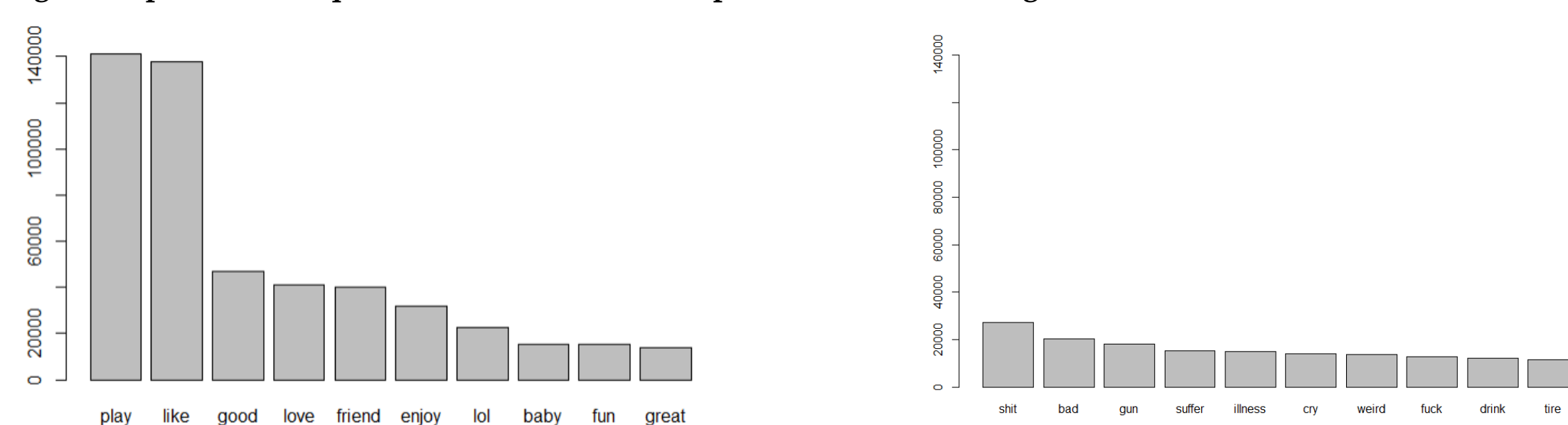


Figure: Top 10 most frequent sentimental words in positive tweets and negative tweets related to screen media parenting.

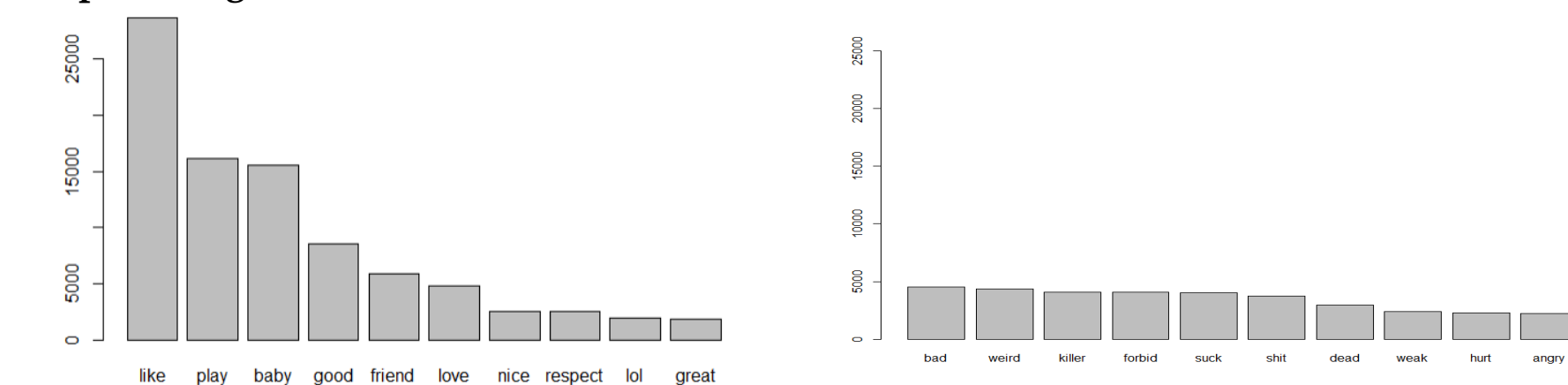


Figure: Word cloud of most frequent sentimental words in positive tweets and negative tweets related to screen media parenting

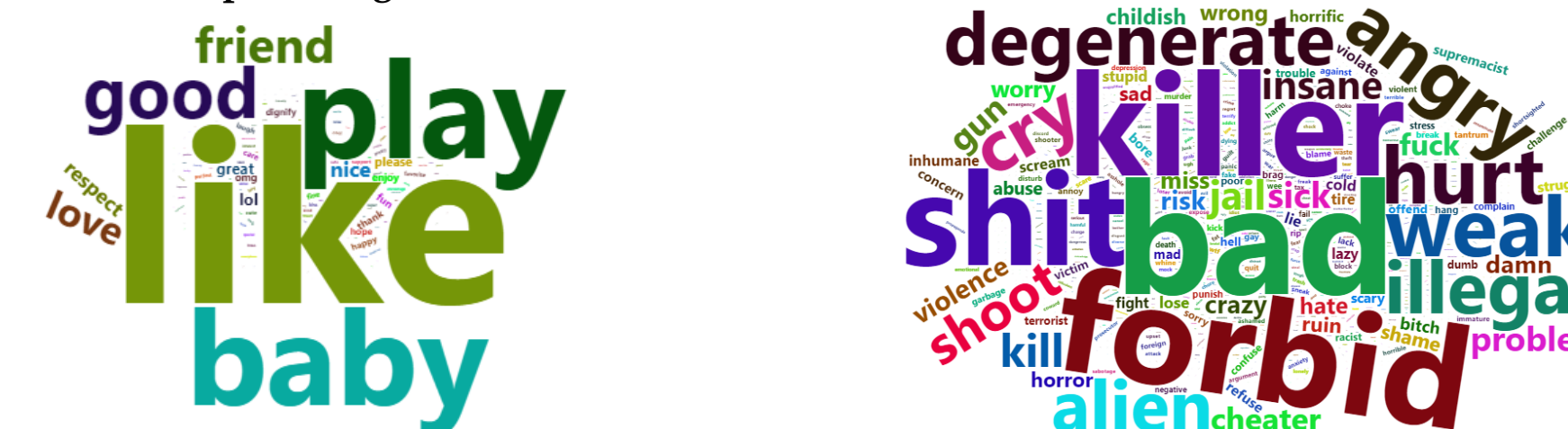


Table: Performance of SentiStrength on sample tweets related to screen media parenting

		Manual Annotation			
		Positive	Negative	Neutral	Total
SentiStrength	Positive	58	24	31	113
	Negative	5	63	16	84
	Neutral	7	23	72	102
	Total	70	110	119	299
	True Positive	58	72	63	-
	False Negative	12	47	47	-
	False Positive	55	30	21	-
	True Negative	174	150	168	-
	Sensitivity (Recall)	82.9%	57.3%	60.5%	-
	Positive Predictive Value (Precision)	51.3%	75.0%	70.6%	-
Accuracy	77.6%	77.3%	74.2%	-	
F1 Score	0.63	0.65	0.65	-	

Conclusions

- This study examined sentiments related to screen media use on Twitter during the pre-COVID 19 period.
- Twitter users in Washington D.C. were more engaged in the discussion related to screen media use compared to the users from other states
- There were slightly more positive tweets than negative tweets related to screen media use and screen media parenting.
- The positive sentiments were involved with friends and family. While the negative sentiments were mostly concerning violence in screen media.

References

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