

User Engagement Analysis For

RESTAURANT
SUCCESS





Yelp is a web and mobile platform that serves as a crowd-sourced local guide.

Users can submit reviews, photos, and tips about businesses, while also exploring information and ratings provided by others.

AGENDA

- Problem statement
- Objectives of the Research
- Formulated Hypothesis
- Overview of Data
- Findings and Analysis
- Proposed Recommendations

Problem Statement

In a competitive market such as the restaurant industry, comprehending the subtleties of the factors Influencing Business Success for stakeholders, grasping the factors that impact business success is crucial. This project seeks to examine the connection between user engagement like reviews, tips, and check-ins and business success metrics, such as review count and ratings, specifically focusing on restaurants, using the Yelp dataset.

Research Objectives

- Quantify the correlation between user engagement (reviews, tips, check-ins) and review count/average star rating.
- Analyze the impact of sentiment on review count and average star rating.
- Time Trends in User Engagement

Formulated Hypothesis

- Increased levels of user engagement (more reviews, tips, and check-ins)
Correlate with increased review counts and ratings for restaurants.
- Reviews and tips with positive sentiments significantly influence higher overall ratings and increase the number of reviews for restaurants.
- Consistent interaction over a period is associated with long-term success for restaurants.

Data Overview

- This dataset is a subset of Yelp and contains information about various businesses.
- Yelp provides the initial data in JSON file format.
- The five JSON files are business, review, user, tip and checkin.
- The JSON files are stored in the database for easy retrieval of data.

Analysis and Findings

- Among 150,000 businesses, 35,000 are restaurants that are currently open.
- The table below illustrates the distribution of success metrics for these businesses, such as the number of reviews and average ratings:

average_review_count	55.975426
min_review_count	5.000000
max_review_count	248.000000
median_review_count	15.000000
average_star_rating	3.477281
min_star_rating	1.000000
max_star_rating	5.000000
median_star_rating	3.500000

Highest Rating

	name	review_count	avg_rating
	á café	48	5.0
	two birds cafe	77	5.0
	the brewers cabinet production	13	5.0
	taqueria la cañada	17	5.0
	la bamba	44	5.0
	la 5th av tacos	24	5.0
	el sabor mexican and chinese food	21	5.0
	eat.drink.Om...YOGA CAFE	7	5.0
	d4 Tabletop Gaming Cafe	8	5.0
	cabbage vegetarian cafe	12	5.0

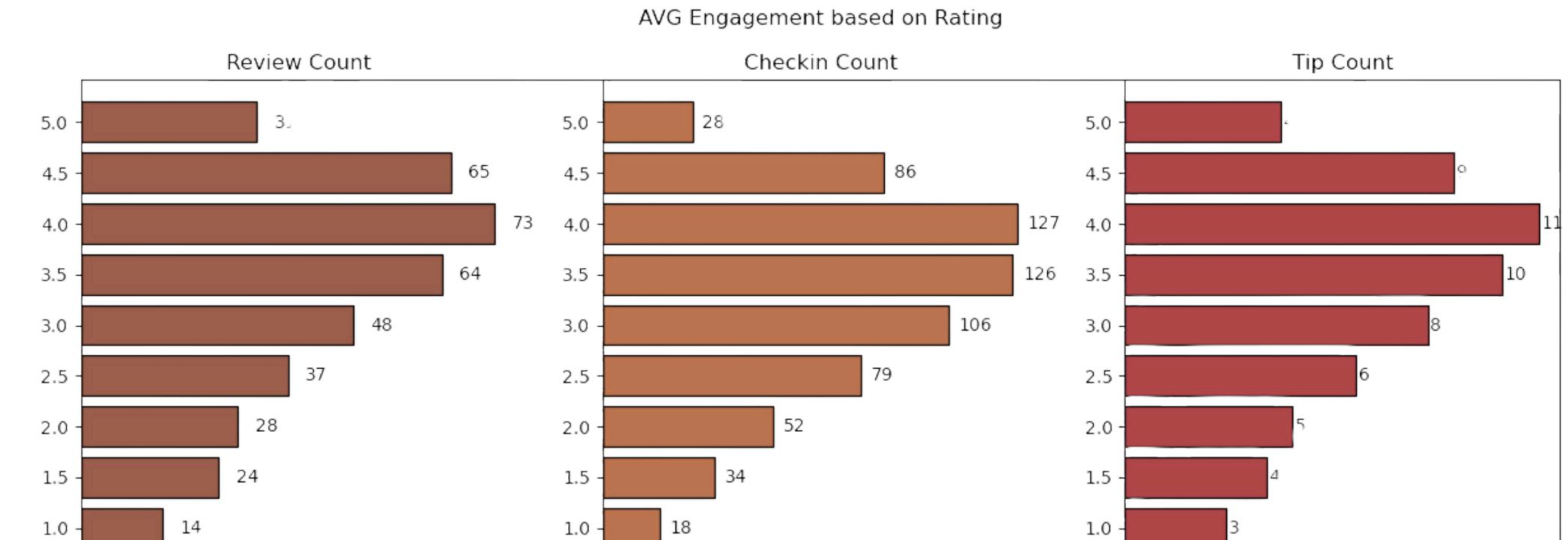
Highest Review Count

	name	review_count	avg_rating
	McDonald's	16490	1.868702
	Chipotle Mexican Grill	9071	2.381757
	Taco Bell	8017	2.141813
	Chick-fil-A	7687	3.377419
	First Watch	6761	3.875000
	Panera Bread	6613	2.661905
	Buffalo Wild Wings	6483	2.344828
	Domino's Pizza	6091	2.290210
	Wendy's	5930	2.030159
	Chili's	5744	2.514706

- High ratings don't always result in more reviews, and more reviews don't necessarily mean better ratings. A restaurant's success isn't just about its ratings or the number of reviews it receives.
- Although a high review count shows user engagement, it doesn't always reflect customer satisfaction or business success.

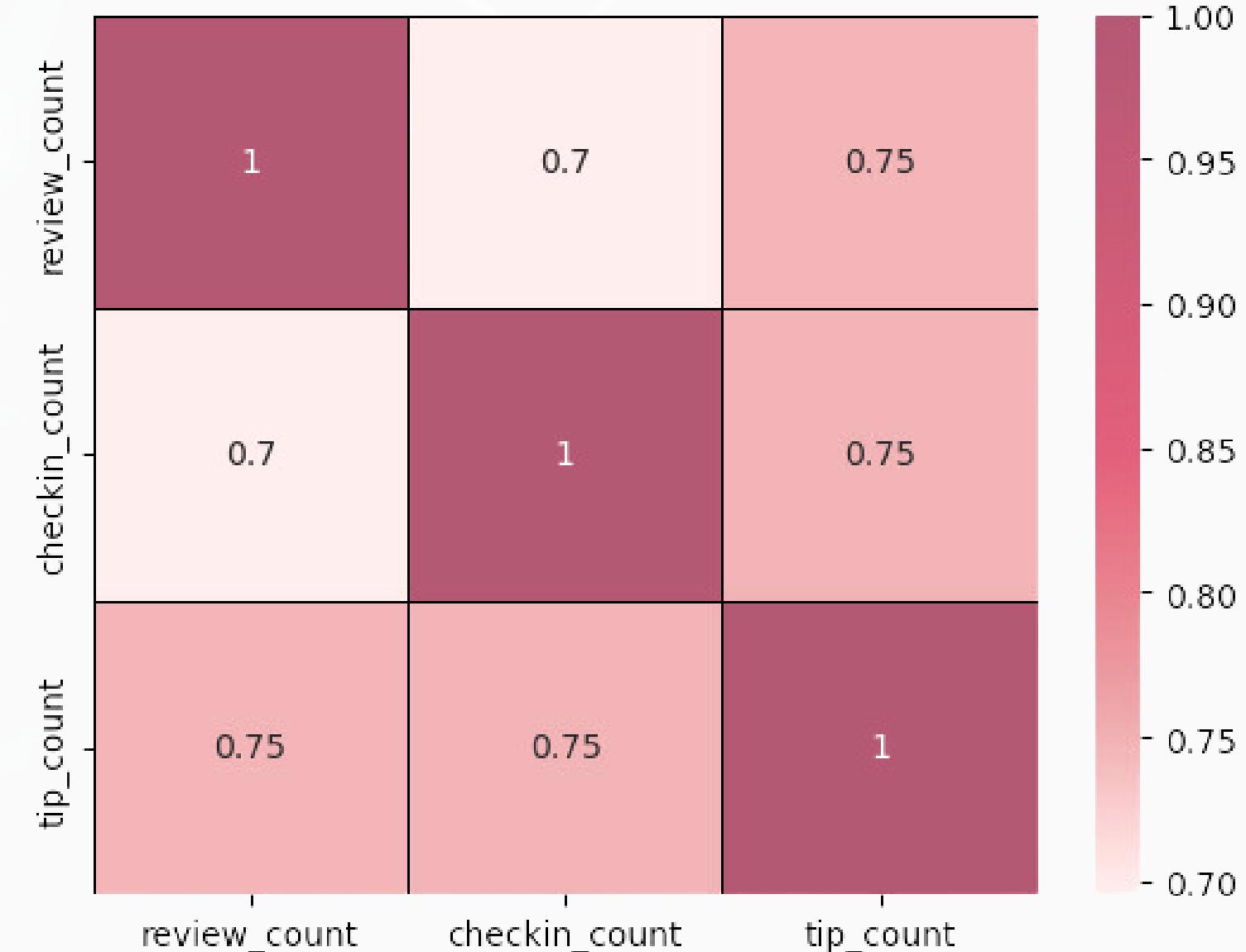
Are restaurants that interact more with their customers likely to earn better ratings?

- Data indicates a general rise in average reviews, check-ins, and tip counts.
- Ratings have significantly improved, jumping from 1 to 4 stars. Restaurants with a 4-star rating show the most engagement; however, engagement decreases for those with ratings above 4 stars.
- This decline at the 5-star level could indicate a saturation point, where fewer customers feel inclined to leave reviews, or it may suggest selectivity, indicating that only a small, highly satisfied group visits these establishments.



How are the number of reviews, tips, and check-ins related for a business?

- These correlations indicate that user engagement varies across different platforms.
User Engagement: The Connection Between Reviews, Tips, and Check-Ins
Reviews, tips, and check-ins are interconnected; when activity rises in one area, it often boosts activity in the others as well.
- Businesses should implement strategies that promote all kinds of user engagement, as growth in one area tends to stimulate growth in others. This comprehensive approach will enhance visibility and improve customer interaction.



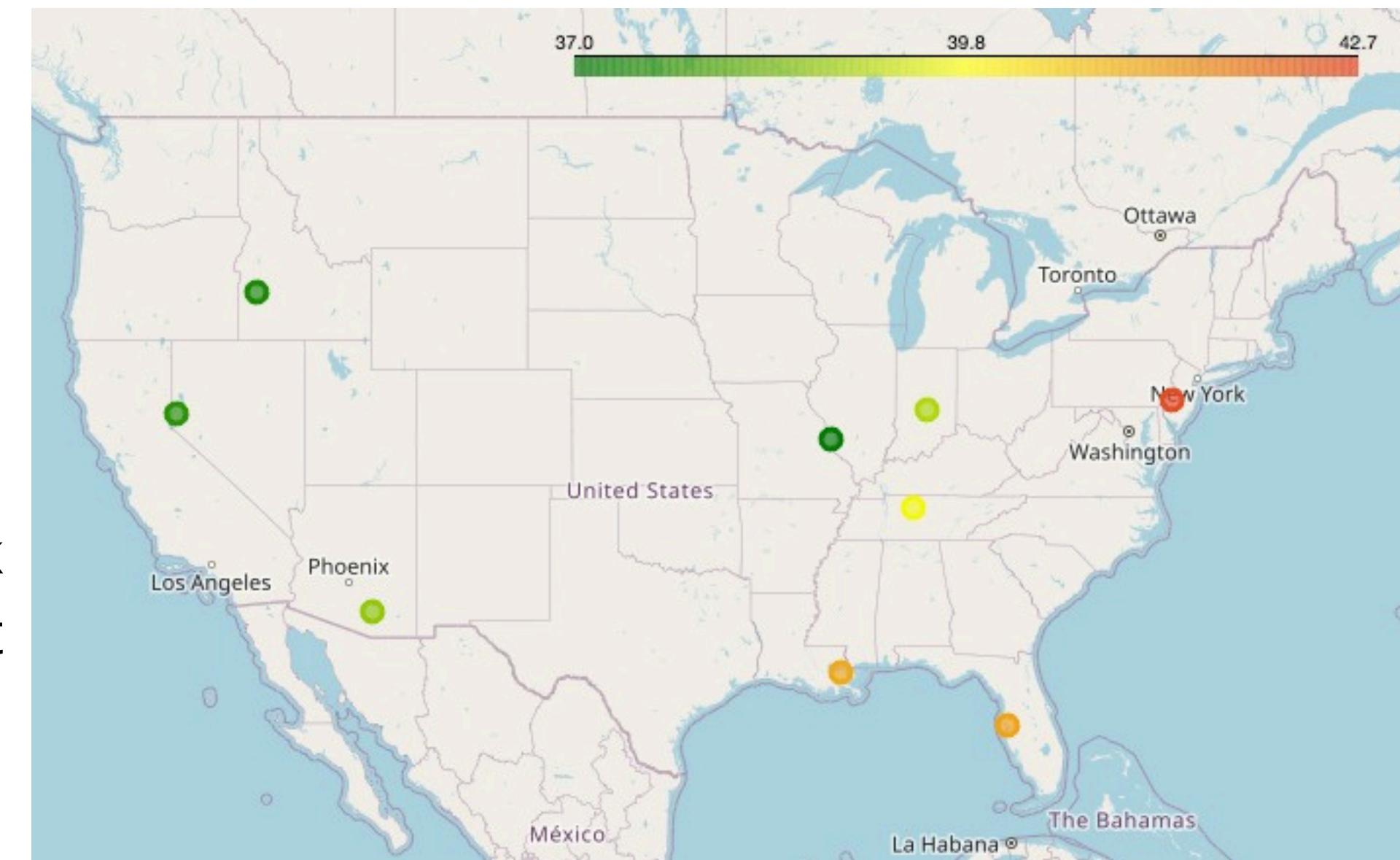
Do user engagement levels vary between businesses that are highly rated and those with lower ratings?

- There is a noticeable connection between elevated ratings and improved user engagement in reviews, tips, and check-ins.
- This trend underscores the importance of maintaining exceptional service and high-quality standards. These practices appear to encourage more reviews, check-ins, and tips, which are crucial metrics for gauging customer engagement and satisfaction.

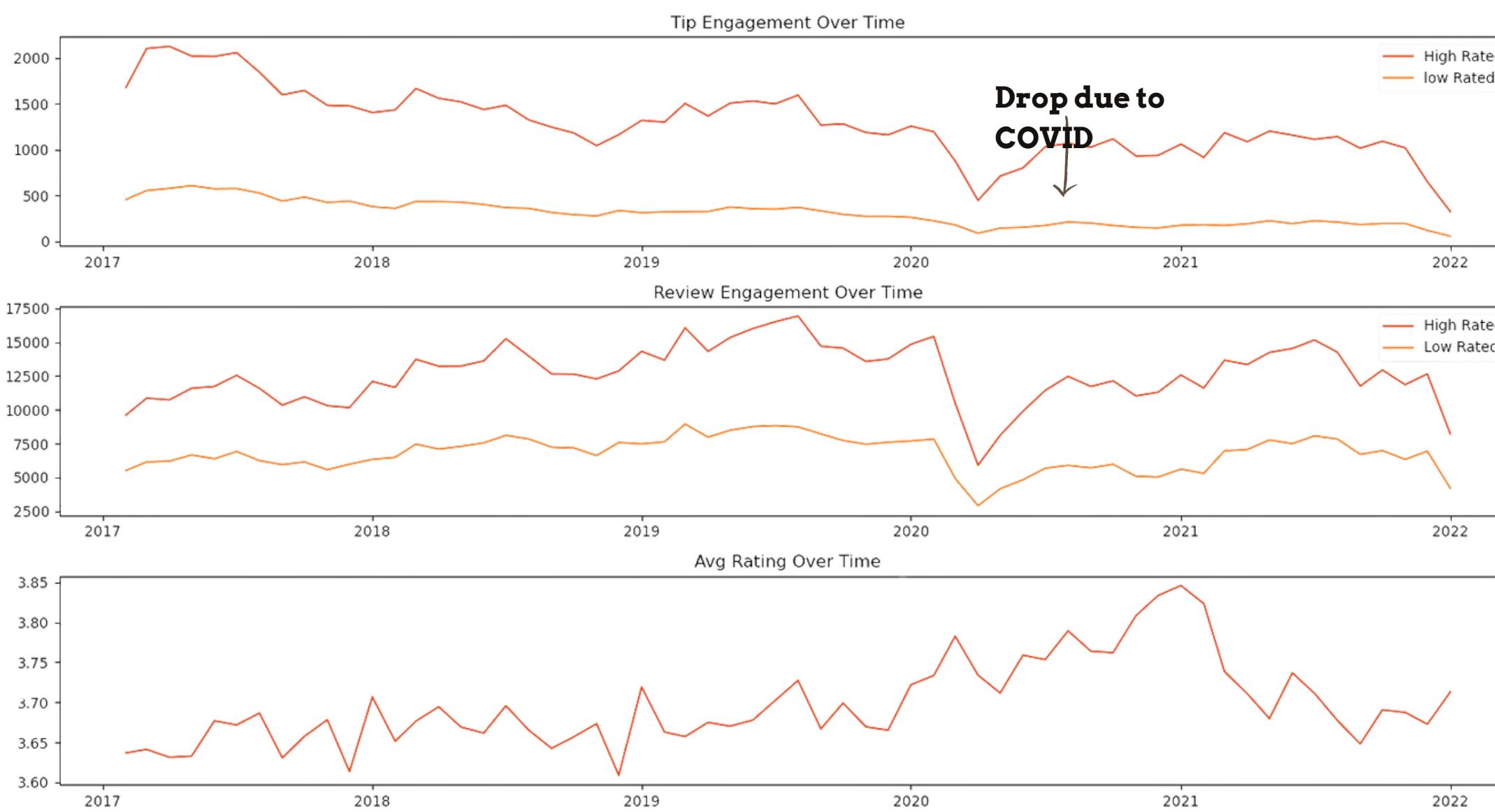
rating_category	review_count	checkin_count	tip_count
High-Rated	63.099378	80.71859	8.069794
Low-Rated	37.152862	64.84321	5.456341

What are the differences in success metrics for restaurants across various states and cities?

- Philadelphia ascends to the forefront as
- the premier city, with the highest success score, indicating a combination of high ratings and active user engagement.
 - Following Philadelphia, Tampa, Indianapolis, and Tucson rank among the top cities with significant success scores, suggesting thriving restaurant scenes in these areas.



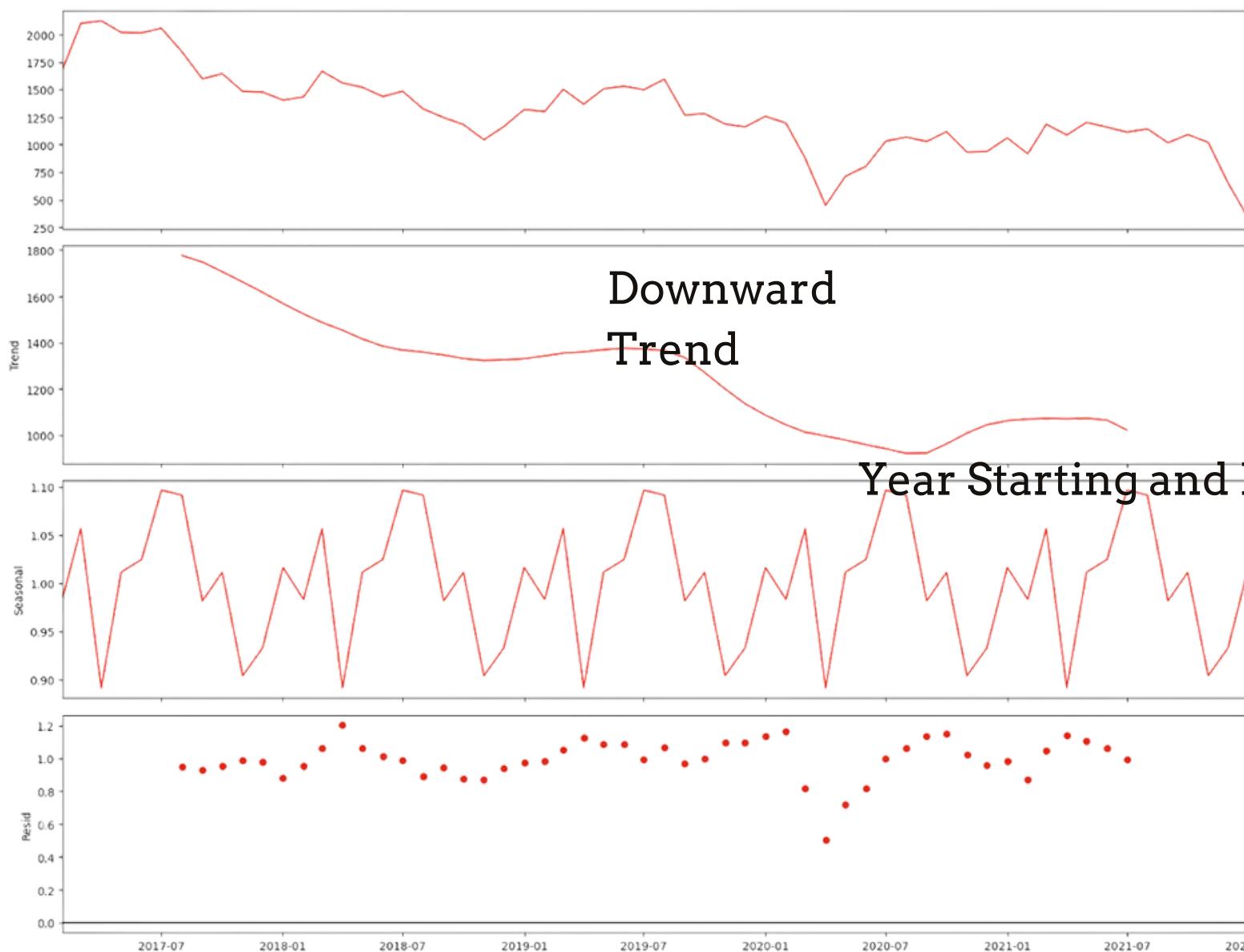
Are there any patterns in user engagement over time for successful businesses compared to less successful ones?



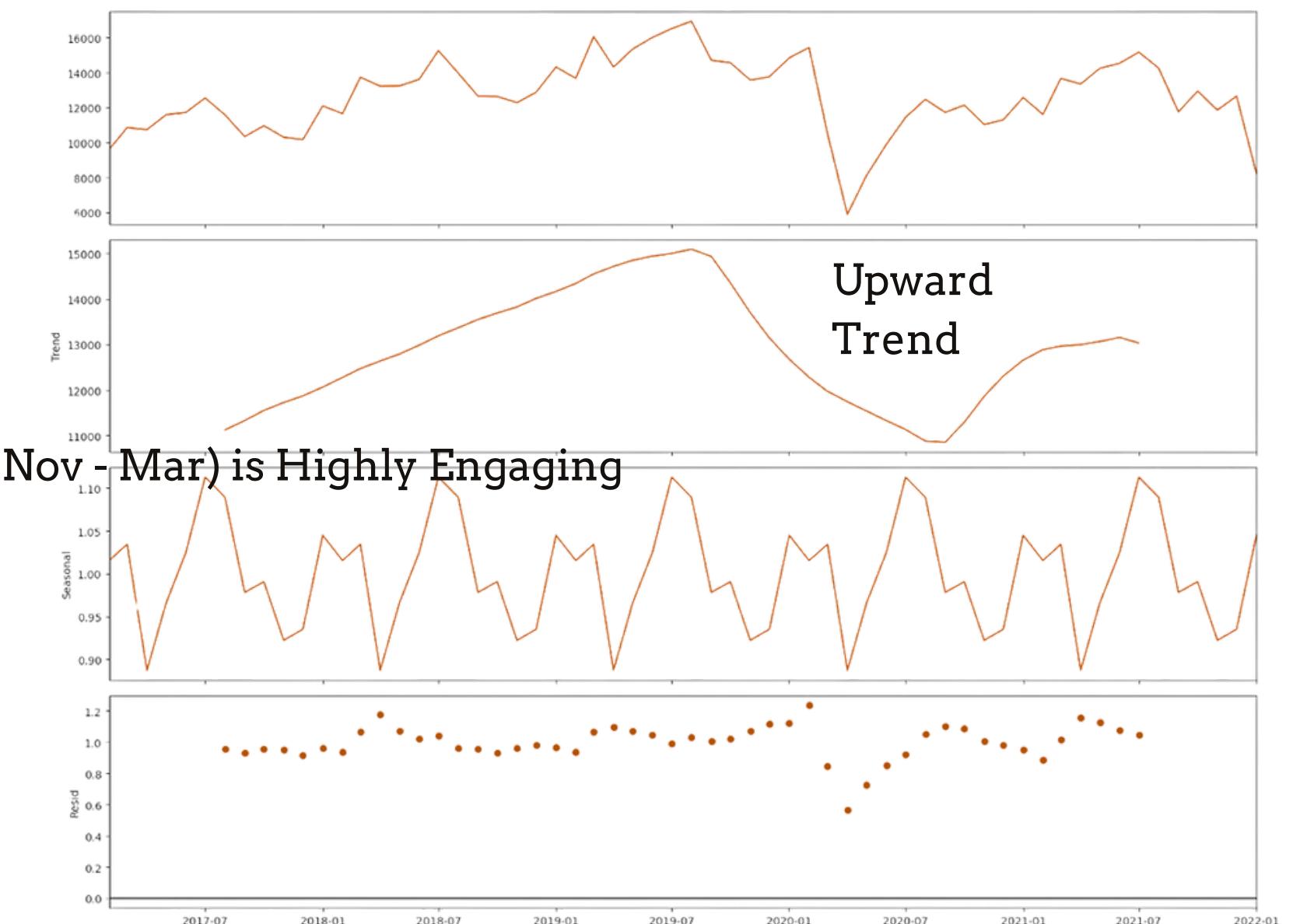
- Businesses that are more successful, especially those with ratings above 3.5, tend to show stable or steadily increasing user interaction over time.
- Restaurants with higher ratings often experience sustained or improving levels of engagement, indicating strong customer interest and satisfaction throughout the years.

Trend and Seasonality Analysis

Tip Count

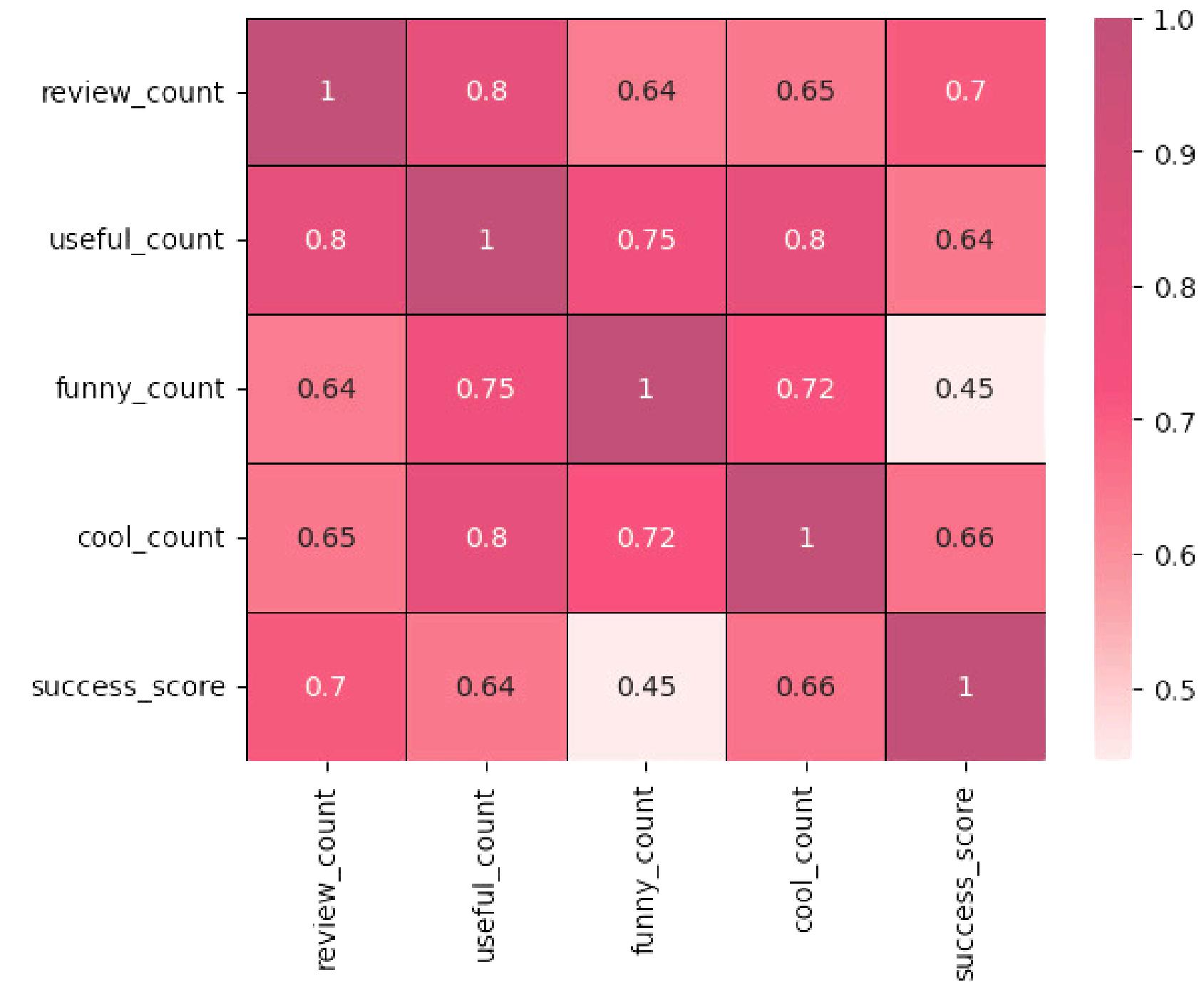


Review Count



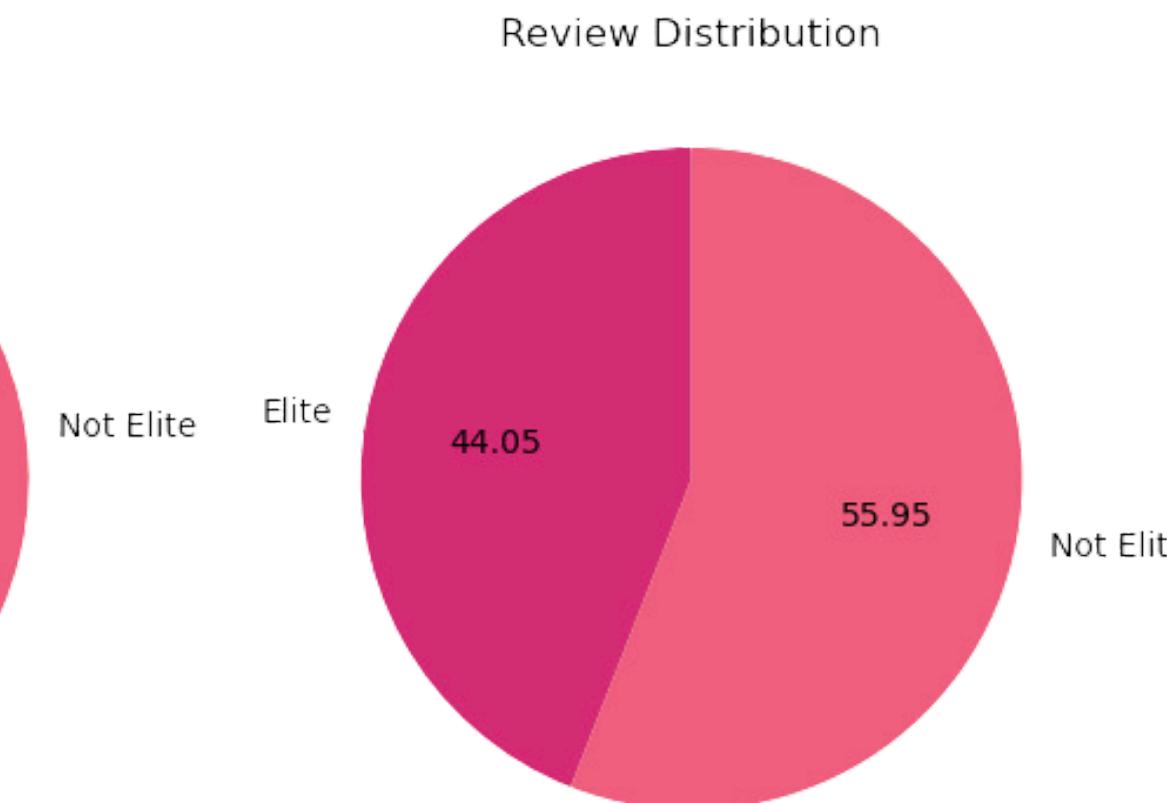
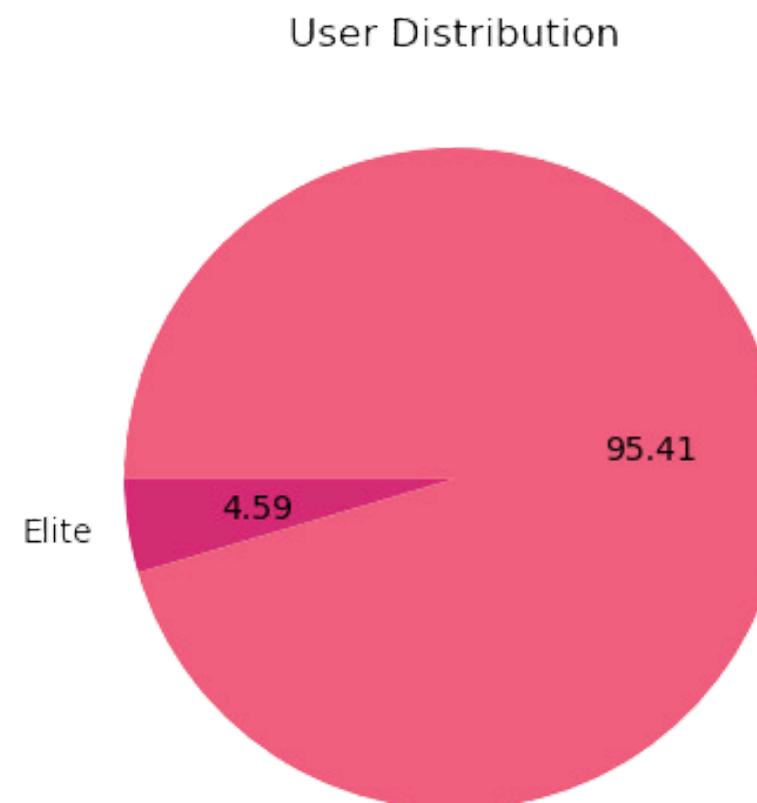
How does the sentiment of reviews and tips (useful, funny, cool) correlate with the success metrics of restaurants?

- User reviews often include labels like “useful,” “funny,” and “cool,” which reflect how users perceive the helpfulness, entertainment value, or appeal of the feedback.
- A larger number of reviews marked as useful, funny, or cool indicates increased customer interaction and satisfaction—important elements that can boost a restaurant’s overall success.

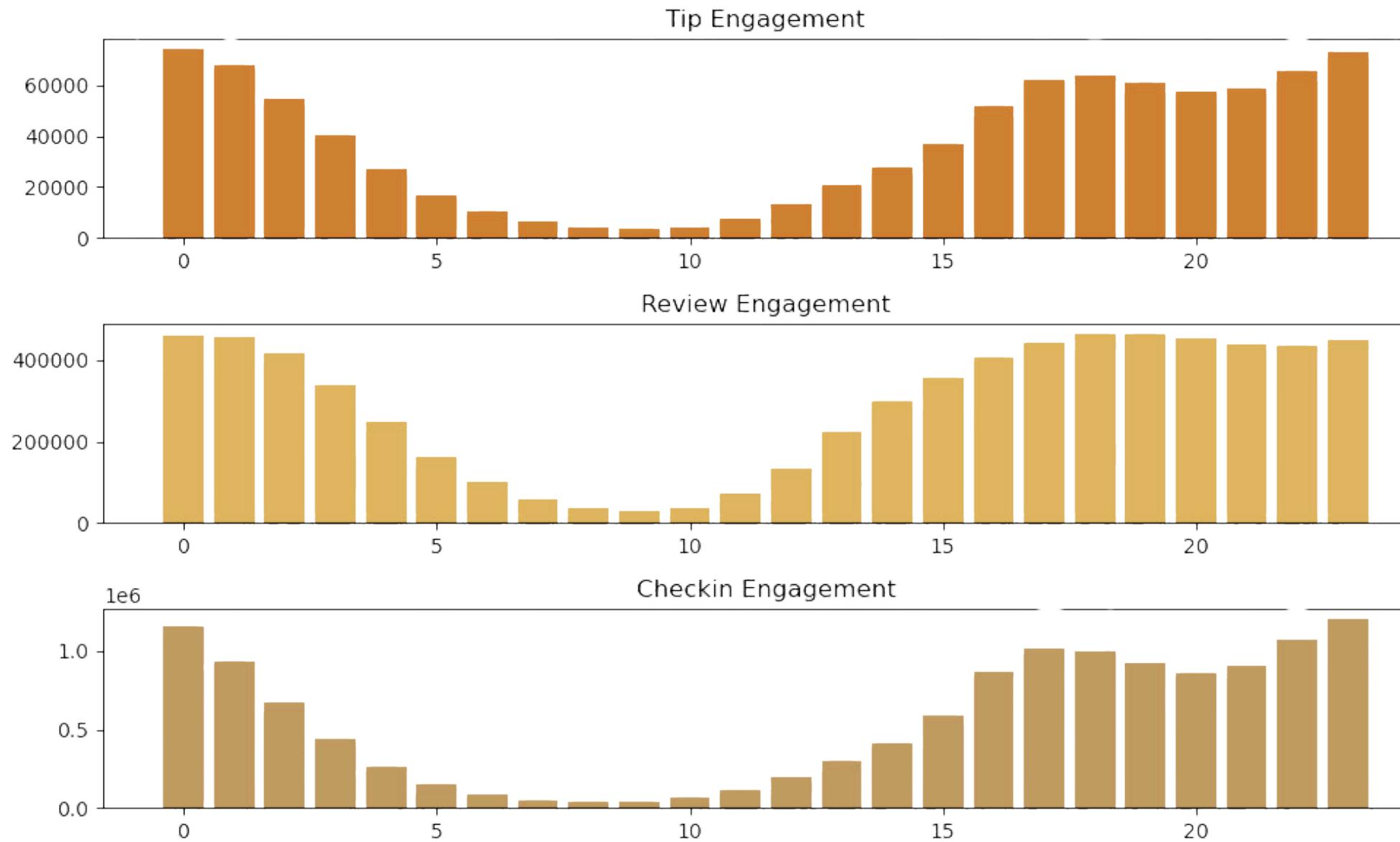


Is there any difference in engagement of elite users and non elite users?

- Yelp designates certain users as “Elite” based on their consistent, high-quality contributions and active participation on the platform.
- Even though elite users make up a small portion of the community, they account for a significant share of the overall reviews, far outweighing the input from non-elite users.
- Building strong relationships with elite users can encourage repeat patronage and customer loyalty, as these users are more inclined to support businesses they trust and enjoy.



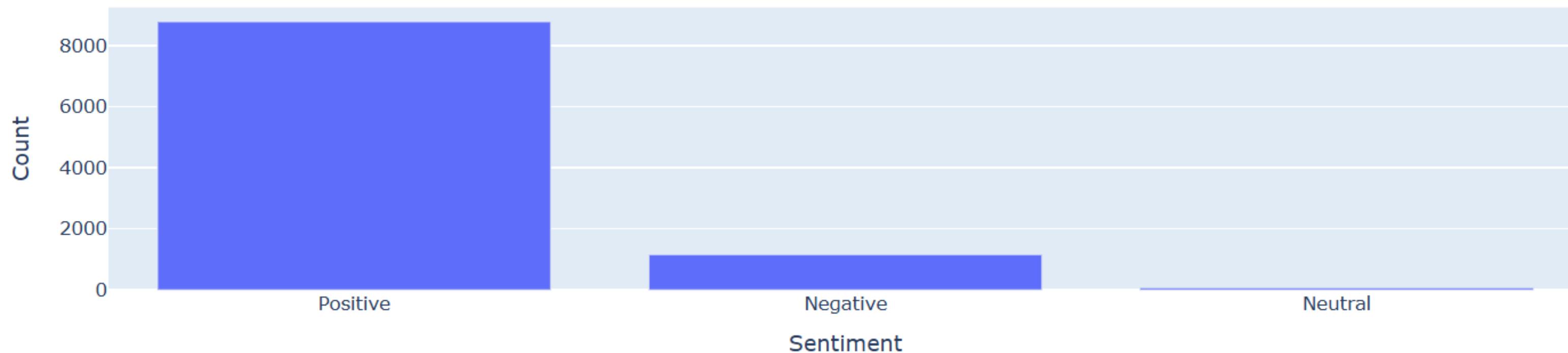
Busiest Hours



- Restaurants experience the highest levels of user engagement between 4 pm and 1 am, marking these as their peak operating hours.
- Identifying these busy periods helps businesses adjust staffing and resource planning to maintain smooth operations and deliver superior service
- The increased activity in the evening and nighttime likely reflects greater dining demand influenced by work hours, social events, and recreational pursuits.

Sentiment Analysis of Customer Reviews

- Analysed customer reviews to understand overall satisfaction and feedback trends.
- Categorised sentiments into Positive, Negative, and Neutral using text analysis techniques.
- Helps businesses identify strengths, weaknesses, and customer preferences to improve service quality.



Recommendations

- By analysing factors like user engagement, review sentiments, peak hours, and the role of elite users, businesses can make strategic decisions to enhance their performance.
- Partnering with elite users and utilising their influence can strengthen marketing campaigns, boost brand visibility, and attract new customers.
- Adjusting business hours or offering targeted promotions during peak times can help restaurants better meet customer demand and improve profitability.
- Restaurants facing challenges should prioritise strategies that build long-term customer engagement, such as enhancing service quality and actively addressing customer feedback.
- Cities with strong performance metrics offer promising opportunities for restaurant chains to expand or invest further in growth initiatives.
- Analyzing review sentiments helps businesses understand customer satisfaction and quickly address areas that need improvement.
- Monitoring positive and negative sentiments allows restaurants to enhance their service quality and build stronger customer relationships.