

User Engagement Analysis For

RESTAURANT SUCCESS



About YELP

Yelp is a web and mobile platform that functions as a crowd – sourced local business review site. Users can submit reviews, photos and tips about businesses, while also browsing information and ratings left by others

AGENDA

- **Problem Statement**
- **Research Objectives**
- **Hypothesis**
- **Data Overview**
- **Analysis and Findings**
- **Recommendations**

Problem Statement

In a competitive market like the restaurant industry, understanding the factors that influence business success is crucial for stakeholders. Utilizing the Yelp dataset, this project aims to investigate the relationship between user engagement (reviews, tips, and check-ins) and business success metrics (review count, ratings) for restaurants.

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**

Hypothesis

- **Higher levels of user engagement (more reviews, tips, and check-ins) correlate with higher review counts and ratings for restaurants.**
- **Positive sentiment expressed in reviews and tips contributes to higher overall ratings and review counts for restaurants**
- **Consistent engagement over time is positively associated with sustained business success for restaurants.**

Data Overview

- **This dataset is as subset of Yelp and has information about businesses across 8 metropolitan areas in the USA and Canada.**
- **The original data is shared by Yelp as JSON files.**
- **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

- Out of 150k business, 35K are restaurants business and are open.
- Table showing distribution of business success metrics (review count and average rating).

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
0	ã café	48	5.0
1	two birds cafe	77	5.0
2	the brewers cabinet production	13	5.0
3	taqueria la cañada	17	5.0
4	la bamba	44	5.0
5	la 5th av tacos	24	5.0
6	el sabor mexican and chinese food	21	5.0
7	eat.drink.Om...YOGA CAFE	7	5.0
8	d4 Tabletop Gaming Cafe	8	5.0
9	cabbage vegetarian cafe	12	5.0

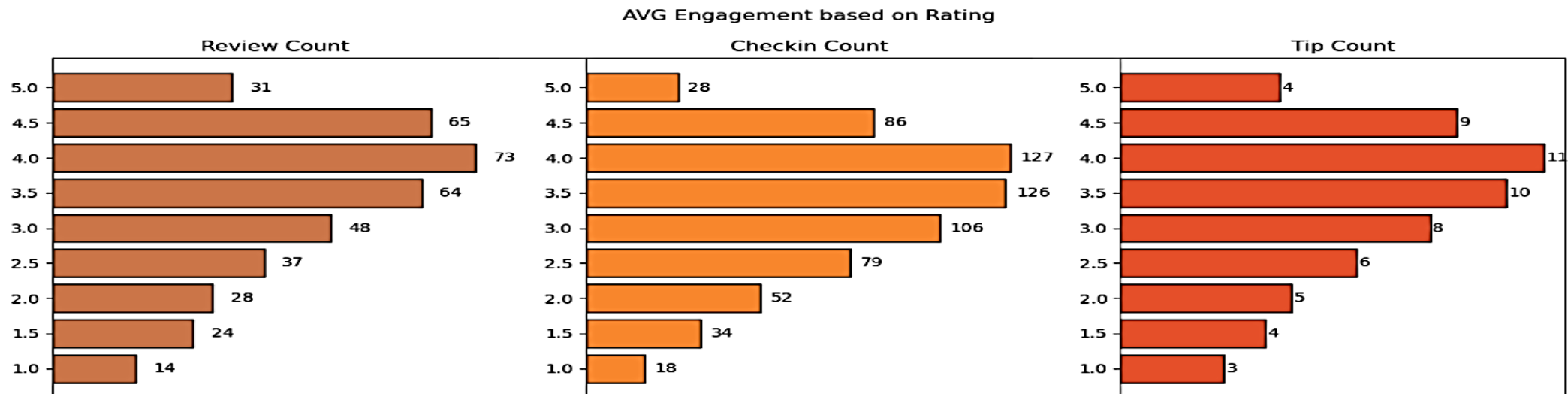
Highest Review Count

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

- Higher rating do not guarantee a higher review count or vice versa.
- Success of Restaurants is not solely determined by ratings or review counts.
- Review count reflects user engagement but not necessarily overall customer satisfaction or business performance.

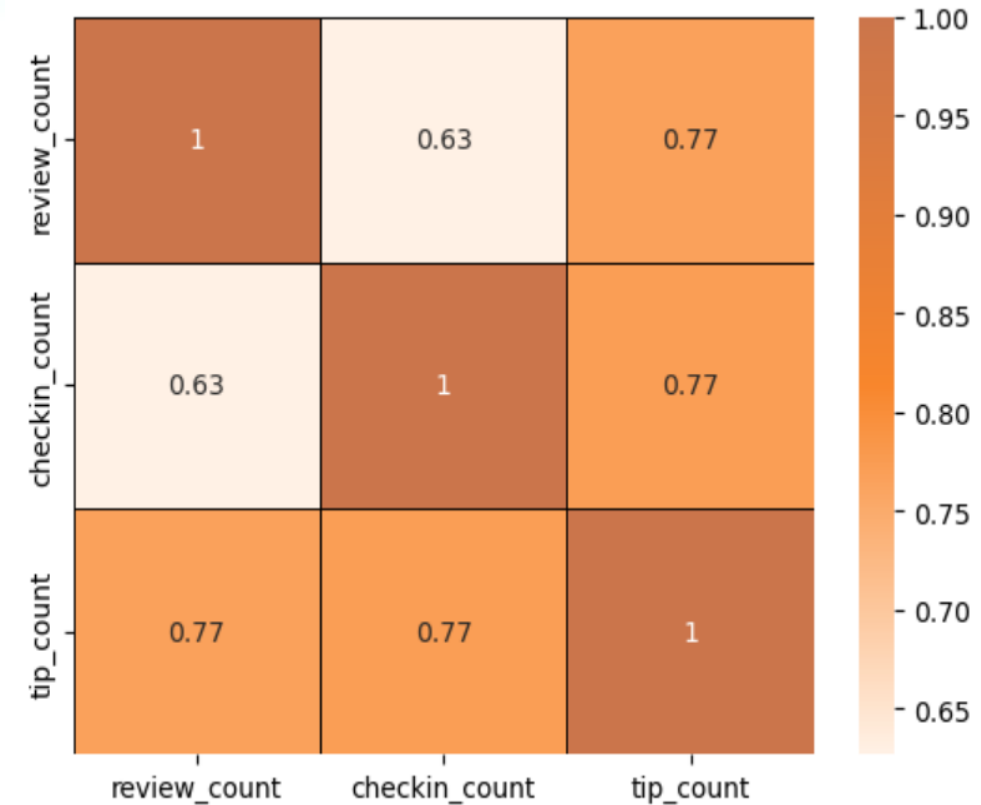
Do restaurants with higher engagement tend to have higher ratings ?

- Data shows a general increase in average review, check-in, and tip counts as ratings improve from 1 to 4 stars.
- Restaurants rated 4 stars exhibit the highest engagement and shows a downward trend for rating above 4.
- The drop in engagement at 5.0 stars might suggest either a saturation point where fewer customers feel compelled to add their reviews, or a selectivity where only a small, satisfied audience frequents these establishments.



Is there a correlation between the number of reviews, tips, and check-ins for a business?

- These correlations suggest that user engagement across different platforms (reviews, tips, and check-ins) is interlinked; higher activity in one area tends to be associated with higher activity in others
- Businesses should focus on strategies that boost all types of user engagement, as increases in one type of engagement are likely to drive increases in others, enhancing overall visibility and interaction with customers



Is there a difference in the user engagement between high rated and low rated businesses ?

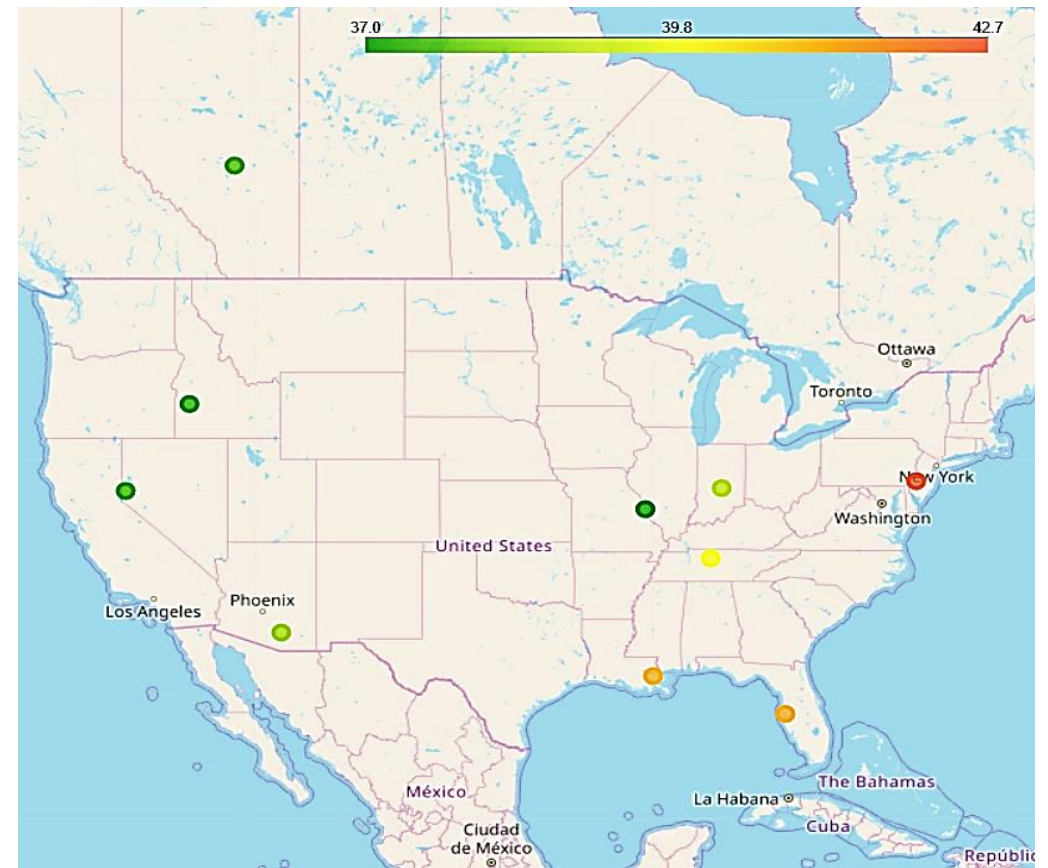
- Data indicates a clear correlation between higher ratings and increased user engagement across reviews, tips and checkins.
- This pattern underscores the importance of maintaining high service and quality standards, as these appear to drive more reviews, checkins and tips which are critical metrics of customer engagement and satisfaction.

		review_count	tip_count	checkin_count
	Category			
Rating >= 3.5	High-Rated	72.291062	10.162766	122.066641
Rating < 3.5	Low-Rated	42.123420	6.541689	88.880828

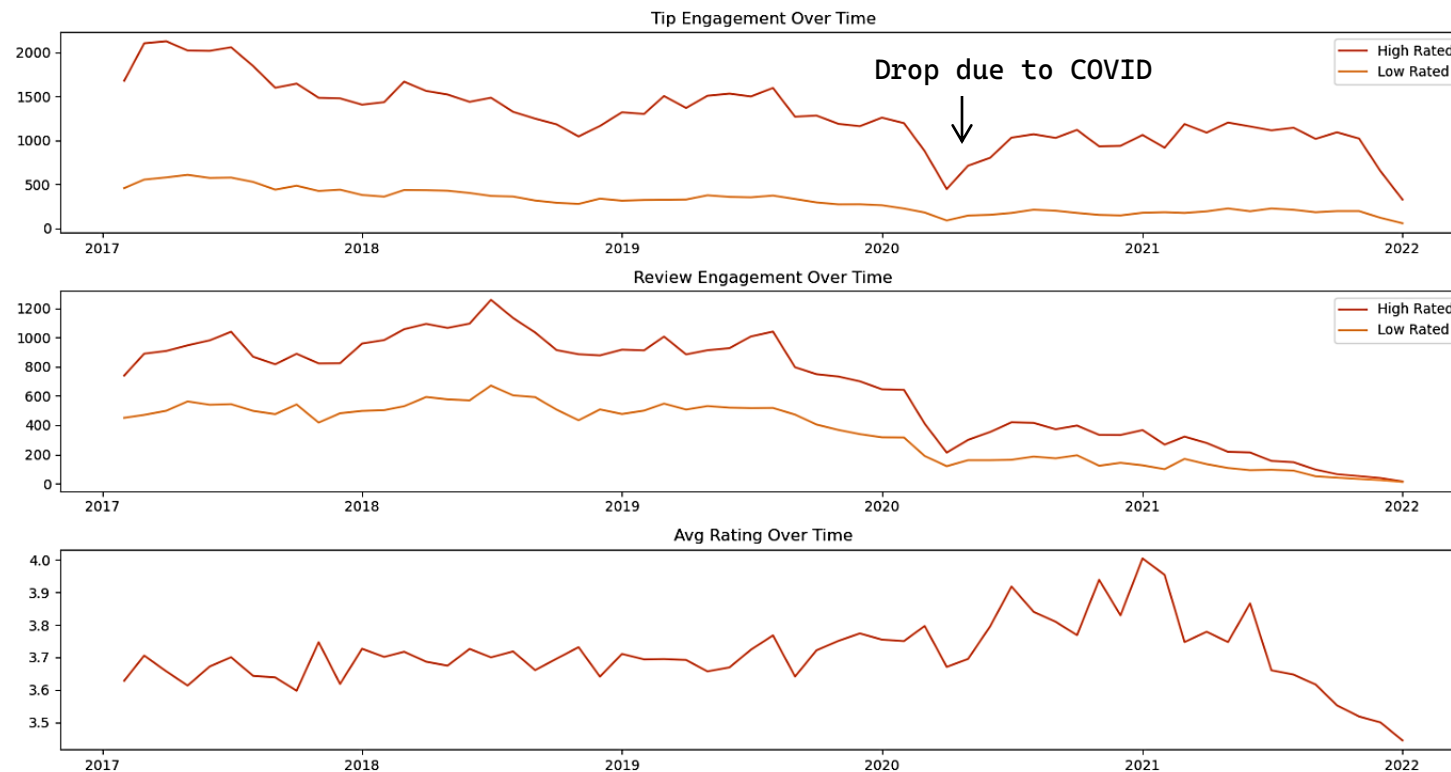
How do the success metrics of restaurants vary across different states and cities?

- Philadelphia emerges as the top 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.

	city	state	latitude	longitude	avg_rating	review_count	resturant_count	success_score
0	Philadelphia	PA	39.955505	-75.155564	3.532156	175487	3001	42.651934
1	Tampa	FL	27.890814	-82.502346	3.571429	104376	1715	41.270588
2	Indianapolis	IN	39.637133	-86.127217	3.412111	92639	1701	39.022521
3	Tucson	AZ	32.338572	-111.010760	3.386187	91613	1419	38.688341



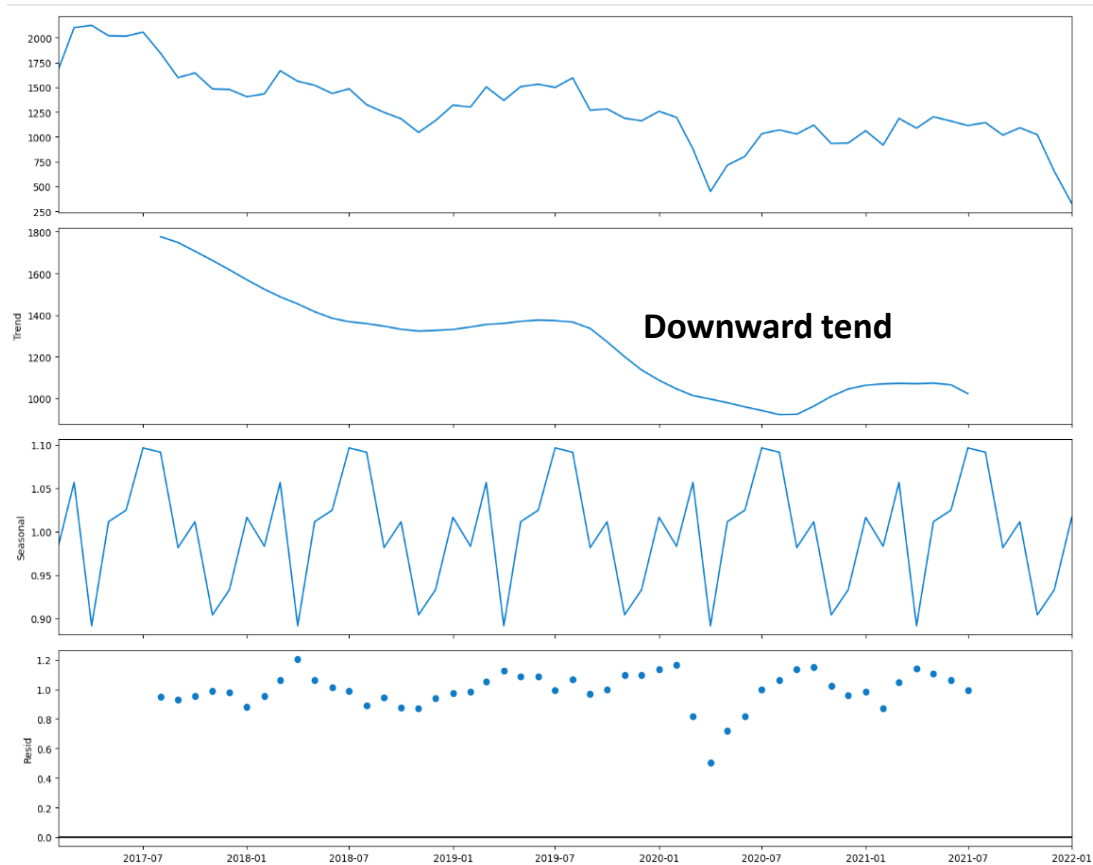
Are there any patterns in user engagement over time for successful businesses compared to less successful ones?



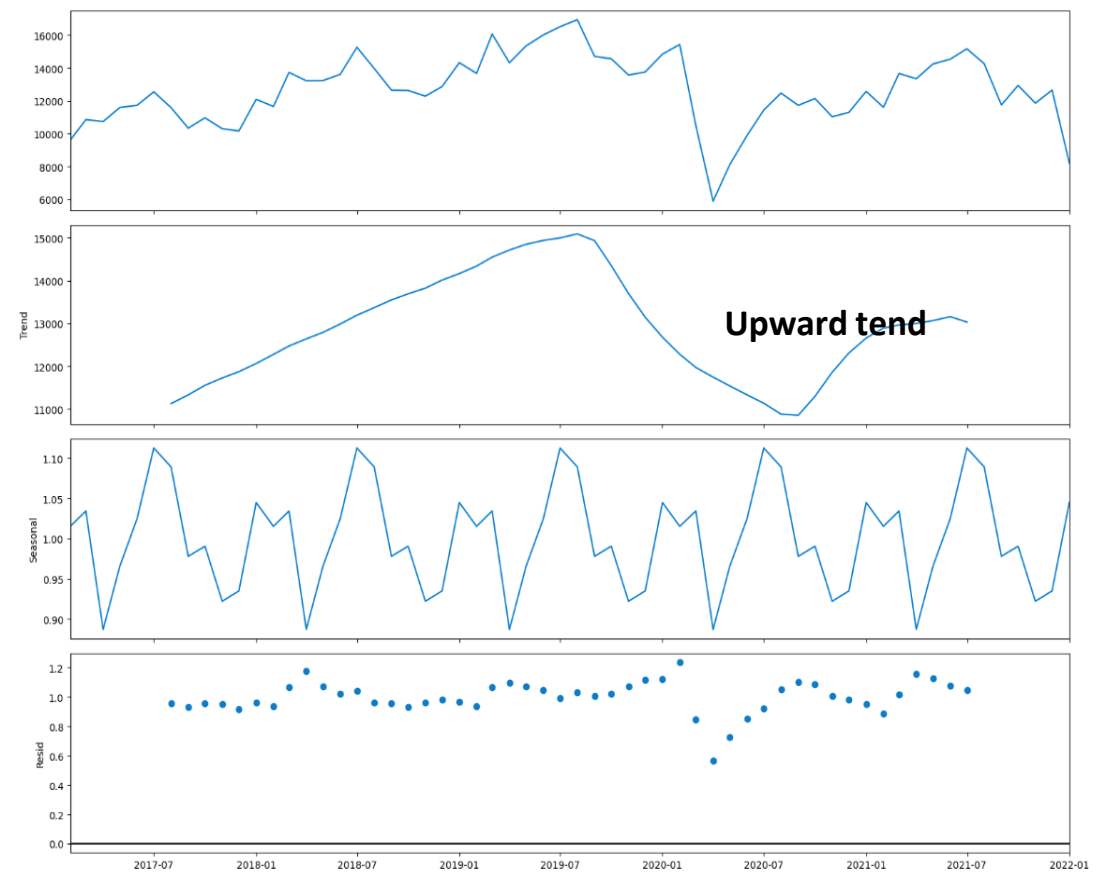
- **Successful businesses, particularly those with higher ratings (above 3.5), exhibit consistent and possibly increasing user engagement over time.**
- **High rated restaurants maintain a steady or growing level of user engagement over time, reflecting ongoing customer interest and satisfaction.**

Trend and Seasonality Analysis

Tip Count

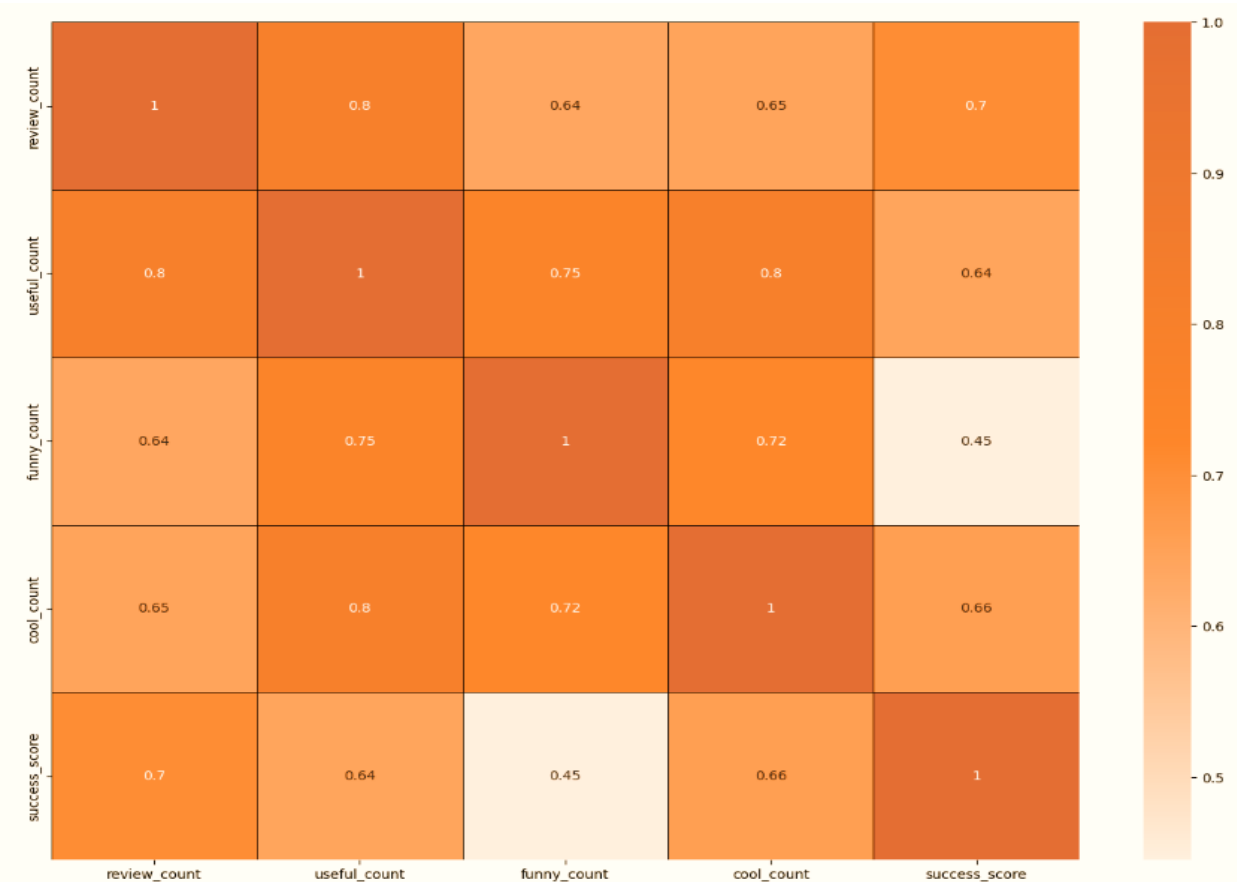


Review Count



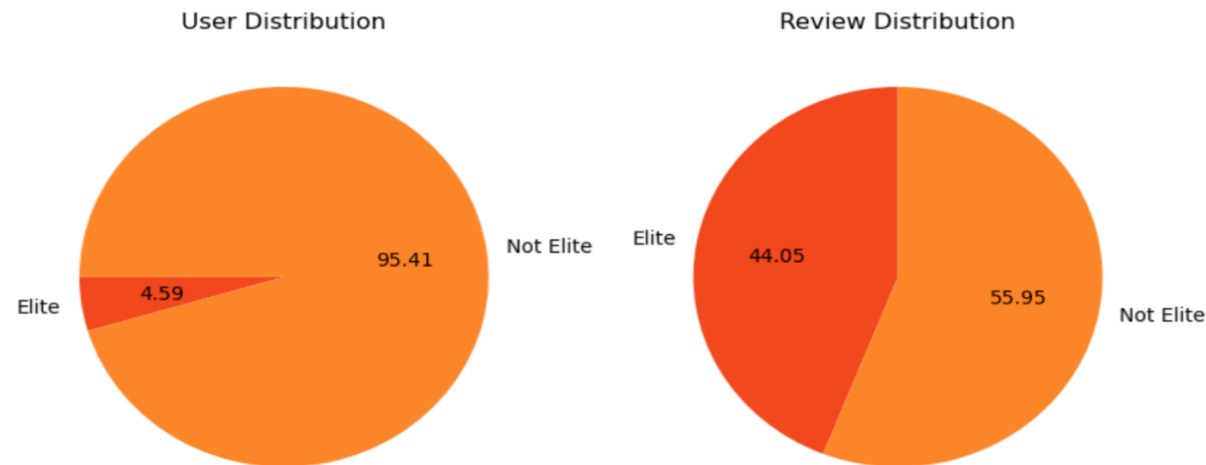
How does the sentiment of reviews and tips (useful, funny, cool) correlate with the success metrics of restaurants?

- "useful", "funny", and "cool" are attributes associated with user reviews. They represent the feedback provided by users about the usefulness, humor or coolness of a particular review.
- Higher counts of useful, funny, and cool reviews suggest greater user engagement and satisfaction, which are key factors contributing to restaurant's success.

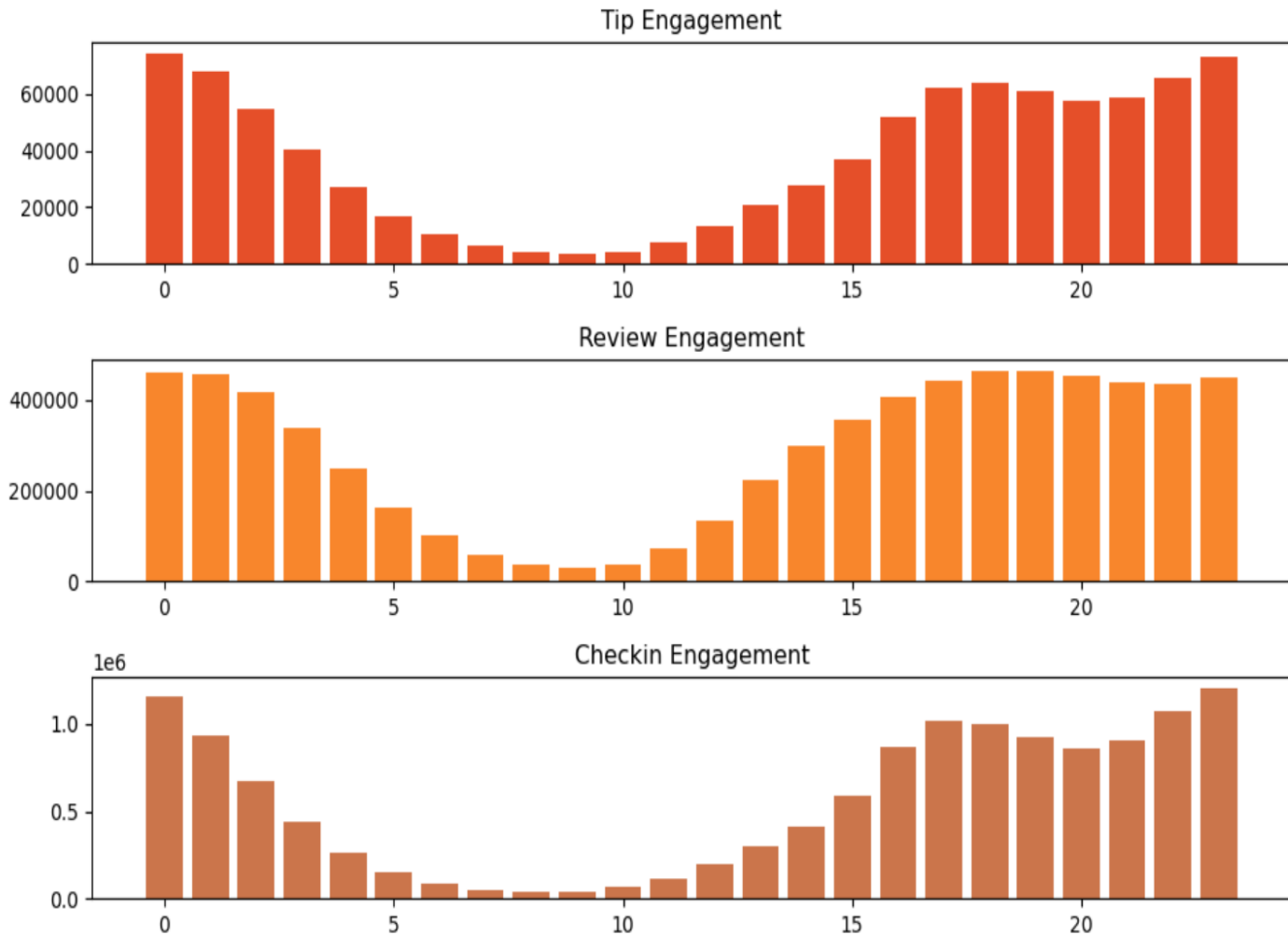


Is there any difference in engagement of elite users and non elite users ?

- Elite users are individuals who have been recognized and awarded the “Elite” status by yelp for their active and high quality contributions.
- Elite users, despite being significantly fewer in number, contribute a substantial proportion of the total review count compared to non-elite users.
- Establishing a positive relationship with elite users can lead to repeat visits and loyalty, as they are more likely to continue supporting businesses they have had good experience with.



Busiest Hours



- The busiest hours for restaurants, based on user engagement, span from 4pm to 1am.
- Knowing peak hours allows businesses to optimize their staffing levels and resource allocation during these times to ensure efficient operations and quality service delivery
- The concentration of user engagement during the evening and night hours suggests a highest demand of dining out during these times, potentially driven by factors such as work schedules, social gathering and leisure activities

Recommendations

- Utilizing insights from the analysis of various metrics such as user engagement, sentiment of reviews, peak hours, and-the impact of elite users, businesses can make informed decisions to drive success.
- Collaborating with elite users and leveraging their influence can amplify promotional efforts, increase brand awareness, and drive customer acquisition.
- Businesses can adjust their operating hours or introduce special promotions to capitalize on the increased demand during peak hours.
- Less successful businesses may need to focus on strategies to enhance user engagement over time such as improving service quality, responding to customer feedback.
- Cities with high success scores presents opportunities for restaurant chains to expand or invest further.



Thank You
