

# User Engagement Analysis For

## RESTAURANT SUCCESS

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.





# Problem Statement

## RELATIONSHIP MANAGEMENT

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

- ✓ **Engagement Drives Success**  
Higher levels of user engagement (more reviews, tips, and check-ins) correlate with higher review counts and ratings for restaurants.
  - ✓ **Sentiment Matters:**  
Positive sentiment expressed in reviews and tips contributes to higher overall ratings and review counts for restaurants.
  - ✓ **Consistency is Key:**  
Consistent engagement over time is positively associated with sustained business success for restaurants.
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# Data Overview



## Yelp Data overview

- This dataset is a 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.

## Data structure Breakdown

- The five JSON files are business, review, user, tip and check-in.
- The JSON files are stored in the database for easy retrieval of data.





# Analysis and Findings



## No. of open business

Out of 150k businesses, 35k are restaurants business and are open.

## Data Metrics

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
ā 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

Higher ratings do not guarantee a higher review count, or vice versa.  
Success of Restaurants is not solely determined by ratings or review counts

## 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

Review count reflects user engagement but not necessarily overall customer satisfaction or business performance.

# Do restaurants with higher engagement tend to have higher ratings?

## Rising Engagement with Ratings (1-4 Stars)

Draw shows a general increase in average review, check-in, and tip count as rating improve from 1 to 4 stars.

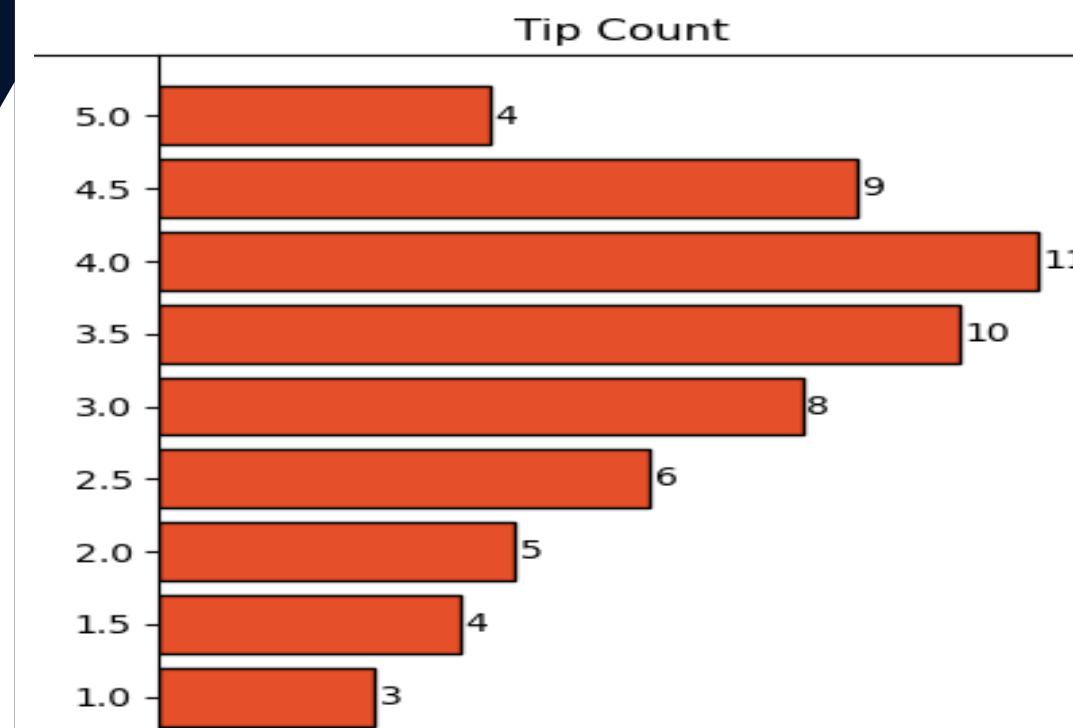
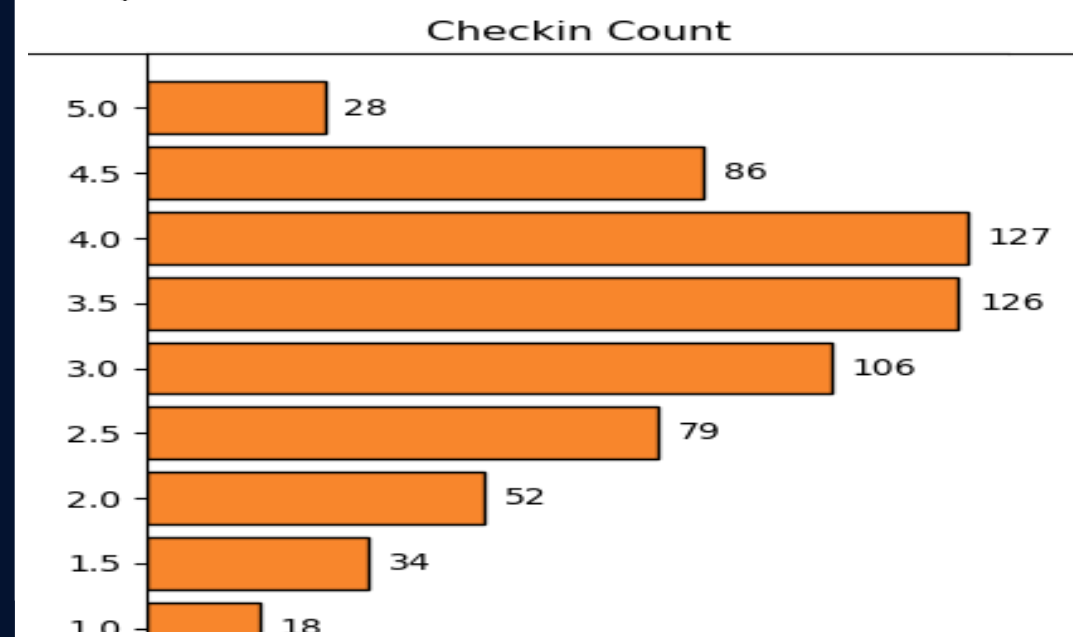
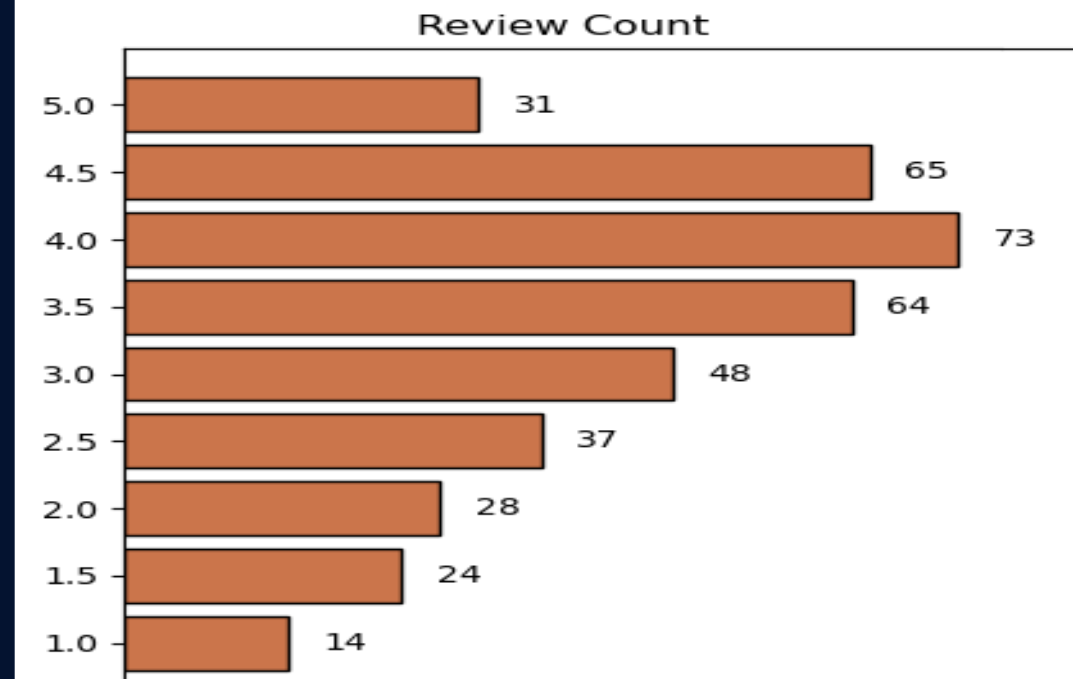
## Peak Engagement at 4-Star Restaurants

Restaurants rated 4 stars exhibit the highest engagement and shows a downward trend for rating above 4.

## Diminished Engagement at 5-Star Ratings

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.

Avg Engagement based on rating





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



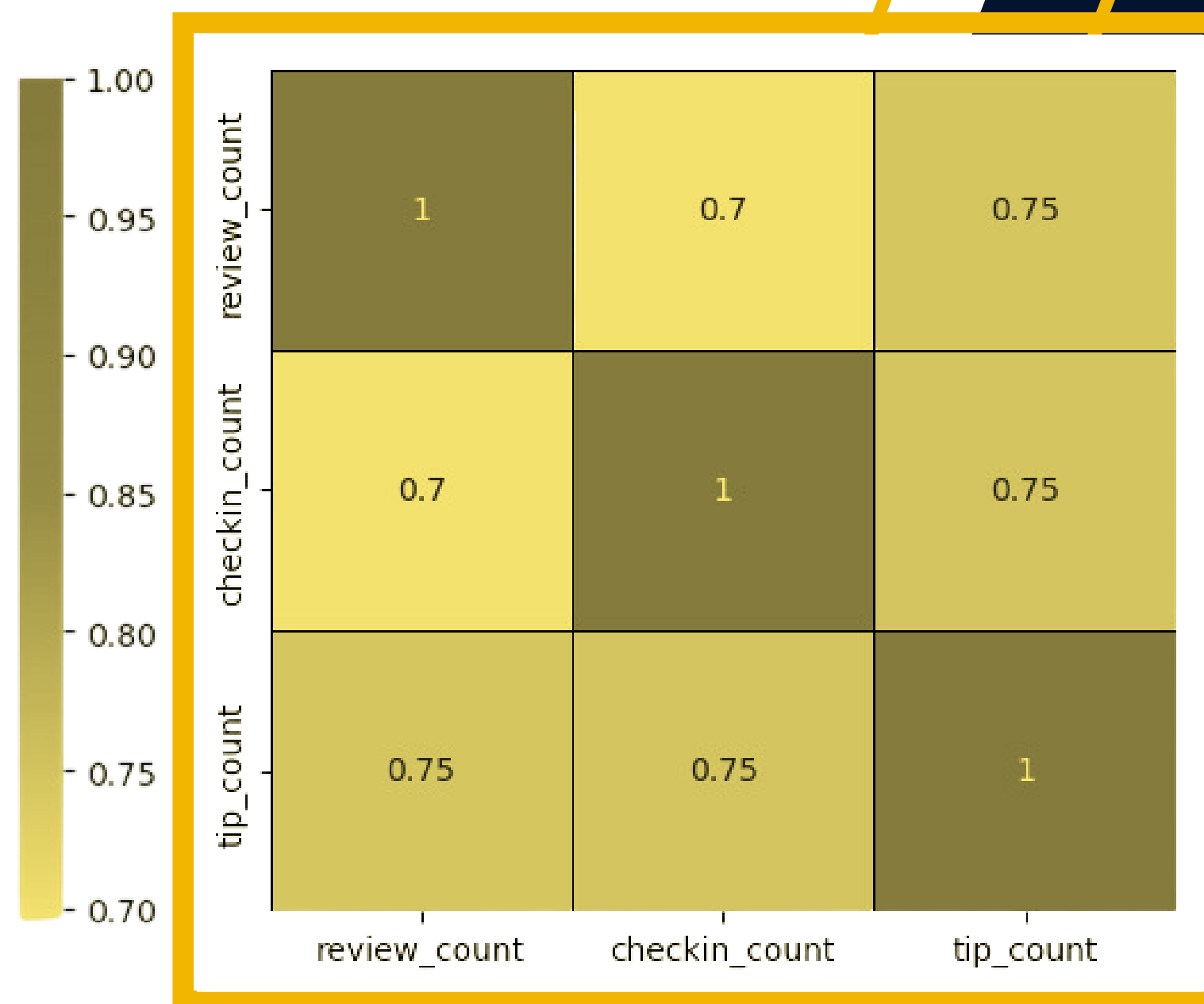
## Correlation of Engagement Metrics

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



## Holistic Approach to Boost Engagement

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?



## Higher Ratings Drive Greater Engagement

Data indicates a clear correlation between higher ratings and increased user engagement across reviews, tips, and check-ins.



## Importance of Quality for User Engagement

This pattern underscores the importance of maintaining high service and quality standards, as these appear to drive more reviews, check-ins, and tips, which are critical metrics of 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







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



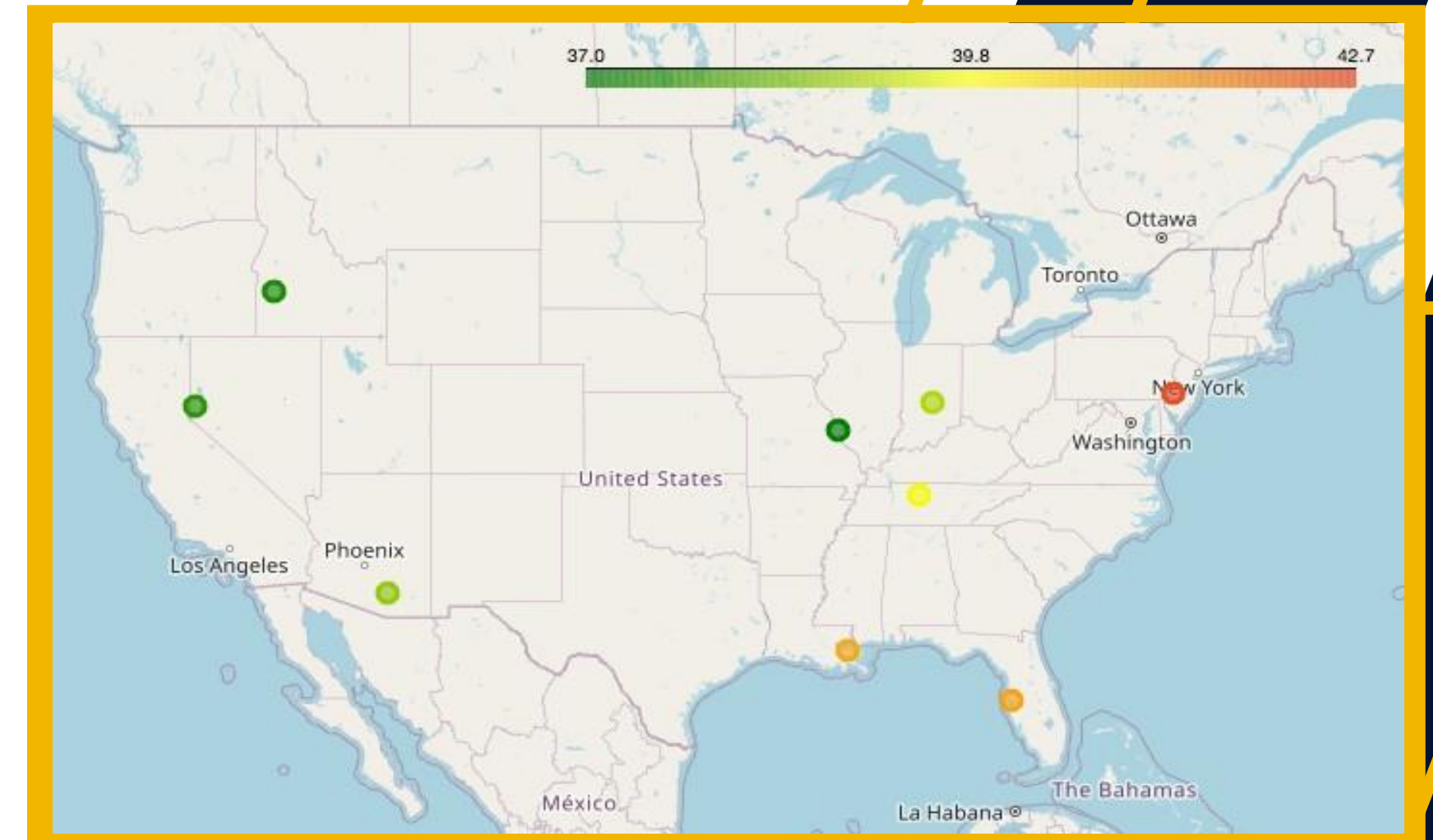
## Philadelphia's Dominance in Success Metrics

Philadelphia emerges as the top city with the highest success score, indicating a combination of high ratings and active user engagement.



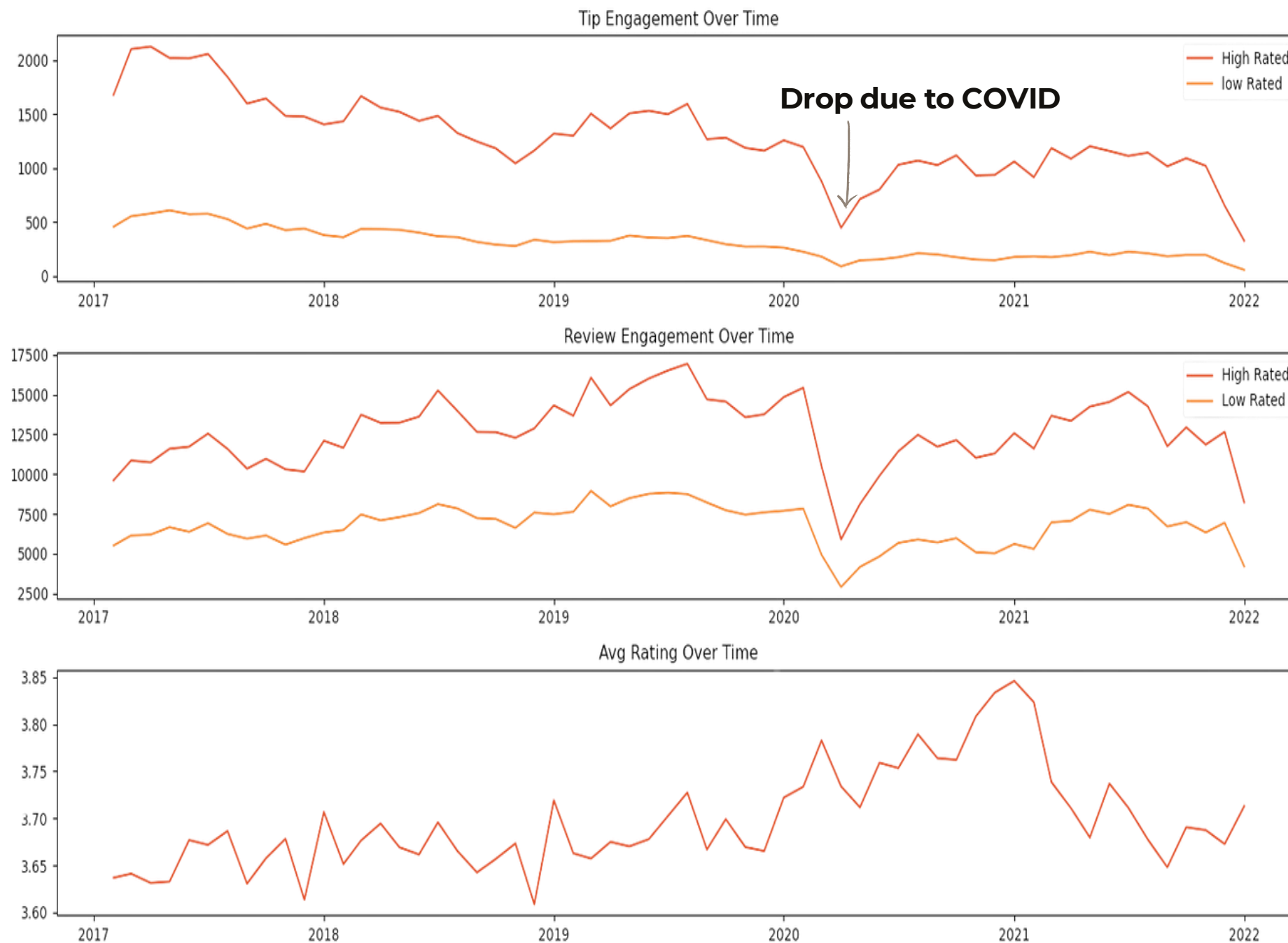
## Thriving Restaurant Scenes in Tampa, Indianapolis, Tucson

Following Philadelphia, Tampa, Indianapolis, and Tucson rank among the top cities with significant success scores, suggesting thriving restaurant scenes in these areas.





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



## Steady Engagement for Highly Rated Businesses

Successful businesses, particularly those with higher ratings (above 3.5), exhibit consistent and possibly increasing user engagement over time.



## Growing User Interest in High-Rated Restaurants

High rated restaurants maintain a steady or growing level of user engagement over time, reflecting ongoing customer interest and satisfaction.

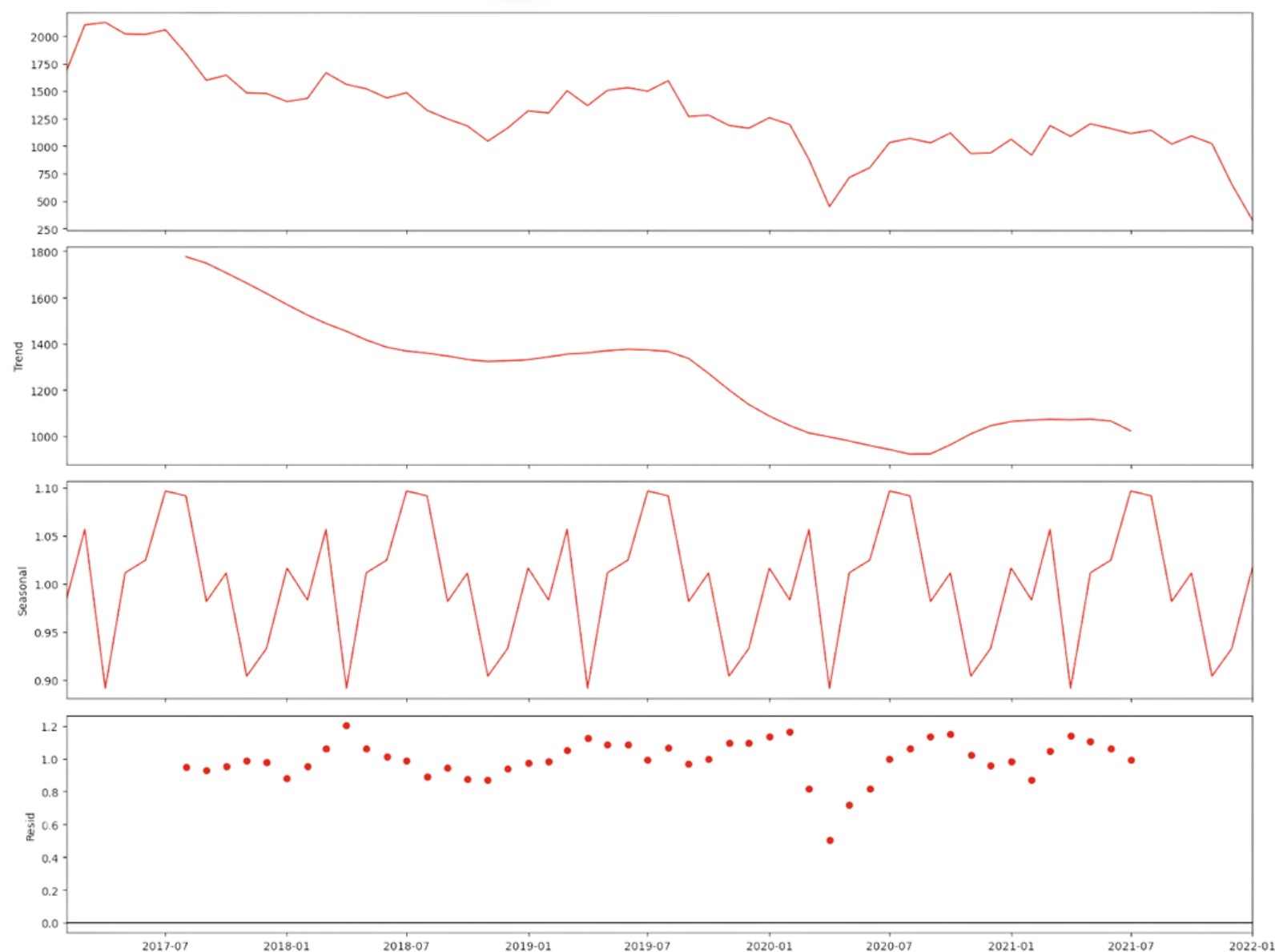




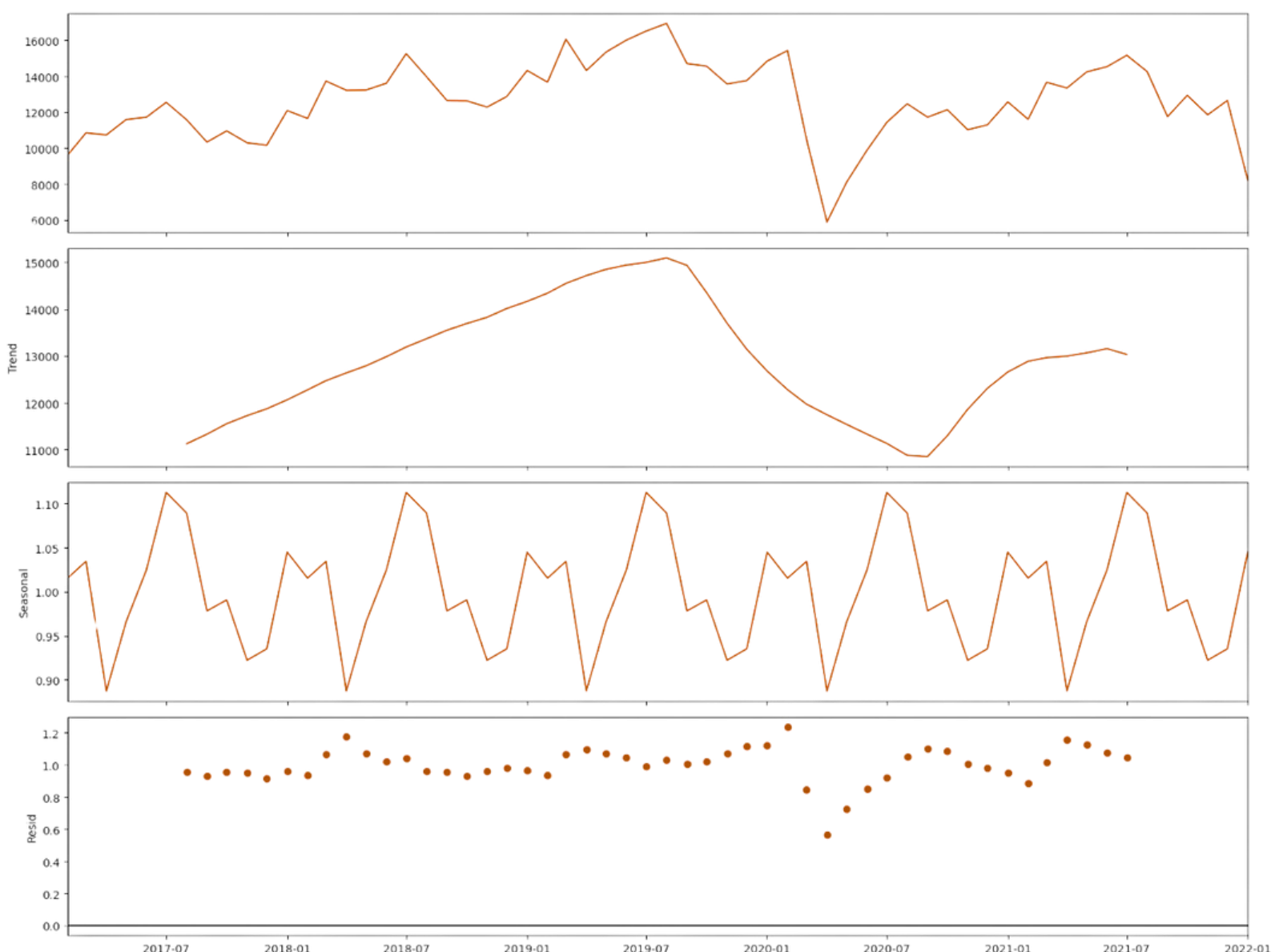
# Trend and Seasonality Analysis



## Tip Count



## Review Count





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



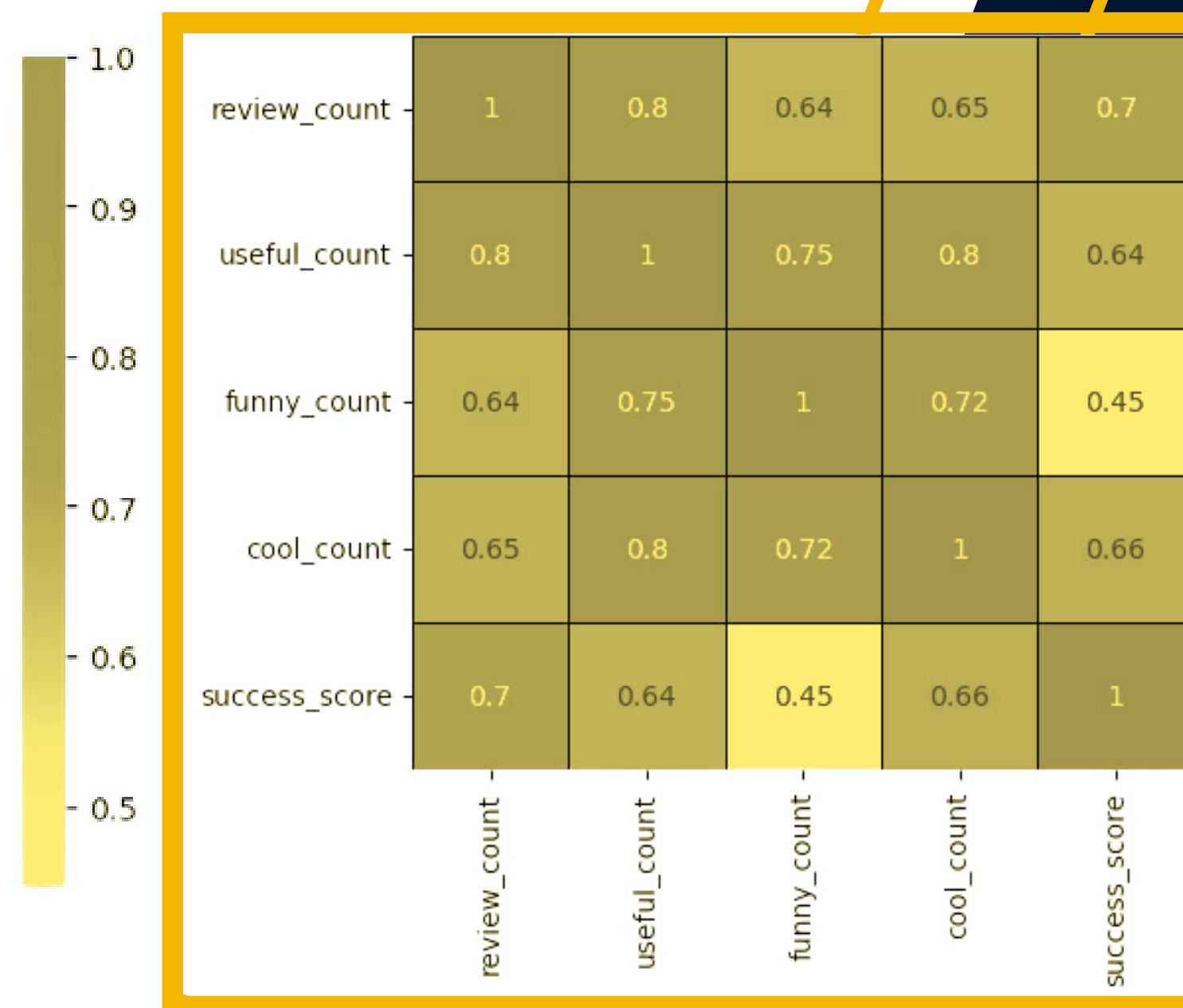
## Attributes of User Reviews: Useful, Funny, Cool

"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.



## Positive Attributes Drive Higher User Engagement

Higher counts of useful, funny, and cool reviews suggest greater user engagement and satisfaction, which are key factors contributing to a restaurant's success.





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

## Elite Status Recognition on Yelp

Elite users are individuals who have been recognized and awarded the "Elite" status by Yelp for their active and high-quality contributions.

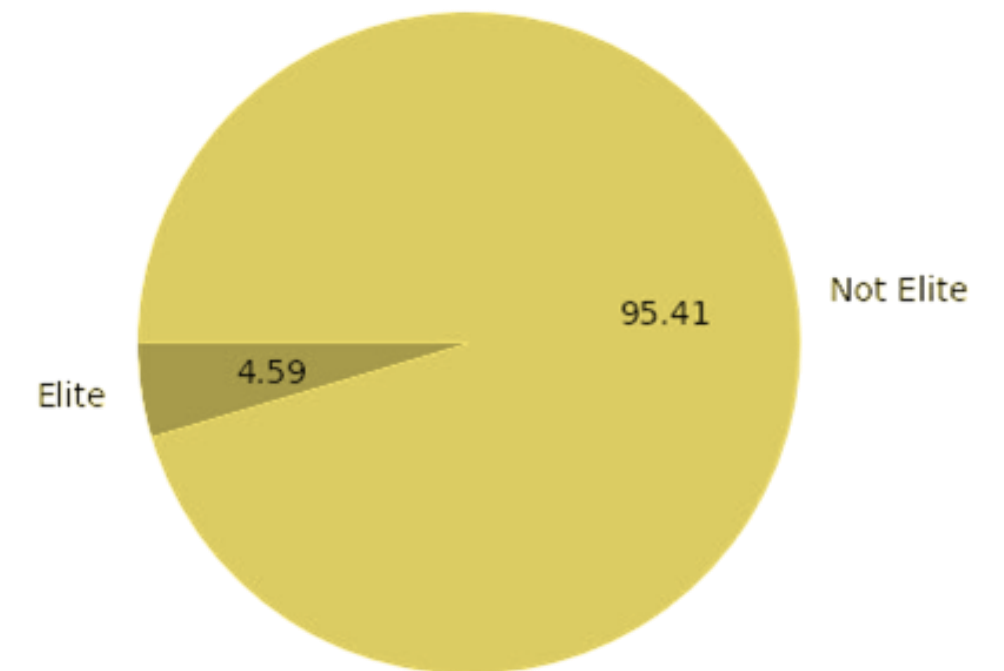
## Significant Contributions by Elite Users

Elite users, despite being significantly fewer in number, contribute a substantial proportion of the total review count compared to non-elite users.

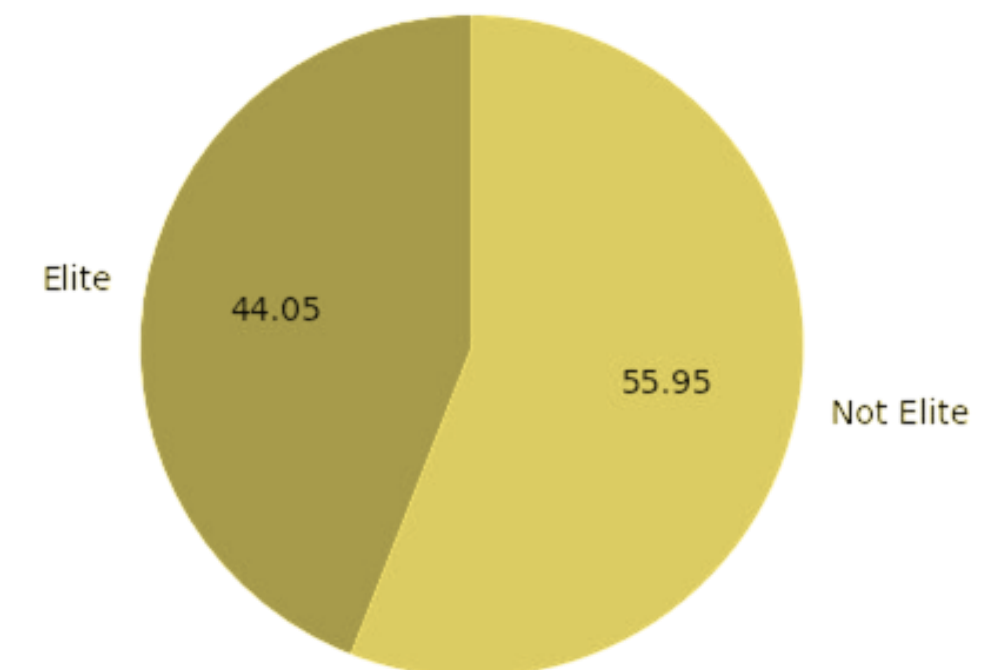
## Engaging and Retaining Elite Users

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 experiences with.

User Distribution



Review Distribution





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



## Peak Engagement Hours: 4 PM to 1 AM

The busiest hours for restaurants, based on user engagement, span from 4 pm to 1 am.



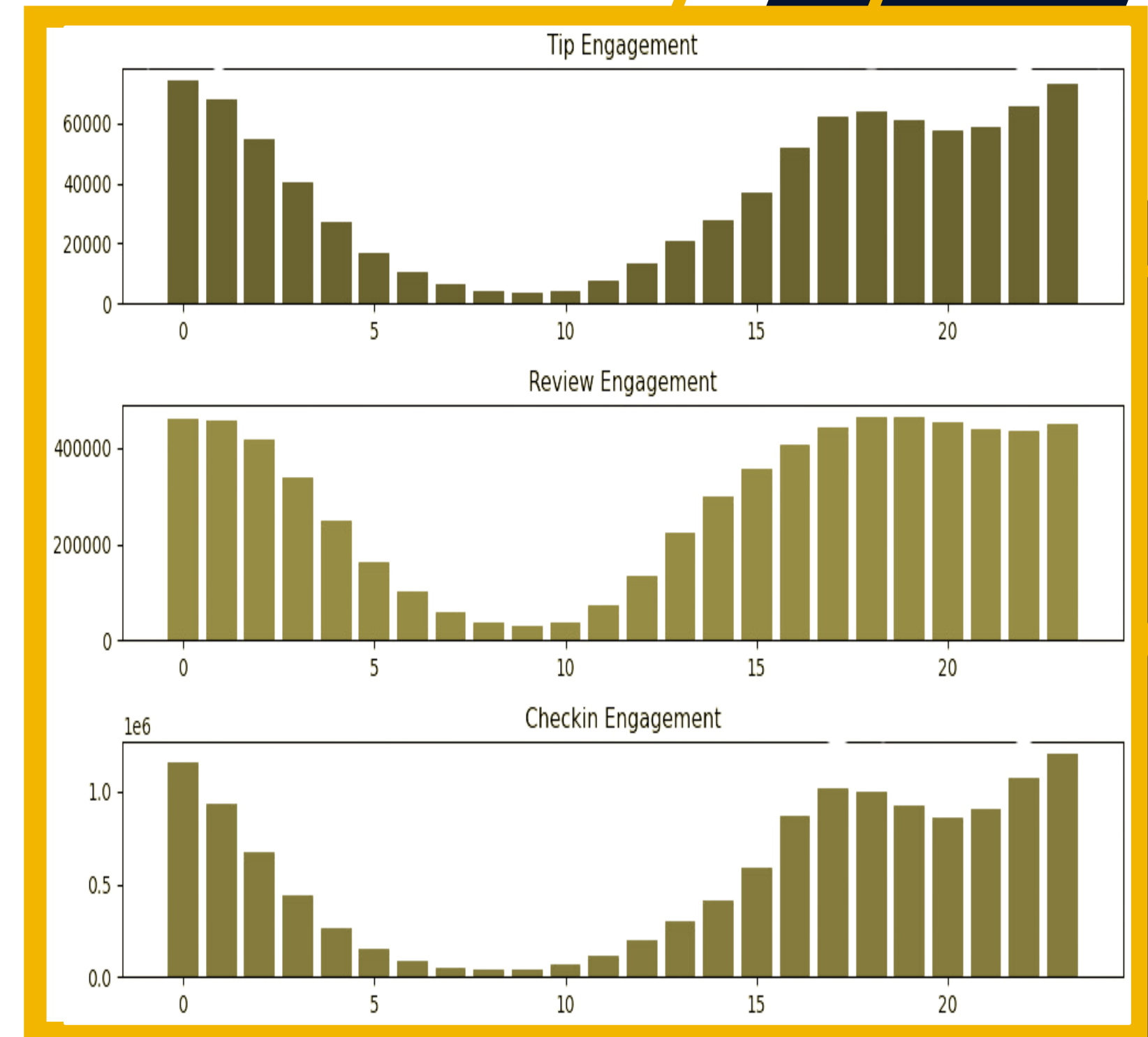
## Optimizing Operations During Peak Hours

Knowing the peak hours allows businesses to optimize their staffing levels and resource allocation during these times to ensure efficient operations and quality service delivery.



## Increased Demand Driven by Social Factors

The concentration of user engagement during the evening and night hours suggests a higher demand for dining out during these times, potentially driven by factors such as work schedules, social gatherings, and leisure activities.





# Recommendations

✓ 1

## Informed Decision-Making from Data Analysis

- 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.

✓ 2

## Leveraging Elite Users for Promotion

- Collaborating with elite users and leveraging their influence can amplify promotional efforts, increase brand awareness, and drive customer acquisition.

✓ 3

## Capitalizing on Peak Hour Demand

- Businesses can adjust their operating hours or introduce special promotions to capitalize on the increased demand during peak hours

✓ 4

## Improving Engagement in Underperforming Businesses

- Less successful businesses may need to focus on strategies to enhance user engagement over time, such as improving service quality, responding to customer feedback.

✓ 5

## Expansion Opportunities in High Success Cities

- Cities with high success scores presents opportunities for restaurant chains to expand or invest further.





# THANK YOU

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