

# USER ENGAGEMENT ANALYSIS *for* RESTAURANT SUCCESS

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# About YELP

Yelp is a popular web and mobile platform where users share reviews, ratings, photos, and tips about local businesses, especially restaurants. It helps people discover places to eat, shop, and visit based on real user experiences. Businesses benefit from increased visibility and customer feedback on Yelp.

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# Agenda

01. Problem Statement

02. Research Objectives

03. Hypothesis

04. Data Overview

05. Analysis & Findings

06. Recommendations

# Problem Statement

This project explores whether restaurant success on Yelp -measured by review count and ratings -is related to user engagement like reviews, tips, and check-ins.

# Research Objectives

- Quantify the correlation between user engagement (reviews, tips, check-ins) and success matrix (review count/average star rating): This will help us determine if restaurants with higher user engagement experience a corresponding increase in reviews and ratings.
- Analyze the impact of sentiment on review count and average star rating: We will investigate if positive sentiment in reviews and tips translates to higher star ratings and potentially influences the total number of reviews left.
- Time trends in User Engagement: We will explore if consistent user engagement over time is a stronger indicator of long-term success compared to sporadic bursts of activity.

# 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. That is, How review quality and emotion affect success.
- Consistent engagement over time is positively associated with sustained business success for restaurants. In other words, Does steady user engagement lead to long-term success?

# Data Overview

- This dataset is a subset of Yelp's businesses, reviews, and user data. The dataset has information about **businesses** across 8 metropolitan areas in the **USA** and **Canada**.
- This dataset contains **five JSON files** containing a trove of reviews, businesses, users, tips, and check-in data.
- The JSON files are stored in the **database** for easy retrieval of data.

# Analysis & Findings

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

|                     |            |
|---------------------|------------|
| min_review_count    | 5.000000   |
| max_review_count    | 248.000000 |
| avg_review_count    | 55.975426  |
| median_review_count | 15.000000  |
| min_stars           | 1.000000   |
| max_stars           | 5.000000   |
| avg_stars           | 3.477281   |
| median_stars        | 3.500000   |

## HIGHEST REVIEWS

|   |  | name                   | total_reviews | 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   |

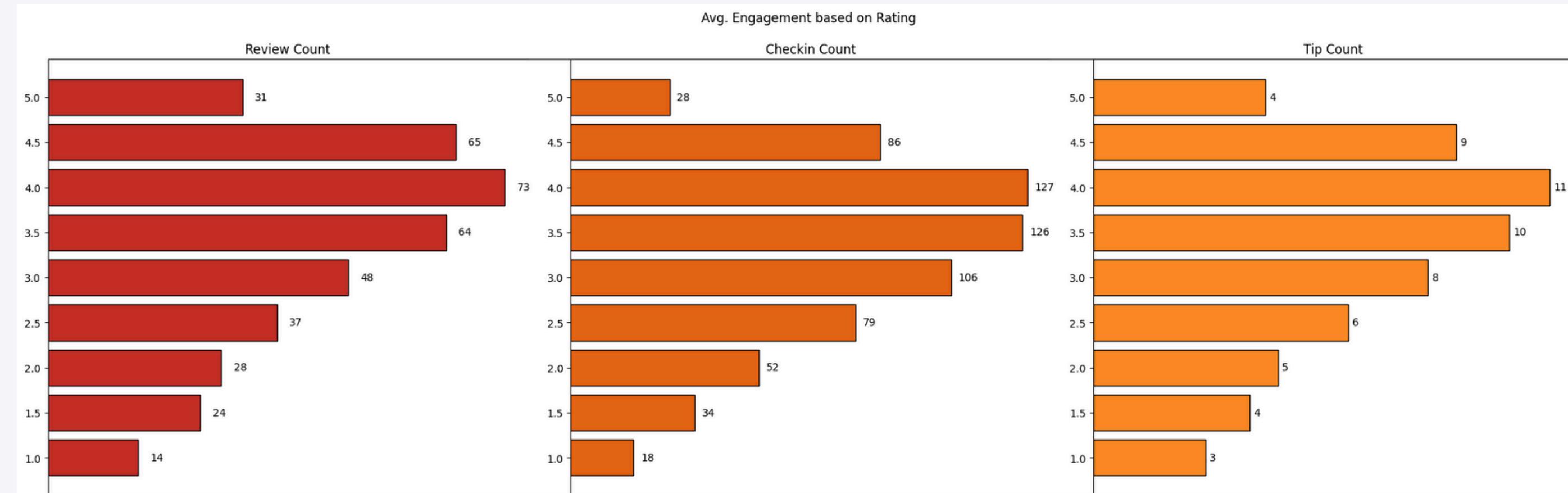
## HIGHEST RATING

|   |  | name                              | total_reviews | avg_rating |
|---|--|-----------------------------------|---------------|------------|
| 0 |  | á 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        |

- ✓ A higher average rating does not necessarily correlate with a higher number of reviews, and vice versa.
- ✓ Restaurant success cannot be solely evaluated based on ratings or review counts.
- ✓ While a higher review count may indicate greater user engagement, it does not always reflect overall customer satisfaction or business performance.

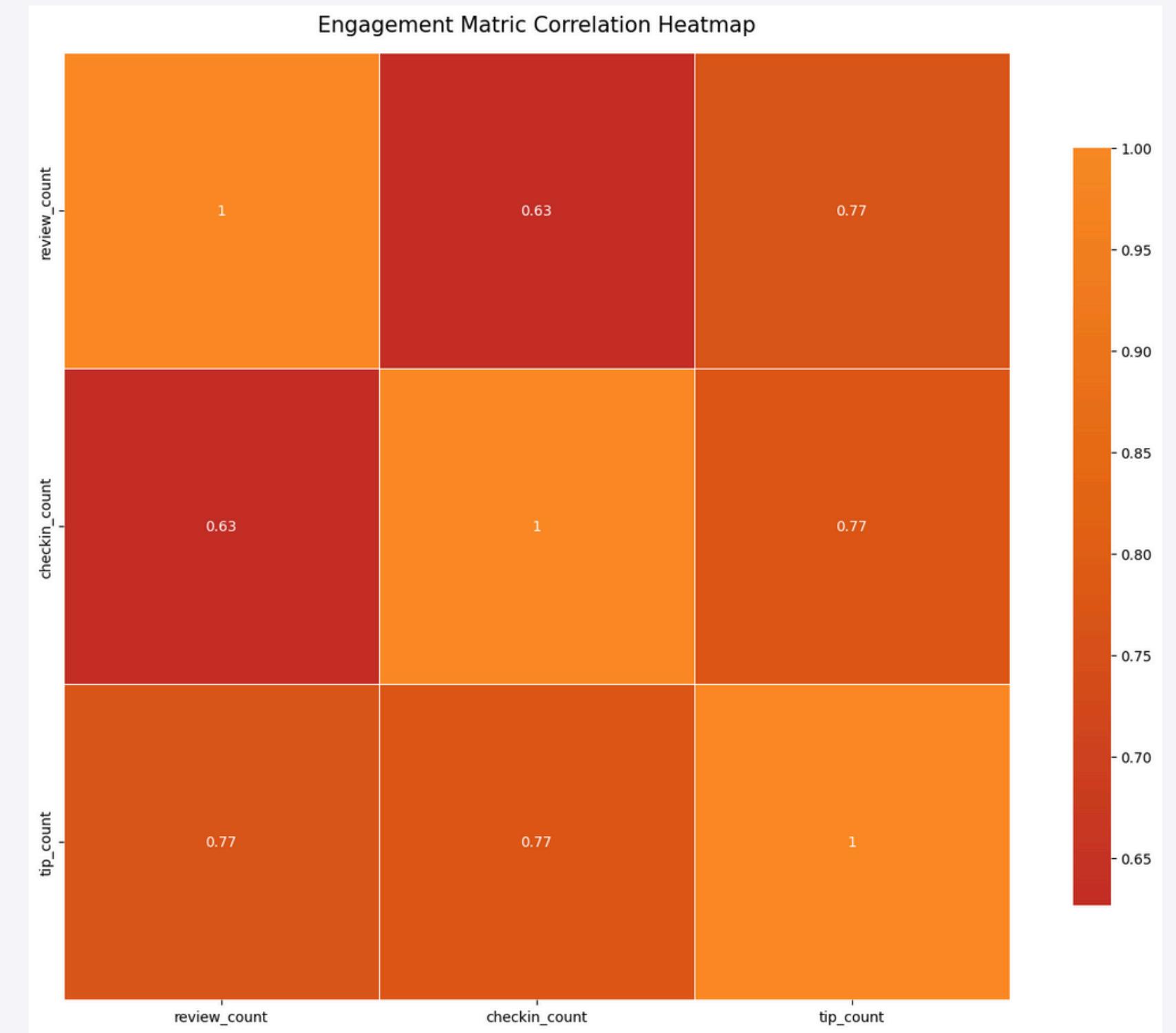
## Do Restaurants with higher engagements tend to have higher ratings?

- ✓ Data indicates a general rise in user engagement – including reviews, check-ins, and tips – as restaurant ratings increase from 1 to 4 stars.
- ✓ Interestingly, restaurants with exactly 4.0 stars show the highest engagement levels, while engagement slightly declines for those rated above 4.
- ✓ This drop at 5.0 stars may suggest a saturation point where fewer users feel the need to contribute, or it may reflect a niche customer base that is highly satisfied but smaller in number.



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

- ✓ Yes, these types of engagement are connected – businesses with more reviews usually have more tips and check-ins too.
- ✓ Increasing one type of engagement (like check-ins) can also boost others, helping the business grow overall.



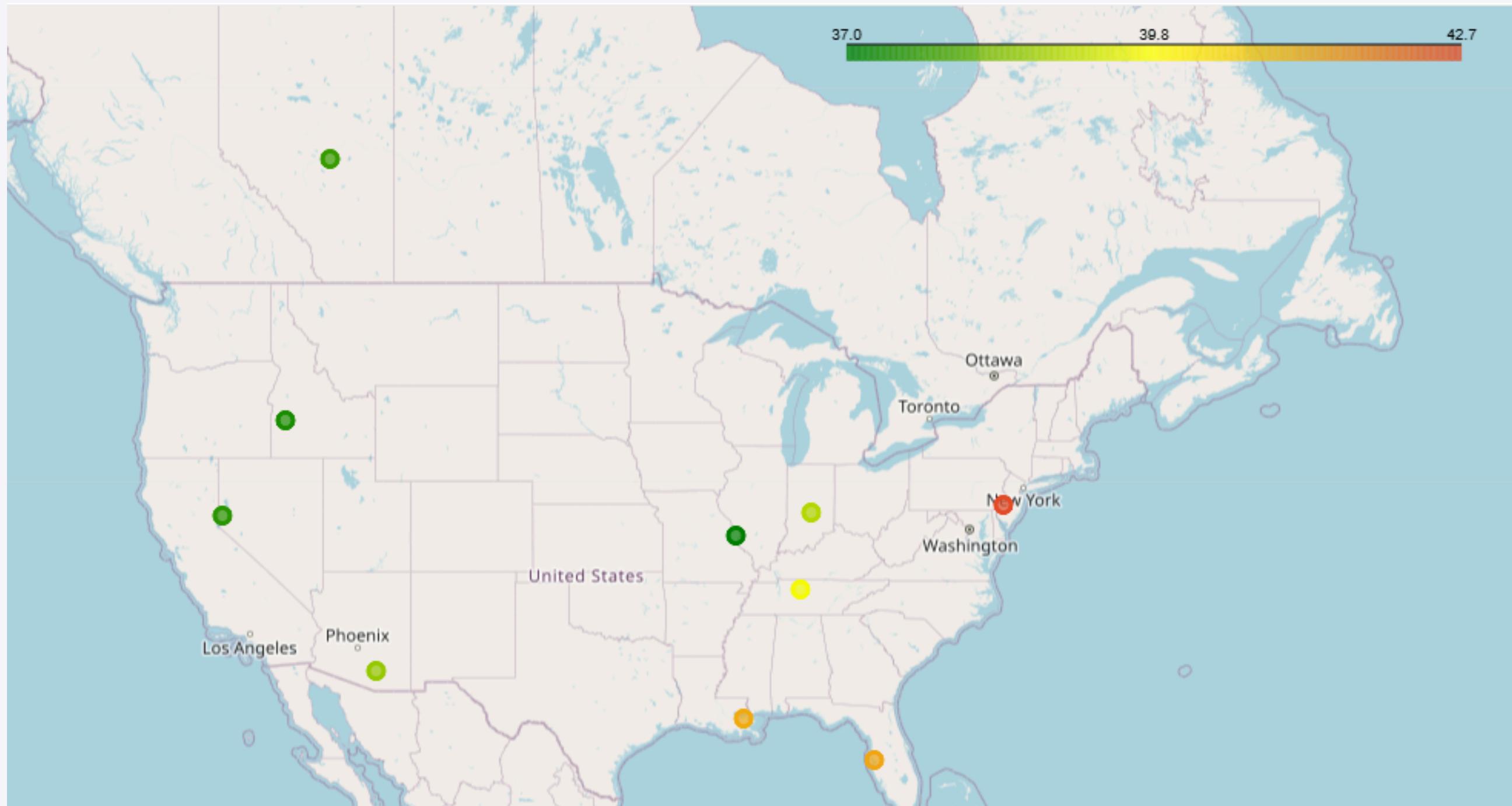
## Is there a difference in the user engagement between high-rated and low-rated businesses?

- ✓ Yes, businesses with higher ratings tend to have more reviews, tips, and check-ins.
- ✓ This means good service and quality can lead to more customer interaction and engagement.

| category   | review_count | tip_count | checkin_count |
|------------|--------------|-----------|---------------|
| High-Rated | 72.291062    | 10.162766 | 122.066641    |
| Low-Rated  | 42.123420    | 6.541689  | 88.880828     |

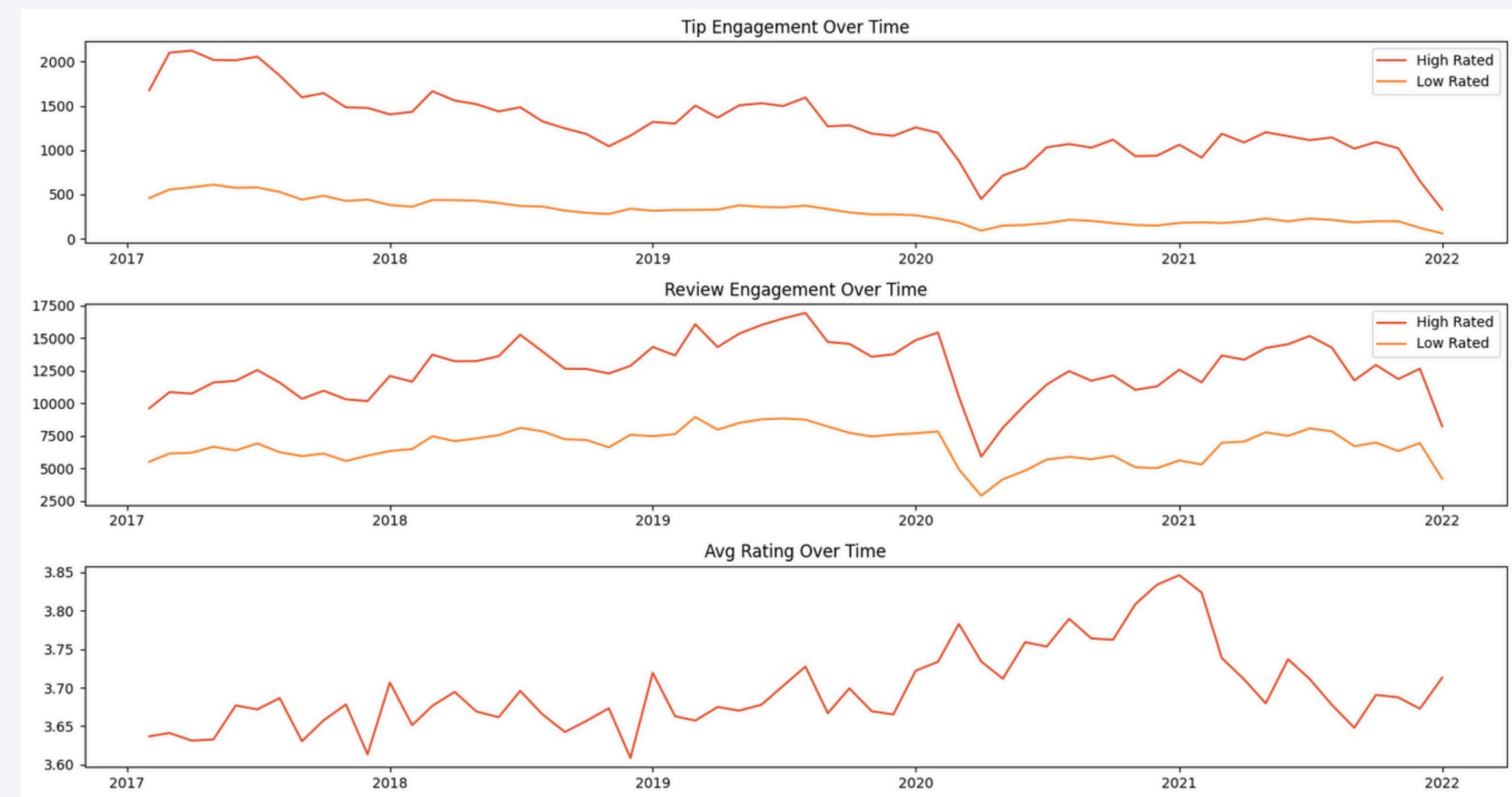
## How do the success metrics of restaurants vary across different states and cities?

- ✓ Philadelphia stands out as the top city with high ratings and strong user engagement.
- ✓ Other cities like Tampa, Indianapolis, and Tucson also show high success, meaning restaurants there perform well in both reviews and engagement.



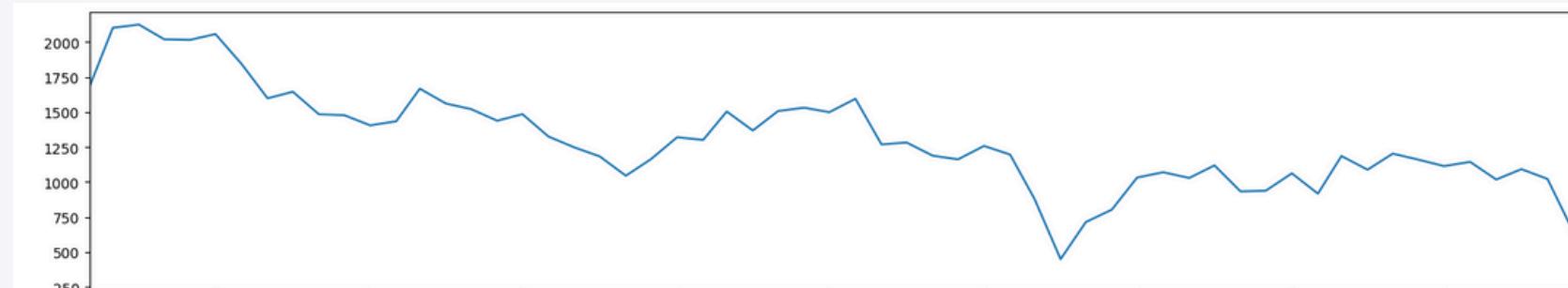
## Are there any patterns in user engagement over time for successful businesses compared to less successful ones?

- ✓ 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, reflecting ongoing customer satisfaction and interest.

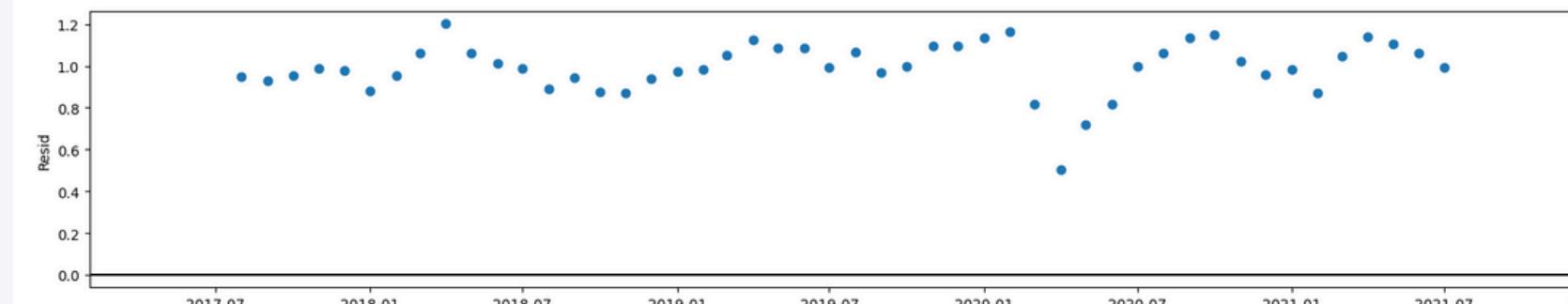
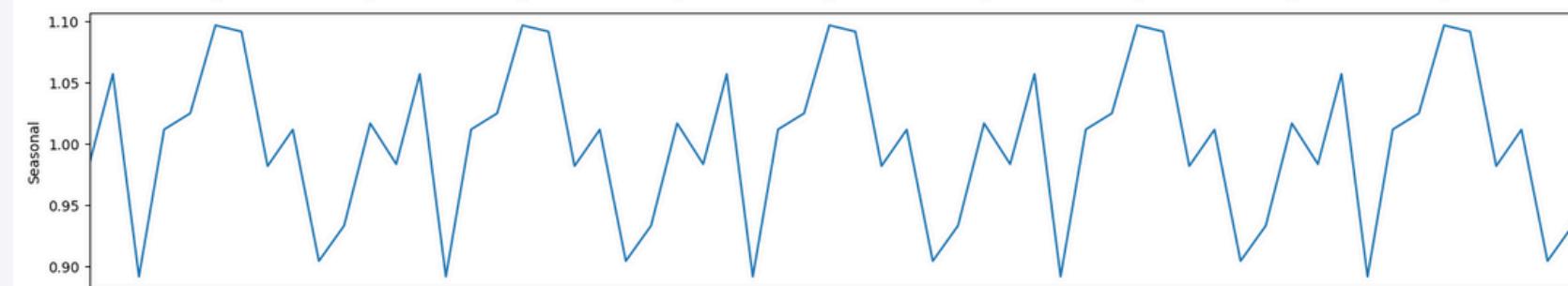
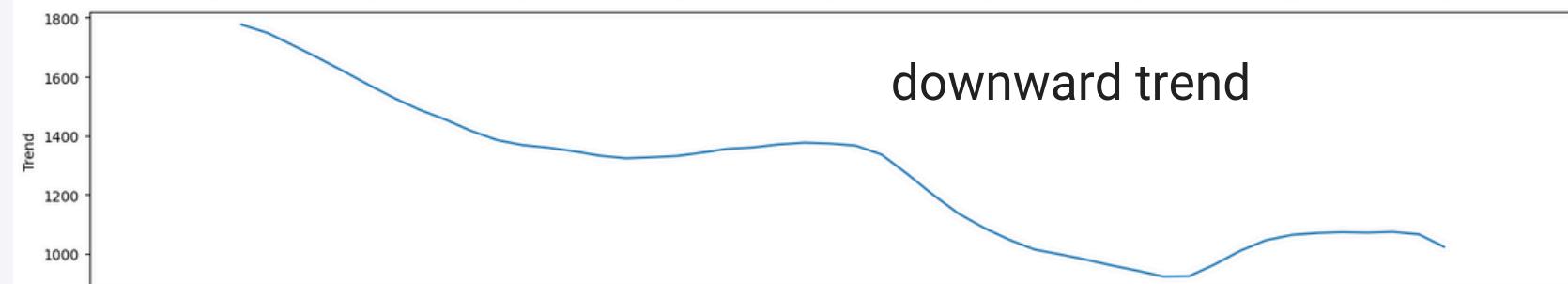


# Trend & Seasonality Analysis

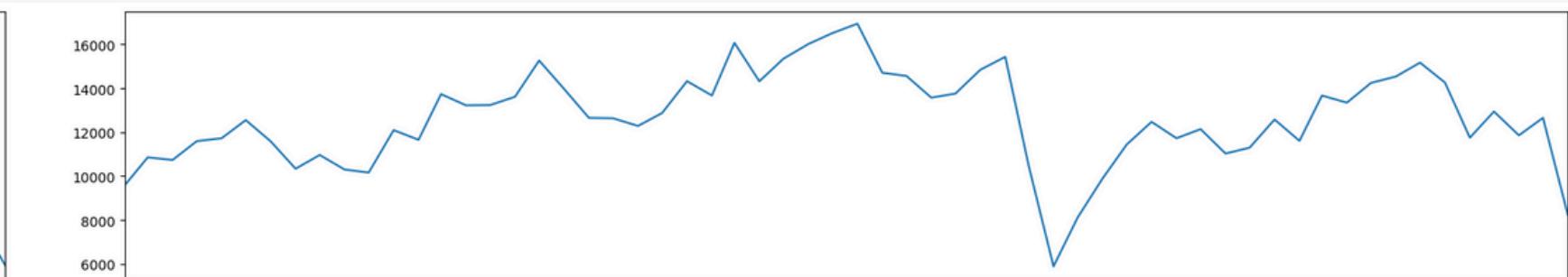
**TIP COUNT**



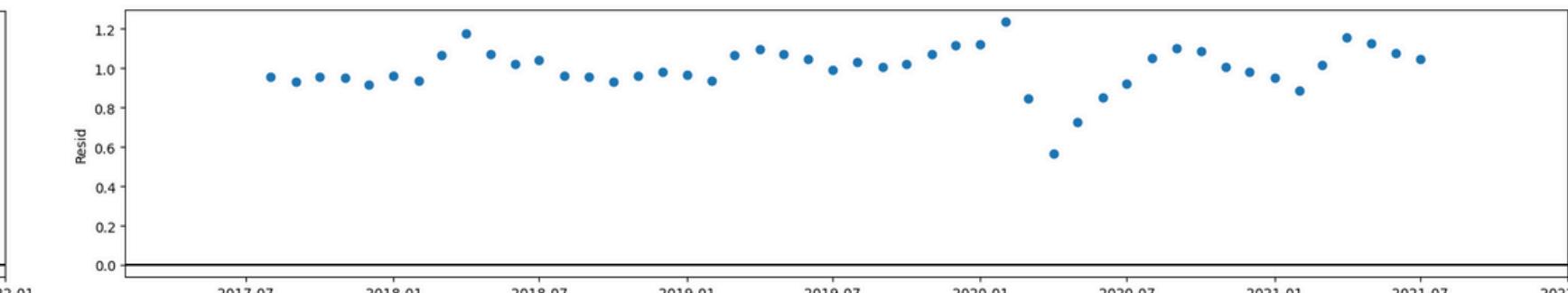
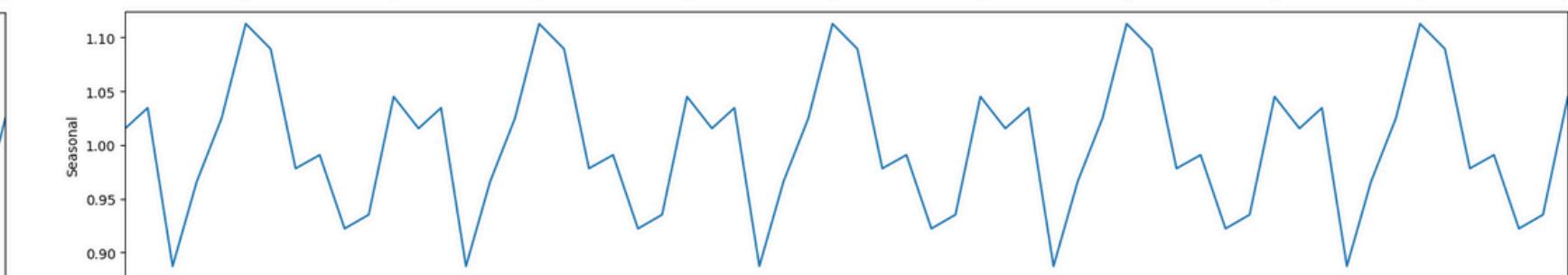
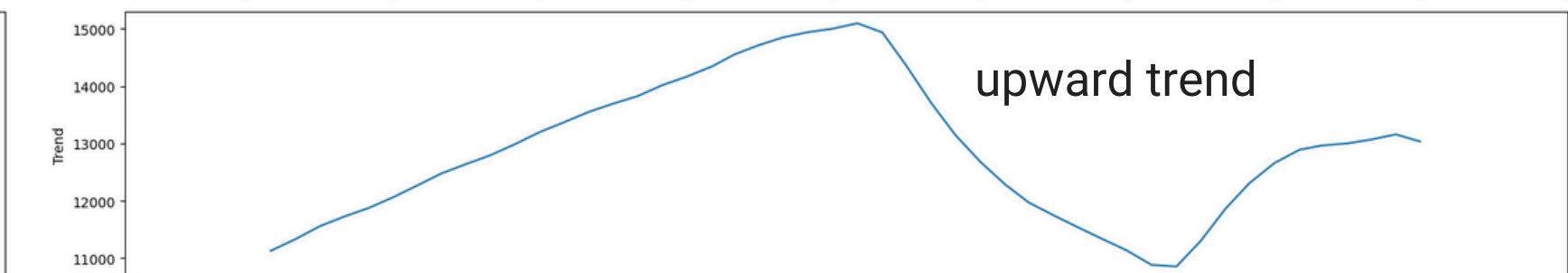
downward trend



**REVIEW COUNT**



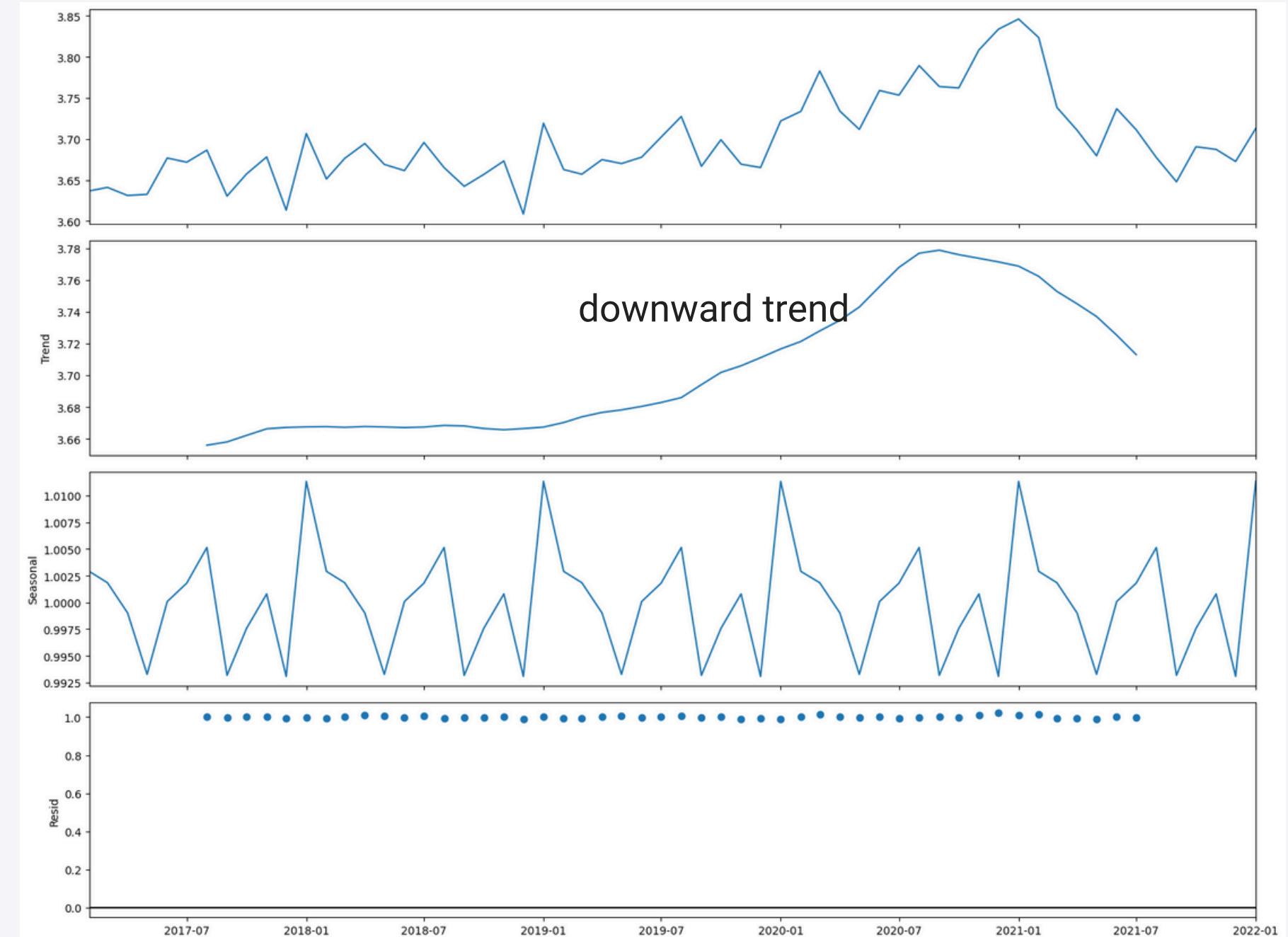
upward trend



Year Starting & Ending (Nov - Mar) is Highly Engaging

# Trend & Seasonality Analysis

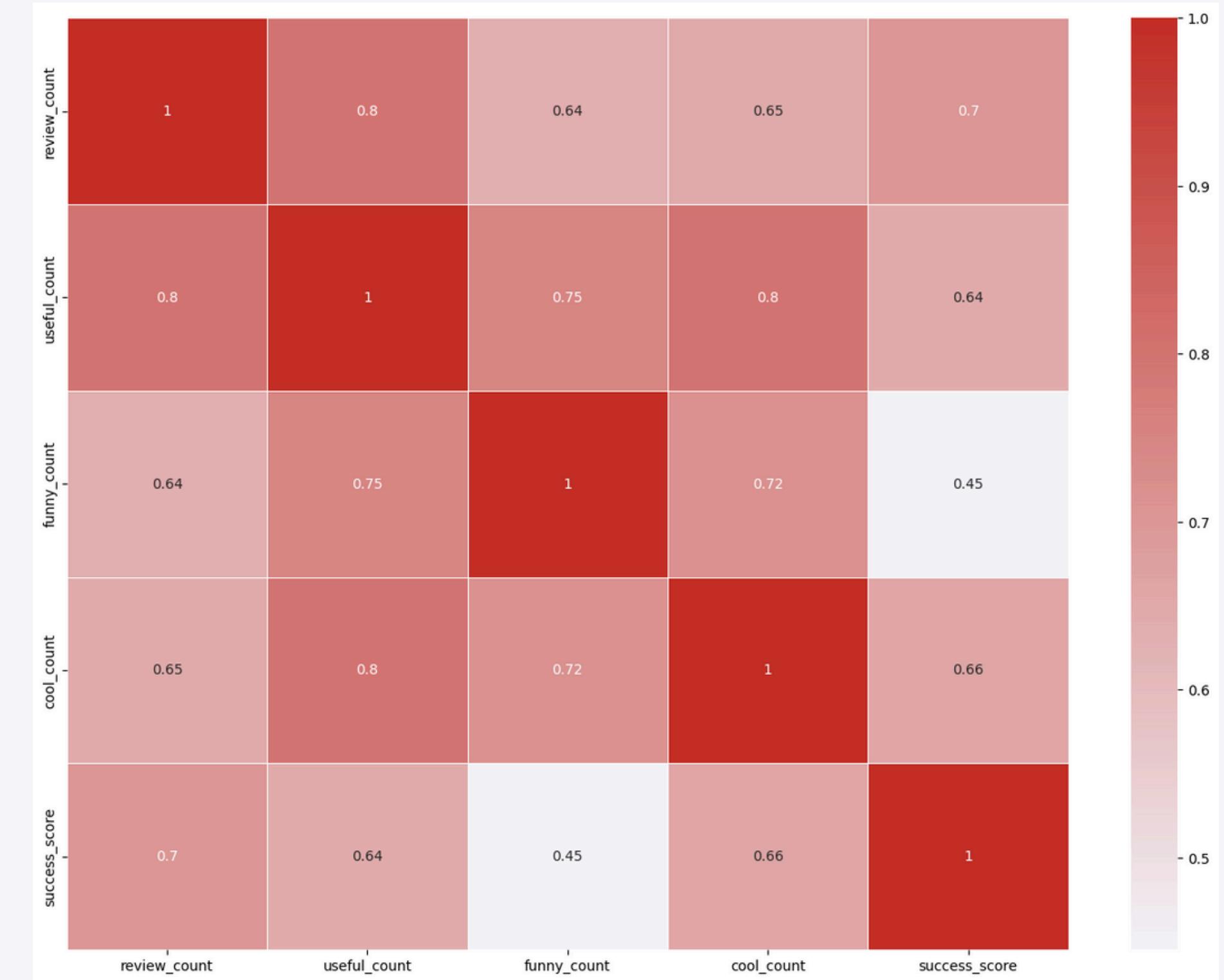
## RATING COUNT



Year Starting & Ending (Nov - Mar) is Highly Engaging

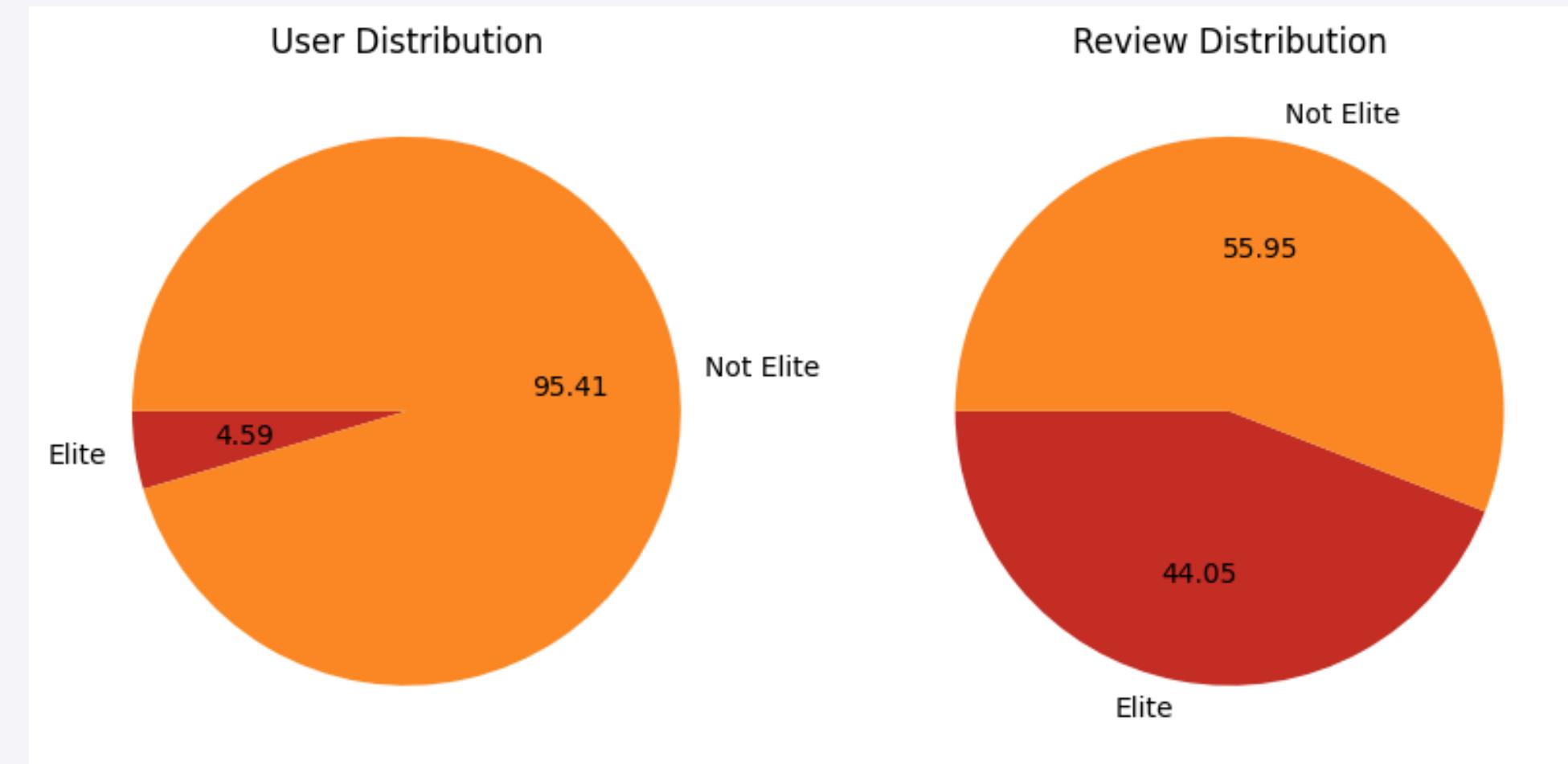
## How does the sentiment of reviews and tips (useful, funny, cool) correlate with the success metrics of restaurants?

- ✓ Reviews marked as useful, funny, or cool are strongly linked with higher review counts, showing that engaging reviews often attract more interaction.
- ✓ A higher number of such reactions reflects better user engagement and satisfaction, which can contribute positively to a 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 experiences with.



## BUSIEST HOURS

- ✓ Peak Hours: Most user engagement happens between 4 PM and 1 AM, across reviews, tips, and check-ins.
- ✓ Operational Insight: Restaurants can use this information to plan staffing and resources better during these hours to maintain service quality.
- ✓ Customer Behavior: Evening and night engagement likely reflects post-work dining, social gatherings, and leisure outings.



## RECOMMENDATIONS

- ✓ Use insights from engagement, reviews, and timings to make smart business decisions.**
- ✓ Work with elite users to boost promotions and attract more customers.**
- ✓ Adjust hours or offer deals during busy times like evenings and nights.**
- ✓ Improve service and respond to feedback to increase user engagement.**
- ✓ Focus expansion or investment in cities with high success scores.**



# THANK YOU



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