

PROJECT: User Engagement Analysis For Restaurant Success

DATASET: YELP Company

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 business, while also browsing information and rating left by others.

The dataset is publically available on the company website. I am also sharing the link of the data here.

Link: [Open Dataset | Yelp Data Licensing](#)

DATA OVERVIEW:

1. This dataset is subset of YELP and has information about businesses across 8 metropolitan areas in the USA and Canada.
2. The original data is shared by YELP as JSON files.
3. The five JSON files are business, review, user, tip and check-in.
4. The JSON files are stored in the MYSQL database for easy retrieval of data.

PROBLEM STATEMENT:

In a competitive market like the restaurant industry, understanding the factors that influence business success is crucial for stake holders.

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:

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

HYPOTHESIS:

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

Analysis and Findings:

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

Table

Question: Which Restaurant Name have highest number of review count and highest number of ratings.

Question: Is there any correlation between highest ratings and highest reviews

1. Restaurant having **highest review count:**

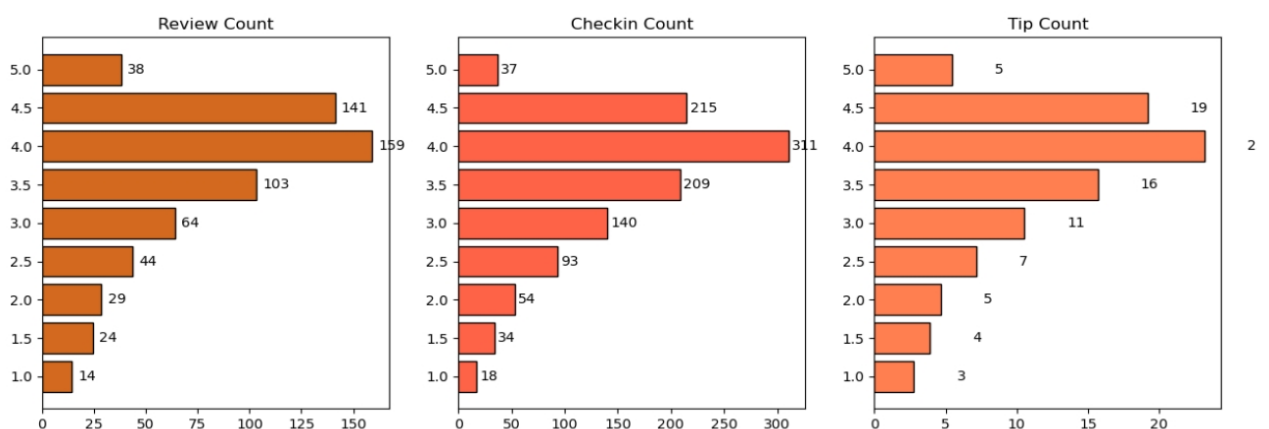
	name	Total_reviews	Average_Rating
0	McDonald's	16490.0	1.868702
1	Chipotle Mexican Grill	9071.0	2.381757
2	First Watch	8688.0	3.896552
3	Acme Oyster House	8343.0	4.000000
4	Taco Bell	8017.0	2.141813
5	Chick-fil-A	7967.0	3.373418
6	Oceana Grill	7400.0	4.000000
7	Buffalo Wild Wings	6810.0	2.347458
8	Panera Bread	6613.0	2.661905
9	Hattie B's Hot Chicken - Nashville	6093.0	4.500000

2. Restaurant having **highest ratings**:

	name	Total_reviews	Average_Rating
0	YWCA Corazon Cafe & Catering	5.0	5.0
1	bb.q Chicken - O'Fallon	42.0	5.0
2	Tacos Don Vicente	8.0	5.0
3	Asia Mix Restaurant	10.0	5.0
4	In and Out Express Food Market	5.0	5.0
5	Healthy Soul Indy	9.0	5.0
6	The Foundry Bakery	185.0	5.0
7	Vegan International Co. Kitchen & Market	269.0	5.0
8	Antojitos Carmen Restaurante Y Taqueria	9.0	5.0
9	Jet City Espresso Hyde Park	152.0	5.0

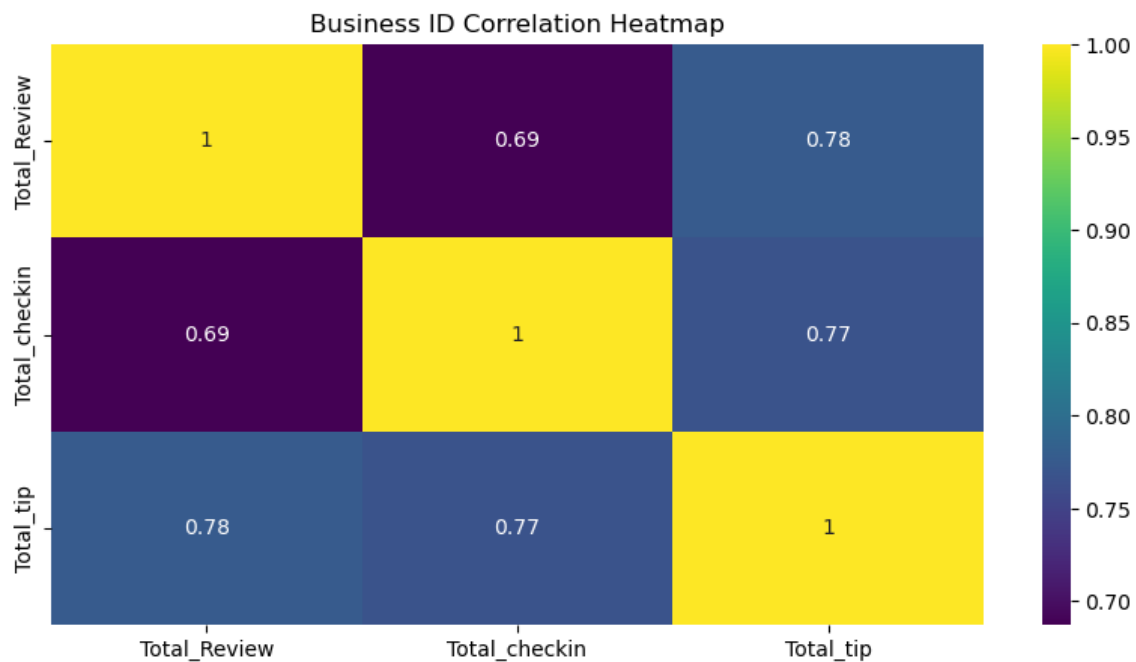
- Higher ratings do not guarantee a higher review count, or vice versa.
- Success of Restaurants is not solely determined by ratings or review counts.
- Review count reflects user engagement but not necessarily overall customer satisfaction or business performance.

Question: 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 and their review, or a selectivity where only a small, satisfied audience frequents these establishments.

Question: Is there any Correlation between the number of reviews, tips and check-ins for a business?



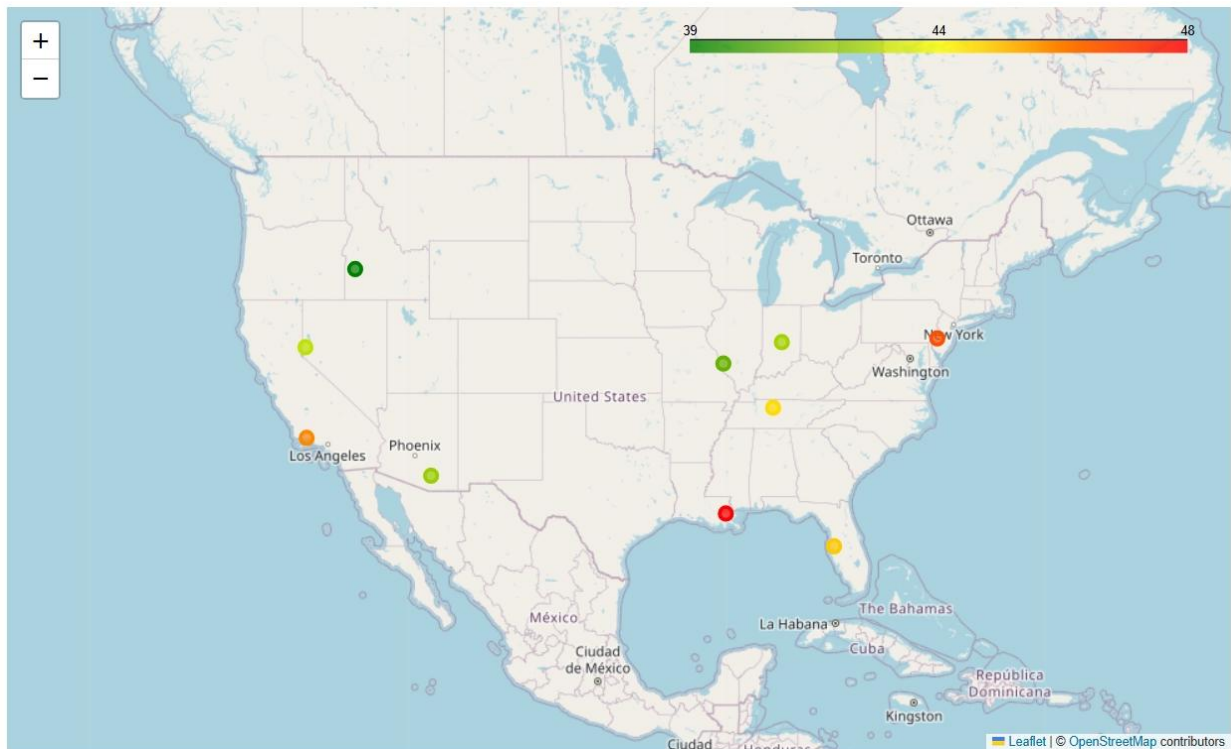
- These correlations suggest that user engagement across different platforms (review, tips, and check-ins) is interlinked; higher activity in one area tends to be associated with higher activity in others.
- Business should focus on strategies that boost all types of user engagement, as increases in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

Question: Is there a difference between user engagement between high-rated and low-rated businesses?

	review_count	checkin_count	tip_count
Category			
HIGH Rated	82.387318	124.181415	10.023205
LOW Rated	43.760127	87.693319	6.383987

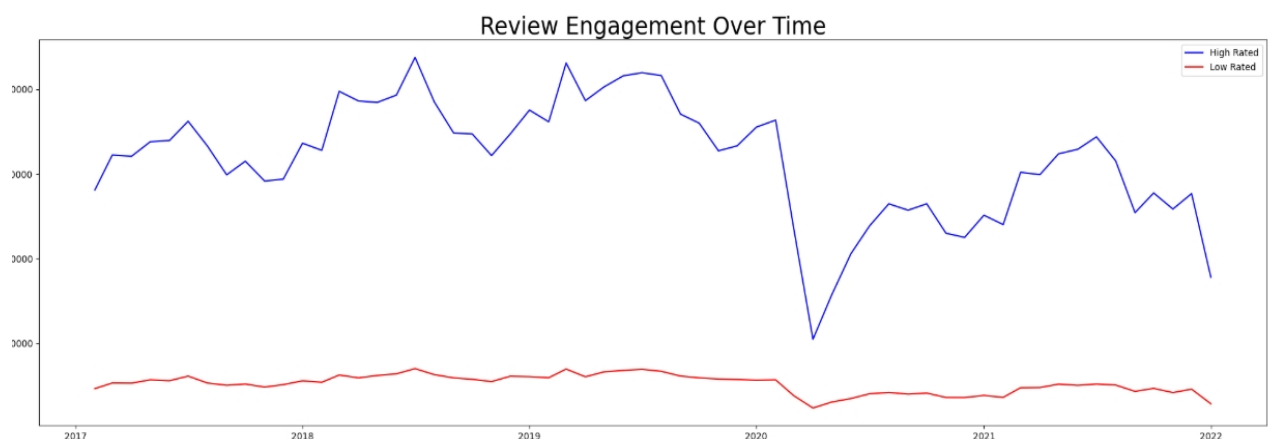
- Data indicates a clear correlation between higher ratings and increased user engagement across reviews, tips, and check-ins.
- This Pattern underscores the importance of maintaining high services and quality standards, as these appear to drive more reviews, check-ins, and tips, which are critical metrics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

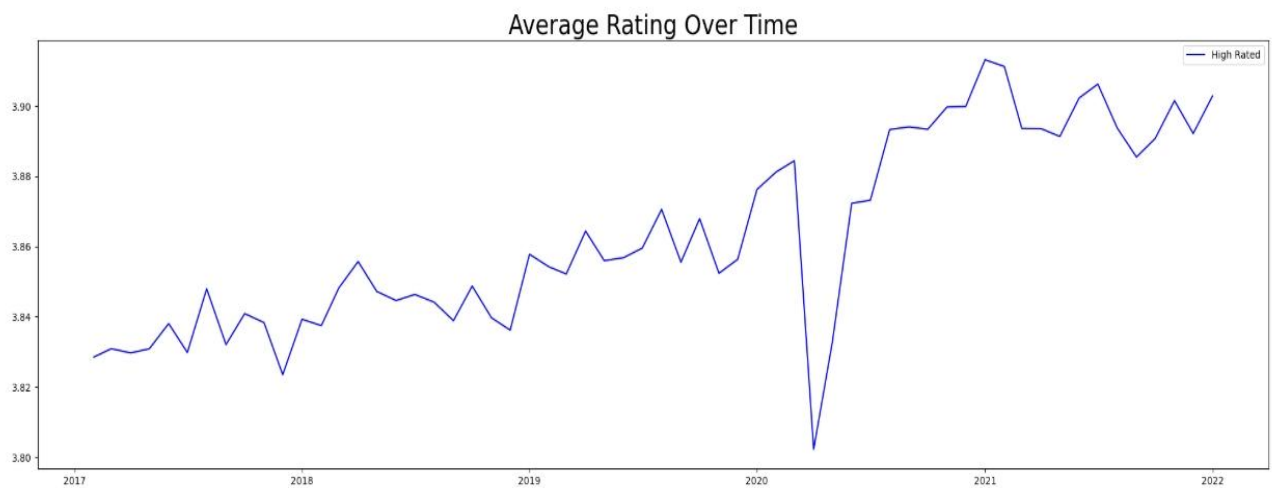
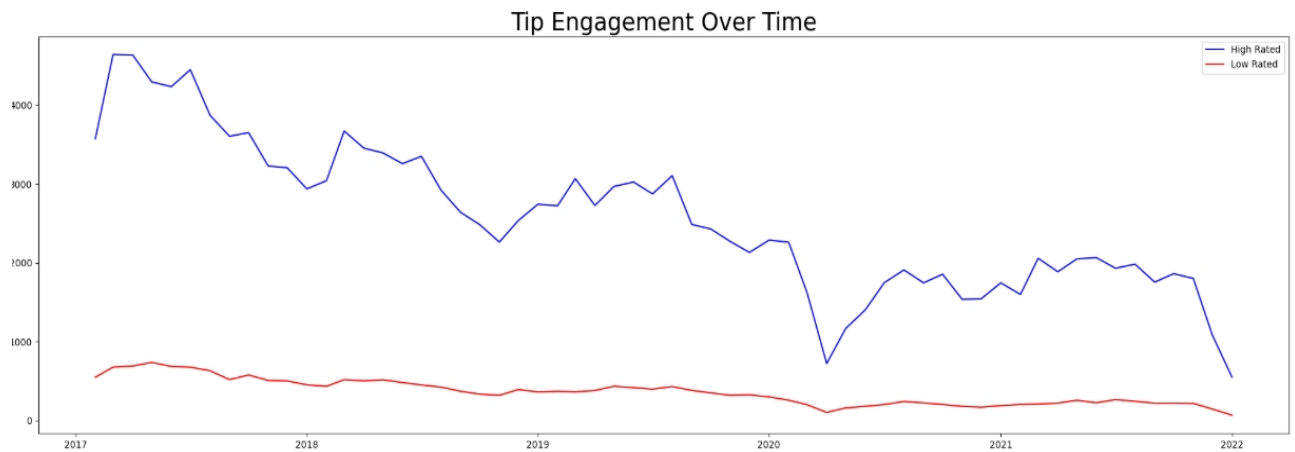
Question: How do the success metrics of restaurants vary across different states and cities?



- Philadelphia emerges as the top city with the highest success score, indicating a combination of high ratings and active user engagement.
- Following Philadelphia, New Orleans, Nashville, and Tampa rank among the top cities with significant success scores, suggesting thriving restaurant scenes in these areas.

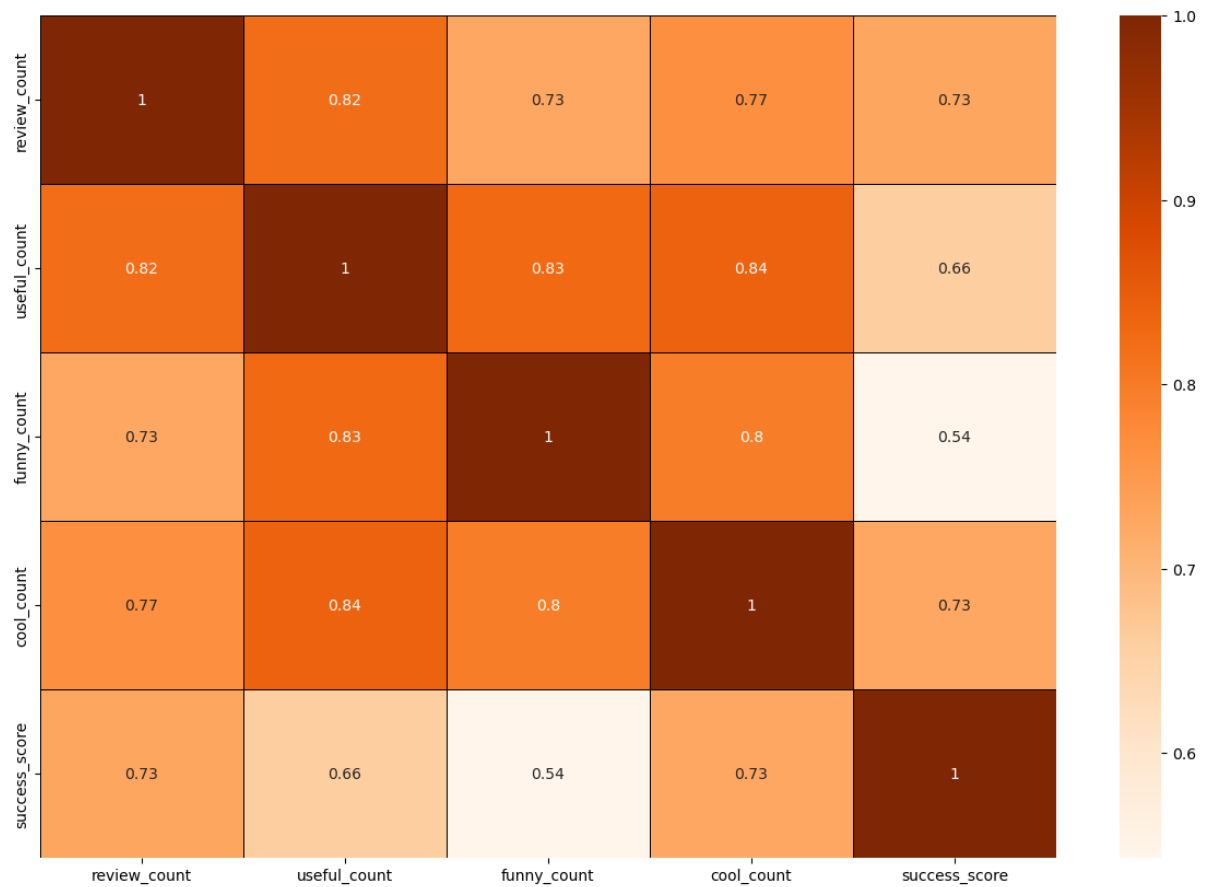
Question: Are there any patterns in user engagement over time for successful business compared to less successful ones?





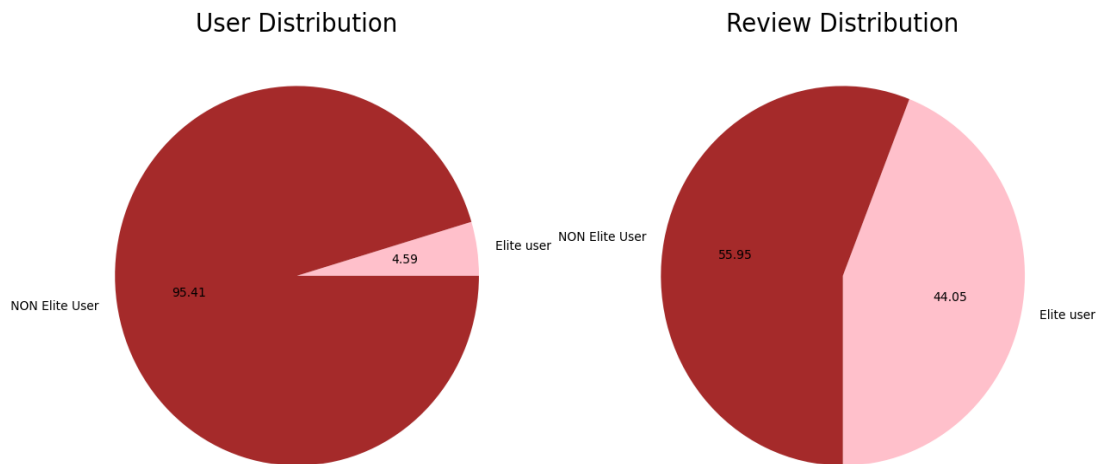
- Successful businesses, particularly those with higher ratings (above 3.5), exhibit consistent and possibly increasing user engagement over time.
- High rated restaurants maintain a steady or growing level of user engagement over time, reflecting ongoing customer interest and satisfaction.

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



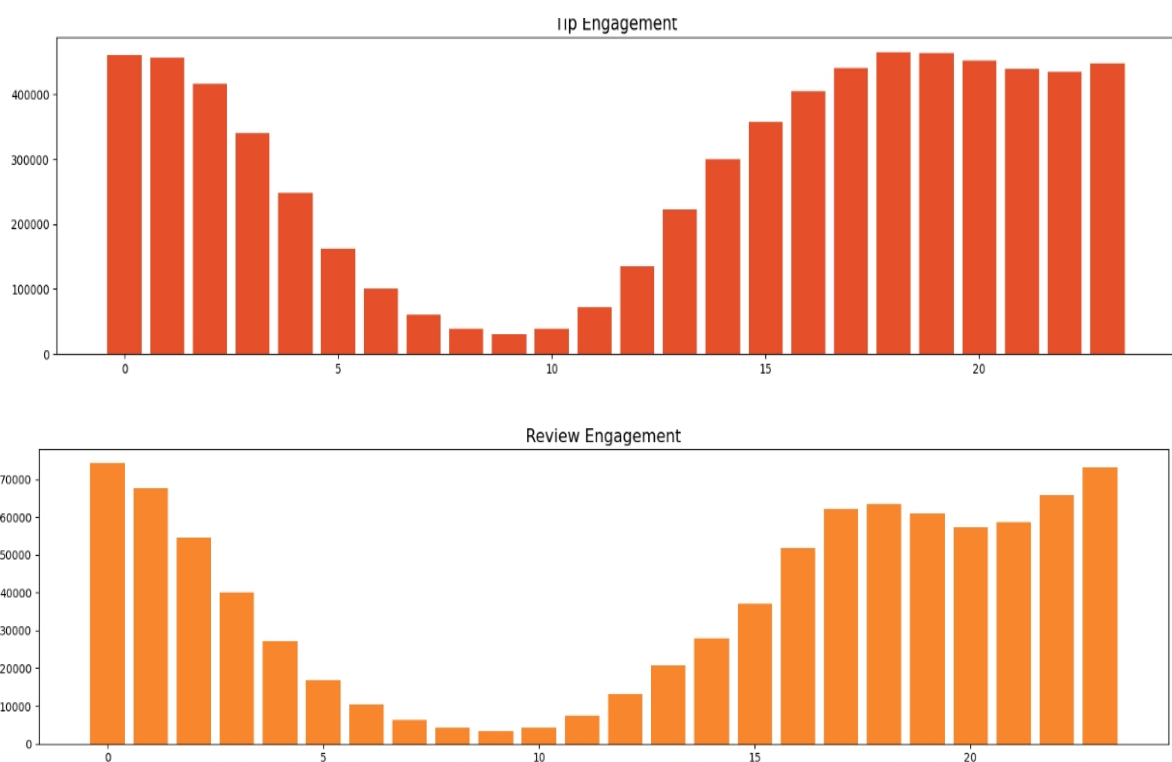
- “Useful”, “funny” and “cool” are attributes associated with user reviews. They represent the feedback provided by users about the usefulness, humor, or coolness of a particular review.
- Higher counts of useful, funny, and cool reviews suggest greater user engagement and satisfaction, which are key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

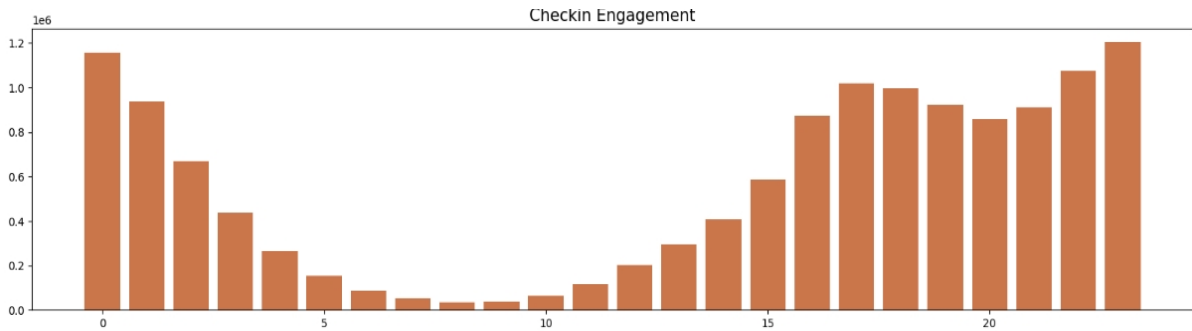
Question: Is there any difference in engagement of elite users and non-elite users?



- Elite users are individuals who have been recognized and awarded the 'elite' status by YELP for their active and high-quality contributors.
- Elite users, despite being significantly fewer in numbers, contribute a substantial proportion of the total review count compared to non-elite users.
- Establishment 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.

Question: Busiest Hours for Businesses?





- The busiest hours for restaurant, based on user engagement, span from 4pm to 1am
- 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.
- 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 gathering and leisure activities.

Recommendations:

1. 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. Collaborating with the elite users and leveraging their influence can amplify promotional efforts, increase brand awareness, and drive customer acquisition.
3. Businesses can adjust their operating hours or introduce special promotion to capitalize on increased demand during peak hours.
4. Less successful businesses may need to focus on strategies to enhance user engagement over time, such as improving services quality, responding to customer feedback.
5. Cities with high success scores present opportunities for restaurant chains to expand or invest further

THANKYOU