

Data Overview

- This dataset is a subset of the Yelp dataset, containing information about businesses located across metropolitan areas in the USA and Canada.
- The original dataset is provided in the form of JSON files.
- The five JSON files included are: Business, Review, User, Tip, and Checkin.
- These JSON files are stored in a database to facilitate efficient data retrieval.

Analysis and Findings

- Out of 1,50,000 businesses, 35,000 are restaurants that are currently open.
- A table shows the distribution of business statistics, including review counts and average ratings:

avg_review_count	104.142767
min_review_count	5.000000
max_review_count	7568.000000
MEDIAN_review_count	15.000000
avg_star_rating	3.523895
min_star_rating	1.000000
max_star_rating	5.000000
MEDIAN_star_rating	3.500000

Top 10 restaurants by reviews

	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

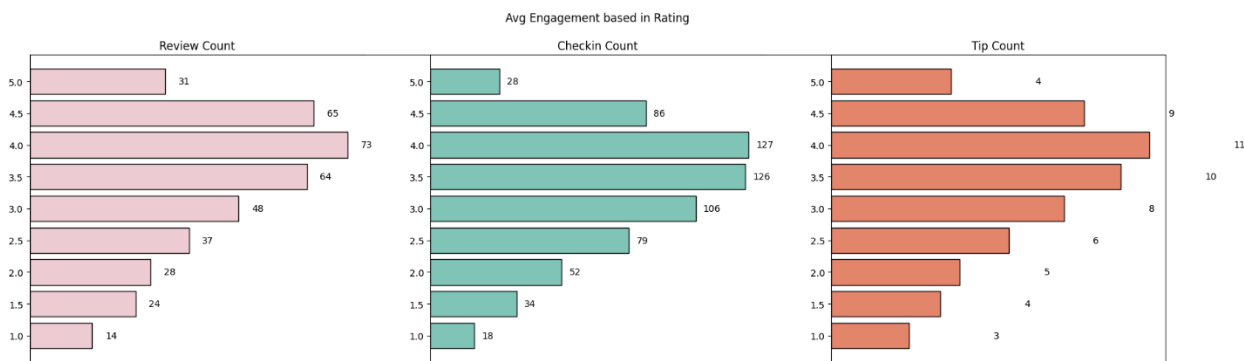
Top 10 restaurants by ratings

	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

- Higher ratings don't always lead to a higher number of reviews, and vice versa.
- A restaurant's success is not solely determined by its ratings or review count.
- The number of reviews reflects user engagement, but it doesn't necessarily indicate overall customer satisfaction or business performance.

Do restaurants with higher engagement typically receive higher ratings?

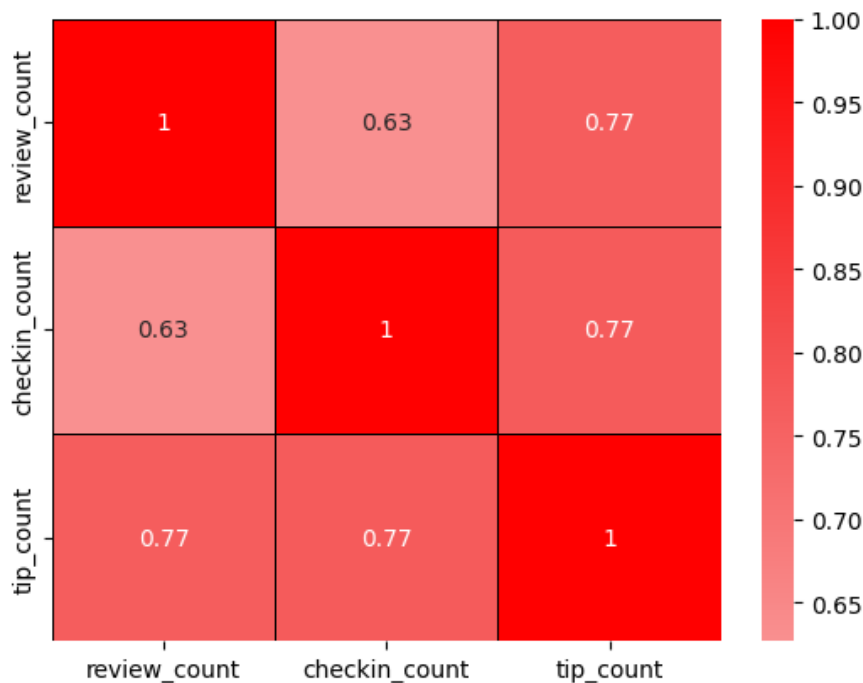
- Data indicates that as ratings improve from 1 to 4 stars, there is a general increase in the average number of reviews and check-ins.
- Restaurants rated with 4 stars show the highest engagement, while engagement tends to decrease for ratings above 4.
- The decline in engagement at 5.0 stars may suggest a saturation point, where fewer customers are motivated to leave reviews, or it could indicate that only a small, highly satisfied group of customers continues to visit these establishments.



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

These relationship indicates that user engagement across different platforms is connected—higher activity in one area is often linked to higher activity in others.

Businesses should prioritize strategies that encourage all forms of user engagements, as an increase in one type of activity is likely to lead to growth in others, improving overall visibility and customer interaction.



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

- Data shows a clear correlation between higher ratings and increased user engagement across reviews, tips, and check-ins.
- This pattern highlights the importance of maintaining high service and quality standards, as these seem to drive more reviews, check-ins, and tips—key metrics of customer engagement and satisfaction.

	review_count	checkin_count	tip_count
category			
High-rated	72.319991	122.106865	10.166411
Low-rated	42.132915	88.905759	6.543136

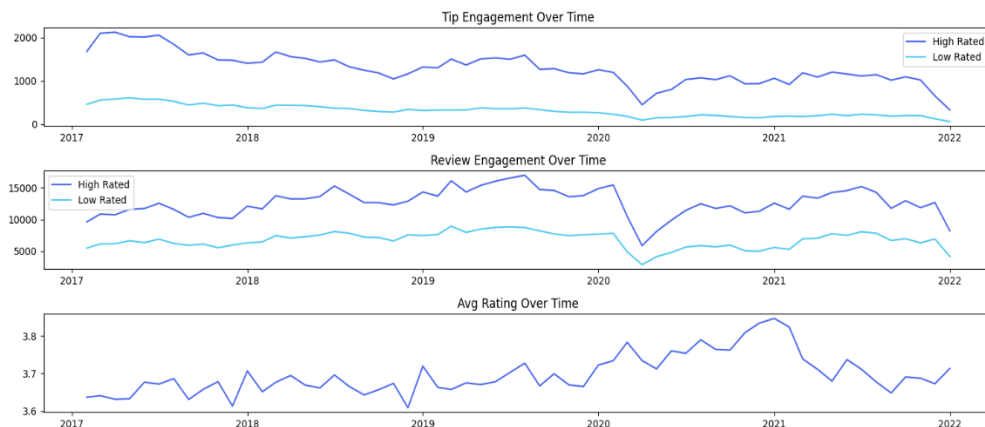
How do the success metrics of restaurants vary across different states and cities?

- Philadelphia stands out as the top city with the highest success score, reflecting a strong combination of high ratings and active user engagement.
- Following Philadelphia, Tampa, Indianapolis, and Tucson also rank among the top cities with notable success scores, indicating thriving restaurant scenes in these areas.

	city	state	latitude	longitude	avg_rating	review_count	restuarant_count	success_score
0	Philadelphia	PA	39.955505	-75.155564	3.532011	175470	2999	42.649838
1	Tampa	FL	27.890814	-82.502346	3.571179	104368	1714	41.267425
2	Indianapolis	IN	39.637133	-86.127217	3.412111	92639	1701	39.022521
3	Tucson	AZ	32.338572	-111.010760	3.385512	91562	1415	38.678743
4	Nashville	TN	36.208102	-86.768170	3.493590	87070	1404	39.737764
5	New Orleans	LA	29.963974	-90.042604	3.692878	69233	1011	41.158043
6	Saint Louis	MO	38.583223	-90.407187	3.412963	51482	810	37.027259
7	Reno	NV	39.476518	-119.784037	3.478705	48340	587	37.521438
8	Edmonton	AB	53.436403	-113.604288	3.509379	45916	1546	37.671748
9	Boise	ID	43.611192	-116.206275	3.558140	36087	559	37.338105

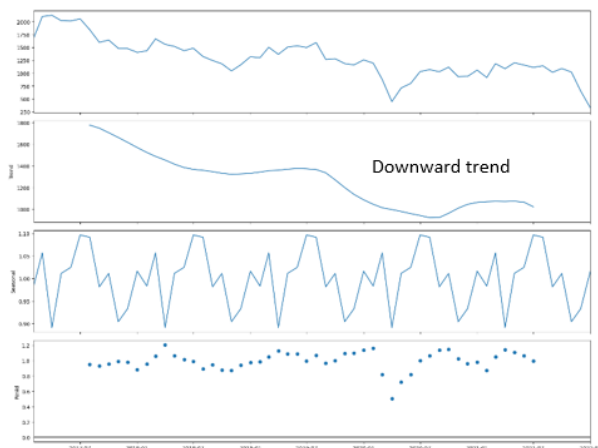
Are there any patterns in user engagement over time for successful businesses compared to less successful ones?

- Successful businesses, especially those with higher ratings (around 3.5 stars), show consistent and possibly increasing user engagement over time.
- Highly rated restaurants maintain a steady or growing level of user engagement, reflecting sustained customer interest and satisfaction.

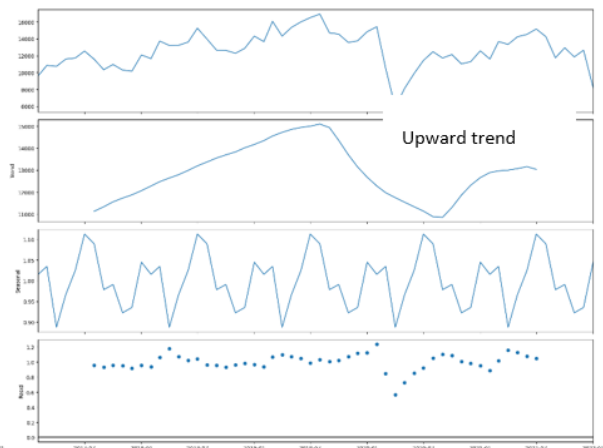


Trend and Seasonality Analysis

Tips



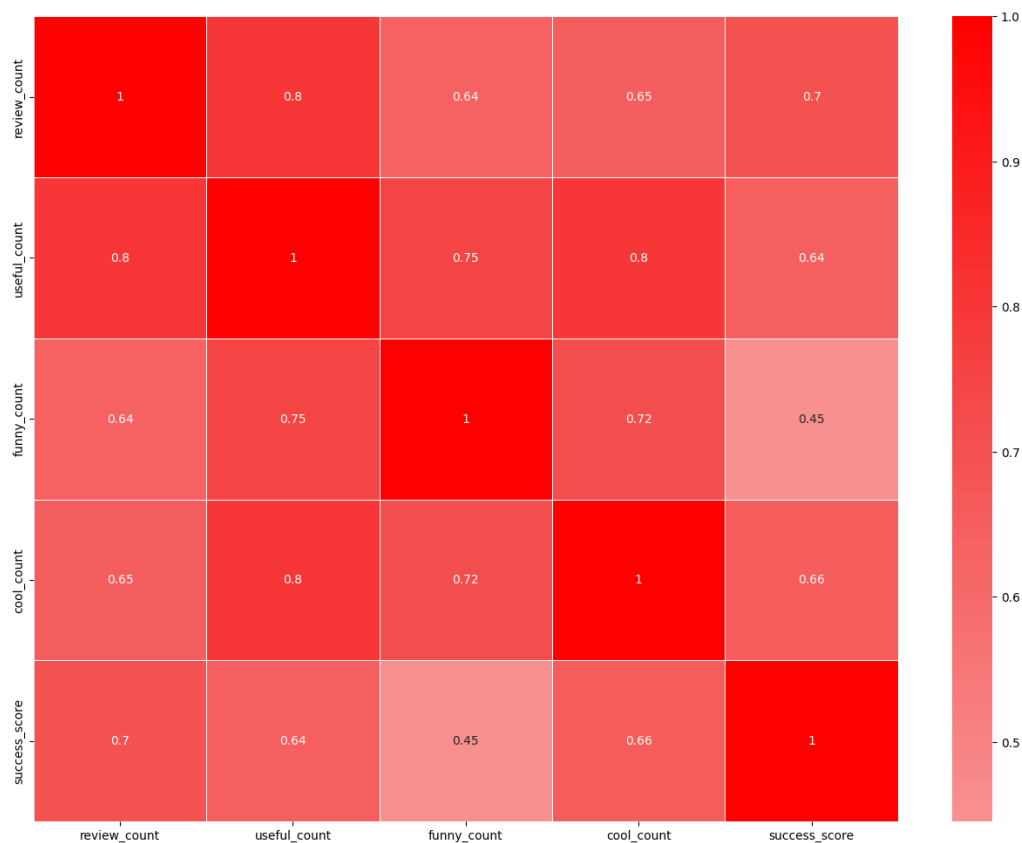
Reviews



- Start and end of the year (Nov – Mar) is highly engaging with customers

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

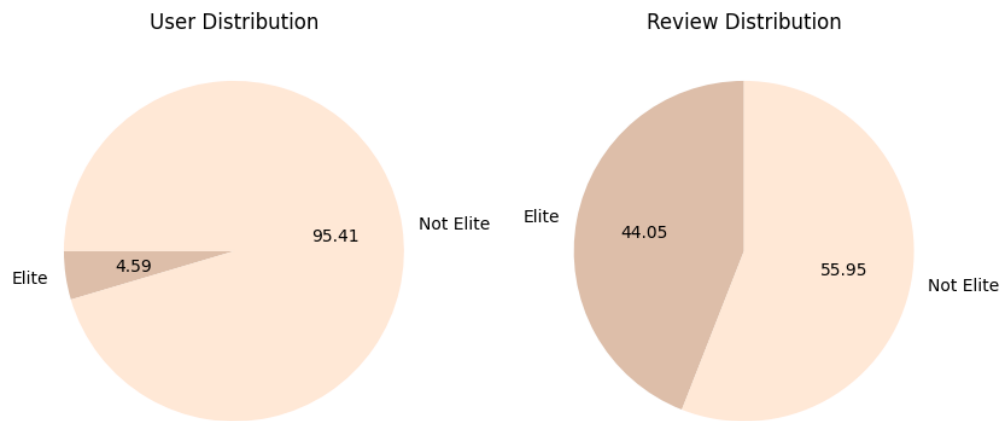
- "Useful," "funny," and "cool" are labels associated with user reviews, representing feedback on the helpfulness, humor, or appeal of a particular review.
- A higher number of "useful," "funny," and "cool" reviews indicates greater user engagement and satisfaction, which are key factors driving a restaurant's success.



Is there a difference in engagement between Elite and non-Elite users?

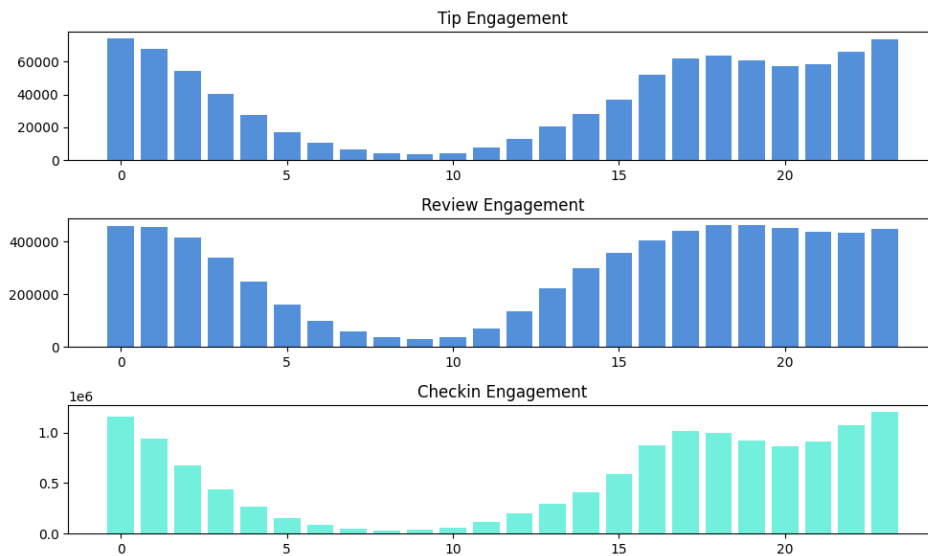
- Elite users are those who have earned recognition for their active and high-quality contributions.
- Although they are fewer in number, Elite users account for a significant share of the total review count, outperforming non-Elite users in this regard.

- Building a strong relationship with Elite users can foster repeat visits and loyalty, as they are more likely to continue supporting businesses with which they've had positive experiences.



Hourly Business

- The peak hours of restaurant activity, based on user engagement, typically occur between 4:00 p.m. and 1:00 a.m.
- Understanding these peak hours enables businesses to optimize staffing and resource allocation, ensuring efficient operations and consistent service quality.
- The concentration of user engagement during the evening and late-night hours reflects a higher demand for dining out, influenced by factors such as work schedules, social events, parties, and leisure activities.



Recommendations

- By leveraging insights from various metrics—such as user engagement, review sentiment, peak hours, and the influence of Elite users—businesses can make data-driven decisions to drive success.
- Partnering with Elite users and tapping into their influence can amplify marketing efforts, boost brand awareness, and attract new customers.
- Adjusting operating hours and introducing special promotions during peak times can help businesses capitalize on heightened demand and maximize sales.
- To maintain long-term success, businesses should focus on strategies to sustain user engagement, such as improving service quality and actively responding to customer feedback.
- Cities with high success scores offer lucrative opportunities for restaurants to expand, diversify, or further invest in their operations.

