



Understanding Customer Satisfaction Through Yelp Reviews: A Text Analytics Study of LA Restaurants (2023)

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From reviews to revenue: Using text analytics to decode customer satisfaction and guide restaurant improvements

Introduction



Restaurant Failure Rates

17% of restaurants fail in year one; 80% within five years



High Emotional & Financial Stakes

Restaurant owners face significant personal and financial risks



Importance of Online Reviews

Online reviews play a crucial role in customer decision-making



Review Biases

- 95% of users share negative experiences
- 87% share positive ones

Our analysis aims at identifying what drives customer satisfaction in Yelp reviews

Business Problem & Objective

Business Problem

1

Competitive LA restaurant market

Understanding customer satisfaction is essential for restaurants to stay competitive

2

Negative reviews lead to lost revenue

Restaurants need to identify and address factors driving negative reviews

Analysis Objective

1

Identify factors driving positive and negative Yelp reviews

Analyze Yelp review data to understand what's driving customer satisfaction

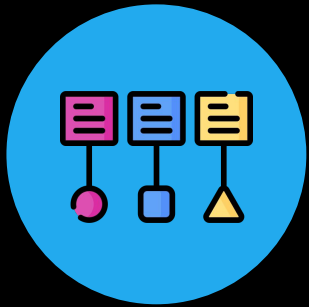
2

Deliver actionable insights for restaurant owners

Provide recommendations to help restaurant owners improve their operations

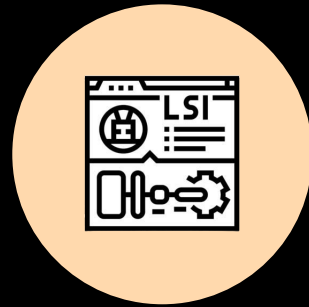
By understanding the key drivers of customer satisfaction, restaurant owners can make data-driven decisions to improve their operations and reputation, ultimately driving revenue growth.

Methodology



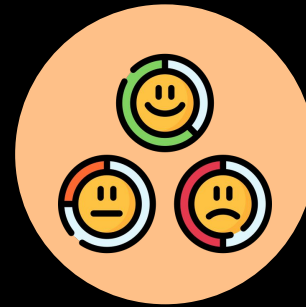
Text Classification

Use XGBoost & Naive Bayes models for accurate text classification



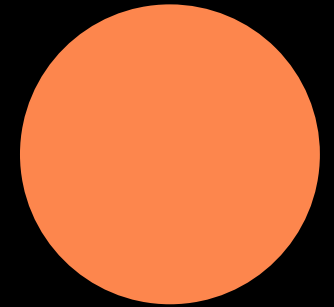
Latent Semantic Analysis (LSA)

Apply TF-IDF, SVD, and cosine similarity to uncover semantic relationships



Sentiment Analysis

Leverage lexicon-based scoring to determine net sentiment



Topic Modeling

Utilize Structural Topic Modeling (STM) to discover key themes

A comprehensive toolkit of text analytics techniques to uncover insights from Yelp reviews and drive business improvements.

Data Preprocessing

Overview of the data

- 240 top L.A. restaurants from Yelp (2023), including cuisine, star rating, price, and sample customer review text
- Each restaurant has 10 most recent reviews

Data cleaning & processing

- Filtered and segment for extreme ratings: Positive (≥ 4.5 stars) vs Negative (< 3.9 stars)
 - Retained 700 positive reviews (StarRating ≥ 4.5)
 - Retained 201 negative reviews (StarRating < 3.9)
- Converted review date into weekend vs. weekday variable
- Applied TF-IDF transformation for later modeling



Key Findings

What drives and what hurts satisfaction?

High-rating guests value

- Consistent flavor
- Place ambiance
- Attentive service

⇒ These factors help make strong impression and customer returns.

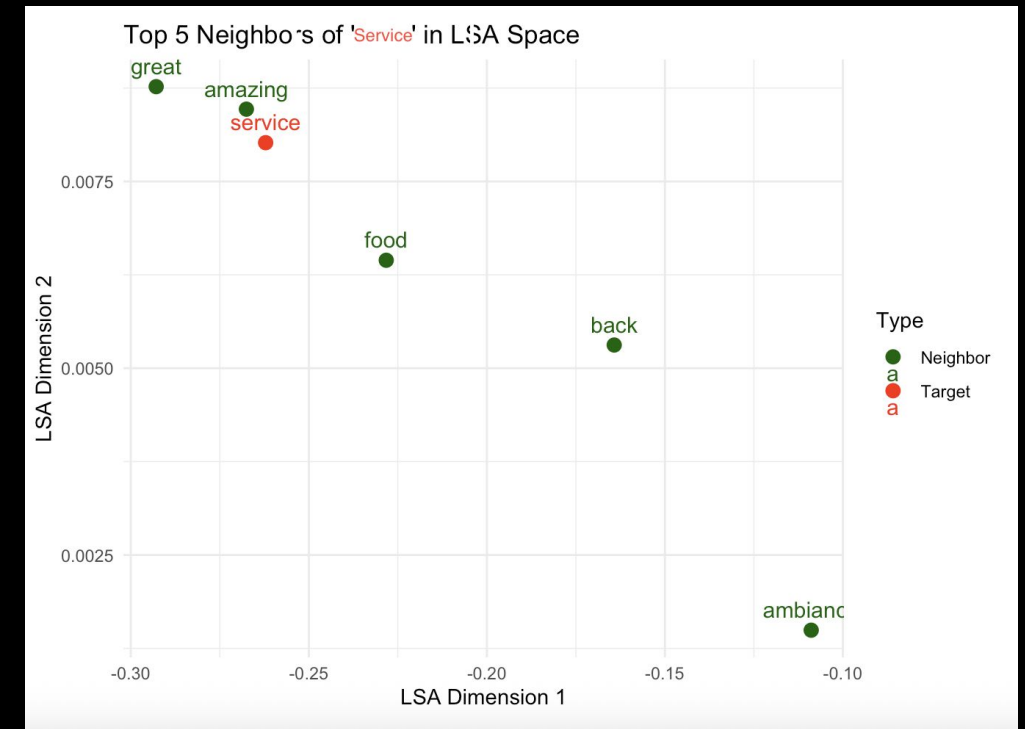
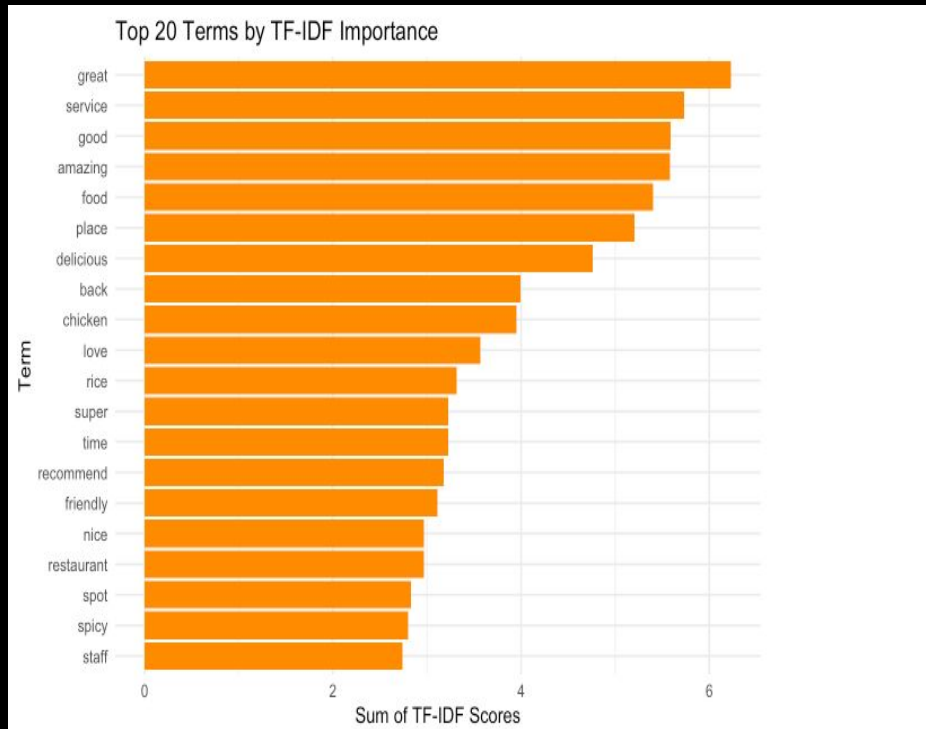
Common issues are

- Inconsistent food quality
- Poor staff attitude
- Billing/order errors
- Poor payment experience

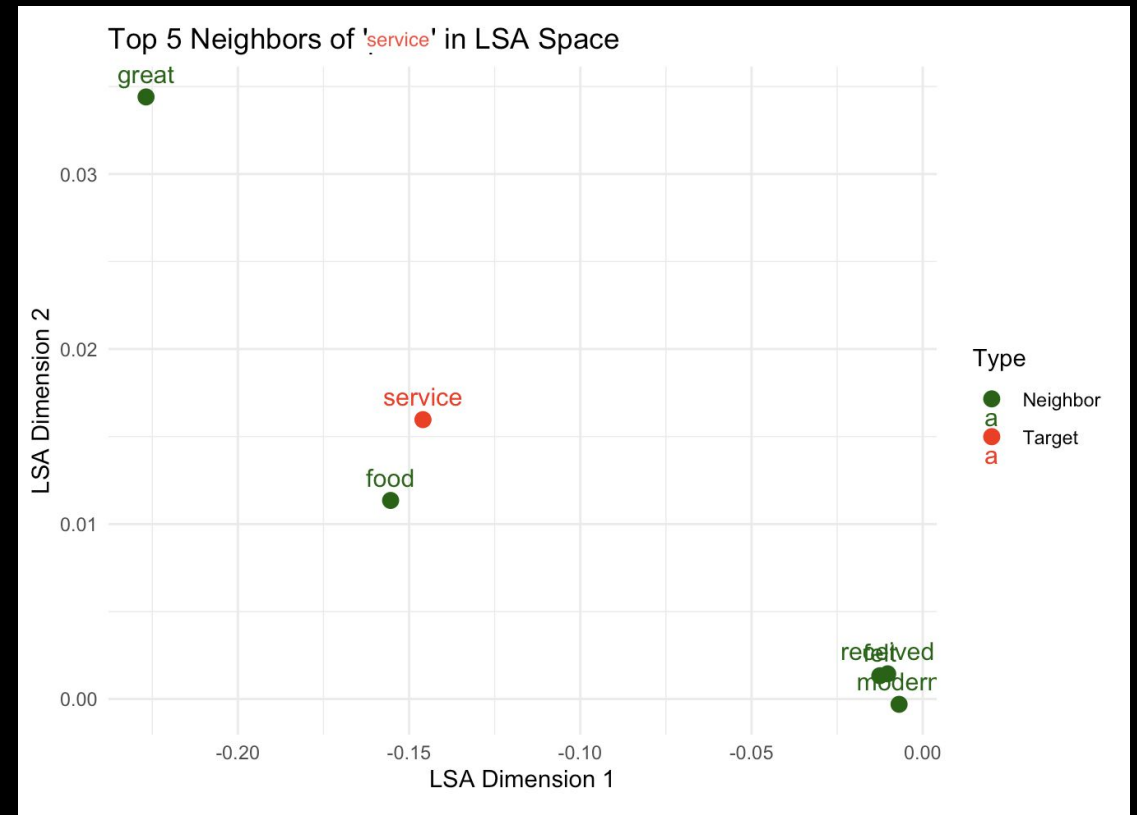
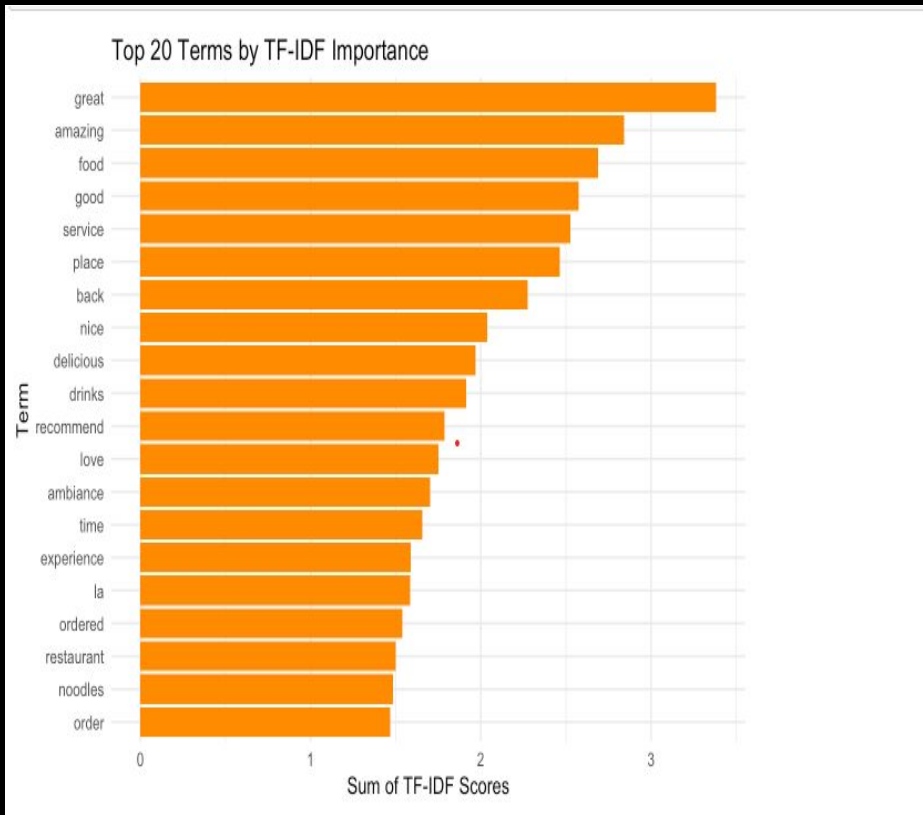
⇒ Staff-related issues, especially attitude and service consistency, are the main pain points of the customers.



Key Findings (LSA - Positive Subsection)



Key Findings (LSA - Negative Subsection)





Key Findings (Sentiment Analysis)

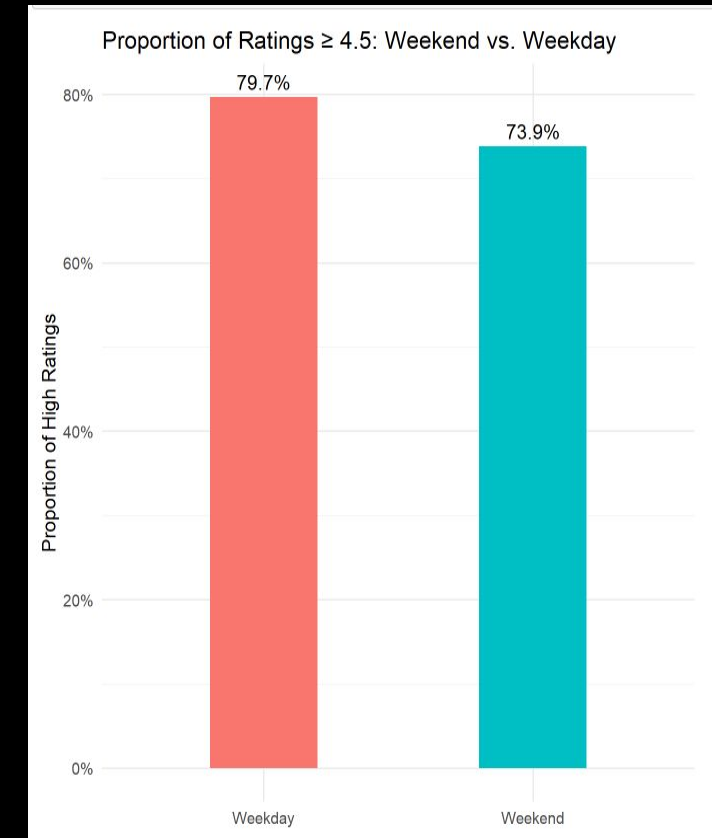
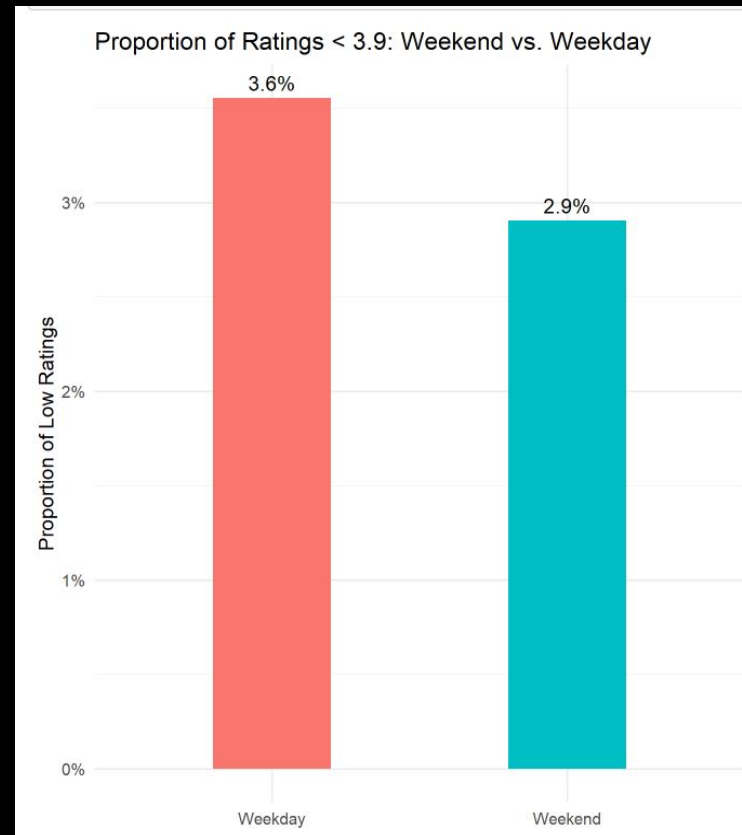
- Regression using sentiment score, price, style, and word count
- Top predictors for negative reviews (statistically significant):
- Style: Laotian, Dim Sum, Tapas, American (New)
- All had negative coefficients
 - (ranging from ~ -0.47 to ~ -0.30)
- Many style-based predictors were not statistically significant in smaller subsamples

Key Findings

Weekday vs weekend reviews

Weekday ratings are more polarized while weekend ratings are milder

- Weekday customers are more critical
- Weekend users may be more relaxed as they enjoy themselves at weekend



Recommendations

Improve service quality

- Positive reviews are often tied to attentive service and ambience.
- Invest in staff training and encourage emotional connection through personalized experiences.

Control theme authenticity

- Ensure restaurant's concept aligns with customer expectations especially when it comes to specialized cuisine styles (e.g., Laotian, Dim Sum)

Weekday and weekend assignment

- Assign strong staff during weekdays to ensure quality consistency
- Use weekends to test new offerings or service improvements



*Thank you
for Listening*

Questions?

