Module 3: Presentation 1

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Group 7

Question

Analyze breakfast and brunch restaurants across the country on whether price, season/time and location affect ratings. What can we learn from the reviews, such as customer satisfaction of popular foods?

Does price, season, satisfaction of popular foods, and location affect customer reviews of a business? If they do, what action can be taken by a business owner to increase reviews based on this analysis.

Data Cleaning

Business Data:

- Filtered by categories containing "breakfast", "brunch", "breakfast & brunch" left with 6,525 businesses.

Review Data:

- Filtered customer review of businesses with business IDS that match the business IDS of the filtered business data set. Originally 6990280 records, after filtering left with 879,195 results
- Filter the reviews by the sum of "useful, funny, cool " greater than 6 (top 95%)

Stop words removal

- Remove punctuations and stop words such as "is", "like","which" to improve efficiency

"0o"	"0s"	"3a"	"3b"	"3d"	"6b"
"6o"	"a"	"a1"	"a2"	"a3"	"a4"
"ab"	"able"	"about"	"above"	"abst"	"ac"
"accordance"	"according"	"accordingly"	"across"	"act"	"actually"

- Stopword dictionary:
  - Gist_stopwords
  - stopword package in R
  - User-defined stopwords

Topic Models for each star level

High reviews are all alike; every low review is unhappy in its own way
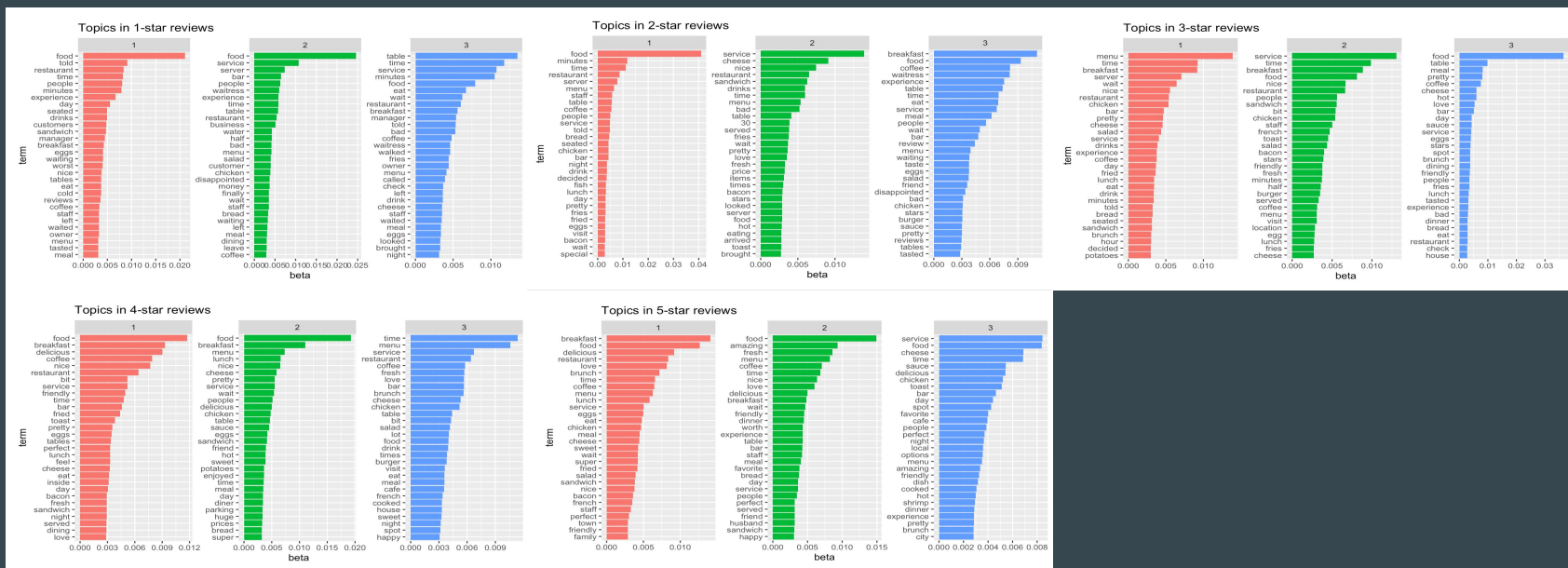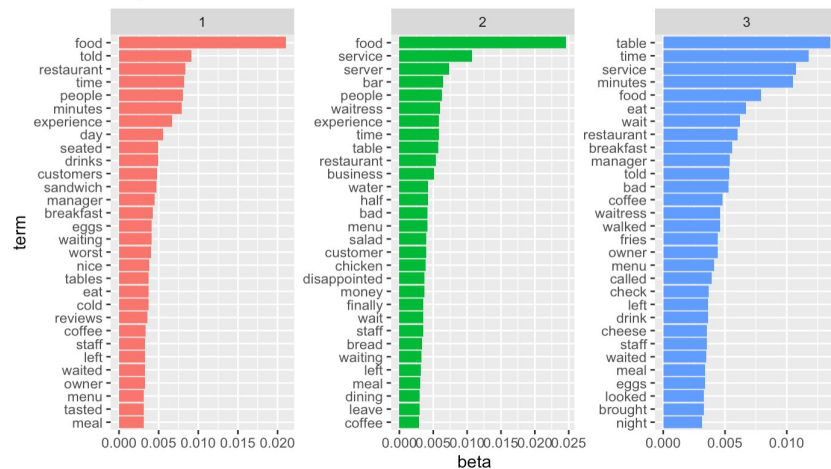
1-star and 2-stars
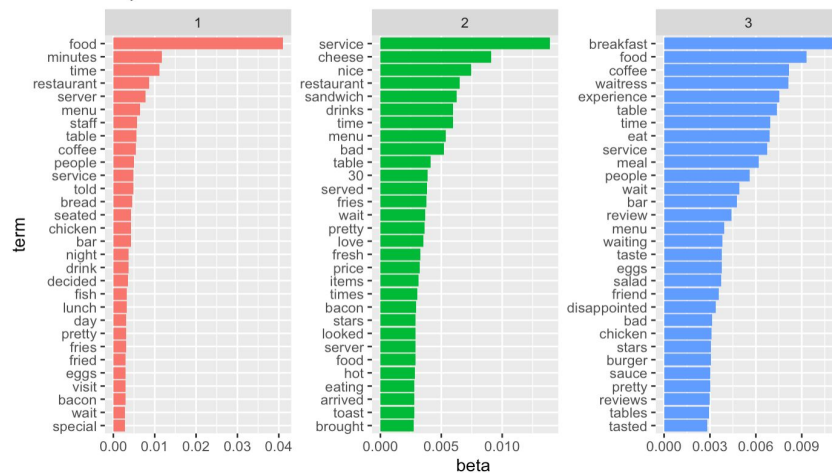
1: Food Reviews

2: Service Reviews (People)

3: Service Reviews (Time)

The only difference is that for 2-stars, the criticism are more neutral, the reviews are like: xxx is nice, but overall it's unsatisfying.
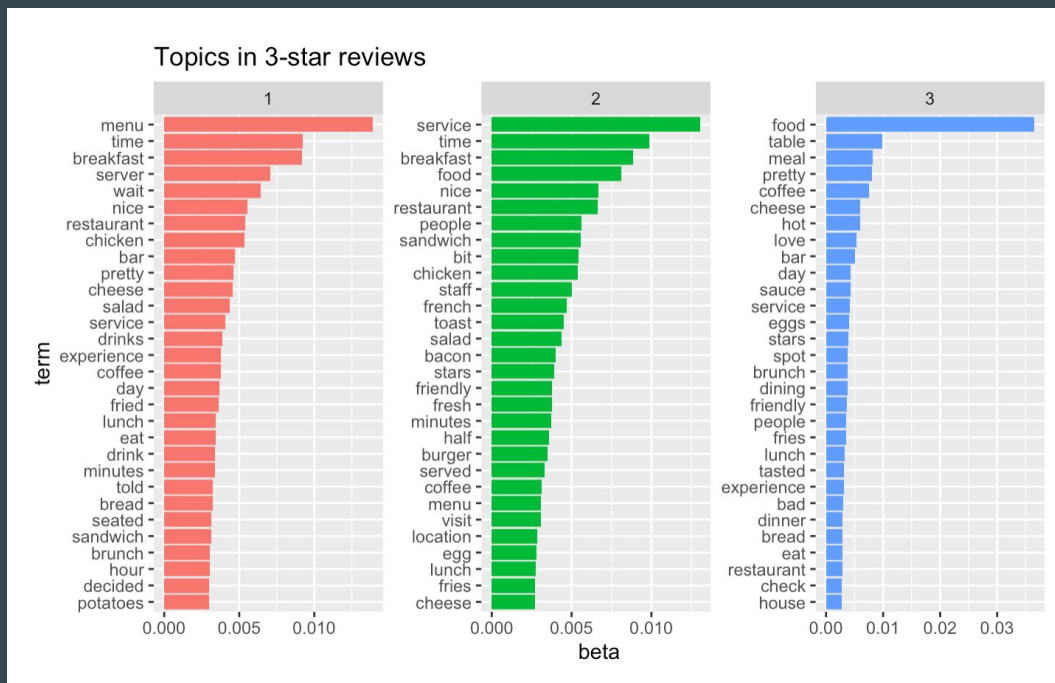
3-stars

1. Food Reviews (Specific Dishes)
2. Experience Reviews (Service and Time)
3. Food Reviews (Overall)

Comparing with 2-stars, now the reviews focus more on the food than the service. It's probably because the service is neither too bad nor very impressive.
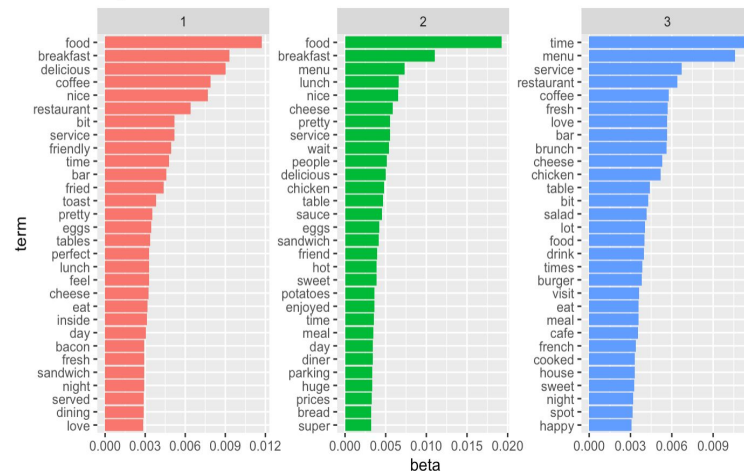

Topics in 3-star reviews

4-stars and 5-stars

1. Food Reviews (Coffee and Bar)
2. Food Reviews (Lunch and Dinner)
3. Service Reviews

The 4 and 5 stars restaurants provide more options and their business are not limited to breakfast. Besides, their service are more humanistic according to the reviews with the words like "love, happy, nice, friendly and enjoyed"
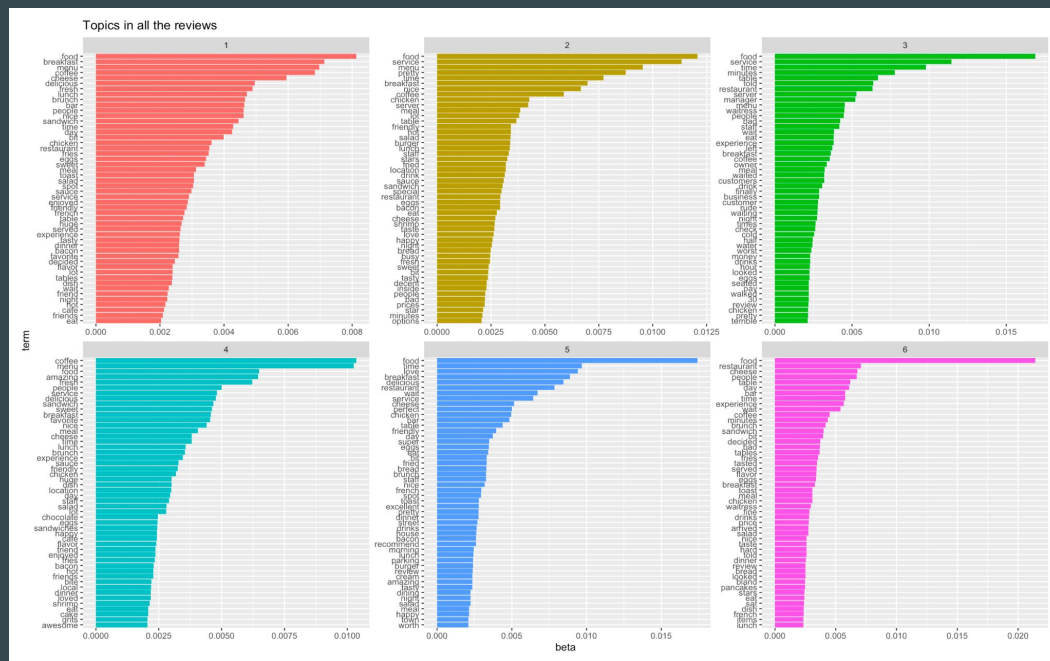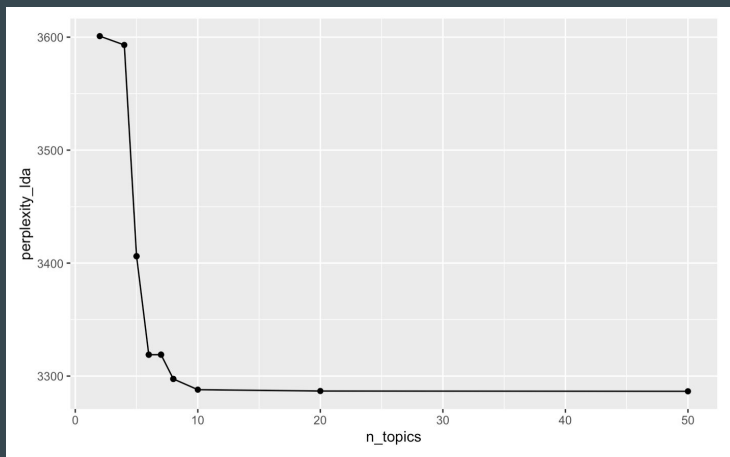

Topics in 4-star reviews

Topics in 5-star reviews
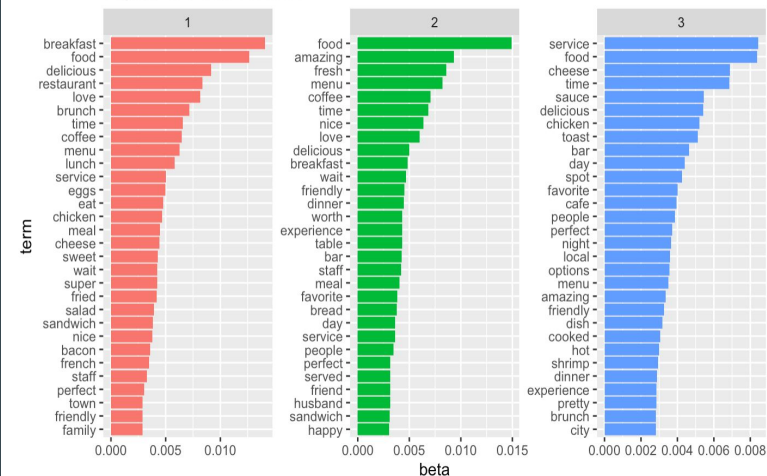
Topic Models for all the reviews

- At 6 topics, perplexity stops decreasing drastically.
- Plot suggests 6 topics may be a good choice

Topic Models for all the reviews

- 1. Broad Business (Lunch & Brunch & Dinner)
- 2. Location and Price
- 3. Service (Long waiting time, bad experience)
- 4. Amazing Coffee (also cake and chocolates)
- 5. Delicious Entree (chicken, cheese, eggs)
- 6. Service (Waiter/Waitress)

Topics distribution in each star-level
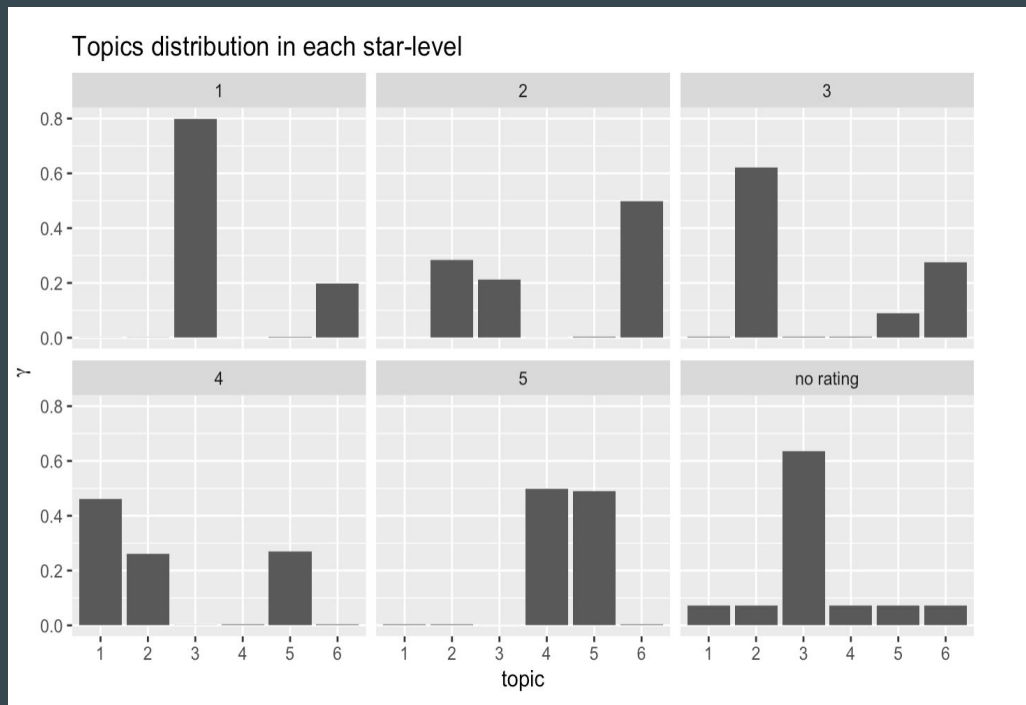
Business Recommendation

Recommendation:

If your restaurant's rating is below 3, improve the service first.

If want to improve the rating to 4, make sure there are at least some dishes in the menu are really delicious

On top of that, if want to improve the rating to 5, having a friendly and joyful atmosphere is very important. You may invest more in staff training.

Further Analysis

- Remove non english words from data -Although low frequency, it still improve accuracy
- Filter to breakfast food reviews so we can see the most talked about items
- Deal with negative words such as "no","don't", "doesn't" to understand the relation between its frequency and ratings
- Standardize user rating for these breakfast/brunch restaurants to see if there is a difference in reviews depending on the month (i.e season)