

MA615 Final Porject—NYC Restaurant Week Analysis

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1. Introduction

In 2018, many restaurants in New York City held a special one week activity called NYC Restaurant Week which they offer many dinner deals. By using the dataset from OpenTable's website, The goal to explore how different type of restaurants performed during this special event. The dataset is available from <https://www.kaggle.com/popoandrew/restaurant-week-2018>.

This project include: 1. Summary and analysis on different type of restaurant. 2. Relationship between type and rating 3. Word Analysis

2. Read dataset and clean the data

There are in total 348 restaurants with 22 variables, e.g. "Average Rating", "type of restaurant", "locations" and so on. I am only interested in reviews, restaurant type, description, so I filtered out some unused variables.

3. Breif summary of the dataset

As shown, there are in total 17 type of restaurant(by food), and the average rating ranged from 3.75 to 4.88. Number of reviews varies from and up to 18139 reviews.

```
length(unique(datac$restaurant_main_type))
```

```
## [1] 17
```

```
length(unique(datac$restaurant_type))
```

```
## [1] 48
```

```
range(datac$average_review)
```

```
## [1] 3.750 4.883
```

```
range(datac$review_count)
```

```
## [1] 12 18139
```

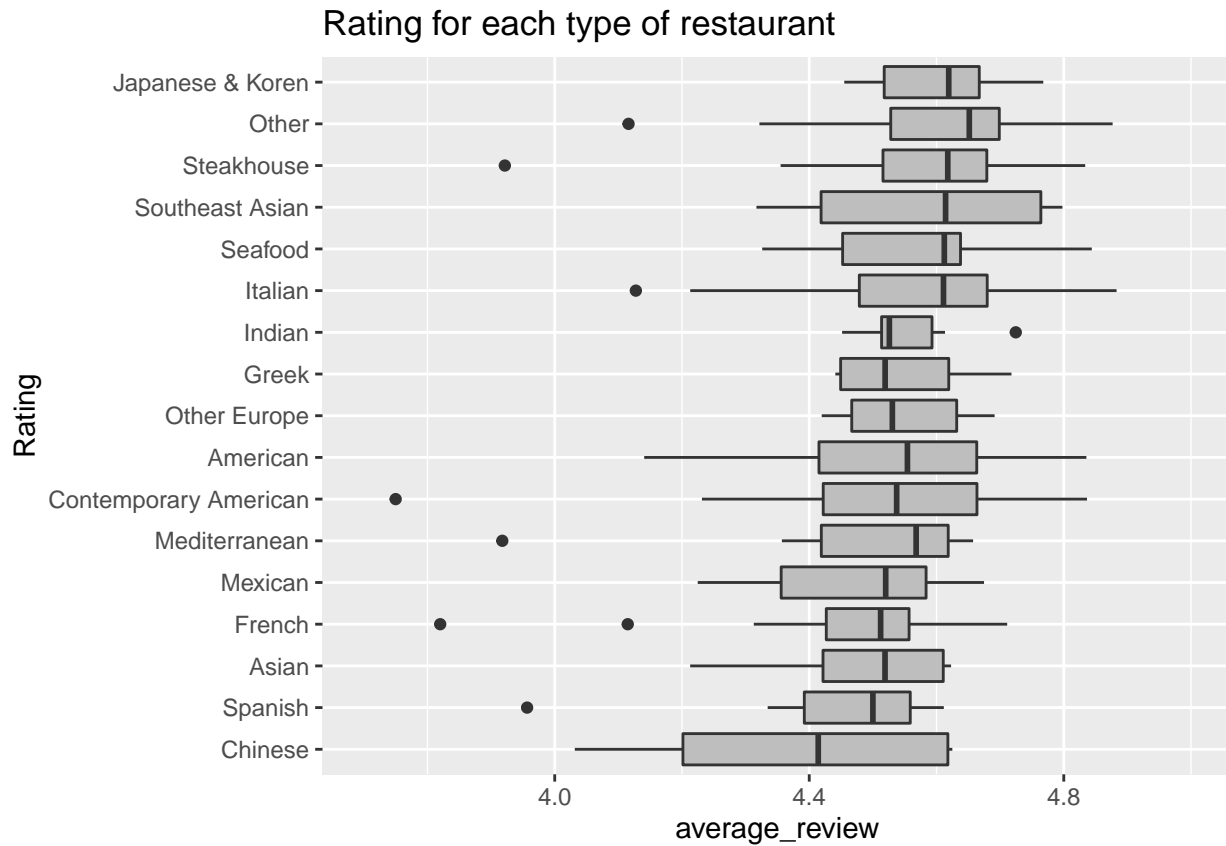
4. Tables and Graphs

4.1 Number of resaurant for each type

| restaurant_main_type | n |
|-----------------------|----|
| American | 52 |
| Asian | 5 |
| Chinese | 8 |
| Contemporary American | 30 |
| French | 30 |
| Greek | 4 |
| Indian | 6 |
| Italian | 74 |
| Japanese & Koren | 16 |
| Mediterranean | 11 |
| Mexican | 19 |
| Other | 19 |
| Other Europe | 7 |
| Seafood | 13 |
| Southeast Asian | 5 |
| Spanish | 8 |
| Steakhouse | 41 |

4.2 Average rating for each type

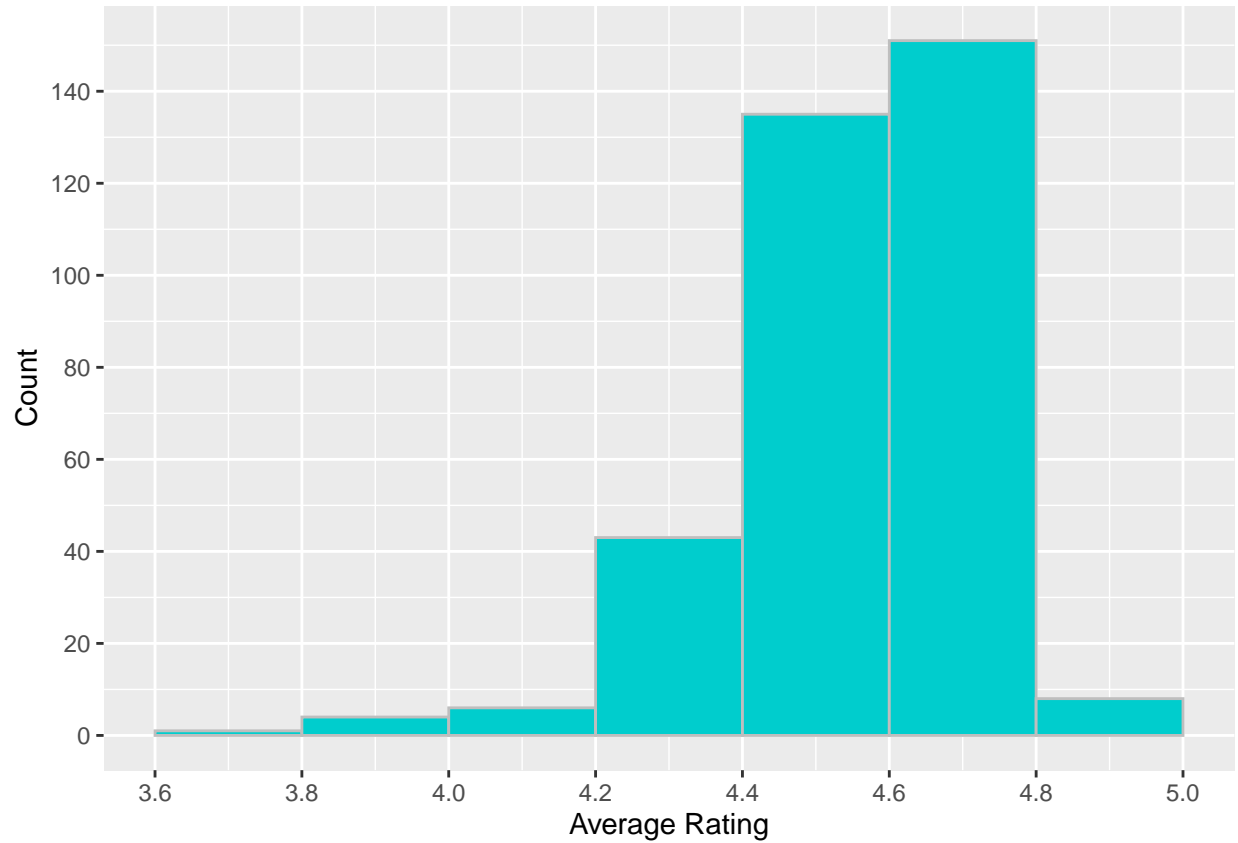
Steakhouse has the highest overall average rating with 4.59, wfollowed by southeast Asian food with 4.58. While Chinese food has the lowest rating with 4.38 on average.



| Restaurant Type | Average Rating |
|-----------------------|----------------|
| American | 4.54 |
| Asian | 4.48 |
| Chinese | 4.39 |
| Contemporary American | 4.52 |
| French | 4.48 |
| Greek | 4.55 |
| Indian | 4.56 |
| Italian | 4.57 |
| Japanese & Koren | 4.61 |
| Mediterranean | 4.48 |
| Mexican | 4.48 |
| Other | 4.59 |
| Other Europe | 4.55 |
| Seafood | 4.57 |
| Southeast Asian | 4.58 |
| Spanish | 4.43 |
| Steakhouse | 4.59 |

4.3 Average rating versus Number of Reviews

From the graph we can see that there is a tendency that more reviews means a higher rating, except those with rating higher than 4.8. This make sense because better restaurant usually attract more customers which lead to higher amount of reviews.



5. Text analysis

I separate all restaurant into three tiers. The first tier rate from 4.6-5.0, the second rate from 4.2-4.6, and the third rate from 3.8-4.2

5.1 Word cloud for restaurant rating 3.8~4.2

Since there is not many restaurant in this range, the result shows that only four type of food.

| ## | word | freq |
|------------------|---------------|------|
| ## chinese | chinese | 2 |
| ## french | french | 2 |
| ## american | american | 1 |
| ## italian | italian | 1 |
| ## mediterranean | mediterranean | 1 |
| ## other | other | 1 |
| ## spanish | spanish | 1 |
| ## steakhouse | steakhouse | 1 |

A word cloud visualization showing the frequency of different restaurant types. The words are arranged in a vertical stack, with 'steakhouse' at the top, followed by 'american', 'chinese', 'french', 'spanish', and 'italian' at the bottom. The word 'italian' is written vertically on the left side, overlapping the other words.

5.2 The wordCloud for rating 4.2~4.6

The american and italian are the two major type of food in this range, and one reason is that there is a large number of restaurant selling these two type of food. However, we can also see French and Steakhouse on the map, which does not as populous as the previous two. We confirm the result that French and steakhouse may have a higher rating.

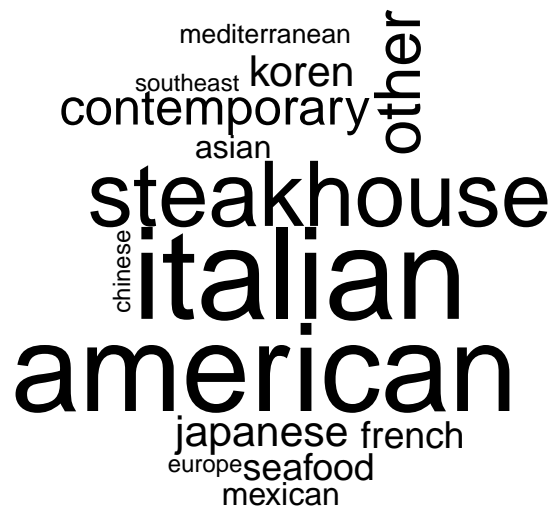
| ## | | word | freq |
|----|--------------|--------------|------|
| ## | american | american | 44 |
| ## | italian | italian | 35 |
| ## | french | french | 21 |
| ## | contemporary | contemporary | 17 |
| ## | steakhouse | steakhouse | 15 |
| ## | mexican | mexican | 14 |
| ## | other | other | 9 |
| ## | japanese | japanese | 7 |



5.3 The wordCloud for rating 4.6~5.0

Italian restaurant is the major type of food in this range, following by American and steakhouse. This further proved our statement that Steakhouse in general could receive a higher rating. However, it is quite surprised that we could not see many French restaurant in this range, and instead, we see some Japanese and Korean and contributed a lot in this range.

| ## | | word | freq |
|----|--------------|--------------|------|
| ## | italian | italian | 38 |
| ## | american | american | 36 |
| ## | steakhouse | steakhouse | 25 |
| ## | other | other | 16 |
| ## | contemporary | contemporary | 12 |
| ## | japanese | japanese | 9 |
| ## | koren | koren | 9 |
| ## | french | french | 7 |



6. Conclusion

From the data analysis we can see that While Italian and American are the two most popular cuisines in NYC, in general, steakhouse, French and Italian tend to have a better rating among all types of food.

In the future, I would also love to compare price and rating to see if there is a relationship between them.