



Restaurant Rating Using Review Topic Smart Filter

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What does 4-stars Yelp Rating say about a Restaurant?



- ✳️ Can we confidently say that the restaurant has very good food? Or, very good customer service?
- ✳️ We can't be sure because every customer rate restaurant differently for different reason.
- ✳️ The only way to find out what the ratings are based on is to read the reviews.



Haberdish Claimed

893 reviews

\$\$. Southern, Cocktail Bars Edit

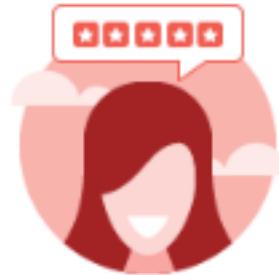
It's impractical to read large number of review

Data Source

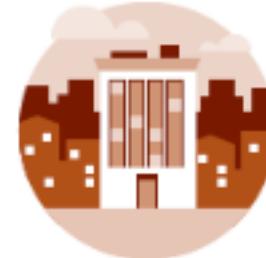


Yelp Open Dataset

An all-purpose dataset for learning



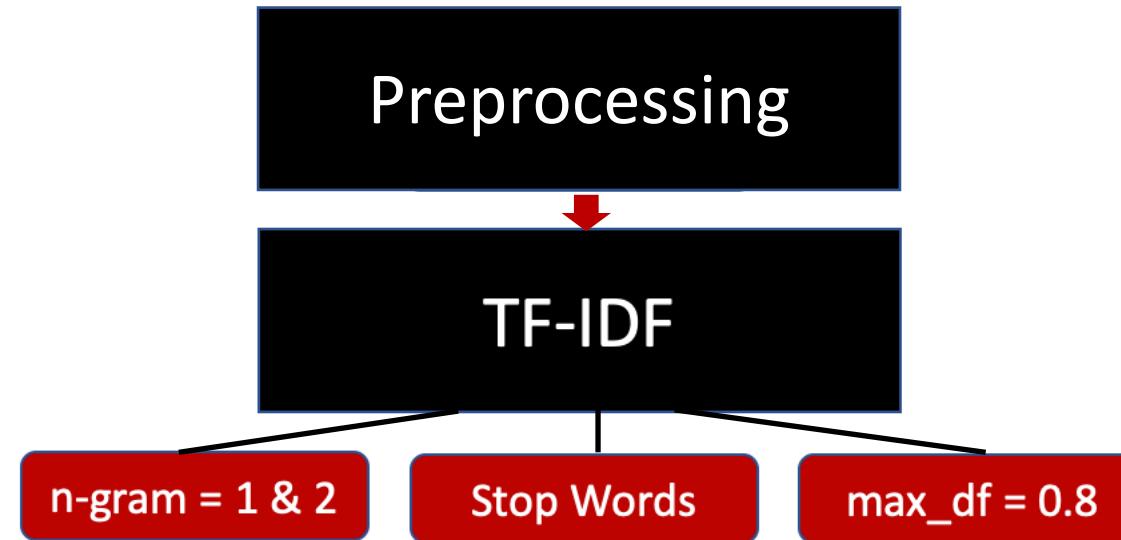
200,000 + Reviews



Restaurants in Charlotte NC
(2009 – 2018)



- IDs, Names
- Categories
- Ratings (1-5 ⭐)
- Customer Reviews

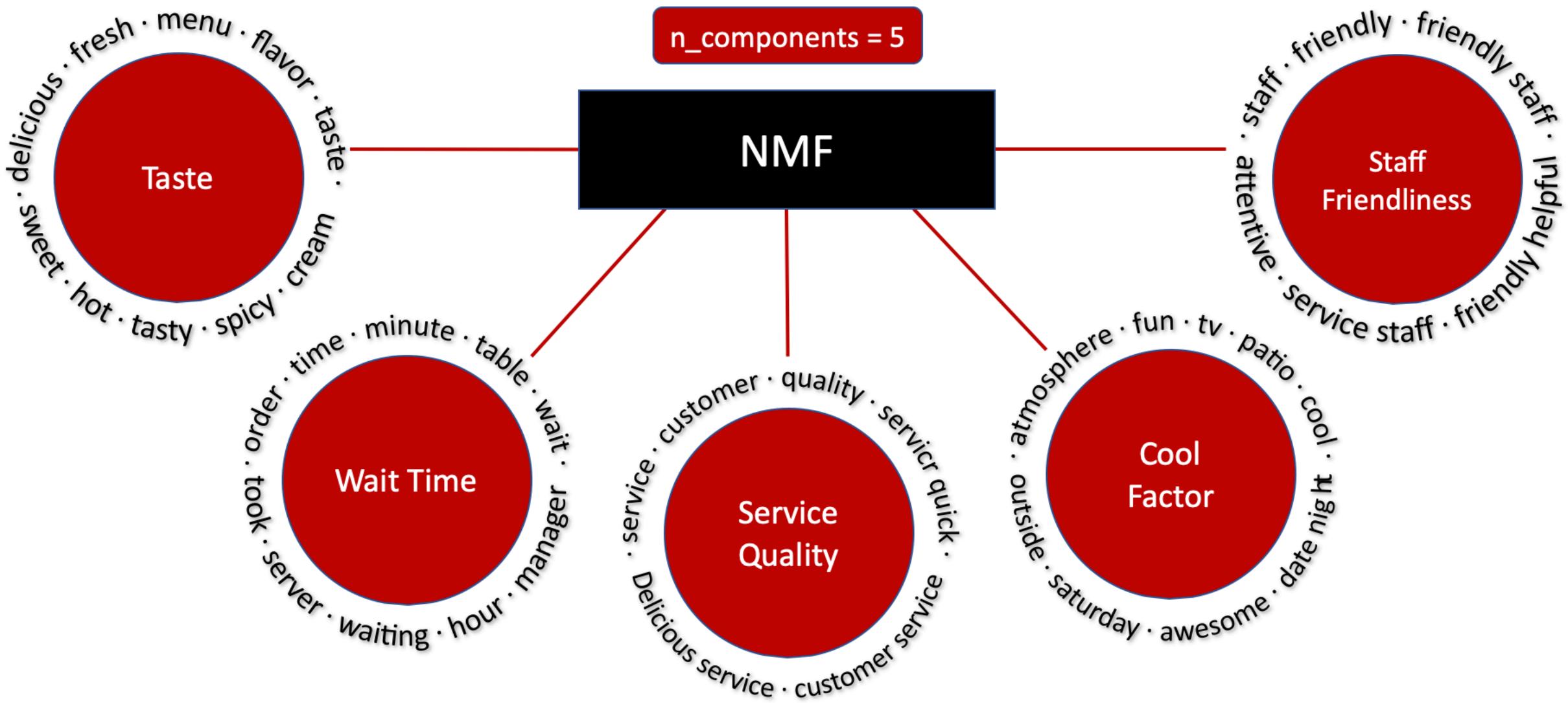


- * Preprocess customer review to remove foreign language, repeating characters and spelling errors, etc.
- * Use TF-IDF to turn words in reviews to statistical numbers

NLP & Topic Modeling



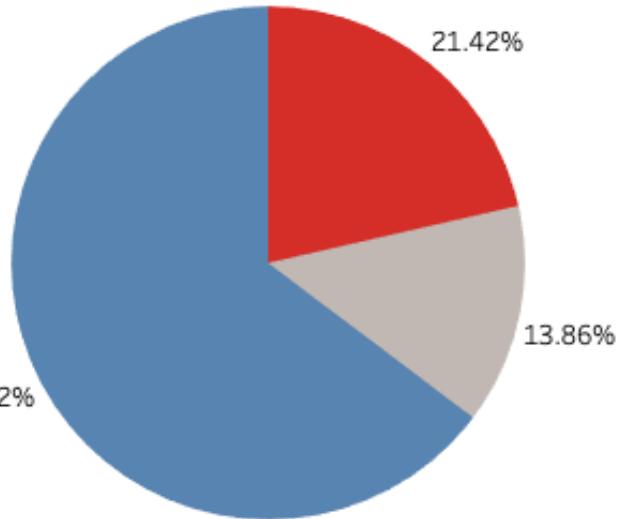
Use NMF to turn the statistical numbers into 5 topics that represent the reviews



Review Topics

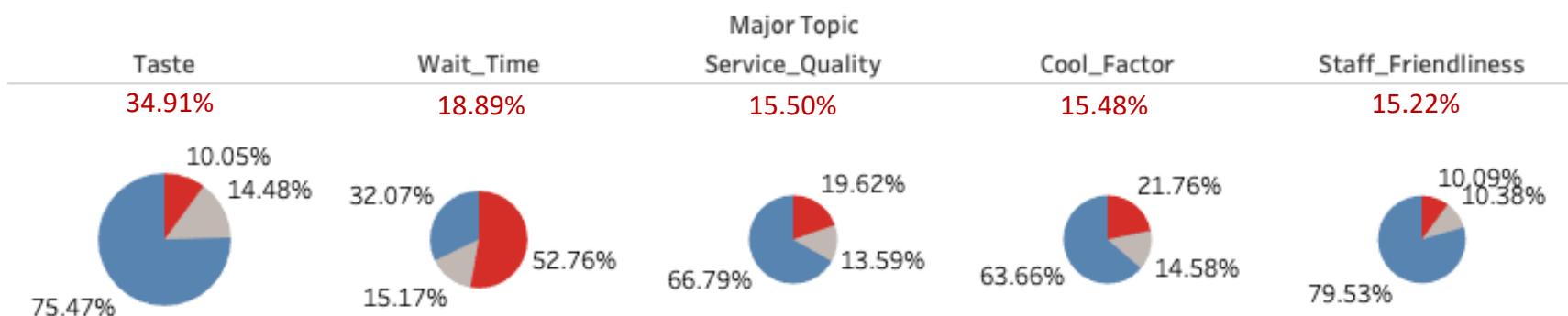


Sentiment of All Reviews



Sentiment
Negative (1-2★)
Neutral (3★)
Positive (4-5★)

% of Total Count of F1
100.00%

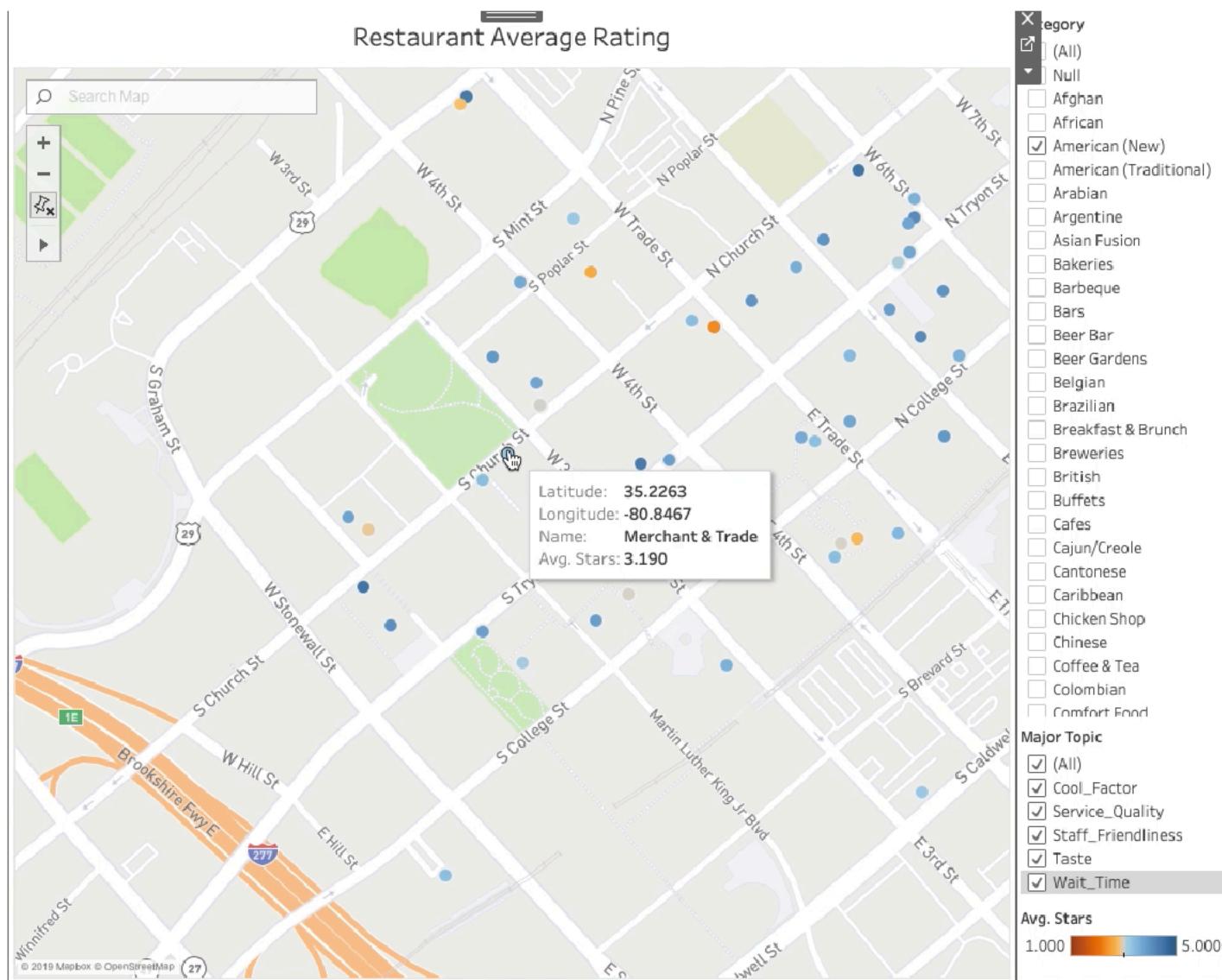


Assigning The Most Relevant Topic to each Review



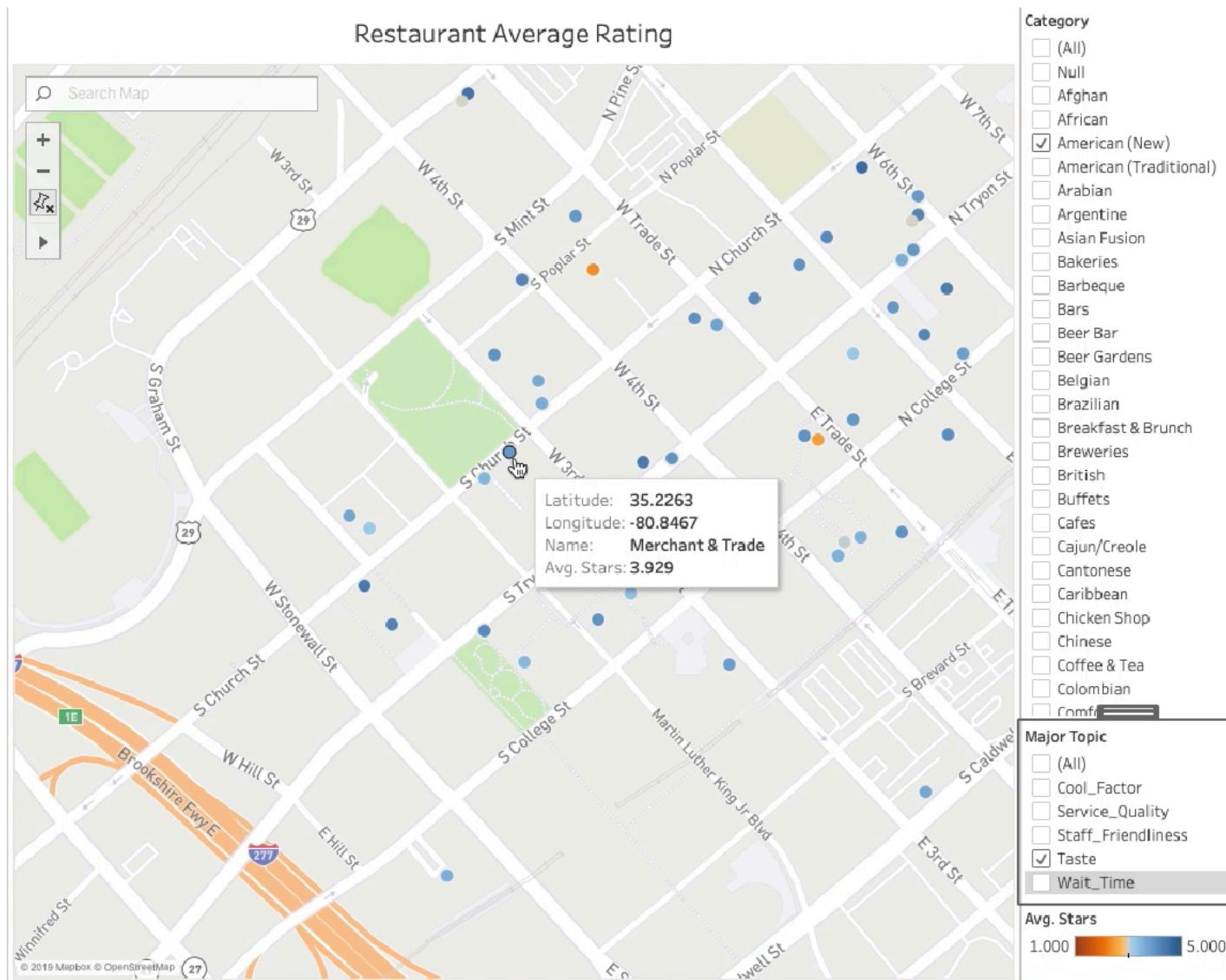
name	latitude	longitude	Category	date	stars	Sentiment	Major_Topic
Block & Grinder	35.170504	-80.806674	American (New)	2015-01-03 21:11:31	5.0	Positive	Wait_Time
Paco's Tacos & Tequila	35.156298	-80.830796	Mexican	2015-09-13 02:37:33	3.0	Neutral	Service_Quality
Living Kitchen	35.209027	-80.861156	Vegan	2017-10-14 00:28:16	3.0	Neutral	Cool_Factor
Futo Buta	35.215379	-80.855443	Japanese	2018-08-10 00:00:56	1.0	Negative	Taste
Nolen Kitchen	35.174088	-80.839809	American (New)	2016-05-03 16:23:50	2.0	Negative	Wait_Time

Using Review Topics to get relevant Rating



Before applying
review topic filter,
restaurant rating
is 3.190

Using Review Topics to get relevant Rating



After applying filter using taste, restaurant rating is 3.929

Conclusion



- ✿ NLP and Topic Modeling can be used to uncover the main topics of customer review
- ✿ With the extracted topics, we could get more accurate restaurant rating