

OLIVE SUN COHORT 15

RESTAURANT OWNER NEVIGATOR

YELP DATASET CHALLENGE

DATASET



ROUND 7 YELP CHALLENGE DATA

- 2.2M reviews and 519 tips by 552K users for 77K business in 10 cities
- Top cities: Las Vegas (4658 businesses) & Phoenix(2922 businesses)
- 566K business attributes
- Use data before 2015 to build model for Marketing Solution, and validate assumptions of similar user effect on data in 2015.





MARKETING SOLUTION

SELECTIVE TARGETED IMPRESSIONS

CURRENT YELP MARKETING PLAN

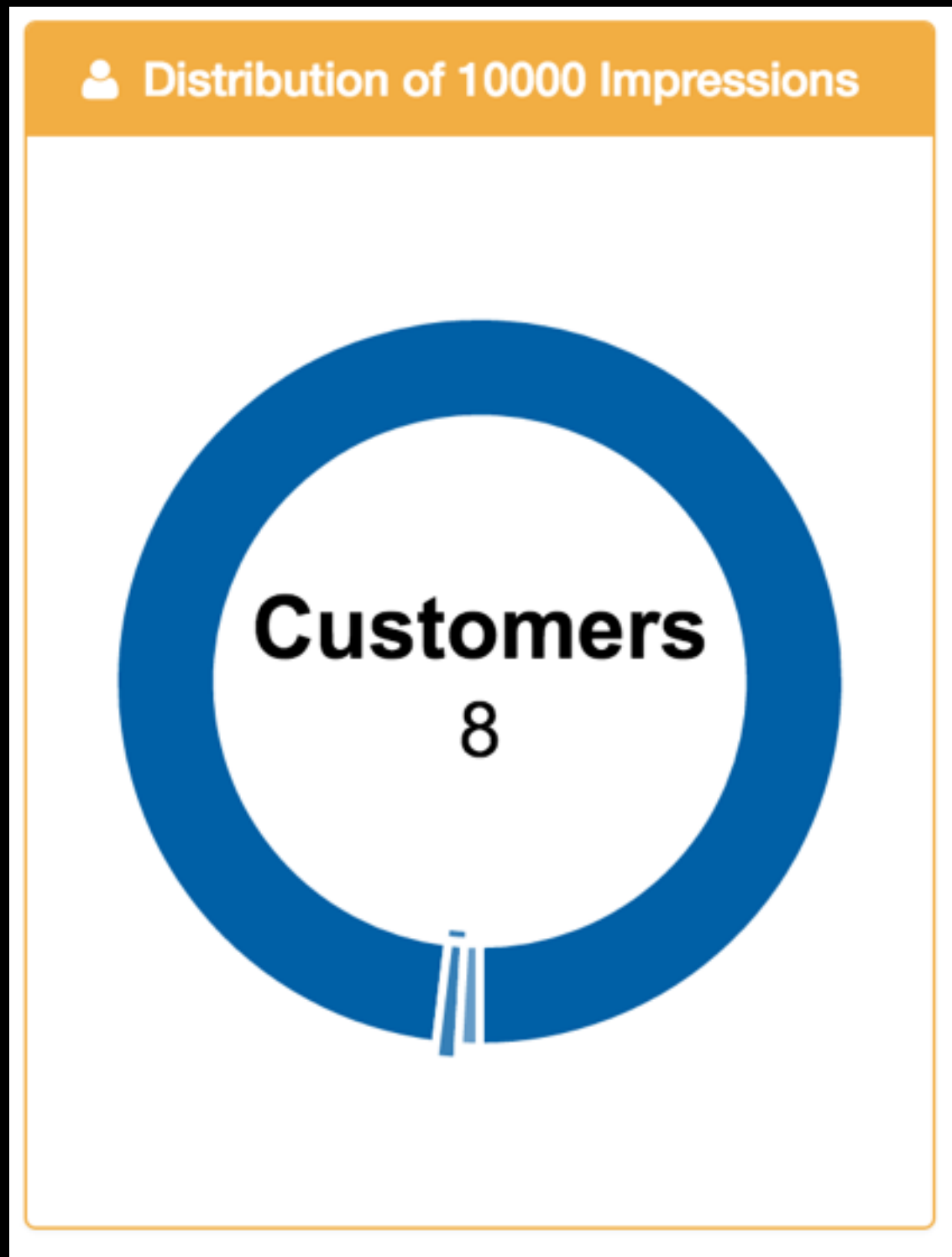
\$1000 FOR 10000 IMPRESSIONS



- 2% Click Through Rate
- 5% Conversion Rate
- 20% Customers leave reviews

CURRENT YELP MARKETING PLAN

\$1000 FOR 10000 IMPRESSIONS



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CURRENT YELP MARKETING PLAN

\$1000 FOR 10000 IMPRESSIONS



- 2% Click Through Rate
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ALTERNATIVE: \$3.27 PER CLICK

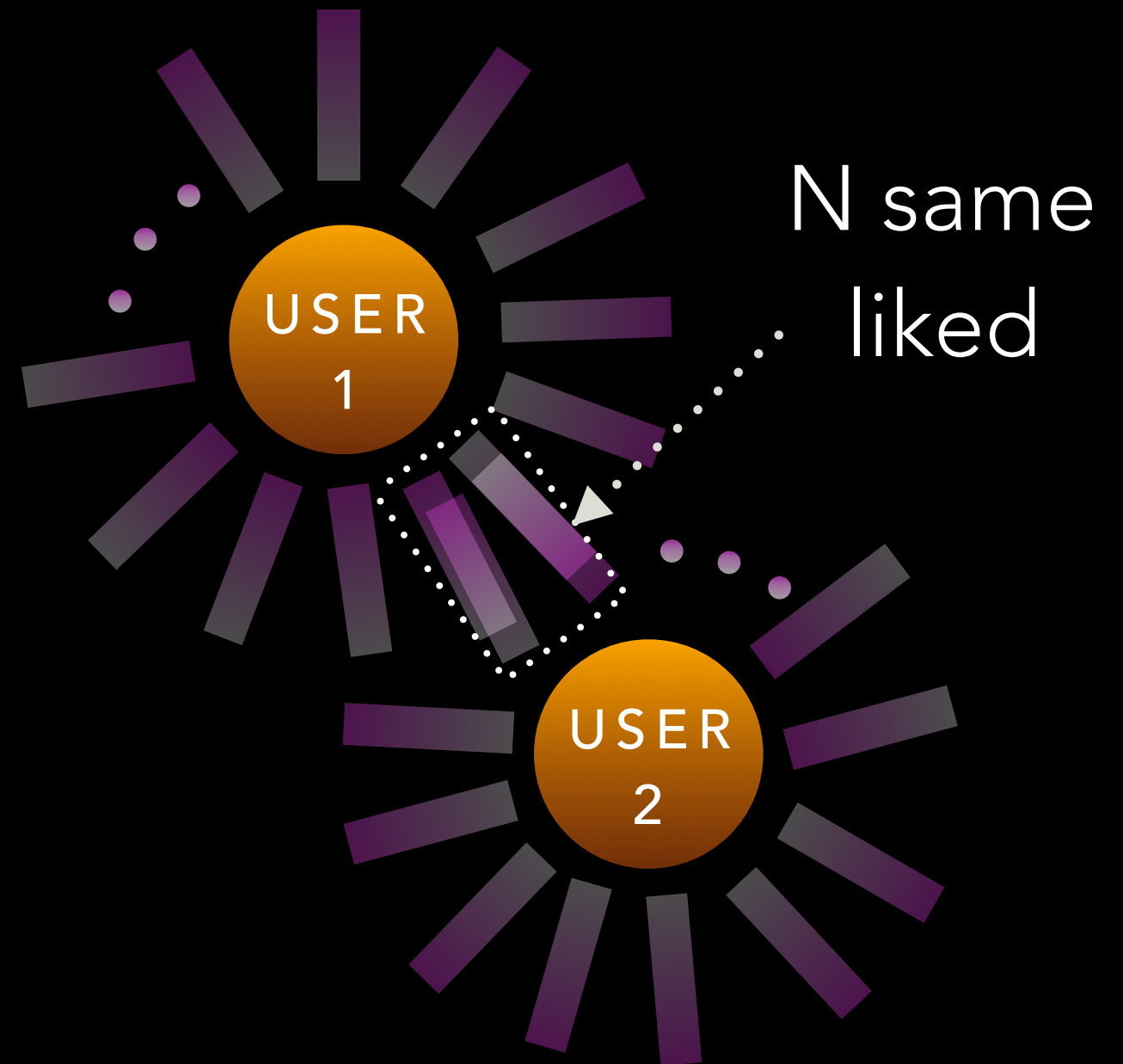
SCHEME	BY IMPRESSION	BY CLICK
COST	\$1000	\$327
PRODUCT	10000 Impressions	100 Clicks
\$/ IMPRESSION	5	3.27
\$/CUSTOMER	100	65
\$/REVIEWER	500	327



- 5% Conversion Rate
- 20% Customers leave reviews

FINDING HIGH POTENTIAL CUSTOMERS & REVIEWERS STEPS

- Identify people who gave your 4+ ratings
- Find out who are similar users to these people:
 - similar users are those who share N+ number of restaurants they left 4+ ratings to
 - N ranging from 5 to 10 are tried in model



FINDING SIMILAR USERS:

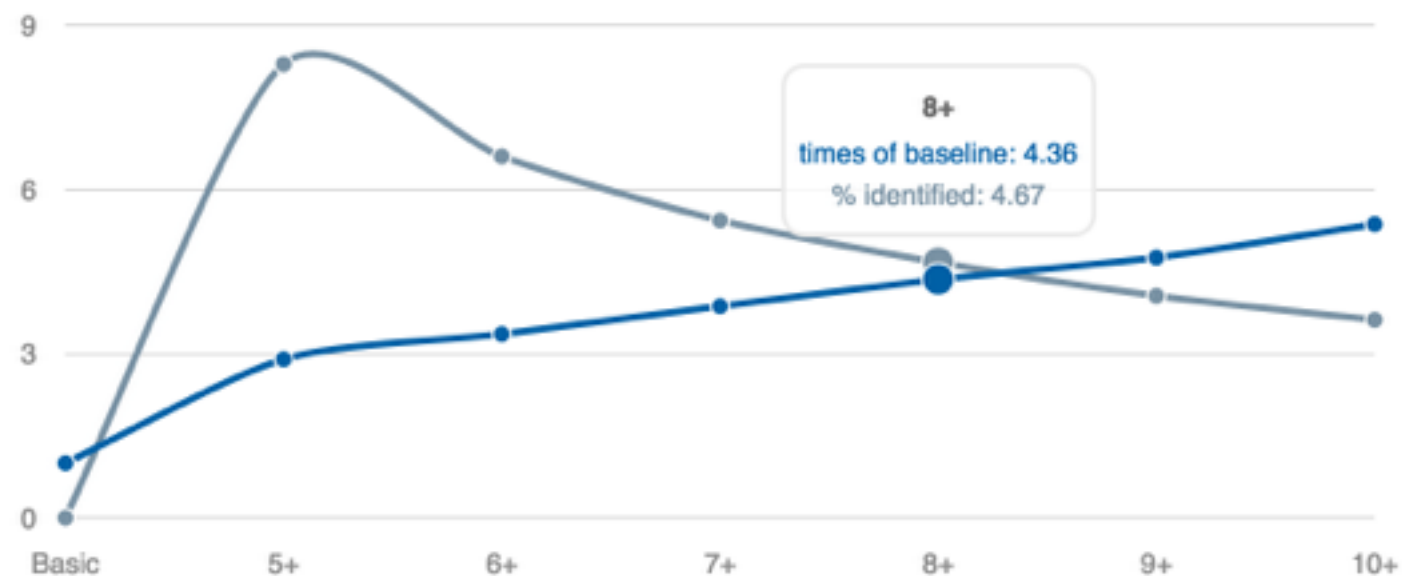
N = 5,6,7,8,9

Las Vegas

no. Shared Liked	x Regular Customers	% Reviewers Identified	% Actual Reviewers
Baseline	1.00	N/A	0.12%
5+	3.58	7.58%	0.41%
6+	4.45	6.31%	0.52%
7+	5.22	5.29%	0.61%
8+	6.17	4.52%	0.72%
9+	7.69	3.89%	0.90%
10+	8.74	3.39%	1.02%

Phoenix

no. Shared Liked	x Regular Customers	% Reviewers Identified	% Actual Reviewers
Baseline	1.00	N/A	0.25%
5+	2.90	8.30%	0.73%
6+	3.36	6.61%	0.85%
7+	3.87	5.44%	0.98%
8+	4.36	4.67%	1.10%
9+	4.76	4.06%	1.20%
10+	5.37	3.62%	1.35%

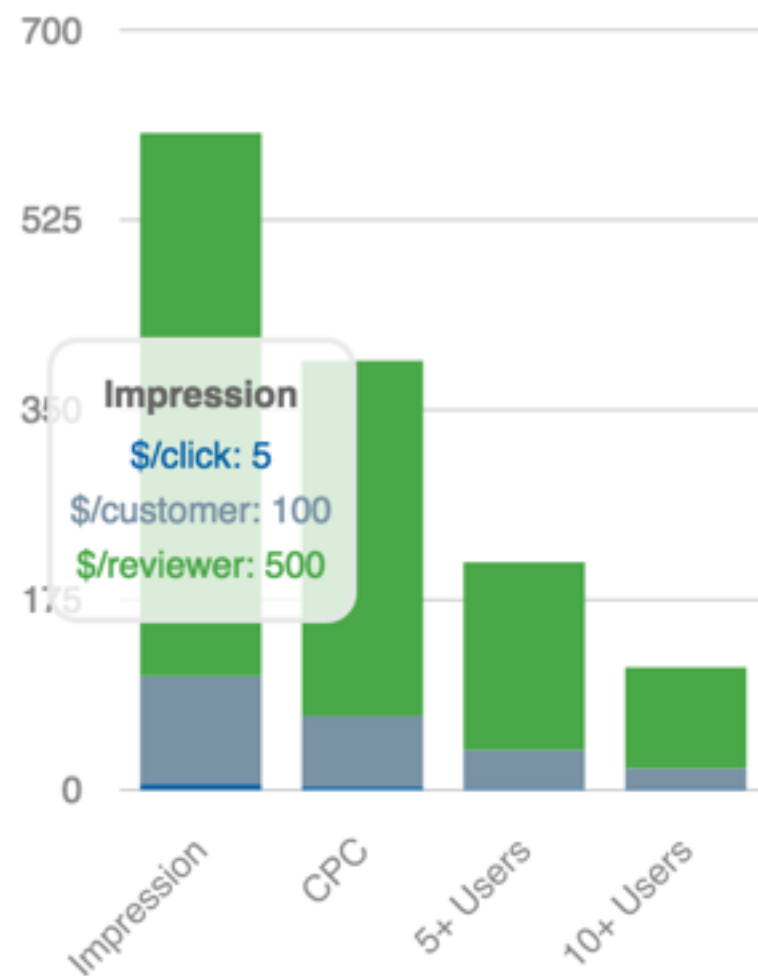


SELECTIVE IMPRESSION ON SIMILAR USERS

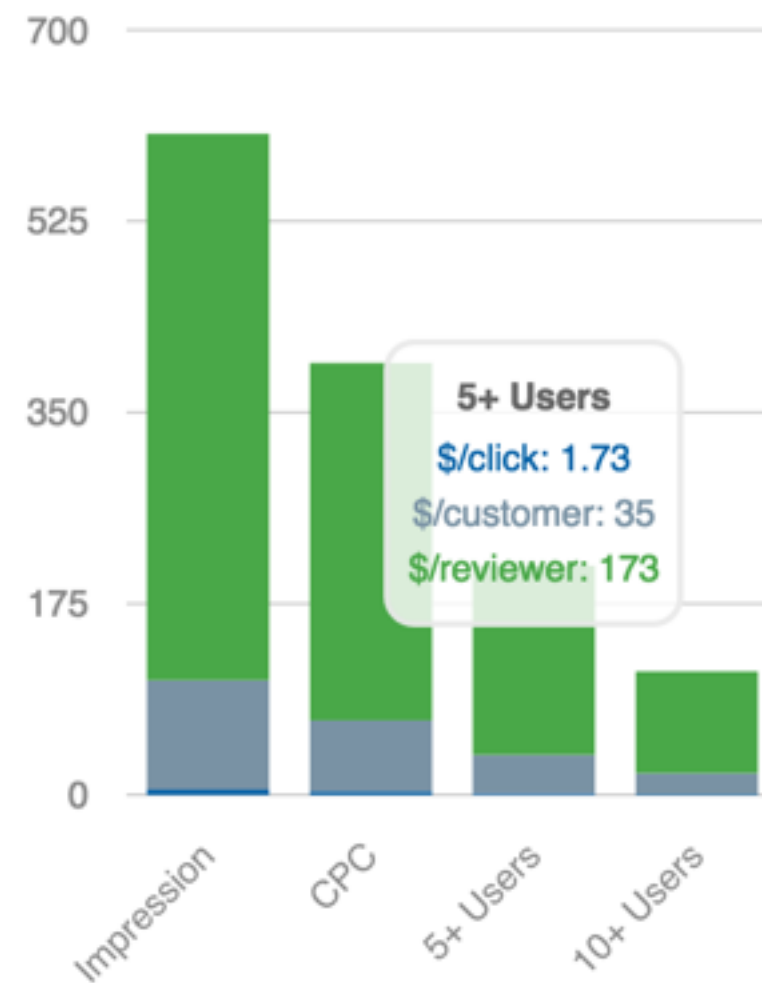
SCHEME	BY IMPRESSION	BY CLICK	5+ SIMILARITY	10+ SIMILARITY
COST	\$1000	\$327	\$1000	\$1000
PRODUCT	10000 Impressions	100 Clicks	10000 Selective Impressions	10000 Selective Impressions
\$/ CLICK	5	3.27	1.73	0.93
\$/CUSTOMER	100	65	35	19
\$/REVIEWER	500	327	173	93

SELECTIVE IMPRESSION ON SIMILAR USERS

Comparison of Marketing Schemes



Comparison of Marketing Schemes





IMPROVEMENT SOLUTION

KNOW AND IMPROVE FOOD ITEMS THAT ATTRACTED BAD REVIEW

BAD REVIEW ANALYSIS

- NMF model to find out topics in the 1-2 star reviews
- Aspect: food items in the topics
- Sentiment Analysis: find out negative sentences describing the aspects
- Extract negative sentences for the aspects from original reviews
- tools used: NMF topic modelling , TextBlob POS tags & Sentiment Detection
- Demo

NMF Topic Modelling

['location', 'sushi', 'horrible', 'slow', 'friend', 'soup', 'hotdog',
'atmosphere', 'drinks', 'hot', 'food', 'service', 'minutes', 'probably', 'table',
'decent', 'girl', 'really', 'went', 'waitress']

Noun Phrases in bad reviews



Phrases with Aspect(plural, synonym)

['sushi', 'soup on the side', 'super small hotdog', 'good service', 'rude and slow waitress', 'cold drinks', 'lovely atmosphere', 'horrible service', 'irish drink', 'cold soup', 'tall waitress', 'cheap sushi'...]

Exact Sentences with Noun Phrases

but they also served mediocre sushi.

soup on the side was very small and too creamy,

I also had this super small hot dog, did not worth it.

The only thing good about it was the good service.

Waitress was rude and slow.

We went for celebration for its lovely atmosphere.

totally horrible services and never again

I had irish drink after work

We especially liked the tall waitress who had an accent

I am a regular for its cheap sushi

Soup was cold when it came to the table

Filter: sentiment detection score

Negative Sentences with Aspect

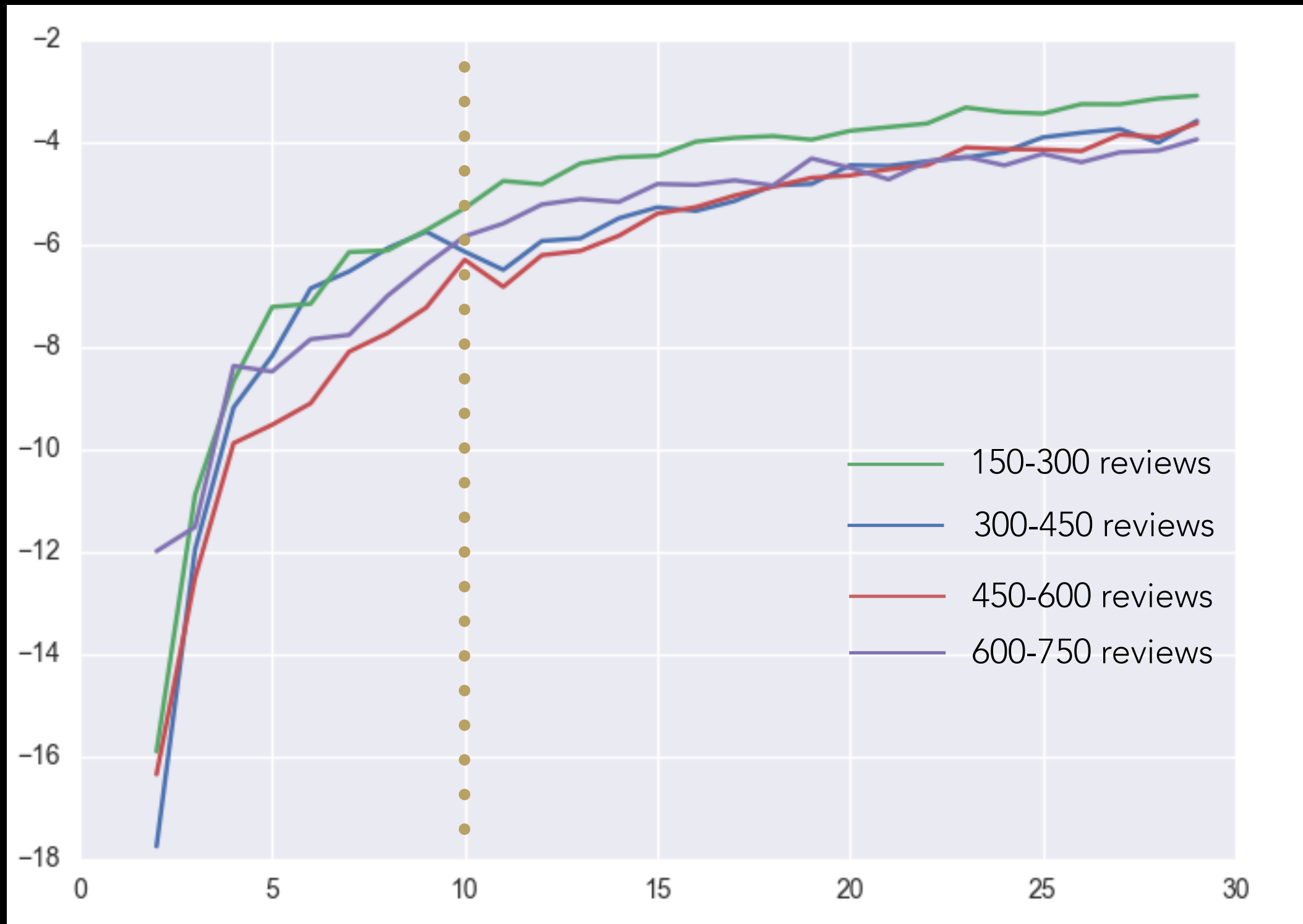
Summary of Bad Review of Problematic Items

but they also served mediocre sushi.
soup on the side was very small and too creamy,
I also had this super small hot dog, did not worth it.
Waitress was rude and slow.
totally horrible services and never again
I am a regular for its cheap sushi
Soup was cold when it came to the table

Also suggests restaurants close to you
who are doing well in these items

FINDING N TOPICS

Negative Sentiment/Items



Number of Topics

