Complex Analysis of Restaurant Reviews

Project of Group 56 - Text Mining @ Vrije Universiteit Amsterdam

Analyzing textual data for sentiment, entity recognition, and thematic content has become crucial in the quickly developing field of natural language processing in order to derive useful insights. This research project, takes a comprehensive journey through the analysis of restaurant reviews using Natural Language Processing (NLP) methods. In this notebook, three Natural Language Processing (NLP) techniques will be applied: Sentiment Analysis, Named Entity Recognition and Classification (NERC) and Topic Analysis. The goal of sentiment analysis is to classify text as positive, negative or neutral [1]. NERC identifies important entities and classifies them, such as Persons, Location or Date and Time [7]. Topic Analysis can categorize text entries - in the case of LDA - into pre-determined topics [9].

Importing the dataset

The initial phase of our research project involved looking for a dataset, and preparing that to our NLP analysis. We obtained the "Restaurant Customer Reviews" dataset from Kaggle (https://www.kaggle.com/datasets/vigneshwarsofficial/reviews). This consists of 1000 textual reviews from guests of a single restaurant. Each review was pre-labeled with binary sentiment values - 1 representing positive feedback and 0 stating negative opinions. The distribution between negative and positive reviews were equal, making in a perfectly balanced dataset. This structured dataset served as the foundational corpus for our analysis.

```python
import pandas as pd

data = pd.read_csv('Restaurant_Reviews.tsv', sep='\t')
print(data.iloc[0:10])
```

```
                                        Review  Liked
0                        Wow... Loved this place.      1
1                             Crust is not good.      0
2             Not tasty and the texture was just nasty.      0
3      Stopped by during the late May bank holiday of...      1
4      The selection on the menu was great and so wer...      1
5         Now I am getting angry and I want my damn pho.      0
6                   Honeslty it didn't taste THAT fresh.)      0
7      The potatoes were like rubber and you could te...      0
8                          The fries were great too.      1
9                                   A great touch.      1
```

Preprocessing

The dataset underwent a number of preprocessing processes, which were essential for improving the precision of our NLP models. The binary sentiment labels were converted into two more comprehensible sting entries — "positive" and "negative" — to start the preprocessing pipeline. We utilized lemmatization to normalize the textual data to handle the variability and complexity of language. Using a WordNetLemmatizer and the Natural Language Toolkit (nltk), every word in the reviews was reduced to its lemma, also known as their basic form. Lemmatization was combined with the removal of unnecessary punctuation, such as commas and periods, and a filtering phase was used to remove any reviews that were empty or irrelevant, guaranteeing that the dataset had no null values. These preparation activities were essential to build a strong basis for the more complex analysis that came after.

```python
import nltk
from nltk.stem import WordNetLemmatizer
from nltk.corpus import stopwords
from nltk.tokenize import word_tokenize

# Converting numerical values into text labels
data['Liked'] = data['Liked'].replace({1: 'positive', 0: 'negative'})

# Making all entries lowercase
#data['Review'] = data['Review'].str.lower()

# Applying lemmatization
def lemmatize_sentence(sentence):
    lemmatizer = WordNetLemmatizer()
    word_list = word_tokenize(sentence)
    lemmatized_output = ' '.join([lemmatizer.lemmatize(w) for w in word_list])
    return lemmatized_output

data['Review'] = data['Review'].apply(lambda x: lemmatize_sentence(x))

# Removing periods
```

```python
data['Review'] = data['Review'].str.replace('.', '', regex=False)
data['Review'] = data['Review'].str.replace(',', '', regex=False)

# Remove NaN values
data = data[data['Review'].notna() & (data['Review'] != '')]

print(data.iloc[0:10])
```

```
                                              Review     Liked
0                               Wow  Loved this place  positive
1                                 Crust is not good     negative
2                     Not tasty and the texture wa just nasty  negative
3   Stopped by during the late May bank holiday of...  positive
4   The selection on the menu wa great and so were...  positive
5      Now I am getting angry and I want my damn pho   negative
6               Honeslty it did n't taste THAT fresh  )  negative
7   The potato were like rubber and you could tell...  negative
8                             The fry were great too    positive
9                                    A great touch      positive
```

Sentiment Analysis - VADER

The Valence Aware Dictionary and sEntiment Reasoner (VADER) - a lexicon and rule-based sentiment analysis tool - was utilized in our study to conduct sentiment analysis [2]. By computing the valence ratings of each text input, VADER is designed to analyze text sentiment and determine whether it is positive, negative, or neutral. This method was selected in particular because it is good at managing slang, emoticons, and casual language—all of which are common in restaurant reviews [8].

VADER learned how to predict sentiment based on the Restaurant Review's "Liked" column. This indicated whether the review is positive or negative. Then predictions will be made with the help of this model, and those labels will be compared to the Gold Set, avaliable with the Restaurant Review dataset.

With VADER there is an option to filter for Part-Of-Speech segments. Tests were carried out to assess how VADER's performance was affected by these selective examination of POS segments, however, these tests did not produce appreciable differences in the result, indicating the robustness of VADER across different textual contexts.

```python
In [ ]:  def run_vader(textual_unit,
                      lemmatize=False,
                      parts_of_speech_to_consider=None,
                      verbose=0):
             """
             Run VADER on a sentence from spacy

             :param str textual unit: a textual unit, e.g., sentence, sentences (one string)
             (by looping over doc.sents)
             :param bool lemmatize: If True, provide lemmas to VADER instead of words
             :param set parts_of_speech_to_consider:
             -None or empty set: all parts of speech are provided
             -non-empty set: only these parts of speech are considered.
             :param int verbose: if set to 1, information is printed
             about input and output

             :rtype: dict
             :return: vader output dict
             """
             doc = nlp(textual_unit)

             input_to_vader = []

             for sent in doc.sents:
                 for token in sent:

                     to_add = token.text

                     if lemmatize:
                         to_add = token.lemma_

                         if to_add == '-PRON-':
                             to_add = token.text

                     if parts_of_speech_to_consider:
                         if token.pos_ in parts_of_speech_to_consider:
                             input_to_vader.append(to_add)
                     else:
                         input_to_vader.append(to_add)

             scores = vader_model.polarity_scores(' '.join(input_to_vader))
```

```python
        if verbose >= 1:
            print()
            print('INPUT SENTENCE', sent)
            print('INPUT TO VADER', input_to_vader)
            print('VADER OUTPUT', scores)

        return scores

    def vader_output_to_label(vader_output):
        """
        map vader output e.g.,
        {'neg': 0.0, 'neu': 0.0, 'pos': 1.0, 'compound': 0.4215}
        to one of the following values:
        a) positive float -> 'positive'
        b) 0.0 -> 'neutral'
        c) negative float -> 'negative'

        :param dict vader_output: output dict from vader

        :rtype: str
        :return: 'negative' | 'neutral' | 'positive'
        """
        compound = vader_output['compound']

        if compound < 0:
            return 'negative'
        elif compound == 0.0:
            return 'neutral'
        elif compound > 0.0:
            return 'positive'

    assert vader_output_to_label( {'neg': 0.0, 'neu': 0.0, 'pos': 1.0, 'compound': 0.0}) == 'neutral' #neutral
    assert vader_output_to_label( {'neg': 0.0, 'neu': 0.0, 'pos': 1.0, 'compound': 0.01}) == 'positive' #posit.
    assert vader_output_to_label( {'neg': 0.0, 'neu': 0.0, 'pos': 1.0, 'compound': -0.01}) == 'negative' #nega
```

```python
In [ ]: from sklearn.metrics import classification_report
        import spacy
        nlp = spacy.load("en_core_web_sm")
        import nltk
        from nltk.sentiment.vader import SentimentIntensityAnalyzer
        vader_model = SentimentIntensityAnalyzer()

        reviews = []
        all_vader_output = []
        gold = []

        pos = set()

        for index, row in data.iterrows():
            the_review = row['Review']
            vader_output = run_vader(the_review,
                                     lemmatize=False,
                                     verbose=0)
            vader_label = vader_output_to_label(vader_output)

            reviews.append(the_review)
            all_vader_output.append(vader_label)
            gold.append(row['Liked'])


        print(classification_report(gold, all_vader_output))
```

```
              precision    recall  f1-score   support

    negative       0.94      0.49      0.64       500
     neutral       0.00      0.00      0.00         0
    positive       0.81      0.82      0.82       500

    accuracy                           0.66      1000
   macro avg       0.58      0.44      0.49      1000
weighted avg       0.87      0.66      0.73      1000
```

```
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in labels wit
h no true samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in labels wit
h no true samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in labels wit
h no true samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
```

While the model is very effective at classifying a review as negative, it only detects a small percentage of all negative reviews. This is equivalent to a high precision but moderate recall for negative sentiments. On the other hand, the model exhibits a great balance between recall and precision for positive sentiments, indicating a more dependable performance in identifying and categorizing positive reviews.

Manual Analysis of Results

We manually examined a subset of the predicted labels and compared them to the original "Liked" labels. As seen above, VADER classifies text entries into three categories - positive, negative and neutral -, while the database only includes two of those categories - the two opposites, positive and negative. Further research could include rerunning the test with a dataset consisting of such three categories. These differences can be observed in the second code block below.

```python
for i, tweet in enumerate(reviews[:10]):
        print(gold[i], "-", all_vader_output[i], "_____", tweet)
```

```
positive - positive _____  Wow  Loved this place
negative - negative _____  Crust is not good
negative - negative _____  Not tasty and the texture wa just nasty
positive - positive _____  Stopped by during the late May bank holiday off Rick Steve recommendation and lo
ved it
positive - positive _____  The selection on the menu wa great and so were the price
negative - negative _____  Now I am getting angry and I want my damn pho
negative - negative _____  Honeslty it did n't taste THAT fresh  )
negative - positive _____  The potato were like rubber and you could tell they had been made up ahead of ti
me being kept under a warmer
positive - positive _____  The fry were great too
positive - positive _____  A great touch
```

```python
for i, tweet in enumerate(reviews):
    if gold[i] != all_vader_output[i]:
        if all_vader_output[i] == "neutral":
            print("GOLD:", gold[i], "VADER:", all_vader_output[i], "\n", tweet)
```

```
GOLD: positive VADER: neutral
 Service wa very prompt
GOLD: negative VADER: neutral
 Would not go back
GOLD: positive VADER: neutral
 I tried the Cape Cod ravoli  chicken  with cranberry  mmmm !
GOLD: negative VADER: neutral
 Waitress wa a little slow in service
GOLD: positive VADER: neutral
 So they performed
GOLD: negative VADER: neutral
 – They never brought a salad we asked for
GOLD: positive VADER: neutral
 The only redeeming quality of the restaurant wa that it wa very inexpensive
GOLD: positive VADER: neutral
 The shrimp tender and moist
GOLD: positive VADER: neutral
 He came running after u when he realized my husband had left his sunglass on the table
GOLD: positive VADER: neutral
 This place receives star for their APPETIZERS ! ! !
GOLD: negative VADER: neutral
 We got the food and apparently they have never heard of salt and the batter on the fish wa chewy
GOLD: positive VADER: neutral
 The deal included 5 tasting and 2 drink  and Jeff went above and beyond what we expected
GOLD: negative VADER: neutral
 It took over 30 min to get their milkshake  which wa nothing more than chocolate milk
GOLD: negative VADER: neutral
 The turkey and roast beef were bland
GOLD: negative VADER: neutral
 say bye bye to your tip lady !
GOLD: negative VADER: neutral
 We 'll never go again
GOLD: positive VADER: neutral
 Will be back again !
GOLD: positive VADER: neutral
 Food arrived quickly !
GOLD: positive VADER: neutral
 Will go back next trip out
GOLD: negative VADER: neutral
 At least 40min passed in between u ordering and the food arriving  and it wa n't that busy
GOLD: positive VADER: neutral
 Check it out
GOLD: negative VADER: neutral
 I just do n't know how this place managed to served the blandest food I have ever eaten when they are prep
aring Indian cuisine
GOLD: positive VADER: neutral
 Phenomenal food  service and ambiance
GOLD: negative VADER: neutral
 I would n't return
GOLD: negative VADER: neutral
 This place is way too overpriced for mediocre food
GOLD: negative VADER: neutral
 Do n't do it ! ! ! !
GOLD: negative VADER: neutral
 The menu is always changing  food quality is going down & service is extremely slow
GOLD: negative VADER: neutral
 The service wa a little slow  considering that were served by 3 people server so the food wa coming in a s
low pace
GOLD: negative VADER: neutral
 I give it 2 thumb down
GOLD: negative VADER: neutral
 Crostini that came with the salad wa stale
GOLD: positive VADER: neutral
 I wa seated immediately
GOLD: positive VADER: neutral
 Their menu is diverse  and reasonably priced
GOLD: positive VADER: neutral
 Restaurant is always full but never a wait
GOLD: positive VADER: neutral
 Bacon is hella salty
GOLD: positive VADER: neutral
 I ordered the Lemon raspberry ice cocktail which wa also incredible
GOLD: negative VADER: neutral
 The live music on Fridays totally blow
GOLD: negative VADER: neutral
 I 've lived here since 1979 and this wa the first ( and last ) time I 've stepped foot into this place
GOLD: negative VADER: neutral
 Must have been an off night at this place
GOLD: positive VADER: neutral
 The side are delish – mixed mushroom  yukon gold puree  white corn – beateous
GOLD: negative VADER: neutral
 For about 10 minute  we we 're waiting for her salad when we realized that it wa n't coming any time soon
GOLD: negative VADER: neutral
```

```
 Wo n't go back
GOLD: positive VADER: neutral
 Extremely Tasty !
GOLD: negative VADER: neutral
 The shower area is outside so you can only rinse  not take a full shower  unless you do n't mind being nud
e for everyone to see !
GOLD: negative VADER: neutral
 The service wa a bit lacking
GOLD: negative VADER: neutral
 Lobster Bisque  Bussell Sprouts  Risotto  Filet ALL needed salt and pepper  and of course there is none at
the table
GOLD: negative VADER: neutral
 As for the `` main  '' also uninspired
GOLD: negative VADER: neutral
 If it were possible to give them zero star  they 'd have it
GOLD: positive VADER: neutral
 Now this dish wa quite flavourful
GOLD: negative VADER: neutral
 —Drinks took close to 30 minute to come out at one point
GOLD: positive VADER: neutral
 The lighting is just dark enough to set the mood
GOLD: positive VADER: neutral
 The Greek dressing wa very creamy and flavorful
GOLD: positive VADER: neutral
 They know how to make them here
GOLD: positive VADER: neutral
 The restaurant atmosphere wa exquisite
GOLD: positive VADER: neutral
 Plus  it 's only 8 buck
GOLD: negative VADER: neutral
 The service wa not up to par  either
GOLD: positive VADER: neutral
 The Veggitarian platter is out of this world !
GOLD: positive VADER: neutral
 You ca n't beat that
GOLD: negative VADER: neutral
 I think not again
GOLD: negative VADER: neutral
 I waited and waited
GOLD: negative VADER: neutral
 This place is not quality sushi  it is not a quality restaurant
GOLD: negative VADER: neutral
 Waited 2 hour & never got either of our pizza a many other around u who came in later did !
GOLD: negative VADER: neutral
 Just do n't know why they were so slow
GOLD: negative VADER: neutral
 Never again will I be dining at this place !
GOLD: negative VADER: neutral
 Will never  ever go back
GOLD: negative VADER: neutral
 She ordered a toasted English muffin that came out untoasted
GOLD: negative VADER: neutral
 Never going back
GOLD: positive VADER: neutral
 All the bread is made in-house !
GOLD: negative VADER: neutral
 I go to far too many place and I 've never seen any restaurant that serf a 1 egg breakfast  especially for
$ 400
GOLD: positive VADER: neutral
 OMG  the food wa delicioso !
GOLD: negative VADER: neutral
 There is nothing authentic about this place
GOLD: positive VADER: neutral
 5 star for the brick oven bread app !
GOLD: negative VADER: neutral
 We sat another ten minute and finally gave up and left
GOLD: negative VADER: neutral
 It should n't take 30 min for pancake and egg
GOLD: negative VADER: neutral
 The buffet is small and all the food they offered wa BLAND
GOLD: negative VADER: neutral
 My wife had the Lobster Bisque soup which wa lukewarm
GOLD: positive VADER: neutral
 Would come back again if I had a sushi craving while in Vegas
GOLD: positive VADER: neutral
 He deserves 5 star
GOLD: negative VADER: neutral
 They dropped more than the ball
GOLD: negative VADER: neutral
 I took back my money and got outta there
GOLD: negative VADER: neutral
 I wo n't be back
GOLD: negative VADER: neutral
```

```
WILL NEVER EVER GO BACK AND HAVE TOLD MANY PEOPLE WHAT HAD HAPPENED
GOLD: positive VADER: neutral
 I will come back here every time I 'm in Vegas
GOLD: positive VADER: neutral
 Def coming back to bowl next time
GOLD: positive VADER: neutral
 Today wa my first taste of a Buldogis Gourmet Hot Dog and I have to tell you it wa more than I ever though
t possible
GOLD: positive VADER: neutral
 First time going but I think I will quickly become a regular
GOLD: negative VADER: neutral
 On the ground  right next to our table wa a large  smeared  been-stepped-in-and-tracked-everywhere pile of
green bird poop
GOLD: negative VADER: neutral
 Furthermore  you ca n't even find hour of operation on the website !
GOLD: negative VADER: neutral
 I never come again
GOLD: negative VADER: neutral
 Ordered an appetizer and took 40 minute and then the pizza another 10 minute
GOLD: positive VADER: neutral
 If you 're not familiar  check it out
GOLD: negative VADER: neutral
 I 'll take my business dinner dollar elsewhere
GOLD: negative VADER: neutral
 Will not be back
GOLD: negative VADER: neutral
 Sauce wa tasteless
GOLD: negative VADER: neutral
 I do n't think we 'll be going back anytime soon
GOLD: positive VADER: neutral
 Food wa so gooodd
GOLD: negative VADER: neutral
 I am far from a sushi connoisseur but I can definitely tell the difference between good food and bad food
and this wa certainly bad food
GOLD: negative VADER: neutral
 The chicken wing contained the driest chicken meat I have ever eaten
GOLD: positive VADER: neutral
 Im in AZ all the time and now have my new spot
GOLD: negative VADER: neutral
 I do n't think I 'll be running back to Carly 's anytime soon for food
GOLD: negative VADER: neutral
 This is wa due to the fact that it took 20 minute to be acknowledged  then another 35 minute to get our fo
od  and they kept forgetting thing
GOLD: negative VADER: neutral
 The one down note is the ventilation could use some upgrading
GOLD: negative VADER: neutral
 Total letdown  I would much rather just go to the Camelback Flower Shop and Cartel Coffee
GOLD: negative VADER: neutral
 I dont think I will be back for a very long time
GOLD: positive VADER: neutral
 I will be back many time soon
GOLD: positive VADER: neutral
 CONCLUSION : Very filling meal
GOLD: positive VADER: neutral
 The ambiance wa incredible
GOLD: negative VADER: neutral
 My gyro wa basically lettuce only
GOLD: positive VADER: neutral
 Reasonably priced also !
GOLD: negative VADER: neutral
 it wa a drive to get there
GOLD: negative VADER: neutral
 Anyway  I do not think i will go back there
GOLD: positive VADER: neutral
 If you have n't gone here GO NOW !
GOLD: negative VADER: neutral
 first time there and might just be the last
GOLD: negative VADER: neutral
 And it wa way to expensive
GOLD: positive VADER: neutral
 This wa my first time and I ca n't wait until the next
GOLD: positive VADER: neutral
 This place is two thumb up  way up
GOLD: negative VADER: neutral
 If there were zero star I would give it zero star
GOLD: negative VADER: neutral
 We waited for thirty minute to be seated ( although there were 8 vacant table and we were the only folk wa
iting )
GOLD: negative VADER: neutral
 not even a `` hello  we will be right with you  ''
GOLD: negative VADER: neutral
 I guess maybe we went on an off night but it wa disgraceful
GOLD: positive VADER: neutral
```

```
 I * heart * this place
GOLD: negative VADER: neutral
 My salad had a bland vinegrette on the baby green and heart of Palm
GOLD: negative VADER: neutral
 The server went back and forth several time  not even so much a an `` Are you being helped ? ''
GOLD: negative VADER: neutral
 I consider this theft
GOLD: negative VADER: neutral
 Eew  This location need a complete overhaul
GOLD: negative VADER: neutral
 Waited and waited and waited
GOLD: negative VADER: neutral
 Over rated
GOLD: negative VADER: neutral
 If you look for authentic Thai food  go else where
GOLD: negative VADER: neutral
 After I pulled up my car I waited for another 15 minute before being acknowledged
GOLD: positive VADER: neutral
 The crouton also taste homemade which is an extra plus
GOLD: negative VADER: neutral
 We got sitting fairly fast  but  ended up waiting 40 minute just to place our order  another 30 minute bef
ore the food arrived
GOLD: negative VADER: neutral
 I will not be eating there again
GOLD: positive VADER: neutral
 An absolute must visit !
GOLD: negative VADER: neutral
 I will not return
GOLD: negative VADER: neutral
 I had the chicken Pho and it tasted very bland
GOLD: positive VADER: neutral
 The grilled chicken wa so tender and yellow from the saffron seasoning
GOLD: positive VADER: neutral
 High-quality chicken on the chicken Caesar salad
GOLD: negative VADER: neutral
 Ordered burger rare came in we 'll done
GOLD: negative VADER: neutral
 Tried to go here for lunch and it wa a madhouse
GOLD: negative VADER: neutral
 I 'm not eating here !
GOLD: negative VADER: neutral
 Maybe if they were n't cold they would have been somewhat edible
GOLD: negative VADER: neutral
 We wo n't be going back anytime soon !
GOLD: negative VADER: neutral
 Not much flavor to them  and very poorly constructed
GOLD: positive VADER: neutral
 Very convenient  since we were staying at the MGM !
GOLD: positive VADER: neutral
 Eclectic selection
GOLD: positive VADER: neutral
 The staff wa very attentive
GOLD: positive VADER: neutral
 The owner used to work at Nobu  so this place is really similar for half the price
GOLD: negative VADER: neutral
 Google mediocre and I imagine Smashburger will pop up
GOLD: negative VADER: neutral
 dont go here
GOLD: positive VADER: neutral
 I ca n't wait to go back
GOLD: negative VADER: neutral
 Service wa slow and not attentive
GOLD: negative VADER: neutral
 Your staff spends more time talking to themselves than me
GOLD: negative VADER: neutral
 Went for lunch — service wa slow
GOLD: negative VADER: neutral
 I wa mortified
GOLD: negative VADER: neutral
 Needless to say  we will never be back here again
GOLD: negative VADER: neutral
 The chip that came out were dripping with grease  and mostly not edible
GOLD: negative VADER: neutral
 Not my thing
GOLD: positive VADER: neutral
 2 Thumbs Up ! !
GOLD: positive VADER: neutral
 After one bite  I wa hooked
GOLD: negative VADER: neutral
 A FLY wa in my apple juice  A FLY ! ! ! ! ! ! ! ! !
GOLD: positive VADER: neutral
 The Han Nan Chicken wa also very tasty
GOLD: negative VADER: neutral
```

The food wa barely lukewarm so it must have been sitting waiting for the server to bring it out to u
GOLD: positive VADER: neutral
They also now serve Indian naan bread with hummus and some spicy pine nut sauce that wa out of this world
GOLD: negative VADER: neutral
It wa way over fried
GOLD: negative VADER: neutral
Will not be back !
GOLD: positive VADER: neutral
An extensive menu provides lot of option for breakfast
GOLD: negative VADER: neutral
I have watched their price inflate portion get smaller and management attitude grow rapidly !
GOLD: positive VADER: neutral
The wonton were thin not thick and chewy almost melt in your mouth
GOLD: negative VADER: neutral
I had to wait over 30 minute to get my drink and longer to get 2 arepas
GOLD: positive VADER: neutral
One of the few place in Phoenix that I would definately go back to again
GOLD: positive VADER: neutral
* Both the Hot & Sour & the Egg Flower Soups were absolutely 5 Stars !
GOLD: negative VADER: neutral
the food is not tasty at all not to say it `` real traditional Hunan style ''
GOLD: negative VADER: neutral
Their frozen margarita are WAY too sugary for my taste
GOLD: positive VADER: neutral
The nacho are a MUST HAVE !
GOLD: negative VADER: neutral
We will not be coming back
GOLD: negative VADER: neutral
Mediocre food
GOLD: positive VADER: neutral
I could eat their bruschetta all day it is devine
GOLD: negative VADER: neutral
This place is overpriced not consistent with their boba and it really is OVERPRICED !
GOLD: negative VADER: neutral
It wa packed ! !
GOLD: negative VADER: neutral
Wo n't ever go here again
GOLD: negative VADER: neutral
For that price I can think of a few place I would have much rather gone
GOLD: negative VADER: neutral
Food is way overpriced and portion are fucking small
GOLD: positive VADER: neutral
I recently tried Caballero 's and I have been back every week since !
GOLD: negative VADER: neutral
I wo n't be back
GOLD: negative VADER: neutral
I probably would not go here again
GOLD: negative VADER: neutral
My fella got the huevos rancheros and they did n't look too appealing
GOLD: negative VADER: neutral
I probably wo n't be coming back here
GOLD: positive VADER: neutral
For sushi on the Strip this is the place to go
GOLD: negative VADER: neutral
I started this review with two star but I 'm editing it to give it only one
GOLD: negative VADER: neutral
There wa hardly any meat
GOLD: positive VADER: neutral
Go To Place for Gyros
GOLD: negative VADER: neutral
I found a six inch long piece of wire in my salsa
GOLD: negative VADER: neutral
The service wa extremely slow
GOLD: negative VADER: neutral
After 20 minute wait I got a table
GOLD: negative VADER: neutral
Pricing is a bit of a concern at Mellow Mushroom
GOLD: positive VADER: neutral
If you stay in Vegas you must get breakfast here at least once
GOLD: negative VADER: neutral
Spend your money elsewhere
GOLD: negative VADER: neutral
The Buffet at Bellagio wa far from what I anticipated
GOLD: negative VADER: neutral
—My order wa not correct
GOLD: negative VADER: neutral
We wo n't be returning
GOLD: negative VADER: neutral
How can you call yourself a steakhouse if you ca n't properly cook a steak I do n't understand !
GOLD: negative VADER: neutral
Needless to say I wo n't be going back anytime soon
GOLD: negative VADER: neutral
However there wa so much garlic in the fondue it wa barely edible

```
GOLD: negative VADER: neutral
 It also took her forever to bring u the check when we asked for it
GOLD: negative VADER: neutral
 WAAAAAAyyyyyyyyyy over rated is all I am saying
GOLD: negative VADER: neutral
 We wo n't be going back
GOLD: negative VADER: neutral
 This place lacked style ! !
GOLD: negative VADER: neutral
 Probably not in a hurry to go back
GOLD: negative VADER: neutral
 very slow at seating even with reservation
GOLD: negative VADER: neutral
 The cashew cream sauce wa bland and the vegetable were undercooked
GOLD: negative VADER: neutral
 It wa n't busy at all and now we know why
GOLD: negative VADER: neutral
 Con : spotty service
GOLD: negative VADER: neutral
 The fry were not hot  and neither wa my burger
GOLD: negative VADER: neutral
 But then they came back cold
GOLD: negative VADER: neutral
 The only reason to eat here would be to fill up before a night of binge drinking just to get some carbs in
your stomach
GOLD: negative VADER: neutral
 If someone order two taco do n't ' you think it may be part of customer service to ask if it is combo or a
la cart ?
GOLD: negative VADER: neutral
 I do n't know what the big deal is about this place  but I wo n't be back `` ya'all ''
GOLD: negative VADER: neutral
 Overpriced for what you are getting
GOLD: negative VADER: neutral
 I vomited in the bathroom mid lunch
GOLD: negative VADER: neutral
 Food wa below average
GOLD: negative VADER: neutral
 All in all  Ha Long Bay wa a bit of a flop
GOLD: negative VADER: neutral
 Shrimp— When I unwrapped it ( I live only 1/2 a mile from Brushfire ) it wa literally ice cold
GOLD: negative VADER: neutral
 It lacked flavor  seemed undercooked  and dry
GOLD: negative VADER: neutral
 The refried bean that came with my meal were dried out and crusty and the food wa bland
GOLD: negative VADER: neutral
 Spend your money and time some place else
GOLD: negative VADER: neutral
 A lady at the table next to u found a live green caterpillar In her salad
GOLD: negative VADER: neutral
 I think food should have flavor and texture and both were lacking
GOLD: negative VADER: neutral
 Appetite instantly gone
GOLD: negative VADER: neutral
 The whole experience wa underwhelming  and I think we 'll just go to Ninja Sushi next time
```

Proportion of Results

The poster corresponding to this project includes a figure, showcasing the proportion of each sentiment label. This is calculated in this step.

```python
In [ ]: gold_pos = 0
        gold_neg = 0
        pred_pos = 0
        pred_neg = 0
        pred_neu = 0

        for i, tweet in enumerate(reviews):
            if gold[i] == "positive":
                gold_pos += 1
            else:
                gold_neg += 1
            if all_vader_output[i] == "positive":
                pred_pos +=1
            elif all_vader_output[i] == "negative":
                pred_neg += 1
            else:
                pred_neu += 1

        print("pos:",pred_pos,"neg:",pred_neg,"neu:",pred_neu)
```

```
pos: 510 neg: 262 neu: 228
```

Evaluating on Baseline Dataset

An additional analysis has been run to asses VADER's performance. This was performed on the baseline dataset provided by the teaching staff of the Text Mining course. This baseline dataset includes sentences with labeled sentiments, aiming to provide a baseline to asess the trained model's performance and transferability.

```python
import pandas as pd
test_data = pd.read_csv('sentiment-topic-test.tsv', sep='\t')

predictions = []
for text in test_data['text']:
    vader_output = run_vader(text, lemmatize=True, verbose=False)
    predictions.append(vader_output_to_label(vader_output))

print(classification_report(test_data['sentiment'], predictions, target_names=['negative', 'neutral', 'pos
```

```
              precision    recall  f1-score   support

    negative       0.00      0.00      0.00         4
     neutral       0.33      0.33      0.33         3
    positive       0.20      0.33      0.25         3

    accuracy                           0.20        10
   macro avg       0.18      0.22      0.19        10
weighted avg       0.16      0.20      0.17        10
```

The model is unable to correctly identify any negative instances, suggesting a significant obsticle in classifying negative sentiments. However, it did have limited capability in recognizing positive and neutral sentiments. Despite this, overall accuracy is still poor, indicating poor transferability of the VADER model trained on the Restaurant Review dataset. This is understandable, as the baseline dataset contains a variety of topics, while the scope of the Restaurant Review dataset, which was used for training, is strictly reviews of the food, staff and the place.

Sentiment Analysis - RoBERTa

Expanding upon basic sentiment analysis carried out with VADER, our study explored the potential of advanced deep learning models, including the HuggingFace transformer model RoBERTa (Robustly Optimized BERT Pretraining Approach). The choice was motivated by RoBERTa's established ability to understand natural language and its adaptability in handling unique classification tasks, allowing a more detailed analysis of sentiment in our datase [3]. The flexibility of RoBERTa was especially helpful in enabling a binary sentiment classification technique that matched the positive and negative labels present in our corpus.

To guarantee reliable model evaluation and optimization, the dataset was divided into training, testing, and development sets. In order to improve performance, we carefully set up the model's parameters. For example, we used early stopping conditions to avoid overfitting and adjusted learning rates for best convergence [8].

The model's loss metrics were closely monitored during training, providing valuable information regarding the process of learning and the need for model adjustments. In the assessment phase that followed, predictions were made on the test set and compared to the true labels in order to evaluate the model's accuracy and performance.

```python
import pandas as pd
import numpy as np
from simpletransformers.classification import ClassificationModel, ClassificationArgs
from sklearn.model_selection import train_test_split
import matplotlib.pyplot as plt
```

```
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/tensorflow/python/debug/cl
i/debugger_cli_common.py:19: DeprecationWarning: module 'sre_constants' is deprecated
  import sre_constants
/Users/markbartos/Library/Python/3.11/lib/python/site-packages/tqdm/auto.py:21: TqdmWarning: IProgress not
found. Please update jupyter and ipywidgets. See https://ipywidgets.readthedocs.io/en/stable/user_install.h
tml
  from .autonotebook import tqdm as notebook_tqdm
```

```python
# Converting sentiment labels back to numerical format
data['labels'] = data['Liked'].map({'negative': 0, 'positive': 1})

# Split the data into training and testing sets
train, test = train_test_split(data, test_size=0.2, random_state=42, stratify=data[['labels']])
train, dev = train_test_split(train, test_size=0.1, random_state=0, stratify=train[['labels']])

# Model configuration
model_args = ClassificationArgs()
```

```python
model_args.overwrite_output_dir=True
model_args.evaluate_during_training=True
model_args.num_train_epochs=10
model_args.train_batch_size=32
model_args.learning_rate=4e-6
model_args.max_seq_length=256
model_args.use_early_stopping=True
model_args.early_stopping_delta=0.01
model_args.early_stopping_metric_minimize=True
model_args.early_stopping_metric='eval_loss'
model_args.early_stopping_patience=2
model_args.evaluate_during_training_steps=50

model = ClassificationModel('roberta', 'roberta-base', num_labels=2, args=model_args, use_cuda=False)
```

```
Some weights of RobertaForSequenceClassification were not initialized from the model checkpoint at roberta-
base and are newly initialized: ['classifier.dense.bias', 'classifier.dense.weight', 'classifier.out_proj.b
ias', 'classifier.out_proj.weight']
You should probably TRAIN this model on a down-stream task to be able to use it for predictions and inferen
ce.
```

In [ ]:
```python
# Training the model
_, history = model.train_model(train[['Review', 'labels']], eval_df=dev[['Review', 'labels']])
```

```
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:608: UserWarning: Dataframe headers not specified. Falling back to using col
umn 0 as text and column 1 as labels.
  warnings.warn(
  0%|          | 0/1 [00:00<?, ?it/s]huggingface/tokenizers: The current process just got forked, after par
allelism has already been used. Disabling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
2it [00:05,  2.71s/it]
Epochs 1/10. Running Loss:    0.6904: 100%|██████████| 23/23 [03:55<00:00, 10.26s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:05,  5.65s/it]
Epochs 2/10. Running Loss:    0.7092: 100%|██████████| 23/23 [03:55<00:00, 10.25s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:05,  5.06s/it]
Epoch 3 of 10:  20%|██        | 2/10 [08:18<33:13, 249.14s/it]/Library/Frameworks/Python.framework/Version
s/3.11/lib/python3.11/site-packages/simpletransformers/classification/classification_model.py:1452: UserWar
ning: Dataframe headers not specified. Falling back to using column 0 as text and column 1 as labels.
  warnings.warn(

huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)

1it [00:04,  4.84s/it]
Epochs 3/10. Running Loss:    0.6703: 100%|██████████| 23/23 [04:07<00:00, 10.76s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:07,  7.11s/it]
Epochs 4/10. Running Loss:    0.6489: 100%|██████████| 23/23 [03:49<00:00,  9.97s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:05,  5.25s/it]
Epoch 5 of 10:  40%|████      | 4/10 [17:24<26:09, 261.55s/it]/Library/Frameworks/Python.framework/Version
s/3.11/lib/python3.11/site-packages/simpletransformers/classification/classification_model.py:1452: UserWar
ning: Dataframe headers not specified. Falling back to using column 0 as text and column 1 as labels.
  warnings.warn(

huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
```

```
1it [00:05,  5.08s/it]
Epochs 5/10. Running Loss:    0.3781: 100%|███████████| 23/23 [04:05<00:00, 10.65s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:05,  5.55s/it]
Epochs 6/10. Running Loss:    0.2062: 100%|███████████| 23/23 [03:47<00:00,  9.87s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:05,  5.00s/it]
Epoch 7 of 10:  60%|███████       | 6/10 [25:45<16:56, 254.21s/it]/Library/Frameworks/Python.framework/Version
s/3.11/lib/python3.11/site-packages/simpletransformers/classification/classification_model.py:1452: UserWar
ning: Dataframe headers not specified. Falling back to using column 0 as text and column 1 as labels.
  warnings.warn(

huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)

1it [00:05,  5.04s/it]
Epochs 7/10. Running Loss:    0.1938: 100%|███████████| 23/23 [04:05<00:00, 10.67s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:04,  4.93s/it]
Epochs 8/10. Running Loss:    0.1679: 100%|███████████| 23/23 [03:49<00:00,  9.97s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:05,  5.34s/it]
Epoch 9 of 10:  80%|██████████    | 8/10 [34:10<08:24, 252.50s/it]/Library/Frameworks/Python.framework/Version
s/3.11/lib/python3.11/site-packages/simpletransformers/classification/classification_model.py:1452: UserWar
ning: Dataframe headers not specified. Falling back to using column 0 as text and column 1 as labels.
  warnings.warn(

huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)

1it [00:04,  4.91s/it]
Epochs 9/10. Running Loss:    0.1019: 100%|███████████| 23/23 [04:03<00:00, 10.59s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:04,  4.75s/it]
Epochs 10/10. Running Loss:    0.0510: 100%|███████████| 23/23 [03:50<00:00, 10.01s/it]
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/simpletransformers/classifi
cation/classification_model.py:1452: UserWarning: Dataframe headers not specified. Falling back to using co
```

```
lumn 0 as text and column 1 as labels.
  warnings.warn(
huggingface/tokenizers: The current process just got forked, after parallelism has already been used. Disab
ling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:13, 13.02s/it]
Epoch 10 of 10: 100%|████████| 10/10 [42:35<00:00, 255.50s/it]
```

In [ ]:
```python
train_loss = history['train_loss']
eval_loss = history['eval_loss']
plt.plot(train_loss, label='Training loss')
plt.plot(eval_loss, label='Evaluation loss')
plt.title('Training and evaluation loss')
plt.legend()
plt.show()
```


In [ ]:
```python
sentences = test['Review'].tolist()

# Get predictions
predictions, raw_outputs = model.predict(sentences)

predicted_labels = ['positive' if prediction == 1 else 'negative' for prediction in predictions]
for sentence, prediction in zip(sentences, predicted_labels):
    print(f"Sentence: {sentence}\nPredicted Sentiment: {prediction}\n")
```

```
0it [00:00, ?it/s]huggingface/tokenizers: The current process just got forked, after parallelism has alread
y been used. Disabling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:04,  4.38s/it]
100%|████████| 2/2 [00:10<00:00,  5.36s/it]
```

Sentence: Awesome selection of beer
Predicted Sentiment: positive

Sentence: Not much flavor to them and very poorly constructed
Predicted Sentiment: negative

Sentence: Worse of all he humiliated his worker right in front of me Bunch of horrible name calling
Predicted Sentiment: negative

Sentence: Host staff were for lack of a better word BITCHES !
Predicted Sentiment: positive

Sentence: Great brunch spot
Predicted Sentiment: positive

Sentence: The service wa great even the manager came and helped with our table
Predicted Sentiment: positive

Sentence: Of all the dish the salmon wa the best but all were great
Predicted Sentiment: positive

Sentence: Service is quick and even `` to go '' order are just like we like it !
Predicted Sentiment: positive

Sentence: I 've never been more insulted or felt disrespected
Predicted Sentiment: negative

Sentence: Hard to judge whether these side were good because we were grossed out by the melted styrofoam an
d did n't want to eat it for fear of getting sick
Predicted Sentiment: negative

Sentence: This is a good joint
Predicted Sentiment: positive

Sentence: I wa seated immediately
Predicted Sentiment: positive

Sentence: What a great double cheeseburger !
Predicted Sentiment: positive

Sentence: The chipolte ranch dipping sause wa tasteless seemed thin and watered down with no heat
Predicted Sentiment: negative

Sentence: The place wa not clean and the food oh so stale !
Predicted Sentiment: negative

Sentence: Very disappointing ! ! !
Predicted Sentiment: negative

Sentence: The decor is nice and the piano music soundtrack is pleasant
Predicted Sentiment: positive

Sentence: Worst service to boot but that is the least of their worry
Predicted Sentiment: negative

Sentence: I found this place by accident and I could not be happier
Predicted Sentiment: positive

Sentence: My girlfriend 's veal wa very bad
Predicted Sentiment: negative

Sentence: A couple of month later I returned and had an amazing meal
Predicted Sentiment: positive

Sentence: Once your food arrives it 's meh
Predicted Sentiment: negative

Sentence: Food wa really good and I got full petty fast
Predicted Sentiment: positive

Sentence: But I definitely would not eat here again
Predicted Sentiment: negative

Sentence: It 's a great place and I highly recommend it
Predicted Sentiment: positive

Sentence: Service wa good and the company wa better !
Predicted Sentiment: positive

Sentence: Nicest Chinese restaurant I 've been in a while
Predicted Sentiment: positive

Sentence: I miss it and wish they had one in Philadelphia !

Predicted Sentiment: positive

Sentence: I came back today since they relocated and still not impressed
Predicted Sentiment: negative

Sentence: This is a great restaurant at the Mandalay Bay
Predicted Sentiment: positive

Sentence: The manager wa the worst
Predicted Sentiment: negative

Sentence: We had fantastic service and were pleased by the atmosphere
Predicted Sentiment: positive

Sentence: You ca n't beat that
Predicted Sentiment: negative

Sentence: I want to first say our server wa great and we had perfect service
Predicted Sentiment: positive

Sentence: This really is how Vegas fine dining used to be right down to the menu handed to the lady that h
ave no price listed
Predicted Sentiment: negative

Sentence: A lady at the table next to u found a live green caterpillar In her salad
Predicted Sentiment: negative

Sentence: This place lacked style ! !
Predicted Sentiment: negative

Sentence: Waited 2 hour & never got either of our pizza a many other around u who came in later did !
Predicted Sentiment: negative

Sentence: Despite how hard I rate business it actually rare for me to give a 1 star
Predicted Sentiment: negative

Sentence: Hot dish are not hot cold dish are close to room tempI watched staff prepare food with BARE HAND
S no glovesEverything is deep fried in oil
Predicted Sentiment: negative

Sentence: Needless to say we will never be back here again
Predicted Sentiment: negative

Sentence: Great food and service huge portion and they give a military discount
Predicted Sentiment: positive

Sentence: How awesome is that
Predicted Sentiment: positive

Sentence: Not my thing
Predicted Sentiment: negative

Sentence: We asked for the bill to leave without eating and they did n't bring that either
Predicted Sentiment: negative

Sentence: Favorite place in town for shawarrrrrrma ! ! ! ! ! !
Predicted Sentiment: positive

Sentence: It also took her forever to bring u the check when we asked for it
Predicted Sentiment: negative

Sentence: If you want healthy authentic or ethic food try this place
Predicted Sentiment: positive

Sentence: So they performed
Predicted Sentiment: negative

Sentence: I got home to see the driest damn wing ever !
Predicted Sentiment: negative

Sentence: It wa delicious ! ! !
Predicted Sentiment: positive

Sentence: I wa n't really impressed with Strip Steak
Predicted Sentiment: negative

Sentence: I love the decor with the Chinese calligraphy wall paper
Predicted Sentiment: positive

Sentence: I 've had better not only from dedicated boba tea spot but even from Jenni Pho
Predicted Sentiment: positive

Sentence: I wa so insulted

Predicted Sentiment: negative

Sentence: Definitely a turn off for me & i doubt I 'll be back unless someone else is buying
Predicted Sentiment: negative

Sentence: Never had anything to complain about here
Predicted Sentiment: negative

Sentence: Never again will I be dining at this place !
Predicted Sentiment: negative

Sentence: Food wa below average
Predicted Sentiment: negative

Sentence: What I really like there is the crepe station
Predicted Sentiment: positive

Sentence: The chip and sals a here is amazing !
Predicted Sentiment: positive

Sentence: Our server wa very nice and attentive a were the other serving staff
Predicted Sentiment: positive

Sentence: The patio seating wa very comfortable
Predicted Sentiment: positive

Sentence: The selection of food wa not the best
Predicted Sentiment: negative

Sentence: I wo n't try going back there even if it 's empty
Predicted Sentiment: negative

Sentence: It really is impressive that the place ha n't closed down
Predicted Sentiment: positive

Sentence: Classy/warm atmosphere fun and fresh appetizer succulent steak (Baseball steak ! ! ! ! !
Predicted Sentiment: positive

Sentence: Ample portion and good price
Predicted Sentiment: positive

Sentence: 2 time — Very Bad Customer Service !
Predicted Sentiment: negative

Sentence: I hate those thing a much a cheap quality black olive
Predicted Sentiment: negative

Sentence: The buffet is small and all the food they offered wa BLAND
Predicted Sentiment: positive

Sentence: The server are not pleasant to deal with and they do n't always honor Pizza Hut coupon
Predicted Sentiment: negative

Sentence: Food wa great and so wa the serivce !
Predicted Sentiment: positive

Sentence: The classic Maine Lobster Roll wa fantastic
Predicted Sentiment: positive

Sentence: Great place fo take out or eat in
Predicted Sentiment: positive

Sentence: Plus it 's only 8 buck
Predicted Sentiment: positive

Sentence: I know this is not like the other restaurant at all something is very off here !
Predicted Sentiment: negative

Sentence: The only reason to eat here would be to fill up before a night of binge drinking just to get some carbs in your stomach
Predicted Sentiment: negative

Sentence: Not a weekly haunt but definitely a place to come back to every once in a while
Predicted Sentiment: positive

Sentence: Google mediocre and I imagine Smashburger will pop up
Predicted Sentiment: negative

Sentence: If you look for authentic Thai food go else where
Predicted Sentiment: positive

Sentence: Great pork sandwich
Predicted Sentiment: positive

Sentence: I have been here several time in the past and the experience ha always been great
Predicted Sentiment: positive

Sentence: Great place to eat reminds me of the little mom and pop shop in the San Francisco Bay Area
Predicted Sentiment: positive

Sentence: Some may say this buffet is pricey but I think you get what you pay for and this place you are ge
tting quite a lot !
Predicted Sentiment: positive

Sentence: I also decided not to send it back because our waitress looked like she wa on the verge of having
a heart attack
Predicted Sentiment: negative

Sentence: Waiter wa a jerk
Predicted Sentiment: negative

Sentence: Not tasty and the texture wa just nasty
Predicted Sentiment: negative

Sentence: Tonight I had the Elk Filet special and it sucked
Predicted Sentiment: negative

Sentence: If it were possible to give them zero star they 'd have it
Predicted Sentiment: negative

Sentence: We 'd definitely go back here again
Predicted Sentiment: positive

Sentence: And service wa super friendly
Predicted Sentiment: positive

Sentence: Both great !
Predicted Sentiment: positive

Sentence: I started this review with two star but I 'm editing it to give it only one
Predicted Sentiment: negative

Sentence: — They never brought a salad we asked for
Predicted Sentiment: negative

Sentence: This place receives star for their APPETIZERS ! ! !
Predicted Sentiment: positive

Sentence: The staff is super nice and very quick even with the crazy crowd of the downtown jury lawyer an
d court staff
Predicted Sentiment: positive

Sentence: The food wa n't good
Predicted Sentiment: negative

Sentence: We are so glad we found this place
Predicted Sentiment: positive

Sentence: Waited and waited and waited
Predicted Sentiment: negative

Sentence: This place is pretty good nice little vibe in the restaurant
Predicted Sentiment: positive

Sentence: I 'm super pissd
Predicted Sentiment: negative

Sentence: Paying $ 785 for a hot dog and fry that look like it came out of a kid 's meal at the Wienerschni
tzel is not my idea of a good meal
Predicted Sentiment: negative

Sentence: Perfect for someone (me) who only like beer ice cold or in this case even colder
Predicted Sentiment: negative

Sentence: There wa a warm feeling with the service and I felt like their guest for a special treat
Predicted Sentiment: positive

Sentence: The sergeant pepper beef sandwich with auju sauce is an excellent sandwich a well
Predicted Sentiment: positive

Sentence: Ryan 's Bar is definitely one Edinburgh establishment I wo n't be revisiting
Predicted Sentiment: positive

Sentence: The vanilla ice cream wa creamy and smooth while the profiterole (chou) pastry wa fresh enough
Predicted Sentiment: positive

Sentence: Furthermore you ca n't even find hour of operation on the website !
Predicted Sentiment: negative

Sentence: This wa my first crawfish experience and it wa delicious !
Predicted Sentiment: positive

Sentence: The ambience is wonderful and there is music playing
Predicted Sentiment: positive

Sentence: This is a really fantastic Thai restaurant which is definitely worth a visit
Predicted Sentiment: positive

Sentence: We recently witnessed her poor quality of management towards other guest a well
Predicted Sentiment: negative

Sentence: Not to mention the combination of pear almond and bacon is a big winner !
Predicted Sentiment: positive

Sentence: Weird vibe from owner
Predicted Sentiment: negative

Sentence: I 've had better atmosphere
Predicted Sentiment: negative

Sentence: The atmosphere here is fun
Predicted Sentiment: positive

Sentence: The black eyed pea and sweet potato UNREAL !
Predicted Sentiment: negative

Sentence: I do love sushi but I found Kabuki to be over-priced over-hip and under-services
Predicted Sentiment: negative

Sentence: Food is way overpriced and portion are fucking small
Predicted Sentiment: negative

Sentence: We 've tried to like this place but after 10+ time I think we 're done with them
Predicted Sentiment: negative

Sentence: The food is good
Predicted Sentiment: positive

Sentence: i felt insulted and disrespected how could you talk and judge another human being like that ?
Predicted Sentiment: negative

Sentence: The waitress and manager are so friendly
Predicted Sentiment: positive

Sentence: The chicken I got wa definitely reheated and wa only ok the wedge were cold and soggy
Predicted Sentiment: negative

Sentence: The chip that came out were dripping with grease and mostly not edible
Predicted Sentiment: negative

Sentence: It wa pretty gross !
Predicted Sentiment: negative

Sentence: Kind of hard to mess up a steak but they did
Predicted Sentiment: negative

Sentence: There is not a deal good enough that would drag me into that establishment again
Predicted Sentiment: negative

Sentence: I just do n't know how this place managed to served the blandest food I have ever eaten when they
are preparing Indian cuisine
Predicted Sentiment: negative

Sentence: Appetite instantly gone
Predicted Sentiment: negative

Sentence: Overall I like there food and the service
Predicted Sentiment: positive

Sentence: This place deserves one star and 90 % ha to do with the food
Predicted Sentiment: positive

Sentence: The description said `` yum yum sauce '' and another said `` eel sauce '' yet another said `` sp
icy mayo '' well NONE of the roll had sauce on them
Predicted Sentiment: negative

Sentence: Not good for the money
Predicted Sentiment: negative

Sentence: First – the bathroom at this location were dirty– Seat cover were not replenished & just plain yu
cky ! ! !
Predicted Sentiment: negative

Sentence: And the bean and rice were mediocre at best
Predicted Sentiment: negative

Sentence: I think this restaurant suffers from not trying hard enough
Predicted Sentiment: negative

Sentence: Must have been an off night at this place
Predicted Sentiment: negative

Sentence: Food quality ha been horrible
Predicted Sentiment: negative

Sentence: This place is amazing !
Predicted Sentiment: positive

Sentence: Their daily special are always a hit with my group
Predicted Sentiment: positive

Sentence: As for the `` main '' also uninspired
Predicted Sentiment: negative

Sentence: Then our food came out disappointment ensued
Predicted Sentiment: negative

Sentence: Im in AZ all the time and now have my new spot
Predicted Sentiment: positive

Sentence: I had to wait over 30 minute to get my drink and longer to get 2 arepas
Predicted Sentiment: negative

Sentence: They brought a fresh batch of fry and I wa thinking yay something warm but no !
Predicted Sentiment: positive

Sentence: They have a good selection of food including a massive meatloaf sandwich a crispy chicken wrap
a delish tuna melt and some tasty burger
Predicted Sentiment: positive

Sentence: DELICIOUS ! !
Predicted Sentiment: positive

Sentence: My husband said she wa very rude did not even apologize for the bad food or anything
Predicted Sentiment: negative

Sentence: say bye bye to your tip lady !
Predicted Sentiment: negative

Sentence: Pricing is a bit of a concern at Mellow Mushroom
Predicted Sentiment: negative

Sentence: Damn good steak
Predicted Sentiment: positive

Sentence: Anyway this FS restaurant ha a wonderful breakfast/lunch
Predicted Sentiment: positive

Sentence: definitely will come back here again
Predicted Sentiment: positive

Sentence: The real disappointment wa our waiter
Predicted Sentiment: negative

Sentence: Today is the second time I 've been to their lunch buffet and it wa pretty good
Predicted Sentiment: positive

Sentence: As for the service : I 'm a fan because it 's quick and you 're being served by some nice folk
Predicted Sentiment: positive

Sentence: Probably not in a hurry to go back
Predicted Sentiment: negative

Sentence: What a mistake that wa !
Predicted Sentiment: negative

Sentence: You get incredibly fresh fish prepared with care
Predicted Sentiment: positive

Sentence: Our waiter wa very attentive friendly and informative
Predicted Sentiment: positive

Sentence: In the summer you can dine in a charming outdoor patio – so very delightful
Predicted Sentiment: positive

Sentence: Went for lunch – service wa slow
Predicted Sentiment: negative

Sentence: Everything on the menu is terrific and we were also thrilled that they made amazing accommodation for our vegetarian daughter
Predicted Sentiment: positive

Sentence: I do n't each much pasta but I love the homemade /hand made pasta and thin pizza here
Predicted Sentiment: positive

Sentence: Talk about great customer service of course we will be back
Predicted Sentiment: positive

Sentence: Lobster Bisque Bussell Sprouts Risotto Filet ALL needed salt and pepper and of course there is none at the table
Predicted Sentiment: negative

Sentence: The management is rude
Predicted Sentiment: negative

Sentence: Then a if I had n't wasted enough of my life there they poured salt in the wound by drawing out the time it took to bring the check
Predicted Sentiment: negative

Sentence: Not good by any stretch of the imagination
Predicted Sentiment: negative

Sentence: I had high hope for this place since the burger are cooked over a charcoal grill but unfortunately the taste fell flat way flat
Predicted Sentiment: negative

Sentence: Great time – family dinner on a Sunday night
Predicted Sentiment: positive

Sentence: The warm beer did n't help
Predicted Sentiment: negative

Sentence: The best place in Vegas for breakfast (just check out a Sat or Sun
Predicted Sentiment: positive

Sentence: Their monster chicken fried steak and egg is my all time favorite
Predicted Sentiment: positive

Sentence: Strike 2 who want to be rushed
Predicted Sentiment: negative

Sentence: Shrimp– When I unwrapped it (I live only 1/2 a mile from Brushfire) it wa literally ice cold
Predicted Sentiment: negative

Sentence: I checked out this place a couple year ago and wa not impressed
Predicted Sentiment: negative

Sentence: I love the fact that everything on their menu is worth it
Predicted Sentiment: positive

Sentence: You cant go wrong with any of the food here
Predicted Sentiment: positive

Sentence: The staff are now not a friendly the wait time for being served are horrible no one even say hi for the first 10 minute
Predicted Sentiment: negative

Sentence: We made the drive all the way from North Scottsdale and I wa not one bit disappointed !
Predicted Sentiment: positive

Sentence: I have been to very few place to eat that under no circumstance would I ever return to and this top the list
Predicted Sentiment: negative

Sentence: I LOVED it !
Predicted Sentiment: positive

Sentence: So flavorful and ha just the perfect amount of heat
Predicted Sentiment: positive

Sentence: The owner are super friendly and the staff is courteous
Predicted Sentiment: positive

Sentence: I would recommend saving room for this !
Predicted Sentiment: positive

```
Sentence: Pretty good beer selection too
Predicted Sentiment: positive

Sentence: We were sat right on time and our server from the get go wa FANTASTIC !
Predicted Sentiment: positive

Sentence: But I do n't like it
Predicted Sentiment: negative

Sentence: The fry were great too
Predicted Sentiment: positive

Sentence: The sweet potato fry were very good and seasoned well
Predicted Sentiment: positive

Sentence: The crêpe wa delicate and thin and moist
Predicted Sentiment: positive

Sentence: One nice thing wa that they added gratuity on the bill since our party wa larger than 6 or 8  and
they did n't expect more tip than that
Predicted Sentiment: negative

Sentence: They also have the best cheese crisp in town
Predicted Sentiment: positive

Sentence: That 's right  the red velvet cake  ohhh this stuff is so good
Predicted Sentiment: positive

Sentence: We will not be coming back
Predicted Sentiment: negative

Sentence: Bacon is hella salty
Predicted Sentiment: positive

Sentence: The food wa very good and I enjoyed every mouthful  an enjoyable relaxed venue for couple small f
amily group etc
Predicted Sentiment: positive
```

Above you can see all sentiments assigned to the reviews by Huggingface's model.

```python
In [ ]:  from sklearn.metrics import classification_report
         true_labels = test['labels'].tolist()
         print(classification_report(true_labels, predictions, target_names=['negative', 'positive']))
```

```
              precision    recall  f1-score   support

    negative       0.93      0.92      0.92       100
    positive       0.92      0.93      0.93       100

    accuracy                           0.93       200
   macro avg       0.93      0.93      0.92       200
weighted avg       0.93      0.93      0.92       200
```

An overall accuracy and macro-average f1-score of 0.93 were obtained on a dataset with equal support (100 instances each) for both categories, as both precision and recall were tightly aligned at roughly 0.93. This illustrates how well the model consistently distinguishes between positive and negative classes.

Evaluating on Baseline Dataset

In a similiar manner as before, an additional analysis has been run to asses RoBERTa's performance. This was performed on the baseline dataset provided by the teaching staff of the Text Mining course. This baseline dataset includes sentences with labeled sentiments, aiming to provide a baseline to asess the trained model's performance and transferability.

```python
In [ ]:  test_data = pd.read_csv('sentiment-topic-test.tsv', sep='\t')

         sentiment_mapping = {'negative': 0, 'neutral': 1, 'positive': 2}
         test_data['numerical_sentiment'] = test_data['sentiment'].map(sentiment_mapping)

         sentences = test_data['text'].tolist()

         # Predicting
         predictions, raw_outputs = model.predict(sentences)

         from sklearn.metrics import classification_report
         print(classification_report(test_data['numerical_sentiment'], predictions, target_names=sentiment_mapping.
```

```
0it [00:00, ?it/s]huggingface/tokenizers: The current process just got forked, after parallelism has alread
y been used. Disabling parallelism to avoid deadlocks...
To disable this warning, you can either:
        - Avoid using `tokenizers` before the fork if possible
        - Explicitly set the environment variable TOKENIZERS_PARALLELISM=(true | false)
1it [00:04,  4.29s/it]
100%|███████████| 1/1 [00:00<00:00,  1.52it/s]
              precision    recall  f1-score   support

    negative       0.33      0.75      0.46         4
     neutral       0.00      0.00      0.00         3
    positive       0.00      0.00      0.00         3

    accuracy                           0.30        10
   macro avg       0.11      0.25      0.15        10
weighted avg       0.13      0.30      0.18        10
```

```
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
```

The results indicate an imbalanced performance across three categories (negative, neutral, positive), with a significantly high recall of 0.75 for the negative class but zero recall for both neutral and positive classes. The model's overall accuracy for a dataset of 10 instances is 0.30.

NERC

We analyze Named Entity Recognition and Classification (NERC) in this section by pre-training a Support Vector Machine (SVM) model on a chosen NERC database from Kaggle (Annotated Corpus for Named Entity Recognition). The aim of this advanced phase of our research was to identify and categorize named entities in the restaurant reviews dataset [4].

After the NERC model was pre-trained using the annotated corpus - that was then carefully split into training and testing sets - with DictVectorizer, we were able to convert the textual data into a numerical format that could be processed by machine learning techniques. After being trained on these features, the SVM model was able to identify different types of entities in the text, including words and Parts-of-Speech, which are essential for identifying named entities [5][7].

The database used for pre-training, Annotated Corpus for Named Entity Recognition, consists of 1.050.795 entries, mainly - mirroring real language - 'O's (Outside of Named Entities), with a high number of time, peson, location and organizations in a BIO stuctured format.

Pre-Training the Model

```python
from sklearn.feature_extraction import DictVectorizer
from sklearn import svm
import nltk

# Importing the NERC Database
path = '/Users/markbartos/Library/Mobile Documents/com~apple~CloudDocs/DRIVE/EDUCATION/VU_AI/YEAR3 PERIOD
kaggle_dataset = pd.read_csv(path, on_bad_lines='skip')

# Splitting the database into train and test sets
df_train = kaggle_dataset[:100000]
df_test = kaggle_dataset[100000:120000]
#print(kaggle_dataset.iloc[0])
```

```python
train_features = []
train_labels = []

for _, row in df_train.iterrows():
    a_dict = {
        'words': row['word'],
        'pos': row['pos']
    }
    train_features.append(a_dict)
    train_labels.append(row['tag'])
```

```python
test_features = []
test_labels = []

for _, row in df_test.iterrows():
    a_dict = {
        'words': row['word'],
        'pos': row['pos']
    }
    test_features.append(a_dict)
    test_labels.append(row['tag'])

# Using DictVectorizer to one-hot encode
vec = DictVectorizer(sparse=False)
all_features = train_features + test_features
print(all_features[0]) ######################
all_features_vec = vec.fit_transform(all_features)

# Splitting back into train and test set
num_training = len(train_features)
train_features_vec = all_features_vec[:num_training]
test_features_vec = all_features_vec[num_training:]
```

```
{'words': 'Thousands', 'pos': 'NNS'}
```

```
In [ ]:  clf = svm.LinearSVC()
         clf.fit(train_features_vec, train_labels)
         predicted_labels = clf.predict(test_features_vec)
         from sklearn.metrics import classification_report
         print(classification_report(test_labels, predicted_labels, zero_division=0))
```

```
              precision    recall  f1-score   support

       B-art       0.00      0.00      0.00         4
       B-eve       0.00      0.00      0.00         0
       B-geo       0.80      0.76      0.78       741
       B-gpe       0.96      0.92      0.94       296
       B-nat       1.00      0.50      0.67         8
       B-org       0.64      0.51      0.57       397
       B-per       0.81      0.53      0.64       333
       B-tim       0.91      0.76      0.83       393
       I-art       0.00      0.00      0.00         0
       I-eve       0.00      0.00      0.00         0
       I-geo       0.74      0.50      0.60       156
       I-gpe       1.00      0.50      0.67         2
       I-nat       0.80      1.00      0.89         4
       I-org       0.65      0.44      0.53       321
       I-per       0.42      0.90      0.57       319
       I-tim       0.41      0.08      0.14       108
           O       0.98      0.99      0.99     16918

    accuracy                           0.94     20000
   macro avg       0.60      0.49      0.52     20000
weighted avg       0.95      0.94      0.94     20000
```

Following training, we applied this model to the restaurant review dataset, identifying and classifying named entities. Tokenizing the reviews, applying Part-of-Speech labels to each token, and using the trained SVM model to predict entity tags were the steps involved in this approach.

Since there was no gold data avaliable for named entities in the original dataset, a random subset of 500 predictions were annotated and nominated as the gold standard. With this approach, we were able to test the accuracy and performance of our NERC model and validate its efficacy. We found it important to mention, as some bias - even to our best efforts - might have occoured.

Preprocessing the Restaurant Review Dataset for NERC Analysis

```python
In [ ]:  def process_review(review):
             tokens = nltk.word_tokenize(review)
             tagged = nltk.pos_tag(tokens)
             features = [{'words': word, 'pos': pos} for word, pos in tagged]
             return features

         processed_reviews = data['Review'].apply(process_review)

         all_features_flat = [feature for sublist in processed_reviews for feature in sublist]
         print(all_features_flat[0:10]) #############

         vec2 = DictVectorizer(sparse=False)
         vec2.fit(all_features_flat)
         all_features_vec2 = vec.transform(all_features_flat)
```

```
[{'words': 'Wow', 'pos': 'NNP'}, {'words': 'Loved', 'pos': 'VBD'}, {'words': 'this', 'pos': 'DT'}, {'word
s': 'place', 'pos': 'NN'}, {'words': 'Crust', 'pos': 'NNP'}, {'words': 'is', 'pos': 'VBZ'}, {'words': 'no
t', 'pos': 'RB'}, {'words': 'good', 'pos': 'JJ'}, {'words': 'Not', 'pos': 'RB'}, {'words': 'tasty', 'pos':
'JJ'}]
```

Exporting Predicted NERC Labels for Manual Evaluation

```python
In [ ]:  predicted_entity_tags = clf.predict(all_features_vec2)
         words_and_entities = zip([feature['words'] for feature in all_features], predicted_entity_tags)

         words_and_entities = list(zip([feature['words'] for feature in all_features_flat], predicted_entity_tags))
         df_words_entities = pd.DataFrame(words_and_entities, columns=['Word', 'Predicted_Entity'])
         subset_for_manual_eval = df_words_entities.sample(n=500, random_state=42)

         #subset_for_manual_eval.to_csv('subset_for_manual_evaluation.csv', index=False) # <------ Uncomment to ove

         #print(subset_for_manual_eval[0:10])
```

```python
In [ ]:  annotated_data = pd.read_csv('annotated-subset.csv', sep=';')
         print(classification_report(annotated_data['Annotated'], annotated_data['Predicted_Entity']))
```

```
              precision    recall  f1-score   support

       B-geo       0.00      0.00      0.00         1
       B-gpe       1.00      1.00      1.00         1
       B-per       0.00      0.00      0.00         2
       B-tim       1.00      1.00      1.00         1
       I-geo       0.00      0.00      0.00         1
       I-org       1.00      1.00      1.00         2
       I-per       0.44      1.00      0.61         7
       I-tim       1.00      1.00      1.00         1
           O       1.00      0.99      0.99       484

    accuracy                           0.98       500
   macro avg       0.60      0.67      0.62       500
weighted avg       0.98      0.98      0.98       500
```

```
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
```

The results show extraordinary precision and recall in detecting 'B-gpe' (Geopolitical entity), 'B-tim' (Time expressions), 'I-org' (Inside an organization), 'I-tim' (Inside a time expression), and non-entity 'O' categories. However, all of these categories have low support, except O'.

Most Common Entities per Category

Furthermore, we conducted an in-depth examination of the entities that appeared most frequently in each category to gain an understanding of the recurring themes and subjects found in the restaurant assessment. This investigation not only improved our comprehension of the content of the dataset but also showed how NERC may be used to identify important patterns and trends in textual data.

```python
In [ ]:  from collections import defaultdict, Counter

         entities_by_tag = defaultdict(list)
         for word, tag in words_and_entities:
             entities_by_tag[tag].append(word)

         most_mentioned_per_tag = {}
         for tag, entities in entities_by_tag.items():
             entity_counts = Counter(entities)
             most_common_entities = entity_counts.most_common(5)
             most_mentioned_per_tag[tag] = most_common_entities

         rows = []
         for tag, entities in most_mentioned_per_tag.items():
             for entity, count in entities:
                 rows.append((tag, entity, count))
```

```python
df_most_mentioned = pd.DataFrame(rows, columns=['Tag', 'Entity', 'Frequency'])
df_most_mentioned
```

```python
df_most_mentioned = pd.DataFrame(rows, columns=['Tag', 'Entity', 'Frequency'])
df_most_mentioned
```

Out[ ]:

	Tag	Entity	Frequency
0	I-per	Vegas	21
1	I-per	Pho	4
2	I-per	Worst	4
3	I-per	Waitress	3
4	I-per	EVER	3
5	O	the	406
6	O	and	382
7	O	I	347
8	O	wa	308
9	O	a	258
10	B-tim	Today	2
11	B-tim	today	2
12	B-tim	summer	2
13	B-tim	May	1
14	B-tim	1979	1
15	B-per	Rick	1
16	B-per	Rock	1
17	B-per	Francisco	1
18	B-per	Ryan	1
19	B-per	Roll	1
20	I-org	Service	15
21	I-org	&	12
22	I-org	Food	10
23	I-org	Phoenix	4
24	I-org	Valley	2
25	B-geo	Cape	1
26	B-geo	San	1
27	B-geo	North	1
28	B-geo	Mediterranean	1
29	B-geo	Christmas	1
30	B-gpe	Thai	5
31	B-gpe	Greek	3
32	B-gpe	Mexican	2
33	B-gpe	Indian	2
34	B-gpe	Italian	2
35	B-org	Great	14
36	B-org	Good	1
37	B-org	Big	1
38	B-org	Google	1
39	I-tim	3	4
40	I-tim	8	3
41	I-tim	afternoon	1
42	I-tim	7	1
43	I-tim	6	1
44	I-geo	Bay	4
45	I-geo	Strip	2
46	B-art	Magazine	1

	Tag	Entity	Frequency
47	B-eve	Eve	1

Evaluating on Baseline Dataset

Once again, to examine the performance of the model and to asess its transferability, the SVM-based NERC model made prediction on the baseline dataset's entities and its performance has been compared to the baseline's gold standards. Since the baseline and the Restaurant Review dataset used different labels for the same BIO tags, a mapping has been applied.

```
In [ ]:  baseline_nerc = pd.read_csv('NER-test.tsv', sep='\t')

         baseline_features = []
         baseline_labels = []

         def map_label(label):
             if label == 'B-ORG':
                 return 'B-org'
             elif label == 'I-PERSON':
                 return 'I-per'
             elif label == 'B-PERSON':
                 return 'B-per'
             elif label == 'I-ORG':
                 return 'I-org'
             elif label == 'B-DATE':
                 return 'B-tim'
             elif label == 'I-DATE':
                 return 'I-tim'
             elif label == 'I-PER':
                 return 'I-per'
             elif label == 'B-PER':
                 return 'B-per'
             elif label == 'B-WORK_OF_ART':
                 return 'O'
             elif label == 'I-WORK_OF_ART':
                 return 'O'
             else:
                 return label

         for _, row in baseline_nerc.iterrows():
             a_dict = {
                 'words': row['token']
             }
             baseline_features.append(a_dict)
             #baseline_labels.append(row['BIO NER tag'])
             mapped_label = map_label(row['BIO NER tag'])
             baseline_labels.append(mapped_label)

         print(baseline_features)
         print(baseline_labels)

         baseline_features_vec = vec.transform(baseline_features)
         predicted_baseline_labels = clf.predict(baseline_features_vec)
         print(classification_report(baseline_labels, predicted_baseline_labels, zero_division=0))
```

[{'words': 'I'}, {'words': 'would'}, {'words': "n't"}, {'words': 'be'}, {'words': 'caught'}, {'words': 'dea
d'}, {'words': 'watching'}, {'words': 'the'}, {'words': 'NFL'}, {'words': 'if'}, {'words': 'it'}, {'words':
'were'}, {'words': "n't"}, {'words': 'for'}, {'words': 'Taylor'}, {'words': 'Swift'}, {'words': '.'}, {'wor
ds': 'Chris'}, {'words': "O'Donnell"}, {'words': 'stated'}, {'words': 'that'}, {'words': 'while'}, {'word
s': 'filming'}, {'words': 'for'}, {'words': 'this'}, {'words': 'movie'}, {'words': ','}, {'words': 'he'},
{'words': 'felt'}, {'words': 'like'}, {'words': 'he'}, {'words': 'was'}, {'words': 'in'}, {'words': 'a'},
{'words': 'Toys'}, {'words': "'''"}, {'words': 'R'}, {'words': "'''"}, {'words': 'Us'}, {'words': 'commercia
l'}, {'words': '.'}, {'words': 'The'}, {'words': 'whole'}, {'words': 'game'}, {'words': 'was'}, {'words':
'a'}, {'words': 'rollercoaster'}, {'words': 'ride'}, {'words': ','}, {'words': 'but'}, {'words': 'Los'},
{'words': 'Angeles'}, {'words': 'Lakers'}, {'words': 'ultimately'}, {'words': 'persevered'}, {'words': 'an
d'}, {'words': 'won'}, {'words': '!'}, {'words': 'Zendaya'}, {'words': 'slayed'}, {'words': 'in'}, {'word
s': 'Dune'}, {'words': '2'}, {'words': ','}, {'words': 'as'}, {'words': 'she'}, {'words': 'does'}, {'word
s': 'in'}, {'words': 'all'}, {'words': 'her'}, {'words': 'movies'}, {'words': '.'}, {'words': 'While'}, {'w
ords': 'my'}, {'words': 'favorite'}, {'words': 'player'}, {'words': 'was'}, {'words': 'playing'}, {'words':
'this'}, {'words': 'match'}, {'words': 'and'}, {'words': 'started'}, {'words': 'off'}, {'words': 'stronggg
g'}, {'words': ','}, {'words': 'it'}, {'words': 'went'}, {'words': 'downhill'}, {'words': 'after'}, {'word
s': 'Messi'}, {'words': "'s"}, {'words': 'injyry'}, {'words': 'midgame'}, {'words': '.'}, {'words': 'My'},
{'words': 'uncle'}, {'words': "'s"}, {'words': 'brother'}, {'words': "'s"}, {'words': 'neighbor'}, {'word
s': "'s"}, {'words': 'cat'}, {'words': "'s"}, {'words': 'veterinarian'}, {'words': 'David'}, {'words': 'rea
ds'}, {'words': 'the'}, {'words': 'communist'}, {'words': 'manifesto'}, {'words': 'in'}, {'words': 'his'},
{'words': 'spare'}, {'words': 'time'}, {'words': '.'}, {'words': 'He'}, {'words': 'said'}, {'words': 'tha
t'}, {'words': 'The'}, {'words': 'Great'}, {'words': 'Gatsby'}, {'words': 'is'}, {'words': 'the'}, {'word
s': 'best'}, {'words': 'novell'}, {'words': 'ever'}, {'words': ','}, {'words': 'and'}, {'words': 'I'}, {'wo
rds': 'was'}, {'words': 'about'}, {'words': 'to'}, {'words': 'throw'}, {'words': 'hands'}, {'words': '.'},
{'words': 'I'}, {'words': 'could'}, {'words': 'not'}, {'words': 'look'}, {'words': 'away'}, {'words': 'fro
m'}, {'words': 'this'}, {'words': 'train'}, {'words': 'wrck'}, {'words': 'of'}, {'words': 'a'}, {'words':
'movie'}, {'words': ','}, {'words': 'on'}, {'words': 'February'}, {'words': '14th'}, {'words': 'of'}, {'wor
ds': 'all'}, {'words': 'days'}, {'words': '.'}, {'words': 'The'}, {'words': 'film'}, {'words': 'Everythin
g'}, {'words': 'Everywhere'}, {'words': 'All'}, {'words': 'At'}, {'words': 'Once'}, {'words': 'follows'},
{'words': 'Evelyn'}, {'words': 'Wang'}, {'words': ','}, {'words': 'a'}, {'words': 'woman'}, {'words': 'drow
ning'}, {'words': 'under'}, {'words': 'the'}, {'words': 'stress'}, {'words': 'of'}, {'words': 'her'}, {'wor
ds': 'family'}, {'words': "'s"}, {'words': 'failing'}, {'words': 'laundromat'}, {'words': '.'}, {'words':
'I'}, {'words': 'just'}, {'words': 'finished'}, {'words': 'reading'}, {'words': 'pride'}, {'words': 'and'},
{'words': 'prejudice'}, {'words': 'which'}, {'words': 'had'}, {'words': 'me'}, {'words': 'HOOOKED'}, {'word
s': 'from'}, {'words': 'the'}, {'words': 'beginning'}, {'words': '.'}]
['O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'B-org', 'O', 'O', 'O', 'O', 'O', 'B-per', 'I-per', 'O', 'B-per',
'I-per', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'B-org', 'I-org', 'I-or
g', 'I-org', 'I-org', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'B-org', 'I-org', 'I-org',
'O', 'O', 'O', 'O', 'O', 'B-per', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O',
'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'B-per', 'O', 'O', 'O',
'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'B-per', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O',
'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O',
'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'B-tim', 'I-tim', 'O', 'O', 'O', 'O',
'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'B-per', 'I-per', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O',
'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O', 'O']

	precision	recall	f1-score	support
B-org	0.00	0.00	0.00	3
B-per	0.00	0.00	0.00	6
B-tim	0.50	1.00	0.67	1
I-org	0.00	0.00	0.00	6
I-per	0.00	0.00	0.00	3
I-tim	0.00	0.00	0.00	1
O	0.91	1.00	0.95	173
accuracy			0.90	193
macro avg	0.20	0.29	0.23	193
weighted avg	0.81	0.90	0.86	193

The model is highly effective in identifying text that is associated with 'O' entities (Outside of named entities), however, these are the easiest to classify. The precise identification and classification of named entities within the dataset presents challenges for this model, as demonstrated by the significantly lower precision and recall for certain entity types like 'B-org' (Beginning of an organization), 'B-per' (Beginning of a person's name), and 'I-org' (Inside an organization). These findings highlight areas for potential improvement in the model tranferability.

```
In [ ]:  for word, predicted_label in zip(baseline_features, predicted_baseline_labels):
             print(f"Word: {word['words']}, Predicted NER Label: {predicted_label}")
```

```
Word: I, Predicted NER Label: O
Word: would, Predicted NER Label: O
Word: n't, Predicted NER Label: O
Word: be, Predicted NER Label: O
Word: caught, Predicted NER Label: O
Word: dead, Predicted NER Label: O
Word: watching, Predicted NER Label: O
Word: the, Predicted NER Label: O
Word: NFL, Predicted NER Label: O
Word: if, Predicted NER Label: O
Word: it, Predicted NER Label: O
Word: were, Predicted NER Label: O
Word: n't, Predicted NER Label: O
Word: for, Predicted NER Label: O
Word: Taylor, Predicted NER Label: O
Word: Swift, Predicted NER Label: O
Word: ., Predicted NER Label: O
Word: Chris, Predicted NER Label: O
Word: O'Donnell, Predicted NER Label: O
Word: stated, Predicted NER Label: O
Word: that, Predicted NER Label: O
Word: while, Predicted NER Label: O
Word: filming, Predicted NER Label: O
Word: for, Predicted NER Label: O
Word: this, Predicted NER Label: O
Word: movie, Predicted NER Label: O
Word: ,, Predicted NER Label: O
Word: he, Predicted NER Label: O
Word: felt, Predicted NER Label: O
Word: like, Predicted NER Label: O
Word: he, Predicted NER Label: O
Word: was, Predicted NER Label: O
Word: in, Predicted NER Label: O
Word: a, Predicted NER Label: O
Word: Toys, Predicted NER Label: O
Word: '', Predicted NER Label: O
Word: R, Predicted NER Label: O
Word: '', Predicted NER Label: O
Word: Us, Predicted NER Label: O
Word: commercial, Predicted NER Label: O
Word: ., Predicted NER Label: O
Word: The, Predicted NER Label: O
Word: whole, Predicted NER Label: O
Word: game, Predicted NER Label: O
Word: was, Predicted NER Label: O
Word: a, Predicted NER Label: O
Word: rollercoaster, Predicted NER Label: O
Word: ride, Predicted NER Label: O
Word: ,, Predicted NER Label: O
Word: but, Predicted NER Label: O
Word: Los, Predicted NER Label: O
Word: Angeles, Predicted NER Label: O
Word: Lakers, Predicted NER Label: O
Word: ultimately, Predicted NER Label: O
Word: persevered, Predicted NER Label: O
Word: and, Predicted NER Label: O
Word: won, Predicted NER Label: O
Word: !, Predicted NER Label: O
Word: Zendaya, Predicted NER Label: O
Word: slayed, Predicted NER Label: O
Word: in, Predicted NER Label: O
Word: Dune, Predicted NER Label: O
Word: 2, Predicted NER Label: O
Word: ,, Predicted NER Label: O
Word: as, Predicted NER Label: O
Word: she, Predicted NER Label: O
Word: does, Predicted NER Label: O
Word: in, Predicted NER Label: O
Word: all, Predicted NER Label: O
Word: her, Predicted NER Label: O
Word: movies, Predicted NER Label: O
Word: ., Predicted NER Label: O
Word: While, Predicted NER Label: O
Word: my, Predicted NER Label: O
Word: favorite, Predicted NER Label: O
Word: player, Predicted NER Label: O
Word: was, Predicted NER Label: O
Word: playing, Predicted NER Label: O
Word: this, Predicted NER Label: O
Word: match, Predicted NER Label: O
Word: and, Predicted NER Label: O
Word: started, Predicted NER Label: O
Word: off, Predicted NER Label: O
```

```
Word: strongggg, Predicted NER Label: O
Word: ,, Predicted NER Label: O
Word: it, Predicted NER Label: O
Word: went, Predicted NER Label: O
Word: downhill, Predicted NER Label: O
Word: after, Predicted NER Label: O
Word: Messi, Predicted NER Label: O
Word: 's, Predicted NER Label: O
Word: injyry, Predicted NER Label: O
Word: midgame, Predicted NER Label: O
Word: ., Predicted NER Label: O
Word: My, Predicted NER Label: O
Word: uncle, Predicted NER Label: O
Word: 's, Predicted NER Label: O
Word: brother, Predicted NER Label: O
Word: 's, Predicted NER Label: O
Word: neighbor, Predicted NER Label: O
Word: 's, Predicted NER Label: O
Word: cat, Predicted NER Label: O
Word: 's, Predicted NER Label: O
Word: veterinarian, Predicted NER Label: O
Word: David, Predicted NER Label: O
Word: reads, Predicted NER Label: O
Word: the, Predicted NER Label: O
Word: communist, Predicted NER Label: O
Word: manifesto, Predicted NER Label: O
Word: in, Predicted NER Label: O
Word: his, Predicted NER Label: O
Word: spare, Predicted NER Label: O
Word: time, Predicted NER Label: O
Word: ., Predicted NER Label: O
Word: He, Predicted NER Label: O
Word: said, Predicted NER Label: O
Word: that, Predicted NER Label: O
Word: The, Predicted NER Label: O
Word: Great, Predicted NER Label: O
Word: Gatsby, Predicted NER Label: O
Word: is, Predicted NER Label: O
Word: the, Predicted NER Label: O
Word: best, Predicted NER Label: O
Word: novell, Predicted NER Label: O
Word: ever, Predicted NER Label: O
Word: ,, Predicted NER Label: O
Word: and, Predicted NER Label: O
Word: I, Predicted NER Label: O
Word: was, Predicted NER Label: O
Word: about, Predicted NER Label: O
Word: to, Predicted NER Label: O
Word: throw, Predicted NER Label: O
Word: hands, Predicted NER Label: O
Word: ., Predicted NER Label: O
Word: I, Predicted NER Label: O
Word: could, Predicted NER Label: O
Word: not, Predicted NER Label: O
Word: look, Predicted NER Label: O
Word: away, Predicted NER Label: O
Word: from, Predicted NER Label: O
Word: this, Predicted NER Label: O
Word: train, Predicted NER Label: O
Word: wrck, Predicted NER Label: O
Word: of, Predicted NER Label: O
Word: a, Predicted NER Label: O
Word: movie, Predicted NER Label: O
Word: ,, Predicted NER Label: O
Word: on, Predicted NER Label: O
Word: February, Predicted NER Label: B-tim
Word: 14th, Predicted NER Label: B-tim
Word: of, Predicted NER Label: O
Word: all, Predicted NER Label: O
Word: days, Predicted NER Label: O
Word: ., Predicted NER Label: O
Word: The, Predicted NER Label: O
Word: film, Predicted NER Label: O
Word: Everything, Predicted NER Label: O
Word: Everywhere, Predicted NER Label: O
Word: All, Predicted NER Label: O
Word: At, Predicted NER Label: O
Word: Once, Predicted NER Label: O
Word: follows, Predicted NER Label: O
Word: Evelyn, Predicted NER Label: O
Word: Wang, Predicted NER Label: O
Word: ,, Predicted NER Label: O
Word: a, Predicted NER Label: O
```

```
Word: woman, Predicted NER Label: O
Word: drowning, Predicted NER Label: O
Word: under, Predicted NER Label: O
Word: the, Predicted NER Label: O
Word: stress, Predicted NER Label: O
Word: of, Predicted NER Label: O
Word: her, Predicted NER Label: O
Word: family, Predicted NER Label: O
Word: 's, Predicted NER Label: O
Word: failing, Predicted NER Label: O
Word: laundromat, Predicted NER Label: O
Word: ., Predicted NER Label: O
Word: I, Predicted NER Label: O
Word: just, Predicted NER Label: O
Word: finished, Predicted NER Label: O
Word: reading, Predicted NER Label: O
Word: pride, Predicted NER Label: O
Word: and, Predicted NER Label: O
Word: prejudice, Predicted NER Label: O
Word: which, Predicted NER Label: O
Word: had, Predicted NER Label: O
Word: me, Predicted NER Label: O
Word: HOOOKED, Predicted NER Label: O
Word: from, Predicted NER Label: O
Word: the, Predicted NER Label: O
Word: beginning, Predicted NER Label: O
Word: ., Predicted NER Label: O
```

The words from the baseline dataset, and their predicted Named Entities are printed above for manual examination.

Topic analysis - Gensim LDA

We used Latent Dirichlet Allocation (LDA) through the Gensim library, a recognized method for topic modeling in text corpora, to investigate thematic structures found in restaurant reviews. This methodological decision was based on LDA's demonstrated ability to reveal latent topic distributions in large unstructured text datasets [6].

A Term Frequency-Inverse Document Frequency (TF-IDF) model was then used to convert the processed documents into a bag-of-words representation and asess the relative value of each term in the corpus to its frequency across documents. This change was essential for improving the topic modeling procedure since it reduced the weight of common but uninformative phrases while highlighting important terms [9].

Using Gensim's LDA Multicore model, we were able to extract and analyze ten different subjects from the restaurant evaluations, which formed the basis of our topic analysis. Every topic was represented as a cluster of words along with their corresponding probabilities, which showed how relevant each word was to the subject. The results of this research demonstrated the wide range of topics that consumers focus on in their reviews.

We utilized pyLDAvis, an interactive visualization tool, to enhance the interpretability of the results of our LDA model. This tool allowed for the easy examination and investigation of the connections between the topics and their distribution across the dataset. The capacity of the model to divide the corpus into logical themes was highlighted by this visual representation.

```python
LDA_data = data
LDA_data.reset_index(inplace=True)
LDA_data.rename(columns={'index': 'index'}, inplace=True)
LDA_data.drop(columns=['Liked'], inplace=True)
LDA_data = LDA_data[['Review', 'index']]

LDA_data.head()
```

Out[ ]:

	Review	index
0	Wow Loved this place	0
1	Crust is not good	1
2	Not tasty and the texture wa just nasty	2
3	Stopped by during the late May bank holiday of...	3
4	The selection on the menu wa great and so were...	4

```python
import gensim
from gensim.utils import simple_preprocess
from gensim.parsing.preprocessing import STOPWORDS
from nltk.stem import WordNetLemmatizer, SnowballStemmer
from nltk.stem.porter import *
import numpy as np
np.random.seed(2018)
```

```python
import nltk
nltk.download('wordnet')

lemmatizer = WordNetLemmatizer()
```

```
[nltk_data] Downloading package wordnet to
[nltk_data]     /Users/markbartos/nltk_data...
[nltk_data]   Package wordnet is already up-to-date!
```

```python
def lemmatize_stemming(text):
    return lemmatizer.lemmatize(text)
def preprocess(text):
    result = []
    for token in gensim.utils.simple_preprocess(text):
        if token not in gensim.parsing.preprocessing.STOPWORDS and len(token) > 3:
            #result.append(token)
            result.append(lemmatize_stemming(token))
    return result
```

```python
processed_docs = LDA_data['Review'].map(preprocess)
#processed_docs[:10]
```

```python
dictionary = gensim.corpora.Dictionary(processed_docs)
count = 0
for k, v in dictionary.iteritems():
    #print(k, v)
    count += 1
    if count > 10:
        break
```

```python
dictionary.filter_extremes(no_below=15, no_above=0.5, keep_n=100000)
```

```python
bow_corpus = [dictionary.doc2bow(doc) for doc in processed_docs]
#bow_corpus[100]
```

```python
from gensim import corpora, models
tfidf = models.TfidfModel(bow_corpus)
corpus_tfidf = tfidf[bow_corpus]
from pprint import pprint
for doc in corpus_tfidf:
    #pprint(doc)
    break
```

```python
lda_model = gensim.models.LdaMulticore(bow_corpus, num_topics=10, id2word=dictionary, passes=2, workers=2)
```

```python
topic_labels = [
    "Positive General Impressions",
    "Food and Staff Appreciation",
    "Value and Quality Comparison",
    "Friendly Service and Atmosphere",
    "Memorable Dining Experiences",
    "Extremes in Service and Quality",
    "Favorites and Love for the Food",
    "Basic Satisfaction with Service and Quality",
    "Ambiance and Dining Experience",
    "Specific Complaints or Concerns"
]
```

```python
for idx, topic in lda_model.print_topics(-1):
    print('Topic: {} \nWords: {}'.format(idx, topic))
```

```
Topic: 0
Words: 0.193*"amazing" + 0.159*"going" + 0.111*"menu" + 0.100*"dish" + 0.082*"food" + 0.078*"service" + 0.0
52*"delicious" + 0.037*"good" + 0.028*"great" + 0.019*"better"
Topic: 1
Words: 0.206*"food" + 0.169*"restaurant" + 0.092*"delicious" + 0.082*"chicken" + 0.047*"love" + 0.045*"sala
d" + 0.044*"nice" + 0.033*"vega" + 0.029*"best" + 0.024*"experience"
Topic: 2
Words: 0.292*"great" + 0.287*"time" + 0.084*"place" + 0.046*"good" + 0.036*"food" + 0.034*"staff" + 0.033
*"restaurant" + 0.025*"going" + 0.020*"service" + 0.019*"amazing"
Topic: 3
Words: 0.191*"service" + 0.120*"great" + 0.118*"food" + 0.108*"came" + 0.088*"delicious" + 0.082*"worst" +
0.043*"friendly" + 0.040*"time" + 0.039*"server" + 0.029*"price"
Topic: 4
Words: 0.286*"place" + 0.219*"service" + 0.209*"like" + 0.059*"food" + 0.030*"love" + 0.028*"good" + 0.025
*"amazing" + 0.020*"star" + 0.019*"great" + 0.014*"restaurant"
Topic: 5
Words: 0.313*"good" + 0.107*"vega" + 0.101*"pretty" + 0.093*"experience" + 0.082*"place" + 0.065*"pizza" +
0.052*"love" + 0.035*"time" + 0.025*"menu" + 0.022*"amazing"
Topic: 6
Words: 0.386*"food" + 0.110*"place" + 0.107*"good" + 0.079*"chicken" + 0.057*"think" + 0.055*"like" + 0.038
*"dish" + 0.036*"great" + 0.029*"restaurant" + 0.022*"time"
Topic: 7
Words: 0.185*"disappointed" + 0.160*"minute" + 0.147*"definitely" + 0.136*"salad" + 0.066*"pizza" + 0.061
*"food" + 0.037*"came" + 0.032*"great" + 0.028*"server" + 0.021*"place"
Topic: 8
Words: 0.189*"best" + 0.160*"good" + 0.113*"food" + 0.101*"service" + 0.072*"price" + 0.066*"better" + 0.04
2*"place" + 0.036*"think" + 0.034*"friendly" + 0.033*"server"
Topic: 9
Words: 0.160*"place" + 0.156*"nice" + 0.143*"friendly" + 0.131*"star" + 0.126*"staff" + 0.078*"restaurant"
+ 0.036*"server" + 0.028*"best" + 0.026*"pizza" + 0.020*"great"
```

```python
for idx, topic in lda_model.print_topics(-1):
    print('Topic: {} Label: {} \nWord: {}'.format(idx, topic_labels[idx], topic))
```

```
Topic: 0 Label: Positive General Impressions
Word: 0.193*"amazing" + 0.159*"going" + 0.111*"menu" + 0.100*"dish" + 0.082*"food" + 0.078*"service" + 0.05
2*"delicious" + 0.037*"good" + 0.028*"great" + 0.019*"better"
Topic: 1 Label: Food and Staff Appreciation
Word: 0.206*"food" + 0.169*"restaurant" + 0.092*"delicious" + 0.082*"chicken" + 0.047*"love" + 0.045*"sala
d" + 0.044*"nice" + 0.033*"vega" + 0.029*"best" + 0.024*"experience"
Topic: 2 Label: Value and Quality Comparison
Word: 0.292*"great" + 0.287*"time" + 0.084*"place" + 0.046*"good" + 0.036*"food" + 0.034*"staff" + 0.033*"r
estaurant" + 0.025*"going" + 0.020*"service" + 0.019*"amazing"
Topic: 3 Label: Friendly Service and Atmosphere
Word: 0.191*"service" + 0.120*"great" + 0.118*"food" + 0.108*"came" + 0.088*"delicious" + 0.082*"worst" +
0.043*"friendly" + 0.040*"time" + 0.039*"server" + 0.029*"price"
Topic: 4 Label: Memorable Dining Experiences
Word: 0.286*"place" + 0.219*"service" + 0.209*"like" + 0.059*"food" + 0.030*"love" + 0.028*"good" + 0.025
*"amazing" + 0.020*"star" + 0.019*"great" + 0.014*"restaurant"
Topic: 5 Label: Extremes in Service and Quality
Word: 0.313*"good" + 0.107*"vega" + 0.101*"pretty" + 0.093*"experience" + 0.082*"place" + 0.065*"pizza" +
0.052*"love" + 0.035*"time" + 0.025*"menu" + 0.022*"amazing"
Topic: 6 Label: Favorites and Love for the Food
Word: 0.386*"food" + 0.110*"place" + 0.107*"good" + 0.079*"chicken" + 0.057*"think" + 0.055*"like" + 0.038
*"dish" + 0.036*"great" + 0.029*"restaurant" + 0.022*"time"
Topic: 7 Label: Basic Satisfaction with Service and Quality
Word: 0.185*"disappointed" + 0.160*"minute" + 0.147*"definitely" + 0.136*"salad" + 0.066*"pizza" + 0.061*"f
ood" + 0.037*"came" + 0.032*"great" + 0.028*"server" + 0.021*"place"
Topic: 8 Label: Ambiance and Dining Experience
Word: 0.189*"best" + 0.160*"good" + 0.113*"food" + 0.101*"service" + 0.072*"price" + 0.066*"better" + 0.042
*"place" + 0.036*"think" + 0.034*"friendly" + 0.033*"server"
Topic: 9 Label: Specific Complaints or Concerns
Word: 0.160*"place" + 0.156*"nice" + 0.143*"friendly" + 0.131*"star" + 0.126*"staff" + 0.078*"restaurant" +
0.036*"server" + 0.028*"best" + 0.026*"pizza" + 0.020*"great"
```

```python
lda_model_tfidf = gensim.models.LdaMulticore(corpus_tfidf, num_topics=10, id2word=dictionary, passes=2, wo
for idx, topic in lda_model_tfidf.print_topics(-1):
    print('Topic: {} Word: {}'.format(idx, topic))
```

```
Topic: 0 Word: 0.214*"time" + 0.136*"pretty" + 0.099*"experience" + 0.097*"love" + 0.076*"place" + 0.051*"c
hicken" + 0.047*"menu" + 0.031*"think" + 0.028*"salad" + 0.027*"food"
Topic: 1 Word: 0.186*"nice" + 0.129*"worst" + 0.126*"restaurant" + 0.116*"salad" + 0.115*"came" + 0.068*"se
rver" + 0.040*"service" + 0.034*"price" + 0.032*"food" + 0.026*"staff"
Topic: 2 Word: 0.254*"amazing" + 0.154*"minute" + 0.106*"think" + 0.098*"menu" + 0.068*"food" + 0.047*"plac
e" + 0.039*"star" + 0.038*"restaurant" + 0.028*"great" + 0.027*"worst"
Topic: 3 Word: 0.182*"delicious" + 0.165*"definitely" + 0.160*"star" + 0.140*"going" + 0.077*"restaurant" +
0.039*"food" + 0.039*"nice" + 0.037*"menu" + 0.026*"price" + 0.020*"vega"
Topic: 4 Word: 0.461*"place" + 0.228*"food" + 0.060*"great" + 0.027*"love" + 0.021*"best" + 0.021*"think" +
0.019*"better" + 0.019*"delicious" + 0.015*"price" + 0.014*"service"
Topic: 5 Word: 0.222*"better" + 0.109*"minute" + 0.088*"dish" + 0.071*"going" + 0.061*"great" + 0.060*"goo
d" + 0.050*"food" + 0.047*"time" + 0.042*"server" + 0.041*"price"
Topic: 6 Word: 0.480*"good" + 0.130*"service" + 0.071*"pizza" + 0.071*"food" + 0.041*"experience" + 0.032
*"definitely" + 0.024*"great" + 0.023*"delicious" + 0.020*"place" + 0.019*"love"
Topic: 7 Word: 0.288*"service" + 0.170*"disappointed" + 0.094*"like" + 0.078*"food" + 0.073*"good" + 0.055
*"time" + 0.050*"amazing" + 0.036*"price" + 0.024*"server" + 0.020*"restaurant"
Topic: 8 Word: 0.204*"best" + 0.178*"friendly" + 0.130*"vega" + 0.095*"staff" + 0.078*"dish" + 0.055*"servi
ce" + 0.053*"time" + 0.025*"food" + 0.022*"restaurant" + 0.019*"great"
Topic: 9 Word: 0.285*"great" + 0.267*"like" + 0.150*"food" + 0.052*"chicken" + 0.036*"service" + 0.023*"pri
ce" + 0.022*"came" + 0.017*"pizza" + 0.016*"think" + 0.014*"time"
```

```python
for index, score in sorted(lda_model[bow_corpus[100]], key=lambda tup: -1*tup[1]):
    print("\nScore: {}\t \nTopic: {}".format(score, lda_model.print_topic(index, 10)))
```

```
Score: 0.6999428272247314
Topic: 0.189*"best" + 0.160*"good" + 0.113*"food" + 0.101*"service" + 0.072*"price" + 0.066*"better" + 0.04
2*"place" + 0.036*"think" + 0.034*"friendly" + 0.033*"server"

Score: 0.03334670886397362
Topic: 0.313*"good" + 0.107*"vega" + 0.101*"pretty" + 0.093*"experience" + 0.082*"place" + 0.065*"pizza" +
0.052*"love" + 0.035*"time" + 0.025*"menu" + 0.022*"amazing"

Score: 0.03334394842386246
Topic: 0.206*"food" + 0.169*"restaurant" + 0.092*"delicious" + 0.082*"chicken" + 0.047*"love" + 0.045*"sala
d" + 0.044*"nice" + 0.033*"vega" + 0.029*"best" + 0.024*"experience"

Score: 0.03334080055356026
Topic: 0.286*"place" + 0.219*"service" + 0.209*"like" + 0.059*"food" + 0.030*"love" + 0.028*"good" + 0.025
*"amazing" + 0.020*"star" + 0.019*"great" + 0.014*"restaurant"

Score: 0.033340685069561005
Topic: 0.191*"service" + 0.120*"great" + 0.118*"food" + 0.108*"came" + 0.088*"delicious" + 0.082*"worst" +
0.043*"friendly" + 0.040*"time" + 0.039*"server" + 0.029*"price"

Score: 0.03334015980362892
Topic: 0.160*"place" + 0.156*"nice" + 0.143*"friendly" + 0.131*"star" + 0.126*"staff" + 0.078*"restaurant"
+ 0.036*"server" + 0.028*"best" + 0.026*"pizza" + 0.020*"great"

Score: 0.03333817794919014
Topic: 0.185*"disappointed" + 0.160*"minute" + 0.147*"definitely" + 0.136*"salad" + 0.066*"pizza" + 0.061
*"food" + 0.037*"came" + 0.032*"great" + 0.028*"server" + 0.021*"place"

Score: 0.03333684429526329
Topic: 0.193*"amazing" + 0.159*"going" + 0.111*"menu" + 0.100*"dish" + 0.082*"food" + 0.078*"service" + 0.0
52*"delicious" + 0.037*"good" + 0.028*"great" + 0.019*"better"

Score: 0.0333363376557827
Topic: 0.292*"great" + 0.287*"time" + 0.084*"place" + 0.046*"good" + 0.036*"food" + 0.034*"staff" + 0.033
*"restaurant" + 0.025*"going" + 0.020*"service" + 0.019*"amazing"

Score: 0.033333491533994675
Topic: 0.386*"food" + 0.110*"place" + 0.107*"good" + 0.079*"chicken" + 0.057*"think" + 0.055*"like" + 0.038
*"dish" + 0.036*"great" + 0.029*"restaurant" + 0.022*"time"
```

Printing out Every Prediciton for Manual Observation

As asked by the project description, a list of all sentences with their predicted topic by LDA is going to get printed out in the next step.

```python
for i, row in enumerate(bow_corpus):
    top_topics = sorted(lda_model[row], key=lambda x: x[1], reverse=True)
    dominant_topic = top_topics[0][0]
    topic_label = topic_labels[dominant_topic]
    review_text = LDA_data.iloc[i]['Review']
    print(f"Review: {review_text}\nAssigned Topic Label: {topic_label}\n")
```

Review: Wow Loved this place
Assigned Topic Label: Memorable Dining Experiences

Review: Crust is not good
Assigned Topic Label: Extremes in Service and Quality

Review: Not tasty and the texture wa just nasty
Assigned Topic Label: Positive General Impressions

Review: Stopped by during the late May bank holiday off Rick Steve recommendation and loved it
Assigned Topic Label: Positive General Impressions

Review: The selection on the menu wa great and so were the price
Assigned Topic Label: Ambiance and Dining Experience

Review: Now I am getting angry and I want my damn pho
Assigned Topic Label: Positive General Impressions

Review: Honeslty it did n't taste THAT fresh)
Assigned Topic Label: Positive General Impressions

Review: The potato were like rubber and you could tell they had been made up ahead of time being kept under
a warmer
Assigned Topic Label: Memorable Dining Experiences

Review: The fry were great too
Assigned Topic Label: Value and Quality Comparison

Review: A great touch
Assigned Topic Label: Value and Quality Comparison

Review: Service wa very prompt
Assigned Topic Label: Memorable Dining Experiences

Review: Would not go back
Assigned Topic Label: Positive General Impressions

Review: The cashier had no care what so ever on what I had to say it still ended up being wayyy overpriced
Assigned Topic Label: Positive General Impressions

Review: I tried the Cape Cod ravoli chicken with cranberry mmmm !
Assigned Topic Label: Favorites and Love for the Food

Review: I wa disgusted because I wa pretty sure that wa human hair
Assigned Topic Label: Extremes in Service and Quality

Review: I wa shocked because no sign indicate cash only
Assigned Topic Label: Positive General Impressions

Review: Highly recommended
Assigned Topic Label: Positive General Impressions

Review: Waitress wa a little slow in service
Assigned Topic Label: Memorable Dining Experiences

Review: This place is not worth your time let alone Vegas
Assigned Topic Label: Extremes in Service and Quality

Review: did not like at all
Assigned Topic Label: Memorable Dining Experiences

Review: The Burrittos Blah !
Assigned Topic Label: Positive General Impressions

Review: The food amazing
Assigned Topic Label: Positive General Impressions

Review: Service is also cute
Assigned Topic Label: Friendly Service and Atmosphere

Review: I could care le The interior is just beautiful
Assigned Topic Label: Positive General Impressions

Review: So they performed
Assigned Topic Label: Positive General Impressions

Review: That 's right the red velvet cake ohhh this stuff is so good
Assigned Topic Label: Extremes in Service and Quality

Review: — They never brought a salad we asked for
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: This hole in the wall ha great Mexican street taco and friendly staff

Assigned Topic Label: Specific Complaints or Concerns

Review: Took an hour to get our food only 4 table in restaurant my food wa Luke warm Our sever wa running around like he wa totally overwhelmed
Assigned Topic Label: Favorites and Love for the Food

Review: The worst wa the salmon sashimi
Assigned Topic Label: Friendly Service and Atmosphere

Review: Also there are combo like a burger fry and beer for 23 which is a decent deal
Assigned Topic Label: Memorable Dining Experiences

Review: This wa like the final blow !
Assigned Topic Label: Memorable Dining Experiences

Review: I found this place by accident and I could not be happier
Assigned Topic Label: Memorable Dining Experiences

Review: seems like a good quick place to grab a bite of some familiar pub food but do yourself a favor and look elsewhere
Assigned Topic Label: Favorites and Love for the Food

Review: Overall I like this place a lot
Assigned Topic Label: Memorable Dining Experiences

Review: The only redeeming quality of the restaurant wa that it wa very inexpensive
Assigned Topic Label: Food and Staff Appreciation

Review: Ample portion and good price
Assigned Topic Label: Ambiance and Dining Experience

Review: Poor service the waiter made me feel like I wa stupid every time he came to the table
Assigned Topic Label: Friendly Service and Atmosphere

Review: My first visit to Hiro wa a delight !
Assigned Topic Label: Positive General Impressions

Review: Service suck
Assigned Topic Label: Memorable Dining Experiences

Review: The shrimp tender and moist
Assigned Topic Label: Positive General Impressions

Review: There is not a deal good enough that would drag me into that establishment again
Assigned Topic Label: Extremes in Service and Quality

Review: Hard to judge whether these side were good because we were grossed out by the melted styrofoam and did n't want to eat it for fear of getting sick
Assigned Topic Label: Extremes in Service and Quality

Review: On a positive note our server wa very attentive and provided great service
Assigned Topic Label: Friendly Service and Atmosphere

Review: Frozen puck of disgust with some of the worst people behind the register
Assigned Topic Label: Friendly Service and Atmosphere

Review: The only thing I did like wa the prime rib and dessert section
Assigned Topic Label: Memorable Dining Experiences

Review: It 's too bad the food is so damn generic
Assigned Topic Label: Favorites and Love for the Food

Review: The burger is good beef cooked just right
Assigned Topic Label: Extremes in Service and Quality

Review: If you want a sandwich just go to any Firehouse ! ! ! ! !
Assigned Topic Label: Positive General Impressions

Review: My side Greek salad with the Greek dressing wa so tasty and the pita and hummus wa very refreshing
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: We ordered the duck rare and it wa pink and tender on the inside with a nice char on the outside
Assigned Topic Label: Specific Complaints or Concerns

Review: He came running after u when he realized my husband had left his sunglass on the table
Assigned Topic Label: Friendly Service and Atmosphere

Review: Their chow mein is so good !
Assigned Topic Label: Extremes in Service and Quality

Review: They have horrible attitude towards customer and talk down to each one when customer do n't enjoy their food
Assigned Topic Label: Favorites and Love for the Food

Review: The portion wa huge !
Assigned Topic Label: Positive General Impressions

Review: Loved it friendly server great food wonderful and imaginative menu
Assigned Topic Label: Friendly Service and Atmosphere

Review: The Heart Attack Grill in downtown Vegas is an absolutely flat-lined excuse for a restaurant
Assigned Topic Label: Food and Staff Appreciation

Review: Not much seafood and like 5 string of pasta at the bottom
Assigned Topic Label: Memorable Dining Experiences

Review: The salad had just the right amount of sauce to not over power the scallop which wa perfectly cook
ed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The ripped banana wa not only ripped but petrified and tasteless
Assigned Topic Label: Positive General Impressions

Review: At least think to refill my water before I struggle to wave you over for 10 minute
Assigned Topic Label: Favorites and Love for the Food

Review: This place receives star for their APPETIZERS ! ! !
Assigned Topic Label: Specific Complaints or Concerns

Review: The cocktail are all handmade and delicious
Assigned Topic Label: Friendly Service and Atmosphere

Review: We 'd definitely go back here again
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: We are so glad we found this place
Assigned Topic Label: Memorable Dining Experiences

Review: Great food and service huge portion and they give a military discount
Assigned Topic Label: Friendly Service and Atmosphere

Review: Always a great time at Dos Gringos !
Assigned Topic Label: Value and Quality Comparison

Review: Update went back for a second time and it wa still just a amazing
Assigned Topic Label: Value and Quality Comparison

Review: We got the food and apparently they have never heard of salt and the batter on the fish wa chewy
Assigned Topic Label: Favorites and Love for the Food

Review: A great way to finish a great
Assigned Topic Label: Value and Quality Comparison

Review: The deal included 5 tasting and 2 drink and Jeff went above and beyond what we expected
Assigned Topic Label: Positive General Impressions

Review: — Really really good rice all the time
Assigned Topic Label: Value and Quality Comparison

Review: The service wa meh
Assigned Topic Label: Memorable Dining Experiences

Review: It took over 30 min to get their milkshake which wa nothing more than chocolate milk
Assigned Topic Label: Positive General Impressions

Review: I guess I should have known that this place would suck because it is inside of the Excalibur but
I did n't use my common sense
Assigned Topic Label: Memorable Dining Experiences

Review: The scallop dish is quite appalling for value a well
Assigned Topic Label: Positive General Impressions

Review: 2 time — Very Bad Customer Service !
Assigned Topic Label: Friendly Service and Atmosphere

Review: The sweet potato fry were very good and seasoned well
Assigned Topic Label: Extremes in Service and Quality

Review: Today is the second time I 've been to their lunch buffet and it wa pretty good
Assigned Topic Label: Extremes in Service and Quality

Review: There is so much good food in Vegas that I feel cheated for wasting an eating opportunity by going
to Rice and Company
Assigned Topic Label: Extremes in Service and Quality

Review: Coming here is like experiencing an underwhelming relationship where both party ca n't wait for the

other person to ask to break up
Assigned Topic Label: Memorable Dining Experiences

Review: walked in and the place smelled like an old grease trap and only 2 others there eating
Assigned Topic Label: Memorable Dining Experiences

Review: The turkey and roast beef were bland
Assigned Topic Label: Positive General Impressions

Review: This place ha it !
Assigned Topic Label: Memorable Dining Experiences

Review: The pan cake everyone are raving about taste like a sugary disaster tailored to the palate of a six
year old
Assigned Topic Label: Memorable Dining Experiences

Review: I love the Pho and the spring roll oh so yummy you have to try
Assigned Topic Label: Extremes in Service and Quality

Review: The poor batter to meat ratio made the chicken tender very unsatisfying
Assigned Topic Label: Favorites and Love for the Food

Review: All I have to say is the food wa amazing ! ! !
Assigned Topic Label: Positive General Impressions

Review: Omelets are to die for !
Assigned Topic Label: Positive General Impressions

Review: Everything wa fresh and delicious !
Assigned Topic Label: Friendly Service and Atmosphere

Review: In summary this wa a largely disappointing dining experience
Assigned Topic Label: Extremes in Service and Quality

Review: It 's like a really sexy party in your mouth where you 're outrageously flirting with the hottest
person at the party
Assigned Topic Label: Memorable Dining Experiences

Review: Never been to Hard Rock Casino before WILL NEVER EVER STEP FORWARD IN IT AGAIN !
Assigned Topic Label: Positive General Impressions

Review: Best breakfast buffet ! ! !
Assigned Topic Label: Ambiance and Dining Experience

Review: say bye bye to your tip lady !
Assigned Topic Label: Positive General Impressions

Review: We 'll never go again
Assigned Topic Label: Positive General Impressions

Review: Will be back again !
Assigned Topic Label: Positive General Impressions

Review: Food arrived quickly !
Assigned Topic Label: Favorites and Love for the Food

Review: It wa not good
Assigned Topic Label: Extremes in Service and Quality

Review: On the up side their cafe serf really good food
Assigned Topic Label: Favorites and Love for the Food

Review: Our server wa fantastic and when he found out the wife love roasted garlic and bone marrow he adde
d extra to our meal and another marrow to go !
Assigned Topic Label: Ambiance and Dining Experience

Review: The only good thing wa our waiter he wa very helpful and kept the bloddy mary 's coming
Assigned Topic Label: Extremes in Service and Quality

Review: Best Buffet in town for the price you can not beat it
Assigned Topic Label: Ambiance and Dining Experience

Review: I LOVED their mussel cooked in this wine reduction the duck wa tender and their potato dish were
delicious
Assigned Topic Label: Positive General Impressions

Review: This is one of the better buffet that I have been to
Assigned Topic Label: Ambiance and Dining Experience

Review: So we went to Tigerlilly and had a fantastic afternoon !
Assigned Topic Label: Positive General Impressions

Review: The food wa delicious our bartender wa attentive and personable AND we got a great deal !

Assigned Topic Label: Friendly Service and Atmosphere

Review: The ambience is wonderful and there is music playing
Assigned Topic Label: Positive General Impressions

Review: Will go back next trip out
Assigned Topic Label: Positive General Impressions

Review: Sooooo good ! !
Assigned Topic Label: Extremes in Service and Quality

Review: REAL sushi lover let 's be honest — Yama is not that good
Assigned Topic Label: Extremes in Service and Quality

Review: At least 40min passed in between u ordering and the food arriving and it wa n't that busy
Assigned Topic Label: Favorites and Love for the Food

Review: This is a really fantastic Thai restaurant which is definitely worth a visit
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Nice spicy and tender
Assigned Topic Label: Specific Complaints or Concerns

Review: Good price
Assigned Topic Label: Ambiance and Dining Experience

Review: Check it out
Assigned Topic Label: Positive General Impressions

Review: It wa pretty gross !
Assigned Topic Label: Extremes in Service and Quality

Review: I 've had better atmosphere
Assigned Topic Label: Ambiance and Dining Experience

Review: Kind of hard to mess up a steak but they did
Assigned Topic Label: Positive General Impressions

Review: Although I very much liked the look and sound of this place the actual experience wa a bit disappo
inting
Assigned Topic Label: Extremes in Service and Quality

Review: I just do n't know how this place managed to served the blandest food I have ever eaten when they a
re preparing Indian cuisine
Assigned Topic Label: Favorites and Love for the Food

Review: Worst service to boot but that is the least of their worry
Assigned Topic Label: Friendly Service and Atmosphere

Review: Service wa fine and the waitress wa friendly
Assigned Topic Label: Friendly Service and Atmosphere

Review: The guy all had steak and our steak loving son who ha had steak at the best and worst place said i
t wa the best steak he 's ever eaten
Assigned Topic Label: Ambiance and Dining Experience

Review: We thought you 'd have to venture further away to get good sushi but this place really hit the spo
t that night
Assigned Topic Label: Extremes in Service and Quality

Review: Host staff were for lack of a better word BITCHES !
Assigned Topic Label: Ambiance and Dining Experience

Review: Bland Not a liking this place for a number of reason and I do n't want to waste time on bad review
ing I 'll leave it at that
Assigned Topic Label: Value and Quality Comparison

Review: Phenomenal food service and ambiance
Assigned Topic Label: Friendly Service and Atmosphere

Review: I would n't return
Assigned Topic Label: Positive General Impressions

Review: Definitely worth venturing off the strip for the pork belly will return next time I 'm in Vegas
Assigned Topic Label: Extremes in Service and Quality

Review: This place is way too overpriced for mediocre food
Assigned Topic Label: Favorites and Love for the Food

Review: Penne vodka excellent !
Assigned Topic Label: Positive General Impressions

Review: They have a good selection of food including a massive meatloaf sandwich a crispy chicken wrap a

delish tuna melt and some tasty burger
Assigned Topic Label: Favorites and Love for the Food

Review: The management is rude
Assigned Topic Label: Positive General Impressions

Review: Delicious NYC bagel good selection of cream cheese real Lox with caper even
Assigned Topic Label: Food and Staff Appreciation

Review: Great Subway in fact it 's so good when you come here every other Subway will not meet your expect
ation
Assigned Topic Label: Value and Quality Comparison

Review: I had a seriously solid breakfast here
Assigned Topic Label: Positive General Impressions

Review: This is one of the best bar with food in Vegas
Assigned Topic Label: Ambiance and Dining Experience

Review: He wa extremely rude and really there are so many other restaurant I would love to dine at during
a weekend in Vegas
Assigned Topic Label: Food and Staff Appreciation

Review: My drink wa never empty and he made some really great menu suggestion
Assigned Topic Label: Value and Quality Comparison

Review: Do n't do it ! ! ! !
Assigned Topic Label: Positive General Impressions

Review: The waiter wa n't helpful or friendly and rarely checked on u
Assigned Topic Label: Specific Complaints or Concerns

Review: My husband and I ate lunch here and were very disappointed with the food and service
Assigned Topic Label: Memorable Dining Experiences

Review: And the red curry had so much bamboo shoot and wa n't very tasty to me
Assigned Topic Label: Positive General Impressions

Review: Nice blanket of moz over top but i feel like this wa done to cover up the subpar food
Assigned Topic Label: Favorites and Love for the Food

Review: The bathroom are clean and the place itself is well decorated
Assigned Topic Label: Memorable Dining Experiences

Review: The menu is always changing food quality is going down & service is extremely slow
Assigned Topic Label: Positive General Impressions

Review: The service wa a little slow considering that were served by 3 people server so the food wa coming
in a slow pace
Assigned Topic Label: Friendly Service and Atmosphere

Review: I give it 2 thumb down
Assigned Topic Label: Positive General Impressions

Review: We watched our waiter pay a lot more attention to other table and ignore u
Assigned Topic Label: Positive General Impressions

Review: My fiancé and I came in the middle of the day and we were greeted and seated right away
Assigned Topic Label: Friendly Service and Atmosphere

Review: This is a great restaurant at the Mandalay Bay
Assigned Topic Label: Value and Quality Comparison

Review: We waited for forty five minute in vain
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Crostini that came with the salad wa stale
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Some highlight : Great quality nigiri here !
Assigned Topic Label: Value and Quality Comparison

Review: the staff is friendly and the joint is always clean
Assigned Topic Label: Specific Complaints or Concerns

Review: this wa a different cut than the piece the other day but still wonderful and tender s well a well f
lavored
Assigned Topic Label: Positive General Impressions

Review: I ordered the Voodoo pasta and it wa the first time I 'd had really excellent pasta since going glu
ten free several year ago
Assigned Topic Label: Value and Quality Comparison

```
Review: this place is good
Assigned Topic Label: Extremes in Service and Quality

Review: Unfortunately  we must have hit the bakery on leftover day because everything we ordered wa STALE
Assigned Topic Label: Positive General Impressions

Review: I came back today since they relocated and still not impressed
Assigned Topic Label: Friendly Service and Atmosphere

Review: I wa seated immediately
Assigned Topic Label: Positive General Impressions

Review: Their menu is diverse  and reasonably priced
Assigned Topic Label: Positive General Impressions

Review: Avoid at all cost !
Assigned Topic Label: Positive General Impressions

Review: Restaurant is always full but never a wait
Assigned Topic Label: Food and Staff Appreciation

Review: DELICIOUS ! !
Assigned Topic Label: Food and Staff Appreciation

Review: This place is hands-down one of the best place to eat in the Phoenix metro area
Assigned Topic Label: Memorable Dining Experiences

Review: So do n't go there if you are looking for good food
Assigned Topic Label: Favorites and Love for the Food

Review: I 've never been treated so bad
Assigned Topic Label: Positive General Impressions

Review: Bacon is hella salty
Assigned Topic Label: Positive General Impressions

Review: We also ordered the spinach and avocado salad  the ingredient were sad and the dressing literally h
ad zero taste
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: This really is how Vegas fine dining used to be  right down to the menu handed to the lady that hav
e no price listed
Assigned Topic Label: Extremes in Service and Quality

Review: The waitress are very friendly
Assigned Topic Label: Specific Complaints or Concerns

Review: Lordy  the Khao Soi is a dish that is not to be missed for curry lover !
Assigned Topic Label: Positive General Impressions

Review: Everything on the menu is terrific and we were also thrilled that they made amazing accommodation f
or our vegetarian daughter
Assigned Topic Label: Positive General Impressions

Review: Perhaps I caught them on an off night judging by the other review  but I 'm not inspired to go back
Assigned Topic Label: Positive General Impressions

Review: The service here leaf a lot to be desired
Assigned Topic Label: Memorable Dining Experiences

Review: The atmosphere is modern and hip  while maintaining a touch of coziness
Assigned Topic Label: Positive General Impressions

Review: Not a weekly haunt  but definitely a place to come back to every once in a while
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: We literally sat there for 20 minute with no one asking to take our order
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The burger had absolutely no flavor - the meat itself wa totally bland  the burger wa overcooked an
d there wa no charcoal flavor
Assigned Topic Label: Positive General Impressions

Review: I also decided not to send it back because our waitress looked like she wa on the verge of having a
heart attack
Assigned Topic Label: Memorable Dining Experiences

Review: I dressed up to be treated so rudely !
Assigned Topic Label: Positive General Impressions

Review: It wa probably dirt
Assigned Topic Label: Positive General Impressions
```

Review: Love this place hit the spot when I want something healthy but not lacking in quantity or flavor
Assigned Topic Label: Memorable Dining Experiences

Review: I ordered the Lemon raspberry ice cocktail which wa also incredible
Assigned Topic Label: Positive General Impressions

Review: The food sucked which we expected but it sucked more than we could have imagined
Assigned Topic Label: Favorites and Love for the Food

Review: Interesting decor
Assigned Topic Label: Positive General Impressions

Review: What I really like there is the crepe station
Assigned Topic Label: Memorable Dining Experiences

Review: Also were served hot bread and butter and home made potato chip with bacon bit on top very original and very good
Assigned Topic Label: Extremes in Service and Quality

Review: you can watch them preparing the delicious food !)
Assigned Topic Label: Food and Staff Appreciation

Review: Both of the egg roll were fantastic
Assigned Topic Label: Positive General Impressions

Review: When my order arrived one of the gyro wa missing
Assigned Topic Label: Positive General Impressions

Review: I had a salad with the wing and some ice cream for dessert and left feeling quite satisfied
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I 'm not really sure how Joey 's wa voted best hot dog in the Valley by reader of Phoenix Magazine
Assigned Topic Label: Ambiance and Dining Experience

Review: The best place to go for a tasty bowl of Pho !
Assigned Topic Label: Ambiance and Dining Experience

Review: The live music on Fridays totally blow
Assigned Topic Label: Positive General Impressions

Review: I 've never been more insulted or felt disrespected
Assigned Topic Label: Positive General Impressions

Review: Very friendly staff
Assigned Topic Label: Specific Complaints or Concerns

Review: It is worth the drive
Assigned Topic Label: Positive General Impressions

Review: I had heard good thing about this place but it exceeding every hope I could have dreamed of
Assigned Topic Label: Extremes in Service and Quality

Review: Food wa great and so wa the serivce !
Assigned Topic Label: Favorites and Love for the Food

Review: The warm beer did n't help
Assigned Topic Label: Positive General Impressions

Review: Great brunch spot
Assigned Topic Label: Value and Quality Comparison

Review: Service is friendly and inviting
Assigned Topic Label: Friendly Service and Atmosphere

Review: Very good lunch spot
Assigned Topic Label: Extremes in Service and Quality

Review: I 've lived here since 1979 and this wa the first (and last) time I 've stepped foot into this place
Assigned Topic Label: Value and Quality Comparison

Review: The WORST EXPERIENCE EVER
Assigned Topic Label: Extremes in Service and Quality

Review: Must have been an off night at this place
Assigned Topic Label: Memorable Dining Experiences

Review: The side are delish — mixed mushroom yukon gold puree white corn — beateous
Assigned Topic Label: Positive General Impressions

Review: If that bug never showed up I would have given a 4 for sure but on the other side of the wall where this bug wa climbing wa the kitchen
Assigned Topic Label: Positive General Impressions

Review: For about 10 minute we we 're waiting for her salad when we realized that it wa n't coming any tim
e soon
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: My friend loved the salmon tartar
Assigned Topic Label: Positive General Impressions

Review: Wo n't go back
Assigned Topic Label: Positive General Impressions

Review: Extremely Tasty !
Assigned Topic Label: Positive General Impressions

Review: Waitress wa good though !
Assigned Topic Label: Extremes in Service and Quality

Review: Soggy and not good
Assigned Topic Label: Extremes in Service and Quality

Review: The Jamaican mojitos are delicious
Assigned Topic Label: Friendly Service and Atmosphere

Review: Which are small and not worth the price
Assigned Topic Label: Ambiance and Dining Experience

Review: – the food is rich so order accordingly
Assigned Topic Label: Favorites and Love for the Food

Review: The shower area is outside so you can only rinse not take a full shower unless you do n't mind be
ing nude for everyone to see !
Assigned Topic Label: Positive General Impressions

Review: The service wa a bit lacking
Assigned Topic Label: Memorable Dining Experiences

Review: Lobster Bisque Bussell Sprouts Risotto Filet ALL needed salt and pepper and of course there is
none at the table
Assigned Topic Label: Positive General Impressions

Review: Hopefully this bodes for them going out of business and someone who can cook can come in
Assigned Topic Label: Positive General Impressions

Review: It wa either too cold not enough flavor or just bad
Assigned Topic Label: Positive General Impressions

Review: I loved the bacon wrapped date
Assigned Topic Label: Positive General Impressions

Review: This is an unbelievable BARGAIN !
Assigned Topic Label: Positive General Impressions

Review: The folk at Otto always make u feel so welcome and special
Assigned Topic Label: Positive General Impressions

Review: As for the `` main '' also uninspired
Assigned Topic Label: Positive General Impressions

Review: This is the place where I first had pho and it wa amazing ! !
Assigned Topic Label: Memorable Dining Experiences

Review: This wonderful experience made this place a must-stop whenever we are in town again
Assigned Topic Label: Extremes in Service and Quality

Review: If the food is n't bad enough for you then enjoy dealing with the world 's worst/annoying drunk pe
ople
Assigned Topic Label: Friendly Service and Atmosphere

Review: Very very fun chef
Assigned Topic Label: Positive General Impressions

Review: Ordered a double cheeseburger & got a single patty that wa falling apart (picture uploaded) Yeah
still suck
Assigned Topic Label: Positive General Impressions

Review: Great place to have a couple drink and watch any and all sporting event a the wall are covered with
TV 's
Assigned Topic Label: Value and Quality Comparison

Review: If it were possible to give them zero star they 'd have it
Assigned Topic Label: Specific Complaints or Concerns

Review: The description said `` yum yum sauce '' and another said `` eel sauce '' yet another said `` spic

y mayo '' well NONE of the roll had sauce on them
Assigned Topic Label: Positive General Impressions

Review: I 'd say that would be the hardest decision Honestly all of M 's dish taste how they are supposed
to taste (amazing)
Assigned Topic Label: Positive General Impressions

Review: If she had not rolled the eye we may have stayed Not sure if we will go back and try it again
Assigned Topic Label: Positive General Impressions

Review: Everyone is very attentive providing excellent customer service
Assigned Topic Label: Memorable Dining Experiences

Review: Horrible — do n't waste your time and money
Assigned Topic Label: Value and Quality Comparison

Review: Now this dish wa quite flavourful
Assigned Topic Label: Positive General Impressions

Review: By this time our side of the restaurant wa almost empty so there wa no excuse
Assigned Topic Label: Value and Quality Comparison

Review: (It wa n't busy either) Also the building wa FREEZING cold
Assigned Topic Label: Positive General Impressions

Review: like the other reviewer said `` you could n't pay me to eat at this place again ''
Assigned Topic Label: Memorable Dining Experiences

Review: —Drinks took close to 30 minute to come out at one point
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Seriously flavorful delight folk
Assigned Topic Label: Positive General Impressions

Review: Much better than the other AYCE sushi place I went to in Vegas
Assigned Topic Label: Extremes in Service and Quality

Review: The lighting is just dark enough to set the mood
Assigned Topic Label: Positive General Impressions

Review: Based on the sub—par service I received and no effort to show their gratitude for my business I wo
n't be going back
Assigned Topic Label: Positive General Impressions

Review: Owner 's are really great people !
Assigned Topic Label: Value and Quality Comparison

Review: There is nothing privileged about working/eating there
Assigned Topic Label: Positive General Impressions

Review: The Greek dressing wa very creamy and flavorful
Assigned Topic Label: Positive General Impressions

Review: Overall I do n't think that I would take my parent to this place again because they made most of t
he similar complaint that I silently felt too
Assigned Topic Label: Favorites and Love for the Food

Review: Now the pizza itself wa good the peanut sauce wa very tasty
Assigned Topic Label: Extremes in Service and Quality

Review: We had 7 at our table and the service wa pretty fast
Assigned Topic Label: Friendly Service and Atmosphere

Review: Fantastic service here
Assigned Topic Label: Memorable Dining Experiences

Review: I a well would 've given godfather zero star if possible
Assigned Topic Label: Specific Complaints or Concerns

Review: They know how to make them here
Assigned Topic Label: Positive General Impressions

Review: very tough and very short on flavor !
Assigned Topic Label: Positive General Impressions

Review: I hope this place stick around
Assigned Topic Label: Memorable Dining Experiences

Review: I have been in more than a few bar in Vegas and do not ever recall being charged for tap water
Assigned Topic Label: Extremes in Service and Quality

Review: The restaurant atmosphere wa exquisite
Assigned Topic Label: Food and Staff Appreciation

Review: Good service very clean and inexpensive to boot !
Assigned Topic Label: Memorable Dining Experiences

Review: The seafood wa fresh and generous in portion
Assigned Topic Label: Positive General Impressions

Review: Plus it 's only 8 buck
Assigned Topic Label: Positive General Impressions

Review: The service wa not up to par either
Assigned Topic Label: Memorable Dining Experiences

Review: Thus far have only visited twice and the food wa absolutely delicious each time
Assigned Topic Label: Food and Staff Appreciation

Review: Just a good a when I had it more than a year ago !
Assigned Topic Label: Extremes in Service and Quality

Review: For a self proclaimed coffee cafe I wa wildly disappointed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The Veggitarian platter is out of this world !
Assigned Topic Label: Positive General Impressions

Review: You cant go wrong with any of the food here
Assigned Topic Label: Favorites and Love for the Food

Review: You ca n't beat that
Assigned Topic Label: Positive General Impressions

Review: Stopped by this place while in Madison for the Ironman very friendly kind staff
Assigned Topic Label: Specific Complaints or Concerns

Review: The chef were friendly and did a good job
Assigned Topic Label: Specific Complaints or Concerns

Review: I 've had better not only from dedicated boba tea spot but even from Jenni Pho
Assigned Topic Label: Ambiance and Dining Experience

Review: I liked the patio and the service wa outstanding
Assigned Topic Label: Memorable Dining Experiences

Review: The goat taco did n't skimp on the meat and wow what FLAVOR !
Assigned Topic Label: Positive General Impressions

Review: I think not again
Assigned Topic Label: Favorites and Love for the Food

Review: I had the mac salad and it wa pretty bland so I will not be getting that again
Assigned Topic Label: Extremes in Service and Quality

Review: I went to Bachi Burger on a friend 's recommendation and wa not disappointed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Service stink here !
Assigned Topic Label: Memorable Dining Experiences

Review: I waited and waited
Assigned Topic Label: Positive General Impressions

Review: This place is not quality sushi it is not a quality restaurant
Assigned Topic Label: Specific Complaints or Concerns

Review: I would definitely recommend the wing a well a the pizza
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Great Pizza and Salads !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Things that went wrong : — They burned the saganaki
Assigned Topic Label: Positive General Impressions

Review: We waited an hour for what wa a breakfast I could have done 100 time better at home
Assigned Topic Label: Value and Quality Comparison

Review: This place is amazing !
Assigned Topic Label: Memorable Dining Experiences

Review: I hate to disagree with my fellow Yelpers but my husband and I were so disappointed with this plac
e
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Waited 2 hour & never got either of our pizza a many other around u who came in later did !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Just do n't know why they were so slow
Assigned Topic Label: Positive General Impressions

Review: The staff is great the food is delish and they have an incredible beer selection
Assigned Topic Label: Value and Quality Comparison

Review: I live in the neighborhood so I am disappointed I wo n't be back here because it is a convenient location
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I did n't know pulled pork could be soooo delicious
Assigned Topic Label: Friendly Service and Atmosphere

Review: You get incredibly fresh fish prepared with care
Assigned Topic Label: Positive General Impressions

Review: Before I go in to why I gave a 1 star rating please know that this wa my third time eating at Bachi burger before writing a review
Assigned Topic Label: Specific Complaints or Concerns

Review: I love the fact that everything on their menu is worth it
Assigned Topic Label: Positive General Impressions

Review: Never again will I be dining at this place !
Assigned Topic Label: Memorable Dining Experiences

Review: The food wa excellent and service wa very good
Assigned Topic Label: Favorites and Love for the Food

Review: Good beer & drink selection and good food selection
Assigned Topic Label: Favorites and Love for the Food

Review: Please stay away from the shrimp stir fried noodle
Assigned Topic Label: Positive General Impressions

Review: The potato chip order wa sad I could probably count how many chip were in that box and it wa probably around 12
Assigned Topic Label: Positive General Impressions

Review: Food wa really boring
Assigned Topic Label: Favorites and Love for the Food

Review: Good Service—check !
Assigned Topic Label: Memorable Dining Experiences

Review: This greedy corporation will NEVER see another dime from me !
Assigned Topic Label: Positive General Impressions

Review: Will never ever go back
Assigned Topic Label: Positive General Impressions

Review: As much a I 'd like to go back I ca n't get passed the atrocious service and will never return
Assigned Topic Label: Memorable Dining Experiences

Review: In the summer you can dine in a charming outdoor patio — so very delightful
Assigned Topic Label: Positive General Impressions

Review: I did not expect this to be so good !
Assigned Topic Label: Extremes in Service and Quality

Review: Fantastic food !
Assigned Topic Label: Favorites and Love for the Food

Review: She ordered a toasted English muffin that came out untoasted
Assigned Topic Label: Friendly Service and Atmosphere

Review: The food wa very good
Assigned Topic Label: Favorites and Love for the Food

Review: Never going back
Assigned Topic Label: Positive General Impressions

Review: Great food for the price which is very high quality and house made
Assigned Topic Label: Ambiance and Dining Experience

Review: The bus boy on the other hand wa so rude
Assigned Topic Label: Positive General Impressions

Review: By this point my friend and I had basically figured out this place wa a joke and did n't mind making it publicly and loudly known

Assigned Topic Label: Memorable Dining Experiences

Review: Back to good BBQ lighter fare reasonable pricing and tell the public they are back to the old way
Assigned Topic Label: Extremes in Service and Quality

Review: And considering the two of u left there very full and happy for about $ 20 you just ca n't go wrong
Assigned Topic Label: Positive General Impressions

Review: All the bread is made in-house !
Assigned Topic Label: Positive General Impressions

Review: The only downside is the service
Assigned Topic Label: Memorable Dining Experiences

Review: Also the fry are without a doubt the worst fry I 've ever had
Assigned Topic Label: Friendly Service and Atmosphere

Review: Service wa exceptional and food wa a good a all the review
Assigned Topic Label: Ambiance and Dining Experience

Review: A couple of month later I returned and had an amazing meal
Assigned Topic Label: Positive General Impressions

Review: Favorite place in town for shawarrrrrrma ! ! ! ! ! !
Assigned Topic Label: Memorable Dining Experiences

Review: The black eyed pea and sweet potato UNREAL !
Assigned Topic Label: Positive General Impressions

Review: You wo n't be disappointed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: They could serve it with just the vinaigrette and it may make for a better overall dish but it wa still very good
Assigned Topic Label: Ambiance and Dining Experience

Review: I go to far too many place and I 've never seen any restaurant that serf a 1 egg breakfast especially for $ 400
Assigned Topic Label: Memorable Dining Experiences

Review: When my mom and I got home she immediately got sick and she only had a few bite of salad
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The server are not pleasant to deal with and they do n't always honor Pizza Hut coupon
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Both of them were truly unbelievably good and I am so glad we went back
Assigned Topic Label: Extremes in Service and Quality

Review: We had fantastic service and were pleased by the atmosphere
Assigned Topic Label: Memorable Dining Experiences

Review: Everything wa gross
Assigned Topic Label: Positive General Impressions

Review: I love this place
Assigned Topic Label: Memorable Dining Experiences

Review: Great service and food
Assigned Topic Label: Friendly Service and Atmosphere

Review: First - the bathroom at this location were dirty- Seat cover were not replenished & just plain yucky ! ! !
Assigned Topic Label: Positive General Impressions

Review: The burger I got the `` Gold Standard '' a $ 17 burger and wa kind of disappointed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: OMG the food wa delicioso !
Assigned Topic Label: Favorites and Love for the Food

Review: There is nothing authentic about this place
Assigned Topic Label: Memorable Dining Experiences

Review: the spaghetti is nothing special whatsoever
Assigned Topic Label: Positive General Impressions

Review: Of all the dish the salmon wa the best but all were great
Assigned Topic Label: Value and Quality Comparison

Review: The vegetable are so fresh and the sauce feel like authentic Thai
Assigned Topic Label: Memorable Dining Experiences

Review: It 's worth driving up from Tucson !
Assigned Topic Label: Positive General Impressions

Review: The selection wa probably the worst I 've seen in Vegas there wa none
Assigned Topic Label: Friendly Service and Atmosphere

Review: Pretty good beer selection too
Assigned Topic Label: Extremes in Service and Quality

Review: This place is like Chipotle but BETTER
Assigned Topic Label: Memorable Dining Experiences

Review: Classy/warm atmosphere fun and fresh appetizer succulent steak (Baseball steak ! ! ! ! !
Assigned Topic Label: Positive General Impressions

Review: 5 star for the brick oven bread app !
Assigned Topic Label: Specific Complaints or Concerns

Review: I have eaten here multiple time and each time the food wa delicious
Assigned Topic Label: Value and Quality Comparison

Review: We sat another ten minute and finally gave up and left
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: He wa terrible !
Assigned Topic Label: Positive General Impressions

Review: Everyone is treated equally special
Assigned Topic Label: Positive General Impressions

Review: It should n't take 30 min for pancake and egg
Assigned Topic Label: Positive General Impressions

Review: It wa delicious ! ! !
Assigned Topic Label: Friendly Service and Atmosphere

Review: On the good side the staff wa genuinely pleasant and enthusiastic – a real treat
Assigned Topic Label: Specific Complaints or Concerns

Review: Sadly Gordon Ramsey 's Steak is a place we shall sharply avoid during our next trip to Vegas
Assigned Topic Label: Extremes in Service and Quality

Review: As always the evening wa wonderful and the food delicious !
Assigned Topic Label: Food and Staff Appreciation

Review: Best fish I 've ever had in my life !
Assigned Topic Label: Ambiance and Dining Experience

Review: (The bathroom is just next door and very nice)
Assigned Topic Label: Specific Complaints or Concerns

Review: The buffet is small and all the food they offered wa BLAND
Assigned Topic Label: Favorites and Love for the Food

Review: This is an Outstanding little restaurant with some of the Best Food I have ever tasted
Assigned Topic Label: Food and Staff Appreciation

Review: Pretty cool I would say
Assigned Topic Label: Extremes in Service and Quality

Review: Definitely a turn off for me & i doubt I 'll be back unless someone else is buying
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Server did a great job handling our large rowdy table
Assigned Topic Label: Value and Quality Comparison

Review: I find wasting food to be despicable but this just wa n't food
Assigned Topic Label: Favorites and Love for the Food

Review: My wife had the Lobster Bisque soup which wa lukewarm
Assigned Topic Label: Positive General Impressions

Review: Would come back again if I had a sushi craving while in Vegas
Assigned Topic Label: Extremes in Service and Quality

Review: The staff are great the ambiance is great
Assigned Topic Label: Value and Quality Comparison

Review: He deserves 5 star
Assigned Topic Label: Specific Complaints or Concerns

Review: I left with a stomach ache and felt sick the rest of the day

Assigned Topic Label: Positive General Impressions

Review: They dropped more than the ball
Assigned Topic Label: Positive General Impressions

Review: The dining space is tiny but elegantly decorated and comfortable
Assigned Topic Label: Positive General Impressions

Review: They will customize your order any way you 'd like my usual is Eggplant with Green Bean stir fry
love it !
Assigned Topic Label: Memorable Dining Experiences

Review: And the bean and rice were mediocre at best
Assigned Topic Label: Ambiance and Dining Experience

Review: Best taco in town by far ! !
Assigned Topic Label: Ambiance and Dining Experience

Review: I took back my money and got outta there
Assigned Topic Label: Positive General Impressions

Review: In an interesting part of town this place is amazing
Assigned Topic Label: Memorable Dining Experiences

Review: RUDE & INCONSIDERATE MANAGEMENT
Assigned Topic Label: Positive General Impressions

Review: The staff are now not a friendly the wait time for being served are horrible no one even say hi f
or the first 10 minute
Assigned Topic Label: Specific Complaints or Concerns

Review: I wo n't be back
Assigned Topic Label: Positive General Impressions

Review: They have great dinner
Assigned Topic Label: Value and Quality Comparison

Review: The service wa outshining & I definitely recommend the Halibut
Assigned Topic Label: Memorable Dining Experiences

Review: The food wa terrible
Assigned Topic Label: Favorites and Love for the Food

Review: WILL NEVER EVER GO BACK AND HAVE TOLD MANY PEOPLE WHAT HAD HAPPENED
Assigned Topic Label: Positive General Impressions

Review: I do n't recommend unless your car break down in front of it and you are starving
Assigned Topic Label: Positive General Impressions

Review: I will come back here every time I 'm in Vegas
Assigned Topic Label: Extremes in Service and Quality

Review: This place deserves one star and 90 % ha to do with the food
Assigned Topic Label: Specific Complaints or Concerns

Review: This is a disgrace
Assigned Topic Label: Positive General Impressions

Review: Def coming back to bowl next time
Assigned Topic Label: Value and Quality Comparison

Review: If you want healthy authentic or ethic food try this place
Assigned Topic Label: Favorites and Love for the Food

Review: I will continue to come here on lady night andddd date night highly recommend this place to anyone
who is in the area
Assigned Topic Label: Memorable Dining Experiences

Review: I have been here several time in the past and the experience ha always been great
Assigned Topic Label: Value and Quality Comparison

Review: We walked away stuffed and happy about our first Vegas buffet experience
Assigned Topic Label: Extremes in Service and Quality

Review: Service wa excellent and price are pretty reasonable considering this is Vegas and located inside t
he Crystals shopping mall by Aria
Assigned Topic Label: Ambiance and Dining Experience

Review: To summarize the food wa incredible nay transcendant but nothing brings me joy quite like the m
emory of the pneumatic condiment dispenser
Assigned Topic Label: Favorites and Love for the Food

Review: I 'm probably one of the few people to ever go to Ians and not like it

Assigned Topic Label: Memorable Dining Experiences

Review: Kids pizza is always a hit too with lot of great side dish option for the kiddos !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Service is perfect and the family atmosphere is nice to see
Assigned Topic Label: Specific Complaints or Concerns

Review: Cooked to perfection and the service wa impeccable
Assigned Topic Label: Memorable Dining Experiences

Review: This one is simply a disappointment
Assigned Topic Label: Positive General Impressions

Review: Overall I wa very disappointed with the quality of food at Bouchon
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I do n't have to be an accountant to know I 'm getting screwed !
Assigned Topic Label: Positive General Impressions

Review: Great place to eat reminds me of the little mom and pop shop in the San Francisco Bay Area
Assigned Topic Label: Value and Quality Comparison

Review: Today wa my first taste of a Buldogis Gourmet Hot Dog and I have to tell you it wa more than I ever
thought possible
Assigned Topic Label: Positive General Impressions

Review: Left very frustrated
Assigned Topic Label: Positive General Impressions

Review: I 'll definitely be in soon again
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Food wa really good and I got full petty fast
Assigned Topic Label: Favorites and Love for the Food

Review: Service wa fantastic
Assigned Topic Label: Friendly Service and Atmosphere

Review: TOTAL WASTE OF TIME
Assigned Topic Label: Value and Quality Comparison

Review: I do n't know what kind it is but they have the best iced tea
Assigned Topic Label: Ambiance and Dining Experience

Review: Come hungry leave happy and stuffed !
Assigned Topic Label: Positive General Impressions

Review: For service I give them no star
Assigned Topic Label: Memorable Dining Experiences

Review: I can assure you that you wo n't be disappointed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I can take a little bad service but the food suck
Assigned Topic Label: Friendly Service and Atmosphere

Review: Gave up trying to eat any of the crust (teeth still sore)
Assigned Topic Label: Positive General Impressions

Review: But now I wa completely grossed out
Assigned Topic Label: Positive General Impressions

Review: I really enjoyed eating here
Assigned Topic Label: Positive General Impressions

Review: First time going but I think I will quickly become a regular
Assigned Topic Label: Positive General Impressions

Review: Our server wa very nice and even though he looked a little overwhelmed with all of our need he st
ayed professional and friendly until the end
Assigned Topic Label: Specific Complaints or Concerns

Review: From what my dinner companion told me everything wa very fresh with nice texture and taste
Assigned Topic Label: Specific Complaints or Concerns

Review: On the ground right next to our table wa a large smeared been-stepped-in-and-tracked-everywhere
pile of green bird poop
Assigned Topic Label: Positive General Impressions

Review: Furthermore you ca n't even find hour of operation on the website !
Assigned Topic Label: Positive General Impressions

Review: We 've tried to like this place but after 10+ time I think we 're done with them
Assigned Topic Label: Memorable Dining Experiences

Review: What a mistake that wa !
Assigned Topic Label: Positive General Impressions

Review: No complaint !
Assigned Topic Label: Positive General Impressions

Review: This is some seriously good pizza and I 'm an expert/connisseur on the topic
Assigned Topic Label: Extremes in Service and Quality

Review: Waiter wa a jerk
Assigned Topic Label: Positive General Impressions

Review: Strike 2 who want to be rushed
Assigned Topic Label: Positive General Impressions

Review: These are the nicest restaurant owner I 've ever come across
Assigned Topic Label: Food and Staff Appreciation

Review: I never come again
Assigned Topic Label: Positive General Impressions

Review: We loved the biscuit ! ! !
Assigned Topic Label: Positive General Impressions

Review: Service is quick and friendly
Assigned Topic Label: Friendly Service and Atmosphere

Review: Ordered an appetizer and took 40 minute and then the pizza another 10 minute
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: So absolutley fantastic
Assigned Topic Label: Positive General Impressions

Review: It wa a huge awkward 15lb piece of cow that wa 3/4ths gristle and fat
Assigned Topic Label: Positive General Impressions

Review: definitely will come back here again
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I like Steiners because it 's dark and it feel like a bar
Assigned Topic Label: Memorable Dining Experiences

Review: Wow very spicy but delicious
Assigned Topic Label: Food and Staff Appreciation

Review: If you 're not familiar check it out
Assigned Topic Label: Positive General Impressions

Review: I 'll take my business dinner dollar elsewhere
Assigned Topic Label: Positive General Impressions

Review: I 'd love to go back
Assigned Topic Label: Extremes in Service and Quality

Review: Anyway this FS restaurant ha a wonderful breakfast/lunch
Assigned Topic Label: Food and Staff Appreciation

Review: Nothing special
Assigned Topic Label: Positive General Impressions

Review: Each day of the week they have a different deal and it 's all so delicious !
Assigned Topic Label: Friendly Service and Atmosphere

Review: Not to mention the combination of pear almond and bacon is a big winner !
Assigned Topic Label: Positive General Impressions

Review: Will not be back
Assigned Topic Label: Positive General Impressions

Review: Sauce wa tasteless
Assigned Topic Label: Positive General Impressions

Review: The food is delicious and just spicy enough so be sure to ask for spicier if you prefer it that wa
y
Assigned Topic Label: Food and Staff Appreciation

Review: My ribeye steak wa cooked perfectly and had great mesquite flavor
Assigned Topic Label: Value and Quality Comparison

Review: I do n't think we 'll be going back anytime soon

Assigned Topic Label: Positive General Impressions

Review: Food wa so gooodd
Assigned Topic Label: Favorites and Love for the Food

Review: I am far from a sushi connoisseur but I can definitely tell the difference between good food and bad food and this wa certainly bad food
Assigned Topic Label: Favorites and Love for the Food

Review: I wa so insulted
Assigned Topic Label: Positive General Impressions

Review: The last 3 time I had lunch here ha been bad
Assigned Topic Label: Value and Quality Comparison

Review: The chicken wing contained the driest chicken meat I have ever eaten
Assigned Topic Label: Food and Staff Appreciation

Review: The food wa very good and I enjoyed every mouthful an enjoyable relaxed venue for couple small family group etc
Assigned Topic Label: Favorites and Love for the Food

Review: Nargile — I think you are great
Assigned Topic Label: Favorites and Love for the Food

Review: Best tater tot in the southwest
Assigned Topic Label: Ambiance and Dining Experience

Review: We loved the place
Assigned Topic Label: Memorable Dining Experiences

Review: Definitely not worth the $ 3 I paid
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The vanilla ice cream wa creamy and smooth while the profiterole (chou) pastry wa fresh enough
Assigned Topic Label: Positive General Impressions

Review: Im in AZ all the time and now have my new spot
Assigned Topic Label: Value and Quality Comparison

Review: The manager wa the worst
Assigned Topic Label: Friendly Service and Atmosphere

Review: The inside is really quite nice and very clean
Assigned Topic Label: Specific Complaints or Concerns

Review: The food wa outstanding and the price were very reasonable
Assigned Topic Label: Ambiance and Dining Experience

Review: I do n't think I 'll be running back to Carly 's anytime soon for food
Assigned Topic Label: Favorites and Love for the Food

Review: This is wa due to the fact that it took 20 minute to be acknowledged then another 35 minute to get our food and they kept forgetting thing
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Love the margarita too !
Assigned Topic Label: Extremes in Service and Quality

Review: This wa my first and only Vegas buffet and it did not disappoint
Assigned Topic Label: Extremes in Service and Quality

Review: Very good though !
Assigned Topic Label: Extremes in Service and Quality

Review: The one down note is the ventilation could use some upgrading
Assigned Topic Label: Positive General Impressions

Review: Great pork sandwich
Assigned Topic Label: Value and Quality Comparison

Review: Do n't waste your time here
Assigned Topic Label: Value and Quality Comparison

Review: Total letdown I would much rather just go to the Camelback Flower Shop and Cartel Coffee
Assigned Topic Label: Positive General Impressions

Review: Third the cheese on my friend 's burger wa cold
Assigned Topic Label: Positive General Impressions

Review: We enjoy their pizza and brunch
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The steak are all well trimmed and also perfectly cooked
Assigned Topic Label: Positive General Impressions

Review: We had a group of 70+ when we claimed we would only have 40 and they handled u beautifully
Assigned Topic Label: Positive General Impressions

Review: I LOVED it !
Assigned Topic Label: Positive General Impressions

Review: We asked for the bill to leave without eating and they did n't bring that either
Assigned Topic Label: Positive General Impressions

Review: This place is a jewel in Las Vegas and exactly what I 've been hoping to find in nearly ten year l
iving here
Assigned Topic Label: Extremes in Service and Quality

Review: Seafood wa limited to boiled shrimp and crab leg but the crab leg definitely did not taste fresh
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The selection of food wa not the best
Assigned Topic Label: Ambiance and Dining Experience

Review: Delicious and I will absolutely be back !
Assigned Topic Label: Food and Staff Appreciation

Review: This is n't a small family restaurant this is a fine dining establishment
Assigned Topic Label: Food and Staff Appreciation

Review: They had a toro tartare with a cavier that wa extraordinary and I liked the thinly sliced wagyu wit
h white truffle
Assigned Topic Label: Positive General Impressions

Review: I dont think I will be back for a very long time
Assigned Topic Label: Favorites and Love for the Food

Review: It wa attached to a gas station and that is rarely a good sign
Assigned Topic Label: Extremes in Service and Quality

Review: How awesome is that
Assigned Topic Label: Positive General Impressions

Review: I will be back many time soon
Assigned Topic Label: Value and Quality Comparison

Review: The menu had so much good stuff on it i could not decide !
Assigned Topic Label: Extremes in Service and Quality

Review: Worse of all he humiliated his worker right in front of me Bunch of horrible name calling
Assigned Topic Label: Positive General Impressions

Review: CONCLUSION : Very filling meal
Assigned Topic Label: Positive General Impressions

Review: Their daily special are always a hit with my group
Assigned Topic Label: Positive General Impressions

Review: And then tragedy struck
Assigned Topic Label: Positive General Impressions

Review: The pancake wa also really good and pretty large at that
Assigned Topic Label: Extremes in Service and Quality

Review: This wa my first crawfish experience and it wa delicious !
Assigned Topic Label: Food and Staff Appreciation

Review: Their monster chicken fried steak and egg is my all time favorite
Assigned Topic Label: Favorites and Love for the Food

Review: Waitress wa sweet and funny
Assigned Topic Label: Positive General Impressions

Review: I also had to taste my Mom 's multi-grain pumpkin pancake with pecan butter and they were amazing
fluffy and delicious !
Assigned Topic Label: Positive General Impressions

Review: I 'd rather eat airline food seriously
Assigned Topic Label: Favorites and Love for the Food

Review: Cant say enough good thing about this place
Assigned Topic Label: Extremes in Service and Quality

Review: The ambiance wa incredible
Assigned Topic Label: Positive General Impressions

Review: The waitress and manager are so friendly
Assigned Topic Label: Specific Complaints or Concerns

Review: I would not recommend this place
Assigned Topic Label: Memorable Dining Experiences

Review: Overall I wa n't very impressed with Noca
Assigned Topic Label: Positive General Impressions

Review: My gyro wa basically lettuce only
Assigned Topic Label: Positive General Impressions

Review: Terrible service !
Assigned Topic Label: Memorable Dining Experiences

Review: Thoroughly disappointed !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I do n't each much pasta but I love the homemade /hand made pasta and thin pizza here
Assigned Topic Label: Extremes in Service and Quality

Review: Give it a try you will be happy you did
Assigned Topic Label: Positive General Impressions

Review: By far the BEST cheesecurds we have ever had !
Assigned Topic Label: Ambiance and Dining Experience

Review: Reasonably priced also !
Assigned Topic Label: Positive General Impressions

Review: Everything wa perfect the night we were in
Assigned Topic Label: Positive General Impressions

Review: The food is very good for your typical bar food
Assigned Topic Label: Favorites and Love for the Food

Review: it wa a drive to get there
Assigned Topic Label: Positive General Impressions

Review: At first glance it is a lovely bakery cafe — nice ambiance clean friendly staff
Assigned Topic Label: Specific Complaints or Concerns

Review: Anyway I do not think i will go back there
Assigned Topic Label: Favorites and Love for the Food

Review: Point your finger at any item on the menu order it and you wo n't be disappointed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Oh this is such a thing of beauty this restaurant
Assigned Topic Label: Food and Staff Appreciation

Review: If you have n't gone here GO NOW !
Assigned Topic Label: Positive General Impressions

Review: A greasy unhealthy meal
Assigned Topic Label: Positive General Impressions

Review: first time there and might just be the last
Assigned Topic Label: Value and Quality Comparison

Review: Those burger were amazing
Assigned Topic Label: Positive General Impressions

Review: Similarly the delivery man did not say a word of apology when our food wa 45 minute late
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: And it wa way to expensive
Assigned Topic Label: Positive General Impressions

Review: Be sure to order dessert even if you need to pack it to-go — the tiramisu and cannoli are both to
die for
Assigned Topic Label: Positive General Impressions

Review: This wa my first time and I ca n't wait until the next
Assigned Topic Label: Value and Quality Comparison

Review: The bartender wa also nice
Assigned Topic Label: Specific Complaints or Concerns

Review: Everything wa good and tasty !
Assigned Topic Label: Extremes in Service and Quality

Review: This place is two thumb up way up
Assigned Topic Label: Memorable Dining Experiences

Review: The best place in Vegas for breakfast (just check out a Sat or Sun
Assigned Topic Label: Extremes in Service and Quality

Review: If you love authentic Mexican food and want a whole bunch of interesting yet delicious meat to cho
ose from you need to try this place
Assigned Topic Label: Food and Staff Appreciation

Review: Terrible management
Assigned Topic Label: Positive General Impressions

Review: An excellent new restaurant by an experienced Frenchman
Assigned Topic Label: Food and Staff Appreciation

Review: If there were zero star I would give it zero star
Assigned Topic Label: Specific Complaints or Concerns

Review: Great steak great side great wine amazing dessert
Assigned Topic Label: Value and Quality Comparison

Review: Worst martini ever !
Assigned Topic Label: Friendly Service and Atmosphere

Review: The steak and the shrimp are in my opinion the best entree at GC
Assigned Topic Label: Ambiance and Dining Experience

Review: I had the opportunity today to sample your amazing pizza !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: We waited for thirty minute to be seated (although there were 8 vacant table and we were the only
folk waiting)
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The yellowtail carpaccio wa melt in your mouth fresh
Assigned Topic Label: Positive General Impressions

Review: I wo n't try going back there even if it 's empty
Assigned Topic Label: Positive General Impressions

Review: No I 'm going to eat the potato that I found some stranger hair in it
Assigned Topic Label: Positive General Impressions

Review: Just spicy enough Perfect actually
Assigned Topic Label: Positive General Impressions

Review: Last night wa my second time dining here and I wa so happy I decided to go back !
Assigned Topic Label: Value and Quality Comparison

Review: not even a `` hello we will be right with you ''
Assigned Topic Label: Positive General Impressions

Review: The dessert were a bit strange
Assigned Topic Label: Positive General Impressions

Review: My boyfriend and I came here for the first time on a recent trip to Vegas and could not have been m
ore pleased with the quality of food and service
Assigned Topic Label: Friendly Service and Atmosphere

Review: I really do recommend this place you can go wrong with this donut place !
Assigned Topic Label: Memorable Dining Experiences

Review: Nice ambiance
Assigned Topic Label: Specific Complaints or Concerns

Review: I would recommend saving room for this !
Assigned Topic Label: Positive General Impressions

Review: I guess maybe we went on an off night but it wa disgraceful
Assigned Topic Label: Positive General Impressions

Review: However my recent experience at this particular location wa not so good
Assigned Topic Label: Extremes in Service and Quality

Review: I know this is not like the other restaurant at all something is very off here !
Assigned Topic Label: Memorable Dining Experiences

Review: AVOID THIS ESTABLISHMENT !
Assigned Topic Label: Positive General Impressions

Review: I think this restaurant suffers from not trying hard enough
Assigned Topic Label: Favorites and Love for the Food

Review: All of the tapa dish were delicious !
Assigned Topic Label: Positive General Impressions

Review: I * heart * this place
Assigned Topic Label: Memorable Dining Experiences

Review: My salad had a bland vinegrette on the baby green and heart of Palm
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: After two I felt disgusting
Assigned Topic Label: Positive General Impressions

Review: A good time !
Assigned Topic Label: Value and Quality Comparison

Review: I believe that this place is a great stop for those with a huge belly and hankering for sushi
Assigned Topic Label: Value and Quality Comparison

Review: Generous portion and great taste
Assigned Topic Label: Value and Quality Comparison

Review: I will never go back to this place and will never ever recommended this place to anyone !
Assigned Topic Label: Memorable Dining Experiences

Review: The server went back and forth several time not even so much a an `` Are you being helped ? ''
Assigned Topic Label: Value and Quality Comparison

Review: Food wa delicious !
Assigned Topic Label: Food and Staff Appreciation

Review: AN HOUR seriously ?
Assigned Topic Label: Positive General Impressions

Review: I consider this theft
Assigned Topic Label: Positive General Impressions

Review: Eew This location need a complete overhaul
Assigned Topic Label: Positive General Impressions

Review: We recently witnessed her poor quality of management towards other guest a well
Assigned Topic Label: Positive General Impressions

Review: Waited and waited and waited
Assigned Topic Label: Positive General Impressions

Review: He also came back to check on u regularly excellent service
Assigned Topic Label: Friendly Service and Atmosphere

Review: Our server wa super nice and checked on u many time
Assigned Topic Label: Specific Complaints or Concerns

Review: The pizza tasted old super chewy in not a good way
Assigned Topic Label: Extremes in Service and Quality

Review: I swung in to give them a try but wa deeply disappointed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Service wa good and the company wa better !
Assigned Topic Label: Ambiance and Dining Experience

Review: The staff are also very friendly and efficient
Assigned Topic Label: Specific Complaints or Concerns

Review: As for the service : I 'm a fan because it 's quick and you 're being served by some nice folk
Assigned Topic Label: Memorable Dining Experiences

Review: Boy wa that sucker dry ! !
Assigned Topic Label: Positive General Impressions

Review: Over rated
Assigned Topic Label: Positive General Impressions

Review: If you look for authentic Thai food go else where
Assigned Topic Label: Favorites and Love for the Food

Review: Their steak are 100 % recommended !
Assigned Topic Label: Positive General Impressions

Review: After I pulled up my car I waited for another 15 minute before being acknowledged
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Great food and great service in a clean and friendly setting

Assigned Topic Label: Friendly Service and Atmosphere

Review: All in all I can assure you I 'll be back
Assigned Topic Label: Positive General Impressions

Review: I hate those thing a much a cheap quality black olive
Assigned Topic Label: Positive General Impressions

Review: My breakfast wa perpared great with a beautiful presentation of 3 giant slice of Toast lightly du
sted with powdered sugar
Assigned Topic Label: Value and Quality Comparison

Review: The kid play area is NASTY !
Assigned Topic Label: Positive General Impressions

Review: Great place fo take out or eat in
Assigned Topic Label: Value and Quality Comparison

Review: The waitress wa friendly and happy to accomodate for vegan/veggie option
Assigned Topic Label: Specific Complaints or Concerns

Review: OMG I felt like I had never eaten Thai food until this dish
Assigned Topic Label: Favorites and Love for the Food

Review: It wa extremely `` crumby '' and pretty tasteless
Assigned Topic Label: Extremes in Service and Quality

Review: It wa a pale color instead of nice and char and ha NO flavor
Assigned Topic Label: Specific Complaints or Concerns

Review: The crouton also taste homemade which is an extra plus
Assigned Topic Label: Positive General Impressions

Review: I got home to see the driest damn wing ever !
Assigned Topic Label: Positive General Impressions

Review: It 'll be a regular stop on my trip to Phoenix !
Assigned Topic Label: Positive General Impressions

Review: I really enjoyed Crema Café before they expanded I even told friend they had the BEST breakfast
Assigned Topic Label: Ambiance and Dining Experience

Review: Not good for the money
Assigned Topic Label: Extremes in Service and Quality

Review: I miss it and wish they had one in Philadelphia !
Assigned Topic Label: Positive General Impressions

Review: We got sitting fairly fast but ended up waiting 40 minute just to place our order another 30 min
ute before the food arrived
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: They also have the best cheese crisp in town
Assigned Topic Label: Ambiance and Dining Experience

Review: Good value great food great service
Assigned Topic Label: Value and Quality Comparison

Review: Could n't ask for a more satisfying meal
Assigned Topic Label: Positive General Impressions

Review: The food is good
Assigned Topic Label: Favorites and Love for the Food

Review: It wa awesome
Assigned Topic Label: Positive General Impressions

Review: I just wanted to leave
Assigned Topic Label: Positive General Impressions

Review: We made the drive all the way from North Scottsdale and I wa not one bit disappointed !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I will not be eating there again
Assigned Topic Label: Positive General Impressions

Review: ! THE OWNERS REALLY REALLY need to quit being soooooo cheap let them wrap my freaking sandwich in
two paper not one !
Assigned Topic Label: Positive General Impressions

Review: I checked out this place a couple year ago and wa not impressed
Assigned Topic Label: Memorable Dining Experiences

Review: The chicken I got wa definitely reheated and wa only ok the wedge were cold and soggy
Assigned Topic Label: Favorites and Love for the Food

Review: Sorry I will not be getting food from here anytime soon : (
Assigned Topic Label: Favorites and Love for the Food

Review: An absolute must visit !
Assigned Topic Label: Positive General Impressions

Review: The cow tongue and cheek taco are amazing
Assigned Topic Label: Positive General Impressions

Review: My friend did not like his Bloody Mary
Assigned Topic Label: Memorable Dining Experiences

Review: Despite how hard I rate business it actually rare for me to give a 1 star
Assigned Topic Label: Specific Complaints or Concerns

Review: They really want to make your experience a good one
Assigned Topic Label: Extremes in Service and Quality

Review: I will not return
Assigned Topic Label: Positive General Impressions

Review: I had the chicken Pho and it tasted very bland
Assigned Topic Label: Food and Staff Appreciation

Review: Very disappointing ! ! !
Assigned Topic Label: Positive General Impressions

Review: The grilled chicken wa so tender and yellow from the saffron seasoning
Assigned Topic Label: Favorites and Love for the Food

Review: a drive thru mean you do not want to wait around for half an hour for your food but somehow when we end up going here they make u wait and wait
Assigned Topic Label: Positive General Impressions

Review: Pretty awesome place
Assigned Topic Label: Extremes in Service and Quality

Review: Ambience is perfect
Assigned Topic Label: Positive General Impressions

Review: Best of luck to the rude and non-customer service focused new management
Assigned Topic Label: Ambiance and Dining Experience

Review: Any grandmother can make a roasted chicken better than this one
Assigned Topic Label: Food and Staff Appreciation

Review: I asked multiple time for the wine list and after some time of being ignored I went to the hostess and got one myself
Assigned Topic Label: Value and Quality Comparison

Review: The staff is always super friendly and helpful which is especially cool when you bring two small boy and a baby !
Assigned Topic Label: Specific Complaints or Concerns

Review: Four star for the food & the guy in the blue shirt for his great vibe & still letting u in to eat !
Assigned Topic Label: Favorites and Love for the Food

Review: The roast beef sandwich tasted really good !
Assigned Topic Label: Extremes in Service and Quality

Review: Same evening him and I are both drastically sick
Assigned Topic Label: Positive General Impressions

Review: High-quality chicken on the chicken Caesar salad
Assigned Topic Label: Food and Staff Appreciation

Review: Ordered burger rare came in we 'll done
Assigned Topic Label: Friendly Service and Atmosphere

Review: We were promptly greeted and seated
Assigned Topic Label: Positive General Impressions

Review: Tried to go here for lunch and it wa a madhouse
Assigned Topic Label: Positive General Impressions

Review: I wa proven dead wrong by this sushi bar not only because the quality is great but the service is fast and the food impeccable
Assigned Topic Label: Friendly Service and Atmosphere

Review: After waiting an hour and being seated I wa not in the greatest of mood

Assigned Topic Label: Positive General Impressions

Review: This is a good joint
Assigned Topic Label: Extremes in Service and Quality

Review: The Macarons here are insanely good
Assigned Topic Label: Extremes in Service and Quality

Review: I 'm not eating here !
Assigned Topic Label: Positive General Impressions

Review: Our waiter wa very attentive friendly and informative
Assigned Topic Label: Specific Complaints or Concerns

Review: Maybe if they were n't cold they would have been somewhat edible
Assigned Topic Label: Positive General Impressions

Review: This place ha a lot of promise but fails to deliver
Assigned Topic Label: Memorable Dining Experiences

Review: Very bad Experience !
Assigned Topic Label: Extremes in Service and Quality

Review: What a mistake
Assigned Topic Label: Positive General Impressions

Review: Food wa average at best
Assigned Topic Label: Ambiance and Dining Experience

Review: Great food
Assigned Topic Label: Favorites and Love for the Food

Review: We wo n't be going back anytime soon !
Assigned Topic Label: Positive General Impressions

Review: Very Very Disappointed ordered the $ 35 Big Bay Plater
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Great place to relax and have an awesome burger and beer
Assigned Topic Label: Value and Quality Comparison

Review: It is PERFECT for a sit-down family meal or get together with a few friend
Assigned Topic Label: Positive General Impressions

Review: Not much flavor to them and very poorly constructed
Assigned Topic Label: Positive General Impressions

Review: The patio seating wa very comfortable
Assigned Topic Label: Positive General Impressions

Review: The fried rice wa dry a well
Assigned Topic Label: Positive General Impressions

Review: Hands down my favorite Italian restaurant !
Assigned Topic Label: Food and Staff Appreciation

Review: That just SCREAMS `` LEGIT '' in my book somethat 's also pretty rare here in Vegas
Assigned Topic Label: Extremes in Service and Quality

Review: It wa just not a fun experience
Assigned Topic Label: Extremes in Service and Quality

Review: The atmosphere wa great with a lovely duo of violinist playing song we requested
Assigned Topic Label: Value and Quality Comparison

Review: I personally love the hummus pita baklava falafel and Baba Ganoush (it 's amazing what they do
with eggplant !)
Assigned Topic Label: Positive General Impressions

Review: Very convenient since we were staying at the MGM !
Assigned Topic Label: Positive General Impressions

Review: The owner are super friendly and the staff is courteous
Assigned Topic Label: Specific Complaints or Concerns

Review: Both great !
Assigned Topic Label: Value and Quality Comparison

Review: Eclectic selection
Assigned Topic Label: Positive General Impressions

Review: The sweet potato tot were good but the onion ring were perfection or a close a I have had
Assigned Topic Label: Extremes in Service and Quality

Review: The staff wa very attentive
Assigned Topic Label: Specific Complaints or Concerns

Review: And the chef wa generous with his time (even came around twice so we can take picture with him)
Assigned Topic Label: Friendly Service and Atmosphere

Review: The owner used to work at Nobu so this place is really similar for half the price
Assigned Topic Label: Memorable Dining Experiences

Review: Google mediocre and I imagine Smashburger will pop up
Assigned Topic Label: Positive General Impressions

Review: dont go here
Assigned Topic Label: Positive General Impressions

Review: I promise they wo n't disappoint
Assigned Topic Label: Positive General Impressions

Review: As a sushi lover avoid this place by all mean
Assigned Topic Label: Memorable Dining Experiences

Review: What a great double cheeseburger !
Assigned Topic Label: Value and Quality Comparison

Review: Awesome service and food
Assigned Topic Label: Memorable Dining Experiences

Review: A fantastic neighborhood gem ! ! !
Assigned Topic Label: Positive General Impressions

Review: I ca n't wait to go back
Assigned Topic Label: Positive General Impressions

Review: The plantain were the worst I 've ever tasted
Assigned Topic Label: Friendly Service and Atmosphere

Review: It 's a great place and I highly recommend it
Assigned Topic Label: Value and Quality Comparison

Review: Service wa slow and not attentive
Assigned Topic Label: Memorable Dining Experiences

Review: I gave it 5 star then and I 'm giving it 5 star now
Assigned Topic Label: Specific Complaints or Concerns

Review: Your staff spends more time talking to themselves than me
Assigned Topic Label: Value and Quality Comparison

Review: Dessert : Panna Cotta wa amazing
Assigned Topic Label: Positive General Impressions

Review: Very good food great atmosphere1
Assigned Topic Label: Favorites and Love for the Food

Review: Damn good steak
Assigned Topic Label: Extremes in Service and Quality

Review: Total brunch fail
Assigned Topic Label: Positive General Impressions

Review: Prices are very reasonable flavor are spot on the sauce is home made and the slaw is not drenche
d in mayo
Assigned Topic Label: Ambiance and Dining Experience

Review: The decor is nice and the piano music soundtrack is pleasant
Assigned Topic Label: Specific Complaints or Concerns

Review: The steak wa amazing rge fillet relleno wa the best seafood plate i have ever had !
Assigned Topic Label: Ambiance and Dining Experience

Review: Good food good service
Assigned Topic Label: Ambiance and Dining Experience

Review: It wa absolutely amazing
Assigned Topic Label: Positive General Impressions

Review: I probably wo n't be back to be honest
Assigned Topic Label: Positive General Impressions

Review: will definitely be back !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The sergeant pepper beef sandwich with auju sauce is an excellent sandwich a well
Assigned Topic Label: Positive General Impressions

Review: Hawaiian Breeze Mango Magic and Pineapple Delight are the smoothy that I 've tried so far and they 're all good
Assigned Topic Label: Extremes in Service and Quality

Review: Went for lunch — service wa slow
Assigned Topic Label: Memorable Dining Experiences

Review: We had so much to say about the place before we walked in that he expected it to be amazing but wa quickly disappointed
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I wa mortified
Assigned Topic Label: Positive General Impressions

Review: Needless to say we will never be back here again
Assigned Topic Label: Positive General Impressions

Review: Anyways The food wa definitely not filling at all and for the price you pay you should expect more
Assigned Topic Label: Ambiance and Dining Experience

Review: The chip that came out were dripping with grease and mostly not edible
Assigned Topic Label: Friendly Service and Atmosphere

Review: I wa n't really impressed with Strip Steak
Assigned Topic Label: Positive General Impressions

Review: Have been going since 2007 and every meal ha been awesome ! !
Assigned Topic Label: Positive General Impressions

Review: Our server wa very nice and attentive a were the other serving staff
Assigned Topic Label: Specific Complaints or Concerns

Review: The cashier wa friendly and even brought the food out to me
Assigned Topic Label: Favorites and Love for the Food

Review: I work in the hospitality industry in Paradise Valley and have refrained from recommending Cibo any longer
Assigned Topic Label: Positive General Impressions

Review: The atmosphere here is fun
Assigned Topic Label: Positive General Impressions

Review: Would not recommend to others
Assigned Topic Label: Positive General Impressions

Review: Service is quick and even `` to go '' order are just like we like it !
Assigned Topic Label: Memorable Dining Experiences

Review: I mean really how do you get so famous for your fish and chip when it 's so terrible ! ? !
Assigned Topic Label: Positive General Impressions

Review: That said our mouth and belly were still quite pleased
Assigned Topic Label: Positive General Impressions

Review: Not my thing
Assigned Topic Label: Positive General Impressions

Review: 2 Thumbs Up ! !
Assigned Topic Label: Positive General Impressions

Review: If you are reading this please do n't go there
Assigned Topic Label: Positive General Impressions

Review: I loved the grilled pizza reminded me of legit Italian pizza
Assigned Topic Label: Extremes in Service and Quality

Review: Only Pros : Large seating area/ Nice bar area/ Great simple drink menu/ The BEST brick oven pizza with homemade dough !
Assigned Topic Label: Specific Complaints or Concerns

Review: They have a really nice atmosphere
Assigned Topic Label: Specific Complaints or Concerns

Review: Tonight I had the Elk Filet special and it sucked
Assigned Topic Label: Positive General Impressions

Review: After one bite I wa hooked
Assigned Topic Label: Positive General Impressions

Review: We ordered some old classic and some new dish after going there a few time and were sorely disappointed with everything
Assigned Topic Label: Positive General Impressions

Review: Cute quaint simple honest
Assigned Topic Label: Positive General Impressions

Review: The chicken wa deliciously seasoned and had the perfect fry on the outside and moist chicken on the inside
Assigned Topic Label: Food and Staff Appreciation

Review: The food wa great a always compliment to the chef
Assigned Topic Label: Favorites and Love for the Food

Review: Special thanks to Dylan T for the recommendation on what to order :) All yummy for my tummy
Assigned Topic Label: Positive General Impressions

Review: Awesome selection of beer
Assigned Topic Label: Positive General Impressions

Review: Great food and awesome service !
Assigned Topic Label: Friendly Service and Atmosphere

Review: One nice thing wa that they added gratuity on the bill since our party wa larger than 6 or 8 and they did n't expect more tip than that
Assigned Topic Label: Specific Complaints or Concerns

Review: A FLY wa in my apple juice A FLY ! ! ! ! ! ! ! ! !
Assigned Topic Label: Positive General Impressions

Review: The Han Nan Chicken wa also very tasty
Assigned Topic Label: Food and Staff Appreciation

Review: As for the service I thought it wa good
Assigned Topic Label: Ambiance and Dining Experience

Review: The food wa barely lukewarm so it must have been sitting waiting for the server to bring it out to u
Assigned Topic Label: Friendly Service and Atmosphere

Review: Ryan 's Bar is definitely one Edinburgh establishment I wo n't be revisiting
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Nicest Chinese restaurant I 've been in a while
Assigned Topic Label: Food and Staff Appreciation

Review: Overall I like there food and the service
Assigned Topic Label: Memorable Dining Experiences

Review: They also now serve Indian naan bread with hummus and some spicy pine nut sauce that wa out of this world
Assigned Topic Label: Positive General Impressions

Review: Probably never coming back and would n't recommend it
Assigned Topic Label: Positive General Impressions

Review: Friend 's pasta —— also bad he barely touched it
Assigned Topic Label: Positive General Impressions

Review: Try them in the airport to experience some tasty food and speedy friendly service
Assigned Topic Label: Ambiance and Dining Experience

Review: I love the decor with the Chinese calligraphy wall paper
Assigned Topic Label: Extremes in Service and Quality

Review: Never had anything to complain about here
Assigned Topic Label: Positive General Impressions

Review: The restaurant is very clean and ha a family restaurant feel to it
Assigned Topic Label: Food and Staff Appreciation

Review: It wa way over fried
Assigned Topic Label: Positive General Impressions

Review: I 'm not sure how long we stood there but it wa long enough for me to begin to feel awkwardly out of place
Assigned Topic Label: Memorable Dining Experiences

Review: When I opened the sandwich I wa impressed but not in a good way
Assigned Topic Label: Extremes in Service and Quality

Review: Will not be back !
Assigned Topic Label: Positive General Impressions

Review: There wa a warm feeling with the service and I felt like their guest for a special treat
Assigned Topic Label: Memorable Dining Experiences

Review: An extensive menu provides lot of option for breakfast
Assigned Topic Label: Positive General Impressions

Review: I always order from the vegetarian menu during dinner which ha a wide array of option to choose fr
om
Assigned Topic Label: Positive General Impressions

Review: I have watched their price inflate portion get smaller and management attitude grow rapidly !
Assigned Topic Label: Ambiance and Dining Experience

Review: Wonderful lil tapa and the ambience made me feel all warm and fuzzy inside
Assigned Topic Label: Positive General Impressions

Review: I got to enjoy the seafood salad with a fabulous vinegrette
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: The wonton were thin not thick and chewy almost melt in your mouth
Assigned Topic Label: Positive General Impressions

Review: Level 5 spicy wa perfect where spice did n't over-whelm the soup
Assigned Topic Label: Positive General Impressions

Review: We were sat right on time and our server from the get go wa FANTASTIC !
Assigned Topic Label: Value and Quality Comparison

Review: Main thing I did n't enjoy is that the crowd is of older crowd around mid 30 and up
Assigned Topic Label: Positive General Impressions

Review: When I 'm on this side of town this will definitely be a spot I 'll hit up again !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I had to wait over 30 minute to get my drink and longer to get 2 arepas
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: This is a GREAT place to eat !
Assigned Topic Label: Value and Quality Comparison

Review: The jalapeno bacon is soooo good
Assigned Topic Label: Extremes in Service and Quality

Review: The service wa poor and thats being nice
Assigned Topic Label: Friendly Service and Atmosphere

Review: Food wa good service wa good Prices were good
Assigned Topic Label: Ambiance and Dining Experience

Review: The place wa not clean and the food oh so stale !
Assigned Topic Label: Favorites and Love for the Food

Review: The chicken dish are OK the beef is like shoe leather
Assigned Topic Label: Favorites and Love for the Food

Review: But the service wa beyond bad
Assigned Topic Label: Memorable Dining Experiences

Review: I 'm so happy to be here ! ! ! ''
Assigned Topic Label: Positive General Impressions

Review: Tasted like dirt
Assigned Topic Label: Memorable Dining Experiences

Review: One of the few place in Phoenix that I would definately go back to again
Assigned Topic Label: Memorable Dining Experiences

Review: The block wa amazing
Assigned Topic Label: Positive General Impressions

Review: It 's close to my house it 's low-key non-fancy affordable price good food
Assigned Topic Label: Ambiance and Dining Experience

Review: * Both the Hot & Sour & the Egg Flower Soups were absolutely 5 Stars !
Assigned Topic Label: Specific Complaints or Concerns

Review: My sashimi wa poor quality being soggy and tasteless
Assigned Topic Label: Positive General Impressions

Review: Great time — family dinner on a Sunday night
Assigned Topic Label: Value and Quality Comparison

Review: the food is not tasty at all not to say it `` real traditional Hunan style ''
Assigned Topic Label: Favorites and Love for the Food

Review: What did bother me wa the slow service
Assigned Topic Label: Memorable Dining Experiences

Review: The flair bartender are absolutely amazing !
Assigned Topic Label: Positive General Impressions

Review: Their frozen margarita are WAY too sugary for my taste
Assigned Topic Label: Positive General Impressions

Review: These were so good we ordered them twice
Assigned Topic Label: Extremes in Service and Quality

Review: So in a nutshell : 1) The restaraunt smell like a combination of a dirty fish market and a sewer
Assigned Topic Label: Memorable Dining Experiences

Review: My girlfriend 's veal wa very bad
Assigned Topic Label: Positive General Impressions

Review: Unfortunately it wa not good
Assigned Topic Label: Extremes in Service and Quality

Review: I had a pretty satifying experience
Assigned Topic Label: Extremes in Service and Quality

Review: Join the club and get awesome offer via email
Assigned Topic Label: Positive General Impressions

Review: Perfect for someone (me) who only like beer ice cold or in this case even colder
Assigned Topic Label: Memorable Dining Experiences

Review: Bland and flavorless is a good way of describing the barely tepid meat
Assigned Topic Label: Extremes in Service and Quality

Review: The chain which I 'm no fan of beat this place easily
Assigned Topic Label: Memorable Dining Experiences

Review: The nacho are a MUST HAVE !
Assigned Topic Label: Positive General Impressions

Review: We will not be coming back
Assigned Topic Label: Positive General Impressions

Review: I do n't have very many word to say about this place but it doe everything pretty well
Assigned Topic Label: Extremes in Service and Quality

Review: The staff is super nice and very quick even with the crazy crowd of the downtown jury lawyer and court staff
Assigned Topic Label: Specific Complaints or Concerns

Review: Great atmosphere friendly and fast service
Assigned Topic Label: Friendly Service and Atmosphere

Review: When I received my Pita it wa huge it did have a lot of meat in it so thumb up there
Assigned Topic Label: Positive General Impressions

Review: Once your food arrives it 's meh
Assigned Topic Label: Favorites and Love for the Food

Review: Paying $ 785 for a hot dog and fry that look like it came out of a kid 's meal at the Wienerschnitzel is not my idea of a good meal
Assigned Topic Label: Memorable Dining Experiences

Review: The classic Maine Lobster Roll wa fantastic
Assigned Topic Label: Positive General Impressions

Review: My brother in law who work at the mall ate here same day and guess what he wa sick all night too
Assigned Topic Label: Positive General Impressions

Review: So good I am going to have to review this place twice — once hereas a tribute to the place and once a a tribute to an event held here last night
Assigned Topic Label: Memorable Dining Experiences

Review: The chip and salsa were really good the salsa wa very fresh
Assigned Topic Label: Extremes in Service and Quality

Review: This place is great ! ! ! ! ! ! ! ! ! ! ! ! ! ! !
Assigned Topic Label: Value and Quality Comparison

Review: Mediocre food
Assigned Topic Label: Favorites and Love for the Food

Review: Once you get inside you 'll be impressed with the place
Assigned Topic Label: Memorable Dining Experiences

Review: I 'm super pissd
Assigned Topic Label: Positive General Impressions

Review: And service wa super friendly
Assigned Topic Label: Friendly Service and Atmosphere

Review: Why are these sad little vegetable so overcooked ?
Assigned Topic Label: Positive General Impressions

Review: This place wa such a nice surprise !
Assigned Topic Label: Specific Complaints or Concerns

Review: They were golden-crispy and delicious
Assigned Topic Label: Friendly Service and Atmosphere

Review: I had high hope for this place since the burger are cooked over a charcoal grill but unfortunately
the taste fell flat way flat
Assigned Topic Label: Memorable Dining Experiences

Review: I could eat their bruschetta all day it is devine
Assigned Topic Label: Positive General Impressions

Review: Not a single employee came out to see if we were OK or even needed a water refill once they finally
served u our food
Assigned Topic Label: Friendly Service and Atmosphere

Review: Lastly the mozzarella stick they were the best thing we ordered
Assigned Topic Label: Ambiance and Dining Experience

Review: The first time I ever came here I had an amazing experience I still tell people how awesome the du
ck wa
Assigned Topic Label: Extremes in Service and Quality

Review: The server wa very negligent of our need and made u feel very unwelcome I would not suggest this p
lace !
Assigned Topic Label: Specific Complaints or Concerns

Review: The service wa terrible though
Assigned Topic Label: Memorable Dining Experiences

Review: This place is overpriced not consistent with their boba and it really is OVERPRICED !
Assigned Topic Label: Memorable Dining Experiences

Review: It wa packed ! !
Assigned Topic Label: Positive General Impressions

Review: I love this place
Assigned Topic Label: Memorable Dining Experiences

Review: I can say that the dessert were yummy
Assigned Topic Label: Positive General Impressions

Review: The food wa terrible
Assigned Topic Label: Favorites and Love for the Food

Review: The seasonal fruit wa fresh white peach puree
Assigned Topic Label: Positive General Impressions

Review: It kept getting worse and worse so now I 'm officially done
Assigned Topic Label: Positive General Impressions

Review: This place should honestly be blown up
Assigned Topic Label: Memorable Dining Experiences

Review: But I definitely would not eat here again
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Do not waste your money here !
Assigned Topic Label: Positive General Impressions

Review: I love that they put their food in nice plastic container a opposed to cramming it in little paper
takeout box
Assigned Topic Label: Food and Staff Appreciation

Review: The crêpe wa delicate and thin and moist
Assigned Topic Label: Positive General Impressions

Review: Awful service
Assigned Topic Label: Memorable Dining Experiences

Review: Wo n't ever go here again
Assigned Topic Label: Positive General Impressions

Review: Food quality ha been horrible
Assigned Topic Label: Favorites and Love for the Food

Review: For that price I can think of a few place I would have much rather gone
Assigned Topic Label: Ambiance and Dining Experience

Review: The service here is fair at best
Assigned Topic Label: Ambiance and Dining Experience

Review: I do love sushi but I found Kabuki to be over-priced over-hip and under-services
Assigned Topic Label: Memorable Dining Experiences

Review: Do yourself a favor and stay away from this dish
Assigned Topic Label: Positive General Impressions

Review: Very poor service
Assigned Topic Label: Friendly Service and Atmosphere

Review: No one at the table thought the food wa above average or worth the wait that we had for it
Assigned Topic Label: Favorites and Love for the Food

Review: Best service and food ever Maria our server wa so good and friendly she made our day
Assigned Topic Label: Ambiance and Dining Experience

Review: They were excellent
Assigned Topic Label: Positive General Impressions

Review: I paid the bill but did not tip because I felt the server did a terrible job
Assigned Topic Label: Friendly Service and Atmosphere

Review: Just had lunch here and had a great experience
Assigned Topic Label: Value and Quality Comparison

Review: I have never had such bland food which surprised me considering the article we read focused so much
on their spice and flavor
Assigned Topic Label: Favorites and Love for the Food

Review: Food is way overpriced and portion are fucking small
Assigned Topic Label: Favorites and Love for the Food

Review: I recently tried Caballero 's and I have been back every week since !
Assigned Topic Label: Positive General Impressions

Review: for 40 buck a head i really expect better food
Assigned Topic Label: Ambiance and Dining Experience

Review: The food came out at a good pace
Assigned Topic Label: Favorites and Love for the Food

Review: I ate there twice on my last visit and especially enjoyed the salmon salad
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I wo n't be back
Assigned Topic Label: Positive General Impressions

Review: We could not believe how dirty the oyster were !
Assigned Topic Label: Positive General Impressions

Review: This place deserves no star
Assigned Topic Label: Specific Complaints or Concerns

Review: I would not recommend this place
Assigned Topic Label: Memorable Dining Experiences

Review: In fact I 'm going to round up to 4 star just because she wa so awesome
Assigned Topic Label: Positive General Impressions

Review: To my disbelief each dish qualified a the worst version of these food I have ever tasted
Assigned Topic Label: Friendly Service and Atmosphere

Review: Bad day or not I have a very low tolerance for rude customer service people it is your job to be
nice and polite wash dish otherwise ! !
Assigned Topic Label: Positive General Impressions

Review: the potato were great and so wa the biscuit
Assigned Topic Label: Value and Quality Comparison

Review: I probably would not go here again
Assigned Topic Label: Positive General Impressions

Review: So flavorful and ha just the perfect amount of heat
Assigned Topic Label: Positive General Impressions

Review: The price is reasonable and the service is great
Assigned Topic Label: Friendly Service and Atmosphere

Review: The Wife hated her meal (coconut shrimp) and our friend really did not enjoy their meal either
Assigned Topic Label: Positive General Impressions

Review: My fella got the huevos rancheros and they did n't look too appealing
Assigned Topic Label: Positive General Impressions

Review: Went in for happy hour great list of wine
Assigned Topic Label: Value and Quality Comparison

Review: Some may say this buffet is pricey but I think you get what you pay for and this place you are gett
ing quite a lot !
Assigned Topic Label: Favorites and Love for the Food

Review: I probably wo n't be coming back here
Assigned Topic Label: Positive General Impressions

Review: Worst food/service I 've had in a while
Assigned Topic Label: Friendly Service and Atmosphere

Review: This place is pretty good nice little vibe in the restaurant
Assigned Topic Label: Specific Complaints or Concerns

Review: Talk about great customer service of course we will be back
Assigned Topic Label: Friendly Service and Atmosphere

Review: Hot dish are not hot cold dish are close to room tempI watched staff prepare food with BARE HANDS
no glovesEverything is deep fried in oil
Assigned Topic Label: Positive General Impressions

Review: I love their fry and their bean
Assigned Topic Label: Extremes in Service and Quality

Review: Always a pleasure dealing with him
Assigned Topic Label: Positive General Impressions

Review: They have a plethora of salad and sandwich and everything I 've tried get my seal of approval
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: This place is awesome if you want something light and healthy during the summer
Assigned Topic Label: Memorable Dining Experiences

Review: For sushi on the Strip this is the place to go
Assigned Topic Label: Memorable Dining Experiences

Review: The service wa great even the manager came and helped with our table
Assigned Topic Label: Friendly Service and Atmosphere

Review: The feel of the dining room wa more college cooking course than high class dining and the service w
a slow at best
Assigned Topic Label: Ambiance and Dining Experience

Review: I started this review with two star but I 'm editing it to give it only one
Assigned Topic Label: Specific Complaints or Concerns

Review: this is the worst sushi i have ever eat besides Costco 's
Assigned Topic Label: Friendly Service and Atmosphere

Review: All in all an excellent restaurant highlighted by great service a unique menu and a beautiful set
ting
Assigned Topic Label: Value and Quality Comparison

Review: My boyfriend and i sat at the bar and had a completely delightful experience
Assigned Topic Label: Extremes in Service and Quality

Review: Weird vibe from owner
Assigned Topic Label: Positive General Impressions

Review: There wa hardly any meat
Assigned Topic Label: Positive General Impressions

Review: I 've had better bagel from the grocery store
Assigned Topic Label: Ambiance and Dining Experience

Review: Go To Place for Gyros
Assigned Topic Label: Memorable Dining Experiences

Review: I love the owner/chef his one authentic Japanese cool dude !
Assigned Topic Label: Extremes in Service and Quality

Review: Now the burger are n't a good the pizza which used to be amazing is doughy and flavorless
Assigned Topic Label: Extremes in Service and Quality

Review: I found a six inch long piece of wire in my salsa
Assigned Topic Label: Positive General Impressions

Review: The service wa terrible food wa mediocre
Assigned Topic Label: Memorable Dining Experiences

Review: We definately enjoyed ourselves
Assigned Topic Label: Positive General Impressions

Review: I ordered Albondigas soup — which wa just warm — and tasted like tomato soup with frozen meatball
Assigned Topic Label: Memorable Dining Experiences

Review: On three different occasion I asked for well done or medium well and all three time I got the bloo
diest piece of meat on my plate
Assigned Topic Label: Value and Quality Comparison

Review: I had about two bite and refused to eat anymore
Assigned Topic Label: Positive General Impressions

Review: The service wa extremely slow
Assigned Topic Label: Memorable Dining Experiences

Review: After 20 minute wait I got a table
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: Seriously killer hot chai latte
Assigned Topic Label: Positive General Impressions

Review: No allergy warning on the menu and the waitress had absolutely no clue a to which meal did or did
not contain peanut
Assigned Topic Label: Positive General Impressions

Review: My boyfriend tried the Mediterranean Chicken Salad and fell in love
Assigned Topic Label: Food and Staff Appreciation

Review: Their rotating beer on tap is also a highlight of this place
Assigned Topic Label: Memorable Dining Experiences

Review: Pricing is a bit of a concern at Mellow Mushroom
Assigned Topic Label: Positive General Impressions

Review: Worst Thai ever
Assigned Topic Label: Friendly Service and Atmosphere

Review: If you stay in Vegas you must get breakfast here at least once
Assigned Topic Label: Extremes in Service and Quality

Review: I want to first say our server wa great and we had perfect service
Assigned Topic Label: Friendly Service and Atmosphere

Review: The pizza selection are good
Assigned Topic Label: Extremes in Service and Quality

Review: I had strawberry tea which wa good
Assigned Topic Label: Extremes in Service and Quality

Review: Highly unprofessional and rude to a loyal patron !
Assigned Topic Label: Positive General Impressions

Review: Overall a great experience
Assigned Topic Label: Value and Quality Comparison

Review: Spend your money elsewhere
Assigned Topic Label: Positive General Impressions

Review: Their regular toasted bread wa equally satisfying with the occasional pat of butter Mmmm !
Assigned Topic Label: Positive General Impressions

Review: The Buffet at Bellagio wa far from what I anticipated
Assigned Topic Label: Positive General Impressions

Review: And the drink are WEAK people !
Assigned Topic Label: Positive General Impressions

Review: —My order wa not correct
Assigned Topic Label: Positive General Impressions

Review: Also I feel like the chip are bought not made in house
Assigned Topic Label: Memorable Dining Experiences

Review: After the disappointing dinner we went elsewhere for dessert
Assigned Topic Label: Positive General Impressions

Review: The chip and sals a here is amazing !
Assigned Topic Label: Positive General Impressions

Review: We wo n't be returning
Assigned Topic Label: Positive General Impressions

Review: This is my new fav Vegas buffet spot
Assigned Topic Label: Extremes in Service and Quality

Review: I seriously can not believe that the owner ha so many unexperienced employee that all are running a round like chicken with their head cut off
Assigned Topic Label: Favorites and Love for the Food

Review: Very very sad
Assigned Topic Label: Positive General Impressions

Review: i felt insulted and disrespected how could you talk and judge another human being like that ?
Assigned Topic Label: Memorable Dining Experiences

Review: How can you call yourself a steakhouse if you ca n't properly cook a steak I do n't understand !
Assigned Topic Label: Positive General Impressions

Review: I 'm not impressed with the concept or the food
Assigned Topic Label: Favorites and Love for the Food

Review: The only thing I wa n't too crazy about wa their guacamole a I do n't like it puréed
Assigned Topic Label: Memorable Dining Experiences

Review: There is really nothing for me at postinos hope your experience is better
Assigned Topic Label: Ambiance and Dining Experience

Review: I got food poisoning here at the buffet
Assigned Topic Label: Favorites and Love for the Food

Review: They brought a fresh batch of fry and I wa thinking yay something warm but no !
Assigned Topic Label: Positive General Impressions

Review: What SHOULD have been a hilarious yummy Christmas Eve dinner to remember wa the biggest fail of th e entire trip for u
Assigned Topic Label: Positive General Impressions

Review: Needless to say I wo n't be going back anytime soon
Assigned Topic Label: Positive General Impressions

Review: This place is disgusting !
Assigned Topic Label: Memorable Dining Experiences

Review: Every time I eat here I see caring teamwork to a professional degree
Assigned Topic Label: Value and Quality Comparison

Review: The RI style calamari wa a joke
Assigned Topic Label: Positive General Impressions

Review: However there wa so much garlic in the fondue it wa barely edible
Assigned Topic Label: Positive General Impressions

Review: I could barely stomach the meal but did n't complain because it wa a business lunch
Assigned Topic Label: Positive General Impressions

Review: It wa so bad I had lost the heart to finish it
Assigned Topic Label: Positive General Impressions

Review: It also took her forever to bring u the check when we asked for it
Assigned Topic Label: Positive General Impressions

Review: We are n't one to make a scene at restaurant but I just do n't get it definitely lost the love aft er this one !
Assigned Topic Label: Food and Staff Appreciation

Review: Disappointing experience
Assigned Topic Label: Extremes in Service and Quality

Review: The food is about on par with Denny 's which is to say not good at all
Assigned Topic Label: Favorites and Love for the Food

Review: If you want to wait for mediocre food and downright terrible service then this is the place for yo u

Assigned Topic Label: Memorable Dining Experiences

Review: WAAAAAAyyyyyyyyyy over rated is all I am saying
Assigned Topic Label: Positive General Impressions

Review: We wo n't be going back
Assigned Topic Label: Positive General Impressions

Review: The place wa fairly clean but the food simply wa n't worth it
Assigned Topic Label: Favorites and Love for the Food

Review: This place lacked style ! !
Assigned Topic Label: Memorable Dining Experiences

Review: The sangria wa about half of a glass wine full and wa $ 12 ridiculous
Assigned Topic Label: Positive General Impressions

Review: Do n't bother coming here
Assigned Topic Label: Positive General Impressions

Review: The meat wa pretty dry I had the sliced brisket and pulled pork
Assigned Topic Label: Extremes in Service and Quality

Review: The building itself seems pretty neat the bathroom is pretty trippy but I would n't eat here agai
n
Assigned Topic Label: Extremes in Service and Quality

Review: It wa equally awful
Assigned Topic Label: Positive General Impressions

Review: Probably not in a hurry to go back
Assigned Topic Label: Positive General Impressions

Review: very slow at seating even with reservation
Assigned Topic Label: Positive General Impressions

Review: Not good by any stretch of the imagination
Assigned Topic Label: Extremes in Service and Quality

Review: The cashew cream sauce wa bland and the vegetable were undercooked
Assigned Topic Label: Positive General Impressions

Review: The chipolte ranch dipping sause wa tasteless seemed thin and watered down with no heat
Assigned Topic Label: Positive General Impressions

Review: It wa a bit too sweet not really spicy enough and lacked flavor
Assigned Topic Label: Positive General Impressions

Review: I wa VERY disappointed ! !
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: This place is horrible and way overpriced
Assigned Topic Label: Memorable Dining Experiences

Review: Maybe it 's just their Vegetarian fare but I 've been twice and I thought it wa average at best
Assigned Topic Label: Ambiance and Dining Experience

Review: It wa n't busy at all and now we know why
Assigned Topic Label: Positive General Impressions

Review: The table outside are also dirty a lot of the time and the worker are not always friendly and helpf
ul with the menu
Assigned Topic Label: Value and Quality Comparison

Review: The ambiance here did not feel like a buffet setting but more of a douchey indoor garden for tea a
nd biscuit
Assigned Topic Label: Memorable Dining Experiences

Review: Con : spotty service
Assigned Topic Label: Memorable Dining Experiences

Review: The fry were not hot and neither wa my burger
Assigned Topic Label: Positive General Impressions

Review: But then they came back cold
Assigned Topic Label: Friendly Service and Atmosphere

Review: Then our food came out disappointment ensued
Assigned Topic Label: Friendly Service and Atmosphere

Review: The real disappointment wa our waiter
Assigned Topic Label: Positive General Impressions

Review: My husband said she wa very rude did not even apologize for the bad food or anything
Assigned Topic Label: Favorites and Love for the Food

Review: The only reason to eat here would be to fill up before a night of binge drinking just to get some c
arbs in your stomach
Assigned Topic Label: Positive General Impressions

Review: Insults profound deuchebaggery and had to go outside for a smoke break while serving just to soli
dify it
Assigned Topic Label: Positive General Impressions

Review: If someone order two taco do n't ' you think it may be part of customer service to ask if it is com
bo or ala cart ?
Assigned Topic Label: Memorable Dining Experiences

Review: She wa quite disappointed although some blame need to be placed at her door
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: After all the rave review I could n't wait to eat here what a disappointment !
Assigned Topic Label: Positive General Impressions

Review: Del Taco is pretty nasty and should be avoided if possible
Assigned Topic Label: Extremes in Service and Quality

Review: It 's NOT hard to make a decent hamburger
Assigned Topic Label: Positive General Impressions

Review: But I do n't like it
Assigned Topic Label: Memorable Dining Experiences

Review: Hell no will I go back
Assigned Topic Label: Positive General Impressions

Review: We 've have gotten a much better service from the pizza place next door than the service we receive
d from this restaurant
Assigned Topic Label: Memorable Dining Experiences

Review: I do n't know what the big deal is about this place but I wo n't be back `` ya'all ''
Assigned Topic Label: Memorable Dining Experiences

Review: I immediately said I wanted to talk to the manager but I did not want to talk to the guy who wa doi
ng shot of fireball behind the bar
Assigned Topic Label: Positive General Impressions

Review: The ambiance is n't much better
Assigned Topic Label: Ambiance and Dining Experience

Review: Unfortunately it only set u up for disapppointment with our entree
Assigned Topic Label: Positive General Impressions

Review: The food wa n't good
Assigned Topic Label: Favorites and Love for the Food

Review: Your server suck wait correction our server Heimer sucked
Assigned Topic Label: Friendly Service and Atmosphere

Review: What happened next wa pretty off putting
Assigned Topic Label: Extremes in Service and Quality

Review: too bad cause I know it 's family owned I really wanted to like this place
Assigned Topic Label: Memorable Dining Experiences

Review: Overpriced for what you are getting
Assigned Topic Label: Positive General Impressions

Review: I vomited in the bathroom mid lunch
Assigned Topic Label: Positive General Impressions

Review: I kept looking at the time and it had soon become 35 minute yet still no food
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I have been to very few place to eat that under no circumstance would I ever return to and this to
p the list
Assigned Topic Label: Memorable Dining Experiences

Review: We started with the tuna sashimi which wa brownish in color and obviously wa n't fresh
Assigned Topic Label: Positive General Impressions

Review: Food wa below average
Assigned Topic Label: Favorites and Love for the Food

Review: It sure doe beat the nacho at the movie but I would expect a little bit more coming from a restaura
nt

Assigned Topic Label: Food and Staff Appreciation

Review: All in all Ha Long Bay wa a bit of a flop
Assigned Topic Label: Positive General Impressions

Review: The problem I have is that they charge $ 1199 for a sandwich that is no bigger than a Subway sub (
which offer better and more amount of vegetable)
Assigned Topic Label: Ambiance and Dining Experience

Review: Shrimp– When I unwrapped it (I live only 1/2 a mile from Brushfire) it wa literally ice cold
Assigned Topic Label: Positive General Impressions

Review: It lacked flavor seemed undercooked and dry
Assigned Topic Label: Positive General Impressions

Review: It really is impressive that the place ha n't closed down
Assigned Topic Label: Memorable Dining Experiences

Review: I would avoid this place if you are staying in the Mirage
Assigned Topic Label: Memorable Dining Experiences

Review: The refried bean that came with my meal were dried out and crusty and the food wa bland
Assigned Topic Label: Friendly Service and Atmosphere

Review: Spend your money and time some place else
Assigned Topic Label: Value and Quality Comparison

Review: A lady at the table next to u found a live green caterpillar In her salad
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: the presentation of the food wa awful
Assigned Topic Label: Favorites and Love for the Food

Review: I ca n't tell you how disappointed I wa
Assigned Topic Label: Basic Satisfaction with Service and Quality

Review: I think food should have flavor and texture and both were lacking
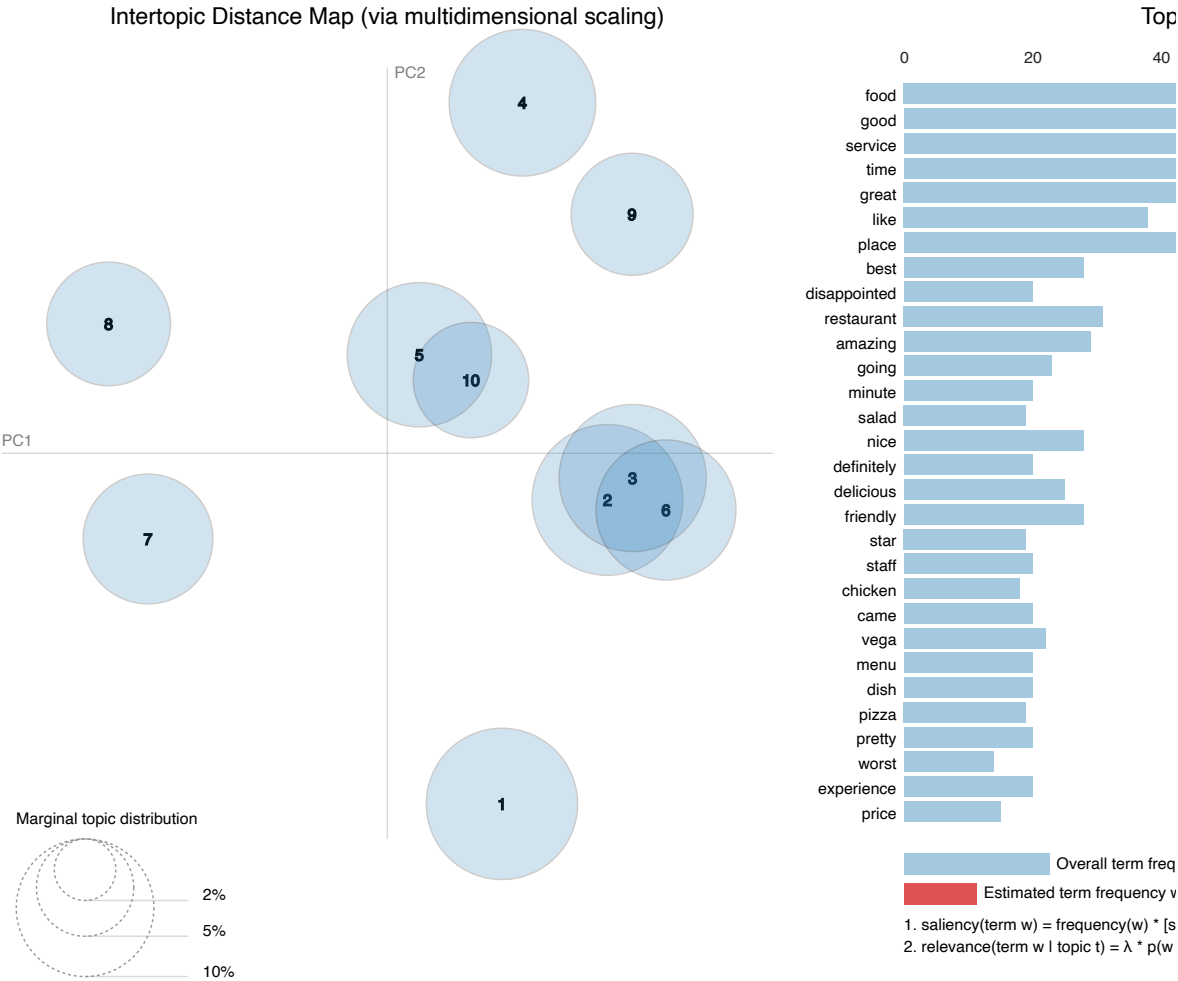Assigned Topic Label: Favorites and Love for the Food

Review: Appetite instantly gone
Assigned Topic Label: Positive General Impressions

Review: Overall I wa not impressed and would not go back
Assigned Topic Label: Positive General Impressions

Review: The whole experience wa underwhelming and I think we 'll just go to Ninja Sushi next time
Assigned Topic Label: Extremes in Service and Quality

Review: Then a if I had n't wasted enough of my life there they poured salt in the wound by drawing out t
he time it took to bring the check
Assigned Topic Label: Value and Quality Comparison

In [ ]:
```python
%matplotlib inline
import pyLDAvis
import pyLDAvis.gensim
vis = pyLDAvis.gensim.prepare(topic_model=lda_model, corpus=bow_corpus, dictionary=dictionary)
pyLDAvis.enable_notebook()
pyLDAvis.display(vis)
```

Out[ ]:   Selected Topic: [0]   [Previous Topic]   [Next Topic]   [Clear Topic]   Slide to adjust relevance metri   (2)

                                                                                              λ = 1

Intertopic Distance Map (via multidimensional scaling)

Marginal topic distribution

2%
5%
10%

Running a Coherence Test against the Baseline Dataset

In [ ]:
```python
from gensim.models import CoherenceModel

topic_test = pd.read_csv('/Users/markbartos/Library/Mobile Documents/com~apple~CloudDocs/DRIVE/EDUCATION/V

lemmatizer = WordNetLemmatizer()
stop_words = set(stopwords.words('english'))

def preprocess(document):
    tokens = nltk.word_tokenize(document)
    return [lemmatizer.lemmatize(token) for token in tokens if token not in stop_words]

processed_test_docs = topic_test['text'].map(preprocess)
test_corpus = [dictionary.doc2bow(document) for document in processed_test_docs]
test_topics = [lda_model[document] for document in test_corpus]

for i, topics in enumerate(test_topics):
    print(f"Document {i}'s topics: {topics}")

coherence_model_test = CoherenceModel(model=lda_model, texts=processed_test_docs, dictionary=dictionary, c
coherence_test = coherence_model_test.get_coherence()
print("------ Test Coherence Score:",coherence_test)
```

```
Document 0's topics: [(0, 0.1), (1, 0.1), (2, 0.1), (3, 0.1), (4, 0.1), (5, 0.1), (6, 0.1), (7, 0.1), (8,
0.1), (9, 0.1)]
Document 1's topics: [(0, 0.050000254), (1, 0.05000098), (2, 0.050000142), (3, 0.05000003), (4, 0.5499925
6), (5, 0.05000003), (6, 0.05000576), (7, 0.05000003), (8, 0.050000127), (9, 0.05000003)]
Document 2's topics: [(0, 0.1), (1, 0.1), (2, 0.1), (3, 0.1), (4, 0.1), (5, 0.1), (6, 0.1), (7, 0.1), (8,
0.1), (9, 0.1)]
Document 3's topics: [(0, 0.1), (1, 0.1), (2, 0.1), (3, 0.1), (4, 0.1), (5, 0.1), (6, 0.1), (7, 0.1), (8,
0.1), (9, 0.1)]
Document 4's topics: [(0, 0.1), (1, 0.1), (2, 0.1), (3, 0.1), (4, 0.1), (5, 0.1), (6, 0.1), (7, 0.1), (8,
0.1), (9, 0.1)]
Document 5's topics: [(0, 0.050000023), (1, 0.050000556), (2, 0.54998946), (3, 0.050003603), (4, 0.05000042
5), (5, 0.050002865), (6, 0.05000153), (7, 0.050000705), (8, 0.05000055), (9, 0.050000284)]
Document 6's topics: [(0, 0.050000038), (1, 0.05000273), (2, 0.050000038), (3, 0.050000038), (4, 0.05000003
8), (5, 0.050000038), (6, 0.050000135), (7, 0.050000206), (8, 0.549994), (9, 0.050002787)]
Document 7's topics: [(0, 0.1), (1, 0.1), (2, 0.1), (3, 0.1), (4, 0.1), (5, 0.1), (6, 0.1), (7, 0.1), (8,
0.1), (9, 0.1)]
Document 8's topics: [(0, 0.1), (1, 0.1), (2, 0.1), (3, 0.1), (4, 0.1), (5, 0.1), (6, 0.1), (7, 0.1), (8,
0.1), (9, 0.1)]
Document 9's topics: [(0, 0.1), (1, 0.1), (2, 0.1), (3, 0.1), (4, 0.1), (5, 0.1), (6, 0.1), (7, 0.1), (8,
0.1), (9, 0.1)]
------ Test Coherence Score: nan
```

```
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/gensim/topic_coherence/dire
ct_confirmation_measure.py:204: RuntimeWarning: divide by zero encountered in scalar divide
  m_lr_i = np.log(numerator / denominator)
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/gensim/topic_coherence/indi
rect_confirmation_measure.py:323: RuntimeWarning: invalid value encountered in scalar divide
  return cv1.T.dot(cv2)[0, 0] / (_magnitude(cv1) * _magnitude(cv2))
```

In [ ]:
```python
from sklearn.metrics import precision_score, recall_score, f1_score

topic_test['cleaned_text'] = topic_test['text'].apply(preprocess)
test_corpus = [dictionary.doc2bow(doc) for doc in processed_test_docs]

topic_mapping = {
    0: 'sports',
    1: 'movie',
    2: 'book'
}

topic_test['predicted_topic'] = [max(lda_model[doc], key=lambda item: item[1])[0] for doc in test_corpus]
topic_test['mapped_topic'] = topic_test['predicted_topic'].apply(lambda x: topic_mapping.get(x, 'unknown')

true_labels = topic_test['topic']
predicted_labels = topic_test['mapped_topic']

precision = precision_score(true_labels, predicted_labels, average='micro')
recall = recall_score(true_labels, predicted_labels, average='micro')
f1 = f1_score(true_labels, predicted_labels, average='micro')

print("Precision:", precision)
print("Recall:",recall)
print("F1 Score:", f1)

print(classification_report(true_labels,predicted_labels))
```

```
Precision: 0.4
Recall: 0.4
F1 Score: 0.4000000000000001
              precision    recall  f1-score   support

        book       1.00      0.33      0.50         3
       movie       0.00      0.00      0.00         4
      sports       0.43      1.00      0.60         3
     unknown       0.00      0.00      0.00         0

    accuracy                           0.40        10
   macro avg       0.36      0.33      0.28        10
weighted avg       0.43      0.40      0.33        10
```

```
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in labels wit
h no true samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in labels wit
h no true samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels
with no predicted samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/sklearn/metrics/_classifica
tion.py:1344: UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in labels wit
h no true samples. Use `zero_division` parameter to control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
```

The model shows with varying levels of efficacy for the baseline datset in the pre-determined four categories (movie, book, sports, and unknown). The model demonstrated 100% precision in the 'book' category, but only recalled 33% of those instances correctly, leading to a poor f1-score. The 'sports' category stands out for having a balanced precision to recall ratio and a strong F1-score because all of its instances were successfully identified. The 'movie' category is a significant obstacle for the model, and it also failed to classify any 'unknown' instances. The model's overall accuracy across 10 cases is 0.40.

```python
In [ ]: for i, row in topic_test.iterrows():
            document_text = row['text']
            predicted_topic_label = row['mapped_topic']

            print(f"Document {i}: {document_text}\nPredicted Topic: {predicted_topic_label}\n")
```

```
Document 0: I wouldn't be caught dead watching the NFL if it weren't for Taylor Swift.
Predicted Topic: sports

Document 1: Chris O'Donnell stated that while filming for this movie, he felt like he was in a Toys ''R'' U
s commercial.
Predicted Topic: unknown

Document 2: The whole game was a rollercoaster ride, but Los Angeles Lakers ultimately persevered and won!
Predicted Topic: sports

Document 3: Zendaya slayed in Dune 2, as she does in all her movies.
Predicted Topic: sports

Document 4: While my favorite player was playing this match and started off strongggg, it went downhill aft
er Messi's injyry midgame.
Predicted Topic: sports

Document 5: My uncle's brother's neighbor's cat's veterinarian David reads the communist manifesto in his s
pare time.
Predicted Topic: book

Document 6: He said that The Great Gatsby is the best novell ever, and I was about to throw hands.
Predicted Topic: unknown

Document 7: I could not look away from this train wrck of a movie, on February 14th of all days.
Predicted Topic: sports

Document 8: The film Everything Everywhere All At Once follows Evelyn Wang, a woman drowning under the stre
ss of her family's failing laundromat.
Predicted Topic: sports

Document 9: I just finished reading pride and prejudice which had me HOOOKED from the beginning.
Predicted Topic: sports
```

As seen above, a topic analyser trained to classify restaurant reviews, preforms poorly on the baseline dataset, consisting of a wide variety of topics.

References

[1] Maynard, D., & Bontcheva, K. (2016). Natural language processing for the semantic web. Morgan & Claypool Publishers. - Chapter 7

[2] Cjhutto. (n.d.). GitHub - cjhutto/vaderSentiment: VADER Sentiment Analysis. VADER (Valence Aware Dictionary and sEntiment Reasoner) is a lexicon and rule-based sentiment analysis tool that is specifically attuned to sentiments expressed in social media, and works well on texts from other domains. GitHub. https://github.com/cjhutto/vaderSentiment

[3] Moraites, A. (2023, April 2). Fine-tuning RoBERTa for Topic Classification with Hugging Face Transformers and Datasets Library. Medium. https://medium.com/@achillesmoraites/fine-tuning-roberta-for-topic-classification-with-hugging-face-transformers-and-datasets-library-c6f8432d0820

[4] Maynard, D., & Bontcheva, K. (2016). Natural language processing for the semantic web. Morgan & Claypool Publishers. - Chapter 3

[5] Jurafsky, D., & Martin, J. H. (2014). Speech and language processing. Pearson. - Chapter 8

[6] Blei, D. M., Ng, A. Y., & Jordan, M. I. (2003). Latent dirichlet allocation. Journal of machine Learning research, 3(Jan), 993-1022.

[7] Markov, I. (2024). Named entity recognition and classification [Lecture Slides]. Text Mining for AI course of Vrije Universiteit

[8] Markov, I. (2024). Sentiment Analysis [Lecture Slides]. Text Mining for AI course of Vrije Universiteit

[9] Markov, I. (2024). Topic Modeling and Text Classification [Lecture Slides]. Text Mining for AI course of Vrije Universiteit

Breakdown of Contribution per Team Member

Name	Coding Effort	Poster Effort
Mark Bartos	50%	50%
Efe Kural	50%	50%

Thank you for your time and effort reviewing our project!