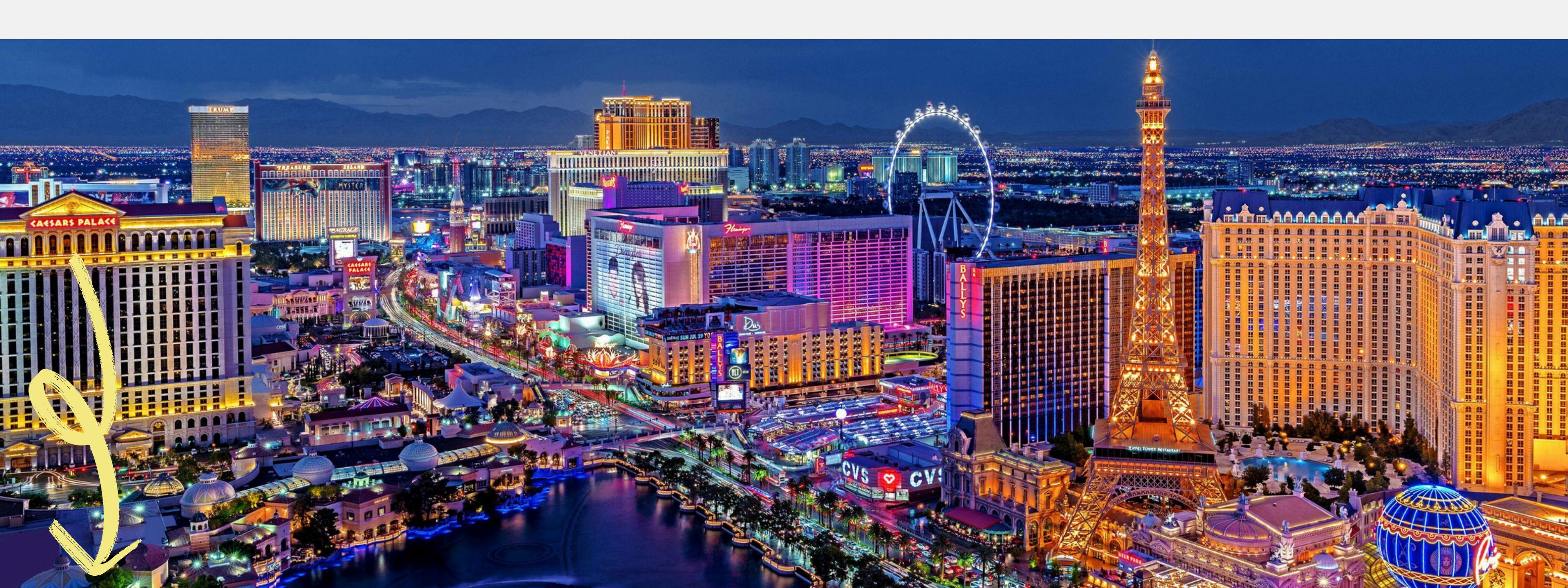


NLP PROJECT

SENTIMENT ANALYSIS

Ş.F.U.



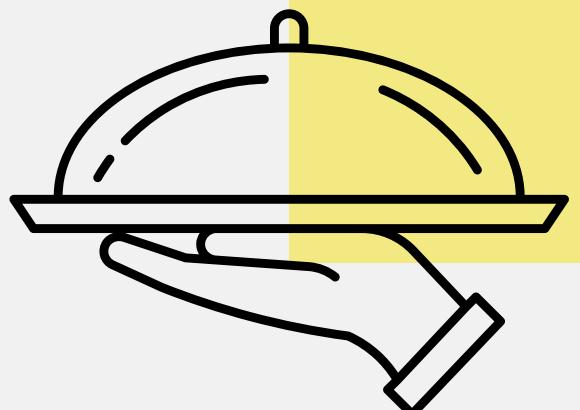
This is where the Bacchanal Buffet
is located.

Welcome to Las Vegas with NLP



What are we doing here?

This is an NLP project. In this project, we will examine the data of a restaurant in Las Vegas using NLP packages and sentiment analysis. We will perform the necessary operations and make our data ready. We will see what kind of comments the incoming customers have made and how many stars they have given. We will examine the incoming comments and give recommendations for improvements on the subject they complain about.



METHODOLOGY

Tools



Library



Modelling



Data



How we solve the project?

01

EDA-EXPLORATORY DATA ANALYSIS

We complete or delete missing information in our data, rearrange columns, remove punctuation marks and other things from the text.

02

TEXT PROCESSING

We remove the suffixes of the words and find their roots, remove stopwords, and tokenize the words.

03

MODELLING

We test our data using classification models. Our classification metrics are confusion matrix, accuracy, f1score, recall and precision. To train our data, we put texts in the x column and stars in the y column. We test our data by performing fit transform.

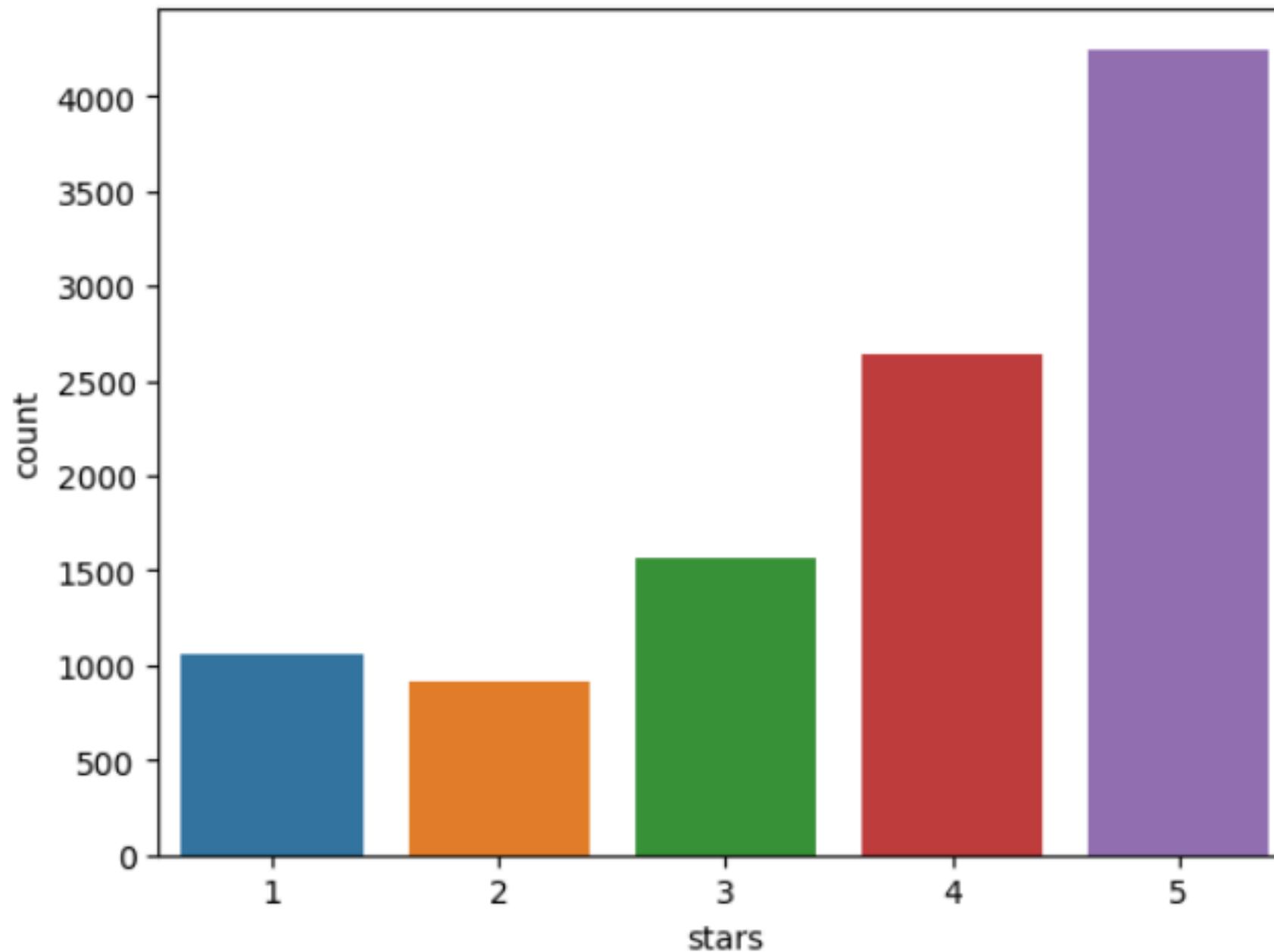
Results

```
df['stars'].value_counts()
```

stars	count
5	4247
4	2636
3	1561
1	1056
2	917
Name: count, dtype: int64	

We see how many stars there are in total.

```
sns.countplot(x=df['stars']);
```

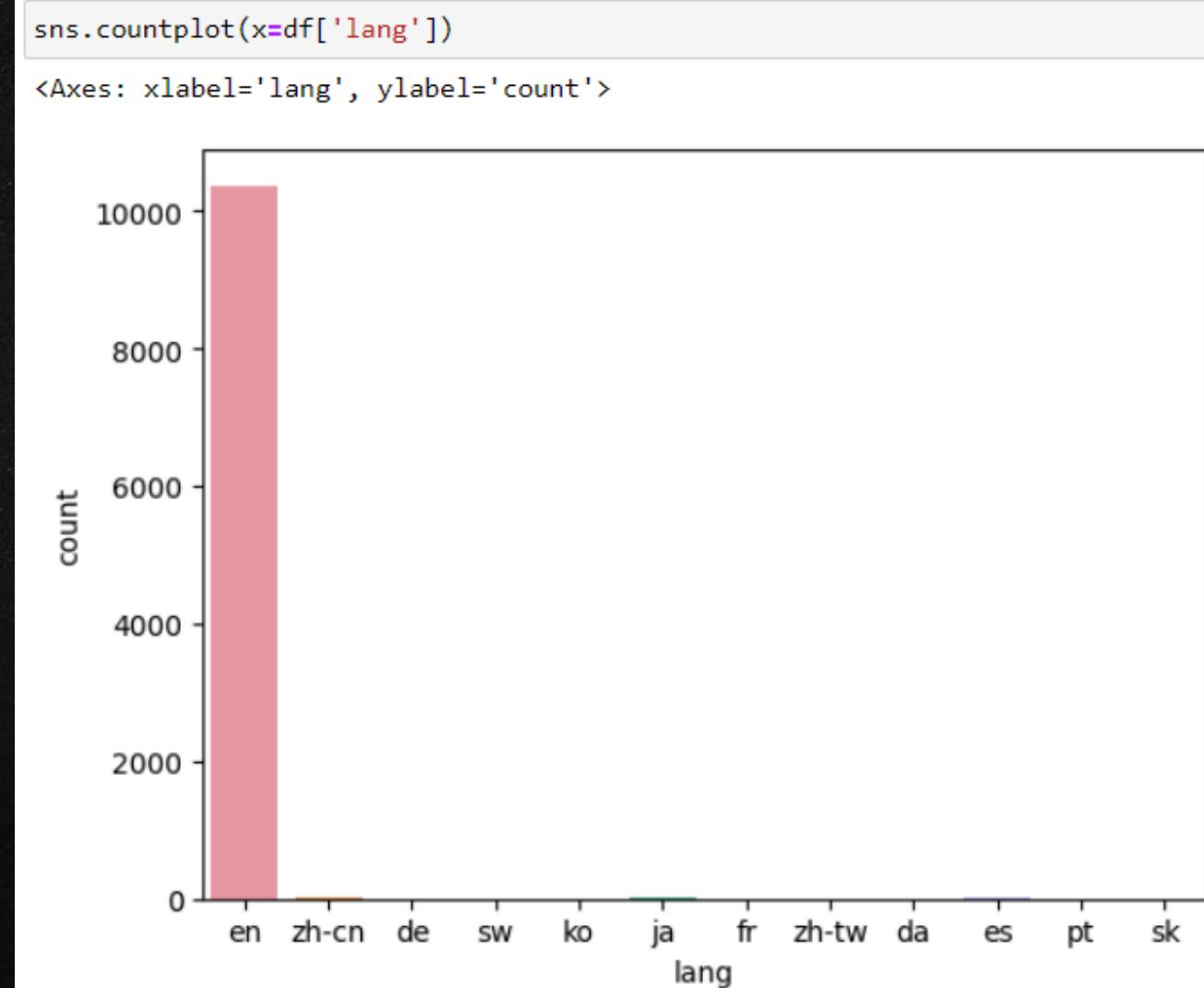


The Graph of Stars

```
df['lang'].value_counts()
```

lang	count
en	10373
es	10
ja	8
zh-cn	7
ko	5
de	4
fr	4
da	2
sw	1
zh-tw	1
pt	1
sk	1

Name: count, dtype: int64



```
df[df['lang'] == 'zh-cn']
```

stars		text	lang
195	1	真心不怎么样 中午没有雪蟹腿菜都很一般港式点心说的过去其他的中式菜只能说尚且入口寿司品质还行...	zh-cn
1370	3	没有做好功课千辛万苦找到才发现ces期间的晚餐要近刀都想打退堂鼓了其实拉斯维加斯的自助餐都并...	zh-cn
3628	5	凯撒宫的自助餐怎么可以这么棒帝王蟹生蚝虾蟹鲜美无比羊排叉烧披萨提拉米苏布丁每一样都想说umm...	zh-cn
9151	3	其实还好没有评价说的那么好 毕竟他只是一家buffet 餐厅首先值得点赞的是他的品种很多你可...	zh-cn
9254	1	食物还可以但吃饭要排很久的队而且歧视中国人吃饭还要出示护照不是很好找在凯撒一楼赌场的里面牛排...	zh-cn
10127	4	很多种类的选择有海鲜甜点和各国的美食就是现在价格变贵了周日美元一位价格还是不便宜的味道还是不...	zh-cn
10366	1	看了网上的广告去的非常失望菜色没有那么丰富大部分菜品颜色暗沉给人感觉不新鲜最想吃的蟹腿肉质又...	zh-cn

```
df[df['lang'] == 'de']
```

stars		text	lang
464	5	die auswahl ist gigantisch es gibt verschieden...	de
2705	5	das beste buffet in las vegas und ich habe al...	de
4933	5	buffetrestaurants haben fast alle hotels in la...	de
5809	3	super auswahl mega groß schönes ambiente aber de...	de

We see statistics and graphs of how many comments were made in which language.

```
In [38]: wc(like, 'white')
```



Wordcloud of 5 star reviewers

```
wc(dislike, 'white')
```



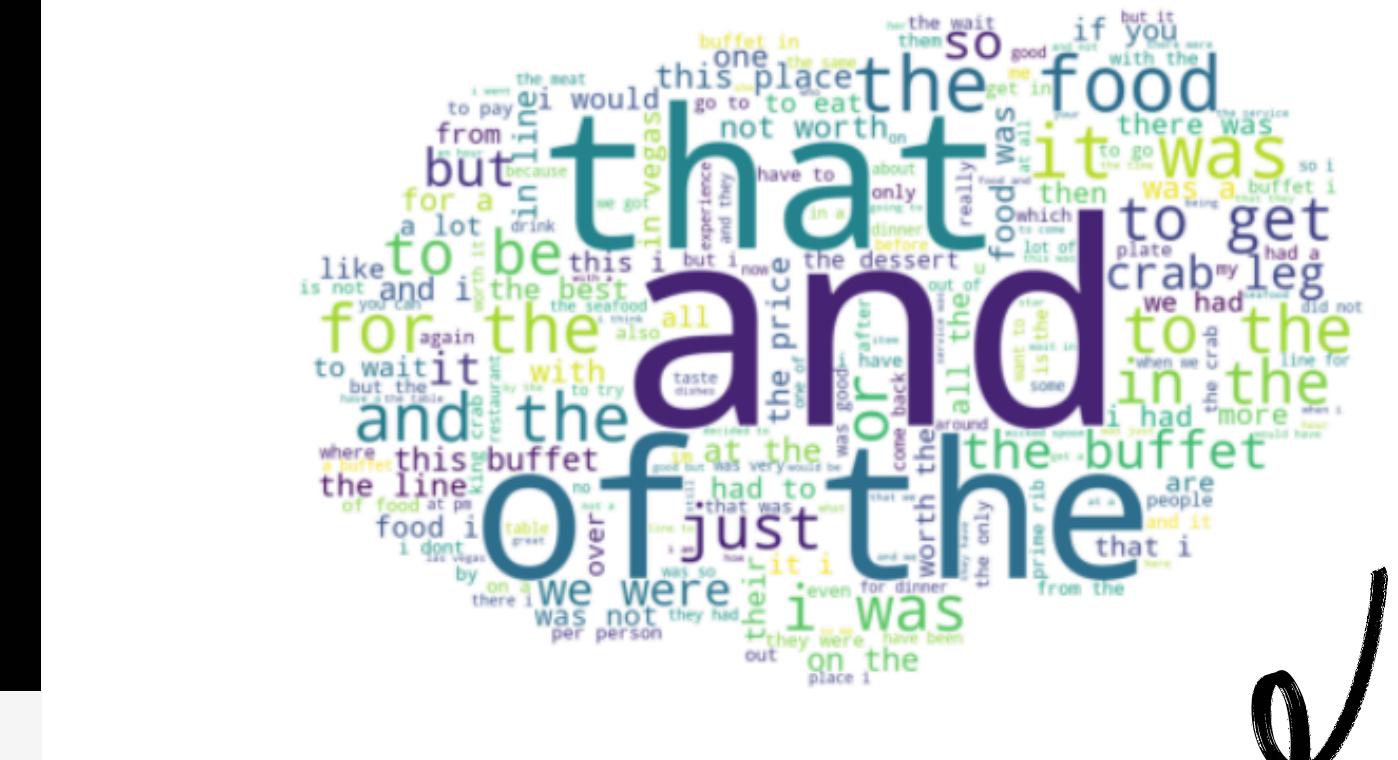
Wordcloud of 1 star reviewers

wc(pozitif)



wordcloud of positive commenters

wc(negatif



wordcloud of negative commenters

wordcloud of neutral commenters

Sentiment Analysis

```
df.loc[(df['stars']==1)|(df['stars']==2), 'sentiment']='negative'  
df.loc[(df['stars']==3,'sentiment')]='neutral'  
df.loc[(df['stars']==4)|(df['stars']==5), 'sentiment']='positive'
```

pozitif.sample(7)

```
4204 dinner for two people but worth it rack of la...  
8938 mmmmm bacchanal the consistently voted best bu...  
5934 soooo many good things it hurt i generally don...  
8 lots of choices good service line wasnt as lon...  
9433 this buffet had good food but the wait to get ...  
5367 i wish i had a bigger stomach there was a wide...  
9831 bacchanal buffetwhat can i say it isnt for no...  
Name: text, dtype: object
```

negatif.sample(7)

```
6402 one of the worst buffets ive had in vegas noth...  
458 place is severely overrated and over priced in...  
1380 brought our friends while they visit us we alw...  
10219 johndoe p you said exactly right they are loo...  
4853 why why why ive never been so disappointed in ...  
746 quality has gone down for their food the vari...  
5763 this placelol our server was nice but for so...  
Name: text, dtype: object
```

pozitif[8761]

'omg so good so freaking good well worth the hour long wait for a monday lunch seriously the moment i was in i had no idea where to go first so much good food fresh shrimp prime rib sushi italian chinese mexican everything i dont think i have ever eaten so much food at one time i really recommend wearing stretchy pants youll be so stuff that youll really appreciate more belly space pmy favorite part of the buffet was by far the dessert station there were loads of ice creams tiramisu strawberry shortcake multiple kinds of creme brulee and even a crepemaking station ah it was foodie heaven i cannot wait to go back the next time im in vegas'

positive comment

negatif[458]

'place is severely overrated and over priced in my opinion the menu seems nice at a glance eg chicken and waffles crab legs carved meats italian asian but very poorly executed the food was not fresh at all and many of the dishes i tried were overcooked the staff also left much to be desired i found them to completely unattentive and disengaged we literally had to clear our own table placed our finished plates at a nearby hutch and was not able to get assistance unless we got up from our table and walked up to someone and asked for it take your and spend it somewhere else wicked spoon bellagio anywhere'

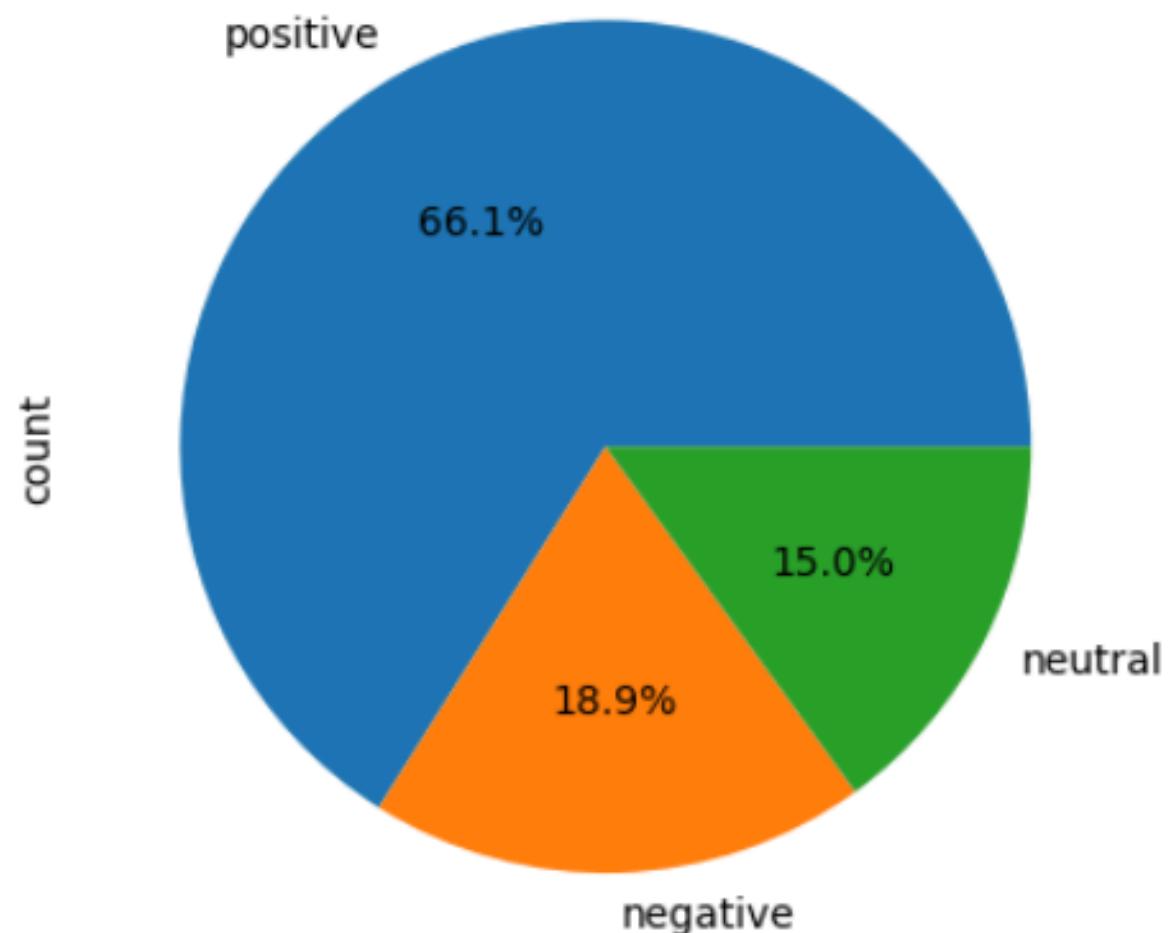
negative comment

```
df['sentiment'].value_counts()
```

```
sentiment
positive      6853
negative      1964
neutral       1557
Name: count, dtype: int64
```

Total number of positive,
negative and neutral comments

```
df['sentiment'].value_counts().plot.pie(autopct='%1.1f%%');
```



Pie Chart of Comments

stars		text	lang	sentiment	polarity	subjectivity
0	5	after getting food poisoning at the palms hote...	en	positive	0.337330	0.586926
1	4	a feast worthy of godsbaccarnal buffet in caes...	en	positive	0.219409	0.537292
2	4	the crab legs are better than the ones at wick...	en	positive	-0.134722	0.731944
3	1	not worth it too salty food and expensive this...	en	negative	-0.325000	0.400000
4	5	i would give this infinite stars if i could my...	en	positive	0.362500	0.725000

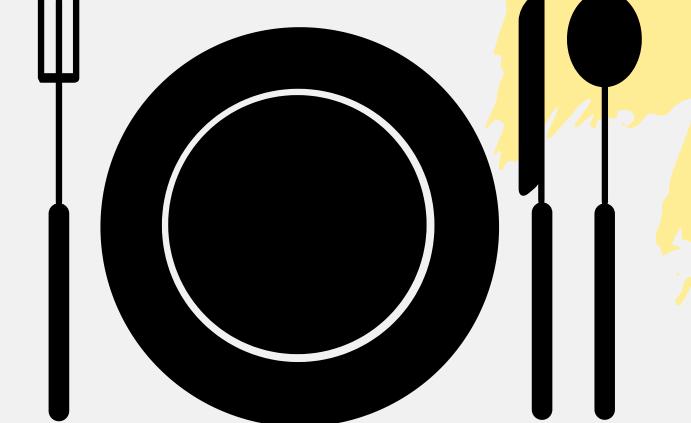
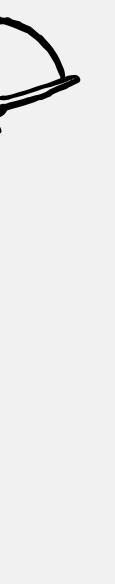
My takeaways
from the bad
comments

Terrible
food

Expensive

Waiting
line

Rude
waiter





Thank you

Ş.F.U.