Task 4 & 5

Task 4:

Popularity

In this task, I will compare the popularity of chinese dishes that I found in week 3.

```
reviews = pd.read_csv('categories/Chinese.txt',sep='\n\n',
                      encoding='utf-8',header=None, engine='python').apply(lambda x: (x[0])
lower(),1).as_matrix().tolist()
with open('dishes.txt') as f:
    dishes = set([(l.strip()) for l in f.readlines()])
```

For each dish, I will calculate number of review that contain this dish name.

```
counter = Counter()
for dish in dishes:
    for review in reviews:
        if review.find(dish) >= 0:
            counter[dish] += 1
```

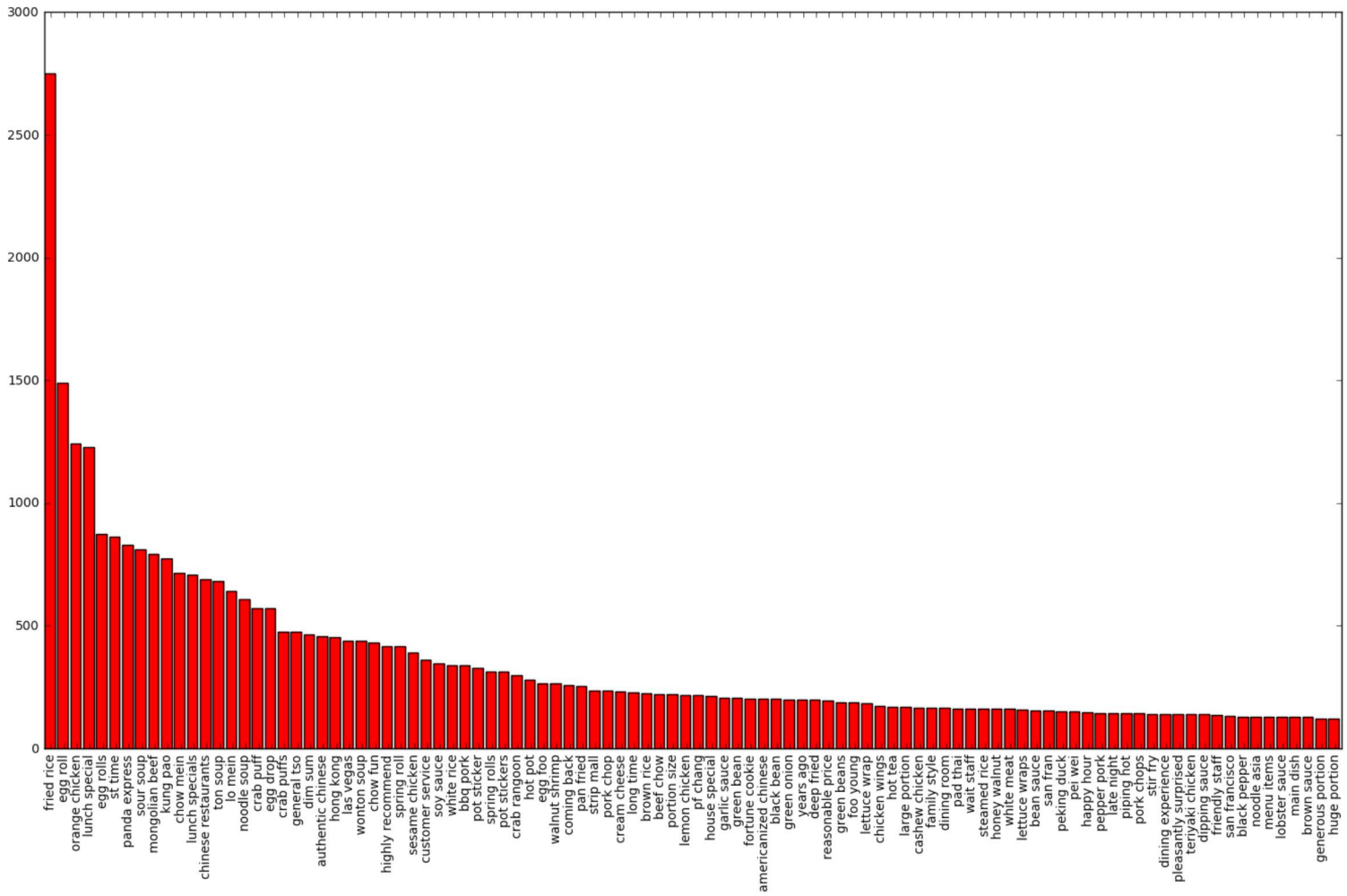
As we can see, top 3 dishes that are reviewed are *fried rice*, *egg roll* and *orange chicken*

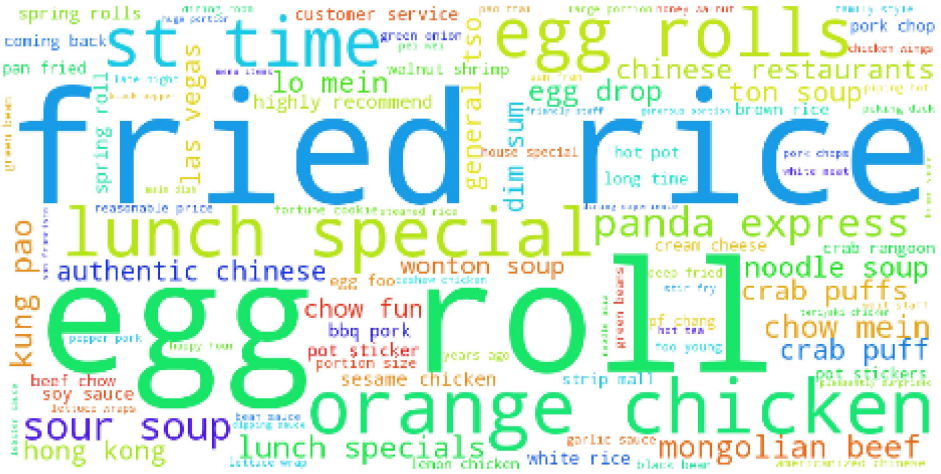
```
counter.most_common(3)
```

```
[('fried rice', 2749),
 ('egg roll', 1490),
 ('orange chicken', 1243)]
```

Base on the counter, I printed the frequence of top 100 dishes. We see that *fried rice* are being mentioned much more frequently than other dishes.

```
draw(counter.most_common(100))
word_cloud(counter.most_common(100))
```





Satisfaction

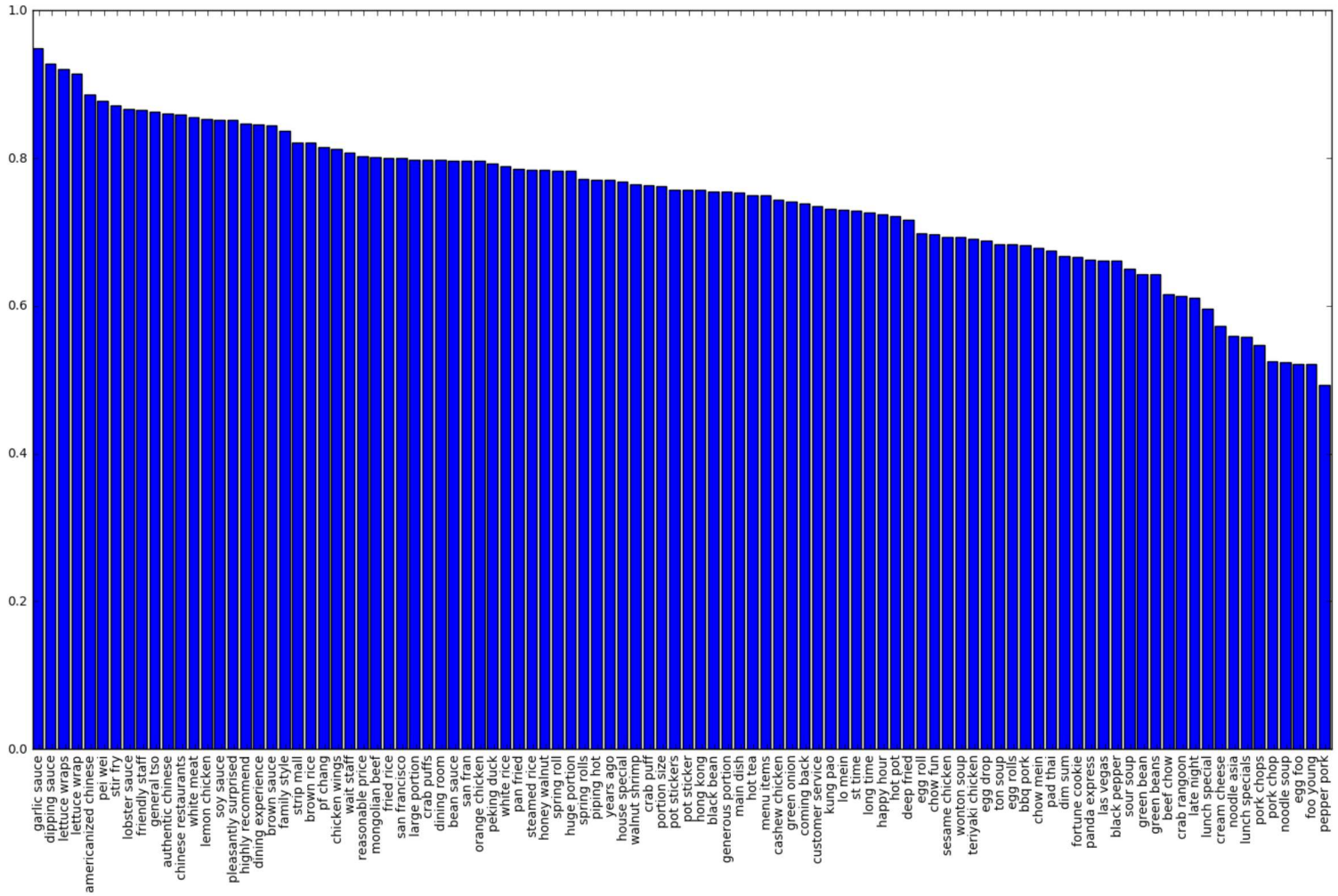
After that, I use NaiveBayesAnalyzer analyze the reviews. It is a algorithm that calculate the probility of a sentence being positive. I will calculate mean of the probility to fingure out which is most satisfied dish.

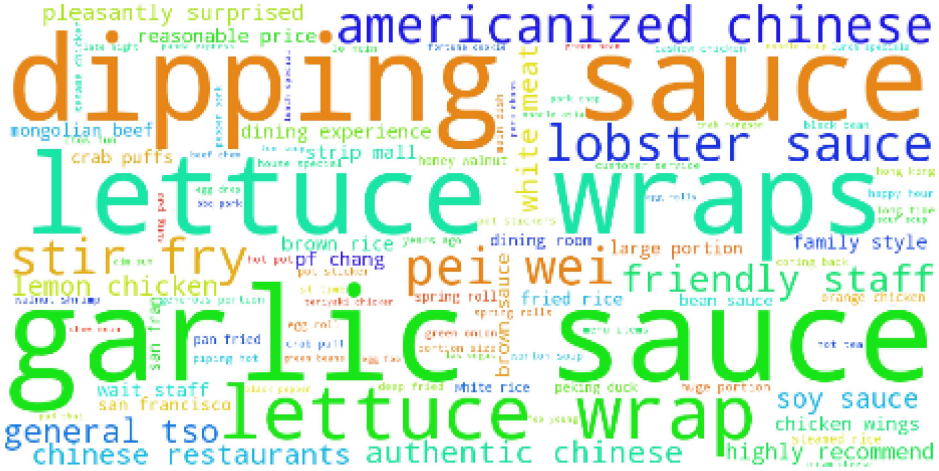
```
naiveBayesAnalyzer = NaiveBayesAnalyzer()
naiveBayesAnalyzer.train()
blobber = Blobber(analyzer = naiveBayesAnalyzer)
```

```
cnt = defaultdict(float)
for review in reviews:
    blob = blobber(review)
    for dish in dishes:
        if review.find(dish) >= 0:
            cnt[dish] += blob.sentiment.p_pos
```

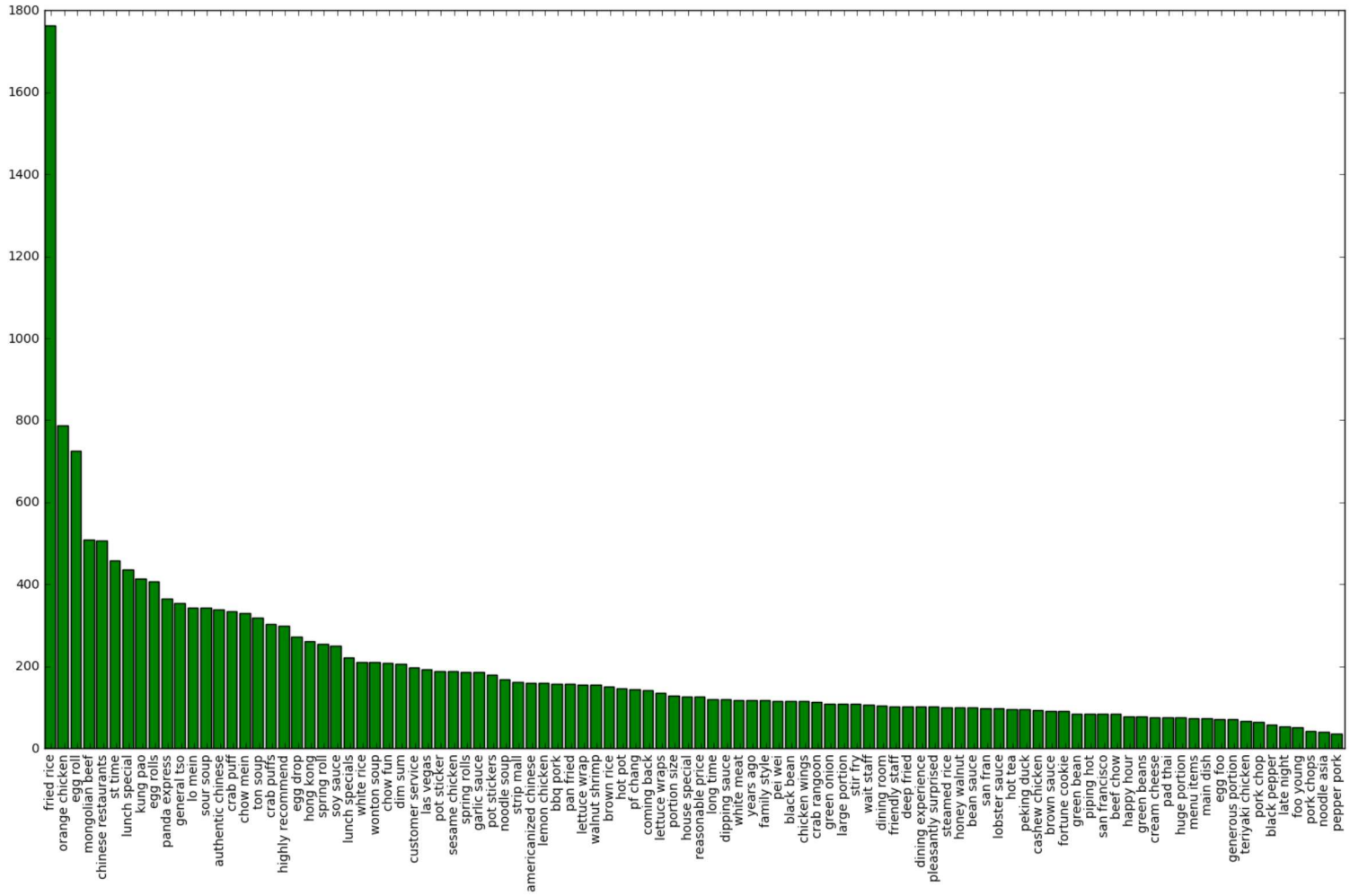
As can be seen, the food that has highest positive probility is garlic sauce and the lowest is pepper pork.

```
draw(sorted([(key,cnt[key]/value) for key,value in counter.most_common(100)],key=lambda x:
 -x[1]),'b')
word_cloud((key,cnt[key]/value) for key,value in counter.most_common(100))
```





```
draw(sorted([(key,cnt[key]*(cnt[key]/value)) for key,value in counter.most_common(100)],ke
y=lambda x: -x[1]),'g')
word_cloud([(key,cnt[key]*(cnt[key]/value)) for key,value in counter.most_common(100)])
```



Task 5:

In this task I will use yelp original dataset.

```
reviews_df = gl.SFrame.read_json('yelp_dataset_challenge_academic_dataset/yelp_academic_da
taset_review.json'
                                 ,orient='lines')
business_df = gl.SFrame.read_json('yelp_dataset_challenge_academic_dataset/yelp_academic_d
ataset_business.json'
                                  ,orient='lines')
```

I set the target value to be the most popular dish (*fried rice*) and It can be set to be any value.

```
target = counter.most_common(1)[0][0]
```

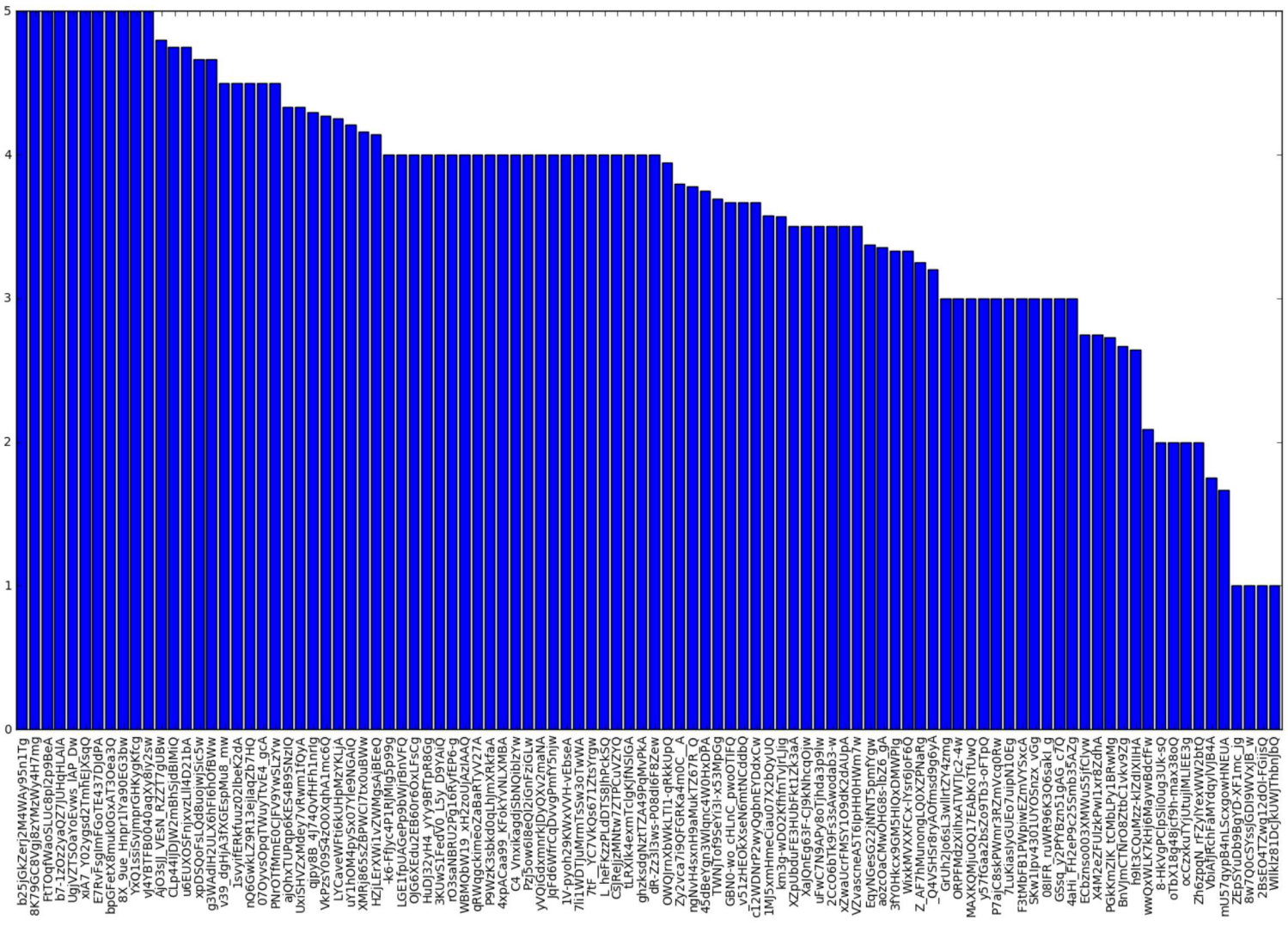
First I will only use the reviews that mentioned target dish. Then I group all the reviews base on their ***business_id*** and calculate mean of all review's star.

```
filtered_reviews = reviews_df[reviews_df.apply(lambda x: x['text'].find(target) >= 0)]
```

```
business_rating = filtered_reviews.groupby(key_columns='business_id',
                          operations={'Mean Rating':
gl.aggregate.MEAN('stars'),'Count':gl.aggregate.COUNT()})
```

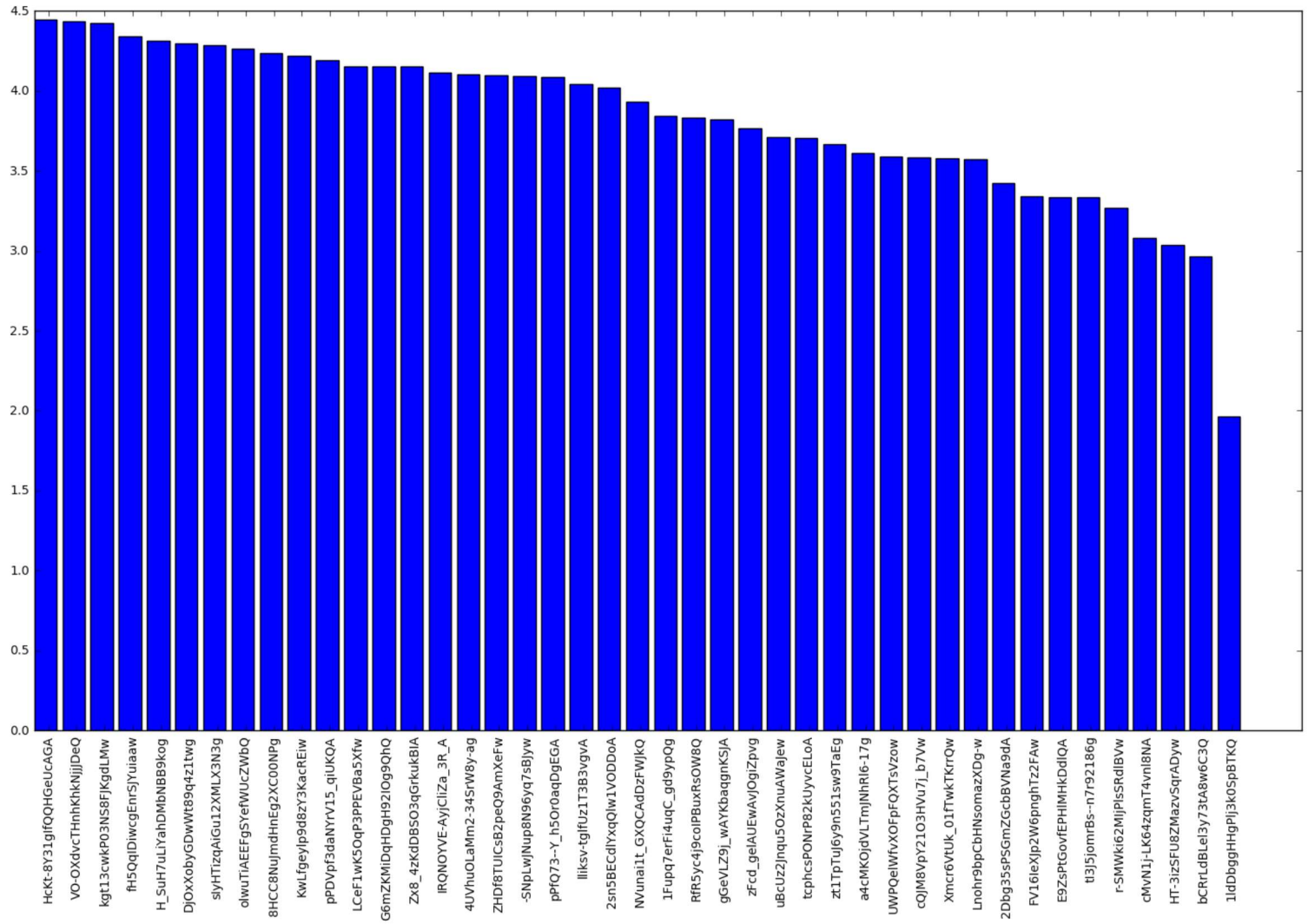
I can see some restaurants have full star, that maybe because they have too few reviews. I also do not want to recommend a restaurant that do not have sufficient number of review. So after that, I filtered out all restaurants have less than or equal 25 reviews about *fried rice*. The Plot have much smaller data and the highest average star is roundly 4.5

```
draw(sorted(list(business_rating[['business_id','Mean Rating']].to_numpy().tolist()[0:100])
y=lambda x: -float(x[1])) ,'b')
```



```
business_rating = business_rating[business_rating['Count']>25]

best_res = sorted(list(business_rating[['business_id','Mean Rating']].to_numpy().tolist()),
=lambda x: -float(x[1]))
draw(best_res ,'b')
```




```
best_choice = business_df[business_df['business_id'] == best_res[0][0]]
```

Now I can recommend the place that has the highest rated *fried rice*.

```
best_choice[0]['name']
```

```
'Rice Trax Teriyaki Grill'
```

```
best_choice[0]['full_address']
```

```
'7780 S Jones Blvd\nSouthwest\nLas Vegas, NV 89139'
```