Analysis_report

December 22, 2017

1 Analysis

```
In [1]: import matplotlib
        import matplotlib.pyplot as plt
        import pandas as pd
```

```
In [2]: tweet_json_cleaned=pd.read_csv('twitter_archive_master.csv')
        tweet_json_cleaned['timestamp'] = pd.to_datetime(tweet_json_cleaned['timestamp'],utc=Tru
```

1.0.1 Analyzing timestamp

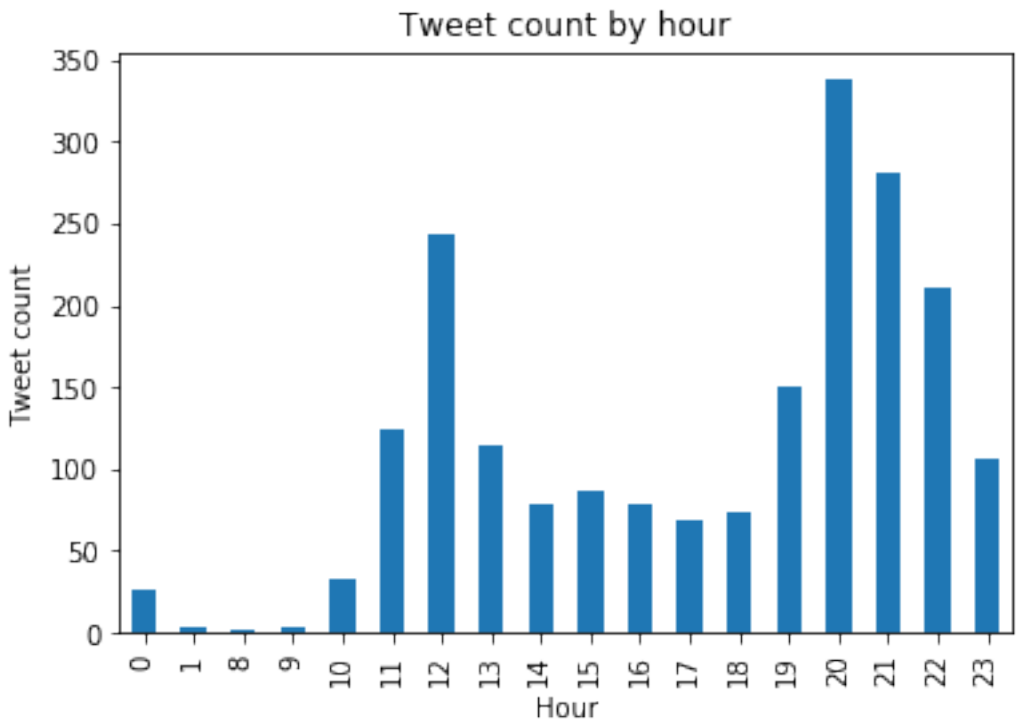
First the column timestamp is formatted as UTC, I transfer the timestamp into an reasonable time-zone 'America/New_York'.It looks like @dog_rates is living in United States.

```
In [3]: tweet_json_cleaned['local_timestamp']=tweet_json_cleaned['timestamp'].dt.tz_localize('UT
```

Extract hour from timestramp and visualize the hour against number of tweets.

```
In [4]: tweet_json_cleaned['hour']=tweet_json_cleaned['local_timestamp'].apply(lambda x : x.hour
```

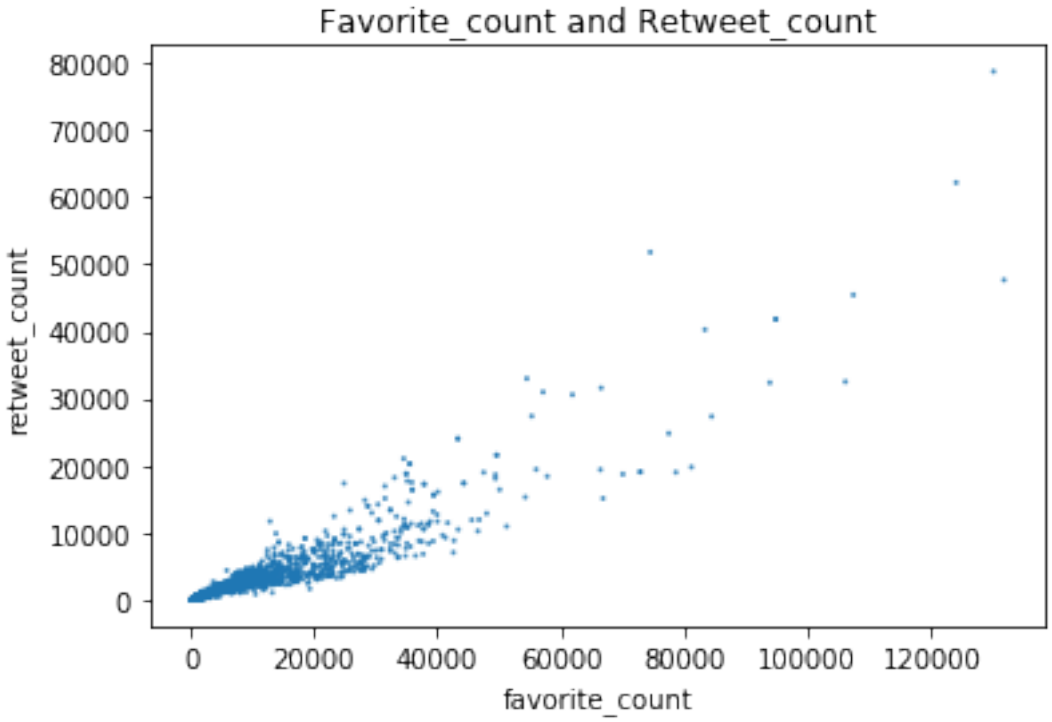
```
In [5]: tweet_json_cleaned['hour'].value_counts().sort_index().plot(kind='bar')
        plt.title('Tweet count by hour')
        plt.xlabel('Hour')
        plt.ylabel('Tweet count')
        plt.show()
```



The plot shows @dog_rates preferred to sent a tweet at late morning and early evening, and never sent a tweet bewteen 2AM to 7AM at Eastern Time, perhaps he/she was sleeping during this period. It's also possible that @dog_rates is living in Central Time Zone, so the inactive time is 1AM to 6AM.

1.0.2 Correlation between favorite_count and retweet_count.

```
In [6]: plt.scatter(tweet_json_cleaned['favorite_count'],tweet_json_cleaned['retweet_count'],s=[
        plt.title('Favorite_count and Retweet_count')
        plt.xlabel('favorite_count')
        plt.ylabel('retweet_count')
        plt.show()
```



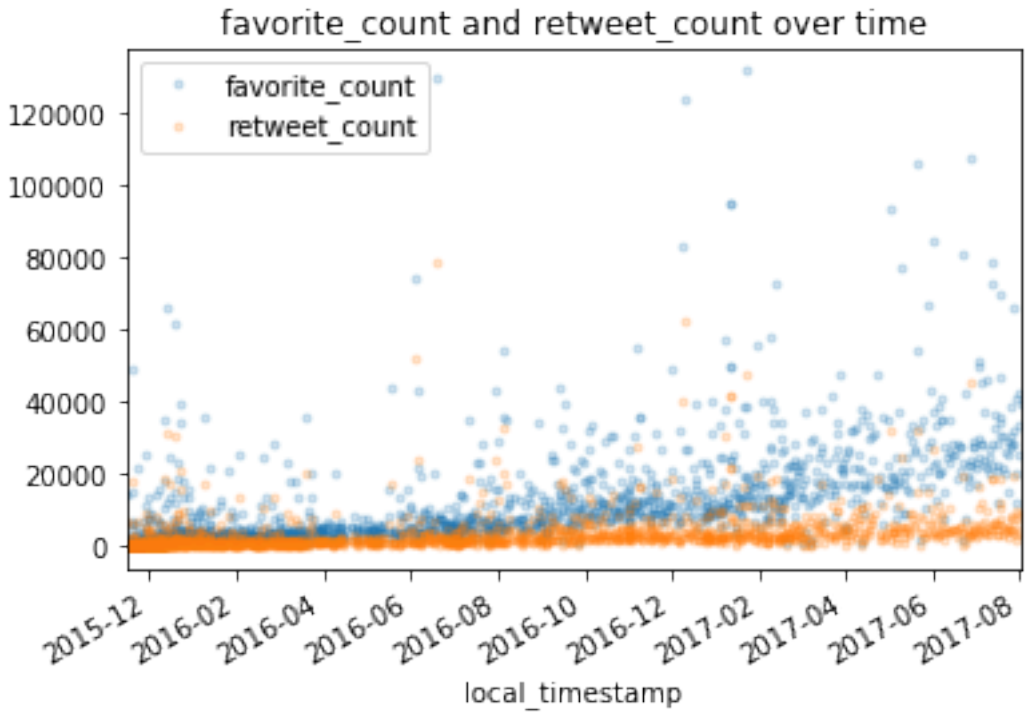
It seems favorite_count and retweet_count have a linear correlation and the variance increases. The favorite_count is almost always larger than the retweet_count. That makes sense because the action of clicking favorite is easier than retweeting a tweet in Twitter.

1.0.3 Time series on favorite_count and retweet_count

In [7]:
```
tweet_json_cleaned1=tweet_json_cleaned.copy()
tweet_json_cleaned1.set_index('local_timestamp',inplace=True)
```

In [8]:
```
tweet_json_cleaned1[['favorite_count','retweet_count']].plot(style='.',alpha=0.2)
# plt.xlim(0,  40000)

plt.title('favorite_count and retweet_count over time')
# plt.xlabel('favorite_count')
# plt.ylabel('retweet_count')
plt.show()
```

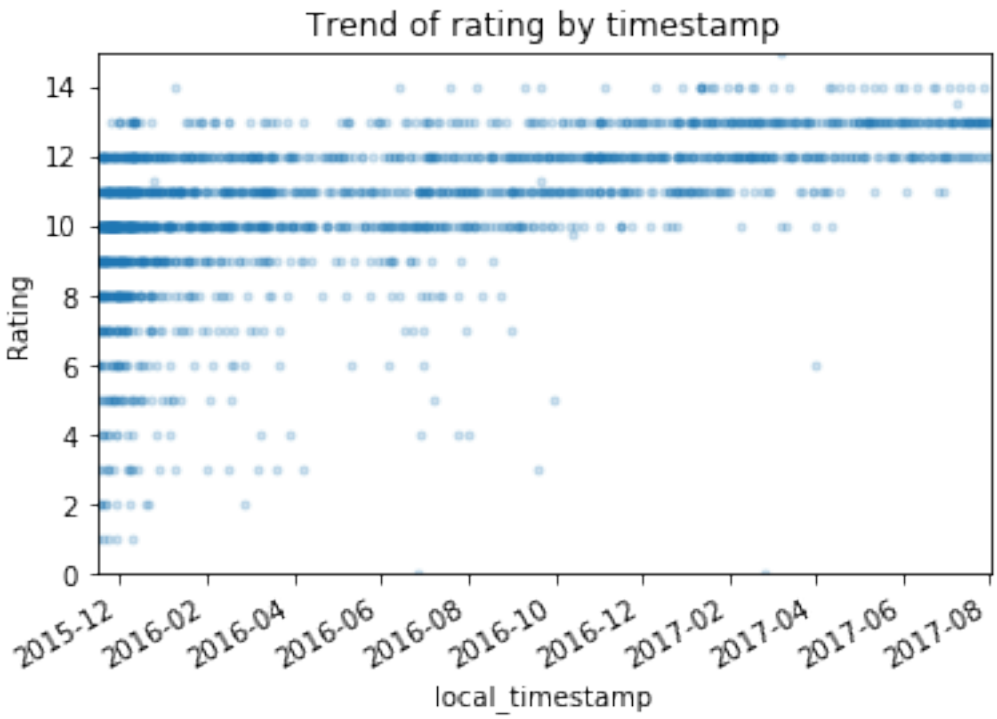


The number of favorite and retweet per tweet is continuously increasing over time elapsed.

1.0.4 Correlation between rating and timestamp

I would consider rating_numerator within range 0-15 is an valid rating, other large integer rating is just a joke. The rating_denominator is either 10 or a joke, so I would like to disregard rating_denominator.

```
In [9]: tweet_json_cleaned1['rating_numerator'].plot(style='.',alpha=0.2)
        # plt.xlim(0,  40000)
        plt.ylim(0, 15)
        plt.title('Trend of rating by timestamp')
        plt.ylabel('Rating')
        plt.show()
```



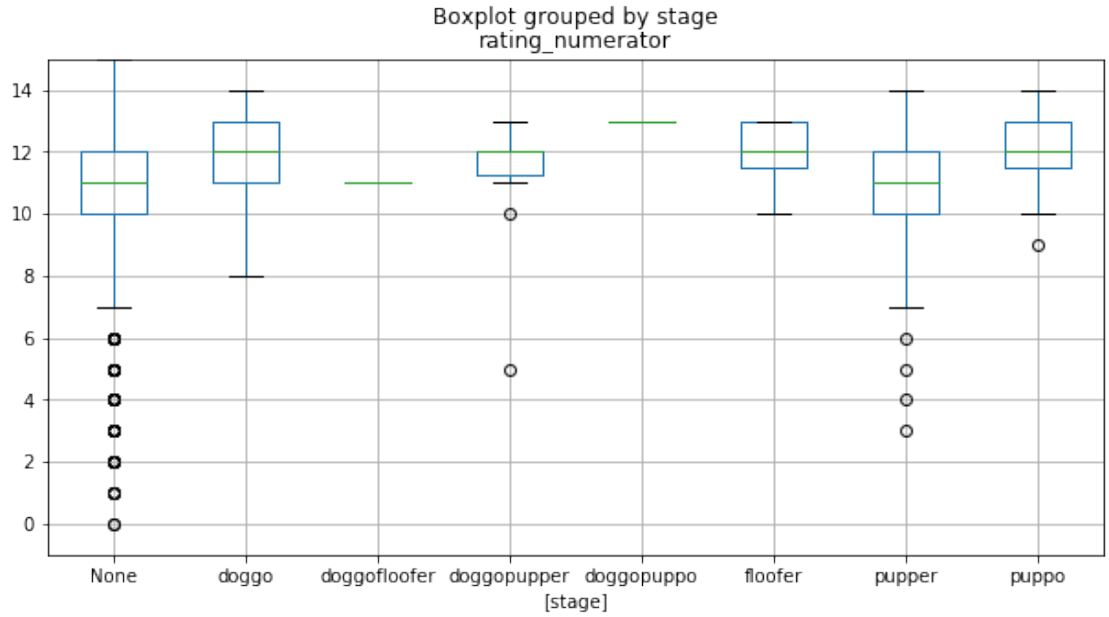
It looks like @dog_rates tended to rate higher as fans grow. Eventually, the common rating converges to either 10,11,12,13,14 so these numbers become meaningless.

1.0.5 Correlation between dog stage and ratings.

I am interested whether the dog stage is correlated to the ratings.

```
In [10]: tweet_json_cleaned.boxplot(column=['rating_numerator'], by=['stage'],figsize=(10,5))
         plt.ylim(-1, 15)
         plt.show()
```

```
/opt/conda/lib/python3.6/site-packages/numpy/core/fromnumeric.py:57: FutureWarning: reshape is d
  return getattr(obj, method)(*args, **kwds)
```



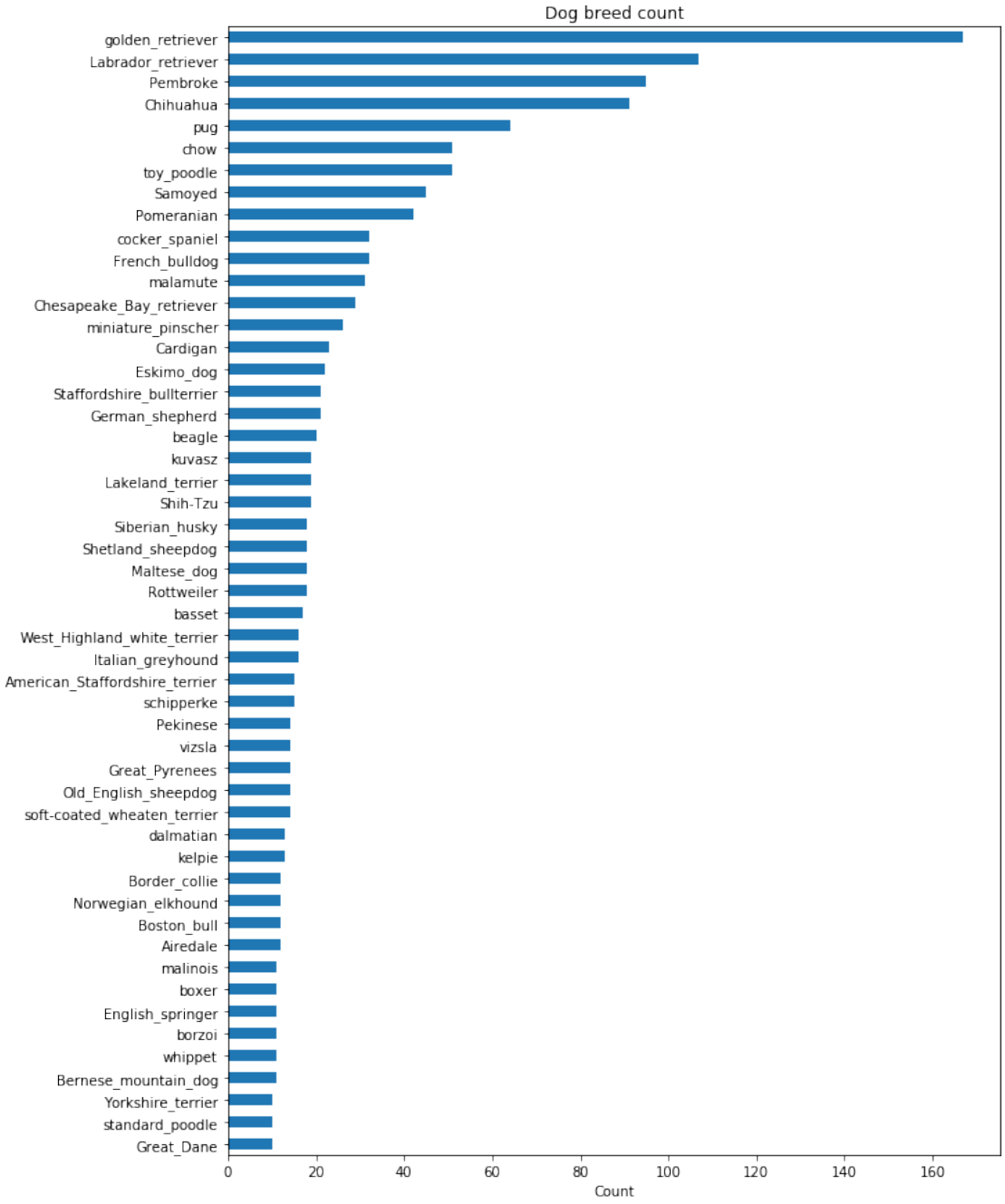
Looks like @dog_rates tends to rate higher on floofer and puppo. The pupper dogs are getting lower rates than other dog stage, with a distribution similar to the dogs without any stage.

1.0.6 Top predicted dog breed

Let's see the predicted dog breed distribution.

```
In [11]: tweet_json_cleaned2=tweet_json_cleaned.groupby('breed_predict').filter(lambda x: len(x)

In [12]: tweet_json_cleaned2['breed_predict'].value_counts(ascending=True).plot(kind='barh',figs
         plt.title('Dog breed count')
         plt.xlabel('Count')
         plt.show()
```



The dog breed prediction model predicts golden retrievers are the most common dogs that @dog_rates publishes. I think the distribution reflects these top breeds are also top popular or favorite dogs people adopt.

```
In [14]: #tweet_json_cleaned3=tweet_json_cleaned2.groupby('breed_predict').median()
         #tweet_json_cleaned3['rating_numerator']
```