wrangle_act

June 18, 2019

1 Gathering Data

In [1]:
```
import tweepy

        consumer_key = 'HIDDEN KEYS'
        consumer_secret = 'HIDDEN KEYS'
        access_token = 'HIDDEN KEYS'
        access_secret = 'HIDDEN KEYS'

        auth = tweepy.OAuthHandler(consumer_key, consumer_secret)
        auth.set_access_token(access_token, access_secret)

        api = tweepy.API(auth, wait_on_rate_limit=True, wait_on_rate_limit_notify=True)
```

In [7]:
```
import pandas as pd
import numpy as np
import random
import matplotlib.pyplot as plt
import json
import requests
```

In [3]:
```
df = pd.read_csv('twitter-archive-enhanced-2.csv')
```

In [4]:
```
missing_tweet_id = []
data = []
for i in range(len(df['tweet_id'])):
    try:
        tweet = api.get_status(df.iloc[i,0],tweet_mode='extended')
        data.append(tweet._json)
    except:
        print(df.iloc[i,0])
        missing_tweet_id.append(df.iloc[i,0])
```

```
888202515573088257
873697596434513921
872668790621863937
872261713294495745
```

```
869988702071779329
866816280283807744
861769973181624320
856602993587888130
845459076796616705
844704788403113984
842892208864923648
837012587749474308
827228250799742977
812747805718642688
802247111496568832
775096608509886464
770743923962707968
Rate limit reached. Sleeping for: 721
754011816964026368
680055455951884288
Rate limit reached. Sleeping for: 721
```

```
In [5]: with open('tweet_json.txt',mode='w') as f:
                json.dump(data, f)
```

```
In [4]: twitter_additional_archive=pd.read_json('tweet_json.txt')
```

```
In [8]: predictions = requests.get('https://d17h27t6h515a5.cloudfront.net/topher/2017/August/599
        with open('predictions.tsv',mode='wb') as p:
             p.write(predictions.content)
```

```
In [6]: i_predictions = pd.read_csv('predictions.tsv', sep='\t')
```

2 Assesment of data

```
In [175]: #Tidy Issue 1: Removing unnecessary columns
           #Tidy Issue 2: Data needs joining into one master file
```

```
In [10]: df.info()
         #Quality Issue 1: Noticed that tweet_id is a integar but twitter recommends it to be a
         #Quality Issue 2: retweet_status_id is a 181 and so those data points must be removed
         #Quality Issue 3: Once retweeted rows are removed, retweet_status_id, retweeted_status_
                         #retweeted_status_timestamp are obsolete and should be removed.
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2356 entries, 0 to 2355
Data columns (total 17 columns):
tweet_id                    2356 non-null int64
in_reply_to_status_id       78 non-null float64
in_reply_to_user_id         78 non-null float64
timestamp                   2356 non-null object
```

```
source                          2356 non-null object
text                            2356 non-null object
retweeted_status_id             181 non-null float64
retweeted_status_user_id        181 non-null float64
retweeted_status_timestamp      181 non-null object
expanded_urls                   2297 non-null object
rating_numerator                2356 non-null int64
rating_denominator              2356 non-null int64
name                            2356 non-null object
doggo                           2356 non-null object
floofer                         2356 non-null object
pupper                          2356 non-null object
puppo                           2356 non-null object
dtypes: float64(4), int64(3), object(10)
memory usage: 313.0+ KB
```

```
In [11]: twitter_additional_archive.info()
         #Quality Issue 4: retweet_status_id is a 166 and so those data points must be removed
         #Quality Issue 5: Once retweeted rows are removed, retweet status id and retweeted are
         #Quality Issue 6: Noticed that id is a integar but twitter recommends it to be a string
         #Quality Issue 7: id_str is the same as id and should be removed.

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2337 entries, 0 to 2336
Data columns (total 32 columns):
contributors                    0 non-null float64
coordinates                     0 non-null float64
created_at                      2337 non-null datetime64[ns]
display_text_range              2337 non-null object
entities                        2337 non-null object
extended_entities               2065 non-null object
favorite_count                  2337 non-null int64
favorited                       2337 non-null bool
full_text                       2337 non-null object
geo                             0 non-null float64
id                              2337 non-null int64
id_str                          2337 non-null int64
in_reply_to_screen_name         77 non-null object
in_reply_to_status_id           77 non-null float64
in_reply_to_status_id_str       77 non-null float64
in_reply_to_user_id             77 non-null float64
in_reply_to_user_id_str         77 non-null float64
is_quote_status                 2337 non-null bool
lang                            2337 non-null object
place                           1 non-null object
possibly_sensitive              2203 non-null float64
possibly_sensitive_appealable   2203 non-null float64
```

```
quoted_status                   24 non-null object
quoted_status_id                26 non-null float64
quoted_status_id_str            26 non-null float64
quoted_status_permalink         26 non-null object
retweet_count                   2337 non-null int64
retweeted                       2337 non-null bool
retweeted_status                166 non-null object
source                          2337 non-null object
truncated                       2337 non-null bool
user                            2337 non-null object
dtypes: bool(4), datetime64[ns](1), float64(11), int64(4), object(12)
memory usage: 520.4+ KB
```

```
In [12]: i_predictions.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2075 entries, 0 to 2074
Data columns (total 12 columns):
tweet_id    2075 non-null int64
jpg_url     2075 non-null object
img_num     2075 non-null int64
p1          2075 non-null object
p1_conf     2075 non-null float64
p1_dog      2075 non-null bool
p2          2075 non-null object
p2_conf     2075 non-null float64
p2_dog      2075 non-null bool
p3          2075 non-null object
p3_conf     2075 non-null float64
p3_dog      2075 non-null bool
dtypes: bool(3), float64(3), int64(2), object(4)
memory usage: 152.1+ KB
```

```
In [13]: i_predictions['p1_dog'].value_counts()
```

```
Out[13]: True     1532
         False     543
         Name: p1_dog, dtype: int64
```

```
In [14]: i_predictions['p2_dog'].value_counts()
```

```
Out[14]: True     1553
         False     522
         Name: p2_dog, dtype: int64
```

```
In [15]: i_predictions['p3_dog'].value_counts()
```

```
Out[15]: True     1499
         False     576
         Name: p3_dog, dtype: int64

In [16]: #Quality Issue number 8: P1 is the most likely prediction for what breed (if any) a dog
         #Therefore any false rows can be removed

In [17]: #checking for duplicates in twitter archive
         df[df['tweet_id'].duplicated()].count()

Out[17]: tweet_id                    0
         in_reply_to_status_id       0
         in_reply_to_user_id         0
         timestamp                   0
         source                      0
         text                        0
         retweeted_status_id         0
         retweeted_status_user_id    0
         retweeted_status_timestamp  0
         expanded_urls               0
         rating_numerator            0
         rating_denominator          0
         name                        0
         doggo                       0
         floofer                     0
         pupper                      0
         puppo                       0
         dtype: int64

In [18]: #Checking for duplicates in the additional archive
         twitter_additional_archive[twitter_additional_archive['id'].duplicated()].count()

Out[18]: contributors                  0
         coordinates                   0
         created_at                    0
         display_text_range            0
         entities                      0
         extended_entities             0
         favorite_count                0
         favorited                     0
         full_text                     0
         geo                           0
         id                            0
         id_str                        0
         in_reply_to_screen_name       0
         in_reply_to_status_id         0
         in_reply_to_status_id_str     0
         in_reply_to_user_id           0
         in_reply_to_user_id_str       0
```

```
is_quote_status                 0
lang                            0
place                           0
possibly_sensitive              0
possibly_sensitive_appealable   0
quoted_status                   0
quoted_status_id                0
quoted_status_id_str            0
quoted_status_permalink         0
retweet_count                   0
retweeted                       0
retweeted_status                0
source                          0
truncated                       0
user                            0
dtype: int64
```

In [19]:
```
#Checking for duplcaites in Predictions.
i_predictions[i_predictions['tweet_id'].duplicated()].count()
```

Out[19]:
```
tweet_id    0
jpg_url     0
img_num     0
p1          0
p1_conf     0
p1_dog      0
p2          0
p2_conf     0
p2_dog      0
p3          0
p3_conf     0
p3_dog      0
dtype: int64
```

In [20]:
```
missing_values = df['tweet_id'].isnull().values
for i in range(len(df['tweet_id'])):
    if missing_values[i] == True:
        i
#Since nothing was out put there is no missing data
```

In [21]:
```
df['rating_numerator'].value_counts()
#Most ratings are between 12 and 13 however some ratings do not follow the
#weratedogs rating system since they are below 10 on the other hand some
#rating are significantly high. Further investigation is required on thier
#legitimacy before they are removed.
```

Out[21]:
```
12      558
11      464
10      461
```

```
13      351
9       158
8       102
7        55
14       54
5        37
6        32
3        19
4        17
1         9
2         9
420       2
0         2
15        2
75        2
80        1
20        1
24        1
26        1
44        1
50        1
60        1
165       1
84        1
88        1
144       1
182       1
143       1
666       1
960       1
1776      1
17        1
27        1
45        1
99        1
121       1
204       1
Name: rating_numerator, dtype: int64
```

```
In [22]: df['name'].value_counts()
         #Some of the names are errors, where they may be only one letter or words
         #like 'the'.
```

```
Out[22]: None          745
         a              55
         Charlie        12
         Cooper         11
         Oliver         11
```

Lucy	11
Tucker	10
Lola	10
Penny	10
Winston	9
Bo	9
Sadie	8
the	8
Bailey	7
Daisy	7
an	7
Toby	7
Buddy	7
Rusty	6
Dave	6
Oscar	6
Bella	6
Scout	6
Jax	6
Stanley	6
Jack	6
Milo	6
Leo	6
Koda	6
Phil	5
...	
Kara	1
Lacy	1
Iggy	1
Roscoe	1
DayZ	1
Brandonald	1
Mosby	1
Cal	1
Ole	1
Chadrick	1
Lillie	1
Superpup	1
Stuart	1
Gordon	1
Sprout	1
Spencer	1
Tassy	1
Major	1
Dunkin	1
Combo	1
Nimbus	1
Dwight	1

```
Tess            1
Eleanor         1
Tessa           1
Julio           1
Jiminus         1
Buckley         1
Molly           1
Sweet           1
Name: name, Length: 957, dtype: int64
```

3 Cleaning

Quality Issue 1: Noticed that tweet_id is a integar but twitter recommneds it to be a string

```
In [23]: df_copy = df
```

```
In [24]: #df['tweet_id'] = df['tweet_id'].apply(str)
         df_copy.tweet_id = df_copy.tweet_id.astype(str)
         df_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2356 entries, 0 to 2355
Data columns (total 17 columns):
tweet_id                    2356 non-null object
in_reply_to_status_id       78 non-null float64
in_reply_to_user_id         78 non-null float64
timestamp                   2356 non-null object
source                      2356 non-null object
text                        2356 non-null object
retweeted_status_id         181 non-null float64
retweeted_status_user_id    181 non-null float64
retweeted_status_timestamp  181 non-null object
expanded_urls               2297 non-null object
rating_numerator            2356 non-null int64
rating_denominator          2356 non-null int64
name                        2356 non-null object
doggo                       2356 non-null object
floofer                     2356 non-null object
pupper                      2356 non-null object
puppo                       2356 non-null object
dtypes: float64(4), int64(2), object(11)
memory usage: 313.0+ KB
```

```
In [25]: x = df_copy.iloc[0,0]
         type(x)
```

```
Out[25]: str
```

Quality Issue 2: retweet_status_id is a 181 and so those data points must be removed

```
In [26]: df_copy.retweeted_status_id = df_copy.retweeted_status_id.fillna(0)
         a =df_copy.index[df_copy['retweeted_status_id'] > 0]
         df_copy = df_copy.drop(df_copy.index[a])
         df_copy.shape
```

```
Out[26]: (2175, 17)
```

Quality Issue 3: Once retweeted rows are removed, retweeted_status_id, retweeted_status_user_id and retweeted_status_timestamp are obsolete and should be removed.

```
In [27]: df_copy =df_copy.drop(['retweeted_status_id', 'retweeted_status_user_id', 'retweeted_st
         df_copy.head()
```

```
Out[27]:             tweet_id  in_reply_to_status_id  in_reply_to_user_id  \
         0  892420643555336193                    NaN                  NaN
         1  892177421306343426                    NaN                  NaN
         2  891815181378084864                    NaN                  NaN
         3  891689557279858688                    NaN                  NaN
         4  891327558926688256                    NaN                  NaN

                        timestamp  \
         0  2017-08-01 16:23:56 +0000
         1  2017-08-01 00:17:27 +0000
         2  2017-07-31 00:18:03 +0000
         3  2017-07-30 15:58:51 +0000
         4  2017-07-29 16:00:24 +0000

                                                source  \
         0  <a href="http://twitter.com/download/iphone" r...
         1  <a href="http://twitter.com/download/iphone" r...
         2  <a href="http://twitter.com/download/iphone" r...
         3  <a href="http://twitter.com/download/iphone" r...
         4  <a href="http://twitter.com/download/iphone" r...

                                                  text  \
         0  This is Phineas. He's a mystical boy. Only eve...
         1  This is Tilly. She's just checking pup on you...
         2  This is Archie. He is a rare Norwegian Pouncin...
         3  This is Darla. She commenced a snooze mid meal...
         4  This is Franklin. He would like you to stop ca...

                                         expanded_urls  rating_numerator  \
         0  https://twitter.com/dog_rates/status/892420643...                13
         1  https://twitter.com/dog_rates/status/892177421...                13
         2  https://twitter.com/dog_rates/status/891815181...                12
         3  https://twitter.com/dog_rates/status/891689557...                13
```

```
4  https://twitter.com/dog_rates/status/891327558...                12

   rating_denominator      name doggo floofer pupper puppo
0                  10   Phineas  None    None   None  None
1                  10     Tilly  None    None   None  None
2                  10    Archie  None    None   None  None
3                  10     Darla  None    None   None  None
4                  10  Franklin  None    None   None  None
```

Quality Issue 4: retweet_status_id is a 166 and so those data points must be removed

```
In [28]: twitter_additional_archive_copy =twitter_additional_archive

In [29]: twitter_additional_archive_copy.retweeted_status = twitter_additional_archive_copy.retw
         b =twitter_additional_archive_copy.index[twitter_additional_archive_copy['retweeted_sta
         twitter_additional_archive_copy = twitter_additional_archive_copy.drop(twitter_addition
         twitter_additional_archive_copy.shape

Out[29]: (2171, 32)
```

Quality Issue 5: Once retweeted rows are removed, retweet status id and retweeted are obsolete and should be removed.

```
In [30]: twitter_additional_archive_copy =twitter_additional_archive_copy.drop(['retweeted_statu

In [31]: twitter_additional_archive_copy.head()

Out[31]:    contributors  coordinates          created_at display_text_range  \
         0           NaN          NaN 2017-08-01 16:23:56            [0, 85]
         1           NaN          NaN 2017-08-01 00:17:27           [0, 138]
         2           NaN          NaN 2017-07-31 00:18:03           [0, 121]
         3           NaN          NaN 2017-07-30 15:58:51            [0, 79]
         4           NaN          NaN 2017-07-29 16:00:24           [0, 138]

                                                 entities  \
         0  {'hashtags': [], 'symbols': [], 'user_mentions...
         1  {'hashtags': [], 'symbols': [], 'user_mentions...
         2  {'hashtags': [], 'symbols': [], 'user_mentions...
         3  {'hashtags': [], 'symbols': [], 'user_mentions...
         4  {'hashtags': [{'text': 'BarkWeek', 'indices': ...

                                       extended_entities  favorite_count  \
         0  {'media': [{'id': 892420639486877696, 'id_str'...          37500
         1  {'media': [{'id': 892177413194625024, 'id_str'...          32245
         2  {'media': [{'id': 891815175371796480, 'id_str'...          24288
         3  {'media': [{'id': 891689552724799489, 'id_str'...          40822
         4  {'media': [{'id': 891327551943041024, 'id_str'...          39048

            favorited                                          full_text  geo  \
```

```
0      False  This is Phineas. He's a mystical boy. Only eve...  NaN
1      False  This is Tilly. She's just checking pup on you...  NaN
2      False  This is Archie. He is a rare Norwegian Pouncin...  NaN
3      False  This is Darla. She commenced a snooze mid meal...  NaN
4      False  This is Franklin. He would like you to stop ca...  NaN

                          ...                          possibly_sensitive  \
0                         ...                                         0.0
1                         ...                                         0.0
2                         ...                                         0.0
3                         ...                                         0.0
4                         ...                                         0.0

   possibly_sensitive_appealable quoted_status  quoted_status_id  \
0                            0.0           NaN               NaN
1                            0.0           NaN               NaN
2                            0.0           NaN               NaN
3                            0.0           NaN               NaN
4                            0.0           NaN               NaN

   quoted_status_id_str  quoted_status_permalink  retweet_count  \
0                   NaN                      NaN           8174
1                   NaN                      NaN           6050
2                   NaN                      NaN           4000
3                   NaN                      NaN           8325
4                   NaN                      NaN           9018

                                             source truncated  \
0  <a href="http://twitter.com/download/iphone" r...     False
1  <a href="http://twitter.com/download/iphone" r...     False
2  <a href="http://twitter.com/download/iphone" r...     False
3  <a href="http://twitter.com/download/iphone" r...     False
4  <a href="http://twitter.com/download/iphone" r...     False

                                                user
0  {'id': 4196983835, 'id_str': '4196983835', 'na...
1  {'id': 4196983835, 'id_str': '4196983835', 'na...
2  {'id': 4196983835, 'id_str': '4196983835', 'na...
3  {'id': 4196983835, 'id_str': '4196983835', 'na...
4  {'id': 4196983835, 'id_str': '4196983835', 'na...

[5 rows x 30 columns]
```

Quality Issue 6: Noticed that id is a integar but twitter recommneds it to be a string

```
In [32]: twitter_additional_archive_copy.id = twitter_additional_archive_copy.id.astype(str)
         twitter_additional_archive_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
Int64Index: 2171 entries, 0 to 2336
Data columns (total 30 columns):
contributors                     0 non-null float64
coordinates                      0 non-null float64
created_at                       2171 non-null datetime64[ns]
display_text_range               2171 non-null object
entities                         2171 non-null object
extended_entities                1990 non-null object
favorite_count                   2171 non-null int64
favorited                        2171 non-null bool
full_text                        2171 non-null object
geo                              0 non-null float64
id                               2171 non-null object
id_str                           2171 non-null int64
in_reply_to_screen_name          77 non-null object
in_reply_to_status_id            77 non-null float64
in_reply_to_status_id_str        77 non-null float64
in_reply_to_user_id              77 non-null float64
in_reply_to_user_id_str          77 non-null float64
is_quote_status                  2171 non-null bool
lang                             2171 non-null object
place                            1 non-null object
possibly_sensitive               2113 non-null float64
possibly_sensitive_appealable    2113 non-null float64
quoted_status                    24 non-null object
quoted_status_id                 25 non-null float64
quoted_status_id_str             25 non-null float64
quoted_status_permalink          25 non-null object
retweet_count                    2171 non-null int64
source                           2171 non-null object
truncated                        2171 non-null bool
user                             2171 non-null object
dtypes: bool(3), datetime64[ns](1), float64(11), int64(3), object(12)
memory usage: 481.3+ KB
```

Quality Issue 7: id_str is the same as id and so should be removed.

```
In [33]: twitter_additional_archive_copy =twitter_additional_archive_copy.drop(['id_str'], axis=
```

```
In [34]: twitter_additional_archive_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2171 entries, 0 to 2336
Data columns (total 29 columns):
contributors                     0 non-null float64
coordinates                      0 non-null float64
created_at                       2171 non-null datetime64[ns]
display_text_range               2171 non-null object
```

```
entities                          2171 non-null object
extended_entities                 1990 non-null object
favorite_count                    2171 non-null int64
favorited                         2171 non-null bool
full_text                         2171 non-null object
geo                               0 non-null float64
id                                2171 non-null object
in_reply_to_screen_name           77 non-null object
in_reply_to_status_id             77 non-null float64
in_reply_to_status_id_str         77 non-null float64
in_reply_to_user_id               77 non-null float64
in_reply_to_user_id_str           77 non-null float64
is_quote_status                   2171 non-null bool
lang                              2171 non-null object
place                             1 non-null object
possibly_sensitive                2113 non-null float64
possibly_sensitive_appealable     2113 non-null float64
quoted_status                     24 non-null object
quoted_status_id                  25 non-null float64
quoted_status_id_str              25 non-null float64
quoted_status_permalink           25 non-null object
retweet_count                     2171 non-null int64
source                            2171 non-null object
truncated                         2171 non-null bool
user                              2171 non-null object
dtypes: bool(3), datetime64[ns](1), float64(11), int64(2), object(12)
memory usage: 464.3+ KB
```

Quality Issue number 8: P1 is the most likely prediction for what breed (if any) a dog maybe. Therefore any false rows can be removed

```
In [35]: i_predictions_copy = i_predictions
```

```
In [36]: c =i_predictions_copy.index[i_predictions_copy['p1_dog'] == False]
         i_predictions_copy = i_predictions_copy.drop(i_predictions_copy.index[c])
         i_predictions_copy.shape
```

```
Out[36]: (1532, 12)
```

4 Tidying

Tidying item 1: Remove unnecessary columns

```
In [37]: df_copy = df_copy.drop(['in_reply_to_status_id','in_reply_to_user_id'],axis=1)
```

```
In [38]: df_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2175 entries, 0 to 2355
Data columns (total 12 columns):
tweet_id              2175 non-null object
timestamp             2175 non-null object
source                2175 non-null object
text                  2175 non-null object
expanded_urls         2117 non-null object
rating_numerator      2175 non-null int64
rating_denominator    2175 non-null int64
name                  2175 non-null object
doggo                 2175 non-null object
floofer               2175 non-null object
pupper                2175 non-null object
puppo                 2175 non-null object
dtypes: int64(2), object(10)
memory usage: 220.9+ KB
```

```
In [39]: twitter_additional_archive_copy = twitter_additional_archive_copy.drop(['contributors',
                                                                                 'extended_entit
                                                                                 'in_reply_to_st
                                                                                 'in_reply_to_us
                                                                                 'quoted_status_
```

```
In [40]: twitter_additional_archive_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2171 entries, 0 to 2336
Data columns (total 13 columns):
created_at                      2171 non-null datetime64[ns]
entities                        2171 non-null object
favorite_count                  2171 non-null int64
favorited                       2171 non-null bool
id                              2171 non-null object
is_quote_status                 2171 non-null bool
lang                            2171 non-null object
possibly_sensitive              2113 non-null float64
possibly_sensitive_appealable   2113 non-null float64
retweet_count                   2171 non-null int64
source                          2171 non-null object
truncated                       2171 non-null bool
user                            2171 non-null object
dtypes: bool(3), datetime64[ns](1), float64(2), int64(2), object(5)
memory usage: 192.9+ KB
```

```
In [41]: i_predictions_copy = i_predictions_copy.drop(['img_num'],axis=1)
```

```
In [42]: i_predictions_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1532 entries, 0 to 2073
Data columns (total 11 columns):
tweet_id    1532 non-null int64
jpg_url     1532 non-null object
p1          1532 non-null object
p1_conf     1532 non-null float64
p1_dog      1532 non-null bool
p2          1532 non-null object
p2_conf     1532 non-null float64
p2_dog      1532 non-null bool
p3          1532 non-null object
p3_conf     1532 non-null float64
p3_dog      1532 non-null bool
dtypes: bool(3), float64(3), int64(1), object(4)
memory usage: 112.2+ KB
```

Tidying item 2:Joining data

```
In [43]: df_copy['created_at'],df_copy['favorite_count'],df_copy['favorited'],df_copy['is_quote_
         df_copy['possibly_sensitive'],df_copy['possibly_sensitive_appealable'],df_copy['retweet
         df_copy['jpg_url'],df_copy['p1'],df_copy['p1_conf'],df_copy['p1_dog']= ["","","",""]
         df_copy['p2'],df_copy['p2_conf'],df_copy['p2_dog'],df_copy['p3'],df_copy['p3_conf'],df_
```

```
In [44]: df_copy.head(2)
```

```
Out[44]:              tweet_id                   timestamp  \
         0  892420643555336193  2017-08-01 16:23:56 +0000
         1  892177421306343426  2017-08-01 00:17:27 +0000

                                                   source  \
         0  <a href="http://twitter.com/download/iphone" r...
         1  <a href="http://twitter.com/download/iphone" r...

                                                     text  \
         0  This is Phineas. He's a mystical boy. Only eve...
         1  This is Tilly. She's just checking pup on you...

                                            expanded_urls  rating_numerator  \
         0  https://twitter.com/dog_rates/status/892420643...                13
         1  https://twitter.com/dog_rates/status/892177421...                13

            rating_denominator     name doggo floofer  ...   jpg_url p1 p1_conf p1_dog  \
         0                  10  Phineas  None    None  ...
         1                  10    Tilly  None    None  ...
```

```
  p2 p2_conf p2_dog p3 p3_conf p3_dog
0
1

[2 rows x 31 columns]
```

```
In [45]: df_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2175 entries, 0 to 2355
Data columns (total 31 columns):
tweet_id                          2175 non-null object
timestamp                         2175 non-null object
source                            2175 non-null object
text                              2175 non-null object
expanded_urls                     2117 non-null object
rating_numerator                  2175 non-null int64
rating_denominator                2175 non-null int64
name                              2175 non-null object
doggo                             2175 non-null object
floofer                           2175 non-null object
pupper                            2175 non-null object
puppo                             2175 non-null object
created_at                        2175 non-null object
favorite_count                    2175 non-null object
favorited                         2175 non-null object
is_quote_status                   2175 non-null object
lang                              2175 non-null object
possibly_sensitive                2175 non-null object
possibly_sensitive_appealable     2175 non-null object
retweet_count                     2175 non-null object
truncated                         2175 non-null object
jpg_url                           2175 non-null object
p1                                2175 non-null object
p1_conf                           2175 non-null object
p1_dog                            2175 non-null object
p2                                2175 non-null object
p2_conf                           2175 non-null object
p2_dog                            2175 non-null object
p3                                2175 non-null object
p3_conf                           2175 non-null object
p3_dog                            2175 non-null object
dtypes: int64(2), object(29)
memory usage: 543.8+ KB
```

```
In [46]: df_copy = df_copy.reset_index(drop=True)
         df_copy.shape
```

```
Out[46]: (2175, 31)
```

```
In [47]: missing_id = []
         missing_id_index = []
         for i in range(len(df_copy['tweet_id'])):
             try:
                 y=twitter_additional_archive_copy.loc[twitter_additional_archive_copy['id'] ==
                 df_copy.iloc[i,12]= twitter_additional_archive_copy.created_at[y[0]]
                 df_copy.iloc[i,13]= twitter_additional_archive_copy.favorite_count[y[0]]
                 df_copy.iloc[i,14]= twitter_additional_archive_copy.favorited[y[0]]
                 df_copy.iloc[i,15]= twitter_additional_archive_copy.is_quote_status[y[0]]
                 df_copy.iloc[i,16]= twitter_additional_archive_copy.lang[y[0]]
                 df_copy.iloc[i,17]= twitter_additional_archive_copy.possibly_sensitive[y[0]]
                 df_copy.iloc[i,18]= twitter_additional_archive_copy.possibly_sensitive_appealab
                 df_copy.iloc[i,19]= twitter_additional_archive_copy.retweet_count[y[0]]
                 df_copy.iloc[i,20]= twitter_additional_archive_copy.truncated[y[0]]

                 df_copy.iloc[i,21]= i_predictions_copy.jpg_url[y[0]]
                 df_copy.iloc[i,22]= i_predictions_copy.p1[y[0]]
                 df_copy.iloc[i,23]= i_predictions_copy.p1_conf[y[0]]
                 df_copy.iloc[i,24]= i_predictions_copy.p1_dog[y[0]]
                 df_copy.iloc[i,25]= i_predictions_copy.p2[y[0]]
                 df_copy.iloc[i,26]= i_predictions_copy.p2_conf[y[0]]
                 df_copy.iloc[i,27]= i_predictions_copy.p2_dog[y[0]]
                 df_copy.iloc[i,28]= i_predictions_copy.p3[y[0]]
                 df_copy.iloc[i,29]= i_predictions_copy.p3_conf[y[0]]
                 df_copy.iloc[i,30]= i_predictions_copy.p3_dog[y[0]]
             except:
                 missing_id.append(df_copy.tweet_id[i])
                 missing_id_index.append(i)
                 print(df_copy.tweet_id[i])
```

```
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668979806671884288

668975677807423489
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668902994700836864
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668872652652679168
668852170888998912
668826086256599040
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668779399630725120
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668645506898350081
668643542311546881
668641109086707712
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668633411083464705
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668625577880875008
668623201287675904
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668614819948453888
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668537837512433665
668528771708952576
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668484198282485761
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668297328638447616
668291999406125056
668286279830867968
668274247790391296
668268907921326080
668256321989451776
668248472370458624
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668226093875376128
668221241640230912
668204964695683073
668190681446379520
668171859951755264

668154635664932864
668142349051129856
668113020489474048
667937095915278337
667924896115245057
667915453470232577
667911425562669056
667902449697558528
667886921285246976
667885044254572545
667878741721415682
667873844930215936
667866724293877760
667861340749471744
667832474953625600
667806454573760512
667801013445750784
667793409583771648
667782464991965184
667773195014021121
667766675769573376
667728196545200128
667724302356258817
667549055577362432
667546741521195010
667544320556335104
667538891197542400
667534815156183040
667530908589760512
667524857454854144
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667491009379606528
667470559035432960
667455448082227200
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667435689202614272
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667188689915760640

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667171260800061440
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667065535570550784
667062181243039745
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666835007768551424
666826780179869698
666817836334096384
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666786068205871104
666781792255496192
666776908487630848
666739327293083650
666701168228331520
666691418707132416
666649482315059201
666644823164719104
666454714377183233
666447344410484738
666437273139982337
666435652385423360
666430724426358785
666428276349472768
666421158376562688
666418789513326592
666411507551481857
666407126856765440
666396247373291520
666373753744588802
666362758909284353
666353288456101888
666345417576210432
666337882303524864

```
666293911632134144
666287406224695296
666273097616637952
666268910803644416
666104133288665088
666102155909144576
666099513787052032
666094000022159362
666082916733198337
666073100786774016
666071193221509120
666063827256086533
666058600524156928
666057090499244032
666055525042405380
666051853826850816
666050758794694657
666049248165822465
666044226329800704
666033412701032449
666029285002620928
666020888022790149
```

```
In [48]: df_copy=df_copy.drop(missing_id_index, axis=0)
```

```
In [49]: #reindex
         df_copy = df_copy.reset_index(drop=True)
```

```
In [50]: df_copy['favorite_count'] = df_copy['favorite_count'].astype(int)
         df_copy['favorited'] = df_copy['favorited'].astype('bool')
         df_copy['is_quote_status'] = df_copy['is_quote_status'].astype('bool')
         df_copy['possibly_sensitive'] = df_copy['possibly_sensitive'].astype(float)
         df_copy['possibly_sensitive_appealable'] = df_copy['possibly_sensitive_appealable'].ast
         df_copy['retweet_count'] = df_copy['retweet_count'].astype(int)
         df_copy['truncated'] = df_copy['truncated'].astype('bool')

         df_copy['p1_conf'] = df_copy['p1_conf'].astype(float)
         df_copy['p1_dog'] = df_copy['p1_dog'].astype('bool')
         df_copy['p2_conf'] = df_copy['p2_conf'].astype(float)
         df_copy['p2_dog'] = df_copy['p2_dog'].astype('bool')
         df_copy['p3_conf'] = df_copy['p3_conf'].astype(float)
         df_copy['p3_dog'] = df_copy['p3_dog'].astype('bool')
```

5 Storing, Analyzing, and Visualizing

5.1 Storing

```
In [51]: df_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1417 entries, 0 to 1416
Data columns (total 31 columns):
tweet_id                          1417 non-null object
timestamp                         1417 non-null object
source                            1417 non-null object
text                              1417 non-null object
expanded_urls                     1375 non-null object
rating_numerator                  1417 non-null int64
rating_denominator                1417 non-null int64
name                              1417 non-null object
doggo                             1417 non-null object
floofer                           1417 non-null object
pupper                            1417 non-null object
puppo                             1417 non-null object
created_at                        1417 non-null object
favorite_count                    1417 non-null int64
favorited                         1417 non-null bool
is_quote_status                   1417 non-null bool
lang                              1417 non-null object
possibly_sensitive                1375 non-null float64
possibly_sensitive_appealable     1375 non-null float64
retweet_count                     1417 non-null int64
truncated                         1417 non-null bool
jpg_url                           1417 non-null object
p1                                1417 non-null object
p1_conf                           1417 non-null float64
p1_dog                            1417 non-null bool
p2                                1417 non-null object
p2_conf                           1417 non-null float64
p2_dog                            1417 non-null bool
p3                                1417 non-null object
p3_conf                           1417 non-null float64
p3_dog                            1417 non-null bool
dtypes: bool(6), float64(5), int64(4), object(16)
memory usage: 285.1+ KB
```

```
In [52]: import numpy
         df_copy.to_csv("twitter_archive_master.csv", sep=',')
```

5.2 Analyzing, and Visualizing

5.2.1 Insight 1

```
In [53]: df.query('rating_numerator == 1776')
```

```
Out[53]:                tweet_id  in_reply_to_status_id  in_reply_to_user_id  \
         979  749981277374128128                    NaN                  NaN
```

```
                       timestamp  \
979  2016-07-04 15:00:45 +0000

                                                 source  \
979  <a href="https://about.twitter.com/products/tw...

                                                   text  retweeted_status_id  \
979  This is Atticus. He's quite simply America af...                  0.0

     retweeted_status_user_id retweeted_status_timestamp  \
979                       NaN                        NaN

                                          expanded_urls  rating_numerator  \
979  https://twitter.com/dog_rates/status/749981277...              1776

     rating_denominator     name doggo floofer pupper puppo
979                  10  Atticus  None    None   None  None
```

```
In [54]: i_predictions.query('tweet_id == 749981277374128128')
```

```
Out[54]:                tweet_id                                          jpg_url  \
1270  749981277374128128  https://pbs.twimg.com/media/CmgBZ7kWcAAlzFD.jpg

      img_num       p1   p1_conf  p1_dog          p2   p2_conf  p2_dog  \
1270        1  bow_tie  0.533941   False  sunglasses  0.080822   False

             p3   p3_conf  p3_dog
1270  sunglass  0.050776   False
```

```
In [55]: print (df.iloc[979,5])
```

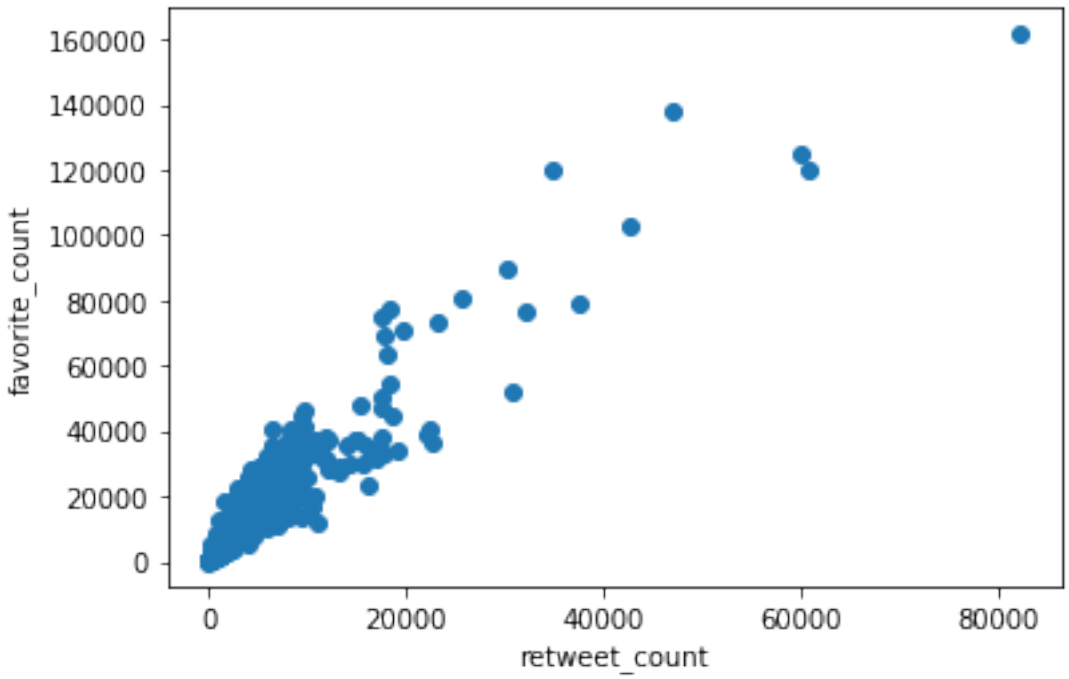
```
This is Atticus. He's quite simply America af. 1776/10 https://t.co/GRXwMxLBkh
```

Having had a look at some of the ratings there was one which stood out to me as being odd. Most of the ratings are around the 11, 12 and 13 mark but this one was at 1776. By looking more in to the Data for that row it can be sen that the post was made on 4th July and by loading in the picture it is obvious the doggo is a patriotic one. Therefore the rating of 1776 is intensional because that is when independance was offically signed and although it is a outlier it should not be disregarded.

5.2.2 Insight 2

```
In [56]: plt.scatter(df_copy['retweet_count'],df_copy['favorite_count'])
         plt.xlabel('retweet_count')
         plt.ylabel('favorite_count')
```

```
Out[56]: Text(0,0.5,'favorite_count')
```

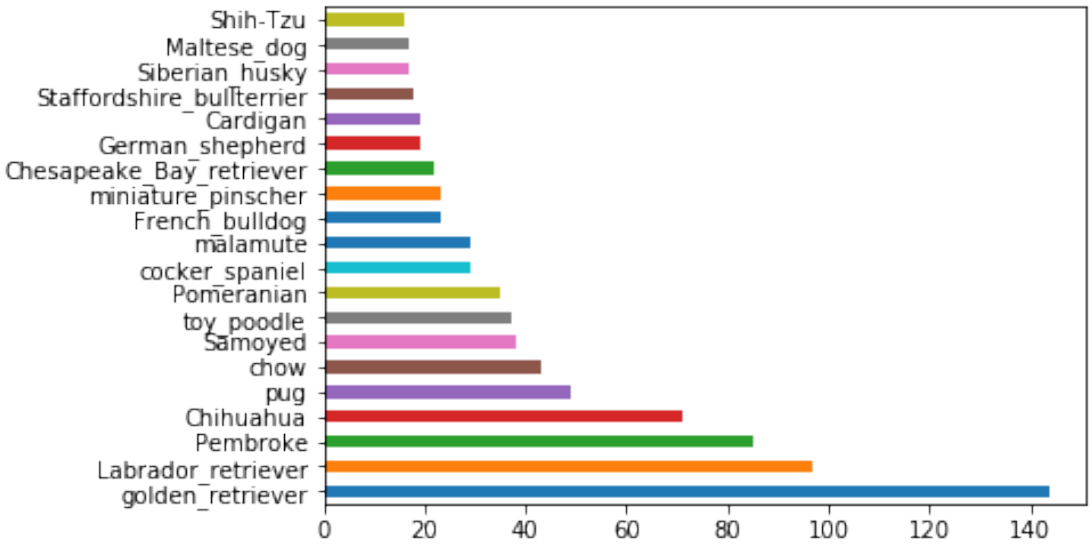


It was interesting to compare if the amount of retweets would corrolate to the amount of favorites a post gets. From the scatter plot above it is clear that there is a positive correlation between retweet_count and favorite_count; the more retweets the more favorites.

5.2.3 Insight 3

```
In [57]: df_copy['p1'].value_counts()[:20].plot(kind='barh')

Out[57]: <matplotlib.axes._subplots.AxesSubplot at 0x7f802d74f3c8>
```



This insight is useful to find which breed is the most popular based on the predictions for what breed the dog is in the image.